

PODOLIA AS A CULTURAL CONTACT AREA IN THE 4TH/3RD-2ND MILLENNIUM BC

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Editor's Foreword

The present volume of *Baltic-Pontic Studies* comprises papers reflecting a segment of research into the *Podolia cultural interchange* of communities genetically related to the drainage basins of the Black and Baltic seas in the 4th/3rd-2nd millennium BC. Accordingly, the papers present the results produced by the Polish-Ukrainian research project whose aim was to explore the *Yampil barrow cemetery complex* located in the southern portion of the Middle Dniester Area (Vinnitsa Oblast).*

The respective papers discuss the Yampil cultural background – a taxonomic record of ‘barrow communities’ settling the forest-steppe zone of the drainage basins of the Dniester and Prut rivers (from the position of the state the investigations of them have been until now). Next, they present the archaeometric and taxonomic descriptions of cemeteries explored by the *Yampil Expedition* in 2010-2015 (Klembivka, Pidlisivka, Porohy, Prydnistrianske) and further, examine the chronometry and anthropological characteristics of the populations that co-created the necropolises in question.

This volume of papers includes synthesizing studies that, while continuing to examine the questions raised earlier, focus on ‘Podolia conceptual propositions’ in the context of Baltic-Pontic archaeology. This particular research focus shall be continued in subsequent volumes of *BPS*.

The requirements related to *BPS* going electronic are the reason behind the limited modification of its editorial formula, which readers will see on the pages of this volume.

The present 20th volume has been made possible owing to the generous financial support provided for undertaking scholarly investigation and associated editing, and publishing, as well as administration under the aegis of a grant from the *National Programme for the Development of the Humanities* (no. 108/NPH3/H12/82/2014).

The reviewers of the papers published in this volume were Professors Lucyna Domańska and Przemysław Makarowicz.

* For a broader discussion see: ‘Naddniestrzańskie kompleksy cmentarzysk kurhanowych społeczności z III i z pierwszej połowy II tysiąclecia przed Chr. w okolicach Jampola, obwód winnicki. Z badań nad północno-zachodnią rubieżą osadnictwa kręgu kultur „wczesnobrązowych” strefy pontyjskiej. Badania z lat 1984-2014 In: Aleksander Koško, Mychajł Potupchuk, Serhiy Razumov (Eds) *Archaeologia Bimaris – Monografie* 6. Poznań: Wydawnictwo Nauka i Innowacje.

Editorial comment

1. All dates in the B-PS are calibrated [BC; see: Radiocarbon vol. 28, 1986, and the next volumes]. Deviations from this rule will be point out in notes [bc].
2. The names of the archaeological cultures and sites are standarized to the English literature on the subject (e.g. M. Gimbutas, J.P. Mallory). In the case of a new term, the author's original name has been retained.
3. The spelling of names of localities having the rank of administrative centres follows official, state, English language cartographic publications (e.g. *Ukraine, scale 1 : 2 000 000*, Kyiv: Mapa LTD, edition of 1996; *Rèspublika BELARUS', REVIEW-TOPOGRAPHIC MAP*, scale 1:1 000 000, Minsk: *BYELORUSSIAN CARTOGRAPHIC AN GEODETIC ENTERPISE*, edition 1993).

Svetlana V. Ivanova*, Gennadiy N. Toshev**

LATE ENEOLITHIC AND BRONZE AGE
PROLOGUE PONTIC SOCIETIES.
FOREST-STEPPE MIDDLE DNIESTER
AND PRUT DRAINAGE BASINS
IN THE 4TH/3RD-2ND MILLENNIUM BC:
A HISTORY OF INVESTIGATIONS

ABSTRACT

The paper presents a historiographic context helpful in the current investigations of the cultural contacts between the societies of the east and west of Europe in the borderland of Podolia and Moldova in the Late Eneolithic and the prologue of the Bronze Age. The focus is on the state of research (chiefly taxonomic and topogenetic) into the sequence of taxa in the age of early 'barrow-building', identified in the funerary rituals of societies settling the forest-steppe of the north-western Black Sea Coast in the 4th/3rd-2nd millennium BC.

Key words: Late Eneolithic, forest-steppe of north-western Black Sea Coast, Gordinești type, Zhvotilovka-Volchansk type, Yamnaya culture, Budzhak culture, Catacomb culture, Edineț culture, Babyno culture, Noua culture

The present investigations concentrate on 4th/3rd-2nd millennium BC societies settling the Dniester and Prut interfluvium and drainage basins, in particular their northern portion: the area of the forest-steppe that forms the borderland between Podolia and Moldova, an area of special interest on the map of transit routes, facil-

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itating contacts between societies inhabiting the drainages of the Black (to which it belongs) and Baltic seas. For it is there that the watersheds of the Prut and Dniester as well as Dniester and Southern Bug rivers are located. They are associated with the development, beginning with the 4th millennium BC, of the network of stable exchange routes [Klochko, Koško 2009].

Any reconstruction of the economy of prehistoric societies entails to a larger or smaller degree the reconstruction of a climate and surrounding landscape, because these two factors may have a significant impact on the major occupations of human populations. Special attention to the natural context and research perspectives into the palaeo-environment of the Dniester Area was given by the Polish-Ukrainian research project focused on the north-western settlement limit of Pontic zone cultures in the prologue of the Bronze Age [Makohonienko, Hildebrandt-Radke 2014].

The archaeological study of the landscape in question involves answering two major questions. The first refers to the relationship between man and the natural environment while the second to the discussion about natural zone boundaries. These questions are closely interrelated, for any analytically justified distinction between natural zones determines the correctness of conclusions drawn not only by geologists or geographers but also archaeologists. In this case, it is absolutely necessary to have a clear idea of boundaries between zones, in particular the boundary between the steppe and forest-steppe on the north-western coast of the Black Sea. Its delimitation raises controversies, hence the history of research and its current state shall be discussed below.

1. THE ENVIRONMENTAL ASPECT AND THE RELEVANCE OF NATURAL ZONE DISTINCTION

Together with the spread of a production economy, on the steppes of the north-western Black Sea Coast, a complex system developed, featuring ecologically intricate relationships between vegetation, animals and man. Hence, the reconstruction of the surrounding environment and climate is particularly relevant for the study of the history of societies at various chronological stages, especially those from which no written records survive. The distinctive features of the economy, settlement and cemetery topography, trade routes and population movements to a greater or lesser degree are related to the climate and landscape, which ultimately determine not only the conditions people live in but also their way of life. Therefore, the studies of archaeological cultures and historical-cultural processes have relied for the last few decades on research results supplied by

geologists, pedologists, botanists, biologists, and ecologists. This has permitted a reconstruction of the environment in which primitive societies lived. Researchers begin to see a relationship between the dynamics of archaeological culture development and climate changes. Climate changes must have had an impact, either directly or indirectly, on the transformations of the economic and social systems of ancient groups of humans. This, in turn, made for the development and survival of the best-adapted models of social organization. Under the favourable conditions of moist periods, the anthropogenic impact on the environment grew stronger. Conversely, when the climate became more arid, conditions were more conducive to the development of mechanisms, allowing for adaptation to climate changes [Kremenetskiy 1991: 177].

The steppes of the north-western Black Sea Coast are the most humid region of all Eurasian steppes. It is believed that Black Sea transgressions moderated aridity, leaving the climate more humid and thus influencing the development of the economic-cultural varieties of Bronze Age societies. The adaptation of populations to climate changes and the anthropogenic impact on the environment must have been interrelated and balanced, which is seen in both the absence of gaps in the cultural-historical development of such societies and the lack of clear traces of ecological crises.

The settlement of new territories, population movements and contacts are to a certain degree dependent on a terrain type and the natural zone of habitation. Nomadism is usually connected with the steppe zone. It is believed that climate changes may result in the movement of subzones north (in the case of increasing aridity) and south (in more humid periods) [Pustovalov 2001-2002]. For this reason, it is crucial to delineate the boundary between the steppe and forest-steppe, i.e. to find out what type of natural environment the societies of the Eneolithic and the Bronze Age lived in.

2. PHYSIOGRAPHIC FEATURES ON THE NORTH-WESTERN BLACK SEA COAST

Traditionally, the north-western Black Sea Coast is defined as the area extending between the Southern Bug, Prut and Danube rivers (administratively speaking: the Republic of Moldova and the Odessa Region in Ukraine). In the south, it is bounded by the coast of the Black Sea, while in the north its limit coincides with the boundary between the steppe and forest-steppe, which is variously delineated by specialists.



Fig. 1. Regional division of natural and vegetation zones in the Dniester-Prut interfluvium
 I – Bukovina beech and hornbeam-oak forests; II – meadows turned into a steppe, now ploughed; III – Romankivtsi forest-steppe with the greatest share of oak; IV – Sorotsk forest-steppe; V – Bălți steppe, multispecies: fescue-feather grass, now ploughed; VI – Codrii including the areas that used to be covered by hornbeam-oak forests; VII – Codrii including the areas that used to be covered by beech-oak forests; VIII – Northern Budzhak steppes, multispecies: fescue-feather grass, now ploughed; IX – Southern Budzhak steppes, multispecies: fescue-feather grass, now ploughed; X – tussock-sagebrush steppes; XI – freshwater vegetation limanowa; XII – saltwater vegetation limanowa. After Shabanova *et al.* 2010: 10, revised

The region of interest to us here (the interfluvium between, and drainages of, the Prut and Dniester rivers) is part of the north-western Black Sea Coast together with adjacent forest-steppe areas in the north (Fig. 1).

There are no dissenting voices in respect to terrain descriptions made by specialists. Thus it can be said that a large portion of Ukraine's territory covers the south-western fringe of the East European Plain and is rather flat or undulating. Within Ukraine, the Plain consists of lowland and upland areas. The Podolian Upland (on the left bank of the Dniester) extends northwest-southeast, from the upper reaches of the Southern Bug River. The southern portion of Ukraine is occupied by the Black Sea Lowland, slightly tilted southward and consisting of broad valleys and flat watersheds. It adjoins the Black and Azov seas and forms a crescent about 120-150 km wide.

The watershed between the Prut and Dniester tilts southward, while its northern part is covered by a range of high hills (Khotyn Upland). Its edge on the Dniester side is steep, while on the Prut side, it is rather flattened out.

In terms of physiography, the north of the Republic of Moldova is occupied by the Moldavian Plateau, featuring flattened reliefs and flat interfluviums. In its western portion, adjacent to the Prut River, a range of chalk hills rises, known as *Tovtry* (a bar of separate rounded massifs 50-80 m high). South of the Moldavian Plateau, there extends the North Moldavian Plain, the surface features of which are rather monotonous. In the central part of the right-bank Prut drainage basin, the Ciuluc Plateau lies, cut by a network of deep valleys and ravines. In the east, between the valleys of the Răut and Dniester, Dniester Hills rise, densely cut by valleys and ravines.

Centrally located, the Central Moldavian Plateau – *Codrii* – has the highest elevations in the country: 350-430 m. The relief is rather diversified there, featuring many bars, hills and deep ravines.

South of the *Codrii*, the country has a small flatland known as the South Moldova Plain, characterized by broad valleys and ravines. In Moldova's southwest, between the Prut and Ialpuș rivers, the Tigheci Plateau is known for its undulating, erosional-landslide terrain [Shabanova *et al.* 2014].

The question of the boundary between the steppe and forest-steppe represents a greater challenge as far as archaeological enquiry is concerned. We shall not, however, relate to the rather long discussion of the origins of the forest-steppe (natural or anthropogenic) or the time it came into existence. These questions are answered in detail by specialists. What we shall focus on instead is the demarcation of the two natural zones.

Already in the first half of the 20th century, L.S. Berg summed up the results of research into this question and observed that as a forest-steppe (from the point of view of surface features) one should consider the areas where forests and brush were still found on watershed plateaus. Thus, the forest-steppe-steppe boundary can be drawn from northern Bessarabia, along the northern edge of the

Bălți Steppe in the direction of Balta (or slightly further south, in the direction of Ananyiv), along the upper course of the Inhul River as far as Poltava and Kremenchuk, next between Kharkiv and Izium and further east. In support of his conception, L.S. Berg adduced data on the character and distribution of soil types and climate parameters, observing that the southern forest-steppe limit coincided with the axis of the belt of a mid-latitude barometric pressure maximum (so-called Voyeykov axis). He also studied other elements such as mean annual temperatures in July, specificity of isotherms in January and mean annual precipitation. Within the steppe belt, two ‘forest-steppe’ islands stand out: *Codrii* in Moldova and the Donetsk Upland, divided between Ukraine and Russia [Berg 1947: 285-287].

F.N. Milkov considered the boundary delineated by L.S. Berg artificial and related it to the impact of an anthropogenic factor – deforestation. As the main criterion, he considered not a complex of characteristics but the presence of watershed forests. Under this assumption, he drew the forest-steppe boundary from the southern edge of the *Codrii*, through Dniepropietrovsk, Samara valley, Donetsk and further east [Milkov 1951: 7-12]¹.

As can be seen, in the case of the interfluves between the Prut, Dniester and Southern Bug rivers, the difference in the course of the boundary, as delineated by the above two scientists, between the steppe and forest-steppe is considerable.

Many specialists had followed the findings by F.N. Milkov for quite a long time. However, recent decades have witnessed a fully justified return to L.S. Berg’s conception. Additional arguments in its favour include the calculations of the hydrothermal coefficient [Fedotov 2008: 10]. The ‘Berg Line’ is recognized by the following Ukrainian geographers: M.I. Davydova, A.I. Kamienskiy, N.P. Nekliukova, G.K. Tushynskiy [Fedotov 2008: 11].

As for the existing forests on the watersheds of the *Codrii*, Donetsk and Volga uplands, specialists believe that they cannot serve as the criterion for demarcating a horizontal (latitudinal) zone, because they are connected to altitudinal zonation, being the first (and the only) plant layer². The watersheds show zonation traits characteristic of the middle and lower climate-vegetation layers; however, on both the *Codrii* and Donetsk Upland, they are covered by steppes. The use of the altitudinal diversification of lowland landscapes for demarcating the zones of the steppe and forest-steppe (as well as forest-steppe and forest zones) bore out L.S. Berg’s conception and proved that the boundary between the geographical zones he delineated was accurate [Fedotov 2008: 9-11].

¹ The boundary lines, as drawn by the above named scientists, partially overlap in some sections in the east.

² It is a well-known fact that a high-mountain layer may be found in a different latitudinal zone.

3. THE HISTORY OF INVESTIGATIONS OF LATE NEOLITHIC AND BRONZE AGE PROLOGUE SITES IN THE CENTRAL, FOREST-STEPPE PRUT-DNIESTER INTERFLUVE AND THE DNIESTER DRAINAGE BASIN

The Eneolithic, in the area in question, includes Tripolye culture (TC) settlement complexes and barrow burials of various cultural groups.

The first *Tripolye sites* were discovered close to the village of Krinichki, Balta uyezd, in the late 19th century. In the early 20th century, S.S. Hamczenko excavated dozens of TC *ploshchadki* in the vicinity of the villages of Krinichki and Korytnoe. In the 1950s, the Odessa Museum of History and Archaeology, headed by A.L. Yesipenko, discovered Tripolye sites in the villages of Timkovo and Slobodka, and investigated settlements in the vicinity of the villages of Aleksandrovka and Cherkasov Sad. A.A. Kravchenko and L.G. Garkusha discovered the settlement of Perlikany. The 1970s witnessed the resumption of excavations at already-known and newly-discovered settlements: Aleksandrovka (K.V. Zinkovskiy), Slobodka-Lesnichestvo, Timkovo (N.B. Burdo, M.Y. Videyko), Nemirovskoe, Stanislavka (M.Y. Videyko), Cherkasov Sad (L.Y. Polischuk). Now, in the Prut and Dniester interfluve, we know of sites related to all the development stages of the TC: early (Tripolye A-Precucuteni III), middle (Tripolye BI-Cucuteni A and Tripolye BII-Cucuteni A-B) and late (Tripolye CI-Cucuteni B), as well as single CII sites [Burdo, Polischuk 2013: 43-44].

The investigations of *barrow sites* in the middle Dniester drainage basin began in the late 19th century. It is from that time that excavations headed by N.E. Brandenburg date. They were carried out in the vicinity of the village of Camenca but did not yield any Eneolithic sites at that time. Investigations concentrated then on the southern, steppe regions. The early 20th century saw amateur barrow excavations near Ciocîlteni of which no documentation has survived, hence, it cannot be known what period they concerned [Rafalovich, Ketraru 1966: 103].

For a long time, field investigations had not gone beyond rare excavations of single barrows and small barrow groups. Only rescue excavations on new construction sites in the 1970s and 1980s were to provide an opportunity to expand the database concerning the Copper Age.

3.1. EARLY-BARROW, 'LATE-ENEOLITHIC' CULTURAL GROUPS

The first discoveries of Eneolithic barrows in the middle Prut drainage basin were made by an expedition headed by V.A. Dergachev in 1975-1976 [Dergachev

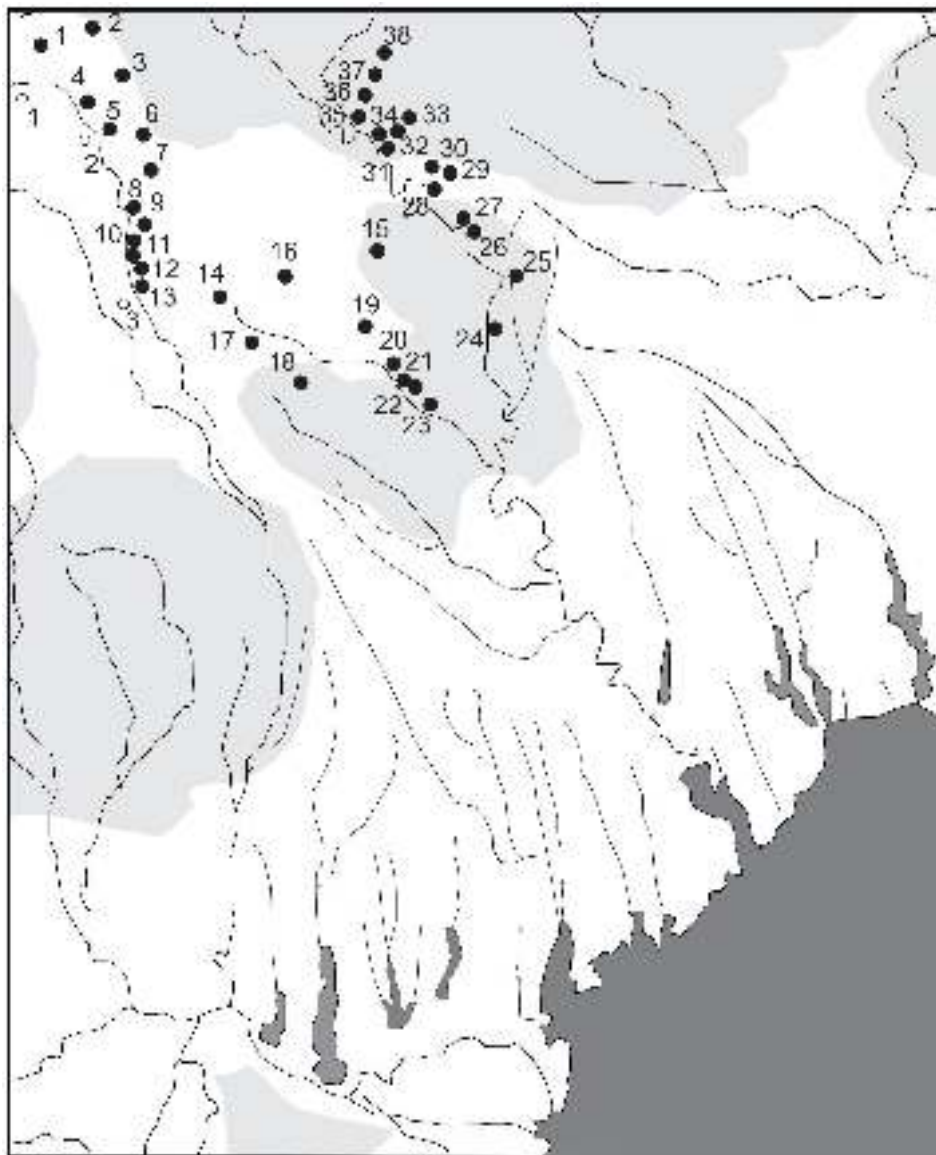


Fig. 2. Yamnaya culture sites in the drainage basins of the middle course of the Dniester and Prut rivers (above the Budzhak steppe zone). • Dniester-Prut interfluvium: 1 – Medveja, 2 – Cotiujeni, 3 – Corjeuți, 4 – Pererita, 5 – Tețcani, 6 – Burlănești, 7 – Hancăuți, 8 – Corpaci, Bădragii Vechi, 9 – Cuconești Vechi, 10 – Scherbaki, 11 – Dumeni, 12 – Duruitoarea Nouă, Văratice; 13 – Costești, Costești Noi, 14 – Iabloana, 15 – Mărculești, 16 – Frunzeny, 17 – Bursuceni, 18 – Mîndrești, 19 – Rogojeni, 20 – Codrul Nou, Brînzani Noi, 21 – Ciocîlteni, 22 – Brăviceni, 23 – Orhei, 24 – Mocra, 25 – Timkovo, 26 – Podoima, 27 – Camenca, 28 – Cuzmin, 29 – Hristovaia, 30 – Ocnița, 31 – Prydnistrianske, 32 – Sloboda Pidlisivska, 33 – Pidlisivka, 34 – Severynivka, 35 – Porohy, 36 – Dobrianka, 37 – Pysarivka, 38 – Klembivka; ○ Prut western bank: 1 – Corlăteni, 2 – Iacobeni, 3 – Glăvănești-Vechi

1982]. Among Gordinești type features, he counted a burial from barrow 4 near Costești and burials from barrows 16-18 in the vicinity of Dumeni, excavated by V.A. Safronov [Dergachev 1982:126]. A burial from barrow 2, Costești site, containing pennant projectile points, had been initially associated with the influence of the Maikop culture, but was later rightly included in the Zhivotilovka-Volchansk cultural group (type) [Rassamakin 1994; 1997: 294]. A clear group of three Zhivotilovka burials with a characteristic inventory was discovered near Bursuceni [Yarovoy 1979]. Zhivotilovka-type burials were excavated on the following sites: Scherbaki [Larina 1989], Cuconești Vechi [Dergachev 1982], Duruitoarea Nouă [Demchenko 2007].

In the 1980s and 1990s, extended burials were investigated in barrows on the following sites: Ocnița, Camenca district [Manzura *et al.* 1992], Bursuceni [Yarovoy 1979: 491-492], Văratice, Prut drainage basin [Larina 1989], Timkovo (on the bank of the Rybnitsa River, a left tributary of the Dniester) [Ostroverkhov *et al.* 1993].

Neolithic burials were also discovered in barrows investigated near Yampil in 2014 by the Yampil Expedition of the Adam Mickiewicz University in Poznań and the Institute of Archaeology, Ukrainian NAS in Kyiv [Prydnistrianske 1: *see* Klochko *et al.* 2015].

Summing up, Eneolithic burials beneath barrows are few in the region in question in contrast to the Budzhak Steppe to the south and the interior of the interfluvium of the Dniester and Southern Bug. This picture is made complete by Gordinești-type burials both barrow and flat ones [Larina 2003; Topal, Tserna 2010: 294; Yarovoy *et al.* 2012: 300; Włodarczak *et al.* 2015; Klochko *et al.* 2015].

3.2. YAMNAYA CULTURE (FIG. 2)

For the first time, barrows in the middle Dnieper drainage basin, near Camenca, Olgopol district, Podolia Governorate, were investigated in 1899-1900. The investigations were carried out by N.E. Brandenburg, director of Petersburg's Artillery Museum [*Zhurnal Raskopok Brandenbura* 1908: 173-175]. Four barrows were built in the Bronze Age while only two features belong to the Yamnaya culture (YC) [Kachalova 1974].

For a long time, excavations had been carried out only in the southern, steppe portion of the region. The first extensive barrow excavations, which resulted in the discovery of many YC burials in the north of the Prut-Dniester interfluvium, were carried out on the construction site of the Costești water-power plant in 1974-1976. Tens of barrows were excavated and found to contain burials from various periods, including the YC. Cemeteries and single barrows were found near Costești, Ivano-

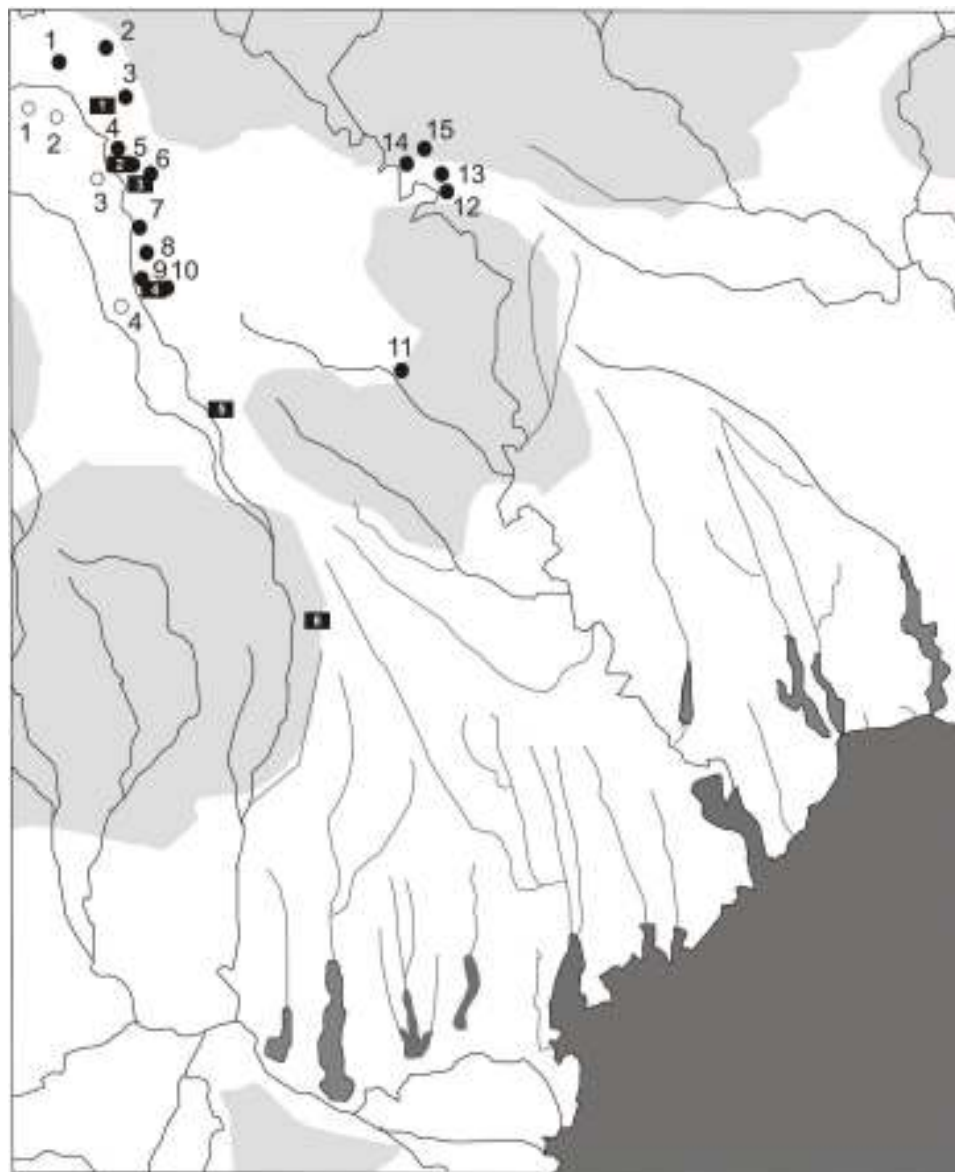


Fig. 3. Catacomb culture and Edineț culture sites in the drainage basins of the middle course of the Dniester and Prut rivers (above the Budzhak steppe zone). Catacomb culture sites. ● Dniester-Prut interfluvial: 1 – Medveja, 2 – Cotiujeni, 3 – Corjeuți, 4 – Tețcani, 5 – Bezeda, 6 – Hancăuți, 7 – Corpaci, 8 – Cuconești Vechi, 9 – Dumeni, 10 – Duruitoarea Nouă, 11 – Codrul Nou, 12 – Cuzmin, 13 – Ocnîța, 14 – Prydnistryanske, 15 – Pidlisivka; ○ Prut western bank: 1 – Corlăteni, 2 – Slobozia Hănești, 3 – Iacobenii, 4 – Glăvănești-Vechi; ■ Edineț culture sites: 1 – Brînzeni, 2 – Cuconești Vechi, 3 – Văratice, 1/4, 1/7, 4 – Cuconești Vechi II 4/?, 5 – Pruteni, 6 – Tochile-Răduceni

vca, Rîșcani District, Cuconești Vechi, Scherbaki, Corpaci, Hancăuți, Edineț District, [Dergachev 1982; Yarovoy 1984; Larina 1989], Hristovaia, Camenca District [Yarovoy 1980] and Iabloana, Glodeni District [Yarovoy 1983], Orhei District *loco* [Dergachev 1973; Popovich 2008], Dumeni District.

In the 1980s, barrows on the following sites were excavated: Medveja, Briceni District [Savva, Dergachev 1984], Mărculești, Florești District [Levinskiy, Tentiuk 1990; Beylekchi 1992], Tețcani and Bezeda, Briceni District [Yarovoy 1990; Glazov, Kurchatov 2005], Cotuieni, Șoldănești District [Agulnikov 1992], Duruitoarea Nouă, Rîșcani District [Demchenko 1988; 2007], Ciocîlteni [Ketraru, Khakheu, 1990], Brăviceni, Orhei District [Larina *et al.* 2008].

In 1988, a cemetery in the vicinity of the village of Ocnița, Camenca District [Manzura *et al.* 1992] was excavated; in 1989, barrows on the Podoima and Cuzmin sites, in the same area, were investigated [Khakheu, Bubulich 2002] while 1990 saw excavations on the Mocra site, Rîbnița District [Kashuba *et al.* 2001-2002]. In 1991, a single barrow in the vicinity of the village of Timkovo, on the left bank of the Dniester, in the Odessa *Oblast* was excavated [Ostroverkhov *et al.* 1993].

After 1991, for a long time, no archaeological investigations were conducted in this region. Only in 2013, were rescue excavations carried out of a barrow on the Rogojeni site, Șoldănești District [Agulnikov *et al.* 2014] and another on the Brînzenii Noi site, Telenești District [Agulnikov, Mistreanu 2014].

In the area known as the *Yampil Barrow Cemetery Complex*, bordering on the north-western Black Sea Coast, on the left bank of the Dniester, excavations were carried out from the mid-1980s to the early 1990s. Barrows on sites: Dobrianka, Pysarivka, Porohy, Severynivka, and Sloboda Pidlisivska were investigated [Potupczyk, Razumov 2014]. The year 2010 saw the beginning of a new stage in the investigations of *Yampil barrows*. They were located on sites: Pidlisivka 1 [Koško *et al.* 2014], Porohy 3A [Razumov *et al.* 2012; Klochko *et al.* 2015a], Klembivka 1 [Razumov *et al.* 2013; Klochko *et al.* 2015b], Prydnistrianske 1 [Klochko *et al.* 2015].

A list of YC sites in the area under discussion is given in the Annex: *Catalogue of Sites*.

3.3. CATACOMB CULTURE (FIG. 3)

The first Catacomb culture (CC) sites in the area in question were explored only in the mid-1970s. These were burials from barrows found on the Corpaci and Hancăuți sites [Dergachev 1982: 131; Yarovoy 1984: 71]. The excavations of barrows on the Dumeni site, headed by V.A. Safronov in 1974-1975, have never been published and are known only from information notices [Dergachev 1986]. The

1980s saw further discoveries of CC sites in the north of the Prut-Dniester interfluvium. These were such sites as Medveja [Savva, Dergachev 1984: 103, 107-108], Ocnîța [Manzura *et al.* 1992: 92] and others. Unfortunately, the largest CC barrow cemeteries – Tețcani and Bezeda sites, numbering 25 burials, and Codrul Nou with 14 burials – have not been published yet [Yarovoy 1990]. Generally speaking, in the region in question, barrows with single or few CC burials dominate.

Field investigations conducted throughout the north-western Black Sea Coast made for moving the western boundary of the catacomb historical-cultural community as far as the Prut River [Toshev 1981; Dergachev 1983]. However, for a long time, generalizing works mentioned only single sites west of the Southern Bug drainage basin [Bratchenko, Shaposhnikova 1985: 415]. At the same time, the series of assemblages in barrows on the right bank of the Prut River had long remained unexplored; only from the mid-1980s on, were they investigated and interpreted [Dergachev 1986; Burtănescu 2002].

In the mid-1980s, the question of including the Prut-Dniester interfluvium in the impact zone of catacomb groups was finally settled [Toshev 1982; 1986; Dergachev 1986]. To a large extent, the conclusions were borne out by materials obtained thanks to new excavations in the north of Moldova [Demchenko 1988; 2007; Yarovoy 1981; 1983; Savva, Dergachev 1984; Bubulich, Khakheu 2002; Yarovoy 1990; 1990a] carried out in the late 20th century. The new data were presented in synthesizing publications [Dergachev 1986; Toshev 1986; Burtănescu 2002; Ivanova 2013].

Due to their meagreness, materials from the forest-steppe are traditionally discussed in the context of the other sites in the Prut-Dniester interfluvium. Researchers distinguish early and late assemblages, which are jointly dated to the 25th-20th century BC [Kaiser 2003; Ivanova 2013].

Investigations carried out in the Yampil Region in the recent years have yielded new CC sites on the left bank of the Dniester [Klochko *et al.* 2015].

A list of CC sites in the area under discussion is given in the Annex: *Catalogue of Sites*.

3.4. EDINETŢ CULTURE (FIG. 3)

The first sites of this culture in the area under discussion were identified by V.I. Markevich in Brînzeni, Edineț District, in the early 1970s. Successive excavations carried out on a flat cemetery, permitted V.S. Titov to raise the issue of distinguishing a separate culture, which was given the name of Edineț culture (EC). He compared the EC to such cultures as Schneckenberg, Pitvários and So-

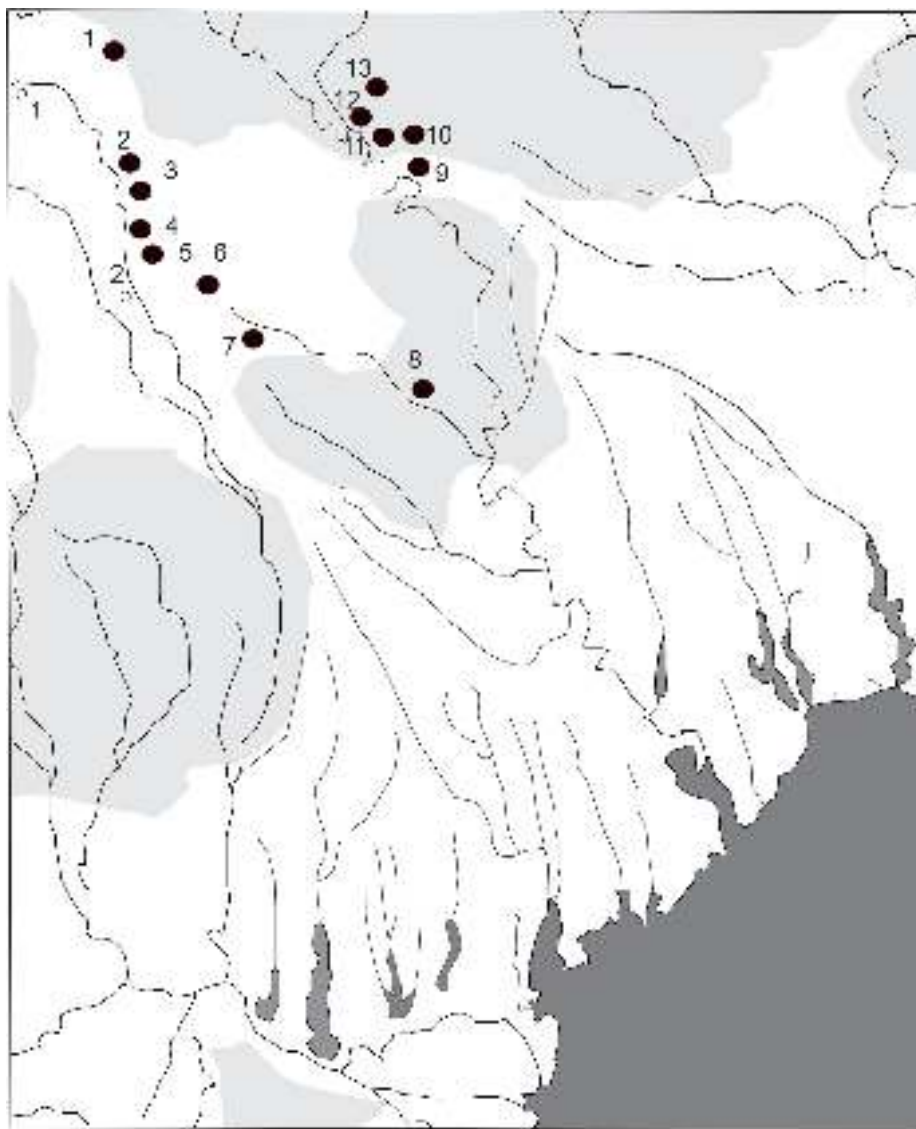


Fig. 4. Babyno culture (Mnogovalikovaya pottery) culture sites in the drainage basins of the middle course of the Dniester and Prut rivers (above the Budzhak steppe zone). ● Dniester-Prut interfluvium: 1 – Cotuijeni 1/4; 1/5; 3/1; 3/2 [Agulnikov 1992]; 2 – Corpaci 2/1 [Yarovoy 1984]; 2/2; 2/5; 3 – Cuconești Vechi 4/2; 8/10; 9/2, 26, 28, 31 [Dergachev 1986]; 4 – Dumeni 74, 8/8, 8/10 [Sava, 1992]; 5 – Duruitoarea Nouă [Demchenko 2007] - Văratice 1/5 [Demchenko 1989]; 6 – Iabloana - 1/5, 1/10 – [Yarovoy, 1983]; 7 – Bursuceni 1/13 (?) [Yarovoy, 1979]; 8 – Brăviceni 3/2; 7/1,7; 15/1,2; 16/2; 18/4 [Larina *et al.* 2008]; 9 – Ocnîța (Camenca) 2/2; 3/2; 3/7; 4/2; 5/2; 6/7; 6/26; 7/13 [Manzura *et al.* 1992]; 10 – Pidlisivka 1/5,7, 13(?); 11 – Severynivka 1/2, 2/2; 12 – Porohy 3/5; 4/1; 4/5; 4/9; 13 – Dobrianka 1/3; 1/10; ○ Prut western bank: Corlăteni - 1949 1/3 [Morintz 1978]; Glăvănești-Vechi-1949 1; 3; 1/10; 1/11; 1/17 [Burtănescu 2002]

mogyvár [1975]. Another flat cemetery was investigated by V.A. Dergachev on the Cuconești Vechi site in 1975 [Dergachev 1982] and in the course of next ten years barrow complexes were discovered on the Văratice, Edineț District [Demchenko 1989] and Bădragii Vechi, Costești VIII sites. The EC includes not only funerary sites but also settlement ones, for instance a short-term Trinca camp [Demchenko 2008].

Few EC materials (fewer than 10 sites) were described and summed up in the works by V.A. Dergachev [1986; 1994] and T.I. Demchenko [2008]. The former believes the EC to be genetically related to the Hatvan culture whose sites can be found in north-eastern Hungary [Dergachev 1999: 208, 214]. J. Machnik [1991:42] records the affinities of the EC with the Schneckenberg-Glina III, Somogyvár-Vinkovci and other cultures of the middle Danube drainage basin. P. Roman [1994] links the EC origins to the cultures of northern Thrace. T.I. Demchenko draws, however, a close parallel between the EC and a number of European cultures of the Bronze Age: Belotić-Bela Crkva, Somogyvár-Vinkovci, or Nagyrév [Demchenko 2008:199].

A list of EC sites in the area under discussion is given in the Annex: *Catalogue of Sites*.

3.5. BABYNO CULTURE (FIG. 4)

The discovery of Babyno culture (BC) sites (*see* the Mnogovalikovaya culture) goes back to barrow explorations already in the 19th century [Dergachev 1973]. Until the mid-1950s, they were discussed together with Late Bronze Age materials. Extensive investigations in the 1960s and 1970s and the identification by S.S. Berezanskaya of the separate Mnogovalikovaya culture gave rise to the question of distinguishing similar complexes on the north-western Black Sea Coast [Cherniakov 1975]. They were held to include above all burials with multiple-roll pottery and belt-buckles. As far as the cultural identification of burials without any grave goods is concerned, various, often contradictory opinions have prevailed to this day. Some of such complexes are interpreted as ‘Babyno’ [Lytvynenko 2009] or ‘Sabatinovka’ [Savva 1992; Sava, Agulnikov 2003].

A credible discovery of the first BC sites in northern Moldova was made in the 1970s on the construction site of the Costești water-power plant and a water reservoir on the Prut [Safronov 1975; Nikolaeva, Safronov 1976; Savva 1992]. An assemblage from the Cuconești Vechi (9/28) site, with a knife-khanjar, gained some fame [Berezanskaya 1986].

Carried out in the middle drainage basins of the Prut and Dniester in the last decades, sporadic excavations have nonetheless contributed toward the rise of the number of BC sites in the region in question. These are: Bursuceni [Yarovoy 1979], Corpaci [Yarovoy 1984], Văratci [Demchenko 1989], Ocnîța-Camenca [Manzura *et al.* 1992], Iabloana [Yarovoy 1983], Cotiujeni [Agulnikov 1992], Brăviceni [Larina *et al.* 2008].

These materials have been included in the research of G.N. Toshev [1982], V.A. Dergachev [1986], E.N. Savva [1992], in which they are discussed together with assemblages coming from further south.

The number of known sites in the region under discussion rose considerably owing to the excavations of *Yampil barrows* in the 1980s and 1990s and in 2010-2014 [Koško *et al.* 2014; Razumov *et al.* 2011; Razumov *et al.* 2013].

The opinions of researchers as to how to interpret BC assemblages in the western portion of the area vary. Once, S.S. Berezanskaya distinguished sites on the north-western Black Sea Coast as a separate south-western variant. Later, E.V. Savva considered assemblages from the Prut-Dniester interfluvium a uniform, fully fledged social organism, which had settled this area [Savva 1992: 157-158; 177]. In his post-doctoral dissertation, R.A. Lytvynenko [2009] believed, in turn, that within the 'Babyno circle', a local Dniester-Prut BC variety could be distinguished.

Furthermore, individual BC artefacts are also known from the upper Dniester drainage basin (present-day Lviv, Ivano-Frankivsk and Ternopil Regions Oblasts). The area yielded both single funerary assemblages (Ostapiv, Palikorovo, Zhorniv) and finds of pottery and bone belt-buckles within settlements. In the latter case, they were often found together with the materials of other cultures (Svitiaziv, Pereveredovo, Zvenigorod). For a long time, it had been these finds that were used as a justification for synchronizing the BC with local cultures and cultural groups [Sveshnikov 1974; Berezanskaya *et al.* 1986].

Two views on the interpretation of 'Babyno' artefacts in the upper Dniester drainage basin have emerged. R.A. Lytvynenko believes that the artefacts show that 'Babyno' population groups penetrated the upper Dniester drainage basin, i.e. an area settled by neighbouring tribes [Lytvynenko 2009: 12]. There is, however, another opinion, holding that this area ought to be included in the BC-settled area [Pâslaru 2006: 233].

Due to the meagreness of source data, the problem, in our opinion, remains open.

A list of BC sites in the area under discussion is given in the Annex: *Catalogue of Sites*.

In the region under discussion – the forest-steppe in the Prut-Dniester interfluvium – the Late Bronze Age is considered to encompass the Noua culture (NC).

The first to draw attention to the peculiarity of materials from a number of sites, especially the cemetery in the vicinity of the village of Noua, close to the city of Braşov (Romania), was I. Nestor in the 1930s. Successive investigations showed that the area settled by this culture covered a considerable part of the Dniester-Carpathian Region. At present, we know of a large number of settlements, flat cemeteries, ritual ash piles (ger. *Aschehügel*) and bronze hoards – over 500 altogether [Dergachev 1986: 153-156].

The investigations of Moldova sites have been conducted since the mid-1950s (V.I. Markevich, A.I. Meliukova, N.A. Ketraru, G.I. Smirnova, I.A. Rafalovich) [Dergachev 1973: 61]. Both settlements and flat cemeteries have been excavated. In the sub-Carpathian Region, NC materials have been actively investigated by G.I. Smirnova, E.A. Balaguri, L.I. Krushelnitskaya [Balaguri 1985; Krushelnitskaya 2006].

In the 1970s-1990s, investigations in the Prut-Dniester area covered both settlement sites and cemeteries. At present, we know of about 250 settlements alone; on some of them (e.g. Odaia-Miciurin), ritual ash piles have been studied for years [Sava, Kaiser 2011].

Of great significance was the discovery of biritual cemeteries (with flat graves and ones underneath barrows), for instance at Pererîta and Burlăneşti; and barrow cemeteries, for instance at Chirilen [Savva 2002] and Brînzarii Noi, which opened up new vistas in the study of the Noua culture, its rituals and contacts with neighbouring cultures.

Separate categories of metal goods, both single finds and hoards, have been comprehensively described in a number of works by V.A. Dergachev [1997; 2010].

The question of the culture's origin has not been settled yet. It is presumed that it had evolved from a number of Middle Bronze Age cultures on the Danubian Lowland above all Monteoru, as well as Costiţa, Tei and Wittenberg; researchers do not exclude, however, some influence by the representatives of the Sabatinovka culture or – more generally – 'eastern impulses' [Lytvynenko 2009; Cherednichenko 2014].

The NC is considered to be contemporaneous with the Sabatinovka culture and the late stage of the Komarov culture, which it bordered on.

There is no clear answer to the question about the chronological brackets of the NC or the entire Sabatinovka-Noua-Coslogeni complex for that matter. While in the 1980s, it was believed that these taxa could be dated to the 14th/13th-12th century BC [Dergachev 1986: 170], today, a clear tendency to make them older is observed [Klochko 2006: 307-308; Sava, Kaiser 2011: 394-395].

Table 1

¹⁴C Dates for late Eneolithic and Bronze age prologue cultures in the Prut-Dniester interfluve

Site/feature	Lab number	¹⁴ C Age BP	¹⁴ C date calibrations	Taxonomic assignment
Bursuceni 1/20	HD-19362	4548±28	3345–3120	Zhivotilovka type
Bursuceni 1/21	HD-19933	4452±22	3110±3030	Zhivotilovka type
Dubinovo 1/8	Ki-11200	3940±70	2575–2349	CC
Dubinovo 1/11	Ki-11202	3720±70	2267–1981	CC

A summary outline of NC sites in the Prut-Dniester interfluve can be found in the works by E. Sava and V.A. Dergachev [Sava 2002: 141-158; Dergachev 2010: 305-308].

4. RADIOCARBON CHRONOMETRY

Only few radiocarbon dates are available for the forest-steppe zone: these are two burials of the Zhivotilovka type from the Bursuceni site and relatively close (geographically) CC burials from Dubinovo on the Southern Bug River (Table 1).

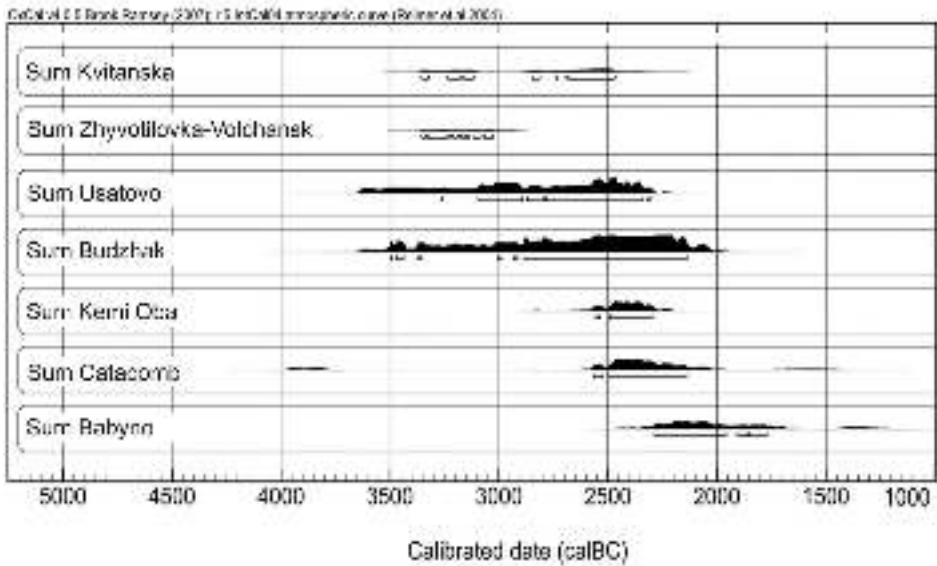


Fig. 5. Graphic presentation of the sum of dates for the cultures of the Late Eneolithic, and Early and Middle Bronze Age on the north-western Black Sea Coast

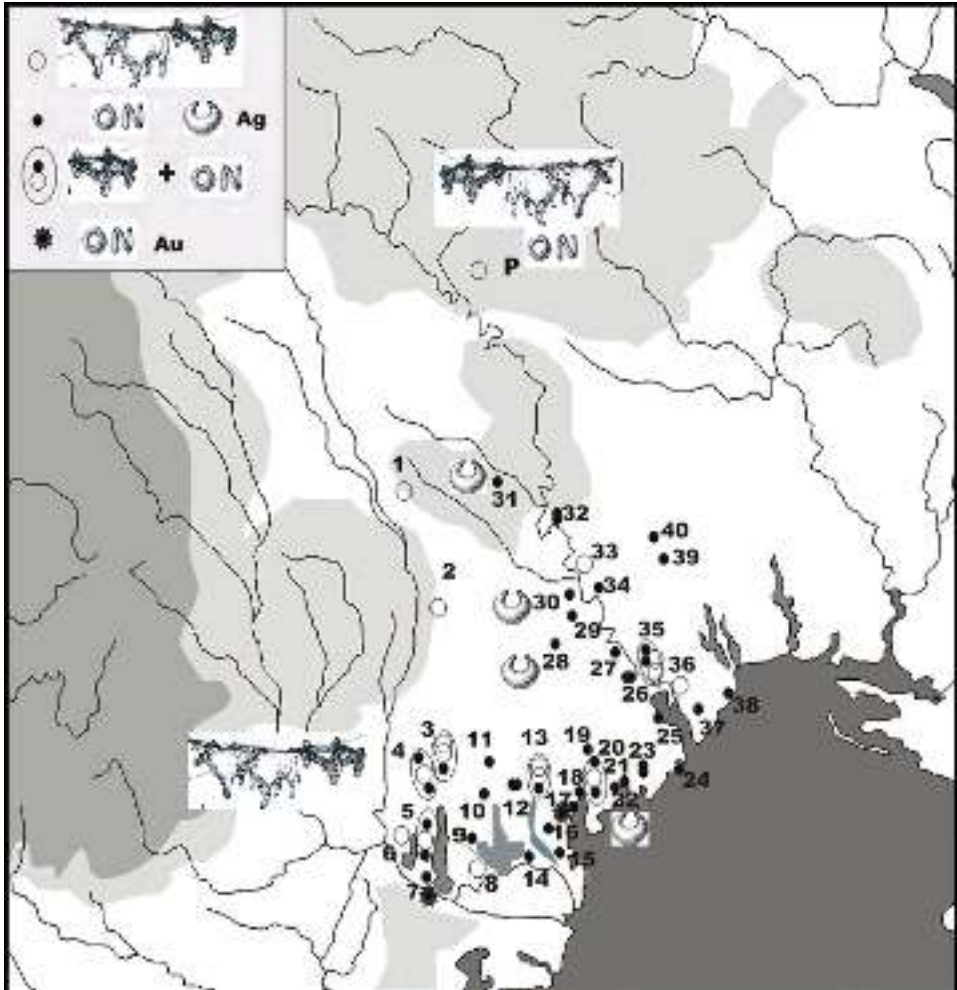


Fig. 6. Budzhak culture burials with wagons and silver ornaments on the north-western Black Sea Coast

This set of dates is supplemented by data for regions lying further south. Generally, the data are consistent with the overall chronology of the cultures discussed above (Fig. 5).

Now, this picture should be expanded to account for the information obtained by the *Yampil Expedition* mentioned earlier [see Goslar *et al.* 2015].

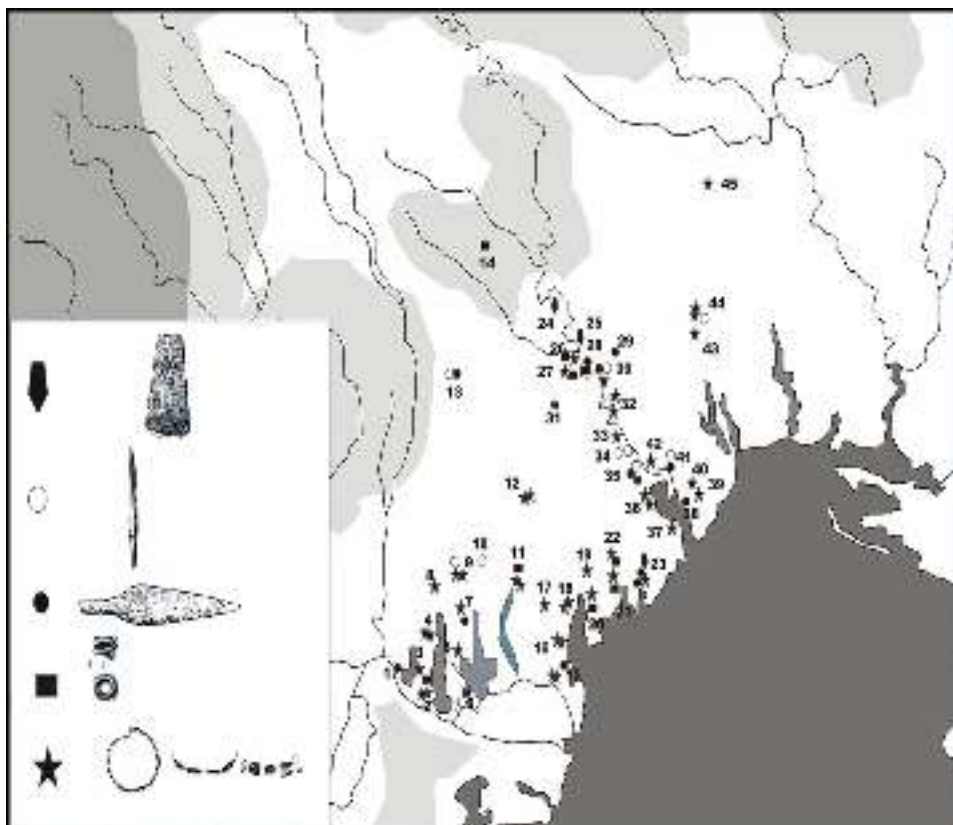


Fig. 7. Budzhak culture burials with copper products on the north-western Black Sea Coast

5. THE CULTURAL CONTEXT OF THE BLACK SEA STEPPE: THE PERSPECTIVE OF THE BUDZHAK CULTURE

Comparing the two regions – the Prut and Dniester drainage basins – a difference can be noticed in the way they were settled by the tribes of Bronze Age prologue cultures. The difference can be illustrated by the Budzhak culture (or, more broadly, the YC circle).

The Dniester drainage basin holds more of its prestigious artefacts – wagons, silver ornaments, metal goods – than its Prut counterpart. The same can be said about the distribution of burials with weapons (Fig. 6-8). The lower Dniester drainage basin is where western and north-western directions of relations kept by ‘Budzhak’ populations crossed; the northern route is documented. The middle Dniester drainage basin must have joined the Budzhak steppe to northern territories

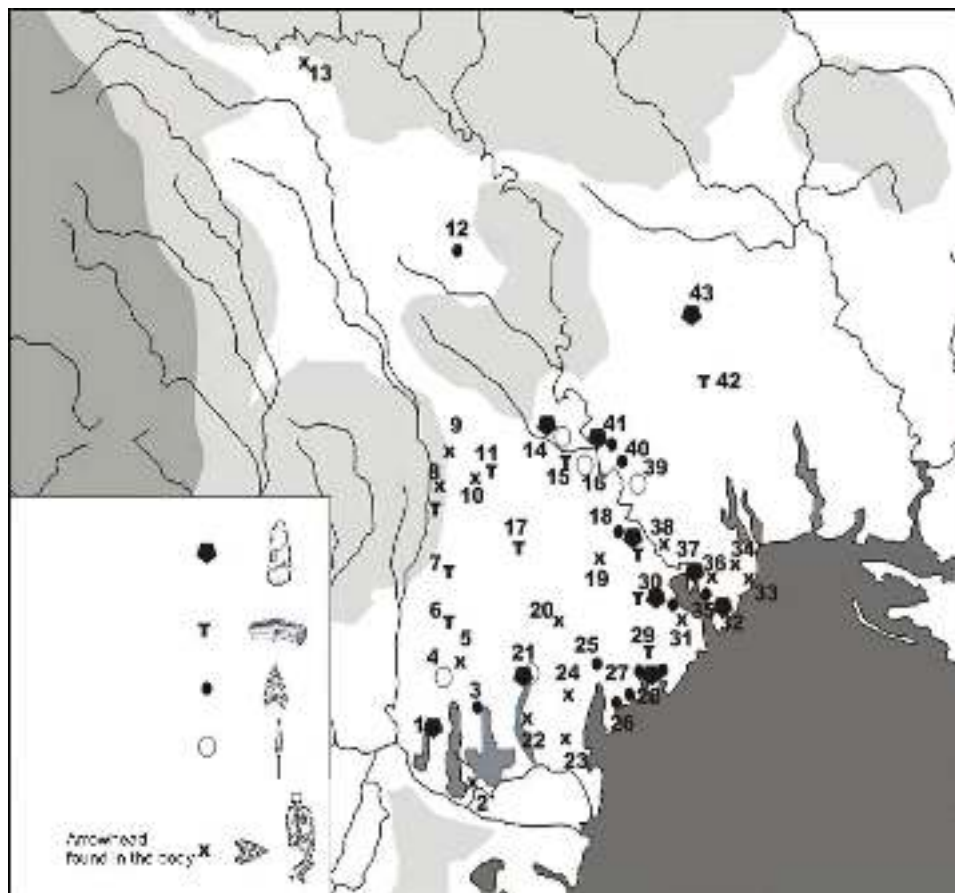


Fig. 8. Budzhak culture burials with weapons on the north-western Black Sea Coast

and central European cultures [Ivanova 2014: 26]. About the possible existence of the Dniester route, researchers wrote already earlier [Koško, Klochko 2009].

Whereas in the Prut drainage basin, the sites of both the Budzhak culture and the CC and BC are located close to known river crossings (Ungheni-Iași, Dumeni, Corpaci, Tețcani, Lipcani). Moreover, the Prut River may have been thought of as an obstacle on the westward route and not as a westward route as such.

CATALOGUE OF SITES ³**Yamnaya culture****Prut-Dniester Interfluve and Dniester Drainage Basin**

1. Medveja 1/4; 3/1; 4/2; 4/4; 5/1; 5/2; 5/3; 5/4 [Savva, Dergachev 1984].
2. Cotiujeni 1/3; 1/6; 3/3; 3/6; 3/8; 3/10; 3/11; 3/12; 3/14; 3/15; 3/15; 3/17 [Agulnikov 1992].
3. Corjeuți 1/3; 2/1; 3/1; 4/1; 4/7; 4/8; 4/9; 5/1; 6/3; 7/3; 8/1; 8/4; 8/5; 9/2; 9/3 [Levițki, Demcenko 1994].
4. Pererîta 1/1; 1/9; 1/10; 2/1; 2/5; 2/6; 2/10 [Kurchatov 2006].
5. Tețcani 1/1; 1/2; 1/7; 1/8; 1/9; 1/11; 1/12 [Glazov, Kurchatov 2005].
6. Burlănești 1/3; 1/4; 1/7; 1/12; 1/13; 2/3; 3/3; 3/7; 4/3; 4/5; 4/6; 4/7; 4/12; 4/13; 5/3; 4/4 [Demchenko, Levitskiy 2006].
7. Hancăuți 1/2; 1/3; 1/4; 1/7; 1/9; 1/12; 2/4; 2/5; 2/6; 2/7; 2/8 [Dergachev 1982].
8. Corpaci I 1/5; 4/1; 4/3; 4/5; 5/3; 5/5; 5/6 [Dergachev 1982]; Corpaci II 2/4; 2/6; 2/7; 2/8; 2/9; 2/11; 2/12; 2/13; 2/14; 2/15; 2/16; 3/1; 3/2; 3/3; 3/4; 3/5; 3/6; 4/1; 4/2; 4/4; 4/5 [Yarovoy 1984].
9. Cuconești Vechi 1/1; 1/3; 1/7; 2/2; 2/3; 3/5 [Dergachev 1982].
10. Scherbaki 1/1; 1/2; 1/5; 1/6 [Dergachev 1982]; 2/2; 2/3 [Larina 1989].
11. Dumeni 1/7; 1/10; 3/2; 3/5 [Dergachev 1986].
12. Duruitoarea Nouă I 1/2 [Dergachev 1982]; Duruitoarea Nouă II (Vărativ) 1/1; 1/5; 1/6; 1/7; 1/8; 1/10; 1/11 [Larina 1989]; Duruitoarea Nouă III 1/2; 1/3; 1/5; 2/1; 2/3; 2/4 [Demchenko 1988]; 3/3; 3/4; 4/1; 4/2; 4/3; 5/4; 5/5; 5/6; 6/2; 6/5; 7/2; 7/3 [Demchenko 2007].
13. Cuconești Vechi 1/5; 1/6; 1/7; 1/9; 1/12; 3/1; 3/2; 3/5; 5/2; 6/1; 8/2; Costeș-ti Noi 1/1 [Dergachev; 1982].
14. Iabloana 1/1; 1/3; 1/4; 1/7; 1/8; 1/11; 1/15; 1/16; 1/17; 1/18; 1/19 [Yarovoy 1983a].
15. Mărculești 1/1; 1/2; 2/2 [Levinskiy, Tentiuk 1990]; 3/1; 3/2; 3/3; 3/5; 3/6; 3/8; 3/9; 3/10; 3/11; 3/12; 3/14; 3/15; 3/16 [Beylekchi 1992].
16. Frunzeny 1/1; 1/2; 1/4; 1/6 [Dergachev 1973].

³ (?) = marks burials whose cultural interpretation in the publication or the report raises doubts with the present Authors.

17. Bursuceni 1/2; 1/6; 1/9; 1/10; 1/12; 1/14; 1/15; 1/16; 1/18; 1/19; 1/3; 1/24; 1/26 [Dergachev 1986].
18. Mîndreşti 1/1; 1/3; 1/4; 1/8 [Dergachev 1973].
19. Rogojeni 1/1; 1/2 [Agulnikov *et al.* 2014].
20. Codrul Nou 1/2; 1/3; 1/6; 1/7; 2/1; 3/6 [Dergachev 1986]; Brînzani Noi 1/2; 1/3; 1/4 [Agulnikov, Mistreanu 2014].
21. Ciocîlteni 2/6; 2/9; 2/10; 2/13; 3/3; 4/1; 4/2; 4/3; 4/4; 4/5; 5/3; 5/6; 5/7; 5/9 [Ketraru, Khakheu 1990].
22. Brăviceni 1/1; 1/10; 1/11; 1/12; 1/14; 2/2; 2/3; 2/4; 2/5; 2/7; 2/8; 2/9; 3/1; 4/4; 7/2; 7/4; 7/8; 7/9; 7/12; 7/13; 9/5; 9/6; 11/1; 11/8; 11/9; 12/1; 12/2; 12/3; 13/4; 13/5; 13/6; 13/7; 15/4; 16/1; 16/4; 16/6; 16/8; 16/9; 16/10; 16/11; 17/1; 17/3; 17/4; 17/5; 18/1; 18/2; 18/3; 18/5; 19/1; 19/4; 19/5; 19/7; 19/8; 19/11; 23/1; 23/3; 23/7; 24/3 [Larina *et al.* 2008].
23. Orhei 1/1; 1/2; 1/3; 1/4; 1/5 1/6; 1/8; 1/9 [Popovich 2008].
24. Mocra 1/3; 1/6; 1/7; 1/8; 1/9; 1/12; 1/13; 1/14; 1/15; 3/1; 3/4; 3/6; 3/7; 3/8; 4/2 [Kashuba *et al.* 2001-2002].
25. Timkovo 1/1; 1/2; 1/4; 1/6 [Ostroverkhov *et al.* 1993].
26. Podoima 3/6. 3/7; 3/8 [Bubulich, Khakheu 2002].
27. Camenca 444/3; 445/7 [Kachalova 1974].
28. Cuzmin 1/2; 2/2; 2/6; 2/7; 3/1; 3/2; 4/1; 4/3; 4/4; 4/5 [Bubulich, Khakheu 2002].
29. Hristovaia 1/1; 1/2; 1/3; 1/4; 1/5; 1/6; 1/7; 1/8; 1/9 [Yarovoy 1980].
30. Ocniţa 1/1; 1/3; 1/4; 1/7; 1/8; 1/9; 2/3; 2/4; 2/5; 2/6; 3/1; 3/3; 3/6; 3/8; 3/9; 3/10; 3/12; 3/13; 3/14; 3/15; 3/16; 4/1; 4/3; 4/4; 4/5; 4/6; 4/7; 5/4; 5/5; 5/6; 5/7; 5/8; 5/9; 6/3; 6/8; 6/9; 6/10; 6/11; 6/13; 6/16; 6/17; 6/18; 6/19; 6/20; 6/21; 6/22; 6/25; 6/27; 6/28; 7/1; 7/3; 7/4; 7/5; 7/6; 7/7; 7/8; 7/9; 7/10; 7/11; 7/12 [Manzura *et al.* 1992].
31. Prydnistrianske 4/3; 4/4; 4/6; 4/8; 4/9 [Włodarchak *et al.* 2015].
32. Sloboda Pidlisivska 2/?; 2/?; 2/?; 2/? [Potupchyk, Razumov 2014: 37].
33. Pidlisivka 1A; 1Aa; 1B 1/4; 1/8; 1/9; 1/10; 1/11 [Koško *et al.* 2014].
34. Severynivka 1/5; 2/1; 2/4; 2/5; 2/6; 2/7; 2/8; 2/9; 2/10; 2/11; 2/12; 2/13 [Harat *et al.* 2014].
35. Porohy 1/1; 1/2; 2/3; 2/4; 2/5; 2/6; 3/2 (1985 r.); 3/4 (1985 r.); 4/8 [Harat *et al.* 2014]; Porohy 3A (2011 r.); 3A/1; 3A/2 (?); 3A/3; 3A/7 (?); 3A/10; 3A/11; 3A/12; 3A/14 (?); 3A/15; 3A/17; 3A/18; 3A/19; 3A/20 [Razumov *et al.* 2011].
36. Dobrianka 1/4; 1/5; 1/6; 1/7; 1/8 [Harat *et al.* 2014].
37. Pysarivka 1/1; 1/2; 2/3; 3/1; 3/2; 3/3; 4/1; 4/2; 5/1; 5/2; 6/1; 6/2; 6/3; 7/2; 8/2; 9/2; 9/3 [Harat *et al.* 2014].
38. Klembivka 1/5 (?); 1/14; 1/15 [Razumov *et al.* 2013].

West Bank of the Prut

1. Corlăteni - 1949 1/3 [Burtănescu 2002].
2. Glăvănești-Vechi - 1949 1; 3; 1/10; 1/11; 1/17 [Burtănescu 2002].

Catacomb culture

Prut-Dniester Interfluve and Dniester Drainage Basin

1. Medveja 4/6 [Savva, Dergachev 1984].
2. Cotiujeni 1/1 [Agulnikov 1992].
3. Corjeuți 4/10 [Levițki, Demchenko 1994].
4. Tețcani [Yarovoy 1990].
5. Bezeda [Yarovoy 1990].
6. Hancăuți 1/8 [Dergachev 1982].
7. Corpaci 1/2; 1/3 [Dergachev 1982].
8. Cuconești Vechi 1/9; 3/7 [Yarovoy 1984]; 5/3; 5/7; 9/21A; 9/22; 9/27; 10/2; 16/3; 16/13; 18/1; 19/3 [Dergachev 1982; 1986].
9. Dumeni 1/4; 1/9 [Dergachev 1986]; 3/4 [Demchenko 1988].
10. Duruitoarea Nouă 1/4; 1/6; 2/2; 2/5; 3/2; 4/6 [Demchenko 1988; Demchenko 2007].
11. Codrul Nou 1/4; 1/5; 1/9; 2/3; 2/4; 2/5; 2/6; 2/7; 2/8; 3/1; 3/2; 3/3; 3/4; 3/10 [Yarovoy 1990; Dergachev 1986].
12. Cuzmin 2/5 [Bubulich, Khakheu 2002].
13. Ocnîța (Kamenka) 3/5 [Manzura *et al.* 1992].
14. Prydnistrianske 1/4 [Włodarchak *et al.* 2015; Klochko *et al.* 2015].
15. Pidlisivka 1/5(?) [Koško *et al.* 2014].

West Bank of the Prut

1. Corlăteni I 1/2 [Burtănescu 2002].
2. Slobozia Hănești 1/3 [Burtănescu 2002].
3. Iacobenii 1/19 [Burtănescu 2002].
4. Glăvănești-Vechi 1/13 [Burtănescu 2002].

Edineț culture

1. Brînzeni [Titov 1975].
2. Cuconești Vechi [Dergachev 1982].
3. Văratice 1/4; 1/7 [Demchenko 1989].
4. Cuconești Vechi II 4/ ? [Dergachev 1986].
5. Pruteni [Dergachev 1986].
6. Tochile-Răducani [Dergachev 1986].

Babyno culture

Prut-Dniester Interfluve and Dniester Drainage Basin

1. Cotiujeni 1/4; 1/5; 3/1; 3/2 [Agulnikov 1992].
2. Corpaci 2/12; 2/2; 2/5 [Yarovoy 1984].
3. Cuconești Vechi 4/2; 8/10; 9/2; 9/26; 9/28; 9/31 [Dergachev 1986].
4. Dumeni 74; 8/8; 8/10 [Savva 1992].
5. Duruitoarea Nouă 3/1 [Demchenko 2007]; Văratice 1/5 [Demchenko 1989].
6. Iabloana 1/5; 1/10 [Yarovoy 1983].
7. Bursuceni 1/13 (?) [Yarovoy 1979].
8. Brăviceni 3/2; 7/1; 7/7; 15/1; 15/2; 16/2?; 18/4 [Larina *et al.* 2008].
9. Ocnița (Camenca) 2/2; 3/2; 3/7; 4/2; 5/2; 6/7; 6/26; 7/13 [Manzura *et al.* 1992].
10. Pidlisivka 1/5; 1/7; 1/13(?)⁴ [Harat *et al.* 2014].
11. Severynivka 1/4; 2/2 [Harat *et al.* 2014].
12. Porohy 2/1(?); 3/5; 4/1; 4/5; 4/6(?); 4/9 [Harat *et al.* 2014]; Porohy 3A/5(?); 3A/8(?); 3A/22(?) [Razumov *et al.* 2011].
13. Dobrianka 1/1(?); 1/2; 1/3; 1/9(?); 1/10; 1/11 [Harat *et al.* 2014].
14. Pysarivka 8/4(?); 9/1(?) [Harat *et al.* 2014].
15. Klembivka 1/1; 1/2(?); 1/3(?); 1/6(?); 1/7(?); 1/8(?); 1/10(?); 1/11(?); 1/12(?); 1/13(?) [Razumov *et al.* 2013].

West Bank of the Prut

1. Corlăteni - 1949 1/3 [Burtănescu 2002].
2. Glăvănești-Vechi - 1949 1; 3; 1/10; 1/11; 1/17 [Burtănescu 2002].

Translated by Piotr T. Żebrowski

⁴ When publishing the materials; S. Razumov classified all burials with the deceased lying crouched on the side as the BC. In a number of cases; however; the present authors do not agree with this interpretation. In such cases; the burials are marked with a question mark.

REFERENCES

Agulnikov S.M.

- 1992 Issledovanie kurganov u s. Kotiuzhen. In: *Archeologicheskie issledovaniya v Moldavii (1986 g.)*, 104-120. Kishinev.

Agulnikov S., Mistreanu E., Popovici S.

- 2014 Cercetări de salvare la tumulul de la Rogojeni, r-nul Șoldănești. *Arheologia Preventivă în Republica Moldova* 1(1-2): 35-42.

Agulnikov S., Mistreanu E.

- 2014 Cercetările de salvare la tumulul de lângă S. Brîzenii Noi (r-nul Telenești). *Arheologia Preventivă în Republica Moldova* 1(1-2): 43-54.

Berezanskaya S.S., Otroschenko V.V., Cherednichenko N.N., Sharafutdinova I.N., (Eds)

- 1985 *Kultury epokhi bronzы na territorii Ukrainy*. Kyiv.

Basov V.M.

- 2006 Rol cheloveka v formirovaniі vidovogo raznoobraziya sovremennykh ekosistem. In: *Dinamika sovremennykh ekosistem v golocene*, 41-45. Moskva.

Beylekchi V.S.

- 1992 Raskopki kurgana 3 u s. Mierkulesht. In: *Archeologicheskie issledovaniya v Moldavii (1986g.)*, 72-87. Kishinev.

Berg L.S.

- 1947 *Geograficheskie zony Sovetskogo Soyuza*, vol. 1. Moskva.

Berezanskaya S.S.

- 1986 Kultura mnogovalikovoy keramiki. In: S.S. Berezanskaya, V.V. Otroschenko, N.N. Cherednichenko, I.N. Sharafutdinova (Eds) *Kultury epokhi bronzы na territorii Ukrainy*, 5-43. Kyiv.

Bratchenko S.N., Shaposhnikova O.G.

- 1985 Katakombnaya kulturno-istoricheskaya obschnost. In: I.I. Artemenko, S.S. Berezanskaya, V.D. Baran, V.A. Anokin (Eds) *Arkheologia Ukrain-skoj SSR*, vol. 1: 403-419. Kyiv.

Bubulich V., Khakheu V.

- 2002 Issledovanie kurganov v Kamenskom rayone na levoberezhie Srednego Dnestra. In: N.A. Ketraru (Ed.) *Severnoe Prichernomore: ot eneolita k antichnosti*, 112-148. Tiraspol.

Burdo N.B., Polischuk L.Y.

- 2013 Tripolskaya kultura. In: S. Hansen, J. Chodorowski, S.D. Kryzhytskiy, G.Y. Ivakin (Eds) *Drevnie kultury Severo-Zapadnogo Prichernomoria*, 43-84. Odessa.

Burtănescu F.

- 2002 *Epoca timpurie a bronzului între Carpați și Prut cu unele contribuții la problemele perioadei premergătoare epocii bronzului în Moldova*. București.

Cherednichenko Y.A.

- 2014 Sabatinovskaya kultura v sisteme drevnostey bronzovogo veka yuga Vostochnoy Evropy. *Stratum plus* 2: 15-112

Cherniakov I.T.

- 1975 *Plemena Severo-Zapadnogo Prichernomoria v pozdnem bronzovom veke. Avtoreferat dissertatsii na soiskanie uchonoj stepeni kandidata istoricheskikh nauk*. Kyiv.

Glazov V., Kurchatov S.

- 2005 Tetskanskies kurgany. Novoe v pogrebalnom obriade sarmat Dnestrovsko-Prutskogo Regiona. *Revista Arheologică. Serie nouă* 1(1): 301-320.

Demchenko T.I.

- 1988 Issledovaniya kurganov v Ryshkanskom rayone. In: *Archeologicheskie issledovaniya v Moldavii* (1988 g.). Kishinev.
- 1989 Novyi pamyatnik edinetskoy kulturnoy gruppy. In: *Archeologicheskie issledovaniya v Moldavii* (1986 g.), 96-109. Kishinev.
- 2007 Arheologicheskie issledovaniya kurganov levoberezhia Srednego Pruta (raskopki 1982 i 1984 gg.). *Tyragetia. Serie nouă I (XVI)*: 195-215.
- 2008 K voprosu o krughe pamyatnikov Edinetskoy kulturnoy grupy. *Tyragetia. Serie noua II (XVII)*: 189-203.

Demchenko T.I., Levitskiy O.G.

- 2006 Kurgany u sela Burlienesht. *Revista Arheologică. Serie nouă* 2 (1-2): 293-327.

Dergachev V.A.

- 1973 *Pamyatniki epokhi bronzy. Arheologicheskaya karta Moldavii*, vol. 3. Kishinev.
- 1982 *Materialy raskopok arkheologicheskoy ekspeditsii na Srednem Prute (1975-1976 gg.)*. Kishinev.
- 1983 Katakombnaya kultura v Dnestrovsko-Prutskom mezhdureche In: *Pervobytnye drevnosti Moldavii*, 128-151. Kishinev.

- 1986 *Moldaviya i sosednie territorii v epokhu bronzy*. Kishinev.
- 1994 Epoca bronzului. Perioda timpurie. *Thraco-Dacica XV*: 1-2.
- 1997 *Metallicheskie izdeliya k probleme genezisa kultur rannego galshtata Karpato-Danubio-nordpontiyskogo Regiona*. Kishinev.
- 1999 Osobennosti kulturno-istoricheskogo razvitiya Karpato-Podnestrovia. K probleme vzaimodeystviya drevnikh obschestv Sredney, Yugo-Vostochnoy i Vostochnoy Evropy. *Stratum plus* 2: 169–221.
- 2010 *Topory-kelty pozdney bronzy Karpato-Podunavia*. Vol. 1. Kishinev.
- 2010 Evoluția comunităților patriarhale. Epoca bronzului. In: *Istoria Moldovei*. 305-308. Chișinău.
- Dylis N.V.
- 1970 Biogeotsenoz. In: *Bolshaya sovetskaya entsiklopediya*. vol. 3, 330-332. Moskva.
- Fedotov S.V.
- 2008 Vertikalnaya differentsiatsiya landshaftov i problema granits prirodnikh zon v tsentre Russkoy ravniny. *Vestnik Voronezhskogo gosudarstvennogo Universiteta. Seriya geografiya. Geoekologiya* 2: 5-12.
- Glazov V., Kurchatov S.
- 2005 Tetskanskies kurgany. Novoe v pogrebalnom obriade sarmat Dnestrovsko-Prutskogo Regiona. *Revista Arheologica. Serie nouă* 1(1): 301-320.
- Harat K., Potupczyk M., Razumow S.
- 2014 Charakterystyka źródeł archeologicznych pozyskanych w latach 1984-1993. In: A. Koško, M. Potupczyk, S. Razumow (Eds) *Naddniestrzańskie kompleksy cmentarzysk kurhanowych społeczności z III i z pierwszej połowy II tysiąclecia przed Chr. w okolicach Jampola, obwód winnicki*. *Archaeologia Bimaris – Monografie* 6, 45-204. Poznań.
- Ivanova S.V.
- 2013 Katakombnye kultury. In: S. Hansen, J. Chodorowski, S.D. Kryzhytskiy, G.Y. Ivakin (Eds) *Drevnie kultury Severo-Zapadnogo Prichernomoria*, 255-275. Odessa.
- 2014 Stan badań nad osadnictwem kultur jamowej i katakumbowej w zlewni dolnego Dniestru. In: A. Koško, M. Potupczyk, S. Razumow (Eds) *Naddniestrzańskie kompleksy cmentarzysk kurhanowych społeczności z III i z pierwszej połowy II tysiąclecia przed Chr. w okolicach Jampola, obwód winnicki*. *Archaeologia Bimaris – Monografie* 6, 17-34. Poznań.
- Kachalova N.K.
- 1974 *Ermitazhnaya kollektsiya N.E. Brandenburgera*. Moskva.

Kaiser E.

- 2003 *Studien zur Katakombengrabkultur zwischen Dnepr und Prut. Archäologie in Eurasien* 14. Mainz.

Kashuba M.T., Kurchatov S.I., Scherbakova T.A.

- 2001-2002 Kochevniki na zapadnoy granitse Velikoy stepi (po materialam kurganov u s. Mocra). *Stratum plus* 4: 180-252.

Ketraru N.A., Khakheu V.P.

- 1990 Chokyltianskie kurgany. In: *Archeologicheskie issledovaniya v Moldavii* (1990 g.), 49-73. Kishinev.

Ketraru N.A., Nikolaeva N.A., Podolskiy N.L., Safronov V.A.

- 1975 Kurgany u s. Starye Kukoneshty Edinetskogo rayona MSSR. *Arheologicheskie otkrytiya* (1974 g.): 438.

Klochko V.I., Koško A., Potupchyk M.V., Włodarczak P., Żurkiewicz D. Ivanova S.V.

- 2015 Tripolye (Gordinești group), Yamnaya and Catacomb culture cemeteries, Prydnistrianske, site 1, Yampil Region, Vinnitsa Oblast: an archaeometric and chronometric description and a taxonomic and topogenetic discussion. In: A. Koško (Ed.) *Podolia as a Cultural Contact Area in the 4th/3rd-2nd Millennium BC. Baltic-Pontic Studies* 20: 183-255.

Klochko V.I., Koško A., Razumov S.M., Włodarczak P., Żurkiewicz D.

- 2015a Eneolithic, Yamnaya and Noua culture cemeteries from the first half of the 3rd and the middle of the 2nd millennium BC, Porohy, site 3a, Yampil Region, Vinnitsa Oblast: archaeometric and chronometric description, ritual and taxonomic-topogenetic identification. In: A. Koško (Ed.) *Podolia as a Cultural Contact Area in the 4th/3rd-2nd Millennium BC. Baltic-Pontic Studies* 20: 78-141.
- 2015b Eneolithic, Babyno and Noua culture cemeteries, Klembivka, site 1, Yampil Region, Vinnitsa Oblast: archaeometry, taxonomy and topogenetics. In: A. Koško (Ed.) *Podolia as a Cultural Contact Area in the 4th/3rd-2nd Millennium BC. Baltic-Pontic Studies* 20: 142-182.

Koško A. Klochko V.I.

- 2009 Transit routes between the Baltic and Black Seas: early development stages – from the 3rd to the middle of the 1st millennium BC. An outline of research project. In: A. Koško, V.I. Klochko (Eds), *Routes between the Seas: Baltic-Bug-Boh-Pont from the 3rd to the Middle of the 1st Millennium BC. Baltic-Pontic Studies* 14: 9-18.

Koško A., Potupczyk M., Razumow S. (Eds)

- 2014 *Naddniestrzańskie kompleksy cmentarzysk kurhanowych społeczności z III i z pierwszej połowy II tysiąclecia przed Chr. w okolicach Jampola, obwód winnicki. Z badań nad północno-zachodnią rubieżą osadnictwa kręgu kultur „wczesnobrązowych” strefy pontyjskiej. Badania z lat 1984-2014. Archaeologia Bimaris – Monografie 6. Poznań.*

Kremenetskiy K.V.

- 1991 *Paleoekologiya drevneyshikh zemledeltsev i skotovodov Russkoy ravniny.* Moskva.

Krushelnytska L.

- 2006 *Kultura Noa na zemliakh Ukrayiny.* Lviv.

Kulpin E.S.

- 2001 Tsivilizatsionnyi fenomen Zolotoy Ordy (Kolonizatsiya yuzhnorusskikh stepey v XIII–XV vekakh). *Obschestvennye nauki i sovremennost* 3: 74–88.

Kurchatov S.

- 2006 Issledovanie kurganov epokhi bronzы na Srednem Prute. *Revista Arheologică. Serie nouă* II (1-2): 263-287.

Larina O.V.

- 1989 Novye kurgannye materialy eneolita-ranney bronzы na Srednem Prute. In: *Arheologicheskie issledovaniya v Moldavii (1989 g.)*, 61–78. Kishinev.
- 2003 Pozdnetripolskoe pogrebenie gordineshtskogo tipa na Dnestre. In: E. Sava (Ed.) *Interferențe cultural-chronologice în spațiul nord-pontic*, 57-80. Chișinău.

Larina O., Manzura I., Khakheu V.

- 2008 *Brevichenskie kurgany.* Kishinev.

Levinskiy A.N., Tentiuk I.S.

- 1990 Issledovanie kurganov u s. Mierkulesht. In: *Issledovaniya molodykh uchenykh Moldavii*, 93-100. Kishinev.

Levițki O., Demcenko T.

- 1994 Grupul tumular de la Corjeuți-Briceni (R. Moldova). *Memoria Antiquitatis* XIX: 213-233.

Lytvynenko R.O.

- 2009 *Kulturne kolo Babyne (za materialamy pokhovalnykh pamiatok). Avtoreferat na zdobuttia stupenia doktora istorychnykh nauk.* Kyiv.

Machnik J.

- 1991 *The earliest Bronze Age in the Carpathian Basin.* Bradford.

Makohonienko M., Hildebrandt-Radke I.

- 2014 Kontekst przyrodniczy i perspektywy studiów paleośrodowiskowych stanowiska kultury jamowej w Pidlisiwce nad Dniestrem, zachodnia Ukraina. In: A. Koško, M. Potupczyk, S. Razumow (Eds) *Naddniestrzańskie kompleksy cmentarzysk kurhanowych społeczności z III i z pierwszej połowy II tysiąclecia przed Chr. w okolicach Jampola, obwód winnicki. Z badań nad północno-zachodnią rubieżą osadnictwa społeczności kręgu kultur „wczesnobrązowych” strefy pontyjskiej. Badania z lat 1984-2014. Archeologia Bimaris – Monografie 6*, 247-274. Poznań.

Manzura I.V., Klochko E.O., Savva E.N.

- 1992 *Kamenskie kurgany.* Kishinev.

Milkov F.N.

- 1951 Lesostepnoy landshaft i ego zonalnoe podrazdelenie. *Izvestiya AN SSSR. Seriya geografiya* 5: 3-14.

Nikolaeva N.A., Safronov V.A.

- 1976 Kurgany u s. Dumeny Ryshkanskiego rayona. In: *Archeologicheskije issledovaniya (1976 g.)*, 472-473. Moskva.

Ostroverkhov A.S., Subbotin L.V., Subbotin A.V.

- 1993 Kurgan epokhi bronzы-eneolita u s. Timkovo. In: *Arkheolohichni doslidzhennia v Ukraini v 1991 roku*: 83-84. Lutsk.

Pâslaru I.

- 2006 *Cultura Delacău-Babino.* Mangalia.

Popovich S.

- 2008 Issledovaniya kurgana u s. Orhey. *Revista Archaeologica. Serie nouă* IV(1): 93-99.

Potupczyk M., Razumow S.

- 2014 Zgrupowanie cmentarzysk kurhanowych w rejonie jampolskim. In: A. Koško, M. Potupczyk, S. Razumow (Eds) *Naddniestrzańskie kompleksy cmentarzysk kurhanowych społeczności z III i z pierwszej połowy II tysiąclecia przed Chr. w okolicach Jampola, obwód winnicki. Z badań nad północno-zachodnią rubieżą osadnictwa społeczności kręgu kultur*

„wczesnobrązowych” strefy pontyjskiej. *Badania z lat 1984-2014. Archaologia Bimaris – Monografie* 6: 35-40.

Pustovalov S.Z.

2001-2002 Dinamika izmeneniy klimata srednego golocena i nekotorye problemy sotsialno-ekonomicheskikh rekonstruktsiy katakombnogo obschestva Severnogo Prichernomoria. *Stratum plus* 2: 317–334.

Rafalovich I.A., Ketraru N.A.

1966 Iz istorii arkheologii i kraevedeniya Moldavii. In: *Problemy geografii Moldavii*, vol. I, 108-111. Kishinev.

Rassamakin Y.Y.

1994 The main directions of the development of early pastoral societies of northern Pontic Zone: 4500-2450 BC (Pre-Yamnaya Cultures and Yamnaya Culture). In: A. Koško (Ed.) *Nomadism and Pastoralism in the Circle of Baltic-Pontic Early Agrarian Cultures: 5000–1650 BC. Baltic-Pontic Studies* 2: 29-70.

1997 Svit skotariv. In: *Davnia istoriya Ukrayiny*, vol. 1, 273–301. Kyiv.

Razumov S., Koško A., Karnaukh E., Manigda O.

2013 *Zvit pro robotu spilnoyi ukrayinsko-polskoyi Yampilskoyi arkheolohichnoyi ekspeditsii v 2012 rotsi* (held in the archives of IA NANU). Kyiv.

Razumov S.M., Koško A., Karnaukh E.G.

2012 *Doslidzhennia kurhanu bilia s. Porohy Yampilskoho rayonu Vinnitskoyi Oblasti* (held in the archives of IA NANU). Kyiv.

Roman P.

1994 Bronzul timpuriu. In: *Enciclopedia arheologiei și istoriei a României*, 212-213. București.

Safronov V.A.

1975 Kurgany u s. Starye Kukoneshty Edinetskogo rayona Moldavskoy SSR (s soavtorami). In: *Arkheologicheskie otkrytiya 1974 goda*. Moskva.

1976 Kurgany u s. Dumiany Ryshkanskiego rayona Moldavskoy SSR. In: *Arkheologicheskie otkrytiya 1975 goda*. Moskva.

Savva E.N. (= Sava E.)

1992 *Kultura mnogovalikovoy keramiki Pruto-Dnestrovskogo mezhdurechia*. Kishinev.

2002 *Die Bestattungen der Noua-Kultur. Ein Beitrag zur Erforschung spät-bronzezeitlicher Bestattungsriten zwischen Dnestr und Westkarpaten. Prähistorische Archäologie in Südosteuropa* 19. Kiel.

Savva E.N., Dergachev V.A.

- 1984 Raskopki kurganov u s. Medvezha. In: *Kurgany v zonakh novostroek Moldavii*, 98-108. Kishinev.

Sava E., Agulnikov S.

- 2003 Contribuții noi la definirea ritului funerar de tip Sabatinovka. In: E. Sava (Ed.) *Interferențe cultural-cronologice în spațiul nord-pontic*, 113-138. Chișinău.

Sava E., Kaiser E.

- 2011 *Poselenie s „zolnikami” u sela Odaia-Michurin, Respublika Moldova (Arkheologicheskie i estestvennonauchnye issledovania)*. Biblioteca „Tyragetia” XIX. Chișinău.

Shabanova G.A., Izverskaya T.I., Gendov V.S.

- 2014 *Flora i rastitelnost Budzhakskikh stepey Respubliki Moldova*. Kishinev.

Sveshnikov I.K.

- 1974 *Istoriya naseleennia Peredkarpattia, Podillia i Volyni v kintsi III – na pochatku II tysiacholittia do nashoyi ery*. Kyiv.
- 1990 Kultura mnogovalikovoy keramiki. In: E.A. Balaguri, O.P. Chernykh (Eds) *Arkheologiya Prikarpatia, Volyni i Zakarpatia. Eneolit, bronză i rannee zhelezo*, 74-76. Kyiv.

Titov V.S.

- 1975 Otkrytie novoy kultury ranney bronzy v Moldavii. In: *Arkheologicheskie issledovaniya (1974 g.)*. Moskva.

Topal D.A., Tserna S.V.

- 2010 Pozdnetripolskiy mogilnik i poseleniya u s. Kunicha (Floreshtskiy r-n, Respublika Moldova). *Stratum plus* 2: 281-298.

Toshev G.N.

- 1981 O pamiatnikakh katakombnoy kultury na territorii Severo-Zapadnogo Prichernomoria. In: *Drevnosti Severo-Zapadnogo Prichernomoria*, 63-71. Kyiv.
- 1982 *Sredniy period bronzovogo veka Severo-Zapadnogo Prichernomoria. Avtoreferat dissertatsii na soiskaniye uchonoy stepeni kandidata istoricheskikh nauk*. Kyiv.
- 1986 Kurgany epokhi bronzy u oz. Yalpug In: *Arkheologicheskie otkrytia 1984 g.* Moskva.
- 1986 Zapadnye sviazi kultury mnogovalikovoy keramiki v Severo-Zapadnom Prichernomorie. In: *Issledovaniya po arkheologii Severo-Zapadnogo Prichernomoria*, 104-115. Kyiv.

- 1987 *Sredniy period bronzovogo veka Yugo-Zapada SSSR* (held in the archives of INION AN SSSR. 19.06.1987 g., № 29903.)
- Włodarczak P., Klochko V., Koško O., Potupchuk M.
- 2015 *Zvit pro rozkopky kurhaniv bilia sela Pridnistrianske Yampilskoho rayonu Vinnitskoyi Oblasti u 2014 rotsi* (held in the archives of IA NANU). Kyiv.
- Yarovoy E.V.
- 1979 Nakhodki sharovidnykh amfor v Moldavii. In: *Problemy epokhi bronzы yuga Vostochnoy Evropy* 35. Donetsk.
- 1979a Okhrannye raskopki kurgana u s. Bursucheny. In: *Arkheologicheskiye otkrytiya 1978 goda*, 491-492. Moskva.
- 1980 Kurgan yamnoy kultury u s. Hrustovaya. In: *Arkheologicheskie issledovaniya v Moldavii (1974-1975 gg)*, 45-58. Kishinev.
- 1983 Kurgan epokhi ranney bronzы u s. Yablona. In: *Archeologicheskie issledovaniya v Moldavii (1983 g.)*, 193-210. Kishinev.
- 1984 Pogrebalnyi obriad nekotorykh skotovodcheskikh plemen Srednego Pruta (po materialam raskopok kurganov u s. Korpach). In: I.I. Artemenko (Ed.) *Kurgany v zone novostroek Moldavii*: 37-75. Kishinev.
- 1990 *Kurgany epokhi eneolita-bronzы Nizhnego Podnestrovia*. Kishinev.
- 1990a K voprosu o zapadnoy granitse katakombnoy kulturno-istoricheskoy Oblasti. In: O.G. Shaposhnikova, V.V. Otroschenko, S.Z. Pustovalov, G.N. Toshev, G.I. Shapovalov (Eds) *Problemy izucheniya katakombnoy kulturno-istoricheskoy obschnosti*, 114-116. Zaporozhe.
- 1990b Katakombnye pogrebeniya leso-stepnoy Moldavii. In: O.G. Shaposhnikova, V.V. Otroschenko, S.Z. Pustovalov, G.N. Toshev, G.I. Shapovalov (Eds) *Problemy izucheniya katakombnoy kulturno-istoricheskoy obschnosti*, 116-119. Zaporozhe.
- Yarovoy E.V., Tserna S.V., Popovich S.S.
- 2012 Pozdnetripolskiy mogilnik u s. Oksentia (Dubossarskiy rayon, Respublika Moldova). *Stratum plus* 2: 287-302.
- Zhurnal Raskopok Brandenbura
- 1908 *Zhurnal Raskopok N.E. Brandenbura 1888-1902 gg*. Sankt Peterburg.

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ENEOLITHIC, YAMNAYA, CATACOMB AND
BABYNO CULTURE CEMETERIES, PIDLISIVKA,
BARROW 1, YAMPIL REGION, VINNITSA OBLAST:
ARCHAEOMETRY, CHRONOMETRY AND TAXONOMY

ABSTRACT

The paper presents excavation results and analytical studies concerning the taxonomic classification of a funerary site identified with the communities of the early 'barrow cultures' settling the north-western Black Sea Coast in the 4th/3rd-2nd millennium BC. The study focuses on the ceremonial centres of the Eneolithic, Yamnaya, Catacomb and Babyno cultures.

Key words: 'barrow cultures', Eneolithic, Early Bronze Age, Late Bronze Age, Middle Dniester Area

The investigations of barrow 1, Pidlisivka, Yampil Region, Vinnitsa *Oblast*, were carried out in 2010 as part of the Polish-Ukrainian research project to investigate the north-western frontier of settlement by 'Early Bronze' culture communi-

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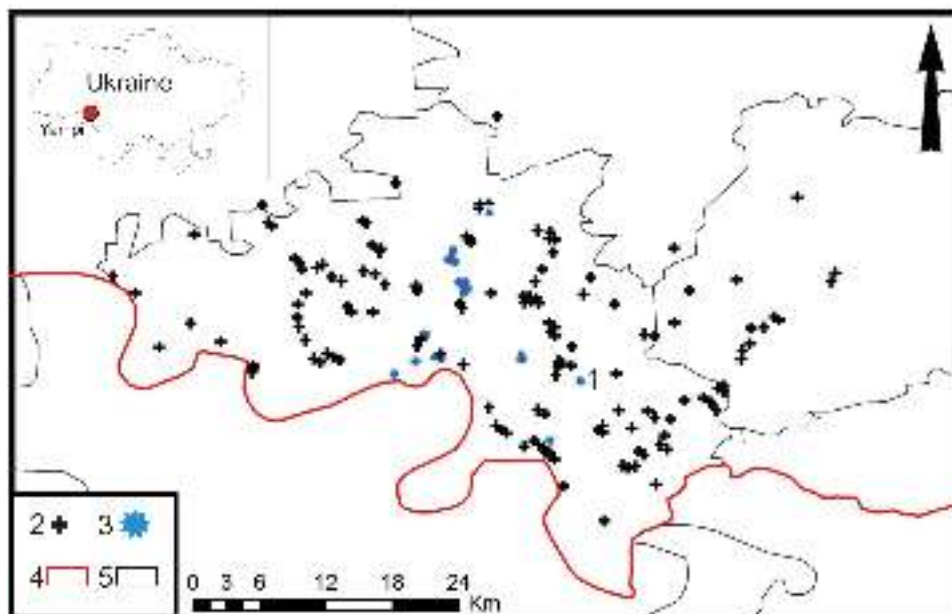


Fig. 1. Map of *Yampil Barrow Complex* showing administrative borders: 1 – Pidlisivka, barrow 1; 2 – barrows; 3 – excavated barrows; 4 – Ukrainian-Moldovan frontier; 5 – Yampil Region border. After Jachimowicz 2015, revised

ties in the Pontic zone by the Institute of Prehistory, Adam Mickiewicz University (AMU) in Poznań and the Institute of Archaeology, Ukrainian National Academy of Sciences (IA UNAS). The project was headed by Prof. Aleksander Koško, representing the AMU Institute of Prehistory, and Dr. Serhij M. Razumov, representing the IA UNAS. The excavation of barrow 1 in Pidlisivka commenced the five-year field work by *Yampil Expedition* of the above-named institutions in the Podolia part of the Middle Dniester Area, specifically in the *Yampil barrow cemetery complex* [Koško *et al.* (Eds) 2014].

The results of investigations in Pidlisivka 1 were published – in Polish and Ukrainian – in 2014 [Koško *et al.* 2014] and initiated an inspiring discussion about the relativity of formal criteria in the identification of Pontic ‘Early Bronze’ taxa especially when the peripheries of their development are concerned [Toshev 1991; Ivanova, Toshev 2015; 2015a]. The discussion was strongly stimulated by the chronometric (radiocarbon) exploration of funerary practices pursued by the users of the *Yampil barrow complex* [Goslar *et al.* 2014; Goslar *et al.* 2015]. This fact made researchers revisit Pidlisivka sources expanded to include attempts to modify their cultural indications (elaboration on the issues raised in the discussion

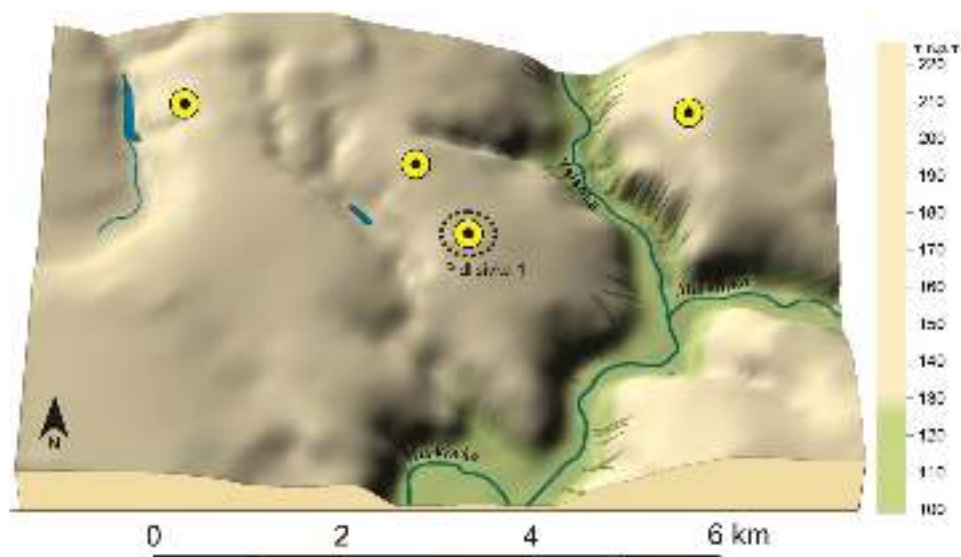


Fig. 2. Pidlisivka, Yampil Region. The elevation model of the immediate surroundings of site 1 and the location of neighbouring barrows (yellow dots). After Makohonienko, Hildebrandt-Radke [2014], revised

mentioned above, concerning taxonomic classifications, for a broader treatment *see* Ch. 4)¹.

1. TOPOGRAPHY AND THE BARROW MOUND: MORPHOMETRY, STRATIGRAPHY AND SCATTER PATTERN OF FEATURES

The investigated feature is part of the *Yampil barrow complex*, which has been excavated since 1984 [Potupczyk, Razumov 2014; Koško *et al.* (Ed.) 2014] (Fig. 1). The 1985 field expedition headed by B.N. Lobay found that it was part of a barrow cluster (a hypothetical ceremonial centre) located between the villages of Severynivka and Pidlisivka. Barrow 1, located close to Pidlisivka, stands on a high plateau, on the right bank of the Yalanka River, northwest of its confluence with the Markivka River, a tributary of the Dniester, 7.0 km away from the Dniester valley (Fig. 2).

¹ Personal considerations have prevented Dr. Serhiy M. Razumov from taking part in the work of this team of experts.

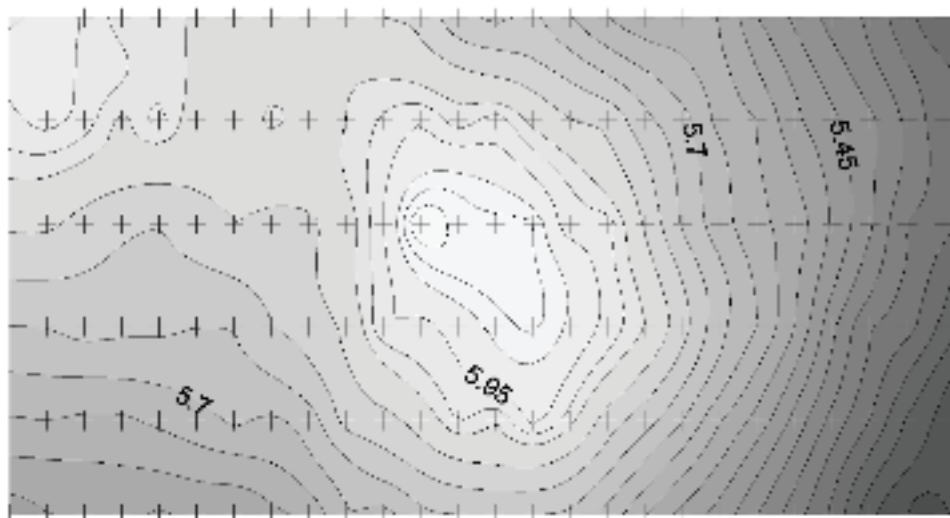


Fig. 3. Pidlisivka, Yampil Region. Barrow 1. Site elevation plan

The excavations were carried out with mechanical equipment which dug parallel trenches oriented W-E. To capture mound stratigraphy, mound profiles were documented by keeping four baulks².

When the excavations began, the barrow was a rather poorly marked landform (Fig. 3) situated on the slope edge of a small watercourse valley, a tributary of the Dniester. Advanced mound levelling off, in relation to its original height, must have been caused by intensive tillage using very deep ploughing. Furthermore, within the mound, considerable damage was caused by trenches dating back to the Second World War, which greatly hamper the understanding of the original stratigraphy of the barrow mound (features 1/2, 1/3 and 1/14).

The recorded maximum height of the barrow stayed below 1.0 m in relation to the surrounding terrain. The recordable diameter of the mound along the W-E axis was about 30.0 m. The outline of the mound in horizontal projection was oval, elongated along the NE-SW axis. The mound contour was marked by a circular ditch of a considerable width from 4.5 (in the NW part) to 7.0 m (in the E course) (Fig. 4).

Vertical observations were hampered by numerous animal burrows. So strong a deformation of cultural strata due to the action of animals and plants finds no analogy in the investigations by the present authors on the Polish Lowland. It suggests that these barrows constituted special loci where biological activity was concentrated [Sudnik-Wójcikowska *et al.* 2013].

² For a broader discussion of the method see Koško, Razumov 2014.

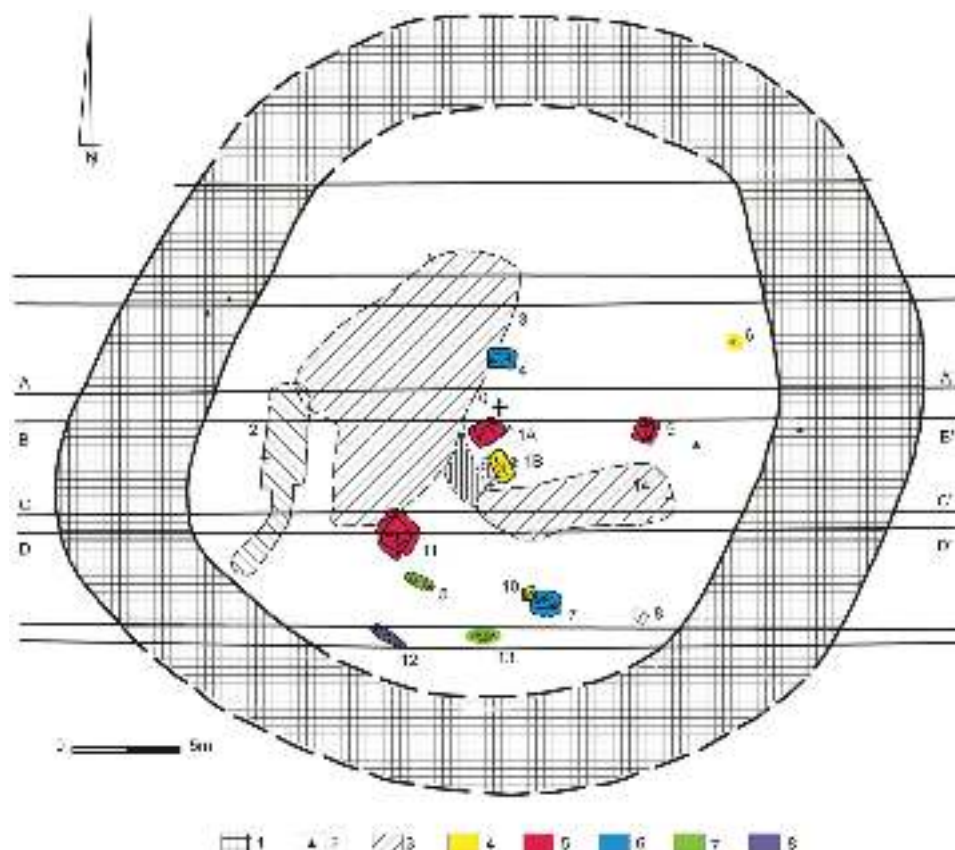


Fig. 4. Pidlisivka, Yampil Region. Plan of barrow 1. 1 – barrow ditch; 2 – pottery shards; 3 – modern damage; 4 – features linked to the Eneolithic; 5 – features linked to the Yamnaya culture; 6 – features linked to the Catacomb culture; 7 – features linked to the Babyno culture; 8 – Iron Age feature

Documentation and the descriptions of feature profiles were produced for each baulk (Fig. 5). They showed that stratigraphy was repeated across the mound. The first layer consisted of surface soil and was 0.3-0.4 m thick. The layer making up the mound can be described as unleached humus of an intensively black-brown colour containing clay and warp. The layer marking the barrow ditch had a similar consistency, but the humus was clearly darker than the mound layer. The parent rock was made up of clearly brighter unleached humus of a brown colour with a high clay content, the consistency of which was comparable to that of loess. The scatter pattern of sub-barrow features shows that burials are clustered to form a small cemetery strongly disturbed later by modern excavations (features 1/2, 1/3 and 1/14) of a relatively large area. The feature distribution is consistent with the three distinguished phases of barrow use.

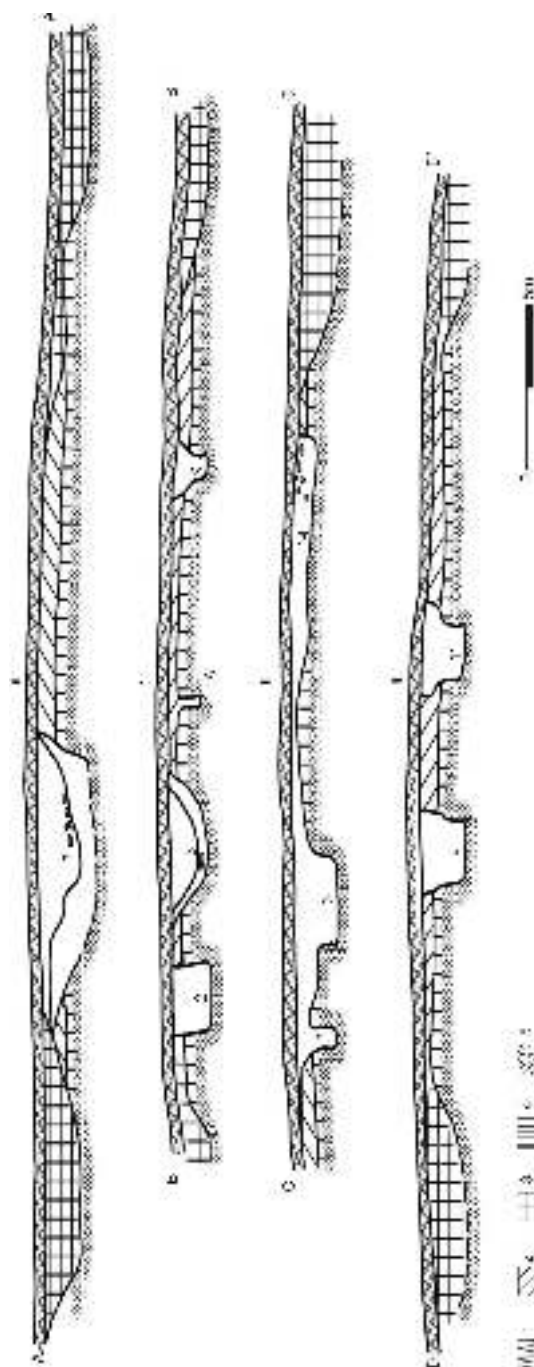


Fig. 5. Pidlisivka, Yampil Region. Profiles of barrow 1. 1 – surface soil; 2 – barrow mound; 3 – fill of barrow ditch; 4 – original ground level; 5 – yellow loess

In the surface soil and mound layers, flint artefacts were discovered (dated mostly to the Upper Palaeolithic) and single pottery fragments from the Eneolithic/Bronze Age: five Tripolye culture (TC), phase CII ones, three Yamnaya culture (YC) ones, three 'Late Bronze Age' ones, one 'Early Iron Age' item and one 'Early Middle Ages' item.

Advanced mound erosion and wartime destruction prevent researchers from making a certain and detailed reconstruction of mound construction phases. Under the central portion of the mound, two graves were exposed: 1/1A and 1/1B. West of them, at a depth of 0.3-0.4 m from today's ground level, the remains of a yellow loess spill 0.1 m thick was found to be seriously disturbed by modern excavations (features 1/2, 1/3 and 1/14). Originally, it must have been crescent-shaped.

Within the barrow mound, another nine graves were exposed: 1/4, 1/5, 1/7, 1/8, 1/9, 1/10, 1/11, 1/12 and 1/13, as well as a sacrificial pit – a *trizna* (feature 1/6). The features named so far are identified with the Eneolithic, YC, Catacomb culture (CC) ? and the Babyno culture (BC). Grave no. 1/12 – excluded from further analyses – is dated to the Iron Age [Goslar *et al.* 2015].

2. FUNERAL FEATURE STRUCTURE AND FURNISHINGS

As mentioned earlier, due to modern terrain deformations, no stratigraphic description of the barrow mound is available. This narrows down the subject matter of this chapter to the questions of feature structure and funerary rites recorded within features. The absence of a clear stratigraphic description is also reflected in the reinterpretation of taxonomic classification of excavated graves against the assumed stages of necropolis development (*see* Chapters 3 and 4)³.

All the anthropological data included in the descriptions below come from the separate publication [Lytvinova *et al.* 2015], while in the case of archaeozoological data, the assessments by O. Zhuravlov [2014] have been used.

³ Already after completing a team re-analysis of the preliminary approach to the Pidlisivka typochronology of ritual practices [preliminary approach Koško *et al.* 2014; for accepted re-analysis = hypothesis 'a', *see* Ch. 3 and 4], which resulted also in completing a series of corrections to 'archaeological-taxonomic components' in specialist anthropological and chronometric publications [Lytvinova *et al.* 2015; Goslar *et al.* 2015], we received the very fortunate offer of an auto-correction from Prof. V.I. Klochko. This has been introduced to the paper included in this volume of BPS (= hypothesis 'b') as an offer of possible further research into Podolia ritual practices.

Feature 1/1A

Culture	Yamnaya		
Dating	Poz-38529: 4195 ± 35 BP; Poz-39214: 4080 ± 40 BP (human bone); Poz-52423: 4190 ± 35 BP (wood) [burial 1Aa] Ki-16673: 3720 ± 60 BP ; Ki-16892: 3895 ± 70 BP (human bone); Poz-52424: 4082 ± 35 BP (wood) [burial 1A]		
Grave pit		Burial	
Structure type	Pit	Sex	1. ? 2. Male
Number of burials	2	Age	1. 7-8 years 2. 30-40 years
Size at the level of discovery	1.6 × 1.1 m	Orientation	1. SE-NW 2. SW-NE
Size at the level of the bottom	1.45 × 1.15 m	Deviation	1. 0° 2. 22° S
Depth	1.0 m	Arrangement of head	1. On the left side 2. Face up
Pit orientation	SW-NE	Arrangement of trunk	1. On the left side 2. Supine
Deviation	19° N	Upper limbs	1. G 2. B
Distance from barrow centre		Lower limbs	1. 2/1 2. 5
Azimuth		Ochre	1. Heavy sprinkling of the bottom and burial bones 2. Substantial layer on the feature bottom and bones
Wooden roofing	+	Presence of mat	1. – 2. +
Roofing element orientation	?	Animal bones	–
Other structural elements	–	Ritual objects	1. Ochre lump 2. –
Comments			

The central grave (?) for the assumed younger mound, identified with the YC. The pit was rectangular and had rounded corners. It was found to contain two burials.

- At a depth of 0.8 m, at the NW corner, the remains of a child aged 7-8 years lay sprinkled with red ochre (burial 1Aa). It lay crouched on the left side. Underneath the bones, crimson ochre was sprinkled and a lump of such ochre 4.0-5.0 cm in diameter and 1.0 cm thick lay at the skull. Between the left upper limb and the chest, fragments of charred wood were discovered. Under skull and shin bones, fragments of wooden slats were found (Figs. 6: A, 7: 1, 8).

- Immediately underneath the above burial, the skeleton of an adult male (grave 1A) lay crouched, supine on the pit bottom. The skeleton bones and pit bottom were heavily sprinkled with crimson ochre (Fig. 6: B, 7: 2, 8).

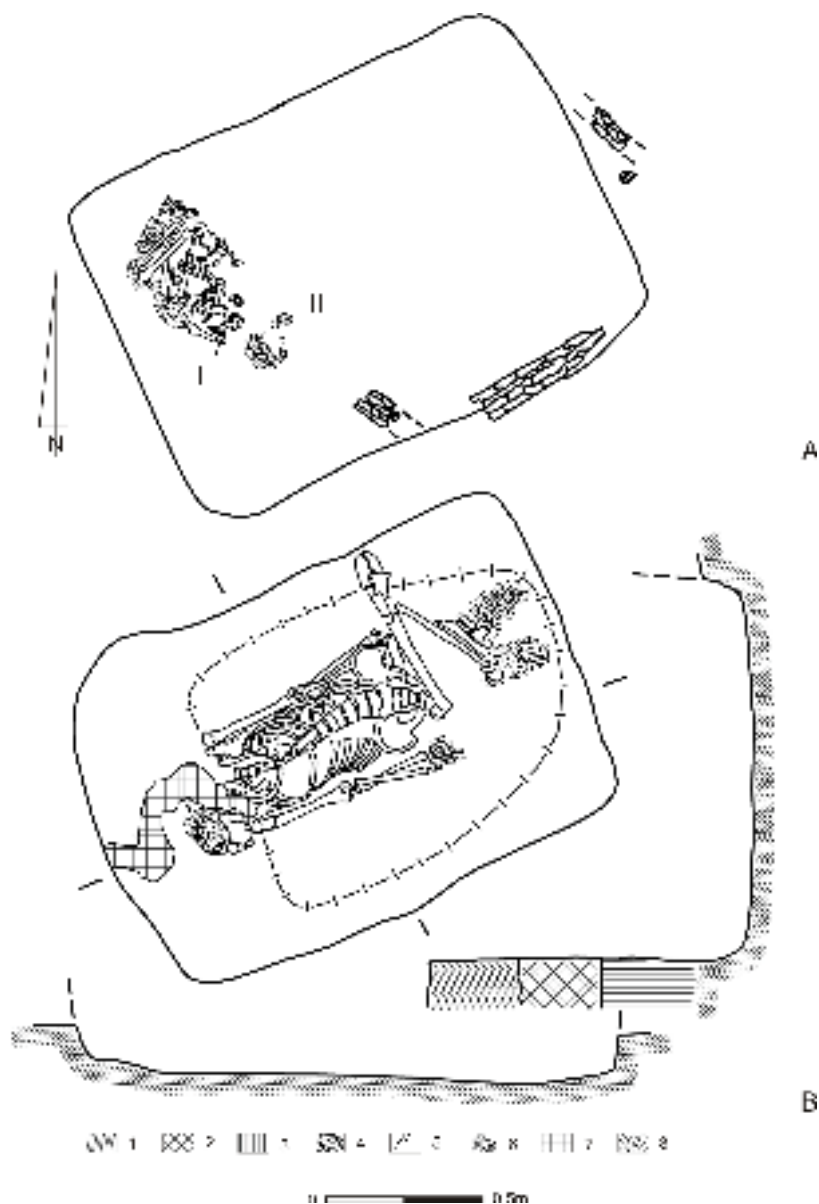


Fig. 6. Pidlisivka, Yampil Region, barrow 1. Plans and profile of feature 1/1A. A – level of higher burial (1Aa): I – charcoals; II – lump of ochre. B – level of lower burial (1A): horizontal plan of the burial 1Aa. 1 – surface soil; 2 – barrow mound; 3 – original ground level; 4 – wood remains; 5 – outline of mat; 6 – ochre; 7 – animal burrow; 8 – yellow loess

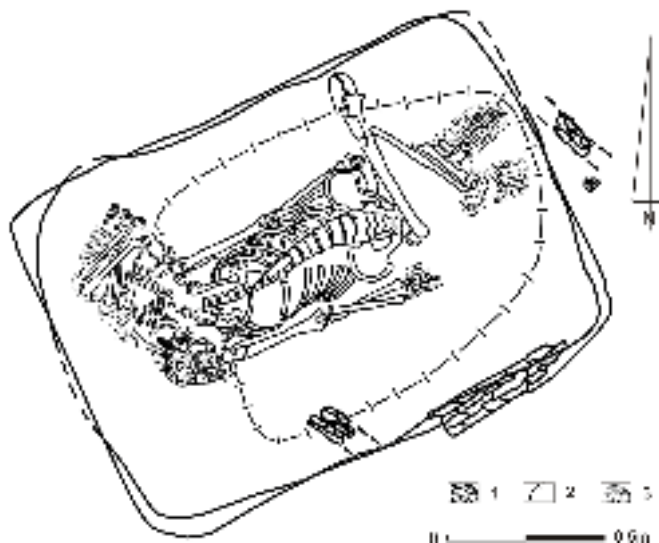


Fig. 7. Pidlisivka, Yampil Region, barrow 1. Plan of feature 1/1A: 1 – joint representation of two burials. 1 – wood remains; 2 – outline of mat; 3 – ochre

Feature 1/1B

Culture	Eneolithic		
Dating	Ki-16674 3680 ± 90 BP (human bone)		
Grave pit		Burial	
Structure type	pit	Sex	Male
Number of burials	1	Age	22-25 years
Size at the level of discovery	1.75 × 0.9 m	Orientation	NW-SE
Size at the level of the bottom	1.45 × 0.7 m	Deviation	20° N
Depth	1.4 m	Arrangement of head	Face up
Pit orientation	NW-SE	Arrangement of trunk	Supine
Deviation	18° E	Upper limbs	B
Distance from barrow centre	1.78 m	Lower limbs	5/3
Azimuth	0°	Ochre	+?
Wooden roofing	+	Presence of mat	+
Roofing element orientation	Oblique or longitudinal	Animal bones	–
Other structural elements	–	Ritual objects	Flint flake
Comments			



1



2

Fig. 8. Pidlisivka, Yampil Region, barrow 1. Grave 1/1A: 1 – burial 1/1Aa; 2 – burial 1/1A

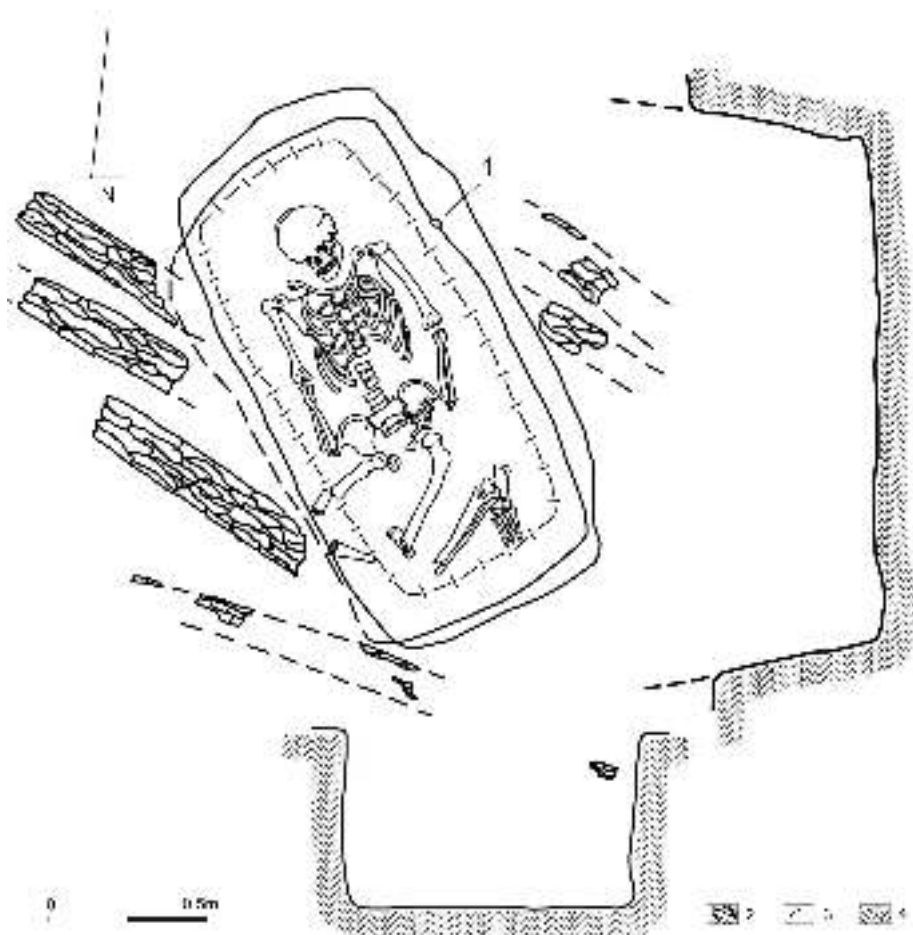


Fig. 9. Pidlisivka, Yampil Region, barrow 1, grave 1/1B. Horizontal and vertical projections of feature. 1 – flint flake; 2 – wood remains; 3 – outline of mat; 4 – yellow loess

The central grave under a hypothetical Eneolithic (= older) mound. In the opinion of V.I. Klochko, the feature may also be considered representative of the YC: as situated in the central portion of a hypothetical ‘Yamnaya’ (= younger) mound. The pit was rectangular and had rounded corners. The roofing was made of wooden planks, lying obliquely to the longer axis of the grave. On the grave bottom, the skeleton of a mature man lay supine, crouched, with the knees originally raised upwards. Underneath the burial, the remains of a mat bearing the traces of ochre have survived. In the pit fill, on the remains of wooden roofing, a flint flake was found (Fig. 9).

1. Flake of Cretaceous Dniester flint. Dimensions: $4.0 \times 3.5 \times 0.8$ cm.

Feature 1/4

Culture	Catacomb?		
Dating	Ki-16675: 3810 ± 80 BP (human bone)		
Grave pit		Burial	
Structure type	niche?	Sex	?
Number of burials	1	Age	11-12 years
Size at the level of discovery	1.25 × 0.9 m	Orientation	W-E
Size at the level of the bottom	1.2 × 0.9 m	Deviation	0°
Depth	1.4 m	Arrangement of head	Face to the right?
Pit orientation	W-E	Arrangement of trunk	Supine
Deviation	0°	Upper limbs	F
Distance from barrow centre	3.45 m	Lower limbs	6
Azimuth	10°	Ochre	Traces
Wooden roofing	Small fragments in the fill	Presence of mat	+
Roofing element orientation	?	Animal bones	—
Other structural elements	—	Ritual objects	Lump of ochre above left shoulder
Comments	About 0.20 m above the chest, a patinated flint flake was found (an Upper Palaeolithic one?).		

The grave was situated north of the barrow centre and linked to the CC (?) or the Eneolithic. In horizontal projection, it was subrectangular. Its arched walls formed a kind of a semi-niche in the western portion of the grave. On the bottom, a child skeleton lay supine, crouched. At the left arm, a lump of ochre was discovered (Fig. 10).

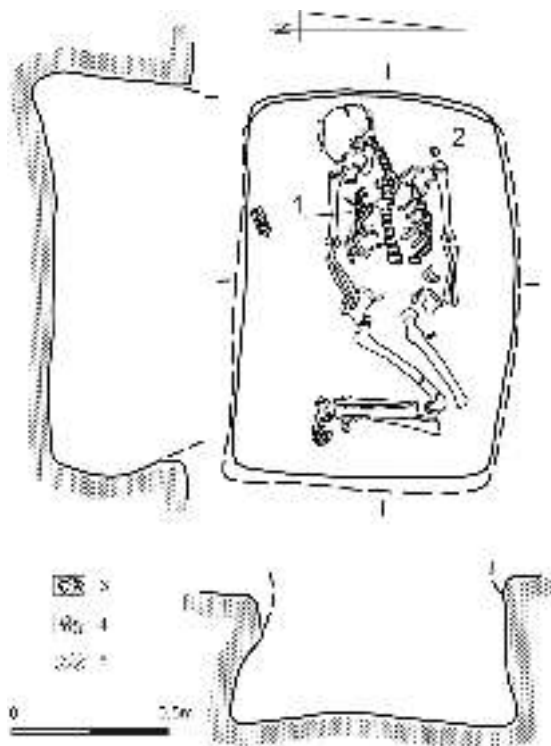


Fig. 10. Pidlisivka, Yampil Region, barrow 1, grave 1/4. Horizontal and vertical projections of feature. 1 – flint flake; 2 – lump of ochre; 3 – wood remains; 4 – ochre; 5 – yellow loess

Feature 1/5

Culture	Babyno		
Dating	Ki -16677: 4170±90 BP; Ki -16893: 4130±35 BP; Poz-38530: 3430±35 BP (human bones)		
Grave pit		Burial	
Structure type	Pit/niche?	Sex	Male
Number of burials	1	Age	30-35 years
Size at the level of discovery	1.5 × 0.5 m	Orientation	SE-NW
Size at the level of the bottom	?	Deviation	19° E
Depth	About 0.60 m	Arrangement of head	On the left side
Pit orientation	SE-NW	Arrangement of trunk	On the left side
Deviation	21° E	Upper limbs	D

Distance from barrow centre	7.62 m	Lower limbs	6
Azimuth	208°	Ochre	–
Wooden roofing	–	Presence of mat	+
Roofing element orientation		Animal bones	28 small fragments of indeterminate species
Other structural elements	–	Ritual objects	–
Comments			

The grave was sunk in the southern portion of the mound. The pit outline could not be traced – judging by the shape of a mat placed on the bottom it was presumably oval. The feature structure may have included a semi-niche (analogous to that in feature 7). On the bottom, the skeleton of an adult male lay crouched on the left side. On its left forearm, small fragments of animal bones were found (Fig. 11).

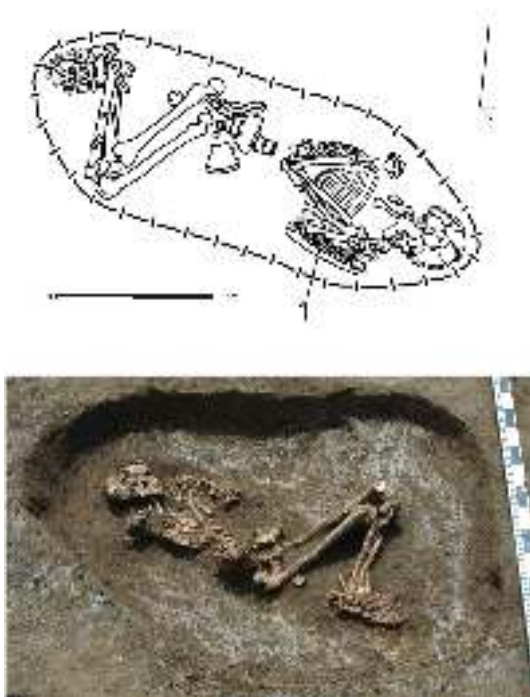


Fig. 11. Pidlisivka, Yampil Region, barrow 1, grave 1/5. Horizontal projection of burial. 1 – animal bones

Feature 1/6

Culture	Eneolithic?
Dating	
Structure type	<i>trizna</i>
Size at the level of discovery	0.8 × 0.8 m
Size at the level of the bottom	0.8 × 0.8 m
Depth	≈ 0.7 m
Pit orientation	?
Deviation	?
Distance from barrow centre	12.0 m
Azimuth	65°
Animal bones	11 fragments (cattle, male)
Ritual objects	–
Comments	

A concentration of cattle bones discovered in the eastern portion of the barrow (11 fragments belonging to a single male individual). The bones may have been deposited in a small pit sunk into the original ground level (Fig. 12:1).

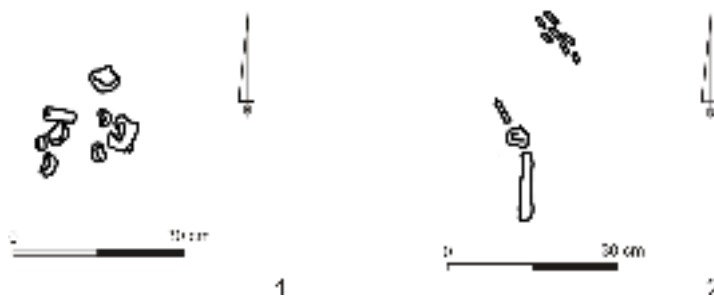


Fig. 12. Pidlisivka, Yampil Region, barrow 1. 1 – Horizontal projection of feature 1/6; 2 – Horizontal projection of feature 1/8

Feature 1/7

Culture	Catacomb?		
Dating	Poz-38531: 4120 ± 35 BP (human bone)		
Grave pit		Burial	
Structure type	Niche?	Sex	Male
Number of burials	1	Age	25-30 years
Size at the level of discovery	?	Orientation	SE-NW
Size at the level of the bottom	1.35 × 0.95 m	Deviation	19° E
Depth	1.1 m	Arrangement of head	On the left side
Pit orientation	W-E	Arrangement of trunk	Supine
Deviation	9° S	Upper limbs	C
Distance from barrow centre	8.32 m	Lower limbs	2
Azimuth	159°	Ochre	–
Wooden roofing	–	Presence of mat	–
Roofing element orientation		Animal bones	Fragment of deer shoulder bone
Other structural elements	–	Ritual objects	–
Comments			

The grave was sunk in the southern portion of the mound, identified with the CC or – in V.I. Klochko's approach – Eneolithic placed in the catacomb structure excavation. In the upper portion, its outline could not be traced. The lower portion formed a semi-niche and was oval in horizontal projection. On the bottom, the skeleton of a mature male lay contracted on its side. Among the remains of the chest, a deer shoulder bone was discovered (Fig. 13).

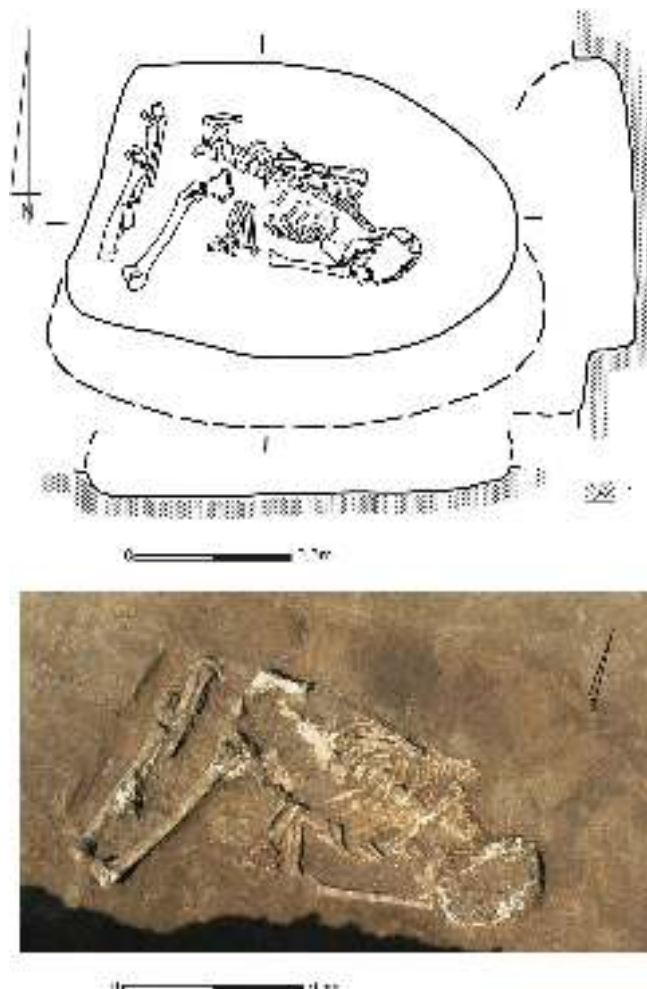


Fig. 13. Pidlisivka, Yampil Region, barrow 1, grave 1/7. Horizontal and vertical projections of feature. 1 – yellow loess

Feature 1/8

Culture			
Dating			
Grave pit		Burial	
Structure type	Pit?	Sex	?
Number of burials	1	Age	1-6 years
Size at the level of discovery	0.8 × 0.8 m	Orientation	?

Size at the level of the bottom	–	Deviation	?
Depth	1.5 m	Arrangement of head	?
Pit orientation	?	Arrangement of trunk	?
Deviation		Upper limbs	?
Distance from barrow centre	11 m	Lower limbs	?
Azimuth	138°	Ochre	–
Wooden roofing	–	Presence of mat	–
Roofing element orientation		Animal bones	–
Other structural elements	–	Ritual objects	–
Comments			

The grave was exposed on the SE edge of the mound. The pit outline could not be captured. It was found to contain disarticulated fragments of a child skeleton, in the *Infans I* age bracket (Fig. 12:2).

Feature 1/9

Culture	Yamnaya?		
Dating			
Grave pit		Burial	
Structure type	Pit	Sex	?
Number of burials	1	Age	Below 1 year
Size at the level of discovery	?	Orientation	N-S?
Size at the level of the bottom	0.8 × 0.55 m	Deviation	?
Depth	≈ 2.15 m	Arrangement of head	?
Pit orientation	N-E	Arrangement of trunk	?
Deviation	?	Upper limbs	?
Distance from barrow centre	7.47 m	Lower limbs	?
Azimuth	83°	Ochre	–
Wooden roofing	+	Presence of mat	+
Roofing element orientation	Longitudinal	Animal bones	–
Other structural elements	Stone cover	Ritual objects	–
Comments	In the fill: a patinated flint flake was found (an Upper Palaeolithic one)		

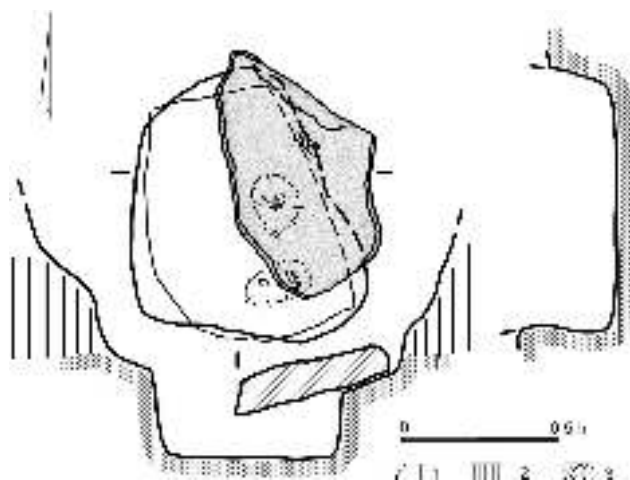


Fig. 14. Pidlisivka, Yampil Region, barrow 1, feature 1/9. Horizontal and vertical projections. 1 – outline of mat; 2 – original ground level; 3 – yellow loess

The feature was sunk into the eastern portion of the mound. The pit had an irregular, subrectangular shape. At a depth of about 0.85 m, there was a step leading to the grave chamber. The step supported roofing consisting of a large stone slab measuring $0.80 \times 0.45 \times 0.10$ m and longitudinally oriented wooden elements underneath it. The grave chamber was regular, rectangular in shape with vertical walls. The bottom extended 0.35 m below the step level. The fill was found to hold single bones of a child in the *Infans I* age. The feature may have been secondarily disturbed (robbed?) already in prehistoric times (Fig. 14).

Feature 1/10

Culture		Eneolithic	
Dating			
Grave pit		Burial	
Structure type	Pit	Sex	?
Number of burials	1	Age	Below 9 months
Size at the level of discovery	0.7×0.7 m	Orientation	W-E
Size at the level of the bottom	0.6×0.35 m	Deviation	0°
Depth	0.5 m	Arrangement of head	?
Pit orientation	W-E	Arrangement of trunk	On the left side
Deviation	7° N	Upper limbs	?
Distance from barrow centre	7.89 m	Lower limbs	?
Azimuth	164°	Ochre	+

Wooden roofing	Traces of wood in the fill and on the pit bottom	Presence of mat	+
Roofing element orientation	Longitudinal	Animal bones	–
Other structural elements	–	Ritual objects	Pot, flint flake, lump of ochre
Comments			

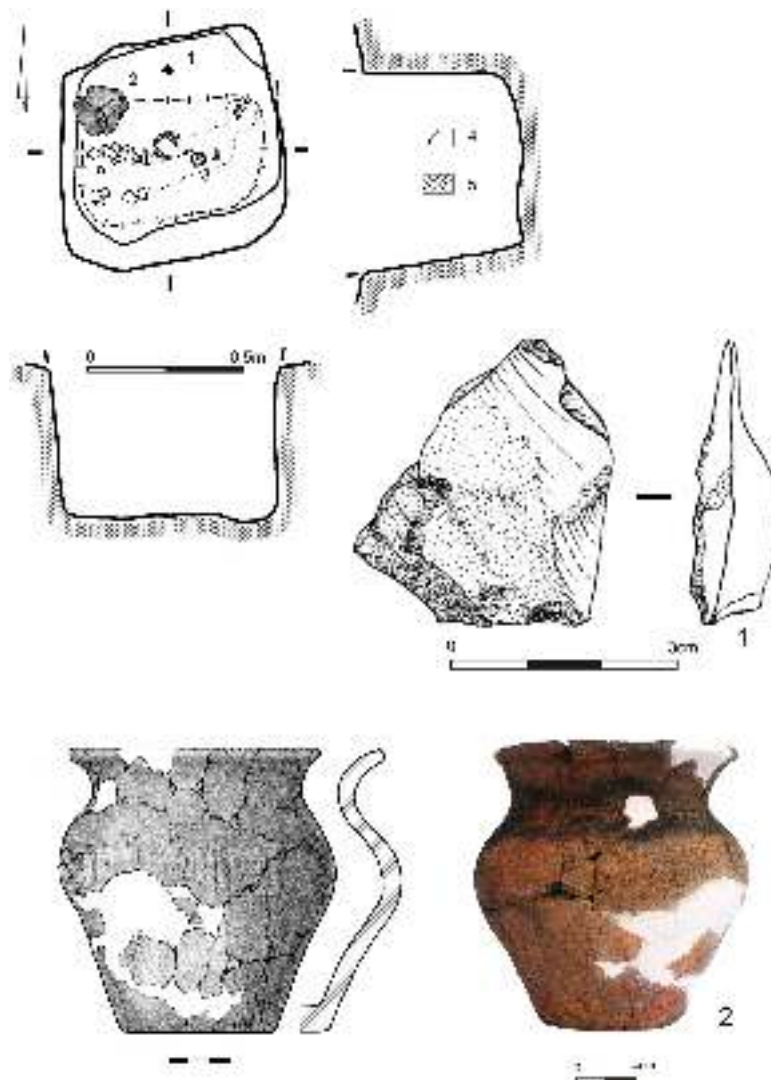


Fig. 15. Pidlisivka, Yampil Region, barrow 1, grave 1/10. Horizontal and vertical projections of feature. 1 – flint flake; 2 – ceramic vessel; 3 – lump of ochre; 4 – outline of mat; 5 – yellow loess



Fig. 16. Pidlisivka, Yampil Region, barrow 1, grave 1/10. Horizontal projection of feature

The grave was unearthed in the southern portion of the mound (sub-barrow?). The pit was rectangular, almost square. Its fill was found to hold the elements of wooden roofing oriented W-E. On the bottom, the poorly preserved skeleton of a child lay crouched on the left side. At its head, in the NW corner of the pit, a pot (1) was found and at the bones of the chest – a flint flake (2). Furthermore, at the waist, a lump of bright red ochre (3) was discovered. Traces of sprinkling with an analogous colorant were recorded on foot bones (Fig. 15, 16).

Grave goods

1. S-profiled pot with a flat bottom. The outer surface is even, mat with broad (0.2-0.3 cm) traces of burnishing. The ceramic body contains temper of crushed ceramics. Uneven firing. Dimensions: height: 13.0 cm, lip diameter: 11.7 cm, belly diameter: 12.0 cm, bottom diameter: 7.5 cm (Fig. 15: 2).

2. Flint flake. Dimensions: 3.7 × 3.3 × 1.3 cm (Fig. 15: 1).

3. Discoidal lump of bright red ochre 5.0 cm in diameter and up to 2.0 cm thick (Fig. 15: 3).

Feature 1/11

Culture	Yamnaya		
Dating	Ki -16676: 3690 ± 80 BP; Poz-81793: 4085 ± 30 BP (human bone)		
Grave pit		Burial	
Structure type	Pit	Sex	Male
Number of burials	1	Age	35-40 years
Size at the level of discovery	1.55 × 1.4 m	Orientation	NW-SE
Size at the level of the bottom	1.35 × 1.15 m	Deviation	0°
Depth	2.40 m	Arrangement of head	On the right side
Pit orientation	NW-SE	Arrangement of trunk	Supine
Deviation	5° S	Upper limbs	I?
Distance from barrow centre	6.59 m	Lower limbs	5
Azimuth	227°	Ochre	–
Wooden roofing	+	Presence of mat	+
Roofing element orientation	Perpendicular	Animal bones	–
Other structural elements	–	Ritual objects	–
Comments	At the level of the step, in the S corner of the pit, an Upper Palaeolithic core was discovered.		

The grave was sunk in the SW portion of the barrow. In its upper portion, the pit was subrectangular. At a depth of about 1.70 m, there was a step leading to the grave chamber and supporting wooden roofing. In the S corner of the step, at the level of the roofing, a (Upper Palaeolithic) flint core lay. On the chamber bottom, the skeleton of an adult male rested supine, crouched. A cluster of his bones was revealed in the northern portion of the chamber – they had been moved due to the activity of animals (Figs. 17, 18).

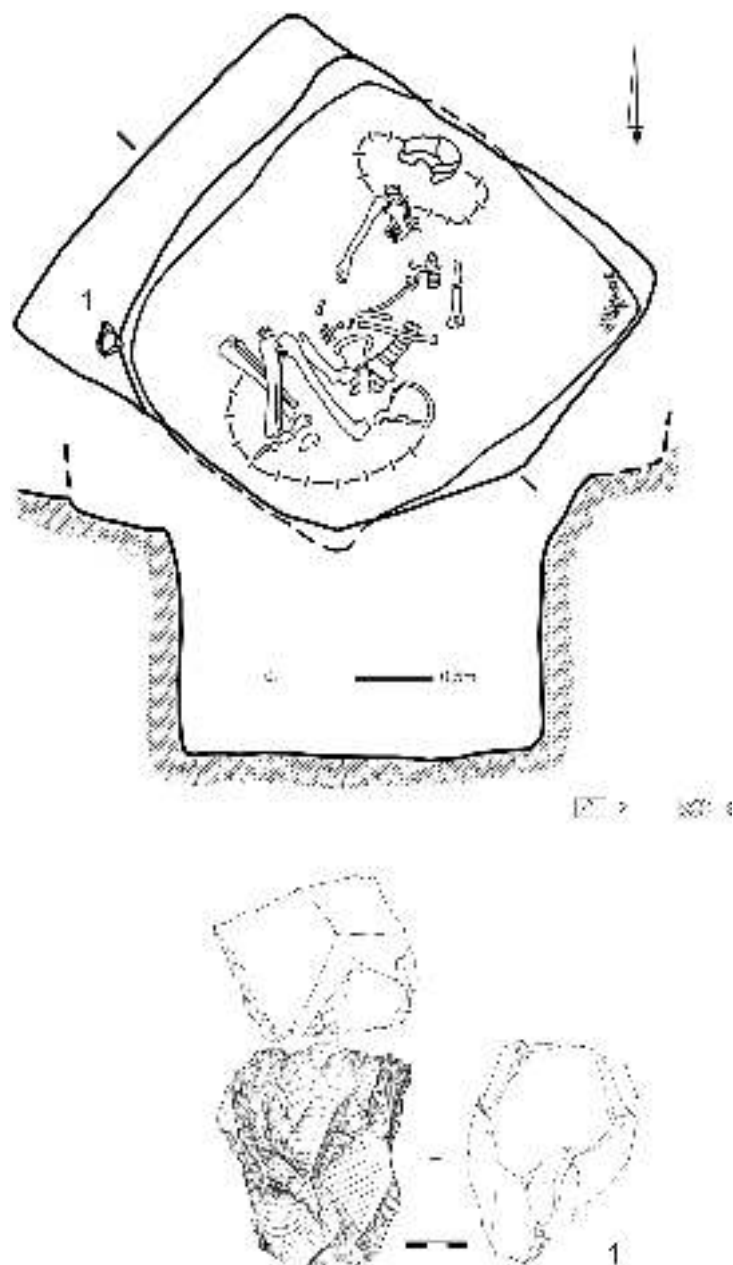


Fig. 17. Pidlisivka, Yampil Region, barrow1, grave 1/11. Horizontal and vertical projections of feature. 1 – Upper Palaeolithic flint core; 2 – outline of mat; 3 – yellow loess



Fig. 18. Pidlisivka, Yampil Region, barrow 1, grave 1/11. Horizontal projection of burial

Feature 1/13

Culture	Babyno		
Dating			
Grave pit		Burial	
Structure type	Pit?	Sex	Female
Number of burials	1	Age	25 years
Size at the level of discovery	?	Orientation	E-W
Size at the level of the bottom	?	Deviation	?
Depth	?	Arrangement of head	?
Pit orientation	SE-NW	Arrangement of trunk	On the right side
Deviation	22° S	Upper limbs	D?
Distance from barrow centre	9.69 m	Lower limbs	1
Azimuth	181°	Ochre	–

Wooden roofing	–	Presence of mat	–
Roofing element orientation		Animal bones	–
Other structural elements	–	Ritual objects	–
Comments			

The grave was sunk into the southern edge of the mound. Its roofing was made of a limestone slab, rhomboid in shape and measuring $0.6 \times 0.22 \times 0.06$ m. The pit outline could not be traced against the background of mound strata. Most likely, it was oval in shape. On the pit bottom, the skeleton of a mature female lay crouched on the right side (Fig. 19).

Evidence from outside of features

In the southern portion of the barrow, stray human bones were found, most likely coming from ploughed-away graves or burials disturbed by modern excavations. The state of preservation of these bones suggests that they came from Late Bronze Age burials. They belonged to an *juvenis* individual. Additionally, four cluster of animal bones were found: those of a pig, cow and horse. Their link to the building of mounds by Eneolithic and YC communities seems probable.



Fig. 19. Pidlisivka, Yampil Region, barrow 1, grave 1/13. Horizontal projection of burial

3. STRATIGRAPHIC CONCEPTION AND TYPOCHRONOLOGY OF RITUAL PRACTICES VS. RADIOCARBON CHRONOMETRY

The interpretation of stratigraphy, typochronology of ritual practices and chronometry of barrow 1 in Pidlisivka as outlined below substantially differs from the proposal put forward in the first publication on this site. The revision followed from the re-analysis of sources procured in 2010 and as a result of older excavations in 1984-1993 [Koško *et al.* 2014; Harat *et al.* 2014]. This was inspired by new interpretations concerning the typochronology of ritual practices made while conducting more recent archaeological and chronometric investigations of the *Yampil barrow cluster* (in 2011-2015). These new interpretations were taken up and applied to ‘barrow analyses’ by the researchers working on the project *Podolia as a Cultural Contact Area in the 3rd and in the first half of the 2nd millennium BC* [Klochko *et al.* 2015; 2015a; 2015b; Goslar *et al.* 2015; Ivanova, Toshev 2015a; *see Editor's Foreword* to this volume]. ‘Pidlisivka taxonomic complications’ follow from two kinds of difficulties: (a) archaeometric ones (the absence of a stratigraphic description of the site, which is a result of the advanced devastation of the barrow mound under investigation) and (b) typological and identification ones (atypicality of the manifestations of local ritual practices – this makes this site stand out from the other features investigated by the *Yampil Expedition*).

The burial layout under the central portion of barrow 1 in Pidlisivka suggests that its mound was hypothetically built in two phases and that the older of them dates back to the Late Eneolithic⁴. Such a two-element ‘barrow architecture’ is characteristic also of other *Yampil features*, including barrows from Porogi (3A) and Klembivka (1). It is characterized by arranging mound add-ons around the barrow centre – in connection with – central graves sunk in close proximity. The radiocarbon dates from Porogi 3A (for feature 3A/2) and Pidlisivka (for burial 1/1Aa and wood from grave 1/1A) indicate that the first mound add-on was connected with the YC [Goslar *et al.* 2014: 308, Tab. 4.1: 1].

Under the oldest mound, besides grave 1/1B, there may have also been located feature 1/10. This situation is often encountered on Eneolithic barrow cemeteries where mounds covered more than one feature as, for instance, in barrow 3 from Prydnistrianske [Klochko *et al.* 2015] or barrow 1 from Bursuceni [Yarovoy 1978]. In this context, barrow 2 from Severynivka located nearby deserves a mention in which to the oldest phase, three features are linked [Harat *et al.* 2014: 172-204].

Summing up, the following chronological scheme may be proposed:

⁴ The variant proposed by V.I. Klochko (*see* footnote 3) assumes that a two-phase YC barrow was superimposed on a flat Eneolithic cemetery.

Stage 1 – Eneolithic barrow. It is linked to graves 1/1B and 1/10 and the first barrow mound. This stage most likely covers also sacrificial pit 6, exposed on the eastern mound edge. Assumed general chronometry: ca. 3000-2800 BC.

Stage 2 – YC barrow. In this stage, into the central portion of the barrow, grave 1A (with two burials) was sunk. This may have been connected with an add-on and, consequently, a minor enlargement of the barrow. Next, into the mound, graves 1/9 and 1/11 were sunk. Chronometry: ca. 2800-2700 BC for grave 1/1A (central) and ca. 2700-2575 BC for the graves sunk into the younger mound.

Stage 3 – CC (?) cemetery. Into the barrow mound, graves 1/4 and 1/7 were sunk. These features had a niche/semi-niche character. The taxonomic findings in respect of these features are not certain: they may be Eneolithic graves sunk into the older mound. Chronometry: ca. 2850-2600 BC.

Stage 4 – BC cemetery. Into the southern mound edge, features 1/5 and 1/13 were sunk. It is probably with this stage that the stray remains discovered in the southern portion of the barrow are connected to; the remains come from a completely ploughed away grave. Chronometry: ca. 1850-1700 BC⁵.

4. TAXONOMIC CLASSIFICATION

The description of the stages of creation and use of the Pidlisivka necropolis takes into account both conceptions ('a' and 'b'), stressing in this way – emphasized in the title – the need for a *discussion about the taxonomic classification* of 'barrow culture' features. We hope, giving precedence to the first conception ('a') in the current interdisciplinary dialogue [Goslar *et al.* 2015; Lytvinova *et al.* 2015], that the two voices can be translated into a programme of an appropriate procedure of empirical verification: a conception of an empirical falsification of both hypotheses.

⁵ An alternative sequence (hypothesis 'b') proposed by V.I. Klochko comprises the following stages:

Stage 1 – a flat Eneolithic cemetery consisting of burials in wide (almost square) pits (feature 10) and catacombs (features 4 and 7).

Stage 2 – YC barrow. In this stage, feature 1A was sunk, above which a small barrow was built.

Stage 3 – the second YC mound, built over feature 1B. Next, into the barrow mound, Late Yamnaya grave 11 was sunk and grave 9 was probably secondarily disturbed.

Stage 4 – BC cemetery. Into the southern mound edge, features 5 and 13 were sunk as well as the third, completely destroyed grave.

4.1. ENEOLITHIC

The size of barrow 1 in Pidlisivka makes it rank among small features of uncomplicated stratigraphy: without any add-ons, considerably extending the mound, usually dated to the Early Bronze Age. Any detailed findings in this respect, however, are not possible due to the advanced destruction of the feature.

The central burial of the oldest barrow, feature 1B was accompanied by a spill of yellow loess (on the east side) and the remains of wooden roofing located at the original ground level. The pit was rather irregular in shape, subrectangular, and was narrower than the neighbouring excavation of grave 1A. The adult male buried in it had been laid supine with the upper limbs slightly bent at the elbows and extended along the trunk and the lower limbs crouched with the knees turned upwards. Neither the skeleton nor the pit bottom were sprinkled with ochre (only trace amounts of a red colourant were found in the remains of a mat). This ritual is on the one hand close to the YC rite and on the other to the Eneolithic burials of the 'post-Stog' type [Ivanova 2015: 282, 283].

The oldest stage may also cover feature 1/10 exposed in the southern portion of the barrow. This was a child burial deeply sunk into yellow loess. Its poorly preserved remains indicated that it had been laid crouched on the left side. The lower limbs were sprinkled with ochre, while grave goods comprised an S-profile pot, placed in a pit corner, at the head of the deceased. This latter trait is characteristic of Middle Dniester rites found in both Eneolithic and Early Bronze milieus. Burials holding S-profile pots in the forest-steppe zone were discovered in feature 1, barrow 2, Varatik, Ryshkany Region [Larina 1989; 72, Fig. 5: 3] and feature 21, barrow 1, Bursuceni, Sîngerei Region [Yarovoy 1978].

4.2. EARLY BRONZE AGE (YAMNAYA CULTURE)

Into the central portion of the mound of the older – Eneolithic – barrow, probably grave 1/1A was sunk as can be judged from its depth, which is clearly smaller than that of feature 1/1B. Its pit only slightly cut into the yellow loess and its bottom extended at a depth of about 0.4 m from the original ground level. Assuming that there was wooden roofing (the elements of which were found in the fill), one has to accept that the original structure must have been deeper. Hence, in the accepted reconstruction, the grave was sunk into the central portion of the older mound [Dergachev 1986: 30, 31, Fig. 3: 2v] and must have entailed an add-on enlarging the barrow (no traces of such an add-on, however, could be captured).

Grave 1/1A was oriented NE-SW or perpendicularly to the longer axis of feature 1/1B. The pit was rectangular in shape and had rounded corners. It was found to hold two burials: one of an adult male and another of a child. The grave, on account of ritual traits (pit structure, orientation and the arrangement of an adult corpse, use of ochre) is associated with the early horizon of the YC. The corpse arrangement is analogous to that found in the graves of the older YC phase in Prydnistrianske 1 and, possibly, barrow 3A in Porohy (partially destroyed burial 3A/2).

Into the barrow mound, some features were sunk that were identifiable on the strength of *ritual dating* as YC graves 1/9 and 1/11, hypothetical CC graves 1/4 and 1/7, BC-related graves 5 and 13, and feature 8 which is hard to identify.

Features 1/9 and 1/11 are pits with a step leading to a rectangular grave chamber. In both cases, roofing remains were recorded. Additionally, in feature 9, there was a cover made from wooden logs and a stone slab. An analogous structure was recorded in grave 13 from neighbouring barrow 2 in Severynivka [Harat *et al.* 2014: 198-204]. In neither of Pidlisivka graves were traces of ochre found. Thus, the cultural attribution of features 1/9 and 1/11 is hard to define. A new dating obtained in the Poznań laboratory for grave 1/11 suggests that it was built still in the first half of the 3rd millennium BC and should be linked to YC communities. The corpse arrangement in this feature is consistent with that characteristic of the late YC phase in the *Yampil cluster*, finding a good analogy in the group of burials from barrow 3A in Porohy sunk into the mound of the younger barrow [Klochko *et al.* 2015a].

4.3. MIDDLE BRONZE AGE (CATACOMB CULTURE?)

A younger horizon is set by features 1/4 and 1/7 whose grave chambers had the nature of semi-niches. Entrance pits leading to them were located on the mound edge side. For grave 1/7, a radiocarbon date was obtained, pointing to the first half of the 3rd millennium BC [Goslar *et al.* 2015]. A similar determination was also obtained for an analogous grave in terms of structure and burial arrangement to taxonomically debatable feature 1/5 from Klembivka. These results argue in favour of including Pidlisivka graves 1/4 and 1/7 in the circle of the early CC. These burials, in terms of corpse arrangement (a strongly contracted position) point to connections with examples on the middle Prut River [Kaiser 2003: 40, 43]. Moreover, the ¹⁴C determinations mentioned earlier indicate an age corresponding to the early CC [Bratchenko 2001; Kaiser 2009; Otroshchenko 2013]. So early a date assigned to them, compared to other finds from the Dniester-Danube area, is surprising [Ivanova 2013] and calls for a revision/confirmation by further research.

The study of the structure of graves 1/4 and 1/7 shows that they must have been sunk into the barrow mound because of the reconstructed depth of entrance pits to grave chambers. This, however, does not rule out the possibility of linking them to the older, Eneolithic stage (I – *see* Ch. 3). A radiocarbon determination obtained in the Poznań Laboratory for grave 1/7 makes it possible to associate it also with the final stage of the Late Eneolithic. The presence of catacomb structures in the Eneolithic is confirmed in both Late Tripolye (C/II) cemeteries and barrows representing various ‘steppe’ traditions [Rassamakin 2004: 43, 57, 58]. In turn, a radiocarbon age determined in the Kyiv Laboratory for grave 1/4 demands that it be referred to the second half of the 3rd millennium BC, that is similarly to the majority of other CC graves on the north-western Black Sea Coast [Kaiser 2009: 65, 66; Ivanova 2014: 22].

4.4. LATE BRONZE AGE (BABYNO CULTURE)

In contrast, there are no doubts about associating graves 5 and 13 with the Late Bronze Age (first half of the 2nd millennium BC). Oval pits sunk into the southern mound edge yielded burials lying on their side, crouched, with the upper limbs bent and directed towards the head. Details of their arrangement, however, vary. What attracts attention the most is the greater degree of ‘pulling up limbs’ in grave 13. At the skeletons, no distinctive grave goods were found (only indeterminate animal bones), hence their cultural attribution is uncertain. The obtained radiocarbon measurements suggest a connection with the BC complex.

4.5. FEATURES OF DOUBTFUL TAXONOMIC REFERENCE: STAGE?

Doubts remain, however, as to the age of ‘grave’ 8 (cluster of child bones) and feature 6 (sacrificial pit – *trizna*). The child burial (?), unearthed on the mound edge, must have been connected to the younger stages of barrow use. Whereas the cluster of animal bones (feature 6) could have been related to the oldest stage and then it might have been deposited prior to the construction of the first mound.

5. PIDLISIVKA-SEVERYNIVKA CEREMONIAL CENTRE: TOPOGENETIC CLASSIFICATION

The comments below relate directly to hypothesis ‘a’ of the construction and use stages of the Pidlisivka 1 necropolis.

In terms of burial traits, the oldest Pidlisivka 1 features represent an Eneolithic tradition different from the finds recorded so far in the Podolia part of the Middle Dniester Area. There, barrow burials were recorded that showed clear connections to the rites of the ‘Late Tripolye’ Gordinești group (Prydnistrianske 1, barrows I-IV) [Klochko *et al.* 2015], as well as to extended burials (‘post-Mariupol’/Kvitanska – Oknița, Mocra, Timkovo, Krasnoye) [Manzura *et al.* 1992; Kashuba *et al.* 2001-2002; Ostroverkhov *et al.* 1993; Serova, Yarovoy 1987]. Although this rite is dated to a broad time bracket, a large portion of burials assigned to it are dated analogously to the cemeteries of TC phase C/II [recently: Rassamakin 2013; Ivanova 2015]. Grave 1B from Pidlisivka should, however, be included among the burials of the post-Stog tradition, while its structural traits would indicate its rather late date – corresponding to the early YC phase [Ivanova 2015: 282, 283]. Burials of this type (groups II-A according to Y.Y. Rassamakin) [Rassamakin 2004: 39-41] have not been identified in the Dniester-Danube forest-steppe zone until now. Hence, they define another barrow tradition in this zone, next to ‘Late Tripolye’, ‘post-Mariupol’ and ‘Zhyvotilovka-Volchansk’ ones (barrows in Bursuceni, Kostashti and Varatik), evincing at the same time the diversity of funerary rites at the dawn of the YC barrow ritual. The similar dating of all the types listed here implies the presence of syncretic or transitional assemblages. Encountered similarities result in controversies regarding the classification of particular assemblages to specific Eneolithic and Early Bronze cultural formations. In this context, the dating of the older phase of the Pidlisivka barrow seems absolutely crucial. It is dated to the very beginning of the 3rd millennium BC or similarly to the radiocarbon-dated older stage of barrow 1 in Klembivka (*see* Klochko *et al.* 2015b). It would be thus a younger horizon than the age of the Prydnistrianske 1 barrow complex, having affinities with the Gordinești group.

The above interpretation makes one revise chronological-cultural assessments of some other barrows from the *Yampil cluster* [Ivanova, Toshev 2015a; Ivanova *et al.* 2015]. Eneolithic ritual traits can be also seen in two proximate barrows (1 and 2) in Severynivka – especially in the case of the central grave of barrow 1 [Harat *et al.* 2014: 166-204]. This would evince the existence of a *Pidlisivka-Severynivka Eneolithic barrow concentration as a local ceremonial centre*, another one within the *Yampil barrow agglomeration*.

Less inspiring to make accepted topogenetic approaches more specific, Pidlisivka YC, CC? and BC materials often cause problems when it comes to the fine-tuning of taxonomic-chronological findings. YC features only in certain respects

correspond to finds from other *Yampil cluster* barrows. The module of a ‘classic’ burial from the older phase of this culture was realized only in feature 1A (although even in this case an atypical trait consisted in placing a child burial immediately over the head of an adult individual). The late phase structures (1/9 and 1/11), in turn, are characterized by irregular pits and the absence of traces of ochre use (which is found in almost all YC graves in the *Yampil barrow* agglomeration).

The catacomb structures of graves 1/4 and 1/7 have become the subject of debates whether they belonged to the CC or the late phase of the Eneolithic. These are unique features on the scale of the forest-steppe of the north-western Black Sea Coast, finding only single and not entirely close analogies. Their very presence in Podolia is an important fact to be reckoned with while assessing the length and significance of the ‘catacomb trend’ in the funerary rites of societies settling the area in question in the beginning of the Early Bronze Age.

In the case of the BC, as a topogenetically meaningful trait, burials in semi-niche graves should be considered.

The new reading of the creation and use of the Eneolithic – ‘Early Bronze’ necropolis in Pidlisivka 1 presented above opens a number of major fields of discussion related to the taxonomic and typochronological classification of Podolia ritual practices followed by ‘barrow culture’ communities (hypotheses ‘a’ and ‘b’ outlined earlier) between 3250 BC and 2500 BC. Unfortunately, it is the chronometry of this period that suffers from a major shortage of meaningful radiocarbon determinations.

The revision trends as sketched above ought to be supported – in the first place – by efforts to make up for the deficiency in available scientific evidence. Moreover, the atypical series of Pidlisivka data, as far as identification purposes are concerned, regarding *Podolia-Yampil ritual practices*, calls for further planned research, including – which is postulated – excavations to broaden our knowledge on the autogenesis of the *Pidlisivka-Severynivka ceremonial centre*.

Translated by Piotr T. Żebrowski

REFERENCES

Bratchenko S.N.

2001 *Donetska katakombna kultura rannioho etapu*, vol. 1. Luhansk.

Dergachev V.A.

1986 *Moldaviya i sosiednie territorii v epokhu bronzy*. Kishinev.

Goslar T., Koško A., Razumow S.

2014 Identyfikacja kulturowo-chronologiczna cmentarzysk „wczesnobrązowych” na stanowisku Pidlisiwka 1. In: A. Koško, M. Potupczyk, S. Razumow (Eds) *Naddniestrzańskie kompleksy cmentarzysk kurhanowych społeczności z II i z pierwszej połowy II tysiąclecia przed Chr. W okolicach Jampola, obwód winnicki. Z badań nad północno-zachodnią rubieżą osadnictwa społeczności kręgu kultur „wczesnobrązowych” strefy pontyjskiej. Badania z lat 1984-2014. Archeologia Bimaris – Monografie 6*, 305-311. Poznań.

Goslar T., Klochko V.I., Koško A., Włodarczak P., Żurkiewicz D.

2015 Chronometry of Late Eneolithic and ‘Early Bronze’ cultures in the Middle Dniester area: investigations of the Yampil Barrow Complex. In: A. Koško (Ed.). *Podolia as a Cultural Contact Area in the 4th/3rd-2nd Millennium BC. Baltic-Pontic Studies 20*: 256-291.

Harat K., Potupczyk M., Razumov S.

2014 Charakterystyka źródeł archeologicznych pozyskanych w latach 1984-1993. In: A. Koško, M. Potupczyk, S. Razumow (Eds) *Naddniestrzańskie kompleksy cmentarzysk kurhanowych społeczności z III i z pierwszej połowy II tysiąclecia BC w okolicach Jampola, obwód winnicki. Z badań nad północno-zachodnią rubieżą osadnictwa społeczności kręgu kultur „wczesnobrązowych” strefy pontyjskiej. Badania z lat 1984-2010. Archeologia Bimaris – Monografie 6*, 45-204. Poznań.

Ivanova S.V.

2013 Kulturno-istoricheskie kontakty naseleniya Severo-Zapadnogo Prichernomoria v rannem bronzovom veke: Zapad-Vostok. Kulturno-istoricheskie kontakty naseleniya. *Stratum plus 2*: 158-248.

2014 Stan badań nad osadnictwem kultur jamowej i katakumbowej w zlewni dolnego Dniestru. In: N. Koško A., Potupczyk M., Razumow S. (Eds) *Naddniestrzańskie kompleksy cmentarzysk kurhanowych społeczności z III i z pierwszej połowy II tysiąclecia BC w okolicach Jampola, obwód winnicki. Z badań nad północno-zachodnią rubieżą osadnictwa społeczności*

- kręgu kultur „wczesnobrzązowych” strefy pontyjskiej. Badania z lat 1984-2014. Archaeologia Bimaris – Monografie 6, 17-33. Poznań.*
- 2015 Protobudzhakskyi horizon Severo-Zapadnoho Prichernomoria. *Stratum plus* 2: 275-294.
- Ivanova S.V., Klochko V.I., Koško A., Szmyt M., Toshev G.N., Włodarczak P.
- 2015 ‘Yampil inspirations’ in the study of the Dniester cultural contact area at the frontier of Pontic and Baltic drainage basins. In: A. Koško (Ed.). *Podolia as a Cultural Contact Area in the 4th/3rd-2nd Millennium BC. Baltic-Pontic Studies* 20: 406-424.
- Ivanova S.V., Toshev G.N.
- 2015 Late Eneolithic and Bronze Age prologue Pontic societies. Forest-steppe Middle Dniester and Prut drainage basins in the 4th/3rd-2nd millennium BC: A history of investigations. In: A. Koško (Ed.) *Podolia as a Cultural Contact Area in the 4th/3rd-2nd Millennium BC. Baltic-Pontic Studies* 20: 7-39
- 2015a The Middle-Dniester cultural contact area of early metal age societies. The frontier of Pontic and Baltic drainage basin in the 4th/3rd-2nd millennium BC. In: A. Koško (Ed.) *Podolia as a Cultural Contact Area in the 4th/3rd-2nd Millennium BC. Baltic-Pontic Studies* 20: 336-405.
- Jachimowicz K.
- 2015 Analiza przestrzenna kurhanów kultury grobów jamowych z okolic Jampola, Ukraina (held in the archives of Adam Mickiewicz University). Poznań.
- Kaiser E.
- 2003 *Studien zur Katakombengrabkultur zwischen Dnepr und Prut. Archäologie in Eurasien* 14. Mainz.
- 2009 Problemy absolutnego datowaniya katakombnoy kultury Severnogo Prichernomoria. *Tyragetia. Serie nouă* 3 (18/1): 59-70.
- Kashuba M.T., Kurchatov S.Y., Scherbakova T.A.
- 2001-2002 Kochevniki na zapadnoy granitse Velikoy stepi (po materialam kurganov u s. Mocra). *Stratum plus* 4: 180-252.
- Klochko V.I., Koško A., Potupchyk M.V., Włodarczak P., Żurkiewicz D., Ivanova S.V.
- 2015 Tripolye (Gordinești group), Yamnaya and Catacomb culture cemeteries, Prydnistrianske, site 1, Yampil Region, Vinnitsa Oblast: an archaeometric and chronometric description and a taxonomic and topogenetic discussion. In: A. Koško (Ed.) *Podolia as a Cultural Contact Area in the 4th/3rd-2nd Millennium BC. Baltic-Pontic Studies* 20: 183-255.

Klochko V.I., Koško A., Razumov S.M., Włodarczak P., Żurkiewicz D.

2015a Eneolithic, Yamnaya and Noua culture cemeteries from the first half of the 3rd and the middle of the 2nd millennium BC, Porohy, site 3A, Yampil Region, Vinnitsa Oblast: archaeometric and chronometric description, ritual and taxonomic-topogentic identification. In: A. Koško (Ed.) *Podolia as a Cultural Contact Area in the 4th/3rd-2nd Millennium BC. Baltic-Pontic Studies* 20: 78-141.

2015b Eneolithic, Babyno and Noua culture cemeteries, Klembivka, site 1, Yampil Region, Vinnitsa Oblast: archaeometry, taxonomy and topogenetics. In: A. Koško (Ed.) *Podolia as a Cultural Contact Area in the 4th/3rd-2nd Millennium BC. Baltic-Pontic Studies* 20: 142-182.

Koško A., Potupczyk M., Razumow S. (Eds)

2014 *Naddniestrzańskie kompleksy cmentarzysk kurhanowych społeczności z III i z pierwszej połowy II tysiąclecia BC w okolicach Jampola, obwód winnicki. Z badań nad północno-zachodnią rubieżą osadnictwa społeczności kręgu kultur „wczesnobrązowych” strefy pontyjskiej. Badania z lat 1984-2014. Archaeologia Bimaris – Monografie* 6. Poznań.

Koško A., Razumow S.

2014 Cele i metody badań terenowych. In: A. Koško, M. Potupczyk, S. Razumow (Eds) *Naddniestrzańskie kompleksy cmentarzysk kurhanowych społeczności z III i z pierwszej połowy II tysiąclecia BC w okolicach Jampola, obwód winnicki. Z badań nad północno-zachodnią rubieżą osadnictwa społeczności kręgu kultur „wczesnobrązowych” strefy pontyjskiej. Badania z lat 1984-2014. Archaeologia Bimaris – Monografie* 6, 41-44. Poznań.

Koško A., Razumow S., Żurkiewicz D.

2014 Nasyp kurhanu: morfometria, stratygrafia oraz planigrafia obiektów. In: A. Koško, M. Potupczyk, S. Razumow (Eds) *Naddniestrzańskie kompleksy cmentarzysk kurhanowych społeczności z III i z pierwszej połowy II tysiąclecia BC w okolicach Jampola, obwód winnicki. Z badań nad północno-zachodnią rubieżą osadnictwa społeczności kręgu kultur „wczesnobrązowych” strefy pontyjskiej. Badania z lat 1984-2014. Archaeologia Bimaris – Monografie* 6, 209-212. Poznań.

Larina O.

1989 Novye kurgannyye materyaly eneolita – ranney bronzy na srednem Prute. In: *Arkheologicheskiye issledovaniya v Moldavii v 1984 g.*, 60-76. Kishinev.

Litvinova L.V., Łukasik S., Żurkiewicz D., Gwizdała M., Chyleński M., Malmström H., Jakobsson M., Juras A.

- 2015 Anthropological description of skeletal material from the Dniester Barrow Cemetery Complex, Yampil Region, Vinnitsa Oblast (Ukraine). In: A. Koško (Ed.) *Podolia as a Cultural Contact Area in the 4th/3rd-2nd Millennium BC. Baltic-Pontic Studies* 20: 292-335.

Makohonienko M., Hildebrandt – Radke I.

- 2014 Kontekst przyrodniczy i perspektywy studiów paleośrodowiskowych stanowiska kultury jamowej w Pidlisivce nad Dniesterem, zachodnia Ukraina. In: A. Koško, M. Potupczyk, S. Razumow (Eds) *Naddniestrzańskie kompleksy cmentarzysk kurhanowych społeczności z III i z pierwszej połowy II tysiąclecia BC w okolicach Jampola, obwód winnicki. Z badań nad północno-zachodnią rubieżą osadnictwa społeczności kręgu kultur „wczesnobrązowych” strefy pontyjskiej. Badania z lat 1984-2014. Archaeologia Bimaris – Monografie* 6, 247-254. Poznań.

Manzura I.V., Klochko E.O, Savva E.N.

- 1992 *Kamenské kurgany*. Kishinev.

Ostroverkhov A.S., Subotin L.V., Subotin A.V.

- 1993 Kurhan epokhi bronzы-eneolita u s. Timkovo. In: *Arkheolohichni doslidzhennia v Ukrayini 1991 r.*, 83-84, Luts'k.

Otroschenko V.V.

- 2013 The Catacomb culture phenomenon. In: A. Koško, V. Klochko (Eds) *The Ingul-Donets Early Bronze Civilization as Springboard for Transmission of Pontic Cultural Patterns to the Baltic Drainage Basin 3200-1750 BC. Baltic-Pontic Studies* 18: 21-38.

Potupczyk M., Razumov S.

- 2014 Zgrupowanie cmentarzysk kurhanowych w rejonie jampolskim. In: A. Koško, M. Potupczyk, S. Razumow (Eds) *Naddniestrzańskie kompleksy cmentarzysk kurhanowych społeczności z III i z pierwszej połowy II tysiąclecia BC w okolicach Jampola, obwód winnicki. Z badań nad północno-zachodnią rubieżą osadnictwa społeczności kręgu kultur „wczesnobrązowych” strefy pontyjskiej. Badania z lat 1984-2014. Archaeologia Bimaris – Monografie* 6, 35-39. Poznań.

Rassamakin Y.Y.

- 2004 *Die nordpontische Steppe in der Kupferzeit Gräber aus der Mitte des 5. Jts. bis Ende des 4. Jts. v. Chr. Archäologie in Eurasien* 17, Mainz.

- 2013 From the Late Eneolithic period to the Early Bronze Age in the Black Sea steppe: what is the Pit Grave Culture (late fourth to mid-third millennium BC)? In: V. Heyd, G. Kulcsár, V. Szeverényi (Eds) *Transition to the Bronze Age. Interregional interaction and socio-cultural change in the third millennium BC. Carpathian Basin and neighbouring regions*, 113-138. Budapest.
- Serova I.L., Yarovoy E.V.
1987 *Grigroriopolskiye kurgany*. Kishinev.
- Sudnik-Wojcikowska B., Moysienko I.I., Dembicz I., Galery H., Rowińska A., Zachwatowicz M.
2013 *Kurhany na „Dzikich Polach” – dziedzictwo kultury i ostoja ukraińskiego stepu*. Warszawa.
- Toshev G.N.
1991 Zapadnyj areal pamiatnikov katakombnoy kultury. In: *Katakombnye kultury Severnogo Prichernomia*, 85-100. Kyiv.
- Yarovoy E.V.
1978 *Otchet o polevykh issledovaniakh eneoliticheskoi archeologicheskoi ekspeditsii v 1977 godu*. Kyshynev.
- Żurawłow O. = Zhuravlov O.
2014 Analiza materiałów kostnych ze stan. Pidlisivka, kurhan 1. In: A. Koško, M. Potupczyk, S. Razumow (Eds) *Naddniestrzańskie kompleksy cmentarzysk kurhanowych społeczności z III i z pierwszej połowy II tysiąclecia BC w okolicach Jampola, obwód winnicki. Z badań nad północno-zachodnią rubieżą osadnictwa społeczności kręgu kultur „wczesnobrzązowych” strefy pontyjskiej. Badania z lat 1984-2014. Archaeologia Bimaris – Monografie 6*, 245-246. Poznań.

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ENEOLITHIC, YAMNAYA AND NOUA CULTURE
CEMETERIES FROM THE FIRST HALF OF THE 3RD
AND THE MIDDLE OF THE 2ND MILLENNIUM BC,
POROHY, SITE 3A, YAMPIL REGION, VINNITSA OBLAST:
ARCHAEOLOGICAL AND CHRONOMETRIC DESCRIPTION,
RITUAL AND TAXONOMIC-TOPOGENETIC
IDENTIFICATION

ABSTRACT

The paper presents the results of excavations and analytical studies regarding the taxonomic classification of a funeral site associated with the societies of 'barrow cultures' of the north-western Black Sea Coast in the first half of the 3rd and the middle of the 2nd millennium BC. The study discusses the ceremonial centres of the Eneolithic, Yamnaya and Noua cultures.

Key words: 'barrow cultures', Eneolithic, Early Bronze Age, Late Bronze Age, Middle Dniester Area

The investigations of site 3A in Porohy, Yampil Region, Vinnitsa *Oblast*, were carried out in 2011 as part of the Polish-Ukrainian research project to investigate the north-western frontier of settlement by 'Early Bronze' culture communities

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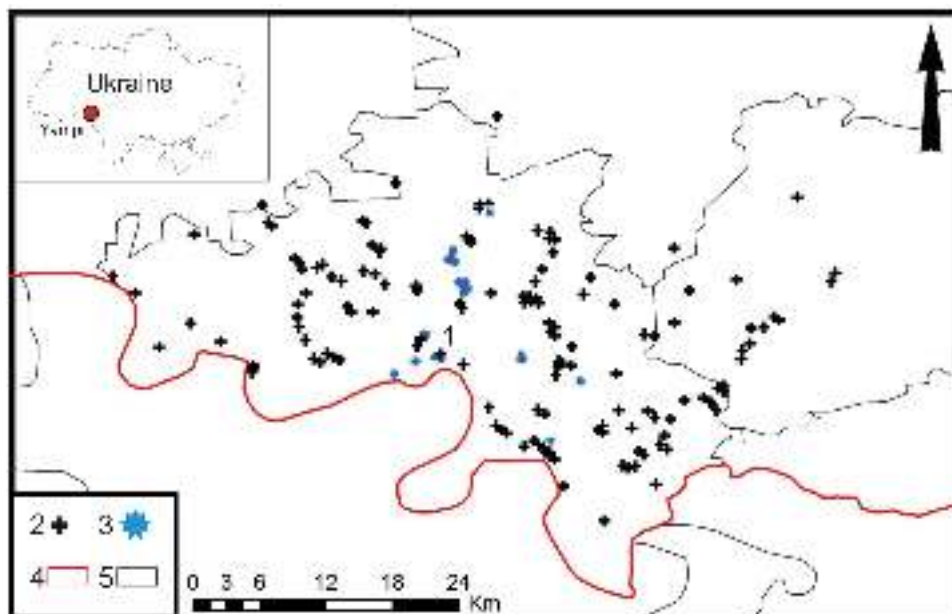


Fig. 1. Map of *Yampil Barrow Complex* showing administrative borders: 1 – Porohy, barrow 3A; 2 – barrows; 3 – excavated barrows; 4 – Ukrainian-Moldovan frontier; 5 – Yampil Region border. After Jachimowicz 2015, revised

in the Pontic zone by the Institute of Prehistory, Adam Mickiewicz University in Poznań and the Institute of Archaeology, Ukrainian National Academy of Sciences (UNAS) in Kyiv. The project was headed by Prof. Aleksander Koško, representing the AMU Institute of Prehistory and by Dr. Serhiy M. Razumov representing the UNAS, assisted by Dr. Piotr Włodarczak, representing the Institute of Archaeology and Ethnology of Polish Academy of Sciences, Centre for Mountains and Uplands Archaeology in Kraków [see Koško *et al.* (Eds) 2014].

Investigation results were first made available as an investigation report, satisfying the conservation-archival requirements of the UNAS Institute of Archaeology [Razumov *et al.* 2012]¹. Some results, concerning feature 5, were also published [Razumov *et al.* 2012a]. This paper, in relation to taxonomy, takes issue with the diagnoses formulated there and presents conclusions drawn by a broader team of experts. The problem of necessary discussions aimed at adjusting the standards of applied systematics of the funeral ‘Yampil’ determinants of Bronze Age cultures has already been raised in some detail in a paper on the Pidlisivka cemetery [Koško *et al.* 2014; Klochko *et al.* 2015]².

¹ See also Razumov *et al.* 2012a.

² Personal considerations have prevented Dr. Serhiy M. Razumov from taking part in the work of this team of experts.

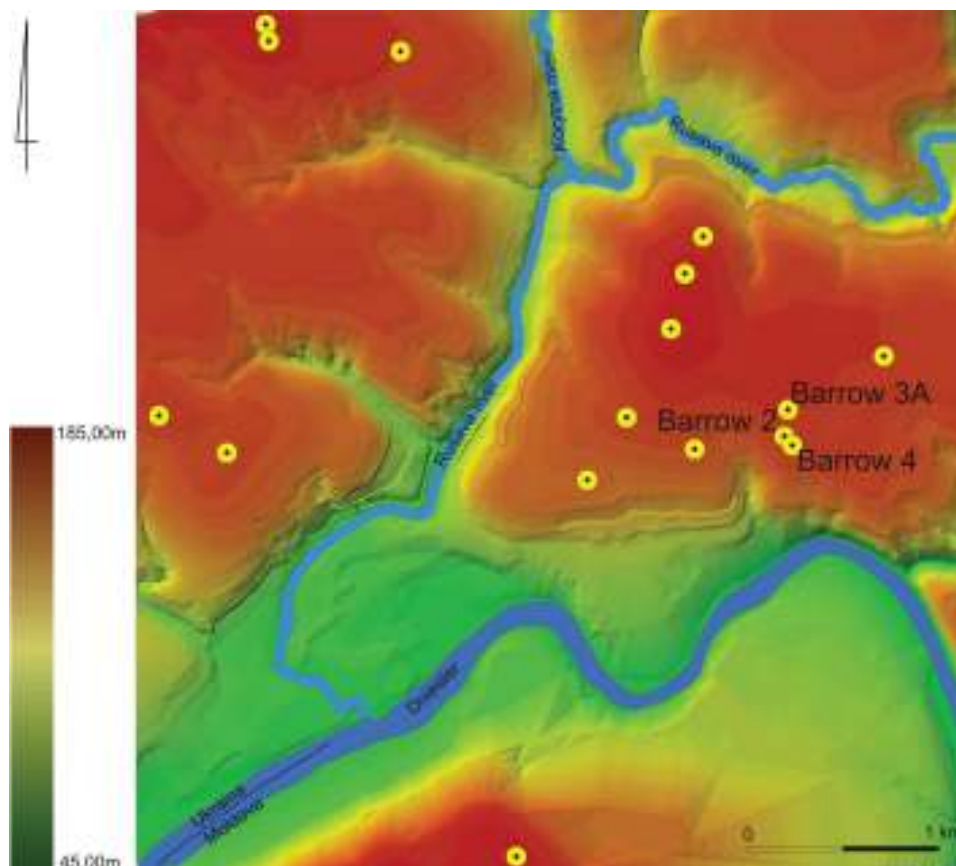


Fig. 2. Porohy, Yampil Region, barrow 3A. Barrow location in the elevation model of the immediate surroundings of the site

1. TOPOGRAPHY OF CEMETERIES AND FIELD INVESTIGATION METHODOLOGY

The site Porohy 3A is situated 4.0 km east of Yampil, Vinnitsa *Oblast* (Fig. 1), where a group of five barrows stands in the fields of the agricultural farm ‘Porogi’. Local people call the barrows *Tsari*. They stand close to the road from Yampil to Kryzhopil, in the southern portion of the watershed crest bounded by the valleys of the Dniester and its left-bank tributary – the Rusava (Fig. 2).

In the 1980s, excavations were carried out there by an expedition organized by the Vinnitsa Oblast Museum of Local Lore headed by B. Lobay. The expedition

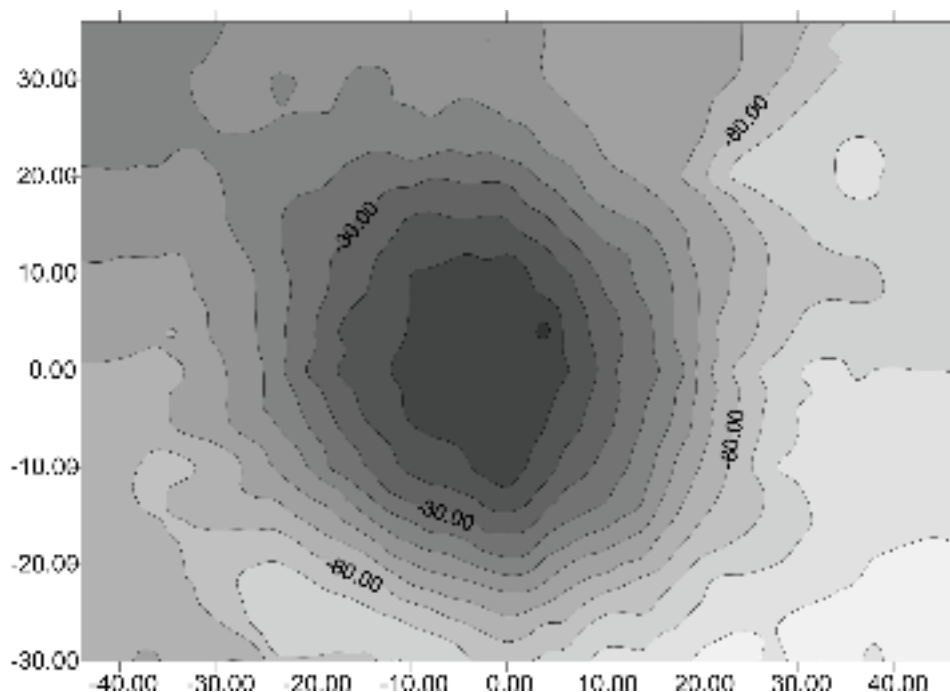


Fig. 3. Porohy, Yampil Region, barrow 3A. Contour line plan

explored two barrows and in one of them made spectacular discoveries of princely burials from the Sarmatian period [Simonenko, Lobay 1991]. Moreover, it was established that both barrows, and two other features located some distance away but still within the limits of the village of Porohy, had been built by the populations of the Yamnaya culture (YC) in the Early Bronze Age [Harat *et al.* 2014: 70-85]. Other discoveries included graves with amphorae. Among them, there was a feature holding a vessel characteristic of the circle of the Corded Ware culture (CWC) [Koško 2011: 188, 192, Fig. 6; Ivanova *et al.* 2014].

The 2011 excavations employed exploration techniques used already earlier such as digging parallel trenches with mechanical equipment and orienting them W-E. They were 4.0 metres wide and were separated by five baulks to document profiles (the length of the central baulk was 48.0 m). In addition, the explored area was expanded in the N and S parts in order to capture the outline of the barrow ditch. The mound was explored with arbitrary layers 5-15 cm thick³.

³ For a broader discussion of methodology see Koško, Razumov 2014.

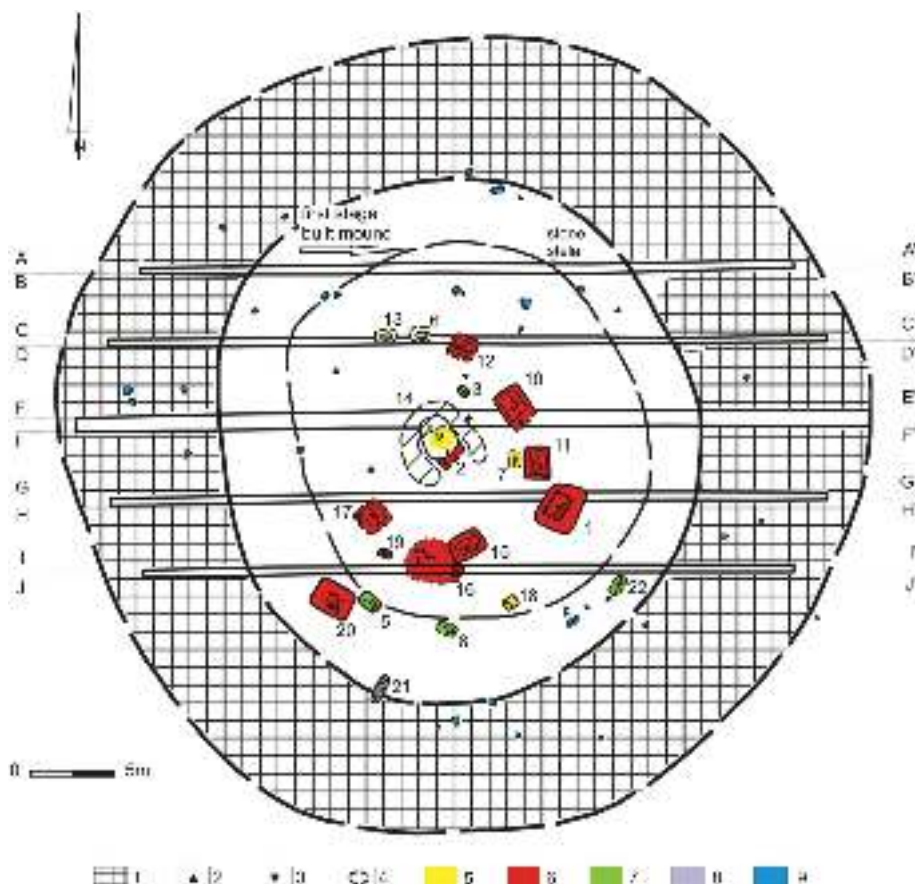


Fig. 4. Porohy, Yampil Region, barrow 3A. Barrow plan: 1 – surrounding ditch; 2 – animal bones; 3 – pottery shards; 4 – vessel fragments; 5 – features associated with the Eneolithic; 6 – features associated with the Yamnaya culture; 7 – features linked with Noua culture; 8 – features linked with Iron Age; 9 – elements of barrow cromlech

2. BARROW DESCRIPTION: MOUND MORPHOMETRY AND STRATIGRAPHY, SCATTER PATTERN AND STRUCTURE OF GRAVE FEATURES

At the time of commencing the excavations, the barrow was already badly damaged by ploughing and by an attempt to level it off using a bulldozer. The barrow was about 40.0 m in diameter and 1.1-1.2 m high (Figs. 3, 4). The extensive barrow destruction took place after the Second World War, as a 1933 map shows its height to be 3.6 m.

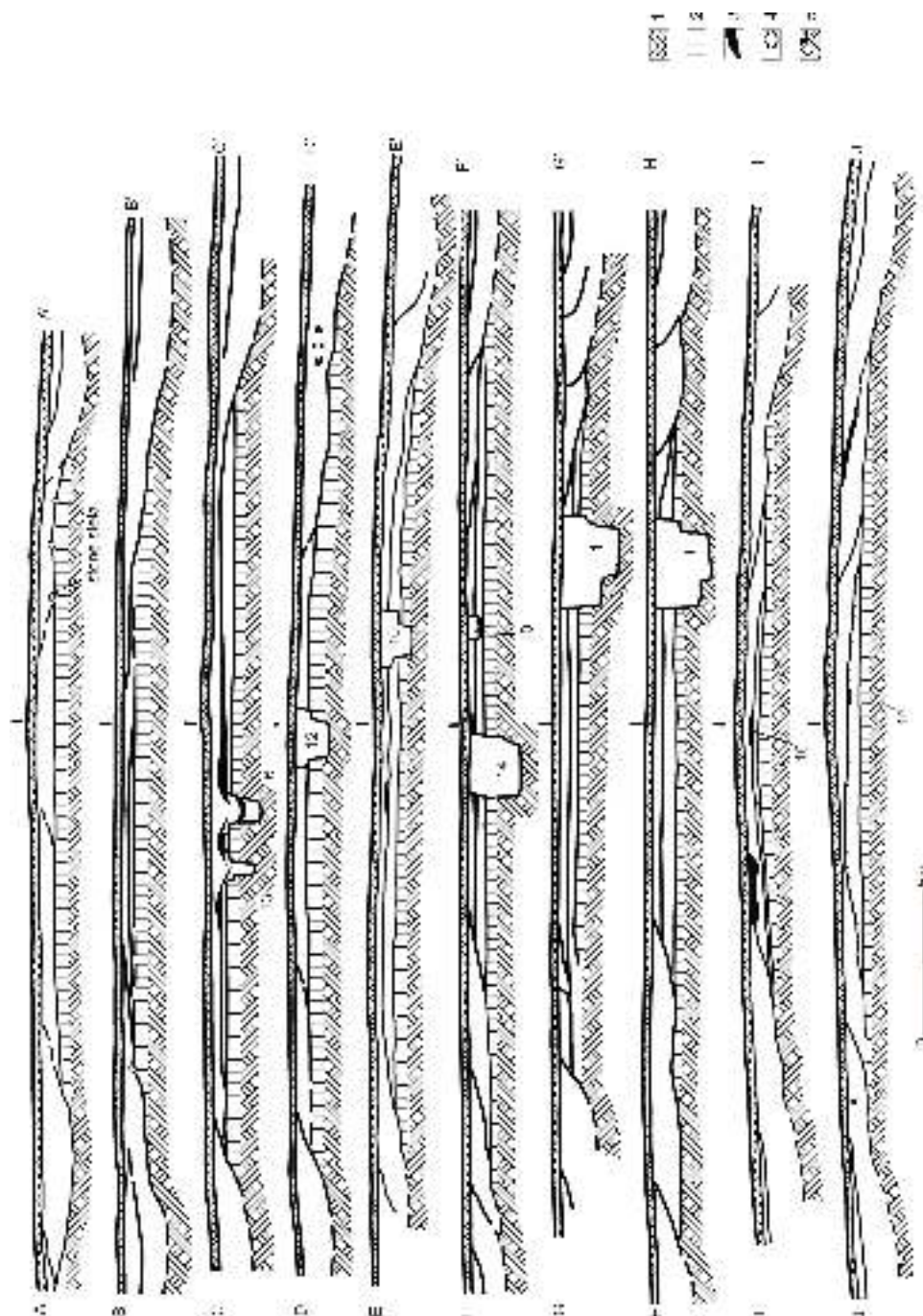


Fig. 5. Porohy, Yampil Region, barrow 3A. Barrow profiles: 1 – surface soil; 2 – layer under the barrow mound; 3 – sterile soil dug from the pit; 4 – ceramic vessel fragments; 5 – sterile soil

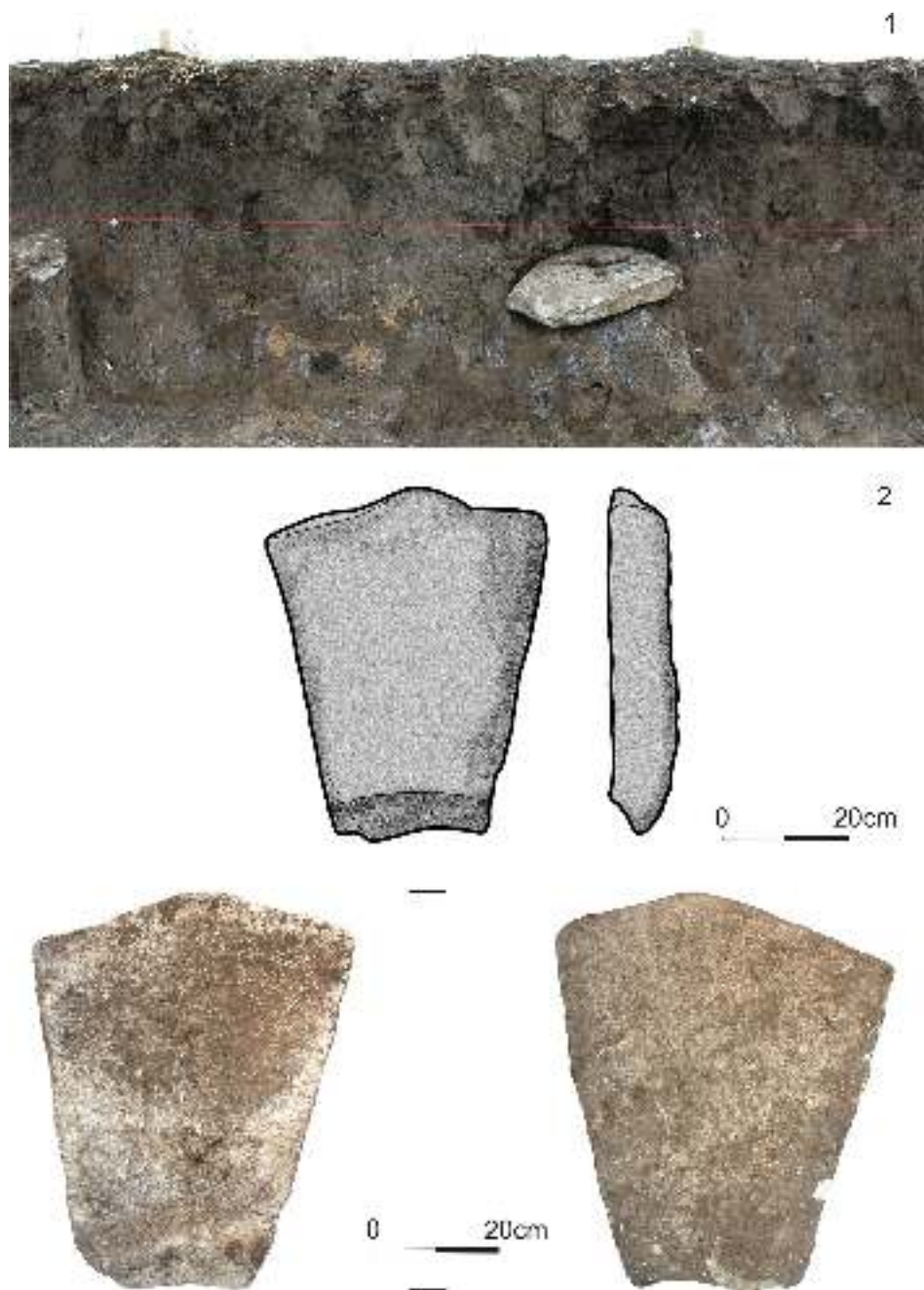


Fig. 6. Porohy, Yampil Region, barrow 3A. Stela: 1 – location in situ (*see* Fig. 4); 2 – drawing and photo the relic

The study of the vertical cross-sections of the barrow helped distinguish two separate mounds: an older, Eneolithic (?) and a younger, YC. Moreover, local add-ons, resulting from the sinking of successive Early Bronze graves were poorly visible. Its final form, the barrow reached still in the Early Bronze Age. Later, around the middle of the 2nd millennium BC and in the early modern era, it was re-used to sink another four graves.

Vertical observations were hampered by numerous animal burrows. So strong a deformation of cultural strata due to the action of animals and plants finds no analogy in the investigations by the present authors on the Polish Lowland. It suggests that these barrows constituted special loci where biological activity was concentrated [Sudnik-Wójcikowska *et al.* 2013].

Along its entire circumference, the barrow was surrounded by a ditch up to 10.0 m wide and 0.5 m deep, measuring from the original level. In the mound strata, flint artefacts were discovered (dated mainly to the Upper Palaeolithic), accompanied by single shards of hand-made pottery (dated to the Eneolithic-Early Bronze Age) and the shards of wheel-thrown pottery, originating from the Iron Age – the Roman period.

In the course of the investigations, 20 features were exposed: four Eneolithic or from the beginnings of the Early Bronze Age (?), ten YC, five Noua culture (NC) and one from the Middle Sarmatian period (Figs. 4, 5). Due to the advanced destruction of the mound caused by tillage, it is difficult to relate individual graves to barrow construction phases. It was possible to distinguish two major phases and cases of local add-ons.

In its oldest phase, the barrow was encircled with a stone cromlech. The structure was badly damaged at subsequent barrow extensions. In the N part, on the edge of the older mound, an overturned stone stela was exposed (Fig. 6).

All the anthropological data included in the descriptions below come from the separate publication [Litvinova *et al.* 2015], while in the case of archaeozoological data, the assessments by Y.Y Yanish [see Razumov *et al.* 2012] have been used.

Feature 3A/1

Culture	Yamnaya		
Dating	Ki-17384: 3770 ± 170 BP Ki-17437: 4430 ± 70 BP; Poz-70668: 3760 ± 35 BP (human bones)		
Grave pit		Burial	
Structure type	Pit	Sex	Male
Number of burials	1	Age	30-35 years
Size at the level of discovery	2.7 × 2.55 m	Orientation	NE-SW
Size at the level of the bottom	1.85 × 1.35 m	Deviation	16° N
Depth	2.15 m	Arrangement of head	L

Pit orientation	NE-SW	Arrangement of trunk	L
Deviation	18°N	Upper limbs	A
Distance from barrow centre	8.52 m	Lower limbs	1/2
Azimuth	120°	Ochre	+
Wooden roofing	+	Presence of mat	+
Roofing element orientation	Perpendicular	Animal bones	–
Other structural elements	Wall boarding	Ritual objects	1 flint flake, ochre lump
Comments			

The grave was sunk into the youngest barrow mound. Its outline was recorded immediately below the surface soil (0.3 m) and its fill was heterogeneous: it consisted of yellow loess and dark humus earth. The pit structure was complex. On the SE side, there was a step 0.8 m wide, leading to a regularly rectangular grave chamber. On the other sides, considerably higher, there were narrower steps supporting a wooden roofing placed perpendicularly to the longer axis of the pit. On the pit circumference, the remains of boards were recorded, which once formed a chest structure 0.6 m high and 4-5 cm thick. The boards were secured in grooves 3-5 cm deep.

On the pit bottom, the skeleton of an adult male lay crouched on the left side. The bones bore traces of colouring with ochre. The frontal bone showed obliterated traces of injuries. On the parietal and occipital bones, and on the mandible, traces of injuries were recorded left by intentional manipulations [Lytvinova *et al.* 2015]. About 0.4 m E of the head, a lump of ochre, and underneath the right wrist bones, a flint flake were found (Figs. 7-9).

Grave goods

1. Oval lump of ochre about 6 cm in diameter.
2. Flint flake (Fig. 7: 1).

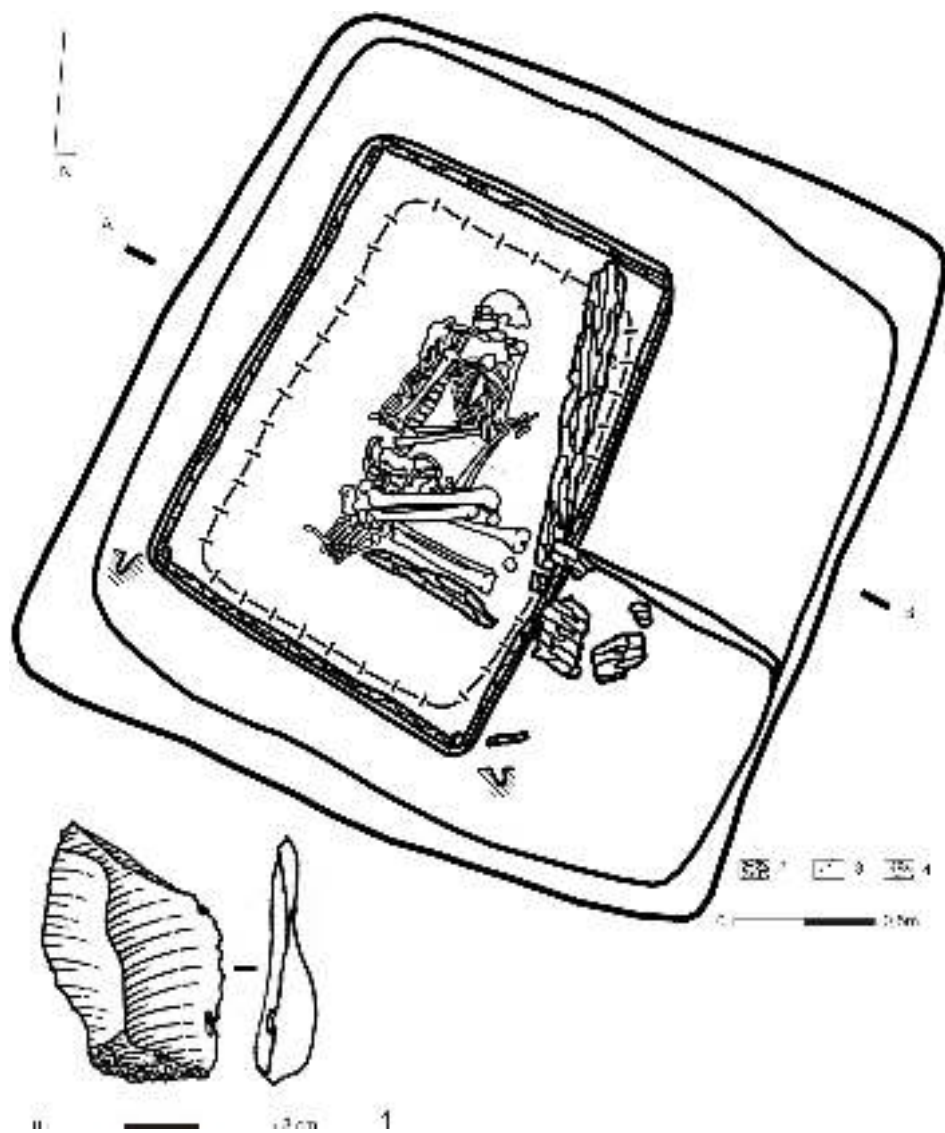


Fig. 7. Porohy, Yampil Region, barrow 3A. Feature 3A/1: 1 – flint flake; 2 – wood remains; 3 – outline of mat; 4 – ochre



Fig. 8. Porohy, Yampil Region, barrow 3A. Feature 3A/1

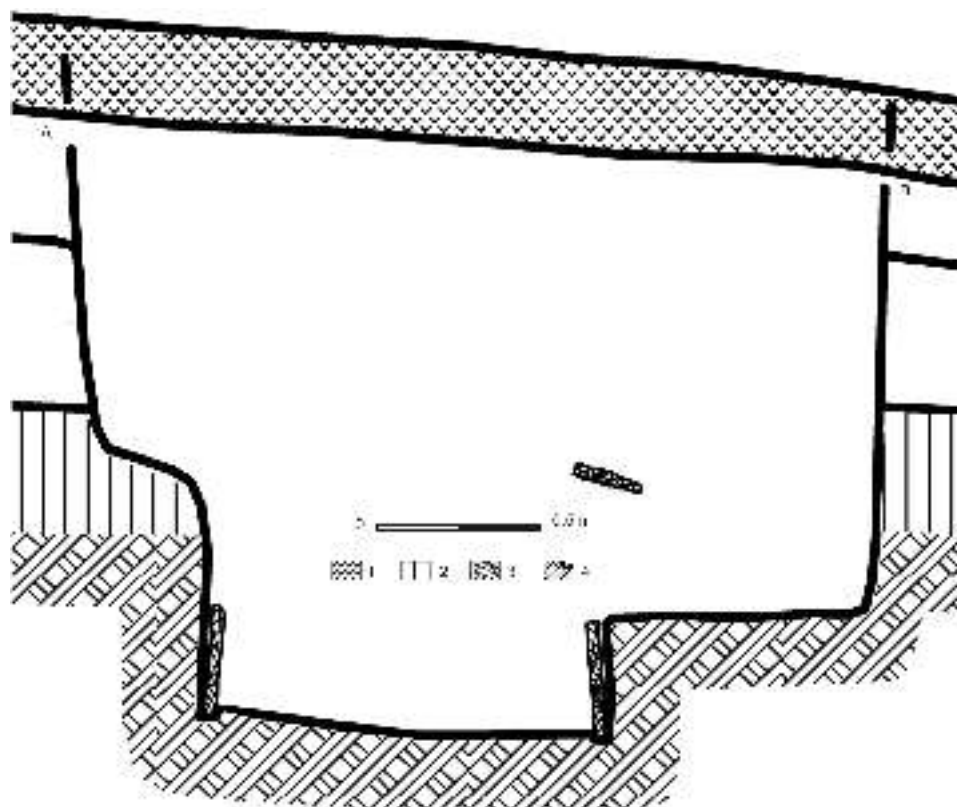


Fig. 9. Porohy, Yampil Region, barrow 3A. Profile of feature 3A/1: 1 – surface soil; 2 – layer under the barrow mound; 3 – wood remains; 4 – sterile soil

Feature 3A/2

Culture	Yamnaya (?)		
Dating	Poz-74392: 4140±35 BP; Ki-18927: 2980 ± 90 BP (human bones)		
Grave pit		Burial	
Structure type	Pit	Sex	Male?
Number of burials	1	Age	<i>Maturus</i>
Size at the level of discovery	?	Orientation	SW-NE
Size at the level of the bottom	1.70 × ? m	Deviation	?
Depth	0.5 m	Arrangement of head	?
Pit orientation	SW-NE	Arrangement of trunk	Supine?
Deviation		Upper limbs	?
Distance from barrow centre	1.7 m	Lower limbs	?
Azimuth	152°	Ochre	+
Wooden roofing		Presence of mat	+
Roofing element orientation	?	Animal bones	—
Other structural elements	—	Ritual objects	—
Comments			

The feature was sunk into the central portion of the mound and to a large extent was damaged by a robber trench (feature 3A/14). Its outline was barely visible. *In situ*, there lay only bones of the right upper limb, the scapula and skull fragments. These remains bore traces of colouring with ochre. Immediately underneath the skull, a large stone slab (0.4 × 0.3 × 0.1 m) was unearthed; it could have been a cover element of older grave 14 (Figs. 10, 13).

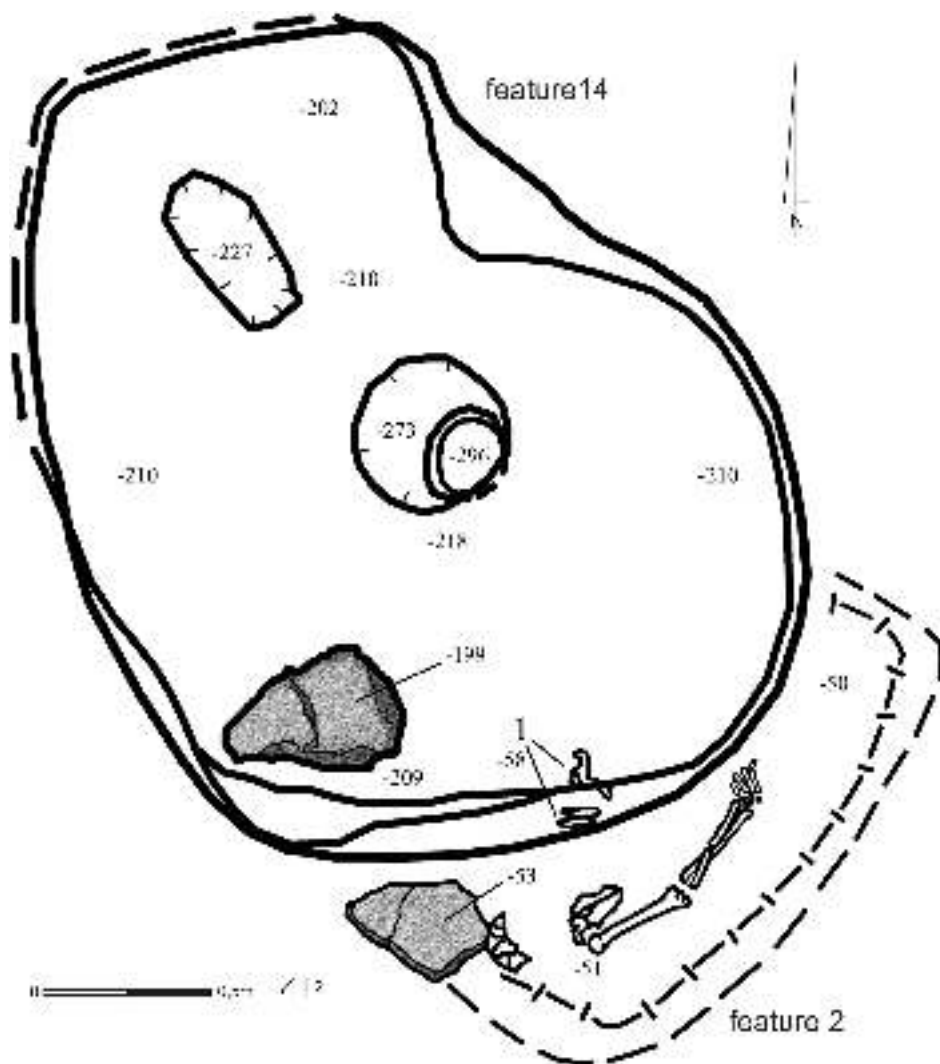


Fig. 10. Porohy, Yampil Region, barrow 3A. Plan of features 3A/2 and 3A/14: 1 – fragments of a tool from red-deer antler; 2 – outline of mat

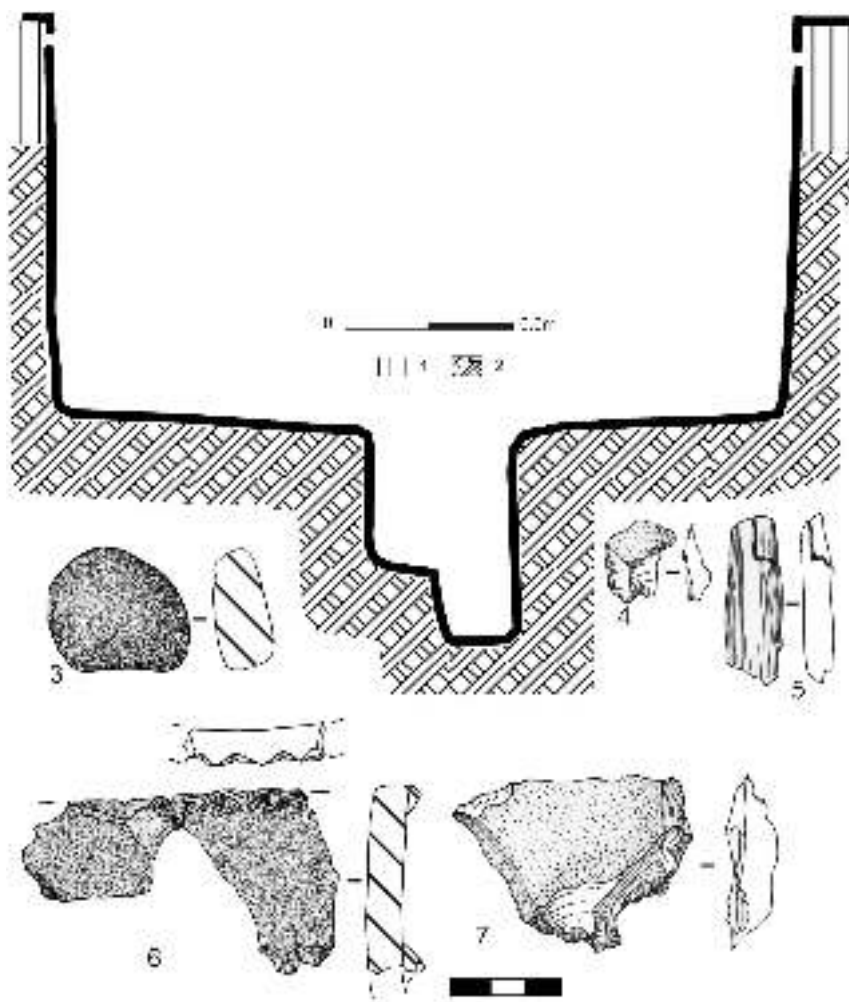


Fig. 11. Porohy, Yampil Region, barrow 3A. Profile of feature 3A/14: 1 – layer under the barrow mound; 2 – sterile soil. Objects from the feature fill; 3 – pebble with traces of use; 4, 7 – flint flakes; 5 – fragment of a tool from red-deer antler; 6 – fragments of a vessel rim



Fig. 12. Porohy, Yampil Region, barrow 3A. Plan of feature 3A/14



Fig. 13. Porohy, Yampil Region, barrow 3A. Plan of feature 3A/2

Feature 3A/3

Culture	Noua		
Dating			
Grave pit		Burial	
Structure type	Pit?	Sex	?
Number of burials	1	Age	Below 3 years
Size at the level of discovery	?	Orientation	NW-SE
Size at the level of the bottom	Approx. 0.70 × 0.50 m	Deviation	12° E
Depth	0.6 m	Arrangement of head	L?
Pit orientation	NW-SE	Arrangement of trunk	L
Deviation	7° W	Upper limbs	?
Distance from barrow centre	2.97 m	Lower limbs	2
Azimuth	148°	Ochre	+
Wooden roofing	+	Presence of mat	+
Roofing element orientation	Perpendicular	Animal bones	–
Other structural elements	–	Ritual objects	–
Comments			

The grave was sunk into the central portion of the mound. Immediately beneath surface soil, the fragments of wooden planks up to 20 cm wide, 75 cm long and 4 cm thick were discovered. They were elements of a roofing. The pit outline was barely visible against mound strata. Judging by the shape of the mat, it can be assumed to have been rectangular. A child skeleton lay crouched on the left side about 0.20 m below a wooden cover. The bones bore traces of slight colouring with ochre (Fig. 14).

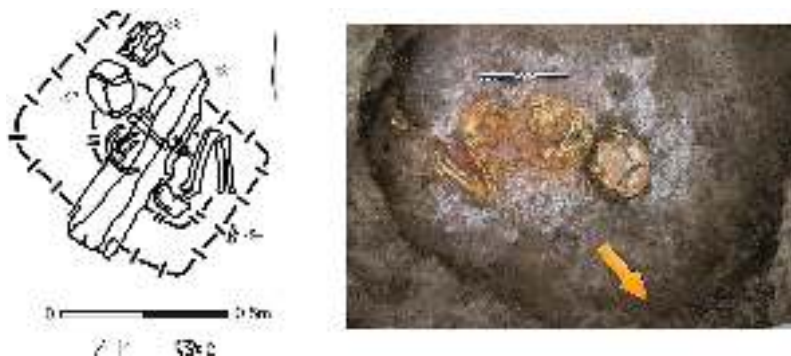


Fig. 14. Porohy, Yampil Region, barrow 3A. Plan of feature 3A/3. 1 – outline of mat; 2 – wood remains

Feature 3A/5

Culture	Noua		
Dating	Ki-17440: 3200 ± 90 BP (human bone)		
Grave pit		Burial	
Structure type	Pit	Sex	Male
Number of burials	1	Age	25-30 years
Size at the level of discovery	?	Orientation	E-W
Size at the level of the bottom	1.5 × 0.75 m	Deviation	0° E
Depth	0.85 m	Arrangement of head	L
Pit orientation	E-W	Arrangement of trunk	L
Deviation	0°	Upper limbs	D
Distance from barrow centre	10.78 m	Lower limbs	1
Azimuth	203°	Ochre	–
Wooden roofing	Present	Presence of mat	+
Roofing element orientation	Longitudinal	Animal bones	8 fragments of horse bones: sacral bone, two caudal vertebrae
Other structural elements	–	Ritual objects	Vessel
Comments			

The grave was sunk into the southern edge of the mound. It was regularly rectangular in shape and its fill was found to contain the fragments of wooden roofing elements, up to 0.15 m wide. On the bottom, there lay the skeleton of an adult male

crouched on its left side. At the chest, next to the hand bones, a clay vessel and several fragments of the spine of a young, domesticated horse were found (Fig. 15).

Grave goods

1. A mug with a tall cylindrical neck and a slightly flared rim ending in an obliquely cut edge. Flat bottom. Coil handle. The outer surface is even, smoothed, black and brown-yellow in colour. The body contains temper of crushed ceramics. Dimensions: height – 11 cm, mouth diameter – 10.5 cm, belly diameter – 13 cm, bottom diameter – 6.8 cm (Fig. 16).

2. Six fragments of the sacral bone and two caudal vertebrae of a young domesticated horse (Fig. 15: 2).

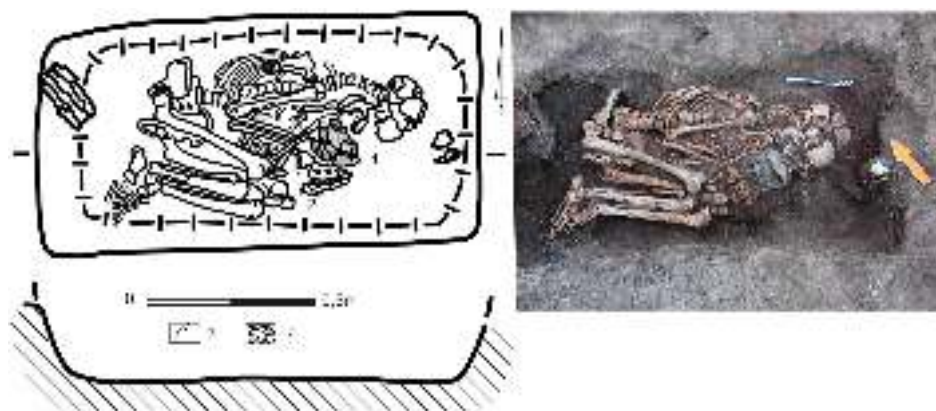


Fig. 15. Porohy, Yampil Region, barrow 3A. Plan and profile of feature 3A/5. 1 – ceramic vessel; 2 – horse sacral bone; 3 – outline of mat; 4 – wood remains

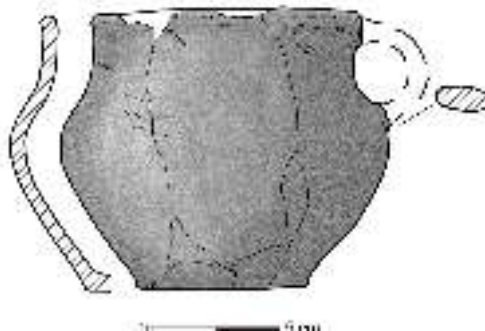


Fig. 16. Porohy, Yampil Region, barrow 3A. Vessel from feature 3A/5 (see Fig. 15)

Feature 3A/6

Culture	Eneolithic?
Dating	
Structure type	Posthole
Size at the level of discovery	?
Size at the level of the bottom	0.7 × 0.7 m
Depth	2.05 m
Pit orientation	NW-SE
Deviation	?
Distance from barrow centre	6 m
Azimuth	351°
Comments	

A posthole discovered in the northern portion of the barrow. Its fill consisted of chernozem with fine charcoals. From depths from 0.8 to 1.5 m, eight lime stones, from 0.2 to 0.5 m in diameter were recovered. Judging by the barrow profile, it can be assumed that the posthole was sunk into the oldest mound of the barrow at a depth of 1.2 m (Fig. 17:A).

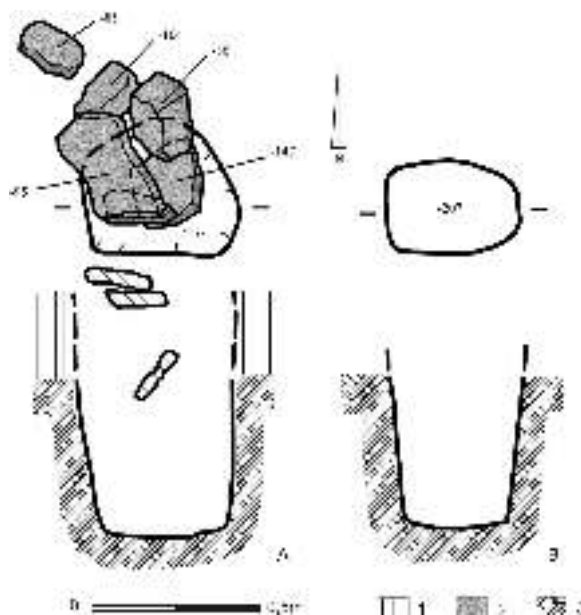


Fig. 17. Porohy, Yampil Region, barrow 3A. A – plan and profile of feature 3A/6; B – plan and profile of feature 3A/13. 1 – layer under the barrow mound; 2 – stones; 3 – sterile soil

Feature 3A/7

Culture	Noua		
Dating	Poz-70667: 4115±35 BP (human bone)		
Grave pit		Burial	
Structure type	Pit	Sex	Male?
Number of burials	1	Age	<i>Adultus-Maturus</i>
Size at the level of discovery	?	Orientation	E-W
Size at the level of the bottom	Approx. 1.3 × 1.0 m	Deviation	0°
Depth	0.65 m	Arrangement of head	P
Pit orientation	N-S	Arrangement of trunk	P
Deviation	0°	Upper limbs	D
Distance from barrow centre	4.85 m	Lower limbs	1
Azimuth	107°	Ochre	+
Wooden roofing	+	Presence of mat	+
Roofing element orientation	Perpendicular	Animal bones	–
Other structural elements	–	Ritual objects	Vessel fragment, ochre lump next to the face, unidentified mineral substance
Comments			

The grave was sunk into the eastern portion of the mound. The pit outline could not be captured. Judging by the shape of the mat, it can be assumed to have been rectangular. In the SW corner, the fragment of a wooden roofing was discovered, measuring 10.0 × 3.0 cm. On the bottom, there lay a skeleton of an adult male crouched on the right side. Its bones were slightly coloured with ochre. In the SE corner of the pit, the lower portion of a flat-bottom vessel was found. It bore traces of fire (a container for keeping embers?). Between the vessel and skull, there lay an oval ochre lump of a bright red colour and north of it, a strongly overheated mineral substance of a red colour was found (Fig. 18).

Grave goods

1. The lower portion of a flat-bottom vessel with even, mat outer surfaces of a light-brown colour. The clay contains temper of crushed ceramics. Dimensions: bottom diameter – 8.5 cm, maximum diameter – 11 cm, wall thickness – 0.8 cm (Figs. 18: 3; 19).

2. Ochre lump measuring 8 × 5 × 2 cm (Fig. 18:1).

3. Lump of overheated mineral substance measuring 7 × 3 × 2 cm (Fig. 18: 2).



Fig. 18. Porohy, Yampil Region, barrow 3A. Plan of feature 3A/7: 1 – lump of ochre; 2 – mineral of a red colour; 3 – fragments of a vessel bottom (*see* Fig. 19); 4 – outline of mat; 5 – ochre

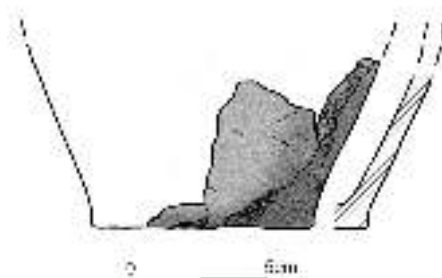


Fig. 19. Porohy, Yampil Region, barrow 3A. Ceramic vessel from feature 3A/7 (*see* Fig. 18)

Feature 3A/8

Culture	Noua		
Dating			
Grave pit		Burial	
Structure type	Pit	Sex	Male
Number of burials	1	Age	25-30 years
Size at the level of discovery	?	Orientation	SE-NW
Size at the level of the bottom	Approx. 1.4 × 0.7 m	Deviation	20°N
Depth	0.6 m	Arrangement of head	L
Pit orientation	W-E	Arrangement of trunk	L
Deviation	19°	Upper limbs	?

Distance from barrow centre	11.6 m	Lower limbs	?
Azimuth	178°	Ochre	–
Wooden roofing	–	Presence of mat	+
Roofing element orientation		Animal bones	–
Other structural elements	–	Ritual objects	–
Comments			

The grave was sunk into the southern edge of the mound and was partially damaged. *In situ*, there lay only a skull, clavicle and the fragment of a scapula. The skeleton of an adult male rested crouched on its left side. Judging by the shape of the mat lying on the feature bottom, it can be assumed that the pit was rectangular (Fig. 20).

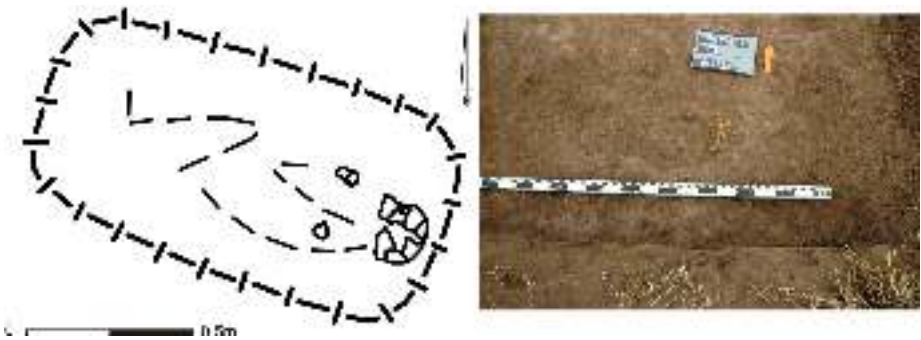


Fig. 20. Porohy, Yampil Region, barrow 3A. Plan of feature 3A/8

Feature 3A/10

Culture	Yamnaya		
Dating	Ki-17383: 3860 ± 160 BP; Ki-17438: 4370 ± 70 BP; Ki-18928: 4070 ± 50 BP; Poz-74393: 4105 ± 35 BP; Poz-81824: 4040 ± 35 BP (human bones)		
Grave pit		Burial	
Structure type	Pit	Sex	Female
Number of burials	1	Age	25-30 years
Size at the level of discovery	2.35 × 1.9 m	Orientation	NW-SE
Size at the level of the bottom	1.7 × 1.4 m	Deviation	8° E
Depth	1.3 m	Arrangement of head	P
Pit orientation	NW-SE	Arrangement of trunk	P
Deviation	4°E	Upper limbs	A
Distance from barrow centre	4.97 m	Lower limbs	2
Azimuth	67°	Ochre	+
Wooden roofing	+	Presence of mat	+
Roofing element orientation	Perpendicular	Animal bones	10 fragments of sheep/goat bones
Other structural elements	–	Ritual objects	Lump of ochre, bone awl (?)
Comments	A circular hearth on the step in the SE of the feature. The bones of the left forearm bear traces of a tattoo.		

The grave was sunk into the eastern part of the mound. The rectangular outline of the pit was captured at a depth of 0.45 m. A step leading to the grave chamber was located at a depth of 0.75 m. In its SE part, the traces of a circular hearth, 0.3 m in diameter, were recorded together with a fill sunk about 0.1 m, which resembled a trough. It consisted of burned earth, ash and charcoals. The step also bore traces of the wooden elements of a perpendicular roofing up to 0.2 m wide and 0.05 m thick.

The grave chamber was regularly rectangular and 0.6 m deep. On its bottom, there lay the skeleton of a female *adultus* crouched on the right side. The bones bore traces of colouring with ochre. Underneath her left elbow and next to the skull, the phalanges and hoofs of a sheep/goat were found. Twenty centimetres W of the right lower limb, a lump of ochre lay. From underneath the chest bones, a bone awl was recovered. On the bones of both forearms, the traces of a tattoo were visible. It consisted of wavy and cross patterns made with a dark blue pigment (Figs. 21-23).

Grave goods

1. Oval lump of red ochre measuring 8 × 5 cm (Fig. 21: 1; 22).
2. Awl with a damaged point made from a fragment of the tubular bone of a sheep/goat. Dimensions: 7 × 1.5 × 0.5 cm (Figs. 21: 3; 22; 23: 3).

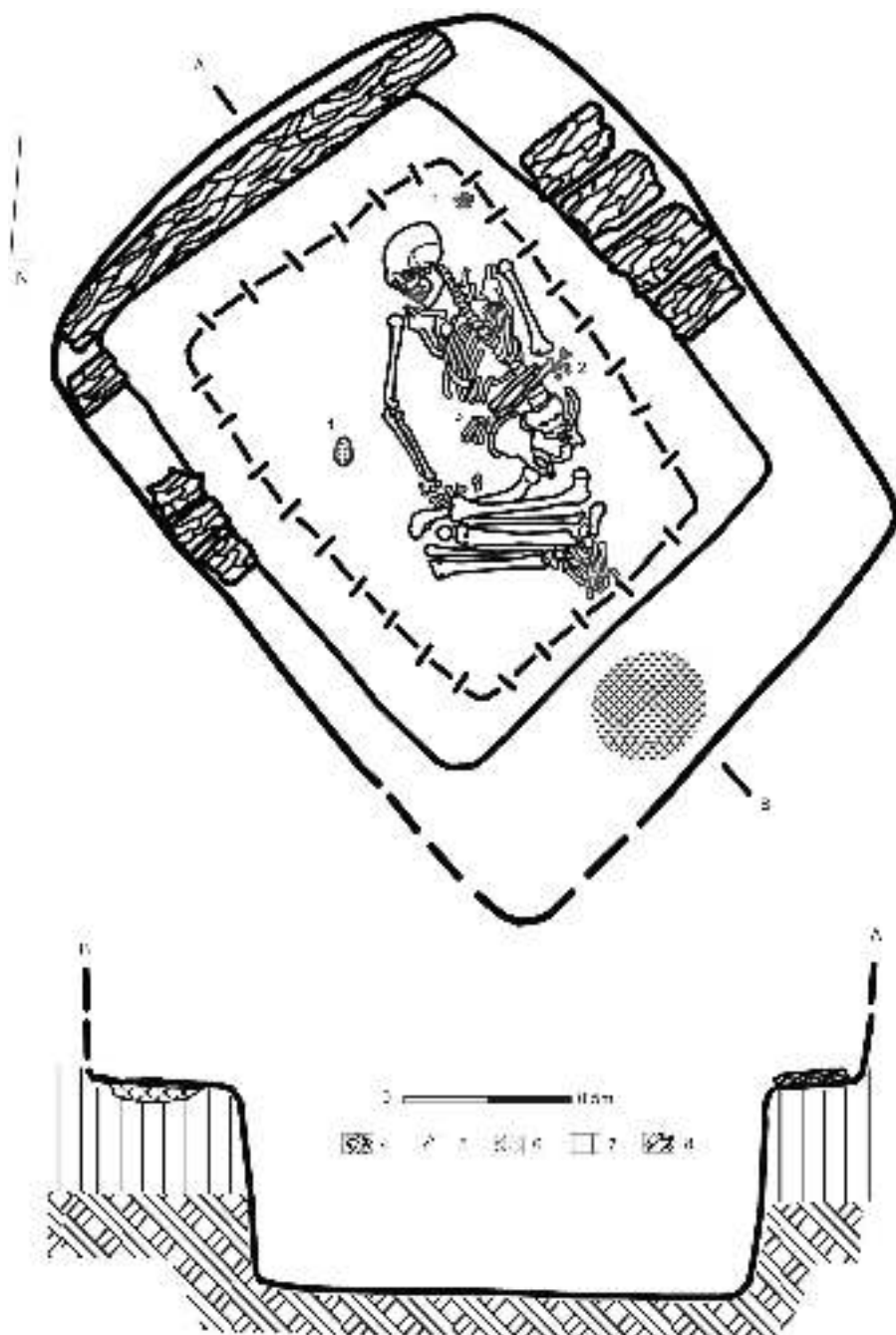


Fig. 21. Porohy, Yampil Region, barrow 3A. Plan and profile of feature 3A/10: 1 – lump of ochre; 2 – phalanges and hoofs of small horned cattle; 3 – cattle bone tool; 4 – wood remains; 5 – outline of mat; 6 – hearth; 7 – layer under the barrow mound; 8 – sterile soil



Fig. 22. Porohy, Yampil Region, barrow 3A. Plan of feature 3A/10



1



2

 0 3cm
 25


3

Fig. 23. Porohy, Yampil Region, barrow 3A. Feature 3A/10 – bones with a colorant: 1 – location in situ; 2 – drawing of a 'tattoo'; 3 – bone tool from the feature

Feature 3A/11

Culture	Yamnaya		
Dating	Poz-47741: 4075 ± 35 BP (human bone)		
Grave pit		Burial	
Structure type	Pit	Sex	Male
Number of burials	1	Age	25-30 years
Size at the level of discovery	2.05 × 1.55 m	Orientation	N-S
Size at the level of the bottom	1.5 × 1.05 m	Deviation	0°
Depth	1.45 m	Arrangement of head	L
Pit orientation	N-S	Arrangement of trunk	Supine
Deviation	0°	Upper limbs	I
Distance from barrow centre	6.01 m	Lower limbs	9
Azimuth	107°	Ochre	+
Wooden roofing	+	Presence of mat	+
Roofing element orientation	Longitudinal	Animal bones	Skull of a goat (without the mandible)
Other structural elements	Four posts in pit corners	Ritual objects	Retouched flake, lump of ochre
Comments	Within the pelvis, two point fragments were discovered.		

The grave was sunk into the eastern part of the mound. The structure consisted of an entrance pit with a step (at a depth of 1.55 m), leading to a grave chamber. The roofing consisted of eight longitudinally placed planks of up to 0.2 m wide, additionally covered with a mat. On the step, in the SE corner (at a depth of 0.8 m), there lay the skull of a domesticated goat, with its muzzle pointing W. The grave chamber was regularly rectangular. In its corners, four holes were exposed left by wooden posts (5 cm in diameter and 8 cm deep). On the pit bottom, there rested the skeleton of a male *adultus*, lying supine with his lower limbs spreading outwards – forming a rhomboid. Underneath the skull, a concentration of ochre was recorded. Within the pelvic girdle, two fragments of a flint point, and at the left arm, a retouched flint flake were found (Figs. 24; 25).

Grave goods

1. Two strongly calcified fragments of a flint arrowhead with a deep, triangular notch (Fig. 24: 1).
2. Retouched flint flake (Fig. 24: 2).
3. Lump of ochre.

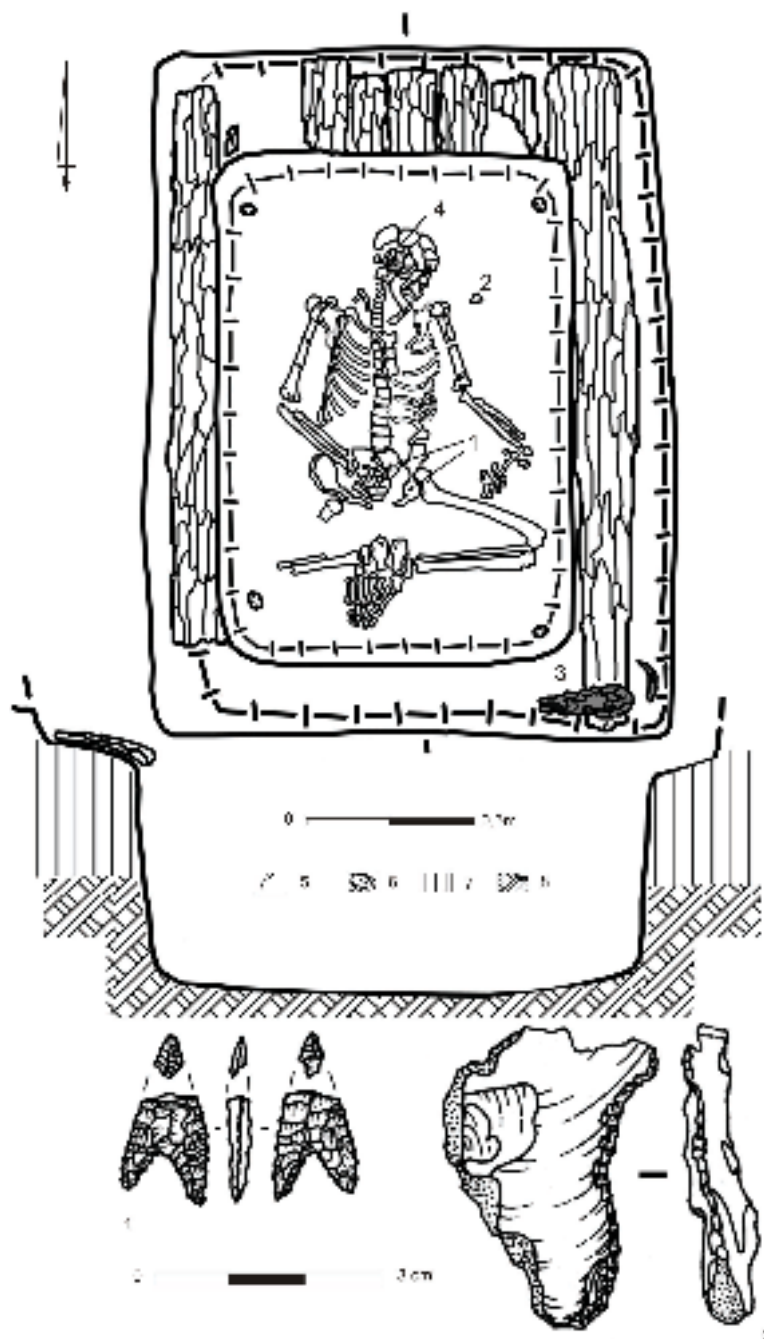


Fig. 24. Porohy, Yampil Region, barrow 3A. Plan and profile of feature 3A/11: 1 – fragments of a flint arrow point; 2 – flint flake; 3 – skull of male goat; 4 – ochre; 5 – outline of mat; 6 – wood remains; 7 – layer under the barrow mound; 8 – sterile soil



Fig. 25. Porohy, Yampil Region, barrow 3A. Plan of feature 3A/11

Feature 3A/12

Culture	Yamnaya		
Dating	Poz-47742: 3985 ± 35 BP (human bone)		
Grave pit		Burial	
Structure type	Pit	Sex	Female
Number of burials	2	Age	22-25 years
Size at the level of discovery	1.8 × 1.3 m	Orientation	SE-NW
Size at the level of the bottom	1.3 × 0.95 m	Deviation	9° E
Depth	1.15 m	Arrangement of head	L
Pit orientation	W-E	Arrangement of trunk	L
Deviation	19°S	Upper limbs	I
Distance from barrow centre	5.45 m	Lower limbs	5
Azimuth	16°	Ochre	+
Wooden roofing	+	Presence of mat	+
Roofing element orientation	Perpendicular	Animal bones	–
Other structural elements	–	Ritual objects	Flint flake, lump of ochre
Comments	Remains of an unborn child on the pelvic bones.		

The grave was sunk into the northern portion of the mound centre. The grave chamber was entered through a step at a depth of about 0.5 m. It supported a roofing built from planks laid perpendicularly to the longer axis of the grave. The chamber was trapezial in shape. On its bottom, there lay the skeleton of a female *adultus* crouched on her left side. Within the abdomen and partially on the pelvic bones, there lay the remains of an unborn child. The woman died during perinatal age. About 12.0 cm E of the skull, a lump of ochre was discovered, measuring 4.0 cm in diameter. At the S pit wall, about 10.0 cm above the bottom, a flint flake was found (Figs. 26; 27).

Grave goods

1. Flint flake
2. Lump of ochre

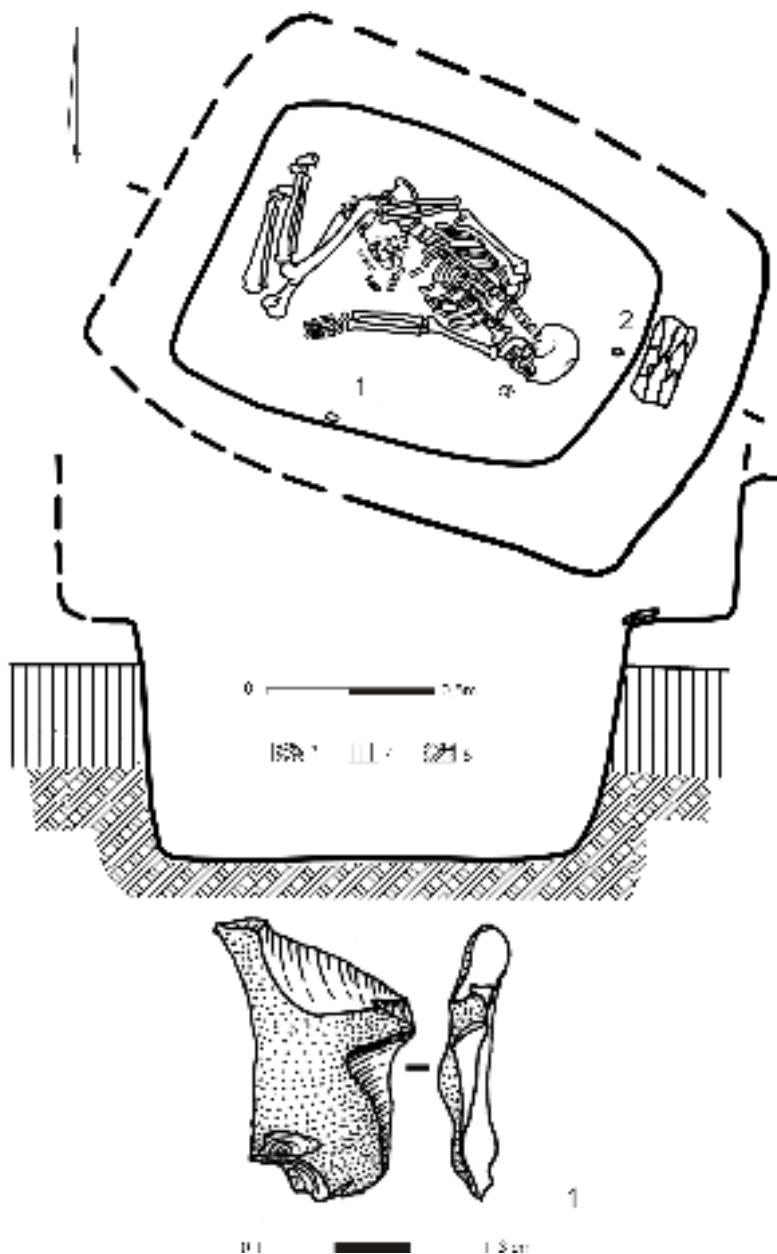


Fig. 26. Porohy, Yampil Region, barrow 3A. Plan and profile of feature 3A/12: 1 – flint flake; 2 – lump of ochre; 3 – wood remains; 4 – layer under the barrow mound; 5 – sterile soil



Fig. 27. Porohy, Yampil Region, barrow 3A. Plan of feature 3A/12.

Feature 3A/13

Culture	Eneolithic?
Dating	
Structure type	Posthole
Size at the level of discovery	?
Size at the level of the bottom	0.6 × 0.4 m
Depth	?
Pit orientation	?
Deviation	?
Distance from barrow centre	6.8 m
Azimuth	334°
Comments	

The posthole was discovered 1.2 m west of feature 6. It was subrectangular and measured 0.3 × 0.5 m. It was 1.95 m deep (Fig. 17: B).

Feature 3A/14

Culture	Eneolithic?		
Dating	Poz-74396: 3674 ±35 BP (human bone)		
Grave pit		Burial	
Structure type	Pit?	Sex	1. ? 2. ?
Number of burials	2	Age	1. Adult 2. Child
Size at the level of discovery	2.65 × 2.1 m	Orientation	
Size at the level of the bottom	2.5 × 2.2 m	Deviation	
Depth	2.2 m	Arrangement of head	1. ? 2. ?
Pit orientation	NW-SE?	Arrangement of trunk	1. ? 2. ?
Deviation	?	Upper limbs	1. ? 2. ?
Distance from barrow centre		Lower limbs	1. ? 2. ?
Azimuth		Ochre	–
Wooden roofing	+	Presence of mat	–
Roofing element orientation	?	Animal bones	1 frag. of deer antler with traces of working, from the fill 5 frag. of deer antler with traces of working, 1 frag. of deer skull, 2 frag. of sheep/goat bones, 6 frag. of bones of unidentified species.
Other structural elements	Lime stones (elements of roofing?)	Ritual objects	–
Comments	The feature was destroyed by a robber trench		

The central feature under the oldest mound was destroyed by a robber trench. The fill was found to contain the fragments of a wooden cover and lime stones (a block measuring 0.50 × 0.30 × 0.15 m was recovered from a depth of 2.0 m). The outline of the pit was irregular and resembled a heart. The S part featured a step (at the level of 1.6 m). At various depths, the bones of an adult individual and skull fragments of a child were found. Other finds included sheep/goat limb bones, two flint flakes, two pottery shards, a stone calcareous lump bearing traces of use (hammerstone?) and a fragment of a deer antler tool (Figs. 10-12).

Grave goods

1. Flint flake (Figs. 11: 4, 7).

2. Fragments of the lip of a large hand-made vessel, ornamented with a corrugated relief strip under the rim. The clay contains temper of crushed ceramics (Fig. 11: 6).

3. Globular hammerstone made of lime stone (Fig. 11: 3).

4. Fragments of a deer antler tool (mattock?) (Fig. 11: 5).

Feature 3A/15

Culture	Yamnaya		
Dating	Ki-17439: 3580 ± 901 BP; Ki-17386: 4010 ± 220 BP (human bones)		
Grave pit		Burial	
Structure type	Pit	Sex	Male
Number of burials	1	Age	25-30 years
Size at the level of discovery	2.05 × 1.85 m	Orientation	E-W
Size at the level of the bottom	1.7 × 1.05 m	Deviation	12° N
Depth	1.35 m	Arrangement of head	L
Pit orientation	W-E	Arrangement of trunk	L
Deviation	11°P	Upper limbs	I
Distance from barrow centre	6.05 m	Lower limbs	5/6
Azimuth	167°	Ochre	+
Wooden roofing	+	Presence of mat	+
Roofing element orientation	Perpendicular	Animal bones	—
Other structural elements	—	Ritual objects	1 flint tool at the level of grave cover
Comments			

The grave was sunk into the southern portion of the mound. Rectangular in shape, at a depth of 0.7 m, it featured a wide step, leading a regularly rectangular grave chamber. The step supported a perpendicular wooden roofing made from planks about 0.2 m wide and covered with a mat. On its NW part, a flint-flake knife lay. On the chamber bottom, the skeleton of a male *adultus* rested crouched on the left side. Under the pelvis, a layer of a yellow organic substance was recorded and measured to be 1.0 cm thick (Figs. 28-30).

Grave goods

1. Flint knife made from a massive, regular blade of semi-transparent Cretaceous flint dark-grey in colour. Regularly retouched on the distal part of both sides. Dimensions: 14 × 3 × 0.7 cm (Fig. 29).

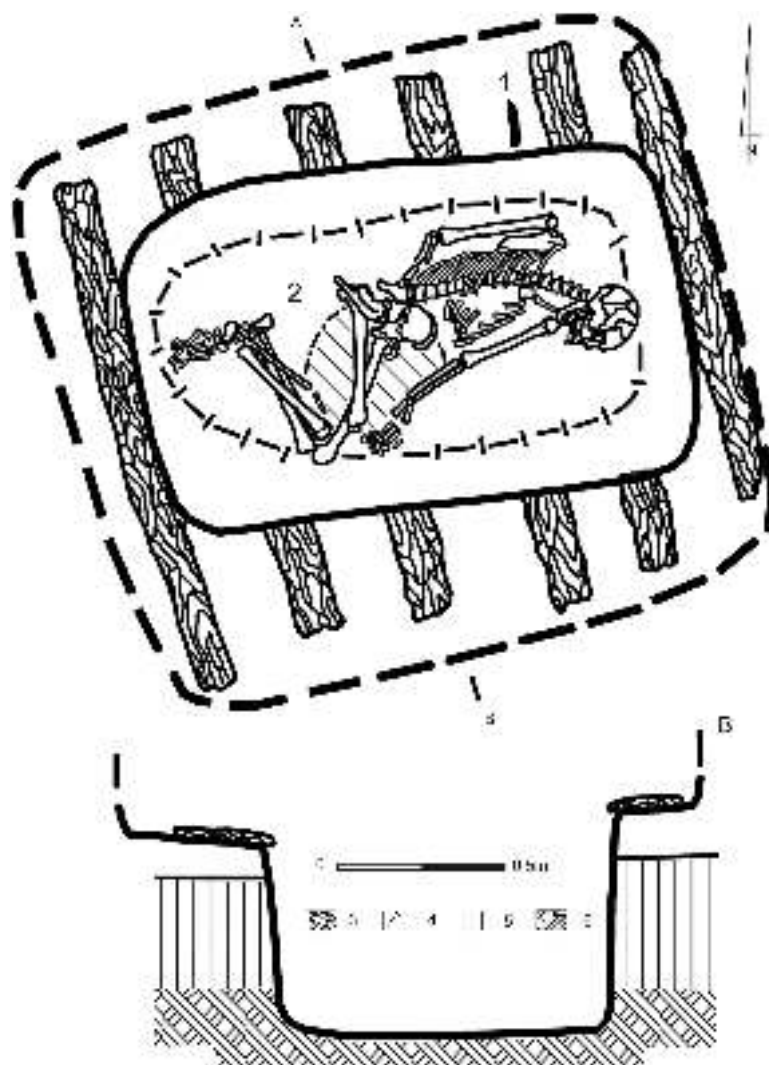


Fig. 28. Porohy, Yampil Region, barrow 3A. Plan and profile of feature 3A/15: 1 – flint blade; 2 – remains of organic matter; 3 – wood remains; 4 – outline of mat; 5 – layer under the barrow mound; 6 – sterile soil

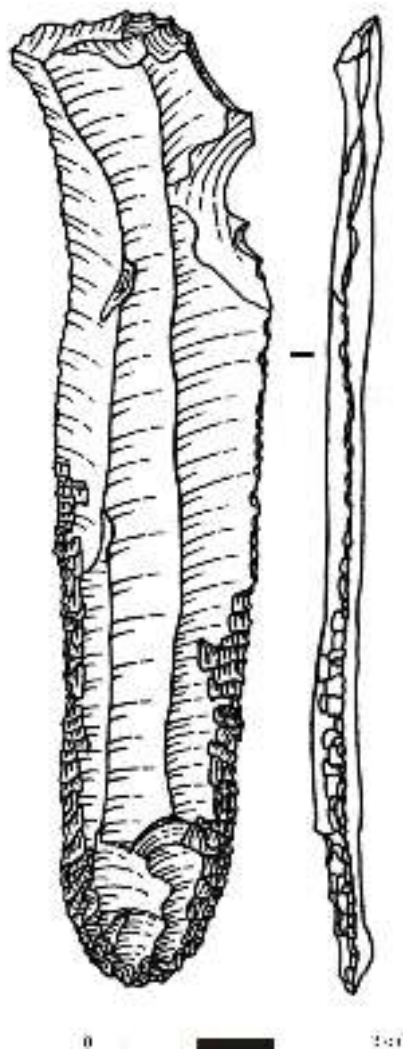


Fig. 29. Porohy, Yampil Region, barrow 3A. Feature 3A/15 – flint blade (localization *see* Fig. 28)



Fig. 30. Porohy, Yampil Region, barrow 3A. Plan of feature 3A/15

Feature 3A/16

Culture	Yamnaya?
Dating	
Structure type	Pit? Hearth?
Size at the level of discovery	?
Size at the level of the bottom	Approx. 2.0 × 1.2 m
Depth	0.7 m
Pit orientation	W-E
Deviation	?
Distance from barrow centre	7.47 m
Azimuth	179°
Animal bones	Sheep/goat bone frag.
Ritual objects	–
Comments	

The feature was discovered at the SW wall of grave 15. Its outline could not be captured. On the bottom, fragments of wooden planks, single sheep/goat bones, a flint flake, ash, and charcoal were discovered (Fig. 31).

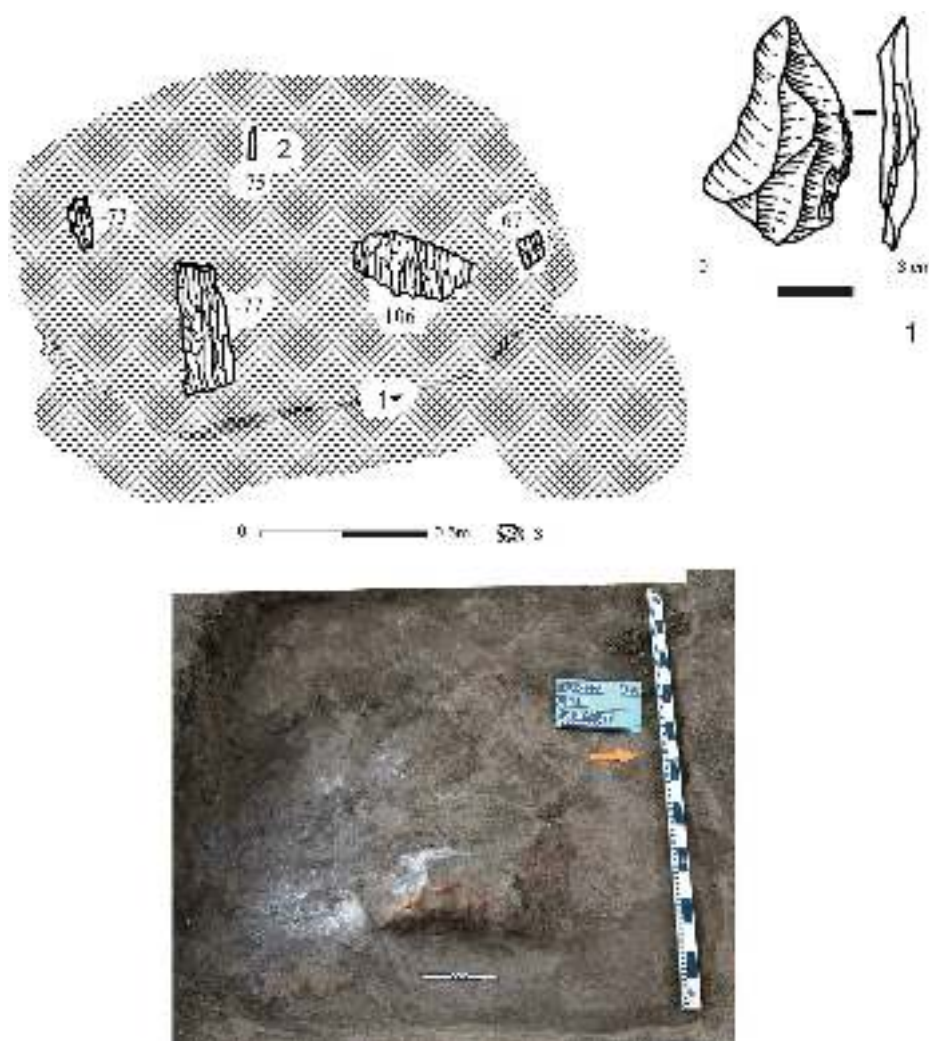


Fig. 31. Porohy, Yampil Region, barrow 3A. Plan of feature 3A/16: 1 – flint flake; 2 – fragments of sheep/goat limb bones; 3 – wood remains

Feature 3A/17

Culture	Yamnaya		
Dating	Poz-47743: 4050 ± 35 BP; Poz-74394: 3930 ± 35 BP (human bones)		
Grave pit		Burial	
Structure type	Pit	Sex	Male
Number of burials	1	Age	30-35 years
Size at the level of discovery	2.05 × 1.9 m	Orientation	NW-SE
Size at the level of the bottom	1.6 × 1.05 m	Deviation	18° N
Depth	1.4 m	Arrangement of head	L
Pit orientation	NW-SE	Arrangement of trunk	L
Deviation	0°	Upper limbs	A
Distance from barrow centre	6.25 m	Lower limbs	5
Azimuth	20°	Ochre	+
Wooden roofing	+	Presence of mat	+
Roofing element orientation	Perpendicular	Animal bones	Two skulls and limb fragments of domesticated goats
Other structural elements	—	Ritual objects	Retouched flake
Comments			

The grave was sunk into the SW part of the mound. At the level of discovery, it was rectangular. A step leading to the grave chamber was located at a depth of 0.75 m. The chamber was regularly rectangular and 0.65 m deep. Its roofing was made from 9-10 wooden planks up to 0.25 m wide. On their remains, in the NW corner of the grave, two skulls of domesticated goats were discovered (male and female; mandibles were missing). Next to the skulls, there also lay fragments of goat limbs, belonging, respectively, to two and three adult individuals. On the pit bottom, the skeleton of an adult male lay crouched on the left side. Under his left scapula, a concentration of ochre was recorded, measuring 0.2 × 0.1 m. At the right arm, a flint flake was found (Figs. 32-34).

Grave goods

1. Retouched flint flake (Fig. 32: 1).
2. Concentration of ochre (originally a lump?) (Fig. 32: 2).

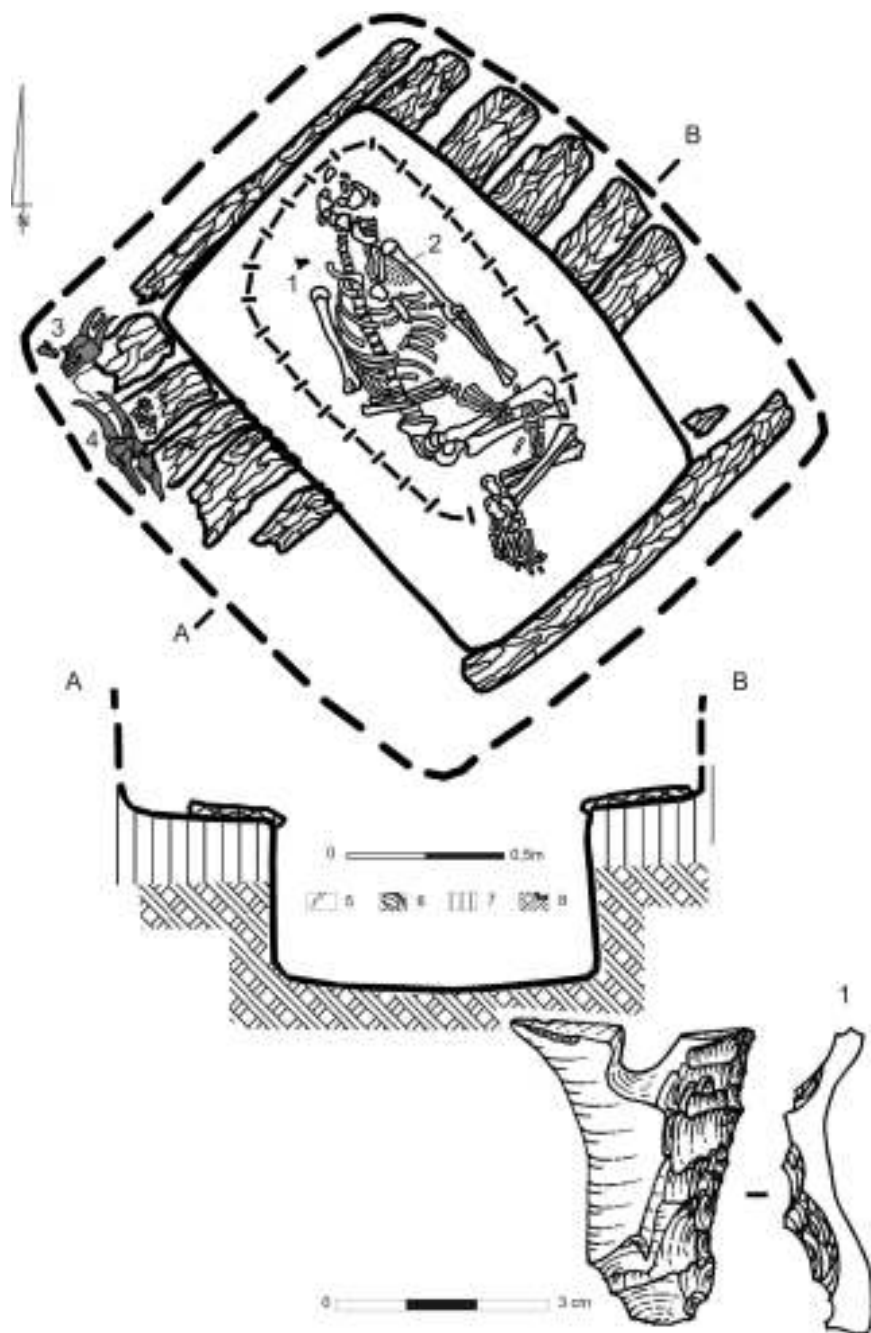


Fig. 32. Porohy, Yampil Region, barrow 3A. Plan and profile of feature 3A/17: 1 – flint flake; 2 – concentration of ochre; 3 – goat skull and hoofs; 4 – male goat skull and hoofs; 5 – outline of mat; 6 – wood remains; 7 – layer under the barrow mound; 8 – sterile soil



Fig. 33. Porohy, Yampil Region, barrow 3A. Plan of feature 3A/17



Fig. 34. Porohy, Yampil Region, barrow 3A. Feature 3A/17: male goat skull and hooves

Feature 3A/18

Culture	Eneolithic (?)		
Dating			
Grave pit		Burial	
Structure type	Pit	Sex	?
Number of burials	1	Age	<i>Infans I</i>
Size at the level of discovery	?	Orientation	SW-NE?
Size at the level of the bottom	0.9 × 0.7 m	Deviation	?
Depth	1.5 m	Arrangement of head	?
Pit orientation	NE-SW	Arrangement of trunk	?
Deviation	15°S	Upper limbs	?
Distance from barrow centre	11.05 m	Lower limbs	?
Azimuth	158°	Ochre	+
Wooden roofing	+	Presence of mat	+
Roofing element orientation		Animal bones	–
Other structural elements	–	Ritual objects	Vessel next to the skull
Comments			

The grave was sunk into the southern part of the mound. The pit was rectangular and had rounded corners. Its fill was found to contain the fragments of wooden roofing elements. In the SW part, a discovery was made of child bone fragments, while in the southern portion, a lump of bright red ochre, measuring 6.0 × 4.0 cm was found. In turn, a concentration of red-brown ochre, 4.0 cm in diameter, was located in the central part. In the NW corner of the feature, a vessel lay (Fig. 35).

Grave goods

1. Small straight-walled vessel with a flat bottom. Its outer surface is even, mat with traces of burnishing. The clay contains temper of crushed ceramics. Dimensions: height – 9.0 cm, lip diameter – 11.0 cm, bottom diameter – 6.0 cm (Fig. 35: 1).

2. Lump of ochre (Fig. 35: 4).

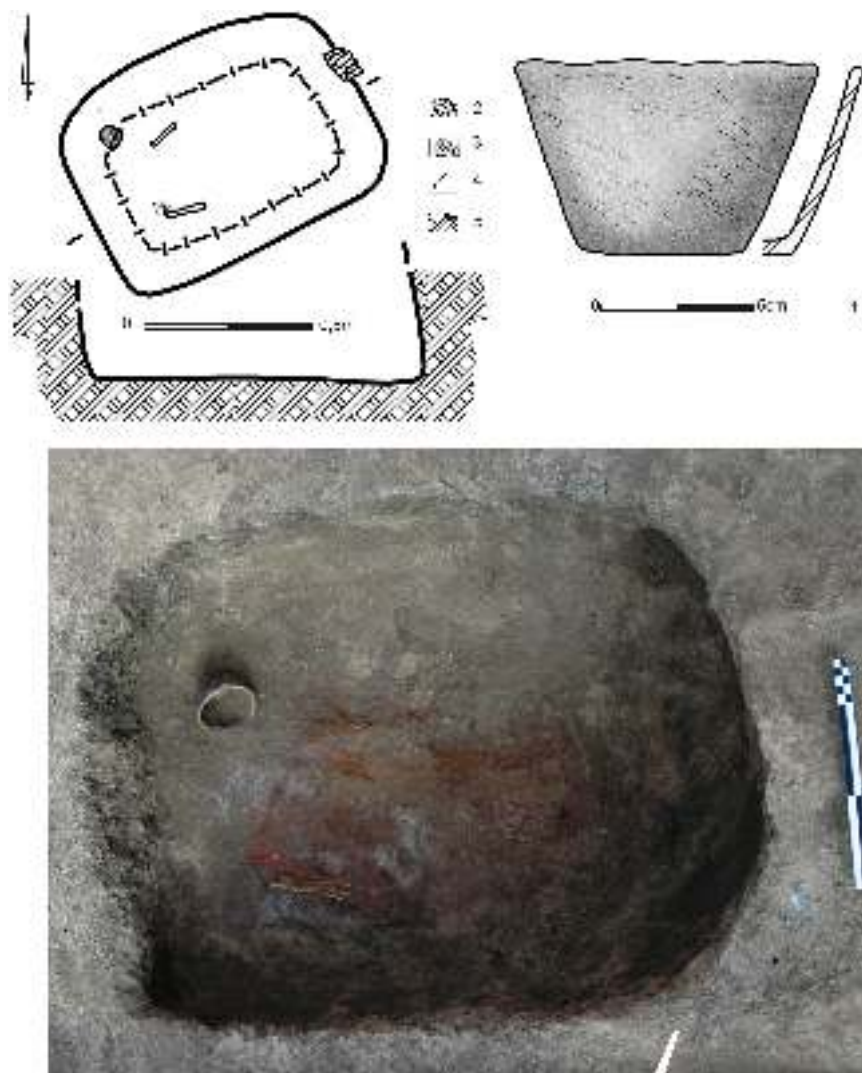


Fig. 35. Porohy, Yampil Region, barrow 3A. Plan and profile of feature 3A/18: 1 – ceramic vessel; 2 – wood remains; 3 – ochre; 4 – outline of mat; 5 – sterile soil

Feature 3A/19

Culture	Yamnaya		
Dating	Poz-70665: 4184 ± 35 BP (human bone)		
Grave pit		Burial	
Structure type	Pit	Sex	
Number of burials	1	Age	Below 18 months
Size at the level of discovery	?	Orientation	W-E
Size at the level of the bottom	0.9 × 0.4 m	Deviation	12° N
Depth	1.35 m	Arrangement of head	Face up
Pit orientation	W-E	Arrangement of trunk	Supine
Deviation	19° S	Upper limbs	F?
Distance from barrow centre	7.7 m	Lower limbs	?
Azimuth	207°	Ochre	+
Wooden roofing	+	Presence of mat	+
Roofing element orientation	?	Animal bones	–
Other structural elements	–	Ritual objects	–
Comments			

The grave was sunk into the SW part of the mound. The pit was subrectangular. Its fill was found to contain wood fragments which were likely the remains of a roofing. On the bottom, there lay supine the skeleton of a child slightly turned to the left side. The skull bones bore traces of colouring with ochre (Fig. 36).

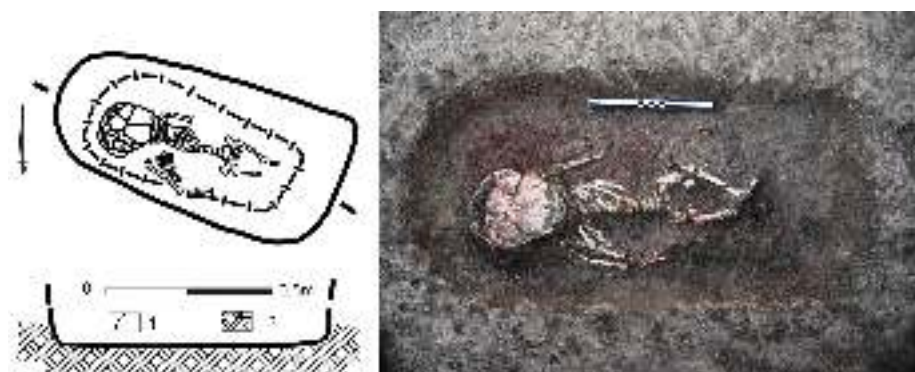


Fig. 36. Porohy, Yampil Region, barrow 3A. Plan and profile of feature 3A/19: 1 – outline of mat; 2 – sterile soil



Fig. 37. Porohy, Yampil Region, barrow 3A. Plan and profile of feature 3A/20: 1 – charcoal; 2 – flint tool; 3 – outline of mat; 4 – ochre; 5 – sterile soil

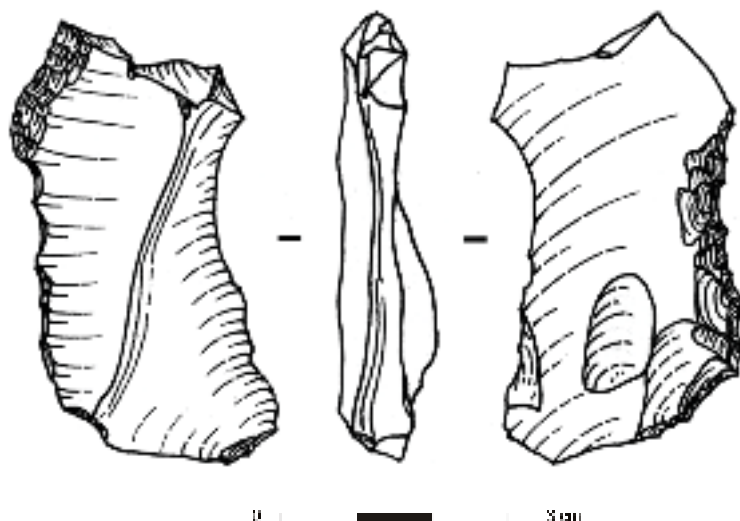


Fig. 38. Porohy, Yampil Region, barrow 3A. Feature 3A/20 – flint tool (localization see Fig. 37)

Feature 3A/20

Culture	Yamnaya		
Dating	Ki-17385: 3820 ± 80 BP; Poz-74397: 4175 ± 35 BP; Poz-47744: 4190 ± 35 BP (human bones)		
Grave pit		Burial	
Structure type	Pit	Sex	1 – Male? 2 – ?
Number of burials	2	Age	1 – 50-55 years 2 – <i>Adultus-Maturus</i>
Size at the level of discovery	2.45 × 1.95 m	Orientation	1 – NW-SE 2 – NW-SE
Size at the level of the bottom	2.30 × 1.75 m	Deviation	1 – 0° 2 – 0°
Depth	2.60 m	Arrangement of head	1 – L 2 – P
Pit orientation	NW-SE	Arrangement of trunk	1 – L 2 – P
Deviation	17° E	Upper limbs	1 – A 2 – ?
Distance from barrow centre	11.58 m	Lower limbs	1 – 5/2 2 – 5?
Azimuth	214°	Ochre	+
Wooden roofing	+	Presence of mat	+
Roofing element orientation	Longitudinal	Animal bones	–

Other structural elements	—	Ritual objects	Retouched flake (?)
Comments			

The grave was sunk into the SW part of the mound. It was accompanied by a spill of yellow loess up to 0.4 m thick. Underneath its western portion, a flint tool was found. The pit was rectangular and its fill contained wooden roofing fragments, suggesting that the roofing had been oriented longitudinally to the longer grave axis. On the pit bottom, a double burial was exposed: a male aged *Maturus-Senilis*



Fig. 39. Porohy, Yampil Region, barrow 3A. Plan of feature 3A/20

lay on the left side and an individual of indeterminate sex aged *Adultus-Maturus* lay on the right side. At the right knee of the skeleton of the male, a concentration of ochre, 5.0 cm in diameter was recorded; another concentration of a similar substance (12.0 cm in diameter) was located between the skulls (Figs. 37-39).

Grave goods

1. Sidescraper on a massive flake (Fig. 38)
2. Two ochre concentrations (Figs. 37: 4, 39)

Feature 3A/22

Culture	Noua		
Dating	Ki-17478: 3260 ± 50 BP; Poz-70666: 3380 ± 35 BP; (human bones)		
Grave pit		Burial	
Structure type	Pit	Sex	Male
Number of burials	1	Age	30-35 years
Size at the level of discovery	?	Orientation	NE-SW
Size at the level of the bottom	1.45 × 0.80 m	Deviation	17° N
Depth	1.05 m	Arrangement of head	L
Pit orientation	NE-SW	Arrangement of trunk	L
Deviation	20° N	Upper limbs	D?
Distance from barrow centre	14.07 m	Lower limbs	1
Azimuth	131°	Ochre	–
Wooden roofing	–	Presence of mat	–
Roofing element orientation		Animal bones	Frag. of a horse spine
Other structural elements	–	Ritual objects	Vessel next to hands and face
Comments			

The feature was sunk into the SE edge of the mound. The pit outline could not be captured. On the bottom, there lay the skeleton of a male crouched on the left side. At the bones of the hands, turned towards the face, there lay the vertebrae and the sacral bone of a young domesticated horse and a broken vessel (Fig. 40).

Grave goods

1. Small barrel-like vessel with a slightly marked lip and bottom. The outer surface is even, mat and has traces of burnishing. The clay contains temper of crushed ceramics. Dimensions: height – 8.0 cm, bottom diameter – 6.0 cm, mouth diameter – 9.0 cm (Fig. 40: 2).

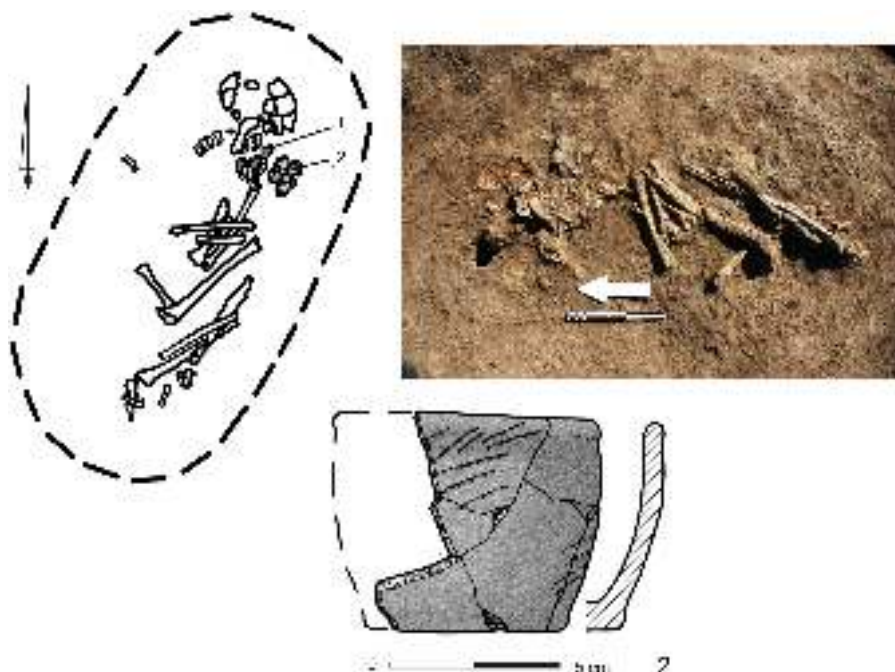


Fig. 40. Porohy, Yampil Region, barrow 3A. Plan and profile of feature 3A/22: 1 – horse sacral bone; 2 – ceramic vessel

3. POROHY 3A: RADIOCARBON CHRONOMETRY

The result of the investigations carried out at Porohy 3A is the documentation of a barrow ceremonial-funeral site set up (as can be judged from the horizontal distribution pattern, stratigraphy and funeral typo-chronological evidence) at the period of transition from the Eneolithic to the Early Bronze Age – in the late 4th and early 3rd millennia BC. Most likely this was expanded later, namely in the first half of the 3rd millennium BC by Early Bronze YC populations only to be converted into a NC necropolis around the middle of the 2nd millennium BC.

The study of the radiocarbon chronometry of the ceremonial-funeral centre made use of 25 bone samples taken from graves. The results and their interpretation standards as far as comparative analyses are concerned have been presented in a separate paper devoted to the study of the radiocarbon chronometry of all Yampil ceremonial centres, associated with ‘barrow cultures’ related to the Eneolithic and the Bronze Age [Goslar *et al.* 2015]. The conclusions drawn there and concerning the Porohy centre can be summarized as follows:

Stage I = Eneolithic/Early Bronze barrow? (features 3A/7, 3A/14, 3A/18 and possibly 3A/6 and 3A/13) most likely built in the late 4th and early 3rd millennia BC (a credible 14C measurement is not available).

Stage II = YC barrow (features 3A/1, 3A/2, 3A/10, 3A/11, 3A/12, 3A/15, 3A/16, 3A/17, 3A/19 and 3A/20) built ca. 2760-2515 BC.

Stage III = NC graves (features 3A/3, 3A/5, 3A/8 and 3A/22) dug into the mound and at the foot of the YC barrow ca. 1713-1464 BC.

When evaluating the scope of the above chronometric findings concerning the ceremonial-funeral centre, it is worthwhile to take note of data collection limitations encountered in exploring the site surface and its neighbouring ‘ritual concepts’ (barrows). First and foremost, any interpretation is hampered by the destruction of the barrow top in historical times (between 1933 and 2011 to mention a brief period, the barrow was levelled off by as much as 2.50 m). This fact greatly restricts any credible stratigraphic analysis of ‘younger YC mounds’, representing stage II of the ‘barrow architecture’ development. Secondly, it is not possible to place the Porohy 3A (locality of cult) in the methodologically corresponding chronology of the “ceremonial centre *Porohy – Tsari*” [see Ch. 1; Potupczyk, Razumov 2014: Fig. 1.2.:2; Harat *et al.* 2014: 70ff].

4. POROHY CEREMONIAL CENTRE: RITUAL AND TAXONOMIC-TOPOGENETIC ASSIGNMENT

The analysis of the horizontal distribution pattern and stratigraphy makes for distinguishing within the feature a sequence of two barrow cemeteries and a flat cemetery sunk into its edge and culmination. The cemeteries are linked to the communities of the Eneolithic (?) and the Early and Late Bronze Ages.

The initial taxonomic assignment of the features, presented in the field investigation report [Razumov *et al.* 2012; see also Razumov *et al.* 2012b], relied on cultural classifications by S. Razumov made after consultations in the Dept. of the Eneolithic and Bronze Age, Ukrainian National Academy of Sciences, Kyiv. The report mentioned two taxa: YC and the Babyno culture (BC). Later corrections, introduced after 2014, relied on an expanded range of typo-chronologically admissible cultural classifications. The analyses focused on the perspectives of ritual references concerning funerary architecture and funeral and post-funeral behaviour in an attempt to distinguish an ‘older’ – ‘Eneolithic’ – level in the set of features/graves classified as ‘Yamnaya’ (S.V. Ivanova) and exclude from the identification framework ‘Babyno-type’ features in favour of including NC ones (V.I. Klochko) [see Ivanova, Toshev 2015; 2015a].

The radiocarbon chronometry of burials recorded on the Porohy 3A site has not always corroborated the corrections made (*see* Ch. 3: no diagnostic date is available for stage I, in particular for feature 3A/14).

4.1. STAGE I: ENEOLITHIC/EARLY BRONZE AGE

By studying profile baulks, two major construction phases of barrow 3A in Porohy were distinguished. To determine the time when the oldest mound was built (*see* stage I) – erected over feature 3A/14 – is difficult due to the secondary destruction of the central feature and the major transformation of the older structure in the course of the later stages of barrow modification. To make matters worse, there is no conclusive evidence such as movable finds and fully diagnostic manifestations of funerary rites or any credible radiocarbon measurements. An attempt to date bones from the fill of grave 3A/14 produced a result most likely unrelated to the time of construction of this feature [Goslar *et al.* 2015]. The presence of a stone cromlech as well as special ‘ritual’ structures (‘postholes’ in the N part of the mound) find analogies in barrows dated to the Eneolithic [Yarovoy 2001; Potemkina 2004]. The stratigraphic arguments referring to the spills of yellow loess clearly showed that, pointing to the north, two large postholes (features 3A/6 and 3A/13) had been sunk into the stratum of the older mound. Hence, they were undeniably younger than grave 3A/14. Whereas their relationship to the burial related to the building of the younger mound (over grave 3A/2?) is harder to define. The wooden structures could have been connected to the presence of the cromlech or possibly to the erection of the stone stela, too (at the time of discovery located at the fringe of the older mound, an azimuth of about 30 degrees).

A similar stratigraphic situation was recorded in the case of barrow 1 in Mocra, Rybnița Region, also in Podolia, where postholes were sunk into the edge of the first mound [Kashuba *et al.* 2001-2002: 220]. In this case, too, the structures of central graves and the barrow itself do not support its linking with any certainty to either the YC or the groups of the Eneolithic. With the Porohy barrow being dated to the very beginning of the 3rd millennium BC, some syncretism of cultural traditions, however, can also be assumed and the presence of a rite with some elements of Eneolithic traditions in the older YC phase can be expected as well [Rassamakin 2013: 127-130; Manzura 2003-2004; Ivanova 2015: 285, 286]. These questions have been discussed mostly in connection with the assessment of the role of the Usatovo group/culture in the formation of the YC variety from the north-western Black Sea Coast [Zbenovich 1974; Yarovoy 1985; Alekseeva 1992].

The height of the older mound in its central part was 0.5-0.7 m. Its upper surface was levelled off. This shape is encountered in the case of some Eneolithic

barrows [see Klochko *et al.* 2015]. Alternatively, it could have been the result of a partial levelling off and remodelling preceding the superimposition of the second mound (which is less likely). Originally, the barrow was oval in shape (elongated along its N-S axis) and its maximum diameter was 24.0 m. On the recorded profiles, a ditch, 5.0 m wide and 0.4 m deep, is seen to have encircled the barrow and must have been related to the construction of the barrow mound.

Grave 14 was almost completely destroyed by a modern-day robber trench, most likely at the end of the 20th century. Around it, despite the fact that the original level has been preserved quite well, no spills of yellow loess have been recorded, which must have been left behind after the pit had been dug. Hence, it is considered to hold the oldest chronological position after taking into account other stratigraphic considerations and the very depth of the pit. The fill of feature 3A/14 was found to contain single human bones. Their anthropological analysis showed them to be the bones of a child and an adult individual. Some of these bones may have come from other burials destroyed by the robber trench, that is above all from grave 2 (burial of an adult male). First of all, to the oldest burial, the single bones of a child could be linked (all anthropological references in this paper are taken from Lytvinova *et al.* 2015). This question can possibly be explained in the future using archaeometric analyses.

The fill of feature 14 yielded also two lip fragments of a large pot with a relief strip at the lip edge. The technological characteristics of this vessel, including its thick walls and a large size, suggest its Eneolithic provenance (phase C/II of the Tripolye culture, the Gordinești/Kasperovtsy – Horodiște/Erbičeni complex?). A link of this type of pottery to the central grave cannot be excluded. The other objects from the fill (deer and sheep/goat bone fragments, fragment of a deer antler tool, and a hammerstone) do not provide any arguments in the attempts to make cultural-chronological distinctions or concretizations.

The child pit grave 3/18, located on the southern fringe of the oldest mound, is connected with the Eneolithic too. Its structural characteristics and depth show that the grave was sunk into the original ground level, prior to the building of the barrow. This situation has analogies on other Late Eneolithic sites such as Pidlisivka [Klochko *et al.* 2015a], Severynivka, barrow 2 [Harat *et al.* 2014] and Bursuceni [Yarovoy 1978]. From grave 3A/18, a small conical vessel was recovered. This form is encountered in both YC features and older ‘Eneolithic’ graves [see Der-gachev 1986: 51, Fig. 11: 1-10; Yarovoy 1985: 85, 86, Fig. 20: 1; Ivanova 2010, Figs. 3.40, 3.41].

4.2. STAGE II – EARLY BRONZE AGE (YAMNAYA CULTURE)

Central grave. Located in the central part of the barrow, grave 3A/2 was damaged by a robber trench. For this reason, it is hard to establish the details of its structure and the burial arrangement. Nevertheless, what could be recorded includes skull fragments and those of an upper limb together with the right portion of the shoulder girdle of an adult individual (probably male), a mat of organic raw material and the traces of colouring the skeleton with ochre. These traits and the obtained radiocarbon measurement argue strongly in favour of associating grave 3A/2 with the YC complex. The outline of the feature was barely visible, but most likely it was a simple pit without a step. The characteristics of the grave, as well as its location, make the case for considering it the central feature of the younger mound. Due to its advanced levelling off, it is hardly possible to assess the range of successive mound add-ons and their relationship to particular graves.

Graves sunk into the mound. Barrow 3A in Porohy stands out from the *Yampil cluster* as the one with the largest number of YC graves sunk into a mound (11 features). These features were oriented not in relation to the points of the compass, but with their longer axis towards the barrow centre, thus forming *arches encircling the barrow centre* characteristic of the Dniester-Danube YC. Interestingly enough, the principle of orienting the deceased clockwise or anticlockwise depending on their location in the barrow, observed sometimes, has not been kept in this case [Dergachev 1986: 40]. Neither is the concentration of graves in the eastern portion of a mound, found in Porohy, often encountered in the region in question.

A considerable number of YC graves sunk into the strata of the younger mound formed an arch, beginning with postholes 3A/6 and 3A/13 on the northern side. It comprised graves 3A/12, 3A/10, 3A/11, 3A/15/16 and 3A/17. Outside of this arrangement, child grave 3A/19 and features 3A/1 and 3A/20 were left. The laying out of the cemetery may have been accompanied by a barrow enlargement, which however – due to the ploughing away of the mound – could not be established. The arch arrangement of secondarily sunk graves is characteristic of the entire Dniester-Danube area [Shmagliy, Chernyakov 1970: 96; Yarovoy 1985: 57-61; Dergachev 1986: 32].

Clear traces of a mound add-on (of unspecified size) were recorded at feature 20 sunk into the SW fringe of the younger mound. On the N side, it was accompanied by the spill of yellow loess covered next with the layer of the mound. To determine the stratigraphic relationship of this grave to the above-named features, forming an arch, is not possible. Radiocarbon measurements for grave 3A/20 indicate its rather early date – despite its outermost location within the mound.

In terms of structure, grave 1, sunk into the younger mound of the barrow, stood out. The outline of a large excavation was perceptible already from the floor

of surface soil. The grave chamber walls were boarded with longitudinally arranged planks, forming a *chest construction*. The boarding of side walls is a structural element characteristic of Podolia YC graves sunk into mounds. In the Yampil cluster, they were recorded in barrow 2, Porohy (graves 2/4 and 2/6), barrow IV, Prydnistrianske (graves IV/8 and IV/9), with more examples coming from barrows in Okniŭša and Mocra [Manzura *et al.* 1992: 89; Kashuba *et al.* 2001-2002: 220, 221]. In all these cases, graves with such wooden structures represent a younger chronological horizon.

Worthy of attention is the way corpses were arranged in all the YC graves sunk into the younger mound. The position on the side clearly dominated: left (6) or right (3), i.e. the positions classified as group III by Y.V. Yarovoy [1985: 48] and group III by V.A. Dergachev [1986: 37] or consistent with the third tradition, following the slightly different division by Y.Y. Rassamakin [2004; 2013: 116]. Only in one case (grave 11) was the corpse laid on its back. Due to advanced grave destruction, it is not possible to determine how the individual buried in feature 2 was deposited, probably the central feature of the younger mound. The arrangement of the preserved lower limb and scapula suggests that in this case the deceased lay supine. The consistency in laying the deceased on their side is a manifestation of the unity of the burial tradition and, perhaps, a relatively late chronological position of the graves sunk into the barrow [Yarovoy 1985: 52]. Furthermore, this is borne out by the recurrent arrangement of upper limbs, with one hand being placed around the pelvis/waist [types A and I according to Häusler 1974: 11, Abb. 1]. The arrangement was recorded in almost all burials secondarily sunk into the barrow – with the exception of feature 3A/7. In this context, a notable absence is that of extended burials – with both upper limbs straightened and placed along the trunk (type F) – characteristic of the YC, in contrast to other *Yampil barrows* located nearby.

In grave 3A/11, forming part of the arch described earlier, the deceased lay supine with the *lower limbs arranged rhomboidly* and one hand laid on the pelvic bones. This arrangement on the one hand differs from the other burials and, on the other, is characteristic of graves secondarily sunk into mounds both in the *Yampil cluster* and on the entire north-western Black Sea Coast. What also attracts attention in this grave is the presence of additional structural elements, namely posts in pit corners, which are characteristic above all of central graves and cemeteries sunk into mounds associated with earlier phases. Feature 3A/11, therefore, stands out among the other graves in respect of several elements of the burial tradition. However, its location in a tight cluster with several other graves argues against its slightly older chronological position.

Among Porohy 3A features, in terms of structure and corpse arrangement, a clear departure from the recurrent pattern is the burial from grave 3A/7. In it, the corpse was placed on its side with limbs strongly bent at both the hips and knees, i.e. in agreement with the rules of the ‘fourth burial tradition’, which is rare in the

YC rite [Rassamakin 2013: 127]. In Podolia, we know only of two other similar features: grave 1/14 from Klembivka, Yampil district, and grave II/2 from Kuzmin, Kamenka district [Bubulich, Khakheu 2001: 130, Fig. 10: A]. Grave 3A/7, as the only feature from Porohy 3A, holding the burial of an adult individual, had a simple structure: a pit without a step leading to the grave chamber.

Flint artefacts. In grave 3A/15, at the level of a wooden roofing, a knife insert was discovered, which had been made from a regular blade of Cretaceous Dniester flint. Tools of this kind are rarely found in YC graves [Yarovoy 1990: 85, Fig. 37: 2; Agulnikov, Sava 2004: 112], but are a frequent component of CWC inventories, including those from barrows in south-eastern Poland and the upper Dniester drainage basin [Machnik *et al.* 2006: 217, Fig. 18; Włodarczak 2006: 30-32; Libera 2009: 288, 291; Gancarski, Valde-Nowak 2011: 284, Fig. 5]. The occurrence of such a tool in a grave from Porohy 3A may thus testify to contacts between populations living on the upper and middle Dniester [Razumov 2011: 146, 147]. This find is made even more interesting when it is considered that neighbouring barrow 2 in Porohy yielded an amphora typical of the older phase of the CWC [Harat *et al.* 2014: 87, Fig. 2.3.4:9; Ivanova *et al.* 2014: Fig. 4.3.3:1].

Flint artefacts were relatively common finds: they were recovered from six graves. Besides the retouched blade from grave 3A/15 mentioned earlier, these were flake tools: sidescrapers (features 3A/11, 3A/17 and 3A/20), a bifacially retouched arrowhead (feature 3A/11) and flakes (features 3A/1 and 3A/12). Their recurrence in Podolia YC graves proves that individual flakes did not find their way to the fills by chance but were an element of a followed ritual. The arrowhead from grave 3A/11, in turn, found among pelvic bones, indicates that the buried individual was shot and injured. The degree of flint calcification suggests, however, that the injury did not result in death but rather that the injured man lived for quite a long time with the point in his body. The finds of points causing injuries and not being elements of grave goods are frequent in YC graves [Razumov 2011: 73].

Animal bones. The only animal bones deposited in the graves were the remains of small ruminants. In two cases (graves 3A/11 and 3A/17), these were goat skulls (without mandibles), and in one case (grave 3A/10), the phalanges and hoofs of a goat/sheep were found. The skulls were placed in the corners of the wooden roofing of the grave chamber. The bones of a goat/sheep were discovered also in the robber trench in the barrow centre (grave 3A/14). From the latter feature, single deer bones and the fragments of a deer antler tool were recovered as well.

Ochre. A constant element of the funerary rite was the use of ochre. Most skeletons bore traces of this colorant (except for the female deceased from feature 3A/12) and in eight cases, next to the heads of the deceased, its small globular or oval lumps were found.

Mats were discovered in all YC graves (9 burials), but also in three of four NC burials and in one of two graves linked to the Eneolithic. The use of rectangular

mats made of organic substances to line the grave bottom was de rigueur. In some cases, mats were part of the grave chamber roofing as well.

As on other Podolia sites, the traces of the use of fire were also recorded in the form of hearths on the step in features 3A/10 and 3A/16.

The characteristics of the funerary rite outlined above lead to an interesting conclusion as to the chronological position and cultural connections of the studied materials. It is hard to assess the character of two graves exposed in barrow centres (features 3A/2 and 3A/14) due to their advanced destruction. The other YC graves, however, are characterized by the high incidence and domination of the elements that are not encountered or are in a minority in other *Yampil cluster* cemeteries or in the entire Middle Dniester Area for that matter. It can be assumed that the oldest barrow was built towards the end of the Eneolithic or in the very beginning of the Early Bronze Age. Next, it was extended in the older YC phase (feature 3A/2?). The funerary rite observed in the graves sunk into the younger mound indicates their considerably later position. Almost all the deceased were laid in the position on the side. The presence of special grave structures with the equally symptomatic absence of elements characteristic of the older phase argues in favour of the relatively late chronological position. Traits typical of the late – Budzhak – phase are not found, either (as defined by V.A. Dergachev, L.S. Klein or I.T. Cherniakov⁴). On the strength of these arguments, one could try to estimate the age of the cemetery ‘on the barrow’ as going back to the last centuries of the first half of the 3rd millennium BC. Moreover, the recurrence of the funerary rite traits mentioned earlier lends itself to the proposition that the cemetery was laid out according to plan by a single local group of people.

The corroboration of the above observations on the age of Porohy 3A finds by radiocarbon measurements is possible only in part. A major obstacle is the inconsistency of results obtained in the Poznań and Kyiv laboratories [Goslar *et al.* 2015]. For the purpose of comparison with the results for three other *Yampil cluster* sites, the measurements made only in the former laboratory can be used. Pointing to the years ca. 2760-2515 BC, the measurements in general are consistent with the above suggestion. They are clearly younger than the oldest results obtained for the barrows in Prydnistrianske 1 and Klembivka 1. Surprisingly early, the age of graves 3A/19 and 3A/20 determined on their basis contrasts with opinions associating these features with the younger stages of the functioning of the Porohy 3A cemetery. Leaving these results aside, only the age obtained for grave 2 (stratigraphically the oldest) is quite close to the dating of the sub-barrow features from Pidlisivka 1 – which may be a correct conclusion just as well. The other graves from Porohy 3A may be referred to the years from the interval of ca. 2650-2500 BC, i.e. to the beginnings of the ‘Budzhak stage’ in the nomenclature used for the north-western Black Sea Coast.

⁴ For a broader discussion see: Ivanova, Toshev 2015; 2015a.

4.3. STAGE III – LATE BRONZE AGE (NOUA CULTURE)

Into the central and southern parts of the younger mound, 2nd-millennium-BC graves, linked to the NC, were sunk (features 3A/3 – central part; features 3A/5, 3A/8, 3A/22 – southern part). These are the northernmost graves of this culture discovered to this day; most NC finds come from the opposite bank of the Dniester.

In the ‘conservator report’, feature 3A/3 was assigned to the YC, while features 3A/5, 3A/8 and 3A/22 were classified as belonging to the BC [Razumov *et al.* 2012]. This debatable, in our opinion, assessment was elaborated on in the first ‘fragmentary publication’ of the necropolis in question concerning burial 3A/5 [Razumov *et al.* 2012a].

NC graves differ from others above all in the degree of limb bending and can hardly be told apart from BC and Sabatinovka culture features, especially in the case of burials deprived of any grave goods, which form a majority of finds [Krushelnitska 2006: 98-102]. The similarity between these burials follows probably from the role of the BC in the development of NC funerary rite, which was stressed by most researchers. In our opinion, difficulties in distinguishing between NC and Sabatinovka culture finds indicate their cultural closeness. Probably, they ought to be considered as two varieties of the same culture, which diverged in order to adapt to different natural-climatic zones: NC to the forest-steppe and foothills, while the Sabatinovka culture to the steppe. The discovery of NC graves in the Yampil district of the Vinnitsa *Oblast* shows that the sites of this culture are located north of the Dniester not only on its upper [Krushelnitska 2006] but also middle course.

The cemeteries in the ‘*Tsari* ceremonial complex’ in Porohy are located in a particularly prominent type of landscape, owing to its immediate proximity to the Dniester. This location may explain the intensity with which they were used for ritual purposes in the Late Eneolithic, and Early and Late Bronze Ages. They were exposed, however, when they were already in the state of advanced devastation, which greatly hampered archaeometric observations and prevented the authors from continuing their interpretations. A number of local, ‘incidental ritual types of behaviour’, one of them being a very rare custom of tattooing the limb bones of the deceased (feature 3A/10), should provoke further, parallel research.

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REFERENCES

Agulnikov S., Sava E.

2004 *Issledovaniya kurganov na levoberezhe Dnestra*. Kishinev.

Alekseeva I.L.

1992 *Kurgany epokhi paleometalla v Severo-Zapadnom Prichernomore*. Kyiv.

Bubulich V., Khakheu V.

2001 *Issledovaniya kurganov v Kamenskom rayone na levoberezhe Srednego Dnestra*. In: N.A. Ketraru (Ed.) *Severnoe Prichernomore ot eneolita k antichnosti*, 112-148. Tiraspol.

Dergachev V.A.

1986 *Moldaviya i sosednie territorii v epokhu bronzы*. Kishinev.

Gancarski J., Valde-Nowak P.

2011 Inwentarze „grobowe” kultury ceramiki sznurowej w nasypach kurhanów w Karpatach. In: H. Kowalewska-Marszałek, P. Włodarczak (Eds) *Kurhany i obrządek pogrzebowy w IV-II tysiącleciu p.n.e.*, 279-289. Kraków, Warszawa.

Goslar T., Klochko V.I., Koško A., Włodarczak P., Żurkiewicz D.

2015 Chronometry of Late Eneolithic and ‘Early Bronze’ cultures in the Middle Dniester area: investigations of the Yampil Barrow Complex. In: A. Koško (Ed.) *Podolia as a Cultural Contact Area in the 4th/3rd-2nd Millennium BC*. *Baltic-Pontic Studies* 20: 256-291.

Harat K., Potupczyk M., Razumow S.

2014 Charakterystyka źródeł archeologicznych pozyskanych w latach 1984-1993. In: A.Koško, M. Potupczyk, S. Razumow (Eds) *Naddniestrzańskie kompleksy cmentarzysk kurhanowych społeczności z III i z pierwszej połowy II tysiąclecia BC w okolicach Jampola, obwód winnicki. Z badań nad północno-zachodnią rubieżą osadnictwa społeczności kręgu kultur „wczesnobrzązowych” strefy pontyjskiej*. *Badania z lat 1984-2010. Archaologia Bimaris – Monografie* 6, 45-204. Poznań.

Häusler A.

1974 *Die Gräber der älteren Ockergrabkultur zwischen Ural und Dnepr*. Berlin.

Ivanova S.V.

- 2000 *Naseleennia yamnoyi kulturno-istorychnoyi spilnoty Pivnichno-Zakhidnoho Prychornomoria (doslid sotsiologichnoyi interpretatsiyi pokhovalnykh pamiatok)*. Kyiv.
- 2013 Kulturno-istoricheskie kontakty naseleniya Severo-Zapadnogo Prichernomoria v rannem bronzovom veke: Zapad-Vostok. Kulturno-istoricheskie kontakty naseleniya. *Stratum plus* 2: 158-248.
- 2015 Protobudzhakskiy gorizont Severo-Zapadnogho Prichernomoria. *Stratum plus* 2: 275-294.

Iwanowa S.V., Koško A., Włodarczak P.

- 2014 Komponent tradycji kultur ceramiki sznurowej. Amfory w północno-zachodnio-nadczarnomorskich grobach kultury jamowej. In: A. Koško, M. Potupczyk, S. Razumow (Eds) *Naddniestrzańskie kompleksy cmentarzysk kurhanowych społeczności z III i z pierwszej połowy II tysiąclecia BC w okolicach Jampola, obwód winnicki. Z badań nad północno-zachodnią rubieżą osadnictwa społeczności kręgu kultur „wczesnobrązowych” strefy pontyjskiej. Badania z lat 1984-2010. Archaeologia Bimaris – Monografie* 6, 351-386. Poznań.

Ivanova S.V., Toshev G.N.

- 2015 Late Eneolithic and Bronze Age prologue Pontic societies. Forest-steppe Middle Dniester and Prut drainage basins in the 4th/3rd-2nd millennium BC: A history of investigations. In: A. Koško (Ed.) *Podolia as a Cultural Contact Area in the 4th/3rd-2nd Millennium BC. Baltic-Pontic Studies* 20: 7-39.
- 2015a The Middle-Dniester cultural contact area of early metal age societies. The frontier of Pontic and Baltic drainage basin in the 4th/3rd-2nd millenium BC. In: A. Koško (Ed.) *Podolia as a Cultural Contact Area in the 4th/3rd-2nd Millennium BC. Baltic-Pontic Studies* 20: 406-424.

Jachimowicz K.

- 2015 *Analiza przestrzenna kurhanów kultury grobów jamowych z okolic Jampola, Ukraina* (held in the archives of Adam Mickiewicz University in Poznań).

Kashuba M.T., Kurchatov S.Y., Scherbakova T.A.

- 2001-2002 Kochevniki na zapadnoy granitse Velikoy stepi (po materialam kurhanov u s. Mocra). *Stratum plus* 4: 180-252.

Klochko V.I., Koško A., Potupchyk M.V., Włodarczak P., Żurkiewicz D., Ivanova S.V.

- 2015 Tripolye (Gordinești group), Yamnaya and Catacomb culture cemeteries, Prydnistryanske, site 1, Yampil Region, Vinnitsa Oblast: an archaeometric and chronometric description and a taxonomic and topogenetic discussion. In: A. Koško (Ed.) *Podolia as a Cultural Contact Area in the 4th/3rd-2nd Millennium BC. Baltic-Pontic Studies* 20: 183-255.

Klochko V.I., Koško A., Razumov S.M., Włodarczak P., Żurkiewicz D.

- 2015a Eneolithic, Yamnaya, Catacomb and Babyno culture cemeteries, Pidlisivka, barrow 1, Yampil Region, Vinnitsa Oblast: archaeometry, chronometry and taxonomy. In: A. Koško (Ed.) *Podolia as a Cultural Contact Area in the 4th/3rd-2nd Millennium BC. Baltic-Pontic Studies* 20: 40-77.

Koško A.

- 2011 Z badań nad kontekstem kultur wczesno brązowych strefy pontyjskiej w rozwoju społeczności środkowoeuropejskich obszaru dorzeczy Wisły w III tys. BC. In: U. Stankiewicz, A. Wawrusiewicz (Eds) *Na rubieży kultur. Badania nad okresem neolitu i wczesną epoką brązu*, 183-194. Białystok.

Koško A., Potupczyk M., Razumov S. (Eds)

- 2014 *Naddniestrzańskie kompleksy cmentarzysk kurhanowych społeczności z III i z pierwszej połowy II tysiąclecia BC w okolicach Jampola, Oblast Winnica. Z badań nad północno-zachodnią rubieżą osadnictwa społeczności kręgu kultur „wczesnobrązowych” strefy pontyjskiej. Badania z lat 1984-2010. Archaeologia Bimaris – Monografie* 6. Poznań.

Koško A., Razumov S.

- 2014 Cele i metody badań terenowych. In: A. Koško, M. Potupczyk, S. Razumov (Eds) *Naddniestrzańskie kompleksy cmentarzysk kurhanowych społeczności z III i z pierwszej połowy II tysiąclecia BC w okolicach Jampola, obwód winnicki. Z badań nad północno-zachodnią rubieżą osadnictwa społeczności kręgu kultur „wczesnobrązowych” strefy pontyjskiej. Badania z lat 1984-2010. Archaeologia Bimaris – Monografie* 6, 41-44. Poznań.

Krushelnitska L.

- 2006 *Kultura Noa na zemliakh Ukrayiny*. Lviv.

Libera J.

- 2009 Materiały krzemienne z badań kurhanów kultury ceramiki sznurowej na Grzędzie Sokalskiej. In: J. Machnik, J. Bagińska, W. Koman, *Neolityczne kurhany na Grzędzie Sokalskiej w świetle badań archeologicznych w latach 1988-2006*, 279-302. Kraków.

Litvinova L.V., Łukasik S., Żurkiewicz D., Gwizdała M., Chyleński M., Mamström H., Jakobsson M., Juras A.

- 2015 Anthropological description of skeletal material from the Dniester Barrow-Cemetery Complex, Yampil Region, Vinnitsa Oblast (Ukraine). In: A. Koško (Ed.) *Podolia as a Cultural Contact Area in the 4th/3rd-2nd Millennium BC. Baltic-Pontic Studies* 20: 292-335.

Machnik J., Pavliv D., Petehyryč V.

- 2006 Recapitulation of results of the archaeological research and outline of the history of the earliest settlement on the Sambir upland (including the Strvjaž River basin) and the Drohobyč upland. In: J. Machnik (Ed.) *Environment and man at the Carpathians foreland in the upper Dniester catchment from Neolithic to Early Mediaeval period, Prace Komisji Prehistorii Karpat PAU* 3, 228-243. Kraków.

Manzura I.V.

- 2003-2004 Severnoe Prichernomore v eneolite i bronzovom veke: stupeni kolnizatsii. *Stratum plus* 2/2003-2004: 63-85.
- 2010 „Vytyanutyje” pogrebeniya epokhi eneolita v Karpato-Dnestrovskom Regione. *Tyragetia. Serie nouă* 4 (1): 35-47.

Manzura I.V., Klochko E.O., Savva E.N.

- 1992 *Kamenskie kurgany*. Kishinev.

Potemkina T.M.

- 2004 Osobennosti struktury sakralnogo prostranstva eneoliticheskikh kurhanov so stolbovymi konstruktsiyami (po materialam Severnogo Prichernomoria). In: A.N. Gey (Ed.) *Pamiatniki arkheologii i drevnego isskusstva Evrazii*, 214-250. Moskva.

Potupczyk M., Razumow S.

- 2014 Zgrupowanie cmentarzysk kurhanowych w rejonie jampolskim. In: A. Koško, M. Potupczyk, S. Razumow (Eds) *Naddniestrzańskie kompleksy cmentarzysk kurhanowych społeczności z III i z pierwszej połowy II tysiąclecia BC w okolicach Jampola, obwód winnicki. Z badań nad północno-zachodnią rubieżą osadnictwa społeczności kręgu kultur „wczesnobrązowych” strefy pontyjskiej. Badania z lat 1984-2010. Archaeologia Bimaris – Monografie* 6, 35-39. Poznań.

Rassamakin Y.Y.

- 1994 The Main Directions of the Development of Early Pastoral Societies of the Northern Pontic Zone: 4500-2450 BC (Pre-Yamnaya Cultures and Yamnaya Culture). In: A. Koško (Ed.) *Nomadism and Pastoralism in the Circle of Baltic-Pontic Early Agrarian Cultures: 5000-1650 BC. Baltic-Pontic Studies* 2: 29-70.

- 2013 From the Late Eneolithic period to the Early Bronze Age in the Black Sea steppe: what is the Pit Grave Culture (late fourth to mid-third millennium BC)? In: V. Heyd, G. Kulcsár, V. Szeverényi (Eds) *Transition to the Bronze Age. Interregional interaction and socio-cultural change in the third millennium BC. Carpathian Basin and neighbouring regions*, 113-138. Budapest.
- Razumov S.M.
- 2011 Flint Artefacts of Northern Pontic Populations of the Early and Middle Bronze Age: 3200-1600 BC. *Baltic-Pontic Studies* 16.
- Razumov S.M., Koško A., Karnaukh E.G.
- 2012a *Doslidzhennia kurhanu bilia s. Porohy Yampilskoho rayonu Vynytskoy Oblasti* (held in the archives of IA NANU). Kyiv.
- Razumov S.M., Lysenko S.D., Koško A.
- 2012b Babinskoe pogrebenie s chashey u s. Porogi na Dnestre. In: O.I. Hurzhiy et al. (Eds) *Arkasivski chytannia: materialy II Mizhnarodnoyi naukovopraktychnoyi konferentsiyi*, 84-87. Mykolayiv.
- Shmagliy N.M., Chernyakov I.T.
- 1970 *Kurgany stepnoy chasti mezhdurechia Dunaya i Dnestra. Materialy po arkheologii Severnogo Prichernomoria* 6. Odessa.
- Simonenko A.V., Lobay B.I.
- 1991 *Sarmaty Severo-Zapadnego Prichernomoria v I v. n.e.* Kyiv.
- Sudnik-Wójcikowska B., Moysienko I.I., Dembicz I., Galery H., Rowińska A., Zachwatowicz M.
- 2013 *Kurhany na „Dzikich Polach” – dziedzictwo kultury i ostoja ukraińskiego stepu*. Warszawa.
- Włodarczak P.
- 2006 *Kultura ceramiki sznurowej na Wyżynie Małopolskiej*. Kraków.
- Yarovoy E.V.
- 1978 *Otchet o polevykh issledovaniakh eneoliticheskoy archeologicheskoy ekspeditsii v 1977 godu* (held in the Archaeological Archives of National Museum of Archaeology and History of Moldova, No.124). Kishinev.
- 1985 *Drevneyshie skotovodcheskie plemena yugo-zapada SSSR (klassifikatsiya pogrebalnogo obriada)*. Kishinev.
- 1990 *Kurgany epokhi eneolita-bronzy Nizhnego Podnestrovia*. Kishinev.
- 2001 Eneoliticheskie sviatilischay antropomorfnye stely Dnestrovsko-Prutskogo mezhdurechia. In: *Davnia istoriya Ukrainy i sumizhnykh rehioniv. Carpatica 13. Yuvileyni zbirnyk na chest 70-richchia vid dnia narodzhennia prof. E.A. Balaguri*, 67-77. Uzhhorod.

Zbenovich V.G.

1974 *Pozdnetripolskie plemena Severnogo Prichernomoria*. Kyiv.

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ENEOLITHIC, BABYNO AND NOUA CULTURE CEMETERIES, KLEMBIVKA, SITE 1, YAMPIL REGION, VINNITSA OBLAST: ARCHAEOOMETRY, TAXONOMY AND TOPOGENETICS

ABSTRACT

The paper presents excavation results and analytical studies concerning the taxonomic classification of a funerary site identified with the communities of the 'barrow cultures' settling the north-western Black Sea Coast in the first half of the 3rd and the middle of the 2nd millennia BC. The study focuses on the ceremonial centres of the Eneolithic communities of the Babyno and Noua cultures.

Key words: 'barrow cultures', Eneolithic, Early Bronze Age, Late Bronze Age, Middle Dniester Area

The investigations of barrow 1 in Klembivka, Yampil Region, Vinnitsa *Oblast*, were carried out in 2012 as part of the Polish-Ukrainian research project to invest-

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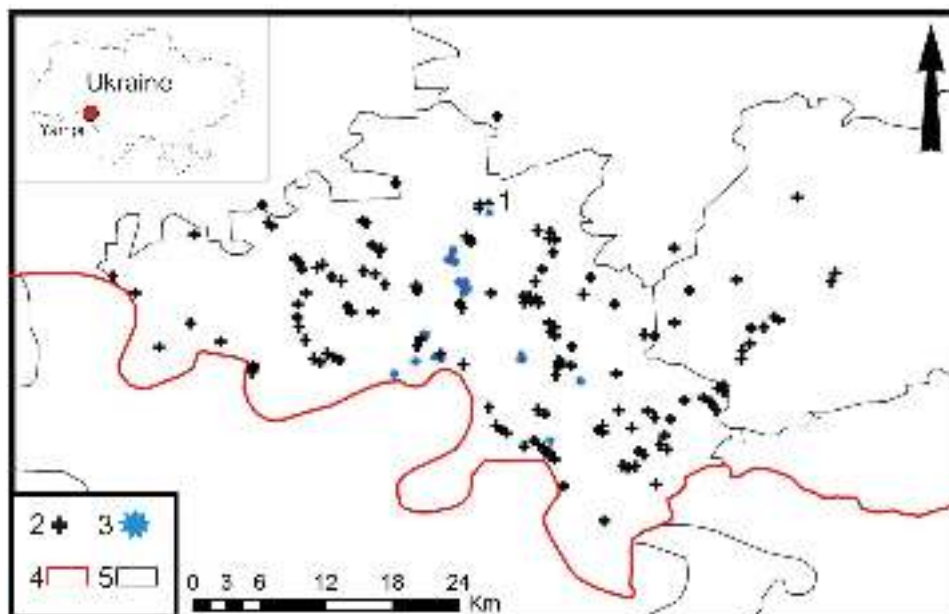


Fig. 1. Map of *Yampil Barrow Complex* showing administrative borders: 1 – Klembivka barrow; 2 – barrows; 3 – excavated barrows; 4 – Ukrainian-Moldovan frontier; 5 – Yampil Region border. After Jachimowicz 2015, revised

igate the north-western frontier of settlement by ‘Early Bronze’ culture communities in the Pontic zone by the Institute of Prehistory, Adam Mickiewicz University (AMU) in Poznań and the Institute of Archaeology, Ukrainian National Academy of Sciences (UNAS) in Kyiv. The project was headed by Prof. Aleksander Koško, representing the AMU Institute of Prehistory, assisted by Dr. Piotr Włodarczak, representing the Institute of Archaeology and Ethnology, Centre for Mountains and Uplands Archaeology in Kraków (as project heads), and Dr. Serhiy Razumov, representing the Institute of Archaeology, UNAS (as expedition head).

Investigation results were first made available as a report, satisfying the conservation-archival requirements of the UNAS Institute of Archaeology in 2013 [Razumov *et al.* 2013]. This paper, in relation to taxonomy, takes issue with the diagnoses formulated there and presents conclusions drawn by a broader team of experts. The problem of necessary discussions aimed at adjusting the standards of applied systematics of the funeral ‘Yampil’ determinants of Bronze Age cultures has already been raised in some detail in an earlier paper on the Pidlisivka cemetery [Klochko *et al.* 2015a]¹.

¹ Personal considerations have prevented Dr. Serhiy M. Razumov from taking part in the work of this team of experts.

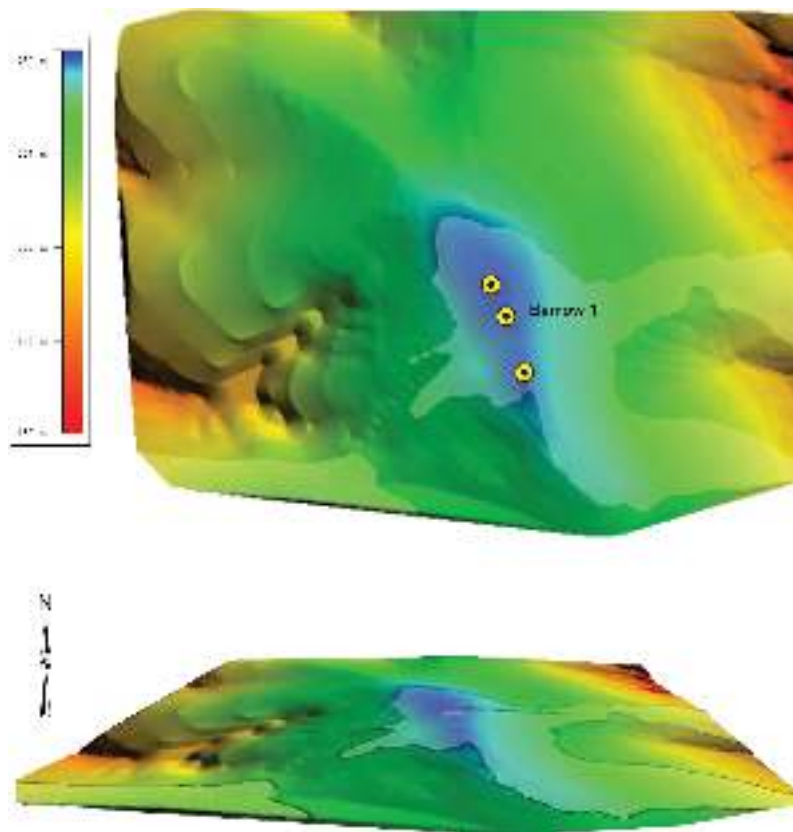


Fig. 2. Klembivka, Yampil Region. The elevation model of the immediate surroundings of site 1 and the location of neighbouring barrows (yellow dots)

1. BARROW MOUND: TOPOGRAPHY, MORPHOMETRY, STRATIGRAPHY AND SCATTER PATTERN OF FEATURES

The Klembivka 1 site is situated on a high watershed crest extending N-S and bounded by the Rusava and Korytna river valleys. The site stands out from other barrow features investigated by the *Yampil Expedition* – Pidlisivka 1, Porohy 3A and Prydnistrianske 1 – by its greater distance from the Dniester (about 15 km) and a fringe location on the map of *Yampil barrow cluster* (Fig. 1).

The investigated barrow is one of the cluster of five features of similar morphology ('tumuli') identified on the surface of the ground in the high-watershed landscape (Fig. 2).

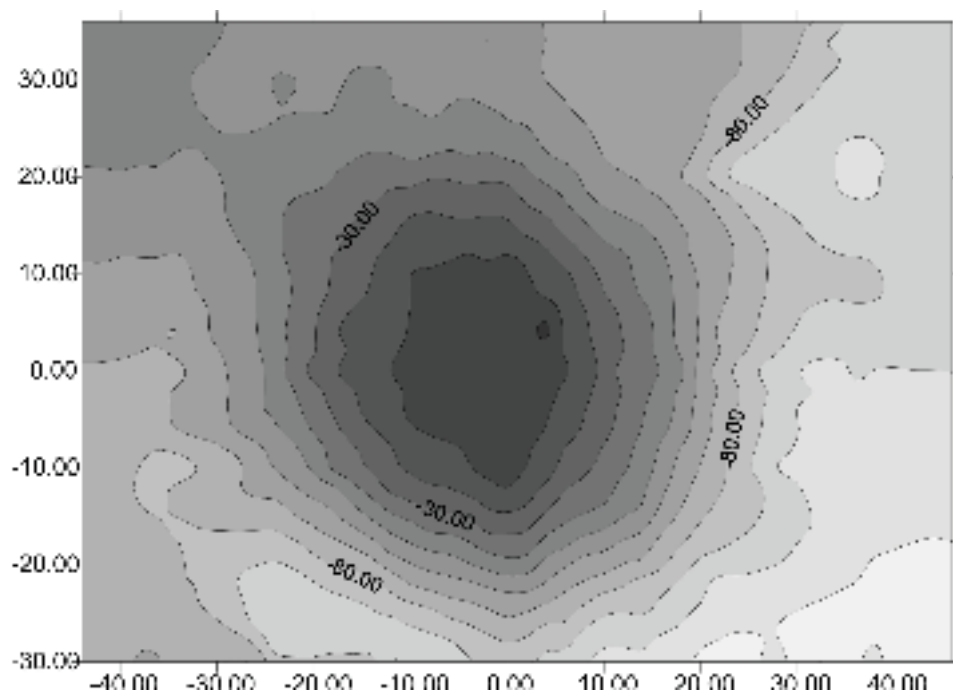


Fig. 3. Klembivka, Yampil Region, barrow 1. Site elevation plan

The analysis of mound profiles justifies distinguishing two phases of its extension (Figs. 4, 5). The older mound was built over feature 15 – an Eneolithic grave. At ground level, the mound was oval (with its longer axis extending N-S), its maximum width being 24 m, while its height reached 0.5-0.7 m. The younger mound, in turn, was built over feature 14 – also an Eneolithic grave. At ground level, the mound was circular, with the diameter of up to 30.0 m and an assumed original height of up to ca. 3.0 m (Fig. 3). The younger mound was surrounded by a borrow pit up to 6.0 m wide and 0.4-0.5 m deep (Fig. 4). To the older mound, in turn, a stela can be linked together with features holding sacrificial animal-bone deposits (nos. 4 and 9; Fig. 6).

Into the central portion of the younger mound, feature 5 was sunk, indicating connections to the ritual module of Eneolithic societies. Other barrow-top burials include Babyno culture (BC) features – sunk into the mound (graves 1-3, 6, 8 and 10) and those of Noua culture (NC) societies – situated along the mound fringe (graves 7, 11-13).

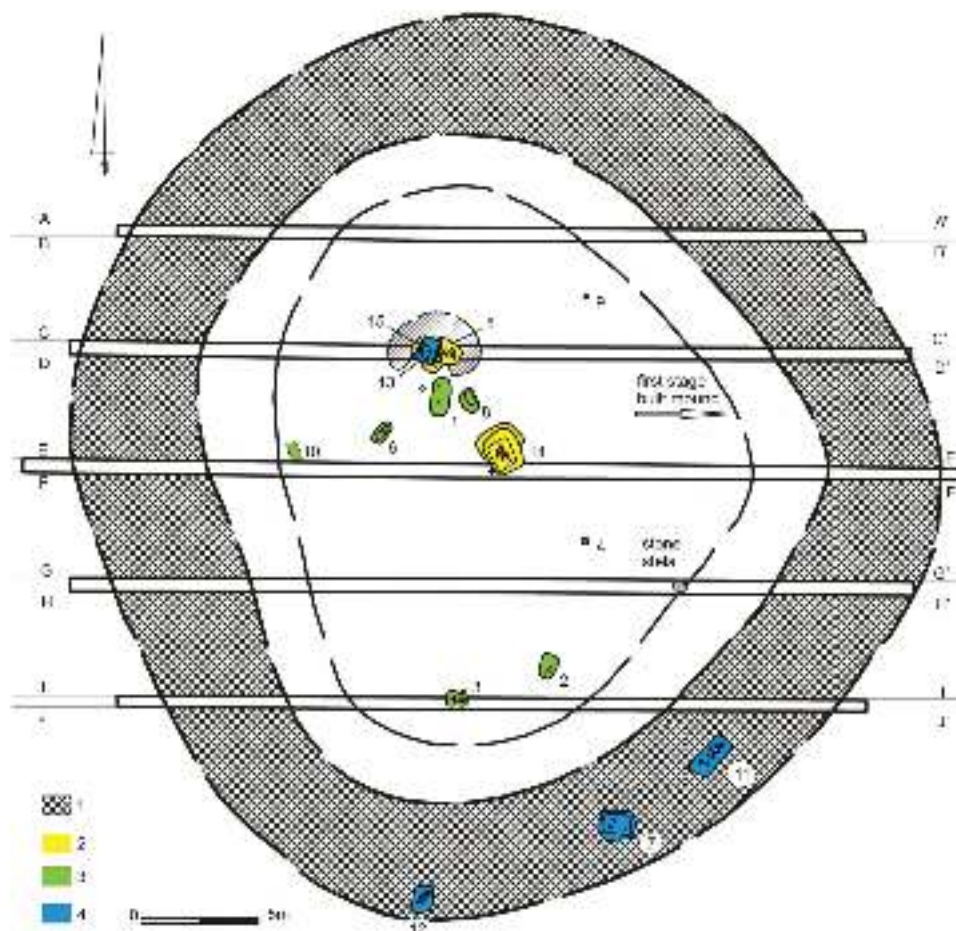


Fig. 4. Klembivka, Yampil Region. Plan of barrow 1. 1 – barrow ditch; 2 – features linked to the Eneolithic; 3 – features linked to the Babyno culture; 4 – features linked to the Noua culture

2. FORMAL-TYPOLOGICAL DESCRIPTION OF FEATURES AND THEIR FURNISHINGS

The descriptions of Klembivka funerary architecture traits that follow, typologically or descriptively identifiable, concern three Eneolithic graves (5, 14 and 15), six BC ones (1, 2, 3, 6, 8 and 10), four NC ones (7, 11-13) and two features (4 and 9) identified as sacrificial deposits (*triznas*) – the derivatives of peri-funeral rites, hypothetically related to Eneolithic communities.

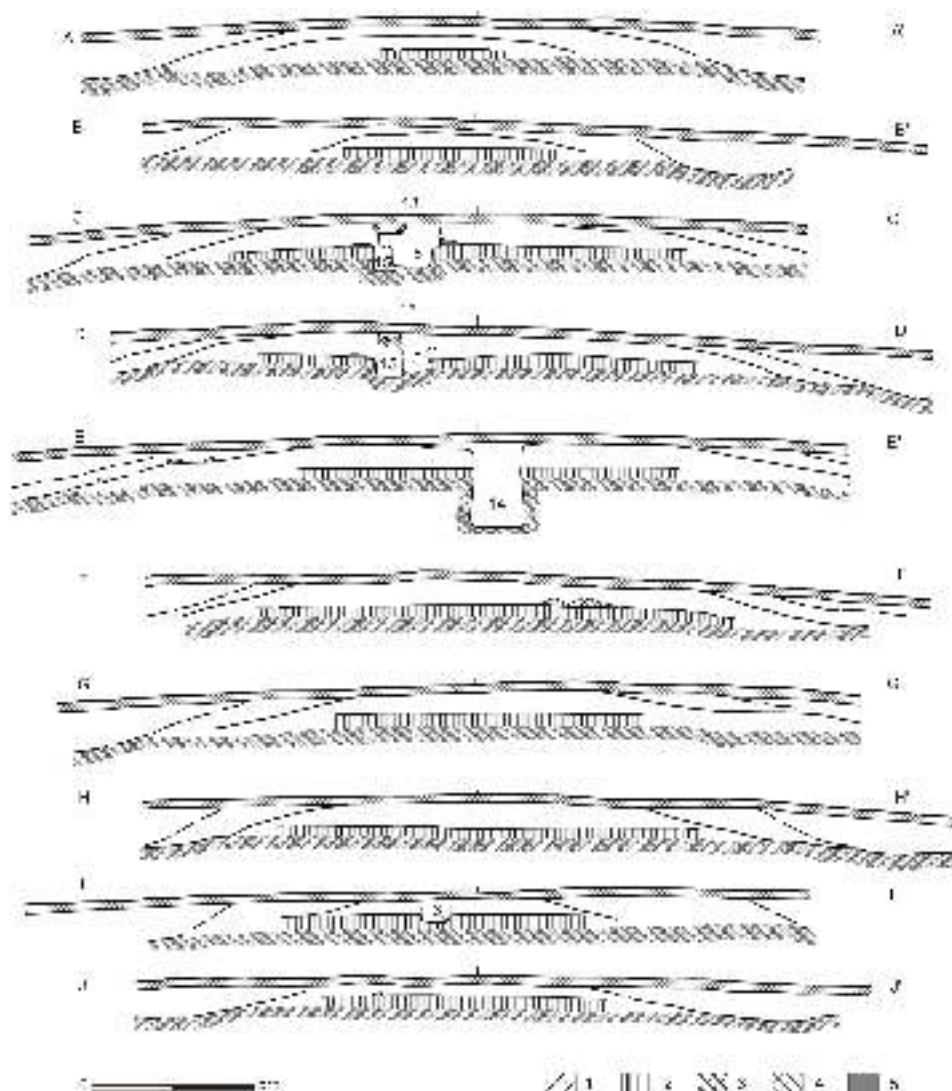


Fig. 5. Klembivka, Yampil Region. Plan of barrow 1. Barrow profiles: 1 – surface soil; 2 – original ground level; 3 – yellow loess; 4 – dark brown soil; 5 – spill of yellow loess from the grave pit

This paper has not included specialist analyses, chiefly bio-archaeological ones, to be published in one of the next volumes of *Baltic-Pontic Studies* (forthcoming). All the anthropological data included in the descriptions below come from the separate publication [Litvinova *et al.* 2015], while in the case of archaeozoological data, the assessments by O. Zhuravlov [see Razumov *et al.* 2013] have been used.

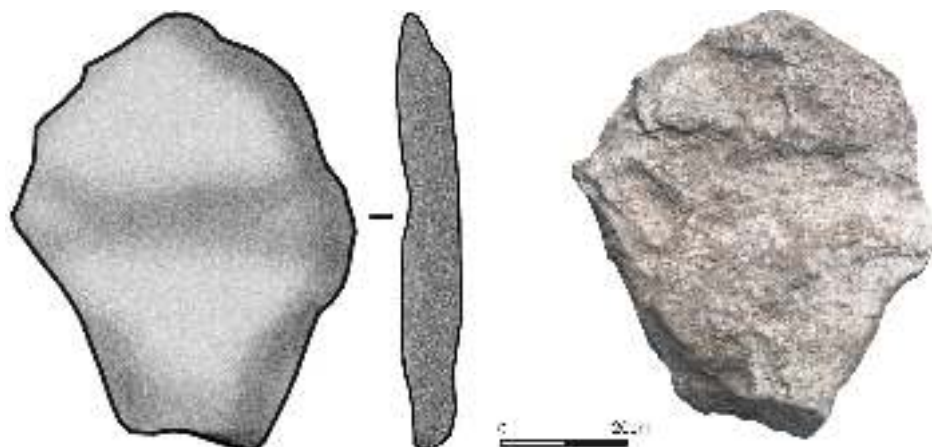


Fig. 6. Klembivka, Yampil Region, barrow 1. Stone stela – for location see Fig. 4

Feature 1/1

Culture	Babyno		
Dating	Poz-70669: 3505 ±35 BP; (human bone)		
Grave pit		Burial	
Structure type	Pit	Sex	?
Number of burials	?	Age	?
Size at the level of discovery	1.55 × 0.7 m	Orientation	?
Size at the level of the bottom	1.6 × 0.7 m	Deviation	?
Depth	0.8 m	Arrangement of head	?
Pit orientation	N-S	Arrangement of trunk	?
Deviation	10° E	Upper limbs	?
Distance from barrow centre	1.81 m	Lower limbs	?
Azimuth	165°	Ochre	–
Wooden roofing	–	Presence of mat	–
Roofing element orientation		Animal bones	Single bones of a pig and cow
Other structural elements	Fragment of stone slabs in feature ceiling	Ritual objects	–
Comments	About 0.4 m E, at a depth 0.32 m from the pit the bottom part of a vessel was found.		

The feature was sunk into the central portion of the barrow. A rectangular pit held many limestone slab fragments at various depths, being probably elements of a pit cover or lining. Close to the bottom, only single fragments of long bones of a cow and pig were found. At a distance of 0.4 m east of the pit, immediately below the surface soil, a discovery was made of a vessel base (its upper portion had been destroyed by ploughing) (Figs. 7, 8).

Inventory

1. The base of a hand-made vessel with a flat bottom, ornamented with horizontal and oblique flat coils. The ceramic body contains temper of fine sand and crushed ceramics. The outer surface is smoothed out and blotched (yellow and grey). The inner surface is even, burnished and black. Dimensions: bottom diameter – 11.7 cm, height of the surviving portion – 10.0 cm, wall thickness – 0.9-1.0 cm, bottom thickness – 1.4 cm (Fig. 7: 2).

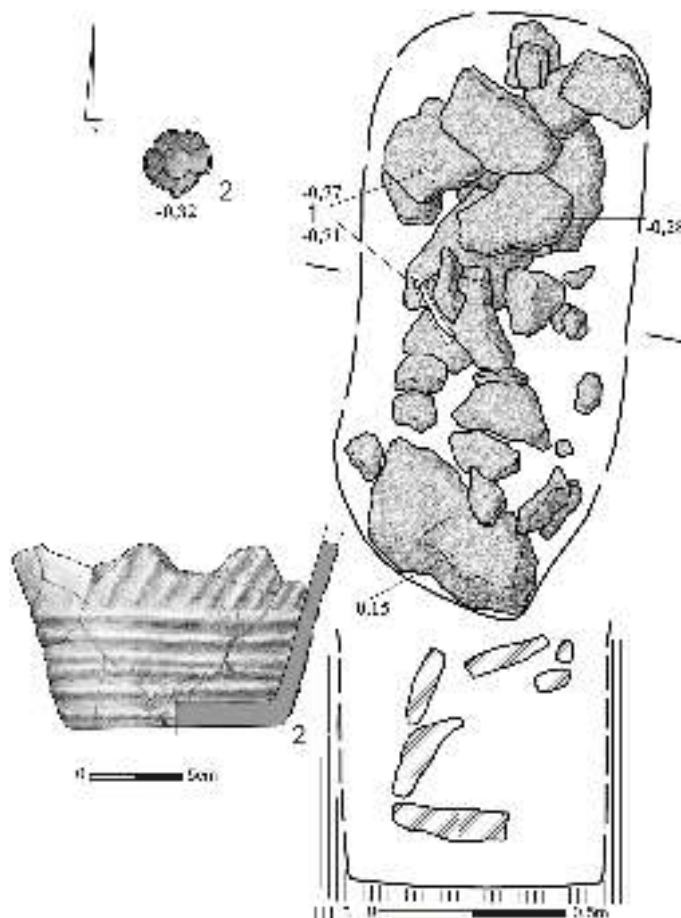


Fig. 7. Klembivka, Yampil Region, barrow 1. Plan and profile of feature 1/1. 1 – pig bones; 2 – base of a vessel; 3 – mound strata



Fig. 8. Klembivka, Yampil Region, barrow 1, feature 1/1 – horizontal projection of feature ceiling

Feature 1/2

Culture	Babyno		
Dating			
Grave pit		Burial	
Structure type	Pit	Sex	?
Number of burials	1	Age	<i>Adult</i>
Size at the level of discovery	0.9 × 0.7 m	Orientation	NE-SW
Size at the level of the bottom	0.9 × 0.7 m	Deviation	?

Depth	1.55 m	Arrangement of head	?
Pit orientation	N-E	Arrangement of trunk	L?
Deviation	21° E	Upper limbs	?
Distance from barrow centre	14.2 m	Lower limbs	2?
Azimuth	159°	Ochre	–
Wooden roofing	–	Presence of mat	–
Roofing element orientation		Animal bones	–
Other structural elements	–	Ritual objects	–
Comments			

A pit grave sunk into the southern portion of the mound. A rectangular pit held on its bottom a poorly-preserved skeleton, damaged by many animal burrows. From the few remains, it can be presumed that the deceased was laid crouched on the left side, with the head pointing NE (Fig. 9).

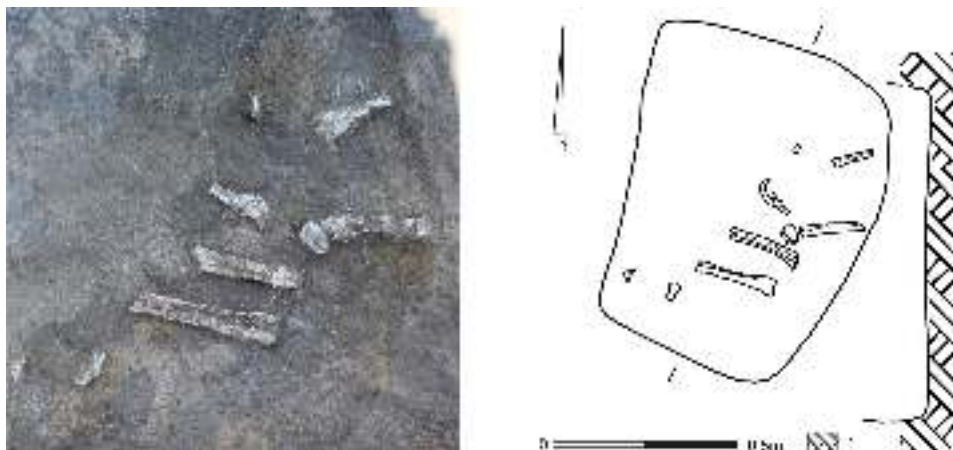


Fig. 9. Klembivka, Yampil Region, barrow 1, feature 1/2. Horizontal and vertical projections of feature. 1 – yellow loess

Feature 1/3

Culture	Babyno		
Dating	Poz-74398: 3495 ± 35 BP (human bone)		
Grave pit		Burial	
Structure type	Pit	Sex	Male
Number of burials	1	Age	35-45 years
Size at the level of discovery	0.9 × 0.65 m	Orientation	E-W
Size at the level of the bottom	0.9 × 0.6 m	Deviation	?
Depth	1.31 m	Arrangement of head	P
Pit orientation	E-W	Arrangement of trunk	P?
Deviation	0°	Upper limbs	D?
Distance from barrow centre	14.66 m	Lower limbs	1?
Azimuth	175°	Ochre	–
Wooden roofing	–	Presence of mat	–
Roofing element orientation		Animal bones	–
Other structural elements	–	Ritual objects	Vessel
Comments			

A pit grave sunk into the southern portion of the mound. A rectangular pit held on its bottom the poorly-preserved skeleton of an adult male, damaged by many animal burrows. The deceased was laid crouched on the right side. At the upper limb bones, a ceramic vessel lay (Fig. 10).

Inventory

1. A small, S-profiled vessel with an unmarked, slightly concave base. Its outer surface is even, smoothed out, yellow and grey in colour; the inner surface is even, mat, and burnished in the upper portion of the vessel. The ceramic body contains fine-grain temper of crushed ceramics and sand. Dimensions: height – 8.5 cm, mouth diameter – 10.9 cm, neck diameter – 10.0 cm, belly diameter – 10.2 cm, bottom diameter – 8.0 cm, wall thickness – 0.8-1.0 cm (Fig. 10: 2).

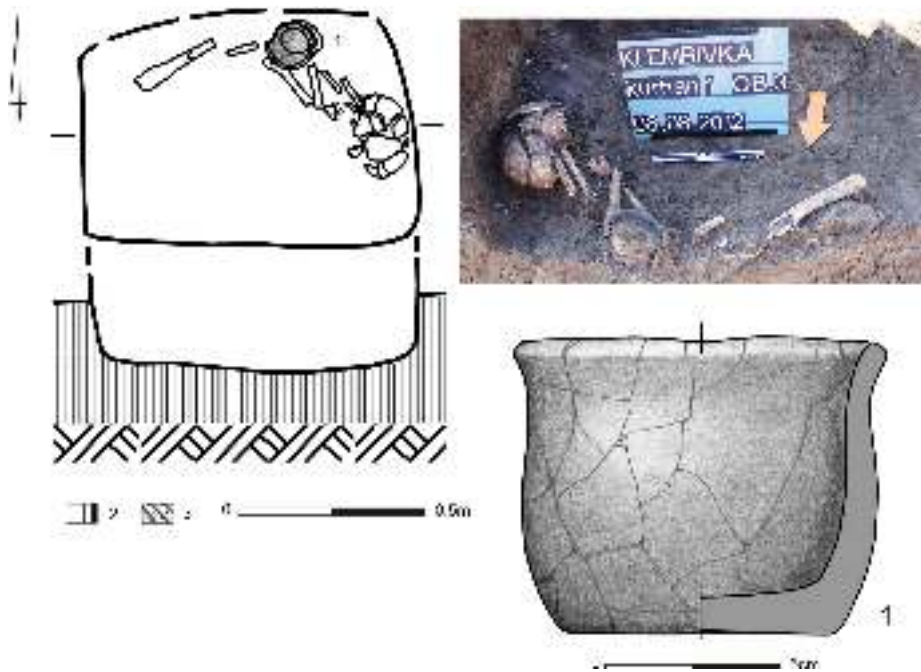


Fig. 10. Klembivka, Yampil Region, barrow 1, feature 1/3. Horizontal and vertical projections of feature. 1 – ceramic vessel; 2 – original ground level; 3 – yellow loess

Feature 1/4

Culture	Eneolithic
Dating	
Structure type	?
Size at the level of discovery	?
Size at the level of the bottom	0.3 × 0.3 m
Depth	1.7 m
Pit orientation	
Deviation	
Distance from barrow centre	10 m
Azimuth	140°
Animal bones	Roe deer bone and 28 other indeterminate bones
Ritual objects	–
Comments	

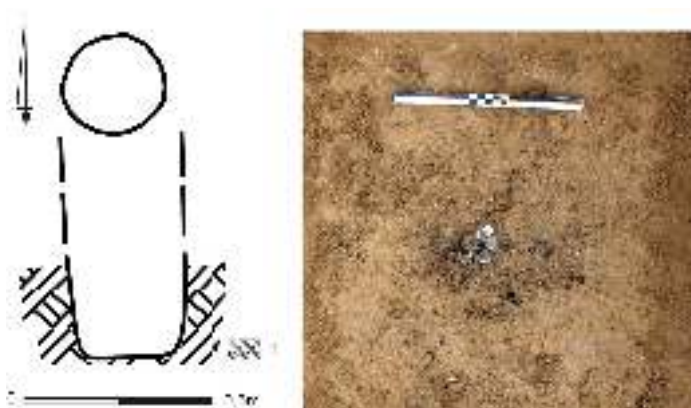


Fig. 11. Klembivka, Yampil Region, barrow 1, feature 1/4. Horizontal and vertical projections of feature. 1 – yellow loess

A (sacrificial?) pit dug from the original ground level before the older mound was built. It was circular in horizontal projection. Its depth, measured from the original ground level, was 0.6 m. The central and bottom parts of the fill were made up of burned soil and charcoals. Within the fill, 29 small calcified animal bones were discovered (one was identified as a roe deer bone) (Fig. 11).

Feature 1/5

Culture	Eneolithic?		
Dating	Poz-70670: 4225 ± 35 BP (human bone)		
Grave pit		Burial	
Structure type	Pit/semi-niche	Sex	Male
Number of burials	1	Age	50-55 years
Size at the level of discovery	?	Orientation	W-E
Size at the level of the bottom	1.85 × 0.95 m	Deviation	13° N
Depth	1.45 m	Arrangement of head	L
Pit orientation	W-E	Arrangement of trunk	Supine
Deviation	6° S	Upper limbs	A
Distance from barrow centre	0.73 m	Lower limbs	2
Azimuth	90°	Ochre	–
Wooden roofing	–	Presence of mat	–
Roofing element orientation		Animal bones	–

Other structural elements	—	Ritual objects	—
Comments			

The grave was sunk into the central portion of the barrow, probably from the level of the older barrow. The pit was irregular in shape, resembling a rectangle with rounded corners. On its bottom, the well-preserved skeleton of an adult male lay crouched, supine, with the head and lower limbs turned to the left side. On the left zygomatic bone, there was a trace of a deep injury (Fig. 12).

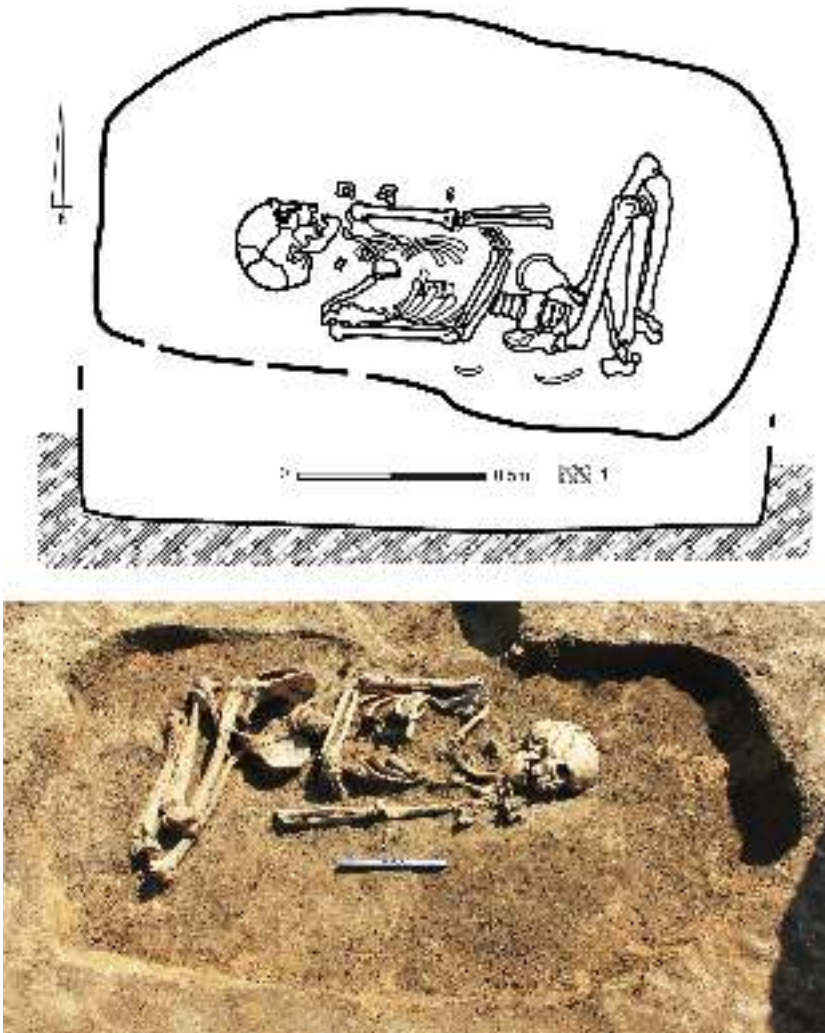


Fig. 12. Klembivka, Yampil Region, barrow 1, feature 1/5. Horizontal and vertical projections of burial. 1 – yellow loess

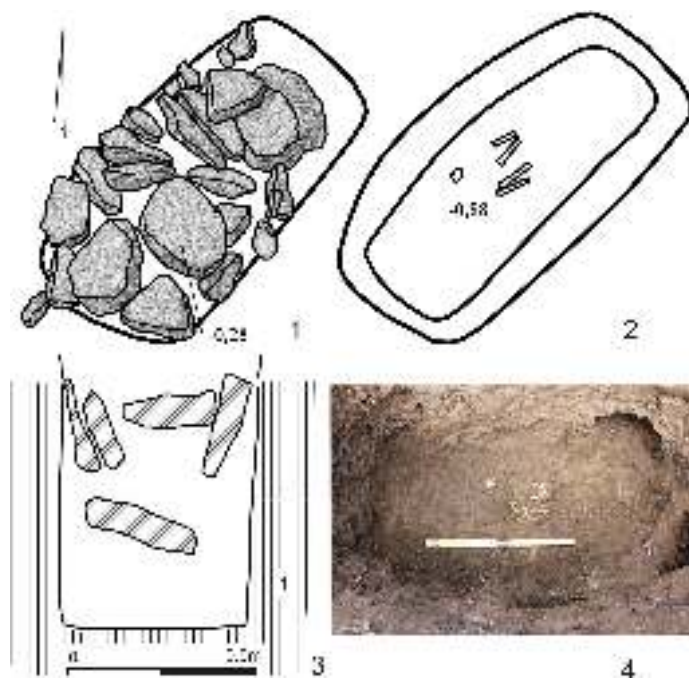


Fig. 13. Klembivka, Yampil Region, barrow 1, feature 1/6. 1 – horizontal projection of feature ceiling; 2, 4 – horizontal projection of feature floor; 3 – vertical projection of feature; 1 – barrow mound

Feature 1/6

Culture	Babyno		
Dating			
Grave pit		Burial	
Structure type	Pit	Sex	?
Number of burials	1	Age	<i>Infans</i>
Size at the level of discovery	1.0 × 0.55 m	Orientation	SW-NE?
Size at the level of the bottom	0.9 × 0.35 m	Deviation	?
Depth	0.9 m	Arrangement of head	?
Pit orientation	SW-NE	Arrangement of trunk	?
Deviation	0°	Upper limbs	?
Distance from barrow centre	3.8 m	Lower limbs	?
Azimuth	211°	Ochre	–

Wooden roofing	–	Presence of mat	–
Roofing element orientation		Animal bones	–
Other structural elements	grave cover of stone slabs	Ritual objects	–
Comments			

The grave was sunk into the western portion of the mound. A rectangular pit held in its fill a pile of lime stones. On the bottom, fragments of bones belonging to an infant were found (Fig. 13).

Feature 1/7

Culture	Noua		
Dating	Poz-74399: 3130 ± 35 BP (human bone)		
Grave pit		Burial	
Structure type	Pit	Sex	1. Male? 2. ? 3. Female?
Number of burials	3	Age	1. <i>Maturus</i> 2. 4-5 years 3. <i>Maturus</i>
Size at the level of discovery	1.35 × 1.25 m	Orientation	1. ? 2. ? 3. ?
Size at the level of the bottom	1.14 × 0.95 m	Deviation	1. ? 2. ? 3. ?
Depth	1.5 m	Arrangement of head	1. ? 2. ? 3. ?
Pit orientation	W-E	Arrangement of trunk	1. ? 2. ? 3. ?
Deviation	0°	Upper limbs	1. ? 2. ? 3. ?
Distance from barrow centre	21.6 m	Lower limbs	1. ? 2. ? 3. ?
Azimuth	158°	Ochre	–
Wooden roofing	–	Presence of mat	–
Roofing element orientation		Animal bones	–
Other structural elements	Stone on the feature bottom	Ritual objects	–
Comments	Robbed?		

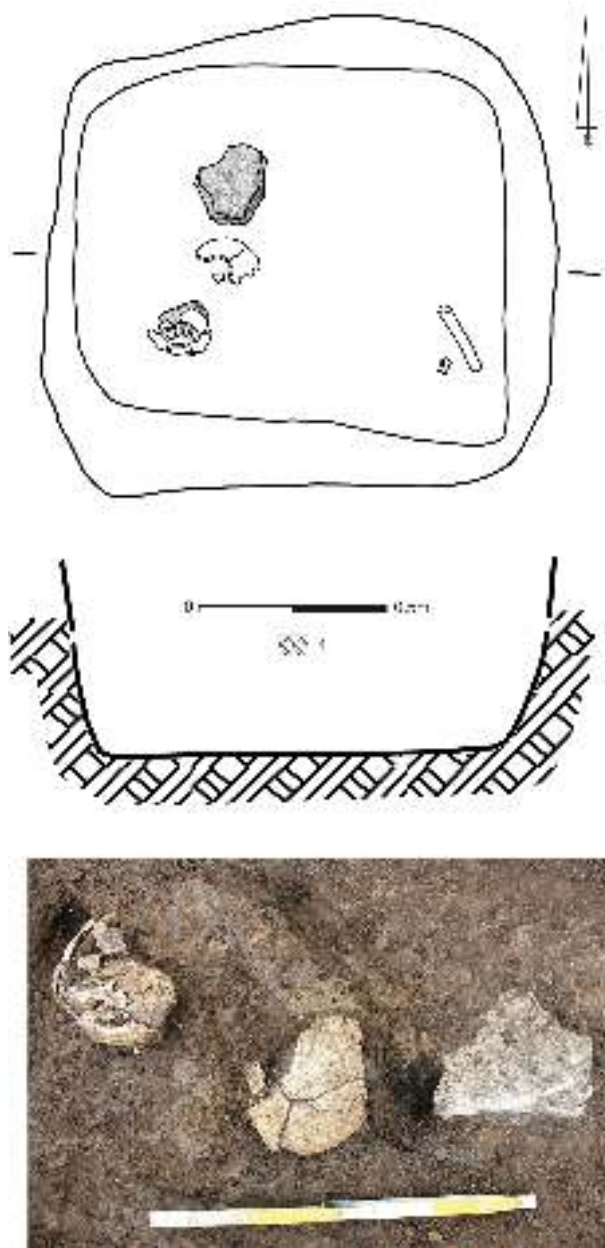


Fig. 14. Klembivka, Yampil Region, barrow 1, feature 1/7. Horizontal and vertical projections of feature. 1 – yellow loess

The grave was sunk into the barrow ditch at the southern edge of the younger mound. The upper portion of the pit was almost square and had rounded corners. The burial was secondarily disturbed (robbed?). Single bones of three individuals (two adults and a child) were recovered from various levels of the fill (beginning from a depth of about 1.0 m). They were accompanied by few small lime stones (Fig. 14).

Feature 1/8

Culture	Babyno		
Dating			
Grave pit		Burial	
Structure type	Pit	Sex	?
Number of burials	?	Age	?
Size at the level of discovery	1.3 × 1.15 m	Orientation	?
Size at the level of the bottom	0.95 × 0.65 m	Deviation	?
Depth	1.4 m	Arrangement of head	?
Pit orientation	SE-NW	Arrangement of trunk	?
Deviation	0°	Upper limbs	?
Distance from barrow centre	2.62 m	Lower limbs	?
Azimuth	137°	Ochre	—
Wooden roofing	—	Presence of mat	—
Roofing element orientation		Animal bones	—
Other structural elements	Grave cover of stone slabs	Ritual objects	—
Comments	Secondarily disturbed? The fill contained fine bones.		

The grave was secondarily sunk into the central portion of the mound. An irregularly shaped, rectangular pit narrowed down towards the floor. It was filled with rubble of lime stones (at a depth from 0.2 to 0.85 m). Inside it, there were fine fragments of human bones. The character of the fill indicates that the feature was secondarily disturbed (robbed?).

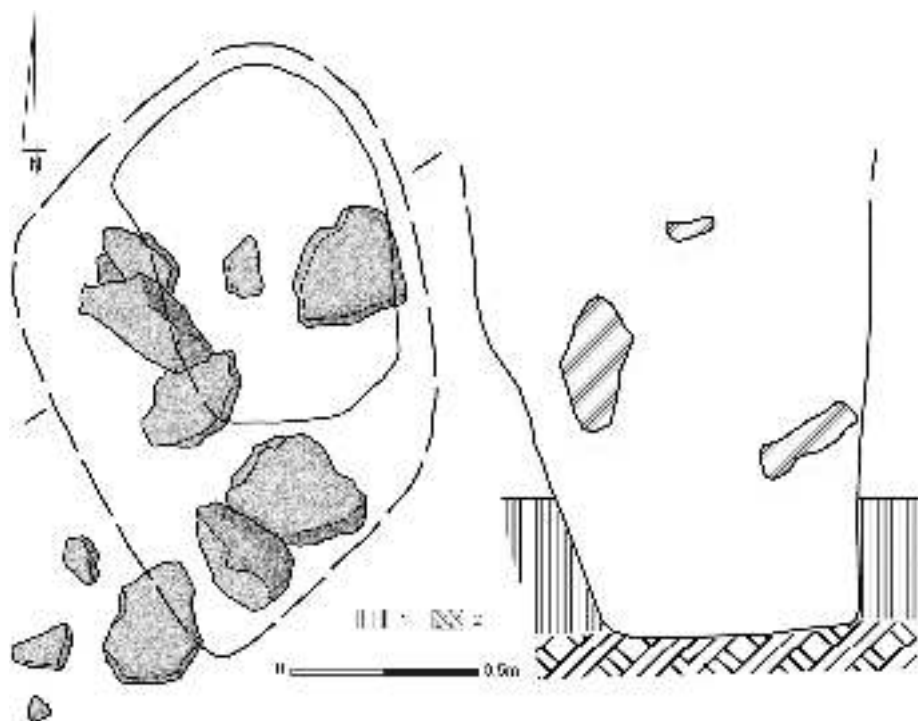


Fig. 15. Klembivka, Yampil Region, barrow 1, feature 1/8. Horizontal and vertical projections of feature. 1 – original ground level; 2 – yellow loess

Feature 1/9

Culture	Eneolithic?
Dating	
Structure type	?
Size at the level of discovery	?
Size at the level of the bottom	0.45 × 0.45 m
Depth	1.2 m
Pit orientation	?
Deviation	?
Distance from barrow centre	7.22 m
Azimuth	109°
Animal bones	11 frag. of sheep/goat bones
Ritual objects	–
Comments	



Fig. 16. Klembivka, Yampil Region, barrow 1, feature 1/9. Horizontal projection of feature

A cluster of sheep/goat bones (ends of limbs, ribs and teeth) located underneath the mound at the eastern barrow edge. At the bones, a fragment of the lip of a Tripolye culture vessel was discovered (Fig. 16).

Feature 1/10

Culture	Babyno?		
Dating			
Grave pit		Burial	
Structure type	Pit	Sex	?
Number of burials	?	Age	?
Size at the level of discovery	?	Orientation	?
Size at the level of the bottom	0.8 × 0.5 m	Deviation	?
Depth	1.05 m	Arrangement of head	?
Pit orientation	S-N	Arrangement of trunk	?
Deviation	11° W	Upper limbs	?
Distance from barrow centre	6.87 m	Lower limbs	?
Azimuth	235°	Ochre	—
Wooden roofing	—	Presence of mat	—
Roofing element orientation		Animal bones	—
Other structural elements	Grave cover of stone slabs	Ritual objects	—
Comments	Secondarily disturbed gawe?		

A pit grave (?) sunk into the western portion of the mound. A rectangular pit held in the middle of its fill many lime stones. On the bottom, no bones of a burial were discovered (Fig. 17).

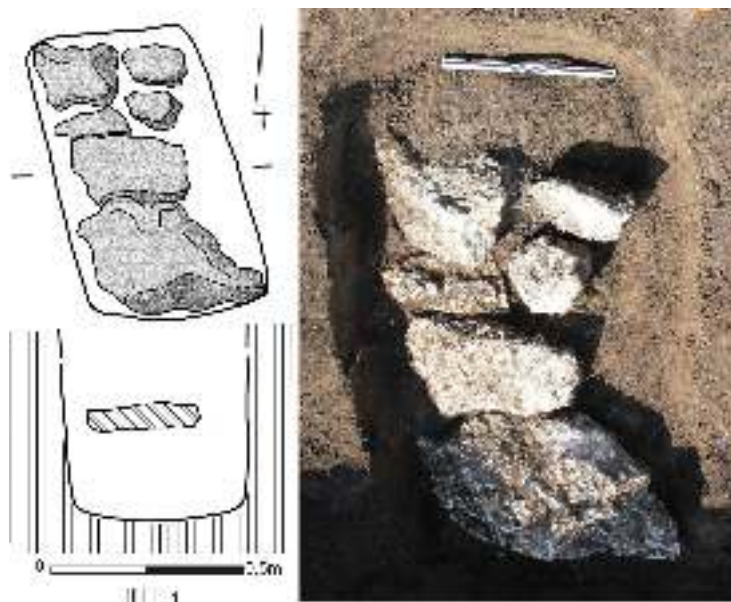


Fig. 17. Klembivka, Yampil Region, barrow 1, feature 1/10. Horizontal and vertical projections of feature. 1 – barrow mound

Feature 1/11

Culture	Noua		
Dating	Poz-70672 4370 ± 40 BP; BIS Poz-72043 4345 ± 35 BP (human bones)		
Grave pit		Burial	
Structure type	Pit	Sex	Male
Number of burials	1	Age	below 25 years
Size at the level of discovery	?	Orientation	NE-SW
Size at the level of the bottom	1.8 × 0.9 m	Deviation	0°
Depth	1.1 m	Arrangement of head	L
Pit orientation	NE-SW	Arrangement of trunk	Supine
Deviation	6° W	Upper limbs	B
Distance from barrow centre	20.75 m	Lower limbs	7
Azimuth	144°	Ochre	–
Wooden roofing	–	Presence of mat	–
Roofing element orientation		Animal bones	–

Other structural elements	—	Ritual objects	Vessel
Comments			

The grave was sunk into the barrow ditch at the southern edge of the mound. On the bottom of a rectangular pit, the skeleton of an adult male lay supine, turned to its left side. Next to the deceased, close to the pelvis, a vessel was found. In addition, in the northern portion of the pit, a discovery was made of charred wood remains 0.3 m long (Figs. 18, 19).

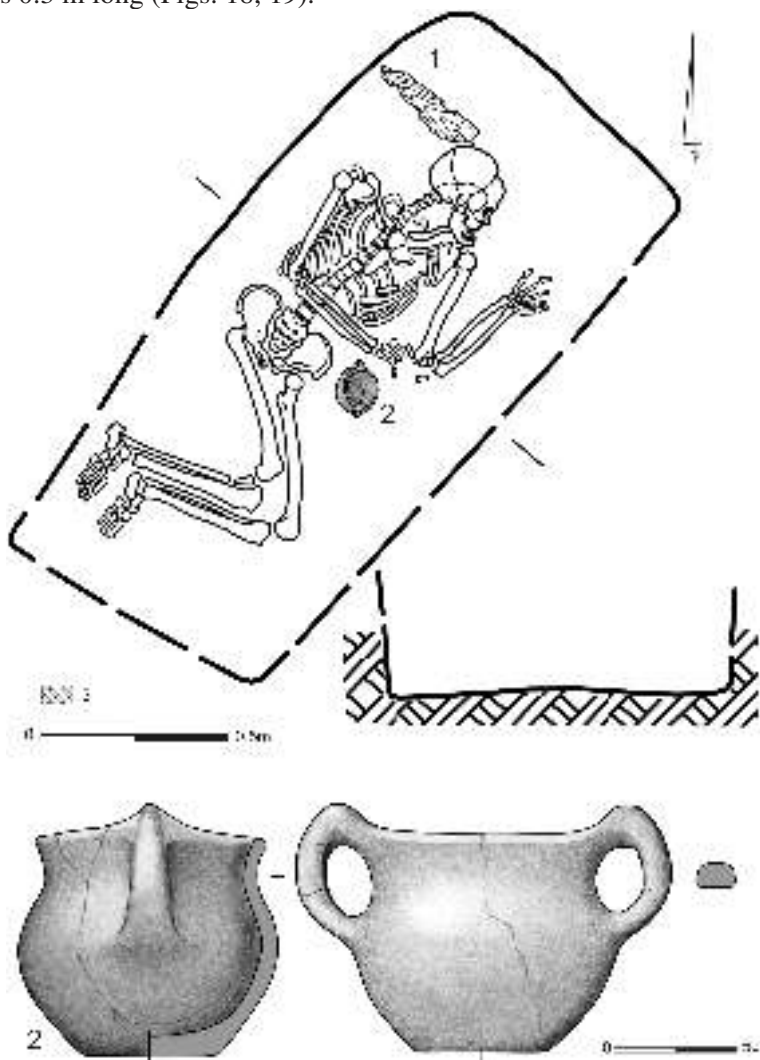


Fig. 18. Klembivka, Yampil Region, barrow 1, feature 1/11. Horizontal and vertical projections of feature. 1 – wood remains; 2 – ceramic vessel; 3 – yellow loess



Fig. 19. Klembivka, Yampil Region, barrow 1, feature 1/11. Horizontal projection of burial

Inventory

1. A small vase-like vessel with two ribbon, 'stretched upwards' handles. The lip rim is slightly flattened. The bottom is flat. The ceramic body contains temper of crushed stones and sand. The outer surface is grey and brown in colour, even and slipped. Dimensions: height – 9.0 cm (together with handles – 10.0 cm), mouth diameter – 9.5 cm, belly diameter – 10.4 cm, bottom diameter – 5.5 cm, wall thickness – 0.5-0.7 cm (Fig. 18: 2).

Feature 1/12

Culture	Babyno		
Dating	Poz-74400 3645 ± 35 BP (human bone)		
Grave pit		Burial	
Structure type	Pit	Sex	?
Number of burials	1	Age	12-14 years
Size at the level of discovery	?	Orientation	NE-SW
Size at the level of the bottom	1.0 × 0.8 m	Deviation	9°
Depth	1.2 m	Arrangement of head	P
Pit orientation	N-S	Arrangement of trunk	P
Deviation	0°	Upper limbs	D
Distance from barrow centre	23 m	Lower limbs	5/1
Azimuth	181°	Ochre	–
Wooden roofing	–	Presence of mat	–

Roofing element orientation		Animal bones	–
Other structural elements	Wall lining or roofing of lime stones	Ritual objects	–
Comments			

The grave was sunk into the barrow ditch at the southern edge of the mound. A rectangular pit contained in its fill a pile of lime stones at a depth of 0.65-1.05 m. Underneath it, on the pit bottom the skeleton of a child lay crouched on the right side (Figs. 20, 21).

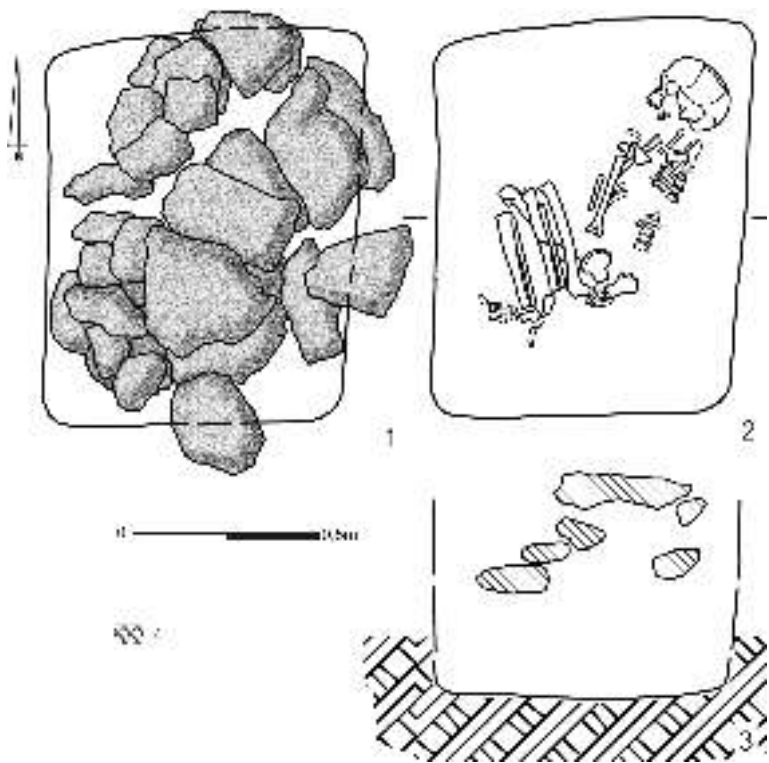


Fig. 20. Klembivka, Yampil Region, barrow 1, feature 1/12. 1 – horizontal projection of feature ceiling; 2 – horizontal projection of feature floor; 3 – vertical projection of feature; 4 – yellow loess



Fig. 21. Klembivka, Yampil Region, barrow 1, feature 1/12. Projection of burial level

Feature 1/13

Culture	Noua?		
Dating			
Grave pit		Burial	
Structure type	Pit	Sex	?
Number of burials	1	Age	Adult
Size at the level of discovery	—	Orientation	N-S?
Size at the level of the bottom	1.15 × 1.0 m	Deviation	?
Depth	1.45 m	Arrangement of head	?
Pit orientation	N-S	Arrangement of trunk	Supine?
Deviation	13° E	Upper limbs	?
Distance from barrow centre	0 m	Lower limbs	2?
Azimuth	0°	Ochre	—
Wooden roofing	—	Presence of mat	+
Roofing element orientation		Animal bones	—
Other structural elements	Stone lining	Ritual objects	—
Comments			

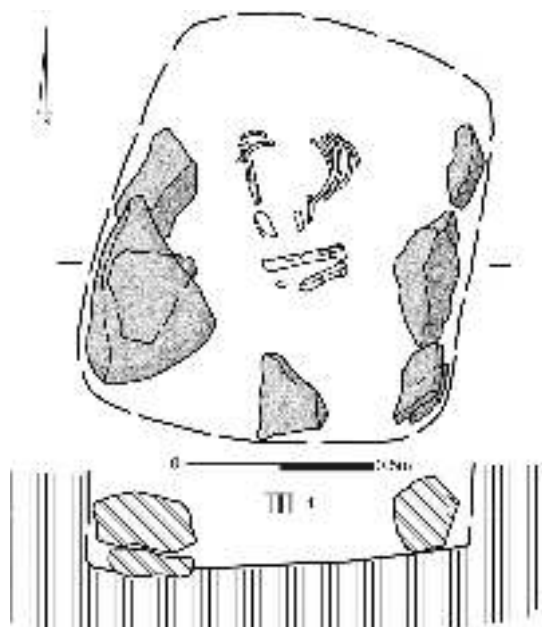


Fig. 22. Klembivka, Yampil Region, barrow 1, feature 1/13. Horizontal and vertical projections of feature. 1 – barrow mound

The grave was sunk into the central portion of the barrow. Immediately below the floor of surface soil, a pile of lime stones was exposed that originally formed a cist stone-lining. The pit was subrectangular and had rounded corners. On its bottom, the remains of the skeleton of an adult individual were discovered lying crouched on the left side with the head pointing N. Three fragments of long bones bore notches made with a sharp tool (Fig. 22).

Feature 1/14

Culture	Eneolithic?		
Dating	Poz-52422 4330 ± 50 BP (wood); Poz-52605 4135 ± 35 BP (human bone)		
Grave pit		Burial	
Structure type	Pit	Sex	Male
Number of burials	1	Age	25-30 years
Size at the level of discovery	2.05 × 1.95 m	Orientation	NW-SE
Size at the level of the bottom	1.2 × 1.0 m	Deviation	8° W
Depth	3.0 m	Arrangement of head	L
Pit orientation	NW-SE	Arrangement of trunk	L
Deviation	16° E	Upper limbs	D
Distance from barrow centre	5.15 m	Lower limbs	5/4
Azimuth	143°	Ochre	+
Wooden roofing	Wood fragments in the fill	Presence of mat	+
Roofing element orientation	?	Animal bones	—
Other structural elements	—	Ritual objects	Flint flake
Comments			

This was the central grave of the younger mound. Its pit was rectangular, almost square in shape. Around its northern portion, at a depth of 1.8-1.9 m, there ran a step 0.15-0.3 m wide and 0.4 m below it, a groove was carved in the walls (0.05 m deep) to hold the wooden elements of roofing (the fragments of which were discovered at lower levels). On the bottom, the skeleton of an adult male lay contracted on the left side. All bones were coloured with bright red ochre. The occipital bone and the right parietal bone had an irregular hole resulting from a blow (which must have caused the individual's death). Among the ribs, a small flint flake was found (Figs. 23, 24).

Inventory

1. Flake of dark grey Dniester flint.

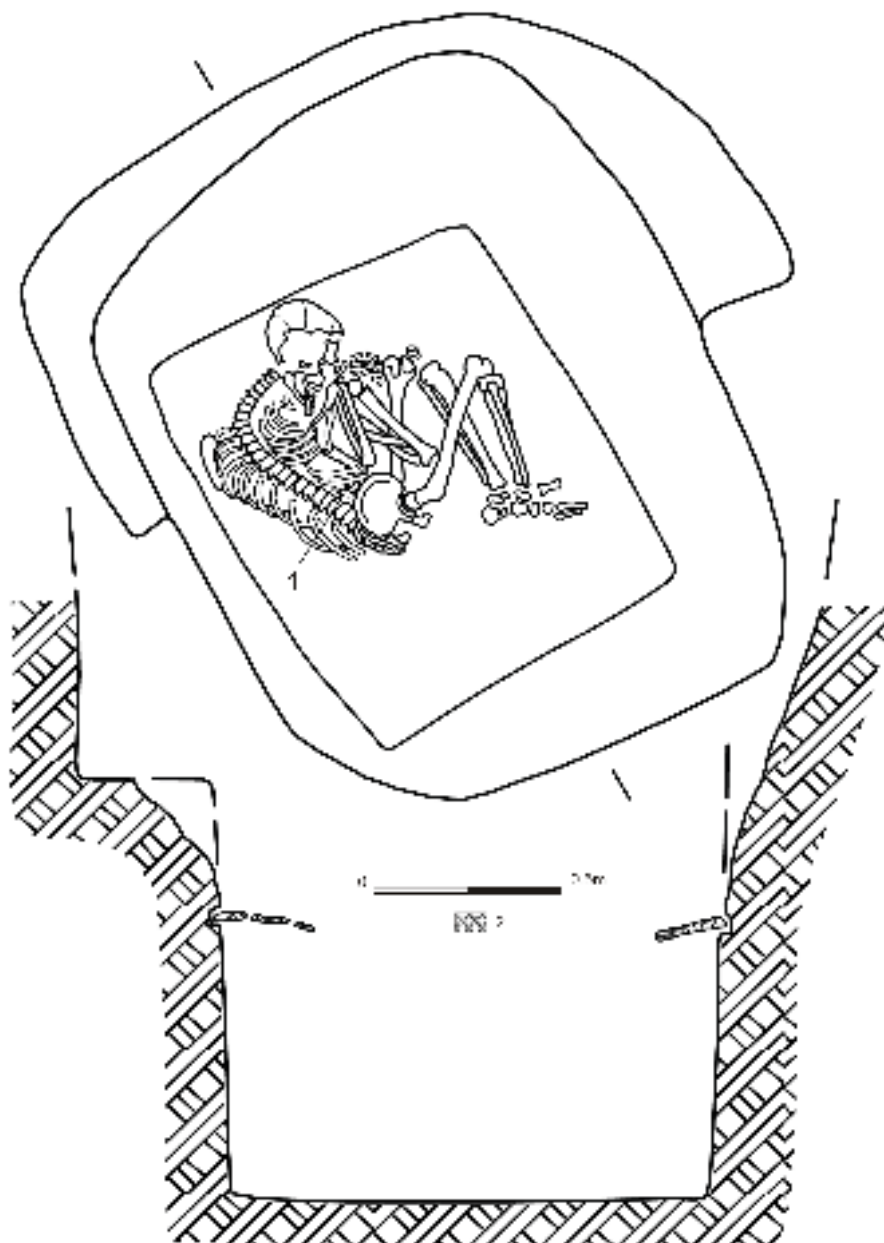


Fig. 23. Klembivka, Yampil Region, barrow 1, feature 1/14. Horizontal and vertical projections of feature. 1 – flint flake; 2 – yellow loess



Fig. 24. Klembivka, Yampil Region, barrow 1, feature 1/14. Horizontal projection of burial level

Feature 1/15

Culture	Eneolithic?		
Dating	Poz77470: 4290 ± 35 BP (human bone)		
Grave pit		Burial	
Structure type	Pit	Sex	?
Number of burials	1	Age	15-20 years
Size at the level of discovery	1.8 × 1.2 m	Orientation	NW-SE
Size at the level of the bottom	1.9 × 0.9 m	Deviation	0°
Depth	1.55 m	Arrangement of head	?
Pit orientation	NW-SW	Arrangement of trunk	Supine
Deviation	9° E	Upper limbs	F?
Distance from barrow centre		Lower limbs	6?
Azimuth		Ochre	+
Wooden roofing	—	Presence of mat	+
Roofing element orientation		Animal bones	1 frag. of cow bone

Other structural elements	—	Ritual objects	Lump of ochre
Comments			

This was the central grave of the older mound. The pit was subrectangular. A poorly-preserved skeleton of a *Juvenis* individual lay supine, crouched. The remains were disturbed by many animal burrows. At the left shoulder, the traces of a decayed lump of red ochre were discovered (Figs. 25, 26).

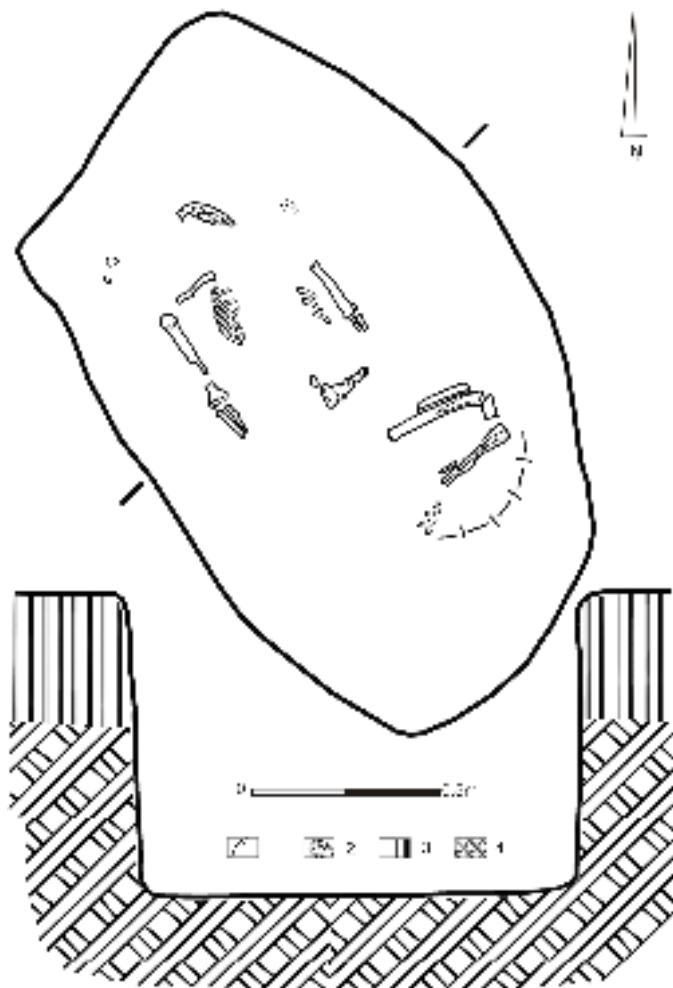


Fig. 25. Klembivka, Yampil Region, barrow 1, feature 1/15. Horizontal and vertical projections of feature. 1 – mat outline; 2 – ochre; 3 – original ground level; 4 – yellow loess



Fig. 26. Klembivka, Yampil Region, barrow 1, feature 1/15. Horizontal projection of burial in relation to neighbouring feature 1/5

Finds from the mound

On the south-eastern edge of the older mound, at a depth of about 0.6 m (or on the original ground level), an anthropomorphic stela made from a lime slab measuring $0.7 \times 0.7 \times 0.10$ m was exposed (Fig. 6).

Moreover, in two places, animal bones were found, possibly linked to sacrificial deposits made at the mound construction. A bone of a domesticated horse was found at the eastern edge of the younger mound, while at the eastern edge of the older mound, a bone of a small ruminant was discovered.

3. RADIOCARBON CHRONOMETRY

Radiocarbon age determinations of 10 samples were performed at the Poznań Radiocarbon Laboratory, Adam Mickiewicz University Foundation, Poznań, Po-

land. Nine samples of bones and one of charcoal were taken from eight features (1, 3, 5, 7, 11, 12, 14 and 15).

In eight cases, the determinations were consistent with archaeological expectations whereas in two, they were widely discrepant (feature 1/11 = archaeometric or possibly laboratory error). A full description of chronometric foundations useful in the reconstruction of the cemetery use can be found in the paper on the Yampil chronometric scale of the 4th/3rd-2nd millennium BC [Goslar *et al.* 2015].

Relying on the determinations and Klembivka taxonomic observations, it can be justifiably claimed that the site in question, viewed as part of the *Klembivka ceremonial centre*, witnessed two stages of ritual activity:

Stage I. The necropolis was laid out in the 30th-28th century BC (3005-2720 BC – features 1/14 and 1/15) as the burial place of Eneolithic communities (or possibly ‘Eneolithic or Early Bronze’ ones, i.e. occupying a borderline taxonomic position, *see* Ch. 4) and was probably continuously used until the 29th-28th century BC (2900-2760 BC – feature 1/5, linked to the Eneolithic or Early Catacomb/‘Yamnaya-Catacomb’ communities).

Stage II. Until the late 21st and early 20th centuries BC (2117-1952 BC – feature 1/12), when a successive burial, taxonomically debatable (probably connected to the BC), was deposited here, that is for about 700/600 years, no signs of funerary connections can be seen in relation to the ‘Eneolithic-Early Bronze’ ceremonial traditions of the ‘cemetery hill’ mentioned earlier. Successive burials were deposited in this place by:

- BC communities in the 19th-18th BC (1880-1771 BC – features 1/3 and 1/12), and
- a NC population about 500/400 years later, in the 15th-14th century (1443-1311 BC – feature 1/7).

The ‘funerary gaps’ mentioned above should be studied against the background of the source potential of the *Klembivka barrow cluster* which can be estimated to have been explored so far in 20 per cent at best (*see* Ch. 4).

4. TAXONOMY OF FUNERARY ARCHITECTURE AND GRAVE INVENTORIES

It must be remembered that the set of 13 grave features from Klembivka 1, both at the stage of field identification and in the preliminary report, was assigned to the YC (features 1/5, 1/14 and 1/15) and BC (features 1/1 and 1/3), while a large group of features were considered ‘Late Bronze’. The latter were graves without any grave goods and as such very hard to identify taxonomically [Razumov *et al.* 2013]. The

set is complemented by ritual features identified then as ‘Early Bronze’ (feature 1/4 – with a bone of a roe deer and 28 other indeterminate animal bones; feature 1/9 – with a fragment of the Tripolye culture (TC) vessel and 11 sheep/goat bones).

Later re-analyses – completed after 2014 – have expanded the cultural-chronological picture of cemetery users to include the NC². Furthermore, it has been found admissible to link the oldest burials and sacrificial pits – earlier associated with the YC – to the Eneolithic horizon [Ivanova, Toshev 2015; 2015a].

4.1. ENEOLITHIC

Both early barrow features were built over single burials: 1/15 = older mound and 1/14 = younger mound. The two barrows differ in size and shape at the ground level. The older one, connected to grave 1/15, is oval in shape, its maximum diameter is 24.0 m and is 0.5-0.7 m high, while the younger one, raised over grave 1/14, is circular in shape, up to 30.0 m in diameter and its original height is estimated at about 3.0 m. Both features are chronometrically close, fitting into the time bracket of 3005-2720 BC [Goslar *et al.* 2015], i.e. the time when the YC early rite was identified on Prydnistrianske 1 (3063-2682 BC) [Klochko *et al.* 2015]. The problem remains that this is also the time of the hypothetical coexistence of the decline TC, steppe Eneolithic groups and the early YC in the area of the *Yampil barrow cluster*. A symbolic manifestation of this identification-taxonomic problem is ritual feature 1/9 in which a fragment of TC pottery was found. Given the situation, the funerary architecture of both graves is crucial.

Burial 1/15 – connected to the older mound – was deposited in a rather irregular, subrectangular pit. The deceased lay supine on a mat with the lower limbs crouched and upper limbs probably extended along the body (subtype IIA according to Y.Y. Rassmakin [2004]). At the head, a lump of ochre was placed. This rite is characteristic of the *early* YC [Klochko *et al.* 2015]. However, it is not alien, either, to Eneolithic rites. In right-bank Ukraine, these traits are characteristic of the post-Stog group of burials [Rassamakin, Evdokimov 2002; Rassamakin 2013: 117, 120]. Characteristic of this group, oval grave pits are accompanied in the late phase by sub-rectangular excavations analogously to the case of Klembivka 1/15 [Ivanova 2015: 282, 283]. This rite is also close to the model found in the beginnings of the Bronze Age, which, incidentally, makes individual researchers differ in assigning ‘late Stog type’ burials either to the Eneolithic or the early phase of the YC. A similar case is encountered with Repin culture burials in left-bank Ukraine [Rassamakin 2013: 117].

² Opinions supported by Prof. V.I. Klochko and Dr. G.N. Toshev.

The stone stela – on account of its location – must have been connected to the older mound (only later was it covered by the strata of the younger mound). In the opinion of E.V. Yarovoy, most anthropomorphic stelae and stone slabs from between the Dniester and Danube rivers are linked to the cult-funeral structures of Eneolithic communities, while in later periods (especially in the Early Bronze Age, i.e. by YC populations), they were destroyed, moved and re-used for other purposes (mainly as elements of grave structures) [Yarovoy 2001: 71-73].

Additionally, in favour of connecting the older Klembivka barrow structure to the Eneolithic rite, ritual animal bone deposits speak which were made prior to mound building. In particular, feature 1/4 – having the parameters of a large post hole – finds analogies in other Eneolithic barrows, including Podolia features from Porohy (barrow 3A) [Klochko *et al.* 2015b] and Mocra (barrow 1) [Kashuba *et al.* 2001-2002: 220]. Such remains of peri-funeral rites performed prior to mound building and recorded now on the ground surface are mostly a sign of the pre-Yamnaya age of a barrow [Rassamakin 2013: 130].

The pit structure and arrangement of the deceased in grave 1/15 from Klembivka find a good analogy in feature 1/1B from Pidlisivka – the central burial connected to the building of the older mound [Klochko *et al.* 2015a]. Both barrows seem to represent the same, Late Eneolithic tradition. In both cases, too, after a short time, into the central portion of the barrow, another feature was sunk, which initiated the extension of the barrow.

Feature 1/14 from Klembivka significantly departs from the model identified with the early YC stage, in particular, in terms of the arrangement of the deceased (contracted on the left side, with hands directed towards the face). This arrangement type – subtype IIIC according to Y.Y. Rassmakin [2004: 55-59] – is encountered in Eneolithic cemeteries in the Dniester-Danube Region. It is also known from the steppe-community barrows of the Zhyvotilovka-Volchansk type [e.g. Bursuceni, graves 8, 20, 21 and 25, or Taraclia 1, barrow 1] [Yarovoy 1978; Dergachev 1991: Fig. 42: 12, 13], as well as an undetermined variety pointing to connections to Ciscaucasia (Costești, grave 2/1) [Dergachev 1982: 9, Fig. 2: 11]. This corpse arrangement is also often found in Late Tripolye cemeteries of the Vykhatyntsi and Usatovo types, both flat and barrow ones [Dergachev 1991: Fig. 14-89]. In contrast, on the Podolia Upland, the burial type found in grave 1/14 is a single occurrence. It may be related to a community representing a cultural tradition other than that shared by the builders of the older mound. The radiocarbon dating obtained for the bones from this feature (Poz-52605: 4135 ± 35 BP) is consistent with the results obtained for ‘classic’ YC burials in the *Yampil area* [Goslar *et al.* 2015]. For this reason, it seems the best solution to consider this grave a case of reminiscence of older Eneolithic traditions in the Early Bronze Age [Ivanova 2015: 285-286].

Located in the central portion of the barrow, feature 1/5 was a pit grave, irregular in shape, subrectangular, resembling the outline of feature 1/15. It was most

probably sunk into the mound of the older barrow (a certain reconstruction is prevented by the degree of barrow levelling off) and its floor part reached the ceiling level of yellow loess (it was located only slightly higher than the level of feature 1/15). On this account, it is believed that grave 5 is linked to the Late Eneolithic horizon. This belief is supported by the result of radiocarbon dating as well – close to the result obtained for grave 1/15.

The arrangement of the deceased in graves 1/5 and 1/15 was similar as well: they lay supine with the lower limbs turned to the left side. What differed them from others was probably the arrangement of upper limbs (only vestiges are left in the case of feature 1/15 – which prevents a certain reconstruction) and the presence of an ochre lump and a mat lining the pit bottom in the central grave. Considering the similarities, both graves may be combined into a single tradition and a conjecture may be made about their creation in a narrow time bracket (which is borne out by radiocarbon age determinations).

The arrangement of the deceased in feature 1/5 resembles that recorded in feature 1/7 from Pidlisivka, having the nature of a catacomb or a semi-niche. The latter feature has been thought to have been linked to the Early Catacomb horizon [Klochko *et al.* 2015a]. However, the ‘Catacomb traditions’ of constructing grave excavations appeared as early as in the Late Eneolithic in Podolia [Prydnistrianske 1, grave IV/10: 3355-3176 BC, or Bylshivtsi, Ki-8272: 3695-3370 BC – Goslar *et al.* 2015; Tkachuk 2001-2002: 214, Fig. 21], as in the entire Northern Pontic Area [Rassamakin 2004: 43, 57, 58]. They may have been continued in the YC rites already from the outset of the 3rd millennium BC. This is excellently illustrated by feature 1/5 from Klembivka 1, of direct interest to us here. It is close to the ‘taxonomic borderline’ of the Eneolithic (traditions of the TC – probably of the Gordinești group, *see* feature 9) and the early YC (2900-2760 BC – Ch. 3).

Considering the *Yampil* graves cited above and a territorially close CC grave from Oknița 3 [Klochko 1990], one can attempt to distinguish an early horizon of the Catacomb funerary rite in forest-steppe Podolia. The horizon is hardly identifiable for the time being when only archaeometric ‘field’ data is available. This is also borne out by the experience of investigating Podolia sites: Pidlisivka 1 (graves 1/4 and 1/7) and Klembivka 1 (grave 1/5), as well as Kuzmin (grave 2/5) [Bubulich, Khakheu 2002: 132].

In the studies of neighbouring lands – in relation to the *Yampil* concentration of early Catacomb traits – where syncretic, ‘Yamnaya-Catacomb’ ritual behaviour was recorded, a dominant conception has held so far that they corresponded to the ‘late YC phases’. They concerned the steppe portion of the Southern Bug (Boh) River [Fomenko 1999 – ‘features of a *Yamnaya-Catacomb* mixed type’] or the Dniester-Prut interfluvium [Ivanova, Toshev 2015; 2015a]. Similar conclusions can be drawn, too, from the updating of the discussion on the share of ‘Catacomb’ traditions in the rise of the *Yampil* barrow cluster, inspired by their recently published monograph [Ivanova 2014; Harat, *et al.* 2014]. Polemical comments concerned

a feature considered a BC grave (Severynivka 1/4), ignoring, however, the question of its more detailed taxonomic identification [Ivanova *et al.* 2015].

Thus, a more active presence of the CC in the left-bank Dniester Area should be credibly dated to the middle of the 3rd millennium BC. This estimate follows from both typo-chronological findings and the directly dated feature/grave I/4 from Prydnistrianske 1 (a grave showing affinities with the traditions of the ‘classic CC stage’): 2600–2450 BC [Goslar *et al.* 2015]. This date corroborates one of the suggested variant chronological brackets of the CC in the Dniester-Prut interfluve: 2450–1950 BC [Kaiser 2003] or 2600–2200 BC [Ivanova 2014: 22; Ivanova, Toshev 2015a].

4.2. LATE BRONZE AGE: BABYNO AND NOUA CULTURES

The Klembivka barrow clearly demonstrates the characteristic traits of Late Bronze burials in the region under investigation conventionally assigned to the BC (features 1, 2, 3 and 12) and NC (features 7, 11 and 13-?). Without grave goods and ¹⁴C dates, they are often hard to distinguish. This circumstance, no doubt, bears out the opinion shared by almost all researchers studying the NC about the participation of the local BC variety (Mnogovalikovaya Pottery culture) in the formation of the NC. In the Klembivka barrow, a rare case of a mixed, BC and NC flat cemetery ‘crawling’ onto a barrow chronologically straddling the Eneolithic and Early Bronze Age was recorded.

5. THE POSITION OF KLEMBIVKA 1 CEMETERIES IN THE CULTURAL SPACE OF THE BLACK SEA DRAINAGE BASIN

As already mentioned earlier, the investigated barrow is one of a cluster of five features of similar morphology that were identified on the surface of the ground on the high watershed crest of the Rusava and Korytna rivers (Fig. 2). We assume that a relatively complete sequence of ritual behaviour from the 3rd-2nd millennium BC may be systemically analysed on the surface of the Klembivka barrow cluster. The relativity of this assessment follows from the limited – up to a maximum of 20 per cent – state of its surface exploration. Moreover, it is worth noting in this context that the cluster occupies a fringe, northernmost position in relation to the *Yampil concentration of barrow cemetery complexes* [Koško *et al.* (Eds) 2014].

In terms of site distance from the Dniester valley, the necropolises in Klembivka 1 and Pidlisivka 3A are relatively far ‘less on the Dniester’ than cemeteries in Prydnistryanske 1 or Porohy 3A. This applies to the ‘exposition’ of burials from the final period of the Late Eneolithic – i.e. from the beginning of the 3rd millennium BC – with a clearly less marked presence of the ‘YC stage’ on these two sites. We may be given in this case an important hint as to the interpretation of the autogenesis of the *Yampil concentration of barrow cemetery complexes*: the first reading of the stages of its chorography.

In the case of the necropolises of the Late Bronze Age, it must be observed that Klembivka (or to put it more broadly ‘Yampil’) evidence slightly extends to the north the NC area within the left-bank Middle Dniester Area [Krushelnitska 2006].

The general import of the above findings is that the investigations of Klembivka 1 in the first place give support to the thesis about the strong position of the Eneolithic trend in the rise of the Podolia ‘barrow architecture’ by drawing attention to its long development in parallel with the ‘Yamnaya’ trend [Klochko *et al.* 2015a]. Inspiring observations continue to be made by identifying the co-development of both trends far away from the Dniester but close to the watershed between the Dniester and Southern Bug (Boh) rivers.

In the light of this conclusion, major diagnostic significance is acquired by a typically ‘watershed barrow cluster’ in Severynivka, on the upper Murafa River. Hence, this destination is also worth considering when drawing plans for further desirable research [Klochko, Koško 2013: Fig. 5].

Translated by Piotr T. Żebrowski

REFERENCES

Bubulich V.G., Khakheu V.P.

- 2002 Issledovaniya kurganov v Kamenskom rayone na levoberezhze Srednego Dnestra. In: N.A. Ketaru (Ed.) *Severnoe Prichernomore ot eneolita k antichnosti*, 112-148. Tiraspol.

Dergachev V.A.

- 1982 *Materialy raskopok arkheologicheskoy ekspeditsii na Srednem Prute (1975-1976 gg.)*. Kishinev.

Dergachev V.A., Manzura I.V.

- 1991 *Pogrebalnye komplekсы pozdnego Tripolia*. Kishinev.

Fomenko V.N.

- 1999 Ob odnoy gruppe pogrebeniy vremeni katakombnoy kultury v stepnom Pobuzhe. In: O.G. Shaposhnikova, V.V. Otroschenko, S.Z. Pustovalov, G.N. Toshev, G.I. Shapovalov (Eds) *Problemy izucheniya katakombnoy kulturno-istoricheskoy obschnosti*, 99-101. Zaporozhe.

Goslar T., Klochko V.I., Koško A., Włodarczak P., Żurkiewicz D.

- 2015 Chronometry of Late Eneolithic and 'Early Bronze' cultures in the Middle Dniester area: investigations of the Yampil Barrow Complex. In: A. Koško (Ed.). *Podolia as a Cultural Contact Area in the 4th/3rd-2nd Millennium BC*. *Baltic-Pontic Studies* 20: 256-291.

Harat K., Potupczyk M., Razumov S.

- 2014 Charakterystyka źródeł archeologicznych pozyskanych w latach 1984-1993. In: A. Koško, M. Potupczyk, S. Razumow (Eds) *Naddniestrzańskie komplekсы cmentarzysk kurhanowych społeczności z III i z pierwszej połowy II tysiąclecia BC w okolicach Jampola, obwód winnicki. Z badań nad północno-zachodnią rubieżą osadnictwa społeczności kręgu kultur „wczesnobrązowych” strefy pontyjskiej. Badania z lat 1984-2010*. *Archaeologia Bimaris – Monografie* 6, 45-204. Poznań.

Ivanova S.V.

- 2014 Stan badań nad osadnictwem kultur jamowej i katakumbowej w zlewni dolnego Dniestru. In: Koško A., Potupczyk M., Razumow S. (Eds) *Naddniestrzańskie komplekсы cmentarzysk kurhanowych społeczności z III i z pierwszej połowy II tysiąclecia BC w okolicach Jampola, obwód winnicki. Z badań nad północno-zachodnią rubieżą osadnictwa społeczności*

kręgu kultur „wczesnobrązowych” strefy pontyjskiej. *Badania z lat 1984-2010. Archaeologia Bimaris – Monografie* 6, 17-33. Poznań.

- 2015 Protobudzhakskiy gorizont Severo-Zapadnogo Prichernomoria. *Stratum plus* 2: 275-294.

Ivanova S.V., Klochko V.I., Koško A., Szmyt M., Toshev G.N., Włodarczak P.

- 2015 ‘Yampil inspirations’ in the study of the Dniester cultural contact area at the frontier of Pontic and Baltic drainage basins. In: A. Koško (Ed.). *Podolia as a Cultural Contact Area in the 4th/3rd-2nd Millennium BC. Baltic-Pontic Studies* 20: 406-424.

Ivanova S.V., Toshev G.N.

- 2015 Late Eneolithic and Bronze Age prologue Pontic societies. Forest-steppe Middle Dniester and Prut drainage basins in the 4th/3rd-2nd millennium BC: A history of investigations. In: A. Koško (Ed.) *Podolia as a Cultural Contact Area in the 4th/3rd-2nd Millennium BC. Baltic-Pontic Studies* 20: 7-39.
- 2015a The Middle-Dniester cultural contact area of early metal age societies. The frontier of Pontic and Baltic drainage basin in the 4th/3rd-2nd millennium BC. In: A. Koško (Ed.) *Podolia as a Cultural Contact Area in the 4th/3rd-2nd Millennium BC. Baltic-Pontic Studies* 20: 336-405.

Jachimowicz K.

- 2015 *Analiza przestrzenna kurhanów kultury grobów jamowych z okolic Jam-pola, Ukraina* (held in the archives of Adam Mickiewicz University) Poznań.

Kaiser E.

- 2003 *Studien zur Katakombengrabkultur zwischen Dnepr und Prut. Archäologie in Eurasien* 14. Mainz.

Kashuba M.T., Kurchatov S.Y., Scherbakova T.A.

- 2001-2002 Kochevniki na zapadnoy granitse Velikoy stepi (po materialam kur-ganov u s. Mocra), *Stratum plus* 4: 180-252.

Klochko E.O.

- 1990 Redkiy pogrebalnyi kompleks katakombnoy kultury na Srednom Dnestre. In: O.G. Shaposhnikova, V.V. Otroschenko, S.Z. Pustovalov, G.N. Toshev, G.I. Shapovalov (Eds) *Problemy izucheniya katakombnoy kulturno-istoricheskoy obschnosti*, 28-30. Zaporozhe.

Klochko V.I., Koško A.

- 2013 The Baltic Drainage Basin in the Reconstruction of the Mental Map of Central Europe Held in Common by Northern-Pontic Early – Bronze Civil-

zation Communities: 3200-1600 BC. An outline of the research programme. In: A. Koško, V.I. Klochko (Eds) *The Ingul-Donets Early Bronze Civilization as Springboard for Transmission of Pontic Cultural Patterns to the Baltic Drainage Basin 3200-1750 BC. Baltic-Pontic Studies* 18: 9-20.

Klochko V.I., Koško A., Razumow S.M., Włodarczak P.

- 2014 Problem dniesztrańsko-wiślańskiego w bałtyckich intruzjach społeczności kultur jamowej i katakumbowej. Zarys aktualnego stanu badań. In: A. Koško, M. Potupczyk, S. Razumow (Eds) *Naddniesztrańskie kompleksy cmentarzysk kurhanowych społeczności z III i z pierwszej połowy II tysiąclecia BC w okolicach Jampola, obwód winnicki. Z badań nad północno-zachodnią rubieżą osadnictwa społeczności kręgu kultur „wczesnobrzązowych” strefy pontyjskiej. Badania z lat 1984-2010. Archaeologia Bimaris – Monografie* 6, 387-398. Poznań.

Klochko V.I., Koško A., Potupchik M.V., Włodarczak P., Żurkiewicz D., Ivanova S.V.

- 2015 Tripolye (Gordinești group), Yamnaya and Catacomb culture cemeteries, Prydnistryanske, site 1, Yampil Region, Vinnitsa Oblast: an archaeometric and chronometric description and a taxonomic and topogenetic discussion. In: A. Koško (Ed.) *Podolia as a Cultural Contact Area in the 4th/3rd-2nd Millennium BC. Baltic-Pontic Studies* 20: 183-255.

Klochko V.I., Koško A., Razumov S.M., Włodarczak P., Żurkiewicz D.

- 2015a Eneolithic, Yamnaya, Catacomb and Babyno culture cemeteries, Pidlisivka, barrow 1, Yampil Region, Vinnitsa Oblast: archaeometry, chronometry and taxonomy. In: A. Koško (Ed.) *Podolia as a Cultural Contact Area in the 4th/3rd-2nd Millennium BC. Baltic-Pontic Studies* 20: 40-77.
- 2015b Eneolithic, Yamnaya and Noua culture cemeteries from the first half of the 3rd and the middle of the 2nd millennium BC, Porohy, site 3A, Yampil Region, Vinnitsa Oblast: archaeometric and chronometric description, ritual and taxonomic-topogenetic identification. In: A. Koško (Ed.) *Podolia as a Cultural Contact Area in the 4th/3rd-2nd Millennium BC. Baltic-Pontic Studies* 20: 78-141.

Koško A., Potupczyk M., Razumow S. (Eds)

- 2014 *Naddniesztrańskie kompleksy cmentarzysk kurhanowych społeczności z III i z pierwszej połowy II tysiąclecia BC w okolicach Jampola, obwód winnicki. Z badań nad północno-zachodnią rubieżą osadnictwa społeczności kręgu kultur „wczesnobrzązowych” strefy pontyjskiej. Badania z lat 1984-2010. Archaeologia Bimaris – Monografie* 6. Poznań.

Krushelnitska L.

2006 *Kultura Noa na zemliakh Ukrayiny*. Lviv.

Litvinova L.V., Łukasik S., Żurkiewicz D., Gwizdała M., Chyleński M., Mamström H., Jakobsson M., Juras A.

2015 Anthropological description of skeletal material from the Dniester Barrow-Cemetery Complex, Yampil Region, Vinnitsa Oblast (Ukraine). In: A. Koško (Ed.) *Podolia as a Cultural Contact Area in the 4th/3rd-2nd Millennium BC. Baltic-Pontic Studies* 20: 292-335.

Rassamakin Y.Y.

2004 *Die nordpontische Steppe in der Kupferzeit Gräber aus der Mitte des 5. Jts. bis Ende des 4. Jts. v. Chr. Archäologie in Eurasien* 17. Mainz.

2013 From the Late Eneolithic period to the Early Bronze Age in the Black Sea steppe: what is the Pit Grave Culture (late fourth to mid-third millenium BC)? In: V. Heyd, G. Kulcsár, V. Szeverényi (Eds), *Transition to the Bronze Age. Interregional interaction and socio-cultural change in the third millenium BC. Carpathian Basin and neighbouring regions*, 113-138. Budapest.

Rassamakin Y.Y., Evdokimov G.L.

2002 Novyi eneoliticheskiy mogilnik na r. Ingulets y problema vydeleniya “post-stogovskikh” pogrebeniy. *Arkheologicheskii almanakh* 10: 71-86.

Razumow S., Koško A., Karnaukh E., Manigda O.

2013 *Zvit pro robotu spilnoi ukrainsko-polskoyi Yampilskoi arkheolohichnoyi ekspeditsii v 2012 rotsi* (held in the archives of IA NANU). Kyiv.

Tkachuk T.M.

2001-2002 Konets etapa CI i nachalo CII tripolskoy kultury verkhnego Podnestrovia (na materialakh poselenia Bilshivtsi. *Stratum plus* 2: 196-217.

Yarovoy E.V.

1978 *Otchet o polevykh issledovaniyakh eneoliticheskoy archeologicheskoy ekspeditsii v 1977 godu*. Kishinev.

2001 Eneoliticheskie sviatilisha y antropomorfnye stely Dnestrovsko-Prutskogo mezhdurechia. In: *Davnia istoriya Ukrayiny i sumizhnykh rehioniv. Carpatica* 13. Yuvileynyi zbirnyk na chest 70-richchia vid dnia narodzhennia prof. E.A. Balaguri, 67-77. Uzhhorod.

Zhuravlov O.

2013 *Vyznachennia osteolohichnykh materialiv z kurhany 1 bilia s. Klembivka* (held in the archives of IA NANU). Kyiv.

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**TRIPOLYE (GORDINEȘTI GROUP), YAMNAYA
AND CATACOMB CULTURE CEMETERIES,
PRYDNISTRYANSKE, SITE 1, YAMPIL REGION,
VINNITSA OBLAST: AN ARCHAEOLOGICAL
AND CHRONOMETRIC DESCRIPTION AND
A TAXONOMIC AND TOPOGENETIC DISCUSSION**

ABSTRACT

The paper presents the results of excavations and analytical studies regarding the taxonomic classification of a unique funeral site associated with the societies of early 'barrow cultures' of the north-western Black Sea Coast in the 4th-3rd millennium BC. The study discusses the ceremonial centres of the Tripolye culture–Gordinești group, as well as Yamnaya and Catacomb cultures.

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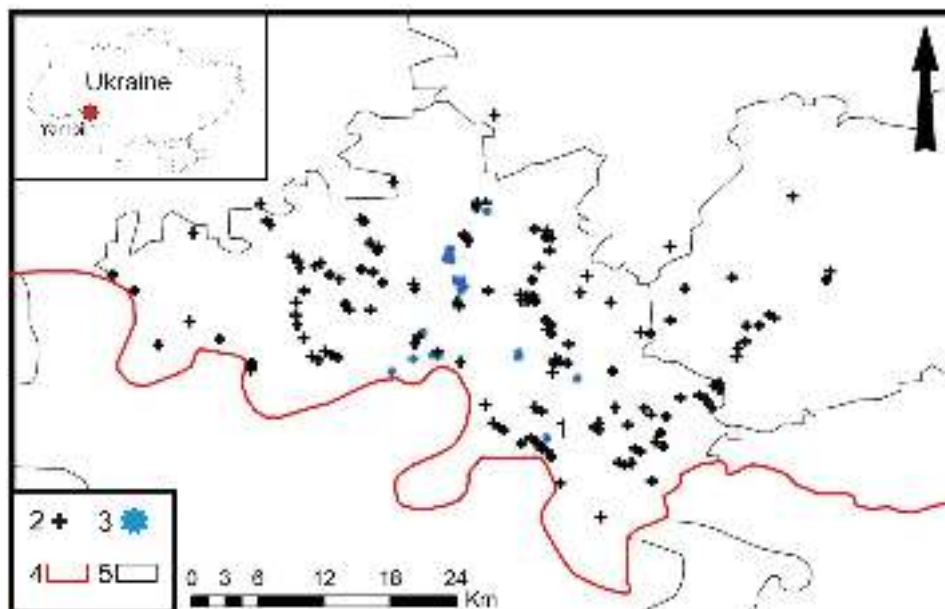


Fig. 1. Map of *Yampil Barrow Complex*, showing administrative borders: 1 – Prydnistrianske, barrows 1-4; 2 – barrows; 3 – excavated barrows; 4 – Ukrainian-Moldovan frontier; 5 – Yampil Region border. After Jachimowicz 2015, revised

Key words: ‘barrow cultures’, Eneolithic, Early Bronze Age, Middle Dniester Area

The investigations of site 1 in Prydnistrianske, Yampil Region, Vinnitsa *Oblast*, were carried out in 2012 (surface survey) and 2014 (excavations) as part of the Polish-Ukrainian research project (using archaeometric and chronometric methods) to investigate the north-western frontier of settlement by ‘Early Bronze’ culture communities in the Pontic zone, carried out by the Institute of Prehistory, Adam Mickiewicz University (AMU) in Poznań and the Institute of Archaeology, Ukrainian National Academy of Sciences (UNAS) in Kyiv. The project was headed by Prof. Aleksander Koško, representing the AMU Institute of Prehistory, assisted by Dr. Piotr Włodarczak, representing the Institute of Archaeology and Ethnology of Polish Academy of Sciences, Centre for Mountains and Uplands Archaeology in Kraków, and by Prof. Viktor I. Klochko, Head of Archaeology Chair, National University of “Kyiv-Mohyla Academy”, representing the Institute of Archaeology, UNAS [see Koško *et al.* (Eds) 2014].

The investigations covered four barrows from the Eneolithic and the prologue of the Bronze Age, making up a clearly visible *ceremonial centre*. Currently, it can be connected to – taking account of the state of contemporary deformations of the

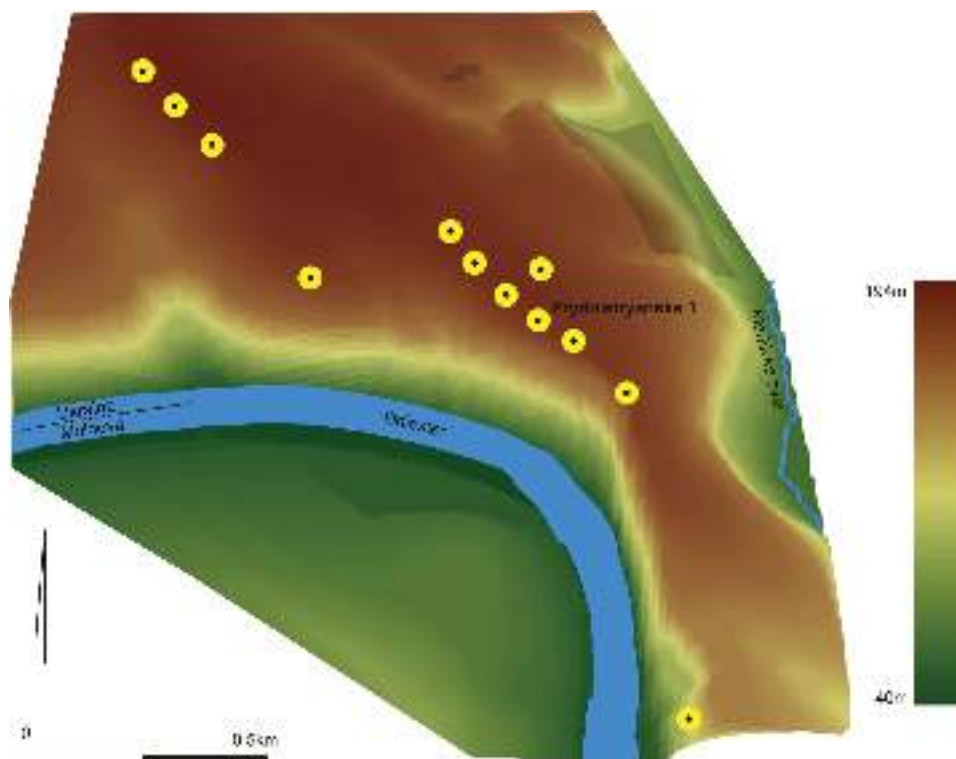


Fig. 2. Prydnistrianske, Yampil Region. Elevation model of the immediate surroundings of site 1

area – from the horizontal perspective, to a minimum of four mounds: one large and clearly standing out against the landscape (=Prydnistrianske 1-IV) and three small ones, barely identifiable on the surface (Prydnistrianske 1-I, II, III).

Further surface survey of the *ceremonial centre* is planned using the geomagnetic method and availing itself of the data from satellite prospection, suggesting a significant extension of the site. Bearing this in mind, the present authors are aware that this paper does not exhaust all potential sources from the Prydnistrianske 1 site. It is believed to be a component of a broader, only partially marked, *ceremonial centre* of ‘early barrow’ communities.

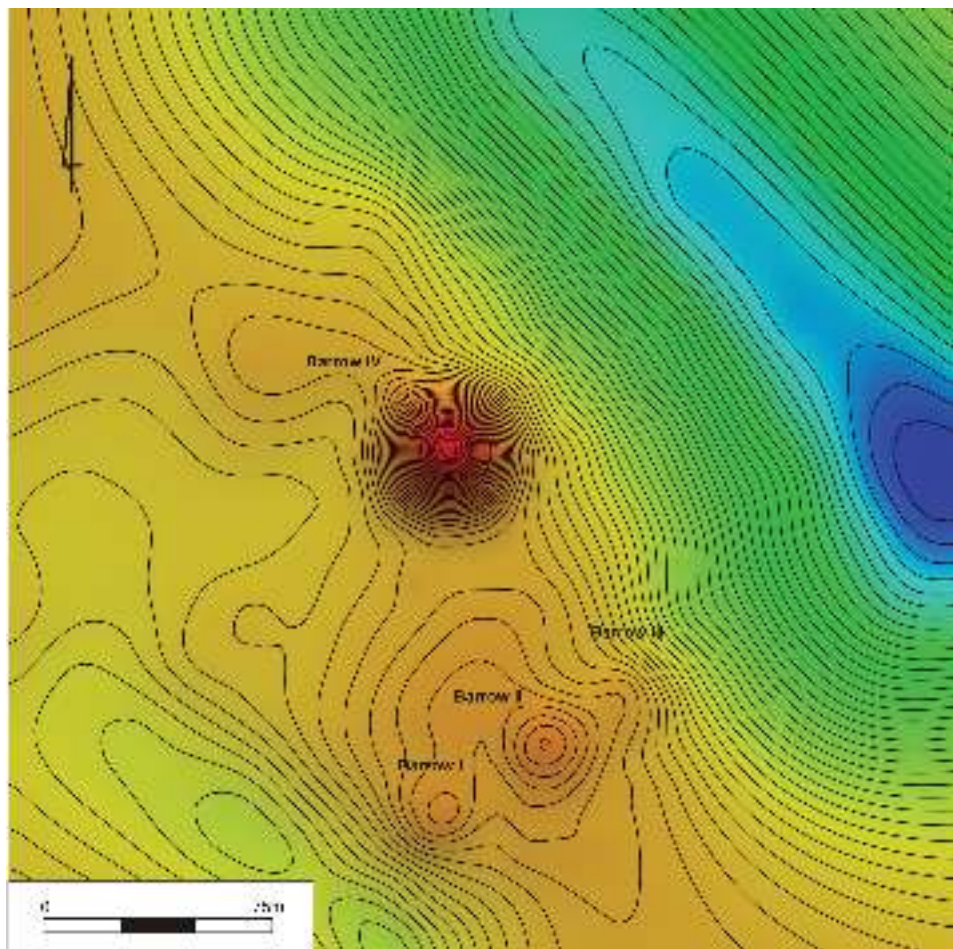


Fig. 3. Prydnistrianske, Yampil Region, Vinnitsa *Oblast*, site 1. Site elevation model

1. TOPOGRAPHY OF CEMETERIES AND FIELD INVESTIGATION METHODOLOGY

The site is located about 2.0 km south of the locality of Prydnistrianske, 12.5 km southwest of Yampil and 7.0 km west of the border with Moldova (territory of the ‘Republic of Transdnistria’) (Fig. 1). The cemetery was founded on the ridge of a long promontory extending NW-SE, the absolute height of which reached 191 m above sea level, in the west bounded by the Dniester valley and in the east by the valley of its tributary – the Markivka River. The highest point of the cemetery, barrow

IV, stands about 1.0 km away from the Dniester valley and about 1.5 km from the Markivka valley (Fig. 2). About 100 m south of the barrow, there were three small mounds grouped linearly (Figs. 3, 4). The features were situated on the substratum of typical chernozem, showing “characteristics typical of pedogenic conditions prevailing in the transition zone of the subboreal belt with a temperate climate displaying marked continental characteristics and supporting steppe vegetation” [Bednarek, Jankowski 2014; for a broader description see their forthcoming paper].

In terms of morphometrics, the barrows may be assigned – on the scale of chronologically comparable features (Eneolithic and those belonging to the Yamnaya culture, YC) – to two typological groups or forms resembling modules identified on the Southern Bug River: (a) “0.8 to 1.2 m high and 15 to 18 m wide” and (b) “1.5 to 2.0 m high and 18 to 22 m wide” [Shaposhnikova *et al.* 1986: 11]. The 30 years that have passed since this systematics was formulated modify the above quoted height criteria. In the Middle Dniester Area, this is particularly true for group (a), the surface field inventory of which is possible now only ‘by the way’ of the field survey of group (b). It was in this way that the cemetery in Prydnistrianske 1 (barrows I, II, III) was identified. A chance of expanding the inventory of ‘Yampil’ type (a) barrow networks (mostly Eneolithic, presumably) is offered now solely by aerial reconnaissance: by planes and satellites. The outlined division of mound preservation states is closely reflected in the relevant stratigraphy (*see* Ch. 2).

The recorded barrow mounds were badly deformed by, as it is believed, barrow flora and fauna [Sudnik-Wójcikowska *et al.* 2013].

The barrows were explored by digging trenches and keeping baulks extending E-W¹ Barrows I-III were thoroughly investigated, while barrow IV was investigated only in part. Excavating the eastern portion of the latter was prevented by the presence of a power-line pylon.

2. BARROWS DESCRIPTION: MOUND MORPHOMETRY AND STRATIGRAPHY, AND SCATTER PATTERN, STRUCTURE AND FURNISHINGS OF GRAVES

This paper has not included specialist analyses, chiefly bio-archaeological ones, to be published in one of the next volumes of *Baltic-Pontic Studies* (forthcoming). All the anthropological and archaeozoological datas included in the descriptions below come from the separate publication [Litvinova *et al.* 2015] have been used.

¹ See the description of the mechanical method of barrow exploration ‘by using trenches and baulks’ in Koško, Razumov 2014.

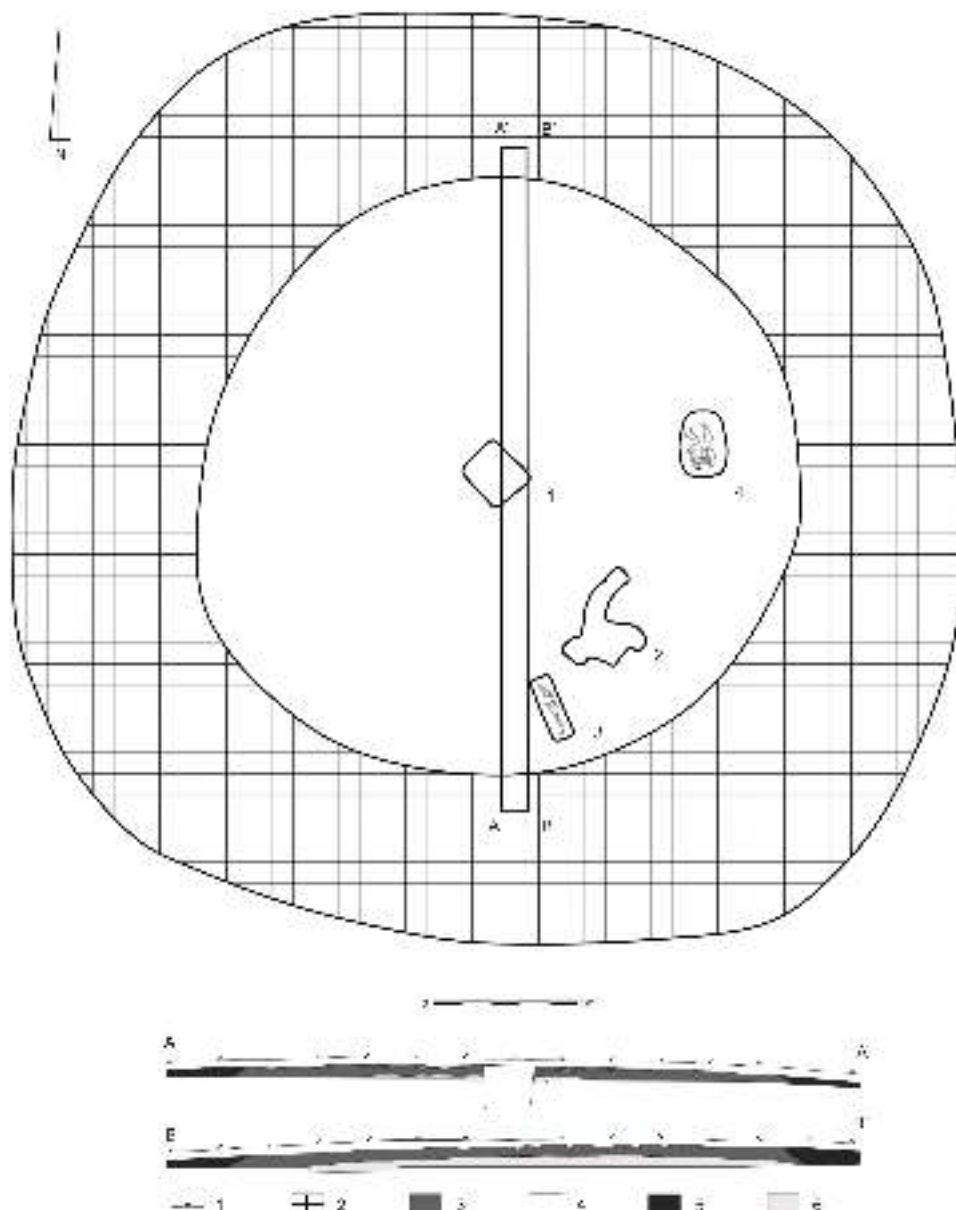


Fig. 5. Prydnistrianske, Yampil Region. Plan of barrow I. 1 – surface soil; 2 – barrow-surrounding ditch; 3 – mound remains, original humus and loess browning level; 4 – yellow loess spills; 5 – fill of barrow-surrounding ditch; 6 – yellow loess

Barrow I

The barrow mound has been almost completely levelled off due to ploughing. It was about 20 metres in diameter and about 30 cm high (Fig. 5). While excavating, a central profile baulk, 1.0 metre wide and oriented N-S, was kept. Under the mound, a single hypothetical centrally-located burial was recorded (feature/grave I/1), in the fill of which, however, no bones or their negatives were found, but Tripolye culture (TC) pottery was identified instead. These observations suggest that the feature may have been a cenotaph or – more likely – that it represents a ‘post-funeral deconstruction’. Into the mound, another Catacomb culture (CC) burial was dug in – grave I/4 – and two Iron Age features, which are not covered by this paper: nos. I/2 and I/3 (dated to the Sarmatian period). The edge of the mound was marked by a circular, trough-like ditch produced by excavating earth to build the barrow. In the barrow mound and in feature fills, in the secondary context, 26 flint artefacts were discovered.

Feature I/1

Culture	Tripolye-Gordinești
Dating	Poz-66235: 13390 ± 70 BP (wood?); Poz-66214: 4700 ± 70 BP (wood)
Structure type	Pit
Size at the level of discovery	1.9 × 1.75 m
Size at the level of the bottom	1.85 × 1.7 m
Depth	1.4 m
Pit orientation	NW-SE
Deviation	5°S
Animal bones	–
Ritual objects	Unidentified object made of bone or antler in the SW corner of the pit
Comments	The fill was found to contain small fragments of a wooden structure, two pottery shards and three flint artefacts.

The feature was identified as central and located, quite naturally, underneath the central part of the mound. It was rectangular and had regular vertical walls (Figs. 6, 7). From the N and S, it was accompanied by a spill of yellow loess 12 cm thick and up to 180 cm wide. The fill was made up of rather homogeneous dark soil, grey-brown in colour and secondarily disturbed by many rodent burrows. In the feature, at various levels, a discovery was made of pieces of wood which may have been the remains of a cover. Their orientation suggests that logs were placed along the longer axis of the grave (NW-SE). At the pit bottom, no traces of a burial were found. At the western corner, the fragments of a poorly-preserved object made of bone or antler were found (Fig. 7: 2). Close to it, at the north-western wall of the feature, an ornamented pottery shard belonging to the TC was recovered.

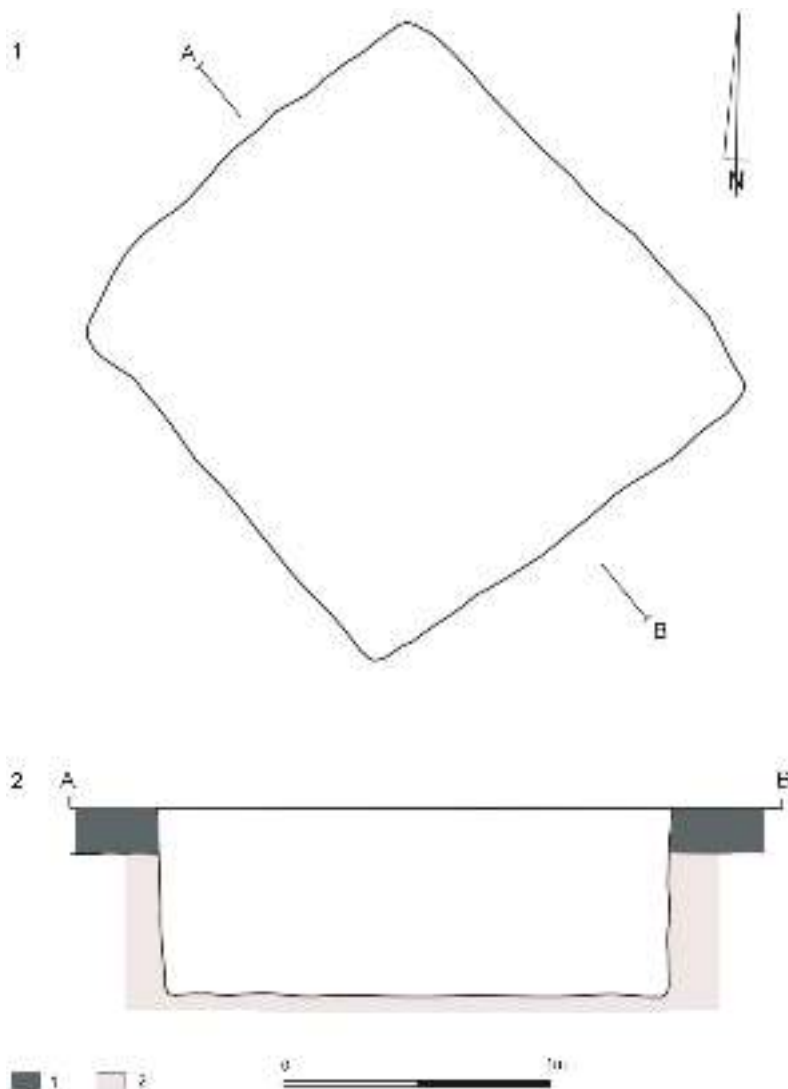


Fig. 6. Prydnistrianske, Yampil Region, barrow I. Plan and profile of feature I/1. 1 – original humus and loess browning level; 2 – yellow loess

Another smaller fragment, bearing an ornament too (coming from another vessel), was discovered in the central portion (Fig. 8: 1,2).

Artefact description

1. A fragment of a vessel belly decorated with oblique incised lines and circular pinholes. The thickness of the shard is 7.0-9.0 mm. The outer surface is light-brown/orange in colour, even and semi-mat. The inner surface is grey-brown



Fig. 7. Prydnistrianske, Yampil Region, barrow I. Ceiling plan and profile of feature I/1

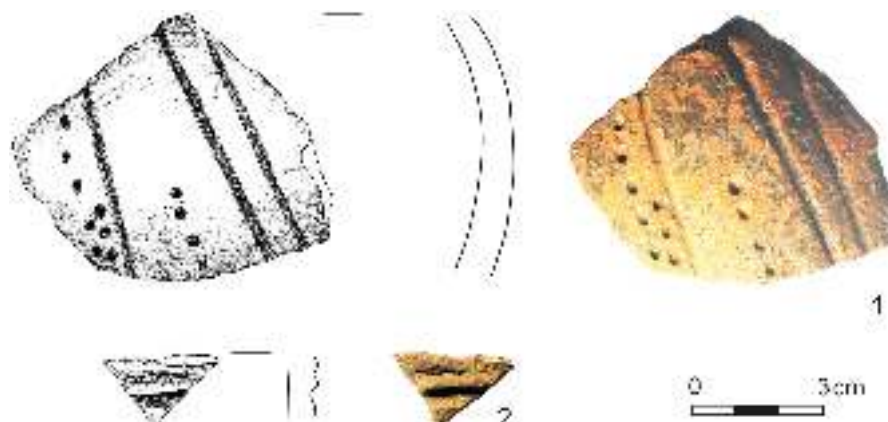


Fig. 8. Prydnistrianske, Yampil Region, barrow I, feature I/1. Ceramic shards from the feature fill. 1 – belly fragment; 2. neck fragment

in colour, even and mat. The fracture is grey and slightly laminated. It contains temper of crushed ceramics, the granulation of which varies (up to 4.0 mm), and sand (Fig. 8: 1).

2. A fragment of a vessel neck ornamented with horizontal flutes. The thickness of the shard is 7.0 mm. The outer surface is grey in colour, even and mat. The inner surface is grey-brown in colour, even and mat. The fracture is grey. The clay contains a medium amount of temper of crushed ceramics, the coarseness of which reaches 2.0 mm (Fig. 8: 2).

Feature I/4

Culture	Catacomb		
Dating	Poz-66218: 4190 ± 80 BP (wood); Poz-66219: 4070 ± 35 BP (human bone from burial no. 1); Poz-66220: 3940 ± 40 BP (human bone from burial no. 2); Poz-66732: 3940 ± 35 BP (human bone from burial no. 2)		
Grave pit		Burial	
Structure type	Pit	Sex	1. Female 2. Male
Number of burials	2	Age	1. 15 year 2. 35-50 years
Size at the level of discovery	2.3×1.55 m	Orientation	1. S-N 2. S-N
Size at the level of the bottom	2.2×1.5 m	Deviation	1. 17° E 2. 21° E
Depth	1.3 m	Arrangement of head	1. Face upwards 2. On the right side
Pit orientation	S-N	Trunk arrangement	1. Supine 2. On the right side
Deviation	0°	Upper limbs	1. H 2. F?

Distance from barrow centre	7.38 m	Lower limbs	1. 5 2. 7
Azimuth	81°	Ochre	–
Wooden roofing	–	Presence of a mat	–
Timber orientation		Animal bones	–
Other structural elements	–	Ritual objects	Stone mace
Comments	In the fill: 6 flint artefacts		

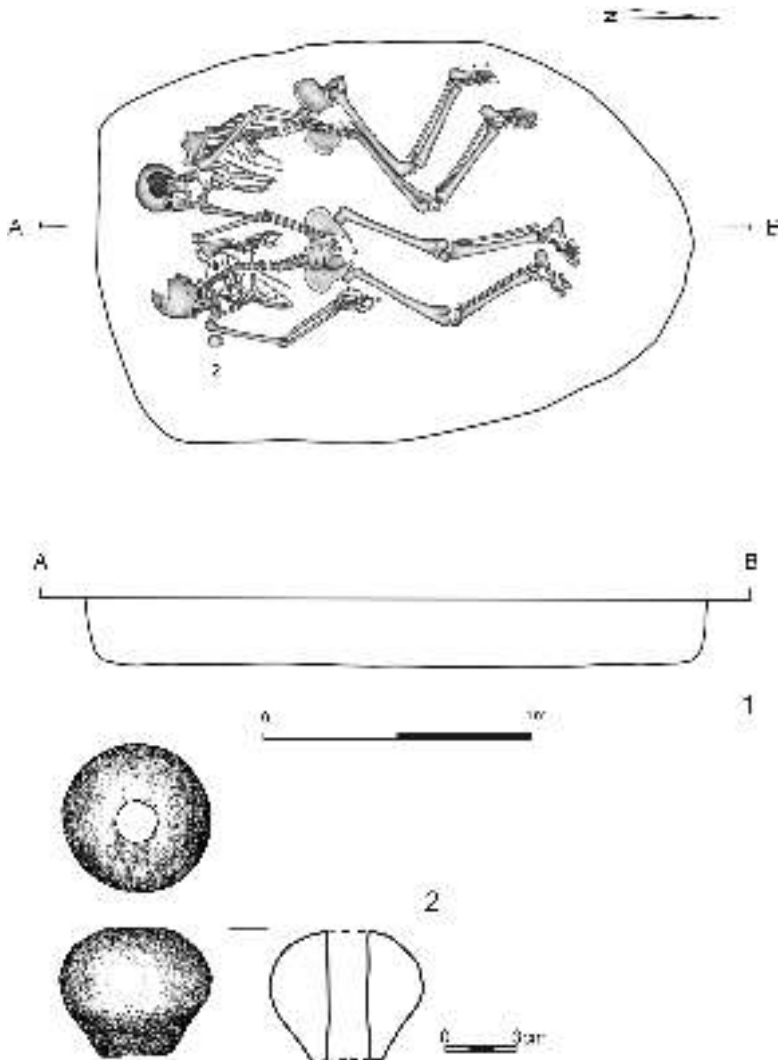


Fig. 9. Prydnistrianske, Yampil Region, barrow I, feature I/4. 1 – burial level and feature profile; 2 – stone mace



Fig. 10. Prydnistrianske, Yampil Region, barrow I, feature I/4. 1 – burial level; 2 – stone mace *in situ* with copper catches visible; 3 – remains of a wooden mace handle; 4 – stone mace

Table 1

Prydnistrianske, Yampil Region, grave I/4. Analysis of the chemical composition of a metal mace shaft catch performed by the laboratory of the UNAS Institute of Archaeology

Cu	As	Si	Cl	P	Al	S	Ti	Fe	Ca	Ag	Cr
96.64	2.115	0.355	0.285	0.173	0.117	0.093	0.072	0.049	0.048	0.033	0.022

The grave was sunk into the eastern barrow edge. Its outline was recorded about 90 cm below the current ground level. It had a regular oval shape and its longer axis was oriented N-S. Its fill was made up of grey-brown earth, which had been disturbed by many animal burrows. On the bottom, two skeletons, oriented N-S, were discovered, with their heads pointing S.

Skeleton 1 (eastern), belonging to an *adult* male (35-50 years), lay supine with the head slightly turned E. Its lower limbs were slightly bent and turned to the right side. Immediately next to its right side, a stone mace was found together with copper elements used to fasten its handle. There were no other grave goods. Skeleton 2 (western), belonging to a *juvenis* individual (about 15 years old; female?), lay on its right side with the face pointing E (at the same time towards the other corpse). Both its lower limbs were similarly bent (at a slightly obtuse angle at the hips and a slightly acute angle at the knees). The hand of the right upper limb was placed under the pelvis of skeleton 1. The left upper limb, in turn, was more strongly bent and directed, in contrast, towards its own pelvis (Fig. 9: 1; 10: 1).

Grave goods description

1. A fine-crystalline rock mace, grey with a bluish shade. The rock is macroscopically identified as basalt or, less credibly, amphibolite (assessment by Dr. V.I. Korinnij, Chair of Geography, Faculty of Natural and Geographic Sciences, Vinnitsa State Pedagogical University). Pear-shaped. Carefully polished on the top; on its bottom portion, it bears obliterated traces of stamping. The perforation is wider at the bottom. On the top, next to the perforation, traces of crushing left by a wedge are noticeable. Dimensions: height 53-54 mm, width: 65 mm, perforation diameter: 18 mm (top) and 21 mm (bottom) (Fig. 9: 2, 10: 4).

Remains of the mace handle fastening, copper catches were found irregularly arranged (roughly radial fashion) on the mace top (Fig. 10: 2, Table 1). At the metal elements, pieces of wood have survived, being the remains of a handle (Fig. 10: 3).

Barrow II

The mound has been almost completely ploughed away, reducing its height to only 10-20 cm. The barrow was slightly oval in shape and measured about 23.0 × 20.0 metres. While excavating, a central profile baulk, 1.0 metre wide and oriented N-S, was kept. Under the mound, a single hypothetical centrally-located burial was recorded (feature/grave II/2), in the fill of which, however, no bones or their negatives were found. These observations suggest that the feature may have been a cenotaph or – more likely – that it represents a ‘post-funeral deconstruction’.

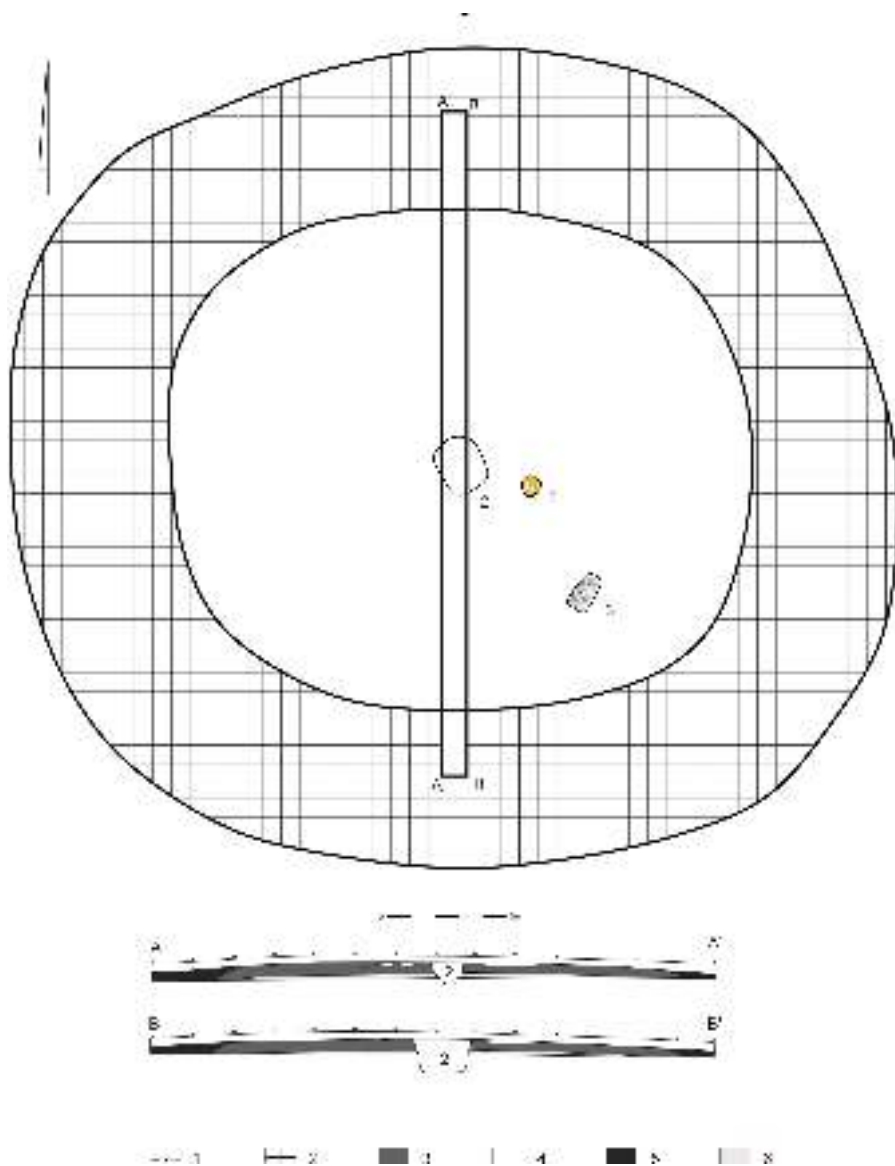


Fig. 11. Prydnistrianske, Yampil Region. Plan of barrow II. 1 – surface soil; 2 – barrow-surrounding ditch; 3 – mound remains, original humus and loess browning level; 4 – yellow loess spills; 5 – fill of barrow-surrounding ditch; 6 – yellow loess

Next to it, a circular hearth (feature II/1), and in its southern portion, a pit of indeterminate chronology (feature II/3) were exposed. The barrow edge was marked by a trough-like borrow ditch filled with dark, black-brown sediment (Fig. 11). In

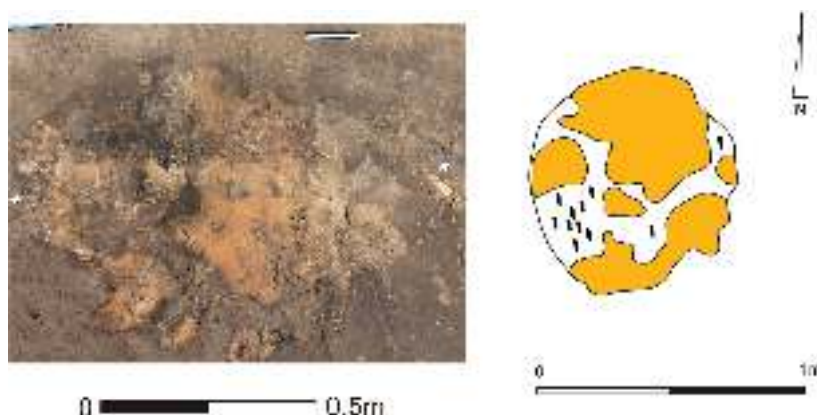


Fig. 12. Prydnistrianske, Yampil Region, barrow II. 1, 2 – horizontal projection of feature II/1

the barrow mound and in feature fills, in the secondary context, 13 flint artefacts were discovered.

Feature II/1

Culture	Tripolye-Gordinești
Dating	Poz-66221: 4485 ± 30 BP (charcoal)
Structure type	Shallow, trough-like hollow
Size at the level of discovery	?
Size at the level of the bottom	0.8 × 0.8 m
Depth	0.45 m
Pit orientation	
Deviation	
Animal bones	–
Ritual objects	–
Comments	

A circular hearth was discovered in the barrow centre. Five to 10 cm thick, its fill was made primarily of earth lumps overheated orange, and clusters of charcoals. The feature was only slightly sunk into the original ground level and must have been covered by the mound together with feature 2 (Fig. 12).

Feature II/2

Culture	Tripolye-Gordinești
Dating	Poz-66222: 4655 ± 35 BP (wood)
Structure type	Pit
Size at the level of discovery	2.35 × 1.9 m
Size at the level of the bottom	2.3 × 1.65 m

Depth	1.65 m
Pit orientation	NW-SE
Deviation	12°N
Animal bones	—
Ritual objects	—
Comments	Pieces of wood in the fill

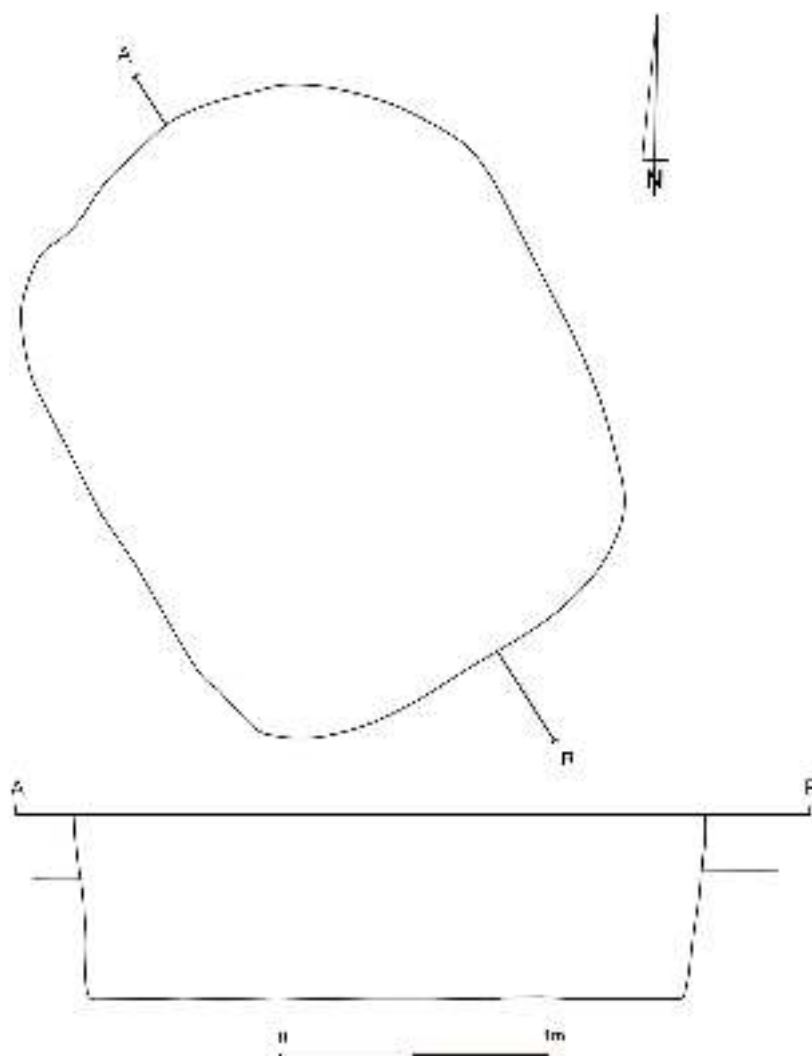


Fig. 13. Prydnistrianske, Yampil Region, barrow II. Bottom level and profile of feature II/2



Fig. 14. Prydnistrianske, Yampil Region, barrow II. Ceiling level and bottom of feature II/2

It is a central barrow feature found underneath the central part of the mound. It is rectangular in shape with rounded corners and is oriented NW-SE. Its fill is made up of dark, homogeneous, grey-brown earth. Within it, several small fragments of rotten wood were found. Its walls are straight, almost vertical, while its flat bottom extends about 1.3-1.35 m below the original surface. On the northern and southern sides of the feature, there are spills of yellow loess, left behind after the pit was dug. They are up to 0.3 m thick and 2.5 m wide. Within the feature, no artefacts have been found or traces of any burial recorded (Figs. 13, 14).

Feature II/3

Culture	?		
Dating	Poz-66223: 155 ± 30 BP (human bone)		
Grave pit		Burial	
Structure type	Pit with a semi-niche	Sex	?
Number of burials	1?	Age	20+ years
Size at the level of discovery	1.15 × 0.6 m	Orientation	?
Size at the level of the bottom	1.6 × 0.9 m	Deviation	?
Depth	0.9 m	Arrangement of head	?
Pit orientation	SW-NE	Trunk arrangement	?
Deviation	10°N	Upper limbs	?
Distance from barrow centre	7.57 m	Lower limbs	?
Azimuth	135°	Ochre	—
Wooden roofing	—	Presence of mat	—
Roofing element orientation		Animal bones	—
Other structural elements	Stones in the feature ceiling	Ritual objects	—
Comments	Five flint artefacts in the fill		

It is a small rectangular pit situated in the SE part of the mound and oriented NE-SW. The fill is made up of homogeneous earth dark-brown in colour. In its upper and middle parts, many lime stones were found scattered chaotically across the feature. The largest stone was over 0.7 m in diameter (Fig. 15). The feature also yielded nine human bone fragments and five flint artefacts (most likely in a secondary context). In the portion adjacent to the bottom, the feature outline is more regular and resembles a rectangle. Its longer walls clearly lean W, thus forming a kind of a semi-niche in the NW portion of the pit (Fig. 15: 3). On the bottom level, no burial or any artefacts have been found.

Barrow III

Prior to the commencement of investigations, the barrow mound was almost completely damaged by ploughing. It was circular and measured about 24.0 m in diameter. Its height stayed below 0.1-0.15 m. While excavating, a central profile baulk, 1.0 metre wide and oriented N-S, was kept. In the central part, underneath

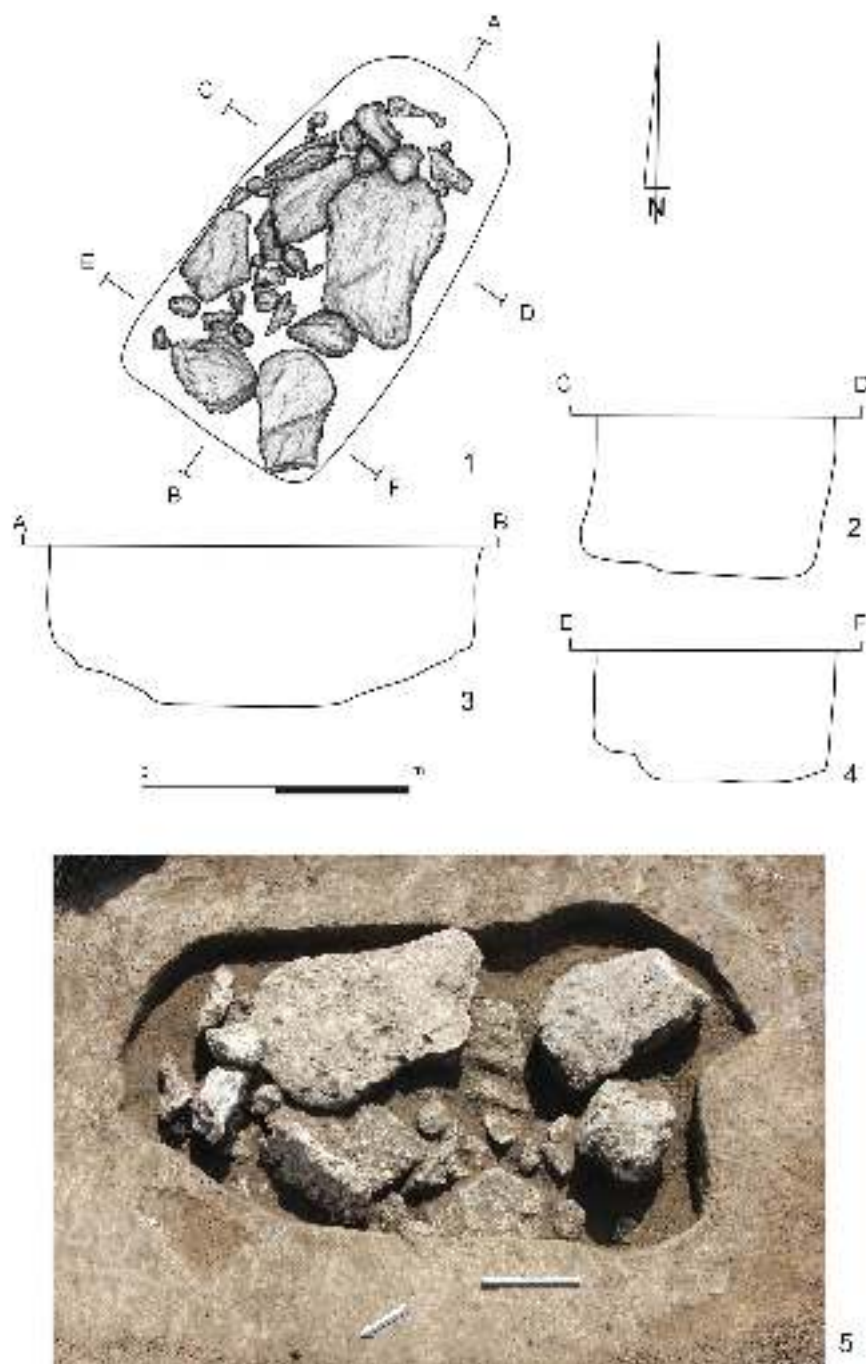


Fig. 15. Prydnistrianske, Yampil Region, barrow II, feature II/3. 1, 5 – horizontal projections of the upper and floor parts; 2 – profile A-B; 3 – profile C-D; 4 – profile E-F

a human burial was sunk. It was dated to the Early Middle Ages (feature III/4). The barrow edge was marked by a trough-like borrow ditch from which earth used to build the barrow had been excavated. It was filled with dark, black-brown sediment (Fig. 16). On the border between the ditch and the mound, lime stones were discovered: single ones on the eastern and southern edges, and a greater concentration on the northern mound edge; the concentration included a stone 'grinder'. From the barrow mound and from the secondary contexts of feature fills, 12 flint artefacts were recovered.

Feature III/1

Culture	Tripolye-Gordinești		
Dating	Poz-66224: 4540 ± 35 BP (human bone)		
Grave pit		Burial	
Structure type	Pit	Sex	?
Number of burials	1?	Age	20+ years
Size at the level of discovery	1.55 × 1.2 m	Orientation	?
Size at the level of the bottom	1.35 × 1.0 m	Deviation	?
Depth	1.65 m	Arrangement of head	?
Pit orientation	NW-SE	Trunk orientation	?
Deviation	6°N	Upper limbs	?
Distance from the barrow centre	2.3 m	Lower limbs	?
Azimuth	58°	Ochre	—
Wooden roofing	—	Presence of mat	—
Roofing element orientation		Animal bones	—
Other structural elements	—	Ritual objects	Pot
Comments	The fill was found to contain a belly fragment of another vessel		

The feature was discovered under the mound, in the central part of the barrow. Its horizontal projection was oval. The upper portion of the fill had two distinct parts: a northern one of mixed brown earth and yellow loess and a southern one of darker and more homogeneous sediment. The pit walls were slightly oblique, while the flat bottom extended about 1.15 m below the original surface. At various levels, but mostly in the middle portion, scattered human bones were found (chiefly postcranial skeleton fragments, including vertebrae and rib fragments), which is interpreted as an effect of a post-funeral deconstruction ('robbery'). The bones belonged to an individual of indeterminate sex aged over 20 years. Amid them, numerous fragments of an S-shaped Tripolye culture pot were discovered, bearing an ornament of two rows of uneven, wedge-shaped impressions, and a single belly fragment of another vessel (Fig. 17).

Artefact description

1. An S-shaped pot with a wide, flat bottom. On the upper part of the belly,

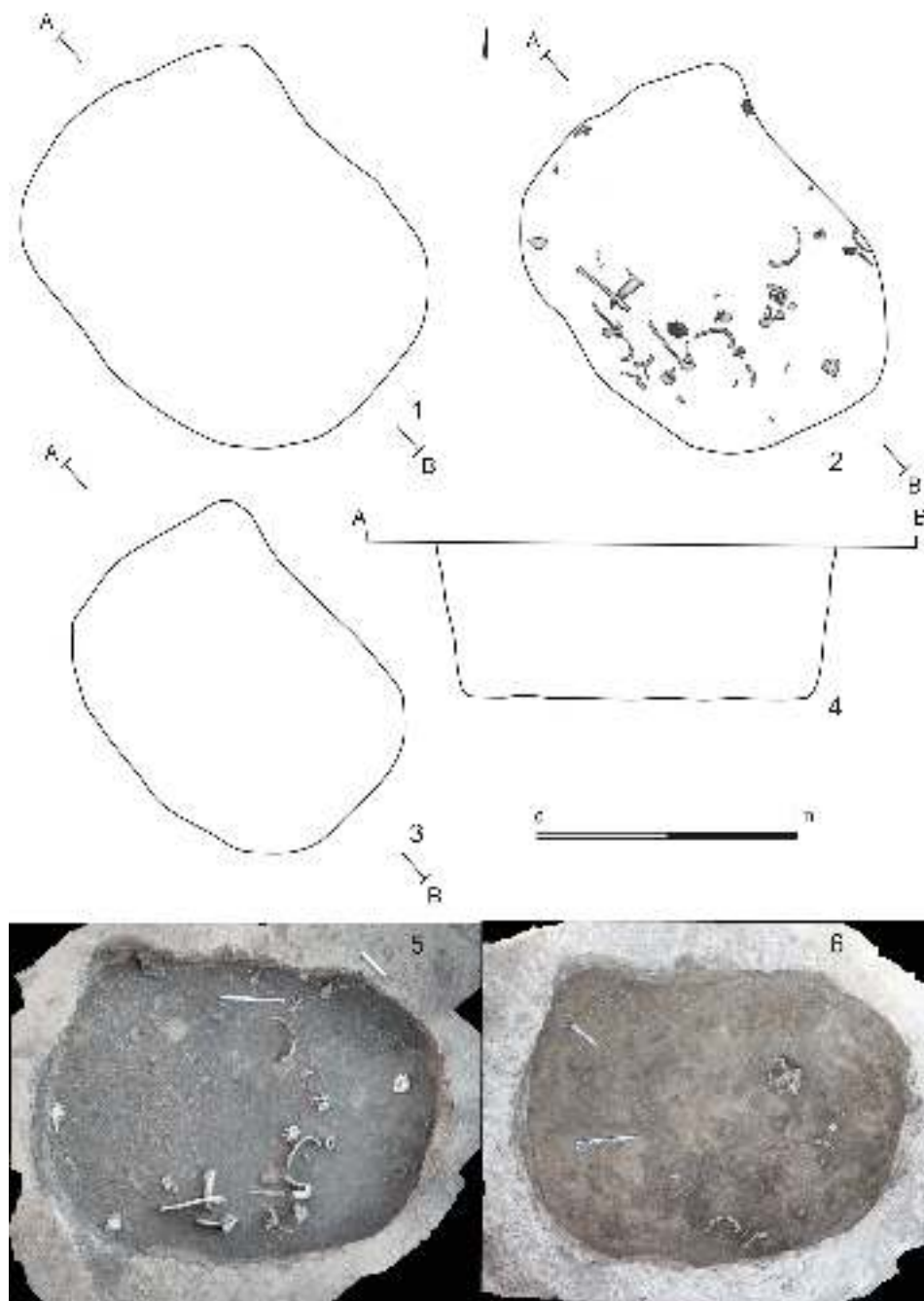


Fig. 17. Prydnistrianske, Yampil Region, barrow III, feature III/1. Horizontal projections of the upper (1), middle (2, 5), floor (3, 6) parts, and grave profile (4)

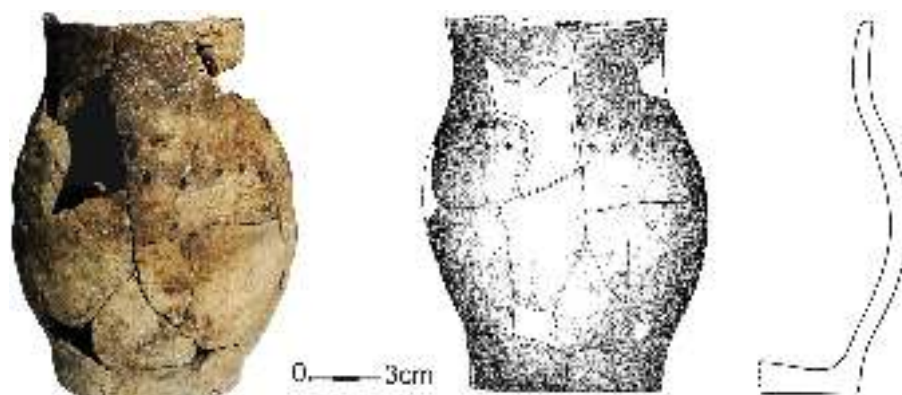


Fig. 18. Prydnistrianske, Yampil Region, barrow III, feature III/1. Vessel from the feature fill

it bears an ornament of two uneven rows of deep wedge-shaped impressions. The outer surface is slightly smoothed, mat, grey and light-brown in colour. The fracture is dark grey. The clay contains temper of crushed shells and fine sand. Height: 15.5 cm, bottom diameter: 9.2 cm, belly diameter: 11.9 cm (Fig. 18).

2. Fragment of a vessel belly (no data).

Feature III/2

Culture	Tripolye-Gordinești		
Dating	Poz-66225: 4530 ± 35 BP (human bone)		
Grave pit		Burial	
Structure type	?	Sex	1. ? 2. ?
Number of burials	2	Age	1. 9-10 years (<i>infans II</i>) 2. 20+ years
Size at the level of discovery	?	Orientation	1. ? 2. ?
Size at the level of the bottom	?	Deviation	1. ? 2. ?
Depth	0.3 m	Arrangement of head	1. ? 2. ?
Pit orientation	N-S	Arrangement of trunk	1. ? 2. ?
Deviation	?	Upper limbs	1. ? 2. ?
Distance from barrow centre	2.58 m	Lower limbs	1. ? 2. ?
Azimuth	19°	Ochre	—
Wooden roofing	—	Presence of mat	—

Roofing element orientation		Animal bones	3 fragments
Other structural elements	–	Ritual objects	–
Comments			

Under the humus base, in the central portion of the barrow, the disarticulated bones of a child aged infans II were unearthed together with those of an adult individual aged above 20 years. Among them, three animal bone fragments were also identified. The remains were in part disturbed by deep ploughing. A related pit outline could not be captured. The depth at which the remains were discovered corresponds to the level at which the barrow was built. Hence, the stratigraphic position of the feature is difficult to determine with any certainty. The bones may have been raked up to the ground surface from a secondarily disturbed feature 1 (in particular, the remains of the adult) or placed on the original level as a funerary offering (*trizna*). Alternatively, they may come from the base portion of the pit sunk into the centre of the barrow mound (Fig. 19).

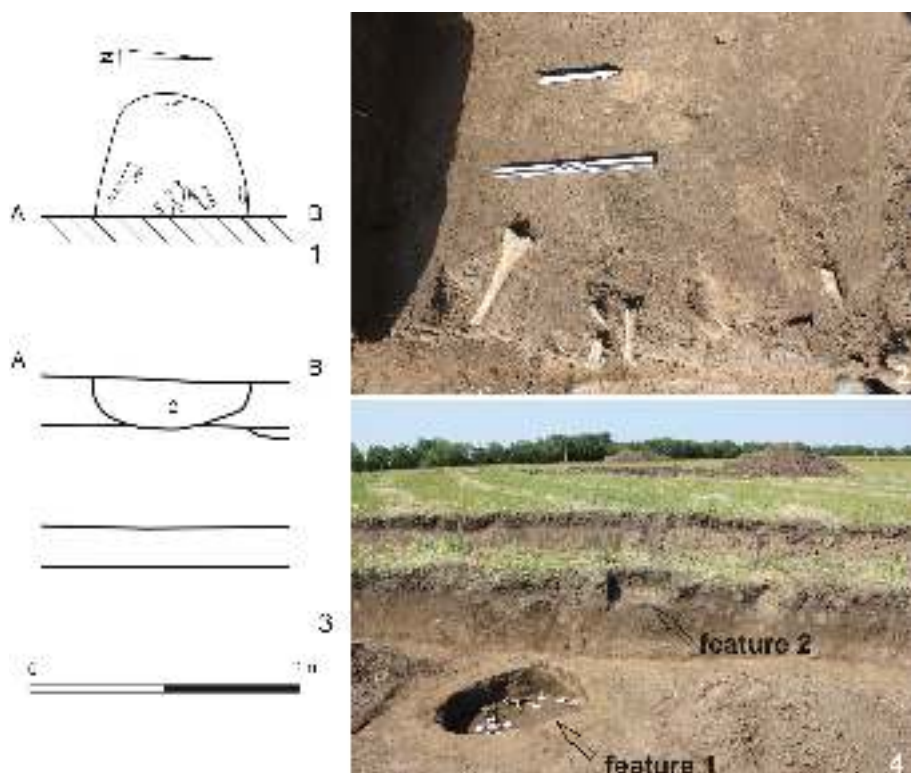


Fig. 19. Prydnistrianske, Yampil Region, barrow III, feature III/2. 1, 2 – fragment of floor part; 3, 4 – feature profile

Feature III/3

Culture	Tripolye-Gordinești		
Dating	Poz-66226: 9090 ± 50 BP; Poz-71367: 4510 ± 40 BP (wood)		
Grave pit		Burial	
Structure type		Sex	?
Number of burials	1	Age	?
Size at the level of discovery	1.3 × 1.0 m	Orientation	?
Size at the level of the bottom	1.25 × 1.0 m	Deviation	?
Depth	1.45 m	Arrangement of head	?
Pit orientation	NW-SE	Arrangement of trunk	?
Deviation	21°N	Upper limbs	?
Distance from barrow centre	0 m	Lower limbs	?
Azimuth	0°	Ochre	+
Wooden roofing	–	Presence of mat	+ (bark?)
Roofing element orientation		Animal bones	–
Other structural elements	–	Ritual objects	Amphora, beaker, stone battle-axe
Comments	The feature fill was found to contain 5 flint artefacts		

The grave was discovered under the mound in the barrow centre. It was sub-rectangular with gently rounded corners and oriented NW-SE. Its fill consisted of homogeneous dark-brown earth and was found to hold single small pieces of wood. In the vertical cross-section, the feature formed a regular rectangle. The depth of the excavation was about 1.15 m from the level at which the barrow had been built. On the bottom, in the northern part of the pit, several sedimentations were recorded, being probably traces left by skull bones (of a child?). Apart from them, no other traces of a burial were recorded, but a rust-brown lining (bark?) was found instead. It was badly damaged by numerous animal burrows. Within it, in the north half of the pit, small lumps of red ochre could be seen. In addition, several small pieces of rotten wood were recovered. On the grave bottom, there lay grave goods: at the west wall – a stone battle-axe, at the north wall – an amphora and a beaker (Fig. 20).

Description of grave goods

1. A battle-axe made of fine-crystalline rock grey-green in colour macroscopically identified as basalt or, less credibly, amphibolite (assessment by Dr. V.I. Korinnij, Chair of Geography, Faculty of Natural and Geographic Sciences, Vinnitsa State Pedagogical University). The blade is asymmetrical and slightly damaged at the top. The butt is oval and flat, bearing traces of stamping or working. The upper and bottom surfaces are slightly smoothed out with deep flutes 6-7 mm wide and

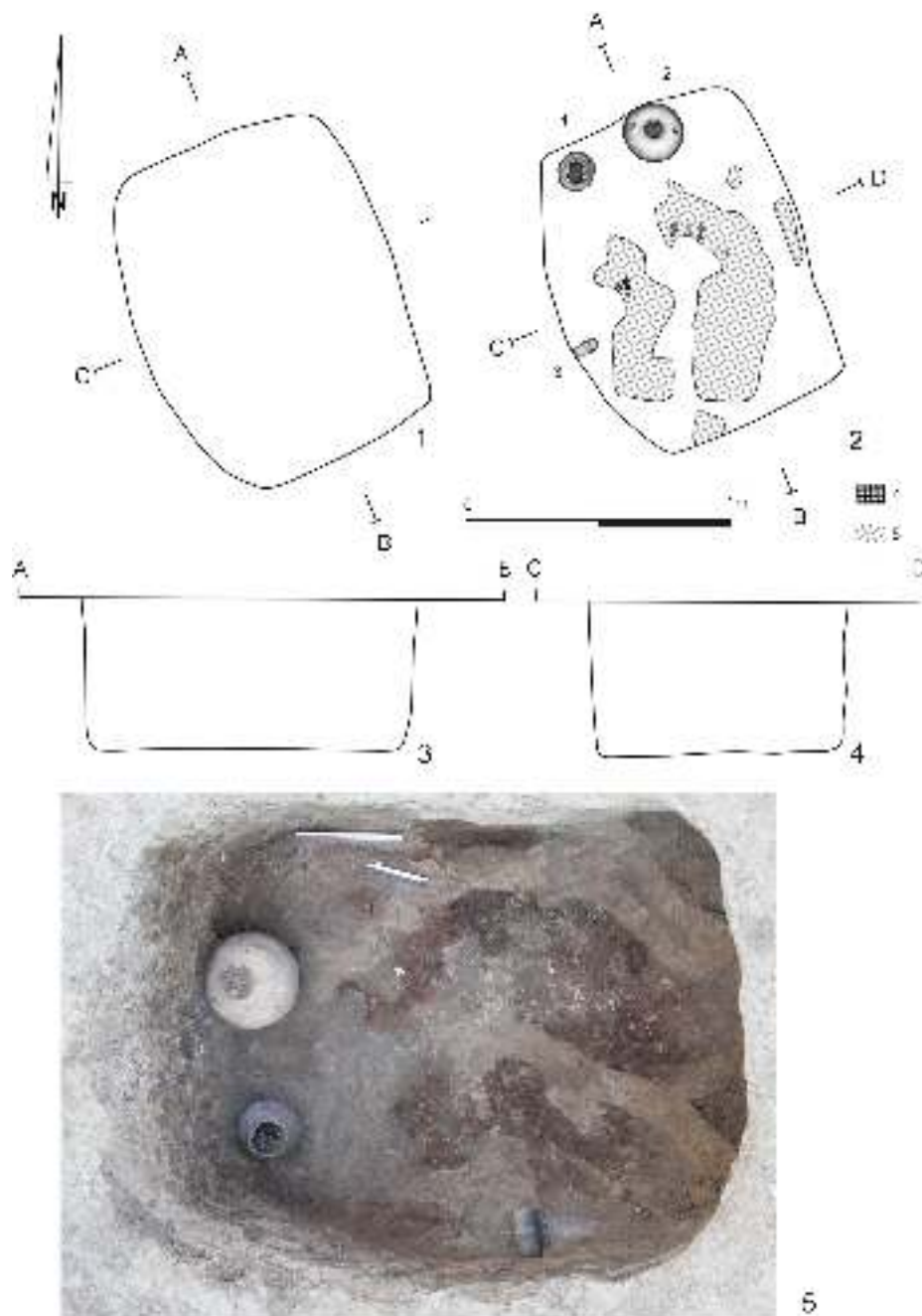


Fig. 20. Prydnistrianske, Yampil Region, barrow III, feature III/3. Upper part (1) burial level (2, 5) and feature profiles (3, 4) (1 – beaker, 2 – amphora, 3 – stone battle-axe, 4 – ochre, 5 – outline of mat)

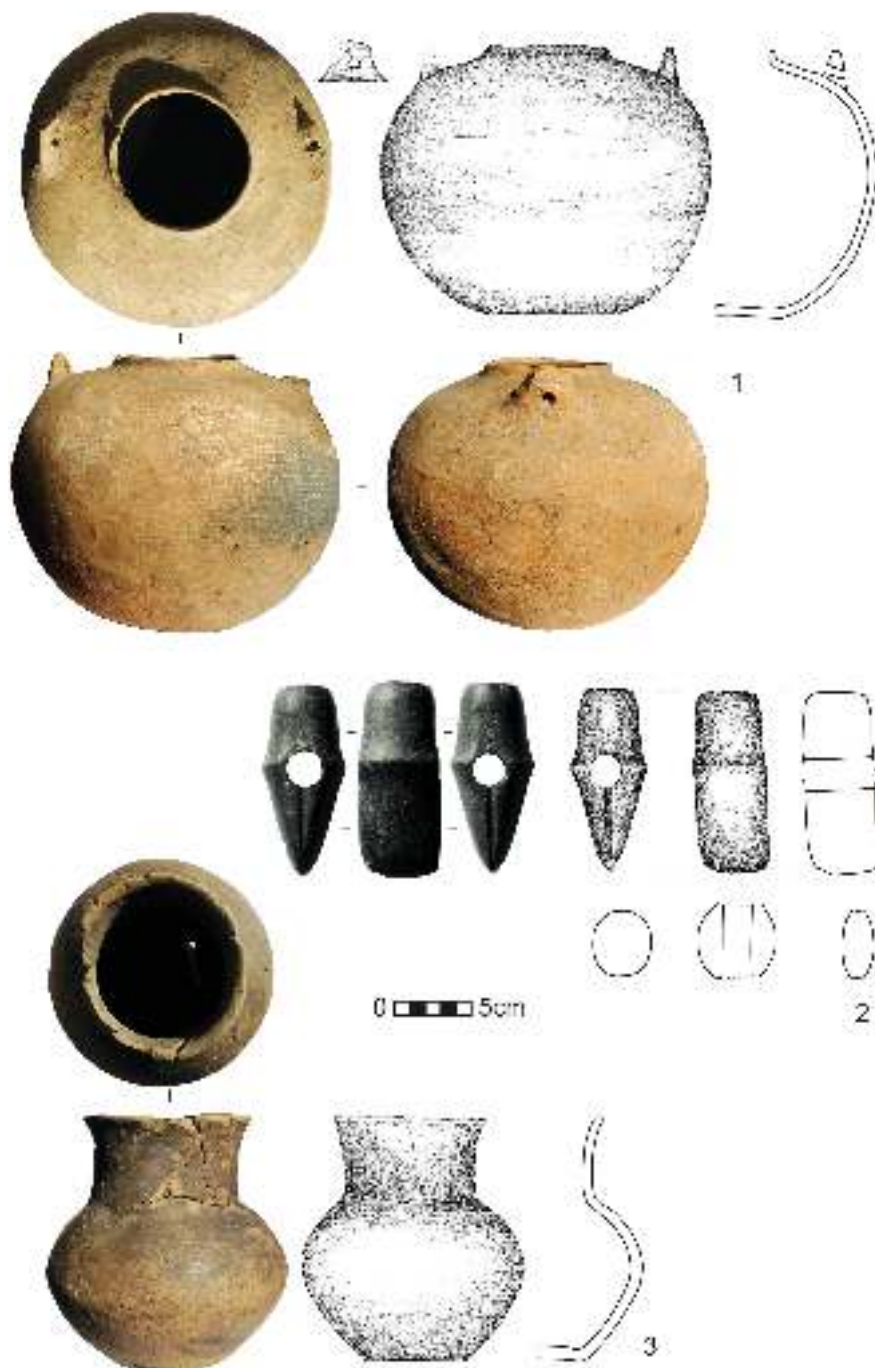


Fig. 21. Prydnistrianske, Yampil Region, barrow III, feature III/3. Grave goods: 1 – amphora, 2 – battle-axe, 3 – beaker

2 mm deep running across their middle; the flutes are slightly wider on the bottom surface. Lateral surfaces bear visible traces of wide facets (changes in the direction of polishing). The perforation was drilled from one side (diameter: 22 mm at the top and 19.5 mm at the bottom). Dimensions: length: 11.6 cm, blade width: 4.2 cm, height: 4.8 cm, butt size: 3.7×3.2 cm, thickness: 5.2 cm (Fig. 21: 2).

2. An amphora with a low, barely marked neck, globular belly and two symmetrically placed and vertically perforated handles on the upper portion of the belly. Its outer surface is covered with light-yellow-grey engobe, displaying clear trac-

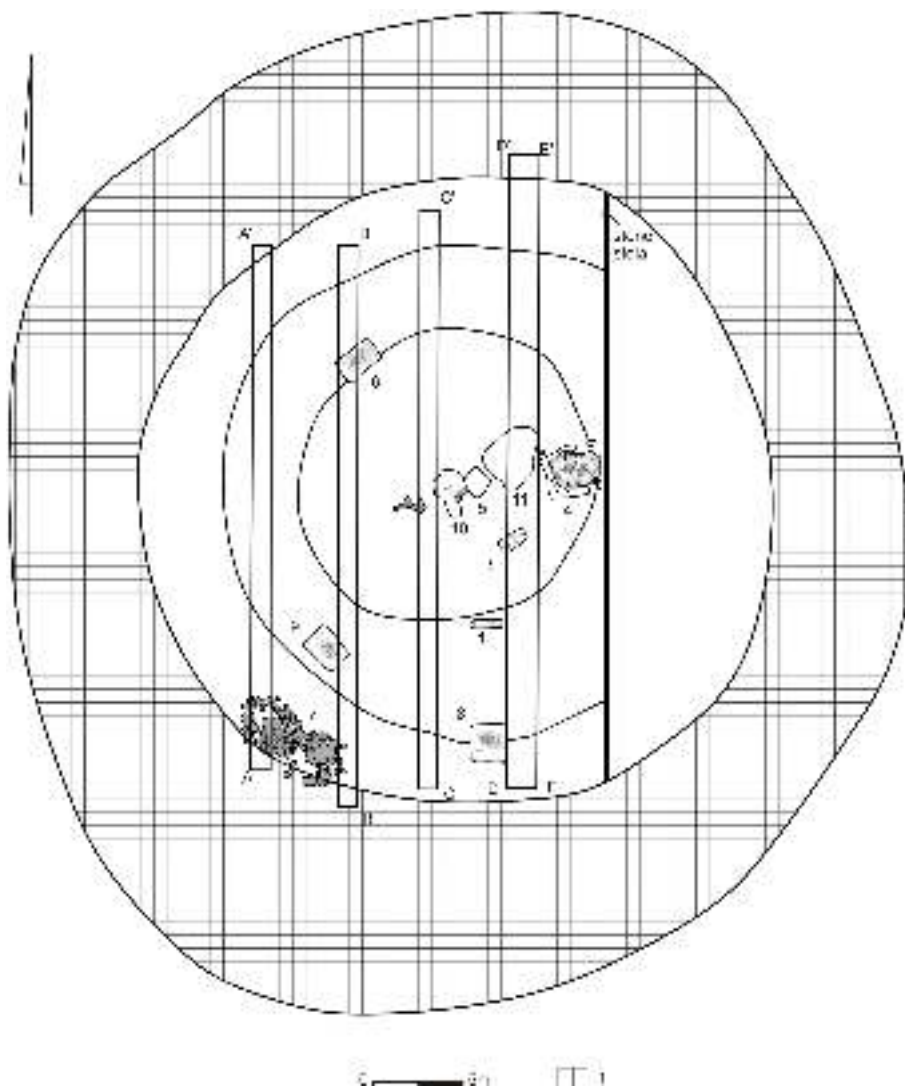


Fig. 22. Prydnistrianske, Yampil Region. Plan of barrow IV

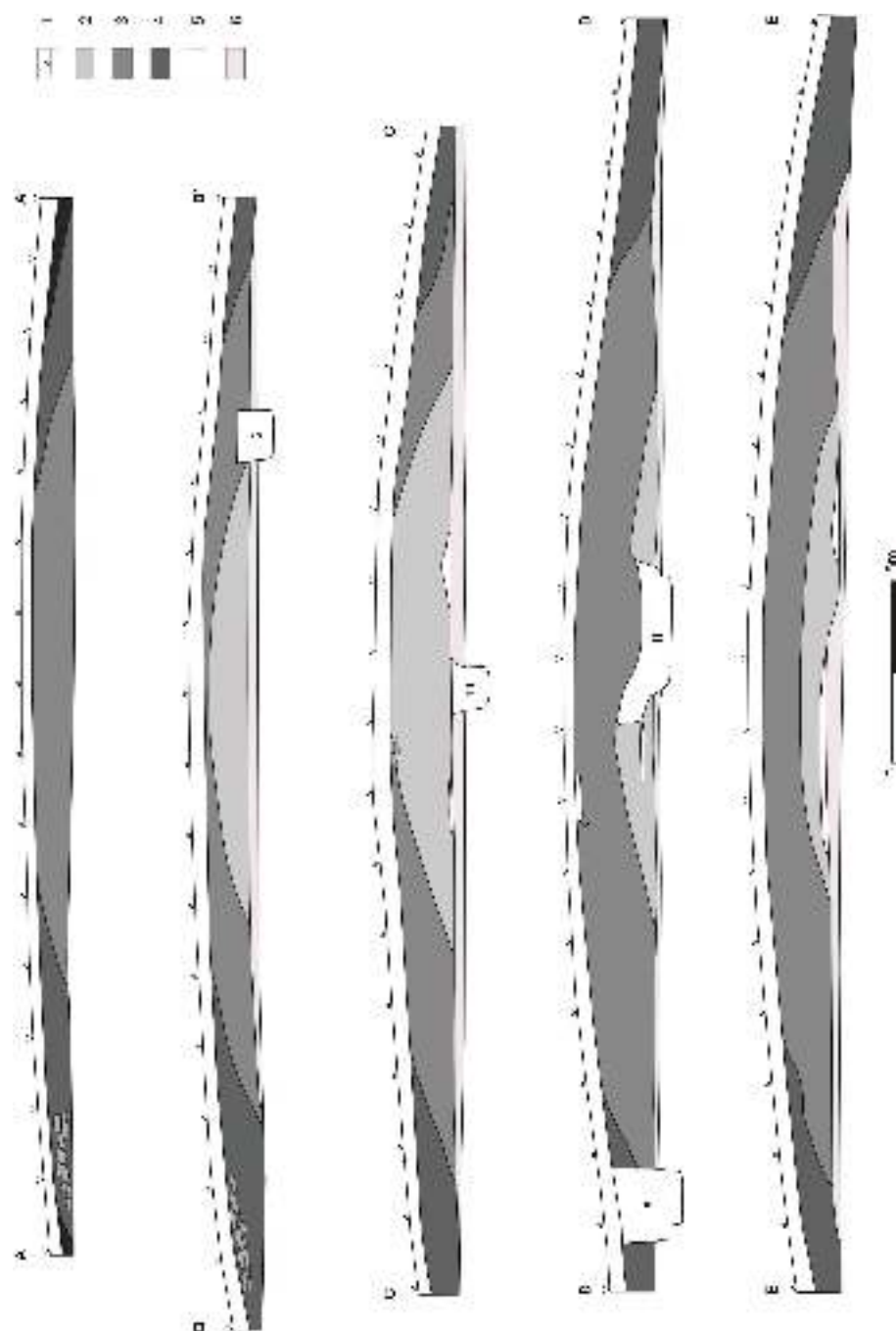


Fig. 23. Prydnistrianske, Yampil Region. Profiles of barrow IV. 1 – surface soil; 2 – first mound construction phase; 3 – second mound construction phase; 4 – third mound construction phase; 5 – yellow loess spills (from grave excavations); 6 – yellow loess



Fig. 24. Prydnistrianske, Yampil Region. Central profiles of barrow IV

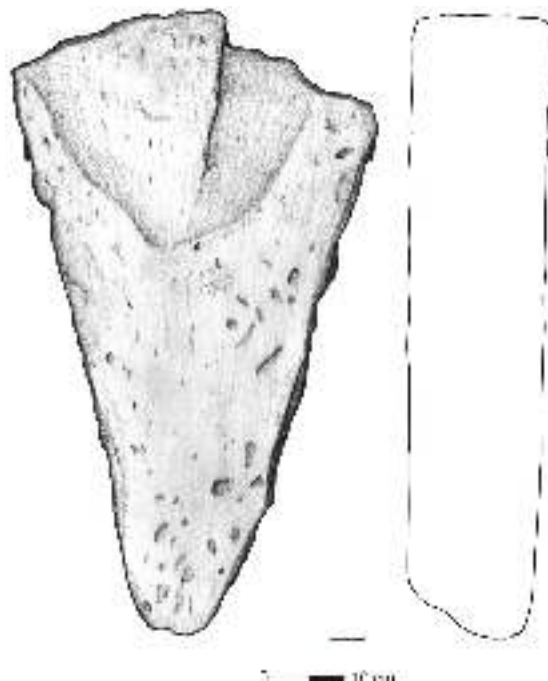


Fig. 25. Prydnistrianske, Yampil Region, barrow IV. Stone stela recovered from the north part of the barrow

es of burnishing. The ceramic body is light-yellow and contains temper of coarse crushed ceramics and fine sand. Height: 17.5 cm, neck height: 0.7 cm, diameter: 21.4 cm, lip diameter: 8.0 cm (Fig. 21: 1).

3. A flat-bottom beaker with a tall neck, flared lip and globular belly. The outer surface is covered with dark-grey engobe and smoothed out (polished). The ceramic body is light-grey with the temper of coarse sand. Height: 15.4 cm, neck height: 5.2 cm, belly diameter: 14.0 cm, neck diameter: 9.5 cm (Fig. 21: 3).

Barrow IV

Located on the very culmination of the watershed, the barrow stands 100 m N of the cluster of barrows I-III. When the excavations commenced, its height was 2.4 m. Its mound was circular and measured about 35 m in diameter (Figs. 22-24). In 2014, the western and central parts of the barrow were excavated: four trenches 4 m wide were laid out and one (westernmost) 7 m wide. Between them, baulks were kept: the central one 2 m wide and another three each 1 m wide. A stratigraphic analysis shows that the mound was built in three stages. At the first stage, related to the Eneolithic, a small mound was erected, about 17-19 m in diameter, over feature IV/10, associated with the TC [Goslar *et al.* 2015]. The mound strata connected with it were visibly darker than the strata linked to later stages. The

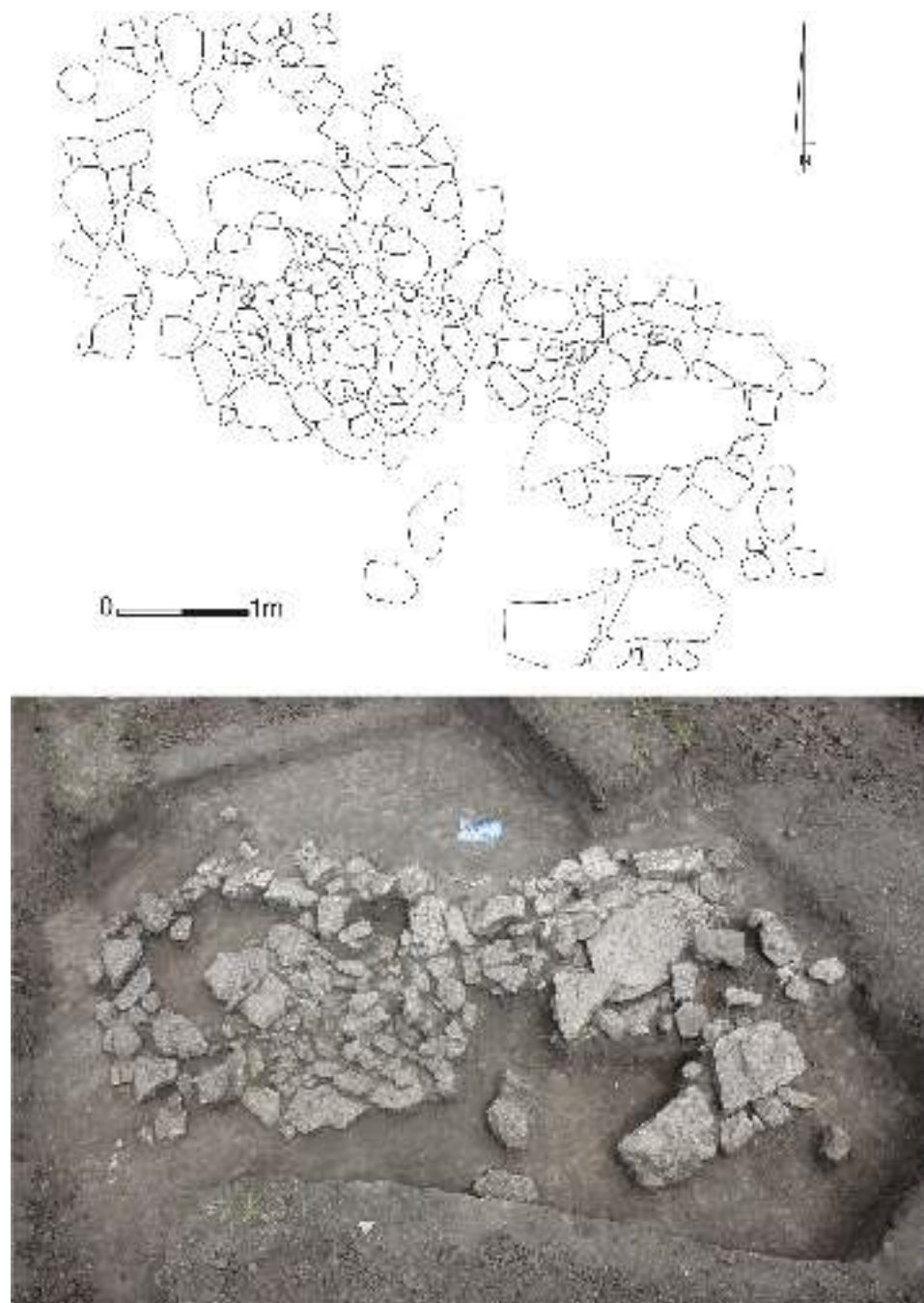


Fig. 26. Prydnistrianske, Yampil Region, barrow IV. Plan of large stones concentration: feature IV/7

mound of the oldest barrow was disturbed by a large, irregular excavation (feature IV/11, Fig. 22), which destroyed a large fragment of the central portion. Into the eastern part of the mound, in turn, grave IV/4 was sunk, linked to the early phase of the YC. This episode was most likely connected to the second stage of mound construction. The barrow was then extended mainly on its eastern side with its diameter growing to more than 25 m. Into the mound of the second barrow, a grave was sunk – feature IV/6 (YC). Already in the Early Bronze Age, the barrow was further extended (the third stage of mound construction) and reached its final size. On the south side, three YC graves were sunk into it (IV/3, IV/8 and IV/9), and much later one more was added – feature IV/1 – dated to the Sarmatian period. In its northern part, in the base of the youngest stratum of the mound, an erect stone stela was exposed (Fig. 25). Since it was found at the edge of the investigated area, its stratigraphic position and a ritual relation to a specific grave remain undetermined. Generally, it can be linked to the younger stage of the Early Bronze Age. Along the mound edges, in various places, several lime stones were found, while their large concentration was located in the southern part (feature 7, Fig. 26). Originally, it must have sat on the mound surface and only later was it covered with earth strata as a result of mound erosion. A smaller stone concentration (feature 2) was located over the central part of the Eneolithic barrow – immediately below the layer of modern humus. In addition, the central part was found to have been also dug into, albeit in a rather restricted manner, in modern times (for robbing purposes? – feature 5). It appears that the intrusion has not disturbed any archaeological features.

In the barrow mound and in the secondary context of archaeological feature fills, 86 flint artefacts were discovered.

Feature IV/3

Culture	Yamnaya		
Dating	Poz-66228: 4090 ± 35 BP (human bone)		
Grave pit		Burial	
Structure type	Pit?	Sex	?
Number of burials	1	Age	40+ years (<i>maturus/senilis</i>)
Size at the level of discovery	Unidentifiable pit outline	Orientation	SW-NE
Size at the level of the bottom	Unidentifiable pit outline	Deviation	0°
Depth	0.3 m	Arrangement of head	Face upwards, slightly tilted to the left
Pit orientation	NE-SW	Arrangement of trunk	On the back
Deviation	0°	Upper limbs	F
Distance from barrow centre	4.8 m	Lower limbs	7

Azimuth	130°	Ochre	Layer on the pit bottom and on skeleton bones
Wooden roofing	—	Presence of mat	+
Roofing element orientation		Animal bones	—
Other structural elements	—	Ritual objects	—
Comments	The grave fill was found to hold one flint artefact		

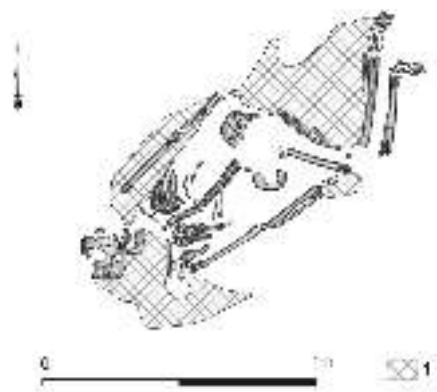


Fig. 27. Prydnistrianske, Yampil Region, barrow IV, feature IV/3. Level of burial

The grave was sunk into the youngest mound stratum, south of the barrow centre. The burial was exposed immediately below the layer of surface soil and for this reason the pit outline could not be captured. The skeleton of an individual aged *maturus/senilis*, of indeterminate sex, was poorly preserved. The corpse lay supine with its lower limbs flexed and turned to the right side. The upper limbs were extended along the trunk. The skull was slightly tilted to the left side. On both the skeleton and the pit bottom, the traces of sprinkling with ochre had survived, with the chest and left upper limb being covered with it rather profusely. No grave goods were recorded (Fig. 27).

Feature IV/4

Culture	Yamnaya		
Dating	Poz-66230: 4455 ± 35 BP (wood); Poz-66229: 4380 ± 35 BP (human bone)		
Grave pit		Burial	
Structure type	Pit with a step	Sex	Male
Number of burials	1	Age	35-50 years (<i>adultus/maturus</i>)
Size at the level of discovery	3.3 × 2.85 m	Orientation	W-E
Size at the level of the bottom	0.9 × 1.05 m	Deviation	13°
Depth	3.1 m	Arrangement of head	Face upwards
Pit orientation	W-E	Arrangement of trunk	On the back
Deviation	15°N	Upper limbs	F
Distance from barrow centre	7 m	Lower limbs	5
Azimuth	82°	Ochre	On the skull, a lump lying left of the skull
Wooden roofing	+	Presence of mat	+
Roofing element orientation	Longitudinal and transverse	Animal bones	-
Other structural elements	Stone grave cover, sealed with mats from above and below; grille woodwork; 8 vertical wooden stakes, supporting, together with crossbeams, a 'canopy'.	Ritual objects	-
Comments	The grave fill was found to hold nine flint artefact, including the fragment of a triangular, bifacially retouched point (Fig. 28) and a flint blade		

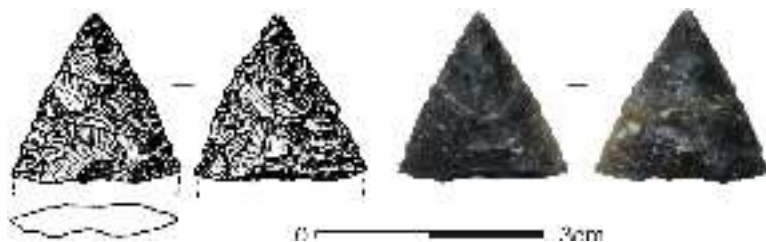


Fig. 28. Prydnistryanske, Yampil Region, barrow IV, feature IV/4. Fragment of a bifacial flint point from the upper portion of the grave fill

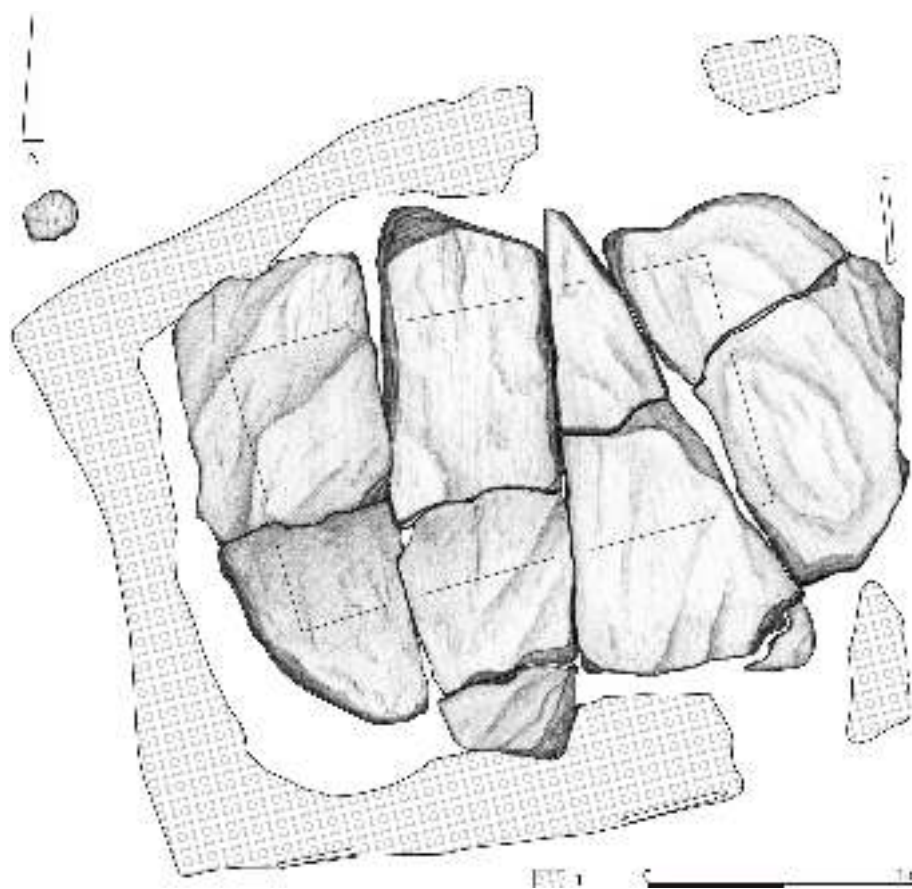


Fig. 29. Prydnistryanske, Yampil Region, barrow IV, feature IV/4. Stone grave cover 1 – remains of a mat covering the stone structure



Fig. 30. Prydnistrianske, Yampil Region, barrow IV, feature IV/4. 1 – stone grave cover; 2 – cross-section reconstruction of grave cover elements (for a detailed description of elements see text)

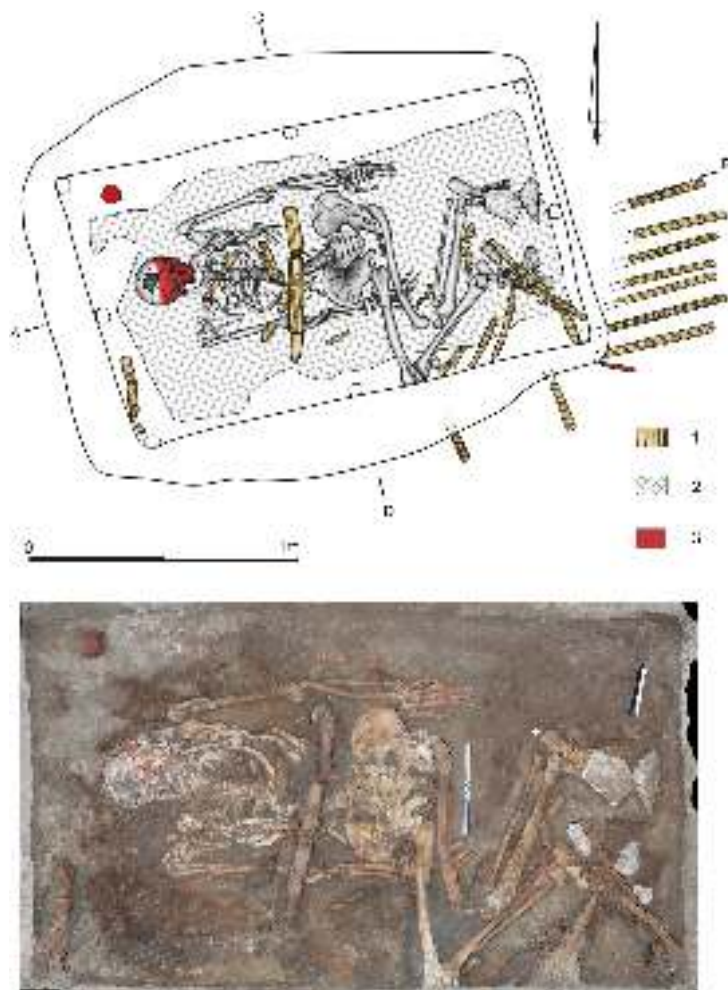


Fig. 31. Prydnistrianske, Yampil Region, barrow IV, feature IV/4. Burial level (1 – outline of mat; 2 – ochre; 3 – woodwork elements)

The grave was sunk into the eastern portion of the oldest (Eneolithic) barrow. The grave pit was covered with four large well-fitted limestone blocks 1.5-2.15 m long and 0.65-0.85 m wide (Figs. 29, 30: 1). Under the weight of earth, the blocks broke along the longer, central axis of the grave and slightly caved in, damaging the upper parts of pit walls. The stone structure was covered by a mat, roughly rectangular, measuring about 3.3×2.80 m. On its southern and eastern ends, black-grey post-pipes have survived left by wooden stakes 2.0-3.0 cm in diameter. They were driven into the ground where the mat ended (for the purpose of stretching it?).

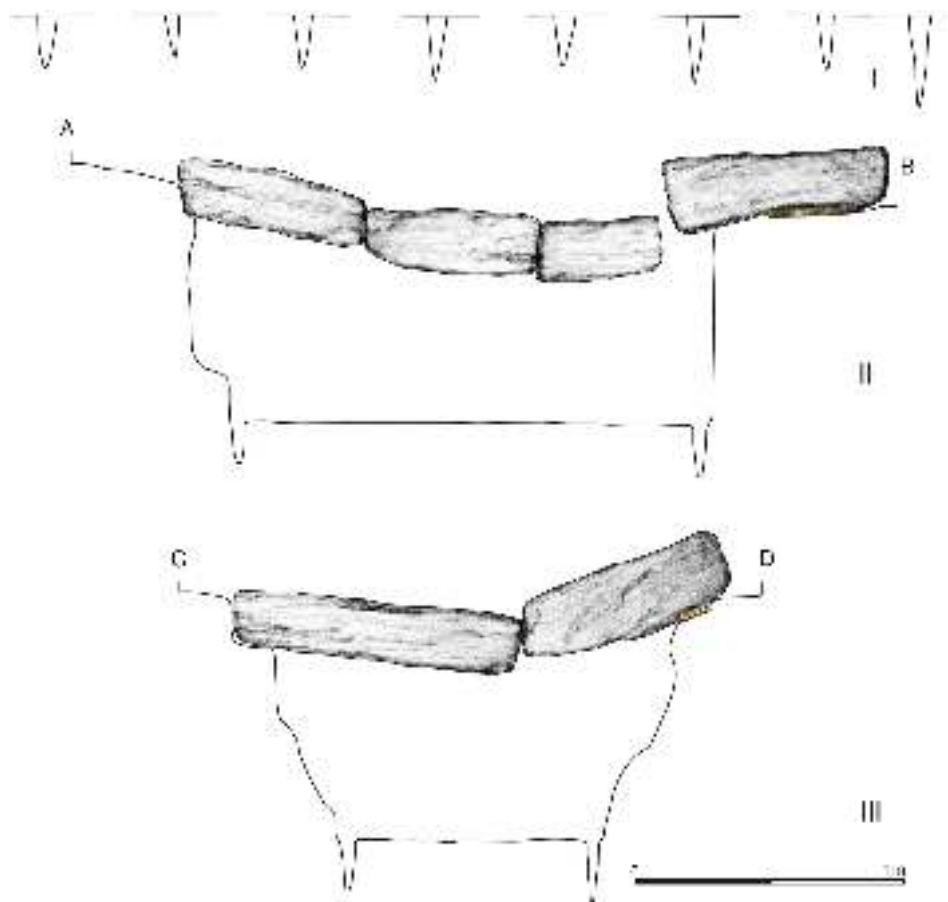


Fig. 32. Prydnistryanske, Yampil Region, barrow IV, feature IV/4. Feature profiles: I – stakes sunk into the grave bottom; II – W-E profile; III – N-S profile



Fig. 33. Prydnistryanske, Yampil Region, barrow IV, feature IV/4. Reconstruction of grave chamber profile

The slabs were placed on a grillage woodwork made of rods 5.0-6.0 cm in diameter. They were much longer than the grave pit at its eastern end and their portions extending beyond the pit edge were also covered by one of the slabs. The wooden grillage was additionally sealed with a wattled mat, the visible traces of which have survived on the bottom side of the stone cover (Fig. 30: 2). The bottom sides of the slabs bore traces of daubing with red colorant.

Located below a step, the grave chamber was originally regularly rectangular and measured 2.0×1.3 m. It was filled with loose light-grey-brown earth disturbed by many animal burrows (Fig. 31). The flat bottom extended at a depth of 95 cm from the level of the stone slabs (chamber ceiling). In the corners of the feature and halfway its sides, eight postholes were exposed. They were 5 cm in diameter and sunk about 20 cm below the pit bottom. Wood fragments, being the remains of the posts, were found inside the holes and in the chamber fill (some of them lay directly on the burial remains) (Fig. 32, 33). At the level of the roofing, the posts supported more sturdy crossbeams of which one (middle one) was found lying on the skeleton's ribs. The pit bottom was lined with a rectangular mat measuring about 1.7×0.85 m. The corpse of a man, aged *adultus/maturus* lay supine, with his lower limbs flexed and knees pointing up. Later, the knees leaned to the right side and rested against the northern wall of the grave. The upper limbs extended along the body. The head lay with the face upwards. The skull, originally well preserved, was partially destroyed in the course of exploration. Its neurocranium bore clear traces of colouring with ochre. Its traces were also visible on the bones of the left hand. Northwest of the skull, at the NW pit corner, a lump of ochre, 8 cm in diameter, lay, being the only element of grave furnishing (Fig. 31: 3).

Feature IV/6

Culture	Yamnaya		
Dating	Poz-66231: 4185 ± 35 BP (wood); Poz-70673: 4090 ± 40 BP (human bone)		
Grave pit		Burial	
Structure type	Pit with a step	Sex	Male
Number of burials	1	Age	45+ years (<i>maturus</i>)
Size at the level of discovery	2.35×1.4 m	Orientation	SW-NE
Size at the level of the bottom	2.1×1.05 m	Deviation	8°W
Depth	1.5 m	Arrangement of head	Face upwards
Pit orientation	SW-NE	Arrangement of trunk	On the back
Deviation	9°W	Upper limbs	K
Distance from barrow centre	8.44 m	Lower limbs	5

Azimuth	324°	Ochre	On the skull, a lump in the NW part of the grave
Wooden roofing	+	Presence of mat	+
Roofing element orientation	Longitudinal	Animal bones	–
Other structural elements	8 vertical posts	Ritual objects	–
Comments	The grave fill was found to hold 17 flint artefacts		

The grave was discovered in the north-western portion of the barrow; it could have been sunk into the mound of the second stage of barrow construction. In its upper portion, the grave was roughly rectangular. At a depth of 60 cm from the current ground level, there was a step, forming a base for the wooden roofing of the grave chamber (Fig. 34: 1). The planks of the roofing were laid along the longer axis of the feature and extended far beyond the chamber in the SW part of the grave. There, they were weighed down by several stones, the size of which was almost 25 cm (some of them remained at the top, while others fell inside the chamber together with the collapsed ceiling). The roofing structure had collapsed under the weight of earth along its entire length at the same time and its debris was recorded at a depth of about 25-30 cm above the bottom, that is immediately above the bones of the burial (Fig. 35).

Below the step, the grave chamber formed a regular rectangle and its fill consisted of homogeneous grey-brown earth. An additional structural element proved to be eight sharpened posts, 5 cm in diameter each, driven 15-20 cm into the ground below the grave bottom in pit corners and halfway pit sides. Their fragments were found in the grave chamber, with one lying on the corpse's skull. On the grave bottom, there were traces of a rectangular mat, measuring 1.55 × 0.80 m. On it, the skeleton of a man, aged *maturus/senilis*, rested on its back, with its lower limbs strongly flexed. The knees, originally pointing upwards, leaned to the left side, with the distal epiphysis of the left femur resting against the north-western grave wall. The upper limbs, straight at the elbows, were slightly removed from the trunk. The skull, slightly drawn to the chest, bore traces of being sprinkled with ochre. The trace of a decomposed lump of ochre, measuring about 10 × 5 cm, was discovered west of the corpse's head (Figs. 34, 36).

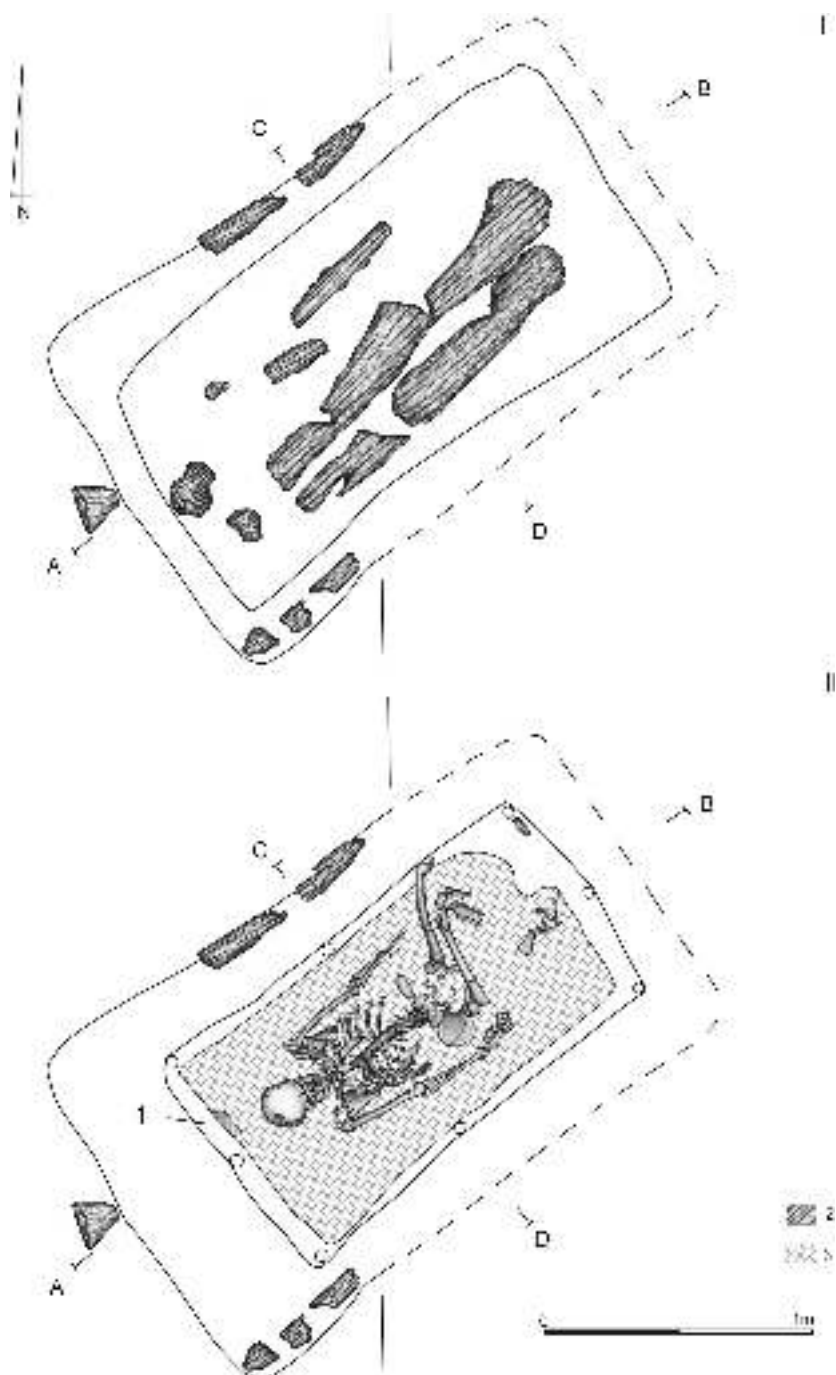


Fig. 34. Prydnistrianske, Yampil Region, barrow IV, feature IV/6. 1 – level of wooden grave roofing; 2 – burial level (1 – lump of ochre; 2 – fragments of wood; 3 – outline of mat)

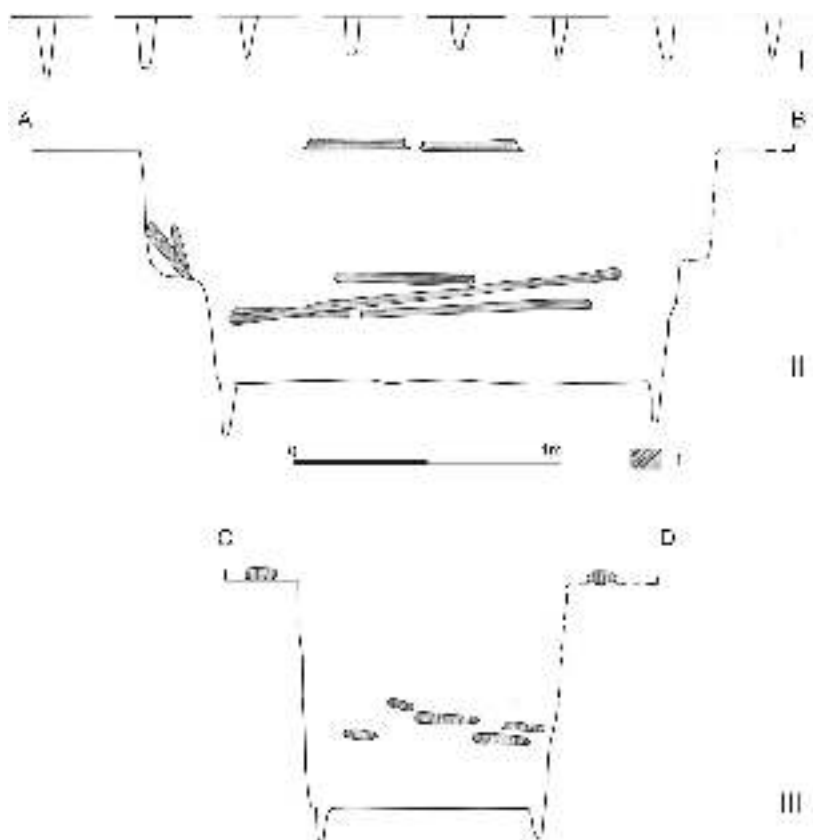


Fig. 35. Prydnistrianske, Yampil Region, barrow IV, feature IV/6. Grave profiles. I – stakes sunk into the grave bottom; II – W-E profile; III – N-S profile (1 – fragments of wood)

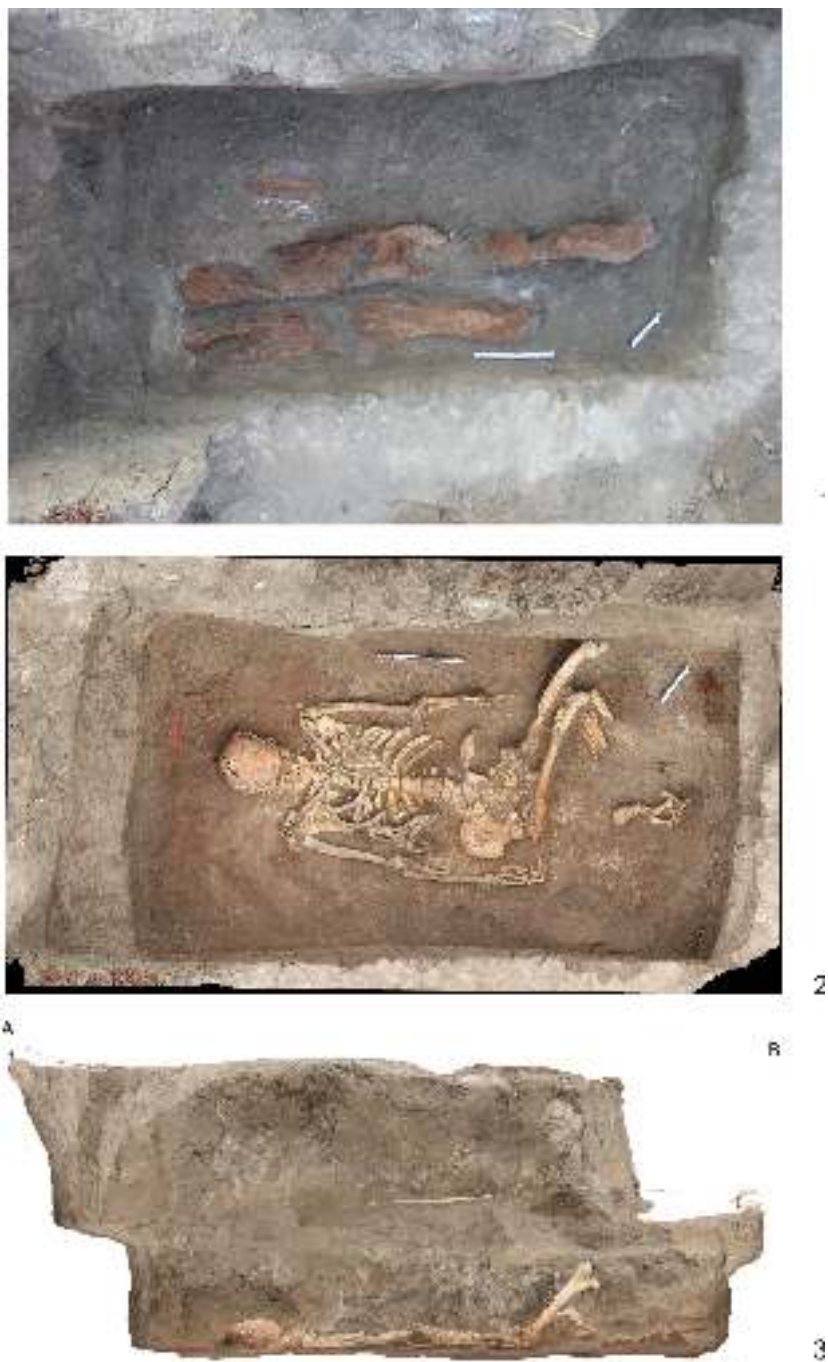


Fig. 36. Prydnistrianske, Yampil Region, barrow IV, feature IV/6. 1 – level of grave roofing; 2 – burial level; 3 – W-E profile

Feature IV/8

Culture	Yamnaya		
Dating	Poz-66232: 4090 ± 40 BP (human bone)		
Grave pit		Burial	
Structure type	Pit	Sex	Male
Number of burials	1	Age	35-50 years (<i>maturus</i>)
Size at the level of discovery	2.1 × 1.95 m	Orientation	W-E
Size at the level of the bottom	1.60 × 1.3 m	Deviation	6°N
Depth	2.2 m	Arrangement of head	On the left side
Pit orientation	W-E	Arrangement of trunk	On the back
Deviation	7°N	Upper limbs	H
Distance from barrow centre	14.68 m	Lower limbs	6
Azimuth	170°	Ochre	Spots at the right forearm and under the pelvis; a lump at the left elbow
Wooden roofing	+	Presence of mat	+
Roofing element orientation	Transverse	Animal bones	–
Other structural elements	–	Ritual objects	Blade knife insert, found at the pelvis
Comments			

Found in the southern portion of the barrow, the grave was sunk into the strata of the third mound. Its upper portion was rectangular, almost square and its fill was made up of grey-brown earth mixed with a substantial addition of yellow loess. At a depth of 190 cm, in the southern portion of the pit, there was a wide step forming a support for a roofing woodwork – six planks, 20-30 cm wide, placed transversely to the longer axis of the pit. From the northern side, they were supported by wooden elements arranged longitudinally. The grave chamber was regularly rectangular in shape and its fill was made up of homogenous grey-brown earth. The flat grave bottom extended 30 cm below the step (2.2 m below the current ground level). The skeleton of a male aged *maturus* rested immediately below the collapsed woodwork, on its back, with the lower limbs strongly bent at the knees and originally pointing upwards (later, they leaned to the left side). The upper limbs, slightly bent at the elbows, pointed towards the pelvis. The corpse was sprinkled with ochre. Its larger concentrations were found at the shins, below the pelvis, and next to the right upper limb. A lump of ochre, measuring about 5 cm in diameter, was found north of the left humerus. Below the pelvis, within the ochre concentration, a flint tool was discovered, being probably one of the grave goods (Figs. 37-39).

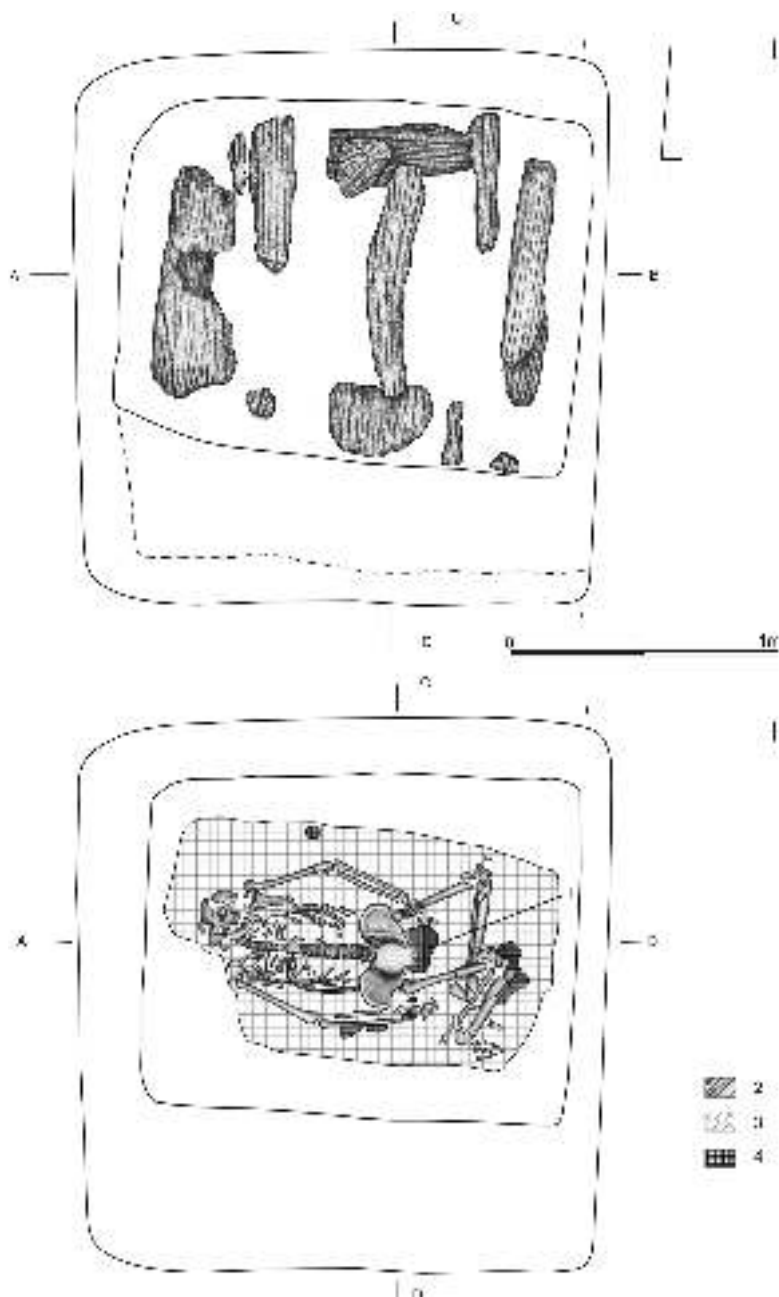


Fig. 37. Prydnistrianske, Yampil Region, barrow IV, feature IV/8. I – level of grave roofing; II – burial level (1 – flint tool; 2 – fragments of wood; 3 – outline of mat; 4 – ochre)

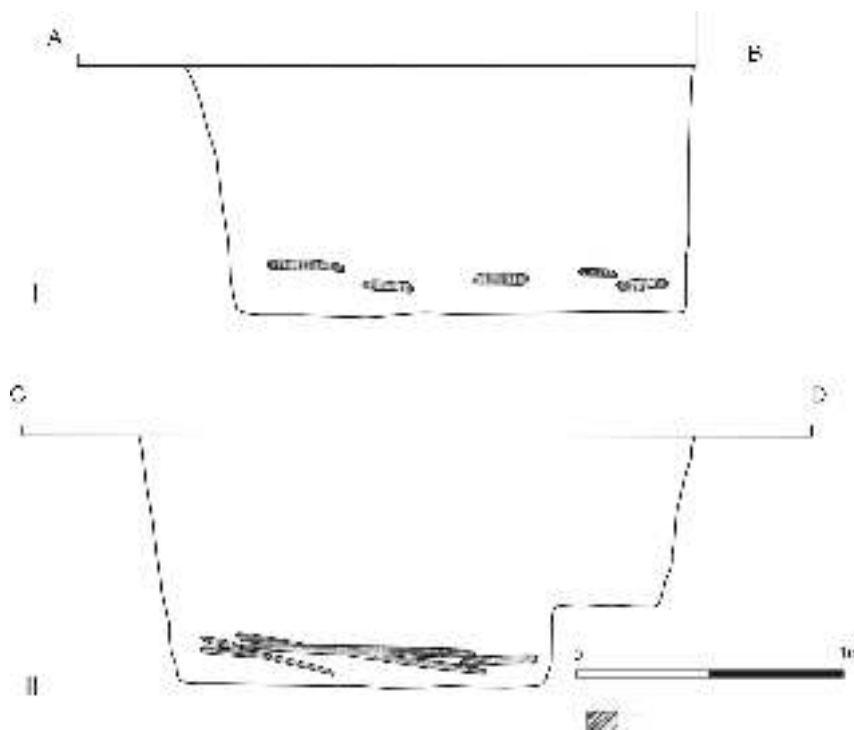


Fig. 38. Prydnistrianske, Yampil Region, barrow IV, feature IV/8. I – N-S profile; II – W-E profile (1 – fragments of wood)



Fig. 39. Prydnistrianske, Yampil Region, barrow IV, feature IV/8. Burial level

Description of grave goods:

1. A blade knife insert made of Cretaceous flint, found at the Dniester Region, whose colour changed as a result of contact with ochre. It was made from a regular blank of broad, chunky dimensions. It has a narrow, tongue-like butt and a pronounced bulb of percussion. Blade edges show micro-retouch and traces of crushing resulting from the tool use. Dimensions: $56 \times 29 \times 5$ mm (Fig. 40).

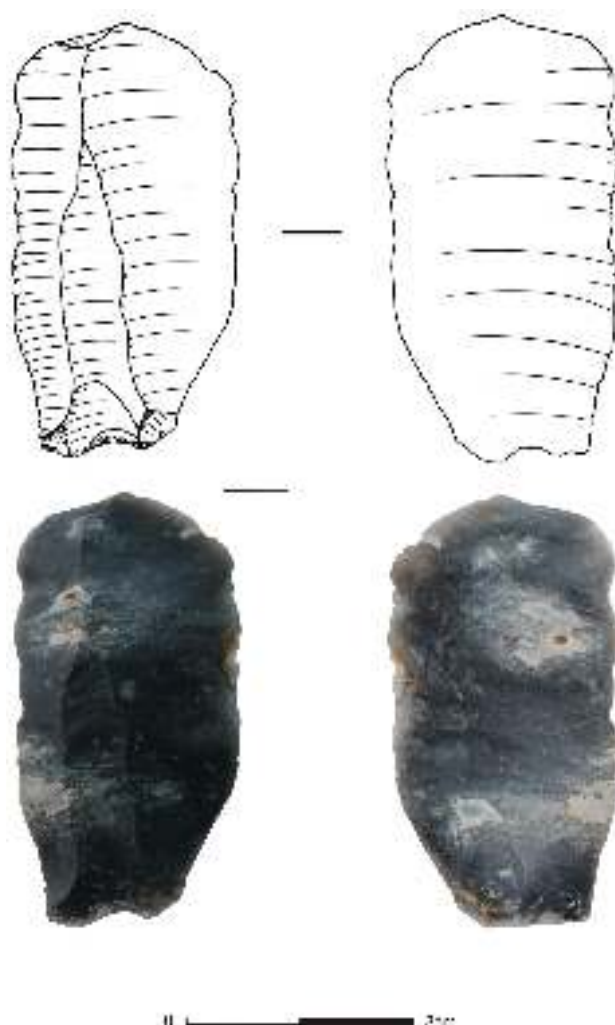


Fig. 40. Prydnistrianske, Yampil Region, barrow IV, feature IV/8. Blade knife insert

Feature IV/9

Culture	Yamnaya		
Dating	Poz-66233: 4120 ± 35 BP (human bone)		
Grave pit		Burial	
Structure type	Pit	Sex	Male
Number of burials	1	Age	25-35 years (<i>adultus</i>)
Size at the level of discovery	2.25 × 1.7 m	Orientation	NW-SE
Size at the level of the bottom	1.85 × 1.4 m	Deviation	6°E
Depth	2.25 m	Arrangement of head	On the right side
Pit orientation	NW-SE	Arrangement of trunk	On the right side
Deviation	5°N	Upper limbs	A
Distance from barrow centre	11.28 m	Lower limbs	2
Azimuth	216°	Ochre	+
Wooden roofing	+	Presence of mat	+
Roofing element orientation	Transverse	Animal bones	One bone fragment
Other structural elements	–	Ritual objects	–
Comments			

Unearthed in the south-eastern portion of the barrow, the grave was sunk into the youngest part of the mound. Its upper portion was sub-rectangular and its fill was made up of light-grey-brown earth, mixed with yellow loess. From its edges, several small wood fragments were recovered. Close to the bottom, the feature was regularly rectangular and its fill was visibly darker, brown in colour. Beginning at a depth of 2.1 m, immediately above the corpse, a woodwork was preserved, consisting of eight logs 20-35 cm wide laid perpendicularly to the longer axis of the pit. On the pit bottom, on a rectangular mat, measuring about 1.8 × 1.2 m, the skeleton of a man aged *adultus/maturus* rested in a crouched position on its right side. Its right upper limb was extended, while the left one was bent at the elbow and placed on the pelvis. The lower limbs were strongly contracted by being bent both at the hips and knees. At the skeleton, the presence of ochre was noted, with a large amount of it being recorded at the feet and shins, next to the arms and within the chest. No grave goods were recorded (Figs. 41-43).

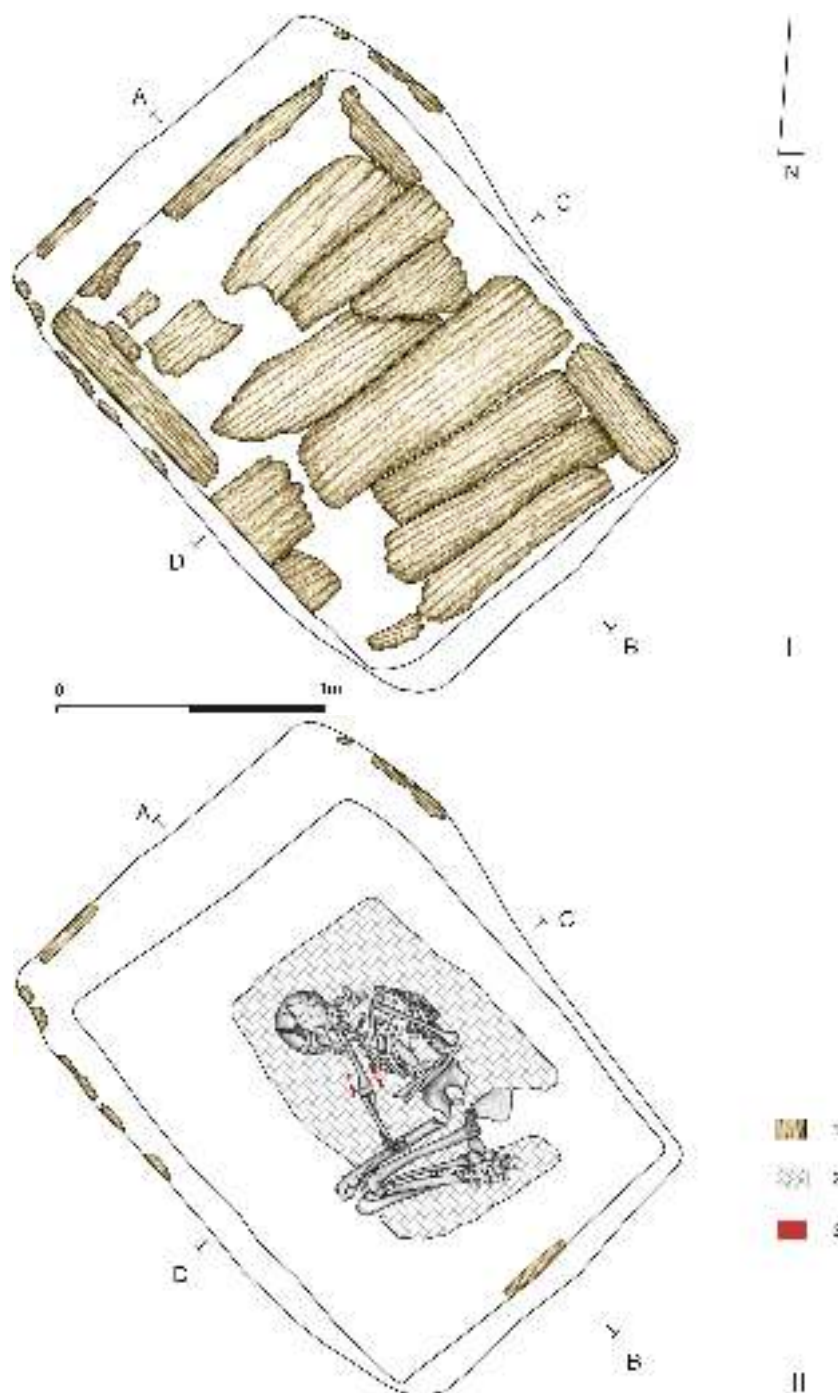


Fig. 41. Prydnistrianske, Yampil Region, barrow IV, feature IV/9. I – level of wooden grave roofing; II – burial level (1 – fragments of wood; 2 – outline of mat; 3 – ochre)

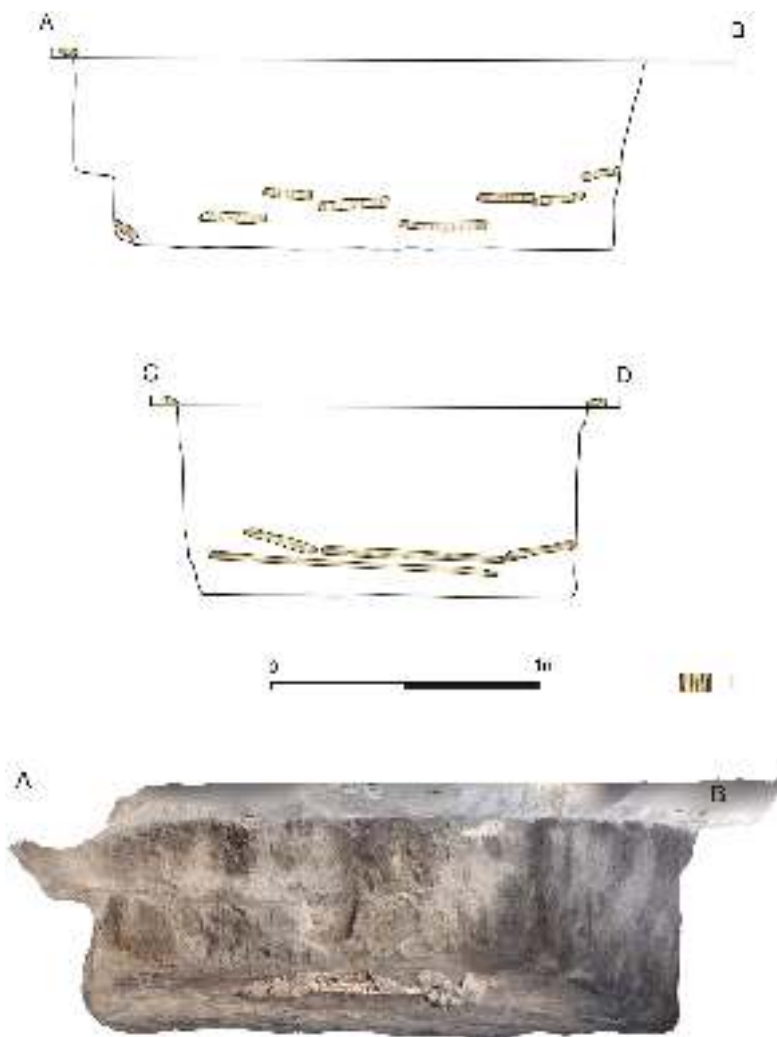


Fig. 42. Prydnistrianske, Yampil Region, barrow IV, feature IV/9. Feature profiles (1 – fragments of wood)



Fig. 43. Prydnistrianske, Yampil Region, barrow IV, feature IV/9. Burial level

Feature IV/10

Culture	Tripolye-Gordinești		
Dating	Poz-66234: 4520 ± 40 BP (human bone)		
Grave pit		Burial	
Structure type	Catacomb?	Sex	?
Number of burials	1	Age	20 years (<i>adultus</i>)
Size at the level of discovery	2.65 × 1.8 m	Orientation	?
Size at the level of the bottom	1.8 × 1.45 m	Deviation	?
Depth	1.2 m	Arrangement of head	?
Pit orientation	N-S	Arrangement of trunk	?
Deviation	15°W	Upper limbs	?
Distance from barrow centre		Lower limbs	?
Azimuth		Ochre	—
Wooden roofing	—	Presence of mat	—
Roofing element orientation		Animal bones	—
Other structural elements	—	Ritual objects	—
Comments	The grave fill was found to hold shards and 12 flint artefacts		

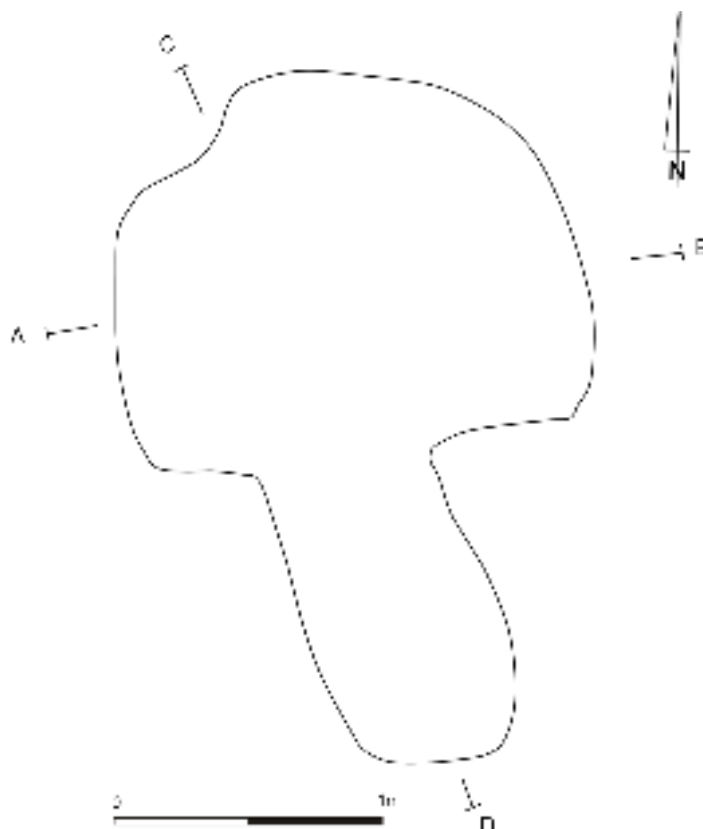


Fig. 44. Prydnistrianske, Yampil Region, barrow IV, feature IV/10. Grave profile: *see* Fig. 45

A central grave was discovered underneath the strata of the oldest mound. It was made up of two parts: the main semicircular chamber, measuring 1.8×1.5 m and located on the northern side, and a shallower narrow pit, measuring 1.2×0.75 m. The arrangement of these two parts is suggestive of a catacomb construction in which the pit located on the south side led to the grave vault directly (without any passage) over a steep threshold. On the northern and southern sides, the feature was accompanied by the spills of yellow loess up to 20 cm thick. In the ceiling portion, both parts of the feature had analogous fills of homogeneous grey-brown earth. At greater depths, and immediately above the bottom, the fill, although slightly brighter, was still homogeneous and consisted of dark, grey-brown earth of a humus nature. The chamber bottom extended 55 cm below the bottom of the entrance pit. At various levels of the grave, few and strongly fragmented human bones were found, including skull fragments, teeth, metacarpals, a hand phalanx,

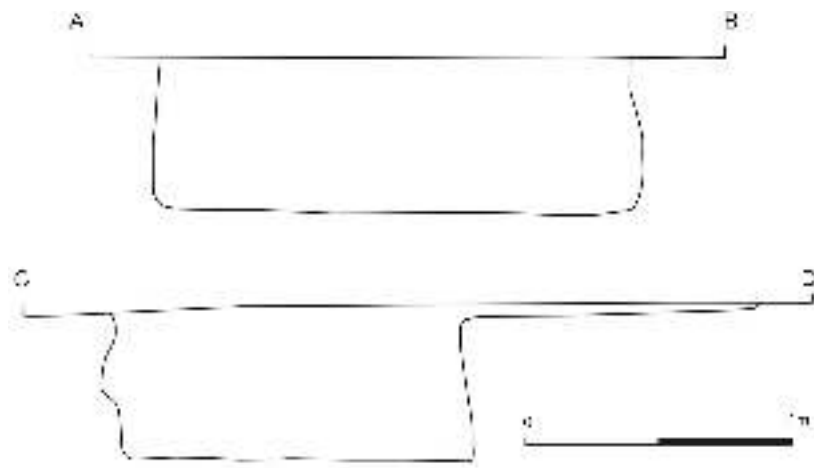


Fig. 45. Prydnistrianske, Yampil Region, barrow IV, feature IV/10. Grave profile

a wrist bone, fragments of the spine, ribs and unidentified long bones. These may have been the skeletal material of a single *adult* individual aged above 20 years. Several scattered bones were found at the feature bottom, too. No grave goods were recorded (Figs. 44, 45).

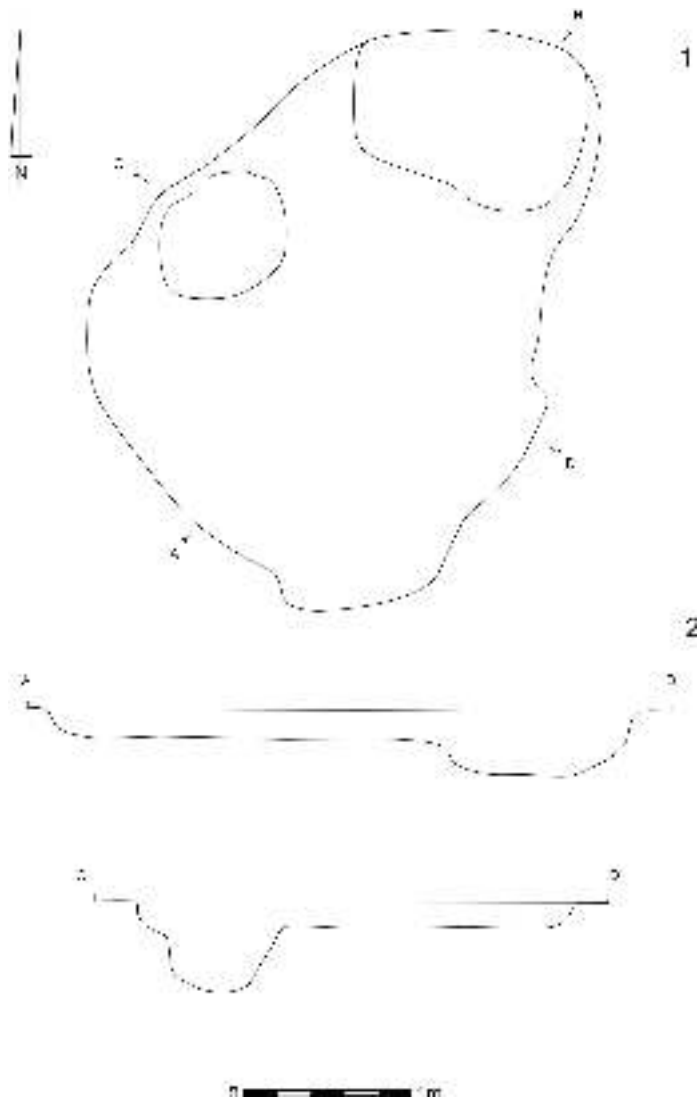


Fig. 46. Prydnistrianske, Yampil Region, barrow IV, feature IV/11. 1 – plan of floor level, 2 – feature profiles

Feature IV/11

Culture	?
Dating	?
Structure type	Irregular trench
Size at the level of discovery	3.65 × 2.7 m

Size at the level of the bottom	0.9 × 0.7 m
Depth	0.7 m
Pit orientation	SW-NE
Deviation	6°N
Distance from barrow centre	4.5 m
Azimuth	65°
Animal bones	–
Ritual objects	–
Comments	

A large irregular excavation in the central portion of the barrow was found, disturbing the strata of the oldest mound. In its northern portion, there were two trough-like hollows overdeepening it by about 14 and 40 cm, respectively. The feature yielded no artefacts. Most likely, it was a complex of animal burrows, dug after the Eneolithic mound had been built (Figs. 46).

3. PRYDNISTRYANSKE 1 CEREMONIAL CENTRE: RADIOCARBON CHRONOMETRY

The result of the investigations carried out at Prydnistryanske 1 is the discovery of a ceremonial-funeral complex set up, as can be judged from typo-chronological evidence, in the Eneolithic, specifically, in the second half of the 4th millennium BC, and expanded later, namely in the first half of the 3rd millennium BC, by Early Bronze YC populations only to be converted into a CC necropolis around the middle of the 3rd millennium BC.

The study of the radiocarbon chronometry of the ceremonial-funeral centre made use of 24 samples: 14 of bones and 10 of wood and charcoals, taken from features – graves. The results and their interpretation norms as far as comparative analyses are concerned have been presented in a separate paper devoted to the study of the radiocarbon chronometry of all Yampil ceremonial centres, associated with ‘barrow cultures’ related to the Eneolithic and the Bronze Age [Goslar *et al.* 2015]. The conclusions drawn there and concerning the Prydnistryanske 1 centre can be summarized as follows:

Stage I = Eneolithic barrows – I, II, III, IV (older mound – IVA) built between ca. 3350 and 3150 BC.

Stage II = YC barrow – IV (younger mound – IVB) built between ca. 3100/3000 and 2550 BC.

Stage III = CC grave dug into the mound of the Eneolithic barrow I (= feature I/4) ca. 2700-2400 BC.

When evaluating the scope of the above chronometric findings concerning the ceremonial-funeral centre, it is worthwhile to take note of data collection limitations encountered in the exploration of the surface of site 1 (*see* Introduction) and barrow IV (case of absolute necessity – power network protection).

4. PRYDNISTRYANSKE 1 CEREMONIAL CENTRE: TAXONOMIC ASSIGNMENT

The observations made here concern almost exclusively the macroscopic space: the taxonomic references (cultural-chronological) of studied sources in their funerary and manufacturing-stylistic aspects, which is true for the artefacts used in rituals. Exceptions include preliminary references to, undertaken at the same time, specialist raw-material analyses.

4.1. ENEOLITHIC STAGE

All four investigated barrows were built above features dated to the Eneolithic (*see* Ch. 3)². The size of mounds did not vary much: they were about 20 m in diameter. Barrow IV (the oldest mound) occupied the highest portion of the crest, while the other three barrows followed closely one another in a line.

Under barrows I-III, discoveries were made of similarly oriented (NE-SW) and regularly rectangular pits 1.5 m deep without any burial remains. This argues in favour of the opinion that the layout of the entire centre was planned, that it was an instance of designing the ‘architecture of a necropolis’.

A different typological position is occupied by the ‘catacomb structure’ of the grave pit recorded under the oldest mound of barrow IV. The pit held secondarily scattered and incomplete burial remains. Arguments in favour of its Eneolithic position, besides radiocarbon dating (ca. 3350-3150 BC), include also typo-chronological findings: the presence of ‘catacomb structures’ in the TC funerary rites [Koshylivtsi group: Tkachuk 2001-2002; Usatovo group: Patokova *et al.* 1989] and

² For a broader approach *see* Goslar *et al.* 2015.

those of steppe Eneolithic groups contemporary with the TC, including the Zhyvotilovka-Volchansk group [Rassamakin 2004: 58].

In the rites of Dniester 'Late Tripolye' communities, fire played a significant role. This can be seen in hearths accompanying graves, with the former being located on the original ground level – as is the case with barrow II (feature II/1). They are known from the Vykhatintsi and Usatovo groups [Patokova 1979: 89]. Another meaningful characteristic is the absence of ochre traces (apart from the microtraces of red colorant on a mat in grave III/3). This characteristic is shared by Gordinești group/type graves.

Graves III/1 and IV/10 were secondarily disturbed, which resulted in a complete scattering of the human remains and rendering them incomplete. Grave III/1 also held a broken vessel, the fragments of which were recovered from various levels of the fill. An analogous situation is encountered in many other graves covered by barrows and associated with the TC Gordinești group [Larina 2003: 66].

From graves III/1 and III/3, the following grave goods were recovered: a pot, amphora, beaker and battle-axe. The list of material determinants is supplemented by ceramic shards recorded in the fills of graves I/1 and IV/10, but their functional assessment is debatable. The pottery from these features, in terms of style and technology, corresponds to the production by the 'Late Tripolye' communities of stage C/II, especially to the materials of the Gordinești-Kasperovtsy-Horodiștea complex³.

To make the above assessment more specific, it is worthwhile to review analytically the diagnostic objects listed above.

Found in grave III/1, a pot-like vessel ornamented with subtriangular impressions (Fig. 18) corresponds to Gordinești group patterns. An analogy to it, a vessel from the Gordinești-mys cemetery [Dergachev 1973], is associated with the eponymous settlement of the group.

The amphora from grave III/3 represents a type which is commonly found on sites linked to the TC, phase C/II (Fig. 21: 1). V.A. Dergachev assigns such forms to the general Late Tripolye horizon [Dergachev 1980: 203, Fig. 37]. We know of ornamented and unornamented amphorae coming from settlements, flat cemeteries [Topal, Tserna 2010: 285, Fig. 2: 5, Yarovoy *et al.* 2012: 293, Fig. 4] and barrow graves [Antoniewicz 1925: 240, Fig. 40; Dergachev, Manzura 1991: 258, 260, Fig. 37: 3, 39: 6].

Found in grave III/3, a large beaker with a tall neck (Fig. 21: 3) corresponds in terms of technology and style, to a group of pottery sometimes bearing an incised

³ In this context, an expert assessment by Dr. S.M. Ryzhov is worth mentioning, to whom these authors are deeply grateful: "The entire ceramic assemblage discussed here [i.e. TC from Prydnistrianske 1, Ed.] belongs to the Tsviklovtsy group according to T.G. Movsha (materials published only in a small part) or the Gordinești II group according to V.A. Dergachev (materials from the Gordinești II settlement and cemetery have not been published). There are also visible analogies to sites in Brynzeny and Zhvanets Gora (unpublished materials). All these similarities are associated with the later stages of the TC in the region".

ornament encountered at Gordinești group settlements. For barrow grave inventories, analogies come from feature 8/15 in Gura Bukului [Dergachev 1984: 28, Fig. 9: 10] and feature 10/16 in Taraclia [Dergachev, Manzura 1991: Fig. 35: 10]. Interestingly enough, similar forms are found in Eneolithic graves 8, 21 and 25 from a barrow in Bursuceni [Yarovoy 1978, Figs. 12, 36, 41].

A good analogy for the stone battle-axe from grave III/3 is hard to find. The closest one is offered by a specimen from grave 10/17 in Taraclia II [Dergachev, Manzura 1991: 256, Fig. 35: 12].

4.2. EARLY BRONZE AGE (YAMNAYA CULTURE)

In the set of features associated with the YC, two grave types were distinguished as a criterion using the current knowledge of the funerary rite evolution of its communities. The two types correspond to *early rites* (features IV/4 and IV/6) and *late rites* (features IV/3, IV/8 and IV/9). Features representative of this division were dated using the radiocarbon method, which corroborated the outlined typo-chronological criteria [Ch. 3, for a broader discussion *see* Goslar *et al.* 2015].

Associated with the early phase of the YC, features 4 and 6 from barrow IV formally coincide as far as skeleton arrangement is concerned. In both graves, the bodies were deposited with the upper limbs extended along the trunk and the lower limbs bent and knees pointing upwards. What they have in common also is the structure of their underground portion. It boasts a wide step leading to a regularly rectangular grave chamber and traces of evenly placed posts once supporting wooden roofing elements ('canopy'?) or providing props for various kinds of wall structures [Dergachev 1986: 35]. Such taxonomically diagnostic structures are common throughout the Dnieper-Danube YC range, as well as in the western zone created by YC Danube expansion.

The issue of 'holes in grave bottoms' for 'post or stakes' was discussed in the studies of the YC on the middle Ingulets River (Kryvyi Rih Region). Such holes occur there in 3.9 per cent of 'Yamnaya' graves; their number varies from 4 to 10. They were elements of linings of grave pit walls [Melnik, Steblina 2013: 20; Fig. 17]. The percentage of structures 'with holes' in the 'Southern Bug variety' of the YC (between the Southern Bug and Ingul rivers) is 2.49 per cent. A particularly meaningful concentration of the use of such structures was recorded on the lower Southern Bug in barrow clusters at Kovalevka, Mykolaiv Region and Tarbarovka, Voznesensk Region [Shaposhnikova *et al.* 1986: 76-79, Fig. 33: 5, 36: 3, 37: 5].

Features with such structures in the Middle Dniester Area are mainly central graves and ones sunk into mounds associated with the older phase of their use. In

the Yampil Region, six graves with ‘holes in the bottom’ have been discovered so far, which represent 11.54 per cent of all ‘Yamnaya’ graves. These are: Pysarivka 1/2, 4/2, 5/1, 6/2, 7/2, and Severynivka 2/5 [Harat *et al.* 2014]. Further examples come from a nearby cluster of barrow sites at Kamenka Region, where five graves ‘with holes’ in the bottom were recorded. These are: Okniŭsa; 3/14, 3/17, 6/11, 7/3, 7/11, which represent 8.20 per cent of all YC graves [Manzura *et al.* 1992]. Still more examples come from other, not very distant areas of the Middle Dniester Area [Mocra: *see* Kashuba *et al.* 2001-2002: 221].

Grave IV/4 boasted a particularly complex stone structure of the grave pit ceiling. It consisted of stone monoliths, a grillage woodwork and two mats. The stone part was made up of four stone slabs, bearing traces of rough hewing. Similar covers are typical above all of YC varieties west of the Dnieper, with their largest concentrations to be found in the drainage basins of the Southern Bug (80% of features), Ingulets (78% of features) and Ingul (55% of features) rivers [Shaposhnikova *et al.* 1986: 15; Rychkov 2001: 45]. Analogous structures, however, do occur also on the Dniester, which is well illustrated by graves 2/2, 6/8 and 13/11 at Olanești, Ștefan Vodă Region [Yarovoy 1990: 158, 178, 203, Fig. 68: 6, 79: 1, 92: 1].

The other three YC graves (IV/3, IV/8 and IV/9) were sunk into the youngest mound. The radiocarbon measurements of their age indicate, however, that this happened already in the first half of the 3rd millennium BC. The arrangement of the deceased in grave IV/3 resembles that in the two features of the older phase. A similar arrangement – with arms lying in a slightly different position – is found in feature IV/8. In contrast, an entirely different arrangement is encountered in grave IV/9. In this case, the corpse lay on its right side with the lower limbs drawn up and one arm bent at the elbow and placed on the dead individual’s waist.

In two instances, wooden covers were found which consisted of logs placed perpendicularly to the longer axis of the grave (features IV/8 and IV/9). In addition, there were also boardings of the side walls of the graves. Structures of this type occur in the context of later YC development phases and are encountered above all on neighbouring Podolia sites [Manzura *et al.* 1992: 89; Kashuba *et al.* 2001-2002: 221]. Such a structure was also recorded in grave 1 from barrow 3A in Porohy dated late [Klochko *et al.* 2015: Fig. 7]. Hence, this is a local characteristic of Dniester sites.

A permanent feature of the funerary rite was the placing of the deceased on rectangular mats, covering most of the grave bottom. All skeletons were also coloured with ochre and in three cases, a globular lump of ochre, several centimetres in diameter, was placed next to the corpse’s head (graves IV/4, IV/6 and IV/8).

Only in grave IV/8 was an intentional item of furnishing discovered: a regular blade knife insert made of good quality Dniester flint. Such tools are not a typical component of YC inventories [Razumov 2011: 146, 147]. They are, however, a frequent element of grave goods offered to males in Corded Ware culture (CWC)

graves, a large number of which is known from Małopolska [Włodarczak 2006: 30-32].

The radiocarbon measurements and funerary rite traits indicate that the graves from Prydnistryanske were dug in the older and middle phases of YC development, while the age of the youngest ones still stays in the first half of the 3rd millennium BC.

4.3. MIDDLE BRONZE AGE (CATACOMB CULTURE)

Unique in the *Yampil Barrow Complex*, grave I/4 is associated with the CC tradition. It was found to hold the remains of two individuals, lying with their lower limbs slightly flexed. The only element of grave furnishing was a stone mace with the copper elements of handle fastening (Fig. 9: 2, 10: 2, 4). Grave I/4 finds analogies in ‘catacomb’ burials from the various development stages of a given taxon [Klochko 2006: 105, Figs. 37, 45]. In the opinion of S.V. Ivanova and G.N. Toshev, the arrangement of the deceased (in the crouched supine position, leaning sideways) argues in favour of assigning this feature to the final part of the Early Catacomb period. This conclusion is not contradicted by radiocarbon dates, either, obtained from the bones of the burials and found generally to fit into the prologue as defined in the chronometry of the CC on the north-western Black Sea Coast [Ivanova, Toshev 2015; 2015a]. The traits of the burials are analogous chiefly to those of the Donetsk CC [Bratchenko 2001; Ivanova 2013]. In the northern reaches of the forest-steppe, a similar burial was found on the middle Prut River, in grave 3/7 from Corpaci, Edineț Region [Yarovoy 1984: 60, Fig. 9: 4; 66, Fig. 12: 7], where it was considered a unique find as well. Its furnishing consisted of a mace analogous to that from grave I/4 in Prydnistryanske.

In the perforation of the mace, the fragments of a wooden shaft have survived together with the copper elements of its fastening. Similar metal fastenings were found in CC graves from left-bank Ukraine: from the Dnieper area [graves III/1 from Kamenka II and IV/1 from Kolpakovka III – Kaiser 2003: 193, Tab. 19] and from the Donetsk area [grave 12/2 from Svatove – Bratchenko 2003: 200, Fig. 10: 1].

Moreover, from the Podolia, left-bank part of the Dniester area, we know of other single burials linked to various territorial branches of the CC. With its early phase, grave 3/5 from Okniŭsa is linked on the strength of its close formal analogies, in terms of inventory, to the burials of the following CC branches: Kharkiv-Voronezh, Donetsk and Predkavkaz-Manych [Manzura *et al.* 1992: 20, 21; Klochko 1990: 30]. Against this background – similarly ‘early’ – grave I/4 from Prydnistryanske forms a clear example of long-distance relations of Podolia with the Donetsk, possibly Ingul, CC groups [Otroshenko 2013: Fig. 2]. Grave 2/5 from Kuzmin [Bubulych, Khakhei 2001: 132], in turn, held a burial where the deceased

lay crouched – analogously to the deceased in the hypothetically ‘catacomb’ feature 1/7 from Pidlisivka [Koško *et al.* 2014: 226-228]. If these burials are in fact related to the CC, they have affinities with, in terms of ritual characteristics, its middle Prut group [Toshev 1991; 2013; Kaiser 2003: 40, 43].

5. PRYDNISTRYANSKE CEREMONIAL CENTRE: TOPOGENETIC CLASSIFICATION

The investigations of Prydnistryanske 1, from the perspective of the topogenetic studies of the Dniester Barrow Cemetery Complex in the area of Yampil, are innovative in three aspects, which we shall discuss in greater detail: (a) the origins of barrow cemeteries in the territory of ‘Late Tripolye’ forest-steppe groups (i.e. ‘extra Usatovo’ ones) in the Dniester and Prut drainage basins [as part of their so-called northern group as ‘preliminarily’ defined by T.G. Movsha 1971]; (b) the position of ‘Yampil-Kamenka’, Podolia (‘left-bank’) evidence for the Dniester exodus of the YC towards the ‘Baltic’ cultural space by means of the currently approved network of its ‘local varieties’ proposed by N.Ya. Merpert and O.G. Shaposhnikova [Merpert 1974]⁴; (c) relatively polygenetic character of the CC in the left-bank Middle Dniester Area – nevertheless, generally identified with its Ingul-Donets centre.

(a) The Prydnistryanske 1 complex is the first barrow cluster of the Gordinești group on the left bank of the Dniester [not counting the distant and mysterious find from Zawisznia, Lviv *Oblast*, Antoniewicz 1925]. It is located, however, in the Dniester Area, where finds associated with this group, both grave and settlement ones, are many. They include flat graves located within settlements (permanent and seasonal) and autonomous ones [Movsha 1964; Larina 2003; Topal, Tserna 2010]. The presence of graves under mounds stresses the differentiation of the funerary rite of the local ‘Late Tripolye’ group, most likely resulting from a socio-economic stratification. From another angle, however, the nearby presence of Eneolithic barrows holding extended burials [‘post-Mariupol’ – Oknița, graves 6/24 and 7/14 – Manzura *et al.* 1992; Timkovo, grave 1/5 – Ostroverkhov *et al.* 1993] raises the issue of relations between ‘steppe’ and ‘Late-Tripolye’ communities. A similar distance separates the barrows of both traditions in other areas of the forest-steppe [e.g. Sărăteni – Levițki *et al.* 1996; Bursuceni – Yarovoy 1978]. Although graves with extended skeletons may be rather broadly dated [Ivanova 2015: 282; Ivanova,

⁴ See Rassamakin, Nikolova 2008: Figs. 1, 2.

Toshev 2015], the barrow burials listed here may be linked to the Late Eneolithic and correspond to stage C/II of the TC [Manzura 2010; Rassamakin 2013]. No data has been obtained yet that would help to date these features more precisely and determine their temporal relation to the ‘Late-Tripolye’ tradition barrows.

To fully appreciate how illuminating topogenetically the studies of the Prydnistrianske 1 ceremonial centre have been so far, it is crucial to assess its genetic relationship to the TC Gordinești group and observe topogenetically extraneous – ‘steppe’ – necropolises in the vicinity (Oknița, grave 6/24). The assessment may prompt us to formulate a research programme offer to measure the planning efficiency of distinguishing a local “Yampil-Kamenka variety” (i.e. as a germ of a field exploration programme) as part of the study of local trends in ‘Late-Tripolye barrow architecture’. This opinion does not clash with placing these trends on a – conceptually justifiable – broad autogenetic scale: that of the Zhivotilovka–Volchansk horizon [Rassamakin 1994; 1999; 2002; Ivanova, Toshev 2015]⁵.

(b) The significance of the topogenetic studies of the Prydnistrianske ceremonial centre does not modify much the topogenetic assessment formulated, relying on the finds recovered from 20 YC barrows in the Yampil area and 13 others located in the Kamenka Region, about 18 km to the southeast (7 from Oknița, 1 from Hrustovaia, 1 from Podoima and 4 from Kuzmin). The finds form a compact concentration representing the Podolia, north-western frontier of the YC complex⁶. At the same time, they form part of a broader forest-steppe zone of the Dniester and Prut drainage basins, which comprises both Podolia barrows (e.g. Mocra, Timkovo) and north Moldavian ones (e.g. sites on the Reut river: Brâncenii Noi, Brăviceni, Orhei or on the upper Prut: Corpaci). The area is unique in its modest funerary rite when compared to the Dniester-Danube steppe areas (Budzhak), specifically in the absence of certain characteristic ceramic forms, for instance regionally highly diagnostic ‘Budzhak pots’ [Ivanova 2013: Figs. 3, 5; Ivanova, Toshev 2015]. Instead, there appear items testifying to contacts with Globular Amphora Cultura - GAC CWC communities, including characteristic ceramic vessel types and flint inventories. The former are chiefly amphorae, which can be found in the middle and lower Dniester area and on the lower Prut and Danube [Iwanowa *et al.* 2014: Fig. 4.3.3:3; Razumov 2011: 141-148].

The problem of relations with the YC Southern Bug group appears interesting in O.G. Shaposhnikova’s definition. According to it, the group comprises mainly the steppe interfluvium of the Southern Bug and Ingulets [Shaposhnikova 1985: 347ff; Shaposhnikova *et al.* 1986; Rassamakin, Nikolova 2008: Fig. 2]. The definition is borne out in the *Yampil complexes* by the presence of characteristic pottery: e.g. a pot ornamented on the lip and upper belly with the ‘impressions of

⁵ For the perspective of ‘western development correspondences’ see Koško 2000; Włodarczak 2008.

⁶ For a sketch of the conception how to identify the *Yampil (Podolia) Territorial Centre* see Ivanova, Toshev 2015.

a toothed wheel' [Pysarivka, grave 2: Razumov 2014: 343-345] or grave structures (e.g. Prydnistrianske, grave IV/4). In this perspective, a difficult problem is posed by the connection to the area of Southern Bug-Dnieper forest-steppe, located between the Podolia group under discussion and the YC Middle Dnieper group right-bank drainage basin of the middle Dnieper, the drainages of the Ros', Rosava, Tyasmin, Omei'nik and middle Southern Bug – the drainages of Siniukha and Tikych [Shaposhnikova 1985:347ff; Rassamakin, Nikolova 2008: Fig. 2]. Few better-known sites from that area [Talyanki and Dobrovody – Klochko, Kruts 1999; Bunyatyan, Nikolova 2010] prevent us from making any broader comparisons. Originating from both this forest-steppe area and the steppe zone on the lower Southern Bug or the middle Ingulets, pottery inventories show several manifest differences such as the absence of round-bottom pots 'from Podolia'. Such pots are diagnostic 'in the Dnieper Area' in the case of both the early and late phases [Shaposhnikova *et al.* 1986: Figs. 13, 15; Melnik, Steblina 2013: Figs. 29-31].

The Prydnistrianske 1 discoveries draw our attention to the problem of the legacy of the funerary rite performed by 'Late Tripolye' Eneolithic groups in the Dniester-Danube area in YC rituals. A special trait of *Yampil* barrows, including Prydnistrianske 1-IV, is seen in the presence of simple, 'idealized' stone stelae – analogous to those found in Eneolithic barrows [Shaposhnikova *et al.* 1980: Fig. 1; Yarovoy 2001]. The scope in which older stone funerary architecture was adapted by YC communities remains unknown. The frequent integration, however, of younger, Early Bronze layouts with older, Eneolithic ones seems to be no coincidence. A separate study ought to be devoted to the issue of inspiration in pottery production and the role of selected pottery types in YC funerary rites (see the grave inventories of the Gordinești group, including that from feature III/3 in Prydnistrianske).

(c) A very limited amount of sources that in Dniester barrow cemetery complexes should be indisputably linked to CC communities clearly point to their early character by emphasizing their topogenetic setting in the circle of Ingul-Donets Early Bronze civilization [Klochko, Koško 2013; Otroshchenko 2013; Toshev 2013]. Whereas in the case of the Oknița grave, in the opinion of E.O. Klochko, one should notice connections to the CC Kharkiv-Voronezh and Donets groups or even to as distant a CC group as the Fore-Caucasian-Manych one [Klochko 1990: 30], analogies to grave I/4 from Prydnistrianske 1 can be found closer [*see* maces with a copper wedge – Bratchenko 2003, 200, Fig. 10: 1; Otroshchenko 2013, Fig. 2-15, in a broader taxonomic approach].

Summing up, it must be stressed that among diagnostic sites important for documenting the early stages or development forms of Northern Pontic 'barrow cultures', Prydnistrianske 1 should enjoy the status of a highly illuminating feature, which can be gathered from both this paper and the series of simultaneously published ones [Litvinova *et al.* 2015; Goslar *et al.* 2015] or currently conducted

‘aspect studies’ (such as bioarchaeological, palaeopedological or ones devoted to fossil DNA). Their results will be published in the next volume of *Baltic-Pontic Studies*. The *Prydnistrianske Research Programme* should bring forth initiatives to continue field work – both non-invasive and excavations – between the Dniester and Markivka rivers.

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REFERENCES

Antoniewicz W.

- 1925 Eneolityczne groby szkieletowe we wsi Złota w pow. Sandomierskim. *Wiadomości Archeologiczne* 9: 191-242.

Bednarek R., Jankowski M.

- 2014 Charakterystyka gleboznawcza materiału budującego nasyp kurhanu 1 w Pidlisivce. In: A. Koško, M. Potupczyk, S. Razumow (Eds) *Nad-dniestrzańskie kompleksy cmentarzysk kurhanowych społeczności z III i z pierwszej połowy II tysiąclecia BC w okolicach Jampola, obwód winnicki. Z badań nad północno-zachodnią rubieżą osadnictwa społeczności kręgu kultur „wczesnobrzązowych” strefy pontyjskiej. Badania z lat 1984-2010. Archaeologia Bimaris – Monografie* 6, 275-279. Poznań.

Bratchenko S.N.

- 2001 *Donetska katakombna kultura rannioho etapu*, vol. 1. Luhansk.
2003 Radiocarbon chronology of the Early Bronze Age of the middle Don. Svatove, Luhansk Region. In: A. Koško (Ed.), *The Foundation of Radiocarbon Chronology of Cultures Between the Vistula and Dnieper: 4000-1000 BC, Baltic-Pontic-Studies* 12, 185-208.

Bubulich V., Khakheu V.

- 2001 Issledovaniya kurganov v Kamenskom rayone na levoberezhie Srednego Dnestra. In: N.A. Ketraru (Ed.), *Severnoe Prichernomore ot eneolita k antichnosti*, 112-148. Tiraspol.

Bunyatyan K.P., Nikolova A.V.

- 2010 Kurgany yamnoyi kultury na trypilskykh poselenniakh Dobrovody i Talianky. In: *Arkheolohiya i davnia istoriya Ukrayiny*, vyp. 3: *Kolektsii Naukovykh Fondiv Instytutu Arkheolohiyi NAN Ukrayiny. Materialy ta doslidzhennia*, 34-50. Kyiv.

Dergachev V.A.

- 1973 *Pamiatniki epokhi bronzы, Arkheologicheskaya Karta Moldavskoy SSR* 3. Kishinev.
1980 *Pamiatniki pozdnego Tripolia*. Kishinev.
1984 Kurgany u s. Gura-Bukului. In: Y.Y. Artemenko (Ed.) *Kurgany v zonakh novostroek Moldavii*, 3-36. Kishinev.
1986 *Moldaviya i sosednie territorii v epokhu bronzы*. Kishinev.

Dergachev V.A., Manzura I.V.

1991 *Pogrebalnye komplekсы позднего Tripolia*. Kishinev.

Goslar T., Klochko V.I., Koško A., Włodarczak P., Żurkiewicz D.

2015 Chronometry of Late Eneolithic and 'Early Bronze' cultures in the Middle Dniester area: investigations of the Yampil Barrow Complex. In: A. Koško (Ed.). *Podolia as a Cultural Contact Area in the 4th/3rd-2nd Millennium BC*. *Baltic-Pontic Studies* 20: 256-291.

Harat K., Potupczyk M., Razumov S.

2014 Charakterystyka źródeł archeologicznych pozyskanych w latach 1984-1993. In: A. Koško, M. Potupczyk, S. Razumow (Eds) *Naddniestrzańskie kompleksy cmentarzysk kurhanowych społeczności z III i z pierwszej połowy II tysiąclecia BC w okolicach Jampola, obwód winnicki. Z badań nad północno-zachodnią rubieżą osadnictwa społeczności kręgu kultur „wczesnobrzązowych” strefy pontyjskiej. Badania z lat 1984-2010*. *Archaeologia Bimaris – Monografie* 6, 45-204. Poznań.

Ivanova S.V.

2013 Kulturno-istoricheskie kontakty naseleniya Severo-Zapadnogo Prichernomoria v rannem bronzovom veke: Zapad-Vostok. Kulturno-istoricheskie kontakty naseleniya. *Stratum plus* 2: 158-248.

2015 Protobudzhakskiy gorizont Severo-Zapadnogo Prichernomoria. *Stratum plus* 2: 275-294.

Ivanova S., Koško A., Włodarczak P.

2014 Komponent tradycji kultur ceramiki sznurowej. Amfory w północno-zachodnio-nadczarnomorskich grobach kultury jamowej. In: A. Koško, M. Potupczyk, S. Razumow (Eds) *Naddniestrzańskie kompleksy cmentarzysk kurhanowych społeczności z III i z pierwszej połowy II tysiąclecia BC w okolicach Jampola, obwód winnicki. Z badań nad północno-zachodnią rubieżą osadnictwa społeczności kręgu kultur „wczesnobrzązowych” strefy pontyjskiej. Badania z lat 1984-2010*. *Archaeologia Bimaris – Monografie* 6, 351-386. Poznań.

Ivanova S.V., Toshev G.N.

2015 Late Eneolithic and Bronze Age prologue Pontic societies. Forest-steppe Middle Dniester and Prut drainage basins in the 4th/3rd-2nd millennium BC: A history of investigations. In: A. Koško (Ed.) *Podolia as a Cultural Contact Area in the 4th/3rd-2nd Millennium BC*. *Baltic-Pontic Studies* 20: 7-39.

2015a The Middle-Dniester cultural contact area of early metal age societies. The frontier of Pontic and Baltic drainage basin in the 4th/3rd-2nd mil-

lennium BC. In: A. Koško (Ed.) *Podolia as a Cultural Contact Area in the 4th/3rd-2nd Millennium BC. Baltic-Pontic Studies* 20: 336-405.

Jachimowicz K.

2015 *Analiza przestrzenna kurhanów kultury grobów jamowych z okolic Jampola, Ukraina (held in the archives of Adam Mickiewicz University)*. Poznań.

Kaiser E.

2003 *Studien zur Katakombengrabkultur zwischen Dnepr und Prut. Archäologie in Eurasien* 14. Mainz.

Kashuba M.T., Kurchatov S.Y., Scherbakova T.A.

2001-2002 Kochevniki na zapadnoy granitse Velikoy stepi (po materialam kurganov u s. Mocra). *Stratum plus* 4: 180-252.

Klochko E.O.

1990 Redkiy pogrebalnyi kompleks katakombnoy kultury na Srednom Dnestre. In: O.G. Shaposhnikova, V.V. Otroschenko, S.Z. Pustovalov, G.N. Toshchev, G.I. Shapovalov (Eds) *Problemy izucheniya katakombnoy kulturno-istoricheskoy obshchnosti*, 28-30. Zaporozhe.

Klochko V.I.

2006 *Ozbroyennia ta viyskova sprava davnoho naselennia Ukrainy (5000-900 r.r. do R.Kh.)*. Kyiv.

Klochko V.I., Koško A.

2013 The Baltic Drainage Basin in the Reconstruction of the Mental Map of Central Europe Held in Common by Northern-Pontic Early – Bronze Civilization Communities: 3200-1600 Bc. An outline of the research programme. In: A. Koško, V.I. Klochko (Eds) *The Ingul-Donets Early Bronze Civilization as Springboard for Transmission of Pontic Cultural Patterns to the Baltic Drainage Basin 3200-1750 BC. Baltic-Pontic Studies* 18: 9-20.

Klochko V.I., Koško A., Razumov S.M., Włodarczak P., Żurkiewicz D.

2015 Eneolithic, Yamnaya and Noua culture cemeteries from the first half of the 3rd and the middle of the 2nd millennium BC, Porohy, site 3A, Yampil Region, Vinnitsa Oblast: archaeometric and chronometric description, ritual and taxonomic-topogentic identification. In: A. Koško (Ed.) *Podolia as a Cultural Contact Area in the 4th/3rd-2nd Millennium BC. Baltic-Pontic Studies* 20: 78-141.

Klochko V.I., Kruts V.A.

- 1999 Radiocarbon Dates from the Yamnaya Culture Barrow at the Tripolye Culture „Giant Settlement” near Talyanky. In: A. Koško (Ed.) *The Foundations of Radiocarbon Chronology of Cultures Between the Vistula and Dnieper: 3150-1850 BC. Baltic-Pontic Studies* 7: 72-79.

Koško A.

- 2000 From research into the issue of the development dependencies of the Corded Ware culture and Yamnaya culture. In: S. Kadrow (Ed.) *A Turning of Ages/Im Wandel der Zeiten. Jubilee Book Dedicated to Professor Jan Machnik on His 70th Anniversary*, 337-346. Kraków.

Koško A., Potupczyk M., Razumow S. (Eds)

- 2014 *Naddniestrzańskie kompleksy cmentarzysk kurhanowych społeczności z III i z pierwszej połowy II tysiąclecia BC w okolicach Jampola, obwód winnicki. Z badań nad północno-zachodnią rubieżą osadnictwa społeczności kręgu kultur „wczesnobrązowych” strefy pontyjskiej (badania z lat 1984-2010). Archaeologia Bimaris – Monografie* 6. Poznań.

Koško A., Razumow S.

- 2014 Cele i metody badań terenowych. In: A. Koško, M. Potupczyk, S. Razumow (Eds) *Naddniestrzańskie kompleksy cmentarzysk kurhanowych społeczności z III i z pierwszej połowy II tysiąclecia BC w okolicach Jampola, obwód winnicki. Z badań nad północno-zachodnią rubieżą osadnictwa społeczności kręgu kultur „wczesnobrązowych” strefy pontyjskiej (badania z lat 1984-2010). Archaeologia Bimaris – Monografie* 6, 41-44. Poznań.

Koško A., Razumow S., Żurkiewicz D.

- 2014 Nasyp kurhanu: morfometria, stratygrafia oraz planigrafia obiektów. In: A. Koško, M. Potupczyk, S. Razumow (Eds) *Naddniestrzańskie kompleksy cmentarzysk kurhanowych społeczności z III i z pierwszej połowy II tysiąclecia BC w okolicach Jampola, obwód winnicki. Z badań nad północno-zachodnią rubieżą osadnictwa społeczności kręgu kultur „wczesnobrązowych” strefy pontyjskiej (badania z lat 1984-2010). Archaeologia Bimaris – Monografie* 6, 209-212. Poznań.

Larina O.

- 2003 Pozdnetripolskoe pogrebenie gordineshtskogo tipa na Dnestre. In: E. Sava (Ed.) *Interferențe cultural-chronologice în spațiul nord-pontic*, 57-80. Chișinău.

Levițki O., Manzura I., Demcenko T.

- 1996 *Necropola tumulară de la Sărăteni*. Bibliotheca Thracologica XVII. București.

Litvinova L.V., Łukasik S., Żurkiewicz D., Gwizdała M., Chyleński M., Malmström H., Jakobsson M., Juras A.

- 2015 Anthropological description of skeletal material from the Dniester Barrow Cemetery Complex, Yampil Region, Vinnitsa Oblast (Ukraine). In: A. Koško (Ed.) *Podolia as a Cultural Contact Area in the 4th/3rd-2nd Millennium BC. Baltic-Pontic Studies* 20: 292-335.

Łukasik S., Gwizdała M.

- 2015 *Ekspertyza antropologiczna ludzkich szczątków kostnych z st. Prydnie-stranskie, Ukraina (held in the archives of Adam Mickiewicz University). Poznań.*

Manzura I.V.

- 2010 “Vytianutyte” pogrebeniya epokhi eneolita v Karpato-Dnestrovskom Regione. *Tyragetia. Serie nouă* 4(1): 35-47.

Manzura I.V., Klochko O.V., Savva E.N.

- 1992 *Kamenskie kurgany*. Kishinev.

Melnik O., Steblina I.

- 2013 *Yamnaya kultura serednoyi techiyi Inhultsia*. Kryvyi Rih.

Merpert N.Y.

- 1974 *Drevneyshye skotovody Volgo-Uralskogo mezhdurechia*. Moskva.

Movsha T.G.

- 1964 Trypolskoe pogrebeniye v c. Tsviklovtsy. *Arkheologia* 16: 213-222.
1971 O severnoy gruppe pozdnetripolskikh pamiatnikov. *Sovetskaya Arkheologia* 1: 31-54.

Ostroverkhov A.S., Subotin L.V., Subotin A.V.

- 1993 Kurhan epokhi bronzы-eneolita u s. Timkovo. In: *Arkheolohichni doslid-zhennia v Ukraini 1991 r.*, 83-84. Lutsk.

Otroschenko V.V.

- 2013 The Catacomb culture phenomenon. In A. Koško, V.I. Klochko (Eds), *The Ingul-Donets Early Bronze Civilization as Springboard for Transmission of Pontic Cultural Patterns to the Baltic Drainage Basin 3200 – 1750 BC. Baltic-Pontic Studies* 18: 21-38.

Patokova E.F.

- 1979 *Usatovskoe poselenie i mogilniki*. Kyiv.

Patokova E.F., Petrenko V.G., Burdo N.B., Polishchuk L.Y.

- 1989 *Pamiatniki Tripolskoy kultury v Severo-Zapadnom Prichernomore*. Kyiv.

Rassamakin Y.Y.

- 1994 The main directions of the development of early pastoral societies of northern Pontic Zone: 4500–2450 BC (Pre-Yamnaya Cultures and Yamnaya Culture) In: A. Koško (Ed.) *Nomadism and Pastoralism in the Circle of Baltic-Pontic Early Agrarian People*. *Baltic-Pontic Studies* 2: 29-70.
- 1999 The Eneolithic of the Black Sea Steppe: Dynamics of Cultural and Economic Development 4500 -2300 BC. In: M. Levine, Y. Rassamakin, N. Kislenko, N. Tatarintseva (Eds) *Late Prehistoric Exploitation of the Eurasian Steppe*, 59-182. Cambridge.
- 2002 Aspects of Pontic steppe development (4550-3000 BC) in the light of the new cultural-chronological model. In: K. Boyle, C. Renfrew, M. Levine (Eds) *Ancient interactions: east and west in Eurasia*, 49-73, Cambridge.
- 2004 *Die nordpontische Steppe in der Kupferzeit Gräber aus der Mitte des 5. Jts. bis Ende des 4. Jts. v. Chr. Archäologie in Eurasien* 17. Mainz.
- 2013 From the Late Eneolithic period to the Early Bronze Age in the Black Sea steppe: what is the Pit Grave Culture (late fourth to mid-third millennium BC)? In: V. Heyd, G. Kulcsár, V. Szeverényi. *Transition to the Bronze Age. Interregional interaction and socio-cultural change in the third millennium BC. Carpathian Basin and neighbouring regions*, 113-138. Budapest.

Rassamakin Y.Y., Nikolova A.

- 2008 Carpathian Imports and Imitations in Context of the Eneolithic and Early Bronze Age of the Black Sea Steppe Area. In: P.F. Biehl, Y.Y. Rassamakin (Eds) *Import and Imitation in Archaeology*, 51-87. Langenweißbach.

Razumov S.M.

- 2011 *Flint Artefacts of Northern Pontic Populations of the Early and Middle Bronze Age: 3200-1600 BC*. *Baltic-Pontic Studies* 16.
- 2014 Komponent tradycji kultury jamowej. In: A. Koško, M. Potupczyk, S. Razumow (Eds) *Naddniestrzańskie kompleksy cmentarzysk kurhanowych społeczności z III i z pierwszej połowy II tysiąclecia BC w okolicach Jam-pola, obwód winnicki. Z badań nad północno-zachodnią rubieżą osadnictwa społeczności kręgu kultur „wczesnobrązowych” strefy pontyjskiej (badania z lat 1984-2010)*. *Archaeologia Bimaris – Monografie* 6, 341-346. Poznań.

Rychkov N.A.

- 2001 Ob uslovnykh tsentrakh nositeley Yamnoy kultury. In: N.A. Kettraru (Ed.) *Severnoe Prichernomore ot eneolita k antichnosti*, 42-66. Tiraspol.

Shaposhnikova O.G.

- 1985 Yamnaya kulturno-istoricheskaya obschnost. In: D.Ya. Telegin (Ed.) *Arkheologiya Ukrainskoy SSR, vol. I*, 336-352. Kyiv.

Shaposhnikova O.G, Fomenko V.N., Dovzhenko N.D.

- 1986 *Yamnaya kulturno-istoricheskaya Oblast (yuzhnobugskiy variant)*. Kyiv.

Shaposhnikova O.G., Sharafutdinova I.N., Fomenko V.N., Dovzhenko N.D.

- 1980 Nekotorye itogi izucheniya pogrebalnykh pamiatnikov epokhi medi-bronzy na r. Ingul. In: *Arkheologicheskie pamiatniki Poingulia*, 5-17. Kyiv.

Sudnik-Wojcikowska B., Moysienko I.I., Dembicz I., Galery H., Rowińska A., Zachwatowicz M.

- 2013 *Kurhany na „Dzikich Polach” – dziedzictwo kultury i ostoja ukraińskiego stepu*. Warszawa.

Tkachuk T.M.

- 2001-2002 Konets etapu CI i nachalo CII tripolskoy kultury verkhnego Podnestrovia (na materialakh poselenia Bilshivtsi. *Stratum plus* 2: 196-217.

Topal D.A., Tserna S.V.

- 2010 Pozdnetripolskiy mogilnik y poseleniya u s. Kunicha (Floreshtskiy r-n, Respublika Moldova. *Stratum plus* 2: 281-298.

Toshev G.N.

- 1991 Zapadnyj areal pamiatnikov katakombnoy kultury. In: *Katakombnye kultury Severnogo Prichernomia*, 85-100. Kyiv
- 2013 In the west of the Budzhak culture. In: A. Koško, V.I. Klochko (Eds), *The Ingul-Donets Early Bronze Civilization as Springboard for Transmission of Pontic Cultural Patterns to the Baltic Drainage Basin 3200-1750 BC. Baltic-Pontic Studies* 18: 72-85.

Włodarczak P.

- 2006 *Kultura ceramiki sznurowej na Wyżynie Małopolskiej*. Kraków.
- 2008 Kultura złocka i problem genezy kultury ceramiki sznurowej w Małopolsce. In: J. Bednarczyk, J. Czebreszuk, P. Makarowicz, M. Szmyt (Eds) *Na pograniczu światów. Studia z pradziejów międzymorza bałtycko-pontyjskiego ofiarowane Profesorowi Aleksandrowi Koško w 60. rocznicę urodzin*, 555-576. Poznań.

Yarovoy E.V.

- 1978 *Otchet o polevykh issledovaniakh eneoliticheskoy archeologicheskoy ekspeditsii v 1977 godu*. Kishinev.

- 1984 Pogrebalnyi obriad nekotorykh skotovodcheskikh plemen srednego Pruta. In: I.I. Artemenko (Ed.) *Kurgany v zonakh novostroek Moldavii*, 37-75. Kishinev.
- 1990 *Kurgany epokhi eneolita-bronzy Nizhnego Podnestrovia*. Kishinev.
- 2001 Eneoliticheskie sviatilischa y antropomorfnye stely Dnestrovsko-Prutskogo mezhdurechia. In: *Davnia istoriya Ukrayiny i sumizhnykh rehioniv. Carpatica 13. Yuvileynyi zbirnyk na chest 70-richchia vid dnia narodzhennia prof. E.A. Balaguri*, 67-77. Uzhhorod.
- Yarovoy E.V., Tserna S.V., Popovici S.S.
- 2012 Pozdnetripolskiy mogilnik u s. Oksentia (Dubossarskiy rayon, Respublika Moldova. *Stratum plus* 2: 287-302.

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CHRONOMETRY OF LATE ENEOLITHIC AND 'EARLY BRONZE' CULTURES IN THE MIDDLE DNIESTER AREA: INVESTIGATIONS OF THE YAMPIL BARROW COMPLEX

ABSTRACT

The paper discusses the 2010-2015 studies of the radiocarbon chronology of Podolia 'barrow cultures' on the left bank of the middle Dniester. The studies have relied on series of ^{14}C dates for the Klembivka 1, Pidlisivka 1, Porohy 3A and Prydnistryanske 1 sites determined in Kyiv and Poznań laboratories. They are the first attempt to construct a regional ('Yampil') radiocarbon scale for 'Early Bronze' funerary rites (4th/3rd-2nd millennium BC) as practised by barrow builders – the communities of the Tripolye and Yamnaya cultures – and the secondary barrow users – the designers of necropolises located on barrows – belonging to the Catacomb, Babyno and Noua cultures.

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Key words: ‘barrow cultures’, Late Eneolithic, Early Bronze Age, Middle Bronze Age, Late Bronze Age, Middle Dniester Area

The study of the radiocarbon chronometry of Late Eneolithic and ‘Early Bronze’ cultures within the *Yampil Barrow Complex* (located between where the Murafa and Markivka rivers empty into the Dniester, Yampil district, Vinnitsa *Oblast*) is an integral part of the international research programme devoted to the study of the north-western frontier of settlement by the nomadic communities of the Black Sea Coast, associated with the prologue of the Bronze Age. The programme commenced in 2010 with the exploration of the Pidlisivka 1 funeral site¹. The series of radiocarbon measurements discussed in this paper was obtained for seven barrows excavated in 2010-2014 by the Polish-Ukrainian *Yampil Expedition* launched by the Institute of Prehistory, Adam Mickiewicz University in Poznań and the Institute of Archaeology, Ukrainian National Academy of Sciences (UNAS) in Kyiv, in association with the Institute of Archaeology and Ethnology of Polish Academy of Sciences, Centre for Mountains and Uplands Archaeology in Kraków.

1. PIDLISIVKA 1: STAGE OF METHODOLOGICAL DISCUSSIONS AND PRELIMINARY STUDY

These issues were tackled for the first time in respect of both (a) the correspondence of radiocarbon dating methods and (b) the analyses of specific measurements referring to graves investigated in 2010 and linked to the cultures – Yamnaya (YC) and Babyno (BC) – covered by the research programme and others staying beyond its scope – originating from the Early Middle Ages – in the paper by T. Goslar, A. Koško and S. Razumov published in 2014 [Goslar *et al.* 2014].

Available then, 14 measurements made from samples of human bones and wooden structures of grave pits taken from eight Pidlisivka features/burials (1A, 1Aa, 1B, 4, 5, 7, 11 and 12)² were performed at the Kyiv Radiocarbon Laboratory, Institute of Environmental Geochemistry, UNAS (Ki) and the Poznań Radiocarbon Laboratory, Foundation of the Adam Mickiewicz University (Poz) (Tab. 1). The latter laboratory (Poz), besides presenting absolute chronological findings, determined also the content and composition of the stable isotopes of carbon ($\delta^{13}\text{C}$) and nitrogen ($\delta^{15}\text{N}$) [Goslar *et al.* 2014: Tab. 4.1: 2].

Both the need to discuss ‘the methodological correspondence of all analyses’, felt by the major Polish and Ukrainian project team members [Klochko *et al.*

¹ For a broader description of the programme objectives see Koško *et al.* 2014: 11-13.

² For a broader discussion see Koško *et al.* 2014a.

Table 1

Results of ^{14}C dating of features from the barrow 1 at Pidlisivka. Results sets of double dating of the same samples are separated by dotted lines. Dates considered unrepresentative [Goslar *et al.* 2014] are printed in italics.

FEATURE	Lab no.	^{14}C Age BP	Calendar Age BC (68.2%)
Eneolithic (?)			
<i>1/1B</i>	<i>Ki-16674</i>	<i>3680±90</i>	<i>2199-1944</i>
<i>1/1I</i>	<i>Ki-16676</i>	<i>3690±80</i>	<i>2198-1964</i>
1/11	Poz-81824 ¹	4085±30	2836-2575
YC			
<i>1/1Aa floor</i>	<i>Ki-16673</i>	<i>3720±60</i>	<i>2201-2032</i>
<i>1/1Aa floor</i>	<i>Ki-16892</i>	<i>3895±70</i>	<i>2473-2287</i>
1/1Aa floor (wood)	Poz-52423	4190±35	2884-2700
1/1A ceiling	Poz-38529	4195±35	2886-2701
1/1A ceiling	Poz-39214	4080±40	2840-2500
1/1A ceiling (wood)	Poz-52424	4085±35	2838-2506
CC (?)			
1/7	Poz-38531	4120±35	2858-2621
1/4	Ki-16675	3810±80	2436-2139
BC			
<i>1/5</i>	<i>Ki-16677</i>	<i>4170±90</i>	<i>2884-2632</i>
<i>1/5</i>	<i>Ki-16893</i>	<i>4130±50</i>	<i>2864-2622</i>
1/5	Poz-38530	3430±35	1862-1685
Early Middle Ages			
1/12	Ki-16678	1050±80	887-1146 AD

¹ – a new determination, not published in Goslar *et al.* [2014]

2015a], and the differences between archaeological and radiocarbon age determinations made their re-analysis necessary. Initially, it focused on the possibility of the reservoir effect (Poz) eventually affecting the ^{14}C ages of human bones, dominating by far in the Pidlisivka samples, owing to their ‘chronometric advantage of short-livedness’ (12 out of 14 analyzed samples). It was found out that ‘the $\delta^{15}\text{N}$ value, measured for the collagen of dated Pidlisivka bones (10-11.6‰), could not be considered the sign of making ^{14}C ages older by the reservoir effect’. Nevertheless, the possibility of making age measurements older, as a consequence of the reservoir effect, made us attempt to corroborate the finding by ‘dating samples of other materials than human bones. As no bones of herbivorous animals were available, oak wood was used for this purpose, taken from the ceiling at the level of the

pit cover of grave 1A, as well as charcoals (oak) from the floor of this feature' [Goslar *et al.* 2014: 306, 307]. This attempt proved positive as well: the chronometric credibility of local ('middle Dniester') human bone samples was retained. Consequently, it was necessary to concentrate on the possible methodological-procedural differences between the two radiocarbon laboratories (Ki and Poz) [Goslar, Koško 2011], leading to a discussion between them (*see* Ch. 2.2).

Relying on spatial stratigraphy and the typo-chronology of funerary practices, four grave subsets were distinguished: Eneolithic (graves 1B, 10 and probably also 11), YC (central feature for the younger mound: 1A + 1Aa), Catacomb culture (CC) (graves 4 and 7) and BC (diagnostic feature 5).

Continuing the inter-laboratory discussion after 2014, in this case devoted to 'Yampil taxonomic nomenclature' as regards 'barrow cultures', researchers subjected the cultural attributions made earlier [Koško *et al.* 2014a] to verification, pointing to the need of considering the presence of Eneolithic and CC graves (features 4 and 7) on the Pidlisivka 1 site.

The dating of the oldest phase, associated with the Late Eneolithic, was unsuccessful: the result obtained for central grave 1B was not credible as it referred to the late 3rd and early 2nd millennia BC. Associated with the Eneolithic or the YC, feature 11 has also yielded a result, based on Ki-16676, which was not credible. An additional, recent dating of bones from this feature (Poz-81824) is, however, consistent with the age of Eneolithic feature 7 from the Porohy 3A site discussed below (Ch. 2.2, Tab. 3).

In order to date the YC phase, a series of measurements (Poz) was procured, dating wood and human bones from features 1A + 1Aa. They point to the interval of 2865-2665 BC (68.2%), which is representative of the building of the younger barrow mound.

The date obtained for grave 7 (2858-2621 BC) can be treated as a 'non-typological-ritual' argument in favour of linking it to the CC circle [Koško *et al.* 2014a: Fig. 3.1: 6; Razumow 2014; due to its rather indistinctive character, the feature was earlier considered to have been related to the BC]. This measurement clearly differs from the result obtained for grave 4 (2436-2139 BC) – also hypothetically associated with the CC, but in an earlier publication associated with the YC.

To assess the chronometry of the youngest of the 'Early Bronze' grave subsets identified with the BC a single date is available, which is 'credible from an archaeological point of view' and was obtained for human bones from feature 5 (Poz-38530): 1862-1685 BC (68.2%).

2. THE 2011-2014 INVESTIGATIONS: PERIODIZATION AND CHRONOMETRY OF 'YAMPIL BARROW' USE IN THE 4TH/3RD-2ND MILLENNIUM BC

In 2011, 2012 and 2014 another three *Yampil barrow* cemeteries located on the following sites: Porohy 3A, Klembivka 1 and Prydnistryanske 1 were excavated. Corollaries of the excavations, next 57 age determinations of funeral features were made either by both laboratories mentioned earlier (Porohy 3A) or the Poznań laboratory (Klembivka 1, Prydnistryanske 1). The determinations concern a broader range of 'barrow cultures': the Late Tripolye culture – Gordinești group (TC-G), other groups of the forest-steppe Eneolithic, YC, CC, BB and the Noua culture (NC), documenting the interval from ca. 3350 BC to 1400 BC. The sequences of the newly obtained series of ^{14}C dates shall be discussed in the subsections that follow, giving prominence – by discussing it first – to the diagnostically superior series of radiocarbon measurements obtained on the Prydnistryanske 1 site.

2.1. PRYDNISTRYANSKE 1

Located 1.0 km north of the Dniester, the site comprised four excavated barrows. Within them, the series of the oldest barrow features to be recorded in the Podolia Middle Dniester Area was exposed and shown to represent TC-G burials under mounds (barrows I-III and the oldest mound of barrow no. IV). The formal-metric characteristics of these funeral structures are discussed in Klochko *et al.* [2015]. So far, this 'pre-Yamnaya barrow horizon' [Ivanova, Toshev 2015a; 2015b] has been identified in typo-chronological classifications made in Moldavia, including nearby Oknița, Kamenka district, situated 17 km east of the site under discussion [Manzura *et al.* 1992], and in the middle Dniester-Prut interfluvium [Larina 2003; Yarovoy *et al.* 2012: 299, Fig. 10]. It must be stressed that the chronology of TC-G barrow cemeteries presented here is the first attempt to determine the time frame of the phenomenon in question which until now has been presented taking advantage of the effect of general chronology.

The second group of barrow features within the Prydnistryanske 1 site consists of YC features: ones under barrows and others sunk into mounds (younger mounds nos. 2 and 3 of barrow IV). The third group comprises a double CC burial sunk into the mound of barrow I (feature I/4) [Klochko *et al.* 2015]. The recorded feature indicates connections to the Donets group/culture [see the concept of Ingul-Donets Early Bronze Civilization in Klochko, Koško 2013].

Table 2

Results of ^{14}C dating of features from Prydnistrianske 1. Sample material other than human bones is indicated with feature designations

FEATURE	Lab No.	^{14}C Age BP	Calendar Age BC (68.2%)	Calendar Age in model ¹ BC (68.2%)	Collagen Extraction Efficiency (%)	Collagen C/N (at)
TC-G						
I/1 (wood)	Poz-66214	4640±40	3464-3341	3380-3274		
II/2 (wood)	Poz-66222	4655±35	3506-3369	3381-3281		
II/1 (charcoal)	Poz-66221	4485±30	3331-3099	3291-3151		
III/1	Poz-66224	4540±35	3362-3119	3360-3131	11.8	n.m.
III/2	Poz-66225	4530±35	3356-3116	3356-3183	14.0	n.m.
III/3 (wood)	Poz-71367	4510±40	3343-3109	3289-3138		
IV/10 mound 1	Poz-66234	4520±40	3350-3113	3351-3177	7.4	n.m.
YC early rite						
IV/4 mound 2	Poz-66230	4455±35	3323-3027	3063-2933	1.5	n.m.
IV/4 mound 2 (wood)	Poz-66229	4380±35	3023-2911	3063-2933		
IV/6 mound 2/3	Poz-70673	4090±40	2850-2573	2861-2682	7.0	3.07
IV/6 mound 2 (wood)	Poz-66231	4185±35	2882-2698	2861-2682		
YC late rite						
IV/9 mound 3	Poz-66233	4120±35	2858-2621	2680-2586	8.0	n.m.
IV/8 mound 3	Poz-66232	4090±35	2847-2574	2671-2586	9.0	n.m.
IV/3 mound 3	Poz-66228	4090±35	2847-2574	2671-2586	4.6	n.m.
CC						
I/4 (wood)	Poz-66218	4105±40	2851-2580	2621-2489		
I/4 (M)	Poz-66219	4070±35	2834-2499	2564-2467	13.6	n.m.
I/4 (F?)	Poz-66220	3940±40	2548-2348	2564-2467	11.0	n.m.
I/4 (F?) BIS	Poz-66732	3940±35	2548-2348	2564-2467	as above	as above
Other						
I/1 (wood)	Poz-66235	13390±70	14281-14056	---		
III/3 (wood)	Poz-66226	9090±50	8447-8233	---		
I/2	Poz-66216	1930±30	29 AD-123 AD	---	3.7	n.m.
III/4	Poz-74405	1160±30	778 AD-944 AD	---	13.0	3.20
I/2 (wood)	Poz-66215	235±30	1680 AD-1939 AD	---		
II/3	Poz-66223	155±30	1669 AD-194 5AD	---	15.5	n.m.

¹ – allowing for the time lag between the tree-ring growth and tree cutting, and carbon accumulation effect in respect of bone sample I/4 (male (M) skeleton).

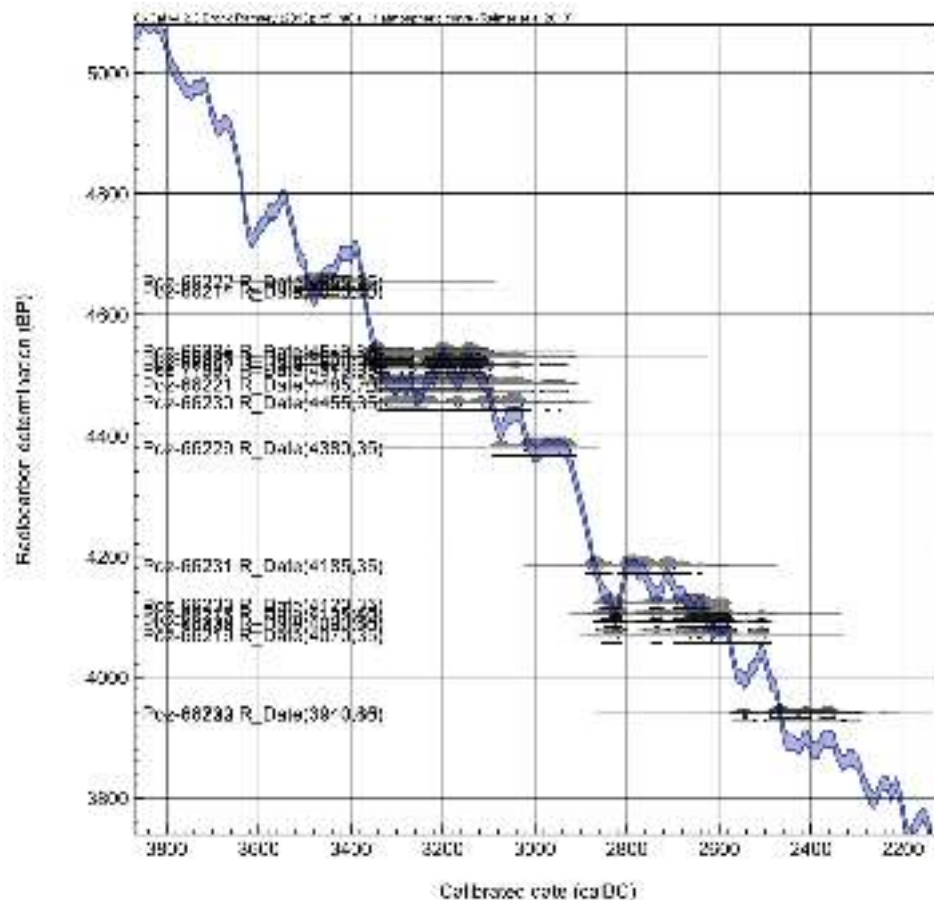


Fig. 1. Calibration results of ^{14}C ages of samples from Prydnistrianske 1 shown against the Intcal13 calibration curve [Reimer *et al.* 2013]. The position of probability distributions of calibrated dates in respect of the vertical axis corresponds to the ^{14}C ages of samples. For the calibration, the Oxcal v 4.2.3 software [Bronk Ramsey, Lee 2013] was used

Among the sample materials from Prydnistrianske 1, human bones are the hardest to date, because their dating results may be distorted due to collagen contamination (collagen undergoes degradation in bones buried in sediments) or the reservoir effect. The experience of radiocarbon laboratories shows that a good indicator of the state of preservation of collagen is extraction efficiency (expressed as the ratio of the mass of obtained collagen to initial bone mass), with the efficiency threshold recommended by the Oxford ^{14}C Laboratory being 1% [Brock *et al.* 2012]. The experience of the Poznań laboratory shows that very good dating results can be also obtained at lower extraction efficiencies (between 0.5-1.0%).

Another and a more direct indicator of collagen quality is the atomic ratio of C/N, which in the extracted collagen should stay in the interval of 2.9-3.5 [van Klinken *et al.* 1999; Brock *et al.* 2010]. In this context, it can be said that the very high extraction efficiency values (Tab. 2) leave no doubt as to the quality of collagen in the dated bones from Prydnistrianske 1.

Below, radiocarbon determinations attributed to Eneolithic and Early Bronze cultures (TC-G, YC, CC; Tab. 1) have been taken into account, leaving out Neolithic, Mesolithic, Iron Age and common era dates. Importantly, the measured ^{14}C ages of samples linked to the above-named cultures cluster around values corresponding to the plateaus of the radiocarbon calibration curve (Fig. 1), while there are no results, corresponding to the steep sections of the curve. With a more or less random distribution of the calendar ages of measured samples, this distribution of ^{14}C ages is the most probable, because the plateaus correspond to periods on the scale of calendar years which are many times longer than the steep sections of the curve. Such a 'usual' distribution of ^{14}C ages would be distorted no doubt by the reservoir effect (it would come into play if the dated samples came from the individuals who subsisted on an aquatic diet), which makes the ^{14}C ages of single samples older by any, randomly distributed values.

The issue of the distortion of ^{14}C dating results by the reservoir effect was raised in the above-mentioned discussion of the chronometric investigations of Pidlisivka 1 barrows [Goslar *et al.* 2014], where the measured values of $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$ in the collagen of the examined bones did not suggest that it played a significant role. A similar conclusion can be drawn from the measurements of $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$ in the bones from Prydnistrianske 1; these results stayed in the range of $-18.8 - -17.9\text{‰}$ and $8.2\text{--}10.9\text{‰}$, respectively. The position of the ^{14}C ages from Prydnistrianske 1 with respect to the calibration curve clearly supports this conclusion.

Among the radiocarbon dated materials from Prydnistrianske 1 are samples of human bones and wood (including charred wood). Interestingly enough, within the taxonomically distinguished cultural phases, calendar ages of wood samples are on the average older than bone sample ages (Fig. 2). This may reflect the actual relationship between the calendar ages of examined features, which just happens to be so, but may also result from the fact that the age of wood determined using the ^{14}C method corresponds to the time when the examined tree rings grew, hence it is necessarily older than the moment the tree in question was cut down and its wood was used. If the dated wood comes from larger structural elements (e.g. grave), the resulting ageing of the dating result by several decades may be considered highly probable. Keeping this effect in mind, we can admit that the oldest dated wood samples from phase TC-G come from the graves that are indeed of the same age as the burials dated by measuring bone samples. For let it be noticed that the ^{14}C ages of samples Poz-66214 and Poz-66222 are, admittedly, older than the ages of bones by 150-200 radiocarbon years, but the ranges of calendar ages of these samples are not more than 50 years apart. Obviously, the question whether the graves

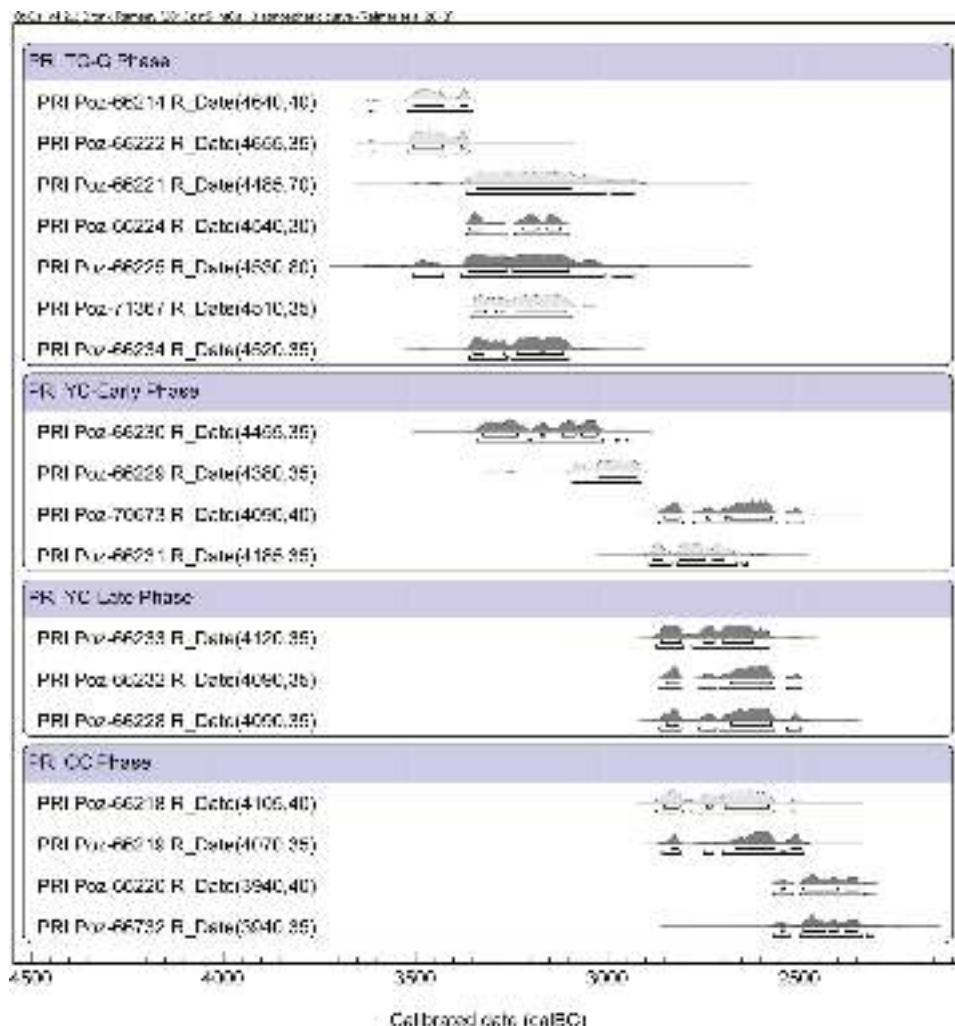


Fig. 2. Calibration results of ^{14}C ages of samples from Prydnistrianske 1. Light-grey silhouettes correspond to wood and charcoal samples

dated with the two wood samples mentioned above are older than the others or not, cannot be settled here.

When calibrating a ^{14}C age, the effect of the difference between the date when a tree grew a given piece of wood and the date when the tree was cut down can be accounted for by allowing for the time lag between these two events. In the case of the investigated site, we do not know anything about the amount of this allowance but the fact that the trees used for building the grave structures are not likely to have had more than 100 annual growth rings. Thus, we can only assume that the

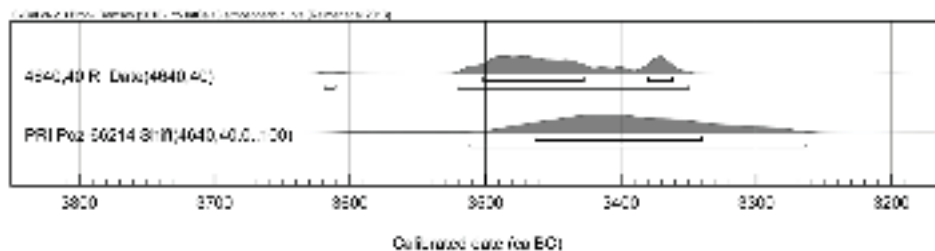


Fig. 3. Prydnistrianske 1: Correction to the probability distribution of a calibrated date allowing for the time lag between the growing of the dated piece of wood and the cutting down of the tree. Above: probability distribution of the calibrated age of the dated sample. Below: probability distribution of the tree-cutting date calculated on the assumption that the correction may take any value in the 0-100 range

allowance amount has a uniform probability distribution in the interval of 0-100 years. The impact of such an allowance, on the example of one ^{14}C date, is shown in Fig. 3.

Another interesting effect is revealed by the relationship between the ^{14}C ages of bones from feature I/4. In this case, ^{14}C dates for the bones of a male (Poz-66219) and a female (Poz-66220 and Poz-66732) differed despite the fact that the remains were identified as a single coherent instance of funeral behaviour. The reason for the difference (besides the inevitable statistical scatter of measurement results) is the suggested considerable age difference between the two individuals at the moment of death (the woman being much younger than the man). The age of an individual at death has a certain impact on the result of ^{14}C dating of bones, because the carbon in bones is quickly replaced (with carbon supplied with food) only in young individuals (below 20-30 years of age), while in the bones of older individuals atoms can be encountered that have been accumulated over a long time. For example, in a 50-year-old man, the average 'age' of an atom of carbon in bone is 30 ± 10 years [Geyh 2001]. Therefore, when calibrating the ^{14}C age of bones of an individual who died at an advanced age, one should use in principle a calibration curve corrected to account for the 'accumulation effect' (Fig. 4).

Strictly speaking, the effect of carbon accumulation in bones should be accounted for when calibrating the ^{14}C age of all human bones. However, this effect, even in the case of dating bones belonging to individuals who died at an advanced age, is not very serious and it is surely for this reason that it is very rarely taken into account when processing ^{14}C dates apart from cases when altering the result of calendar dating by 10-30 years makes a significant difference.

Allowing for the accumulation effect when calibrating the dating results of the bones of the male and female, grave I/4 shows the simultaneity of both burials to be quite probable (Fig. 5: A). This can be seen in the values of the matching

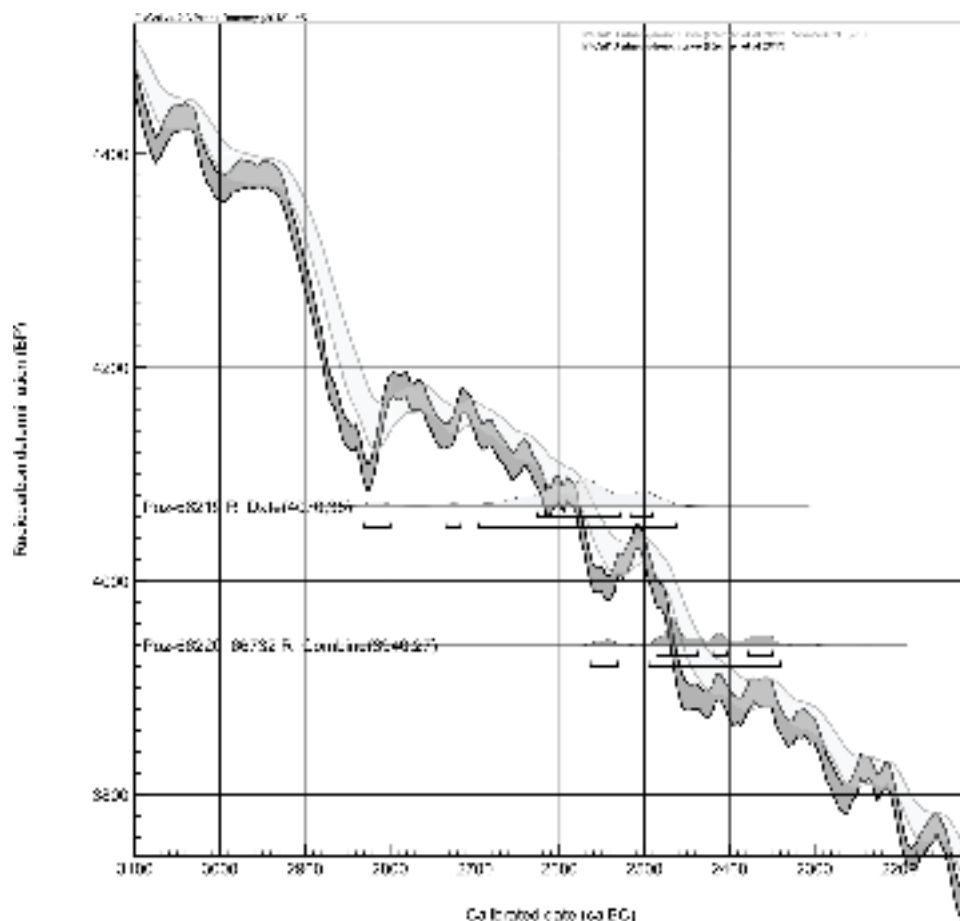


Fig. 4. Prydnistrianske 1: Calibration results of ^{14}C ages of the bones of a female (averaged Poz-66220 and Poz-66732 results) and a male (Poz-66219) from feature I/4. The darker band represents the Intcal13 calibration curve, while the lighter one represents the same curve allowing for the carbon accumulation effect over a period of 30 ± 10 years

index 'A' of both distributions to the model being higher than 60 – considered to be a threshold value. It is harder, however, to accept the simultaneity of both burials and the moment of tree cutting, the wood of which (fragment of the handle of a stone mace) is dated by the result Poz-66218 (Fig. 5: B). For this model matches rather poorly ($A=44$) with the date for the bones of the woman obtained as the result of two ^{14}C measurements (Poz-66220 and Poz-66732). Therefore, it has to be admitted that either the tree trunk (the wood of which was extracted from grave I/4) had more than 100 annual growth rings or the moment of cutting down this very tree preceded the burial.

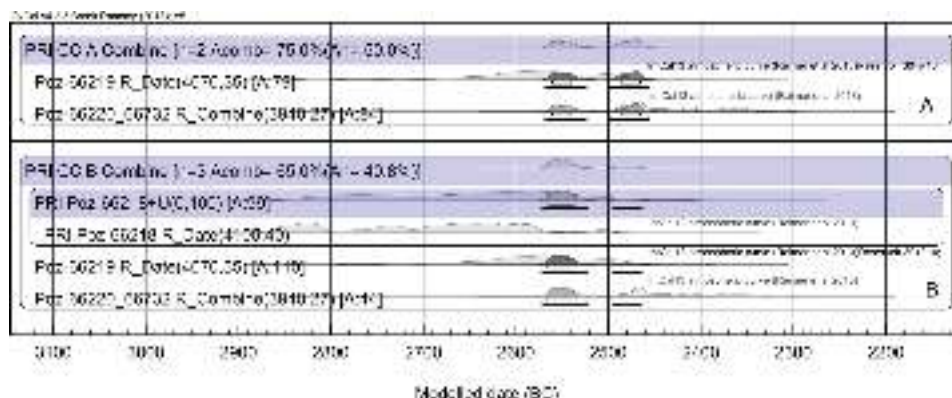


Fig. 5. Prydnistrianske 1: A – Results of calibration of ^{14}C ages of bones from feature I/4, assuming the simultaneity of both burials. Date Poz-66219 was calibrated allowing for the carbon accumulation effect. B – Results of the combined calibration of the ^{14}C ages of bones and wood from feature I/4. The age of wood was calibrated allowing for the time lag between the growing of the dated piece of wood and the cutting down of the tree. The simultaneity of both burials and the cutting down of the tree was assumed

The set of ^{14}C dating results was processed using a Bayesian approach [Bronk Ramsey 2009] by grouping samples into phases according to their taxonomic attribution to particular cultures (Fig. 6). The grouping into a phase reflects the assumption that in the time interval (corresponding to the period when a given culture functioned) the calendar dates of examined samples are randomly distributed. Since a connection can be presumed to exist between the dates for wood/bone sample pairs coming from the same grave (Poz-66230/Poz-66229 and Poz-70673/Poz-66231), within a single phase, dates for such pairs were combined, assuming the simultaneity of the tree felling and burial. The dates for all bones from grave I/4 were treated jointly as well.

The model assumed that YC features were younger than 'Late Tripolye' features (TC-G). It was further assumed that two YC phases succeeded one another in agreement with the typological division into YC-early ritual (YC-ER) and YC-late ritual (YC-LR). No exact time sequence was imposed, however, on the relation of YC features to the CC feature on the assumption that the features of these two cultures could come into existence in parallel in a certain period.

The results of modelling place the dates for TC-G features in the interval of 3364-3165 BC (68.2%), YC features, divided into the YC-ER and YC-LR, in the brackets of 3056-2767 BC and 2690-2577 BC (68.2%), respectively, and the CC feature in the bracket of 2669-2419 BC (68.2%). Interestingly, the chronometric verification does not undermine the correctness of matching YC features to the phases of the early and late ritual while suggesting that the former prevailed much

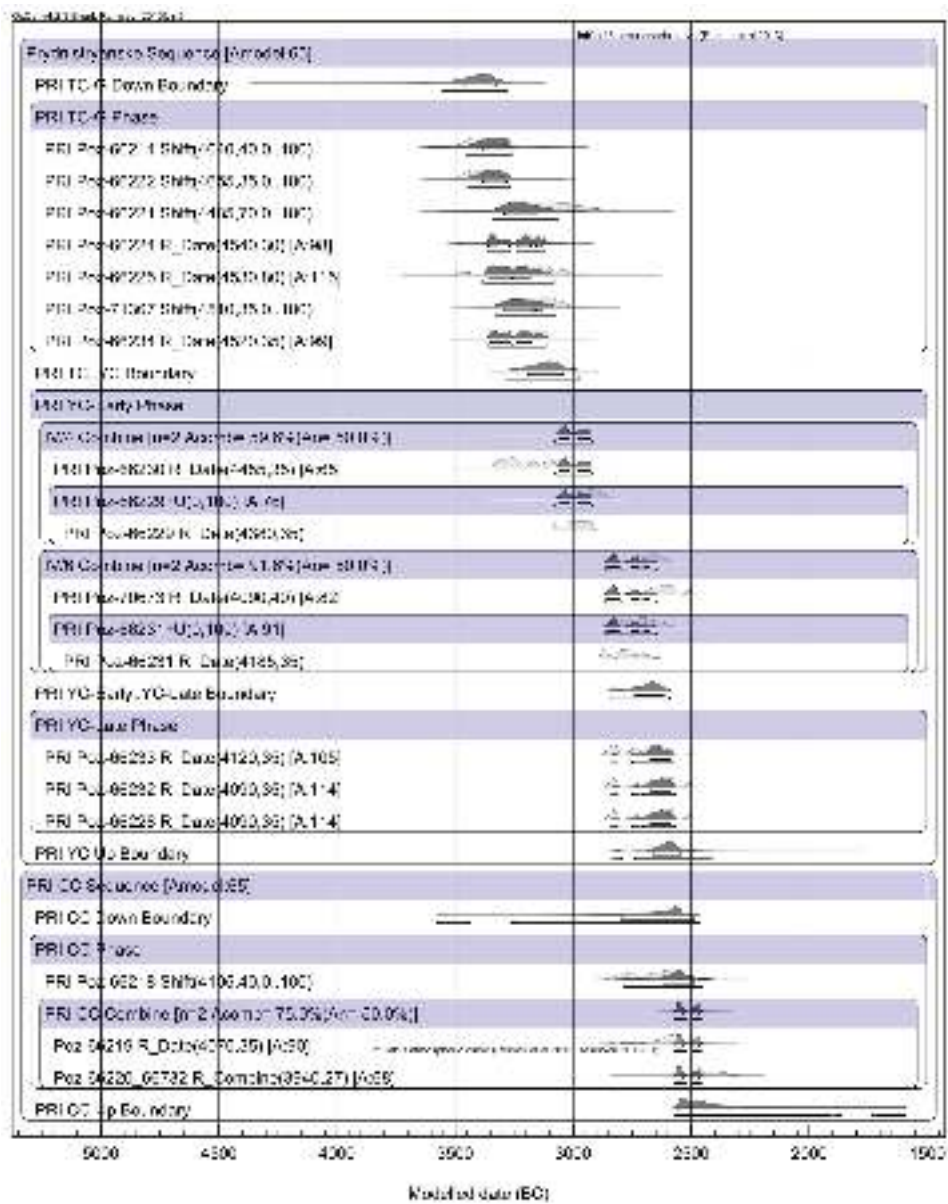


Fig. 6. The Bayesian model of the ages of samples from Prydnistrianske 1, representing the Eneolithic cultures discussed in the text. The model assumptions are presented in full in the figure. In the case of wood (or charcoal) samples, the probability distributions of tree-cutting dates, calculated applying the correction illustrated in Fig. 3, are marked with the word Shift. Results Poz-66220 and Poz-66732 date the same sample, hence, in the Bayesian model, their weighted mean was used

longer. It must be added, however, that this suggestion follows from the dating of a single feature (IV/4).

In this context, it must be observed that the older limit of the Eneolithic phase (TC-G), set by the dating results of two wood samples (Poz-66214 and Poz-66222) may be inadvertently made older. For the dated wood samples are certainly older than the dates of burials in respective graves (no bone remains were recovered from these graves, which prevented us from making any comparative date determinations), while the shape of the calibration curve in the relevant time interval makes a minor ageing on the scale of calendar years correspond to a large difference in the radiocarbon age (Fig. 1) and a major shift of the older limit of the calibrated age range.

To study this effect, the Bayesian model was slightly modified by assuming that the oldest of dated TC-G features was grave IV/10 (Poz-66234). It must be observed that the consistency of ^{14}C dates with this model (Fig. 7) continues to be good and the effect of the assumption is only a slight shift in the range of TC-G phase from 3364-3165 BC (68.2%) to 3348-3199 BC (68.2%). However, the oldest age of grave IV/10, although suggested by the horizontal distribution pattern, is not a hundred-percent certain.

2.2. POROHY 3A

The site is located 1.4 km north of the Dniester and comprises the cluster of a minimum of five barrows known as the *Tsari* group [Potupczyk, Razumov 2014: 37, Fig. 1.2: 2], of which three 'Early Bronze' ones have been investigated to date³.

The typo-chronological analysis of ritual activities within funerary features recorded on the Porohy 3A site helped distinguish three cultural categories divergent in terms of time: Eneolithic, YC and NC. YC graves correspond to the younger mound (this applies to a part of, stratigraphically diagnostic, features), while NC graves were found around the barrow edge. An attempt to date the older – Eneolithic – barrow phase and a related central feature (3A/14) failed (from a human bone coming from a secondarily disturbed fill, a result was obtained indicating the Late Bronze Age). Uncertain, in turn, is the association with the older – Eneolithic – phase of grave 3A/7 (sunk into the older mound?) for which a similar determination was obtained as for YC features (Poz-70667: 4115 ± 35 BP) [Klochko *et al.* 2015b: Fig. 2].

All radiocarbon dated samples from this site were human bones. A major portion of the samples was dated by the Kyiv laboratory. Since the interpretation of

³ For the state of investigations from 1984-1993 see Harat *et al.* 2014: 70-104 – sites 1, 2, 3 and 4.

Table 3

Results of ^{14}C dating of Eneolithic, YC and NC features on the Porohy 3A site. Results sets of multiple dating of the same samples are separated by dotted lines. Dates left out from the Bayesian model are given italics.

FEATURE	Lab No.	^{14}C Age BP	Calendar Age BC (68.2%)	Calendar Age in model BC (68.2%)	Collagen Extraction Efficiency (%)	Collagen C/N (at)
Eneolithic						
3A/7	Poz-70667	4115±35	2856-2601	2864-2731	2.1	3.20
YC						
3A/1	Ki-17384	3770±170	2460-2010			
3A/1	Ki-17437	4430±70	3310-2920			
3A/1	Poz-70668	3760±35	2275-2064	---	8.2	3.05
3A/10	Ki-17383	3860±160	2600-2000			
3A/10	Ki-17438	4370±70	3100-2900			
3A/10	Ki-18928	4070±50	2860-2490			
3A/10	Poz-74393	4105±35	2850-2687	2632-2572	4.8	3.19
3A/10	Poz-81824	4040±35	2619-2490	2632-2572	4.0	3.12
3A/15	Ki-17386	4010±220	2900-2200			
3A/15	Ki-17439	3580±90	2120-1770			
3A/2	Poz-74392	4140±35	2864-2632	2736-2626	0.3	n.m.
3A/2	Ki-18927	2980±90	1370-1050	---		
3A/11	Poz-47741	4075±35	2836-2500	2665-2571	1.1	n.m.
3A/19	Poz-70665	4185±35	2882-2698	2781-2638	2.5	3.16
3A/17	Poz-47743	4050±35	2828-2492	2632-2506	1.0	n.m.
3A/17	Poz-74394	3930±35	2477-2346		0.1	n.m.
3A/12	Poz-47742	3985±35	2566-2471	2577-2521	0.9	n.m.
3A/20	Ki-17385	3820±80	2360-2140	---		
3A/20	Poz-47744	4190±35	2884-2700	2785-2676	1.4	n.m.
3A/20	Poz-74397	4175±35	2879-2695	2785-2676	2.5	3.58
NC						
3A/22	Poz-70666	3380±35	1734-1630	1694-1615	1.3	3.58
3A/22	Ki-17478	3260±50	1612-1497	1619-1511		
3A/5	Ki-17440	3200±90	1611-1396	1636-1471		
Other						
3A/14	Poz-74396	3675±35	2134-1982	---	1.5	3.17

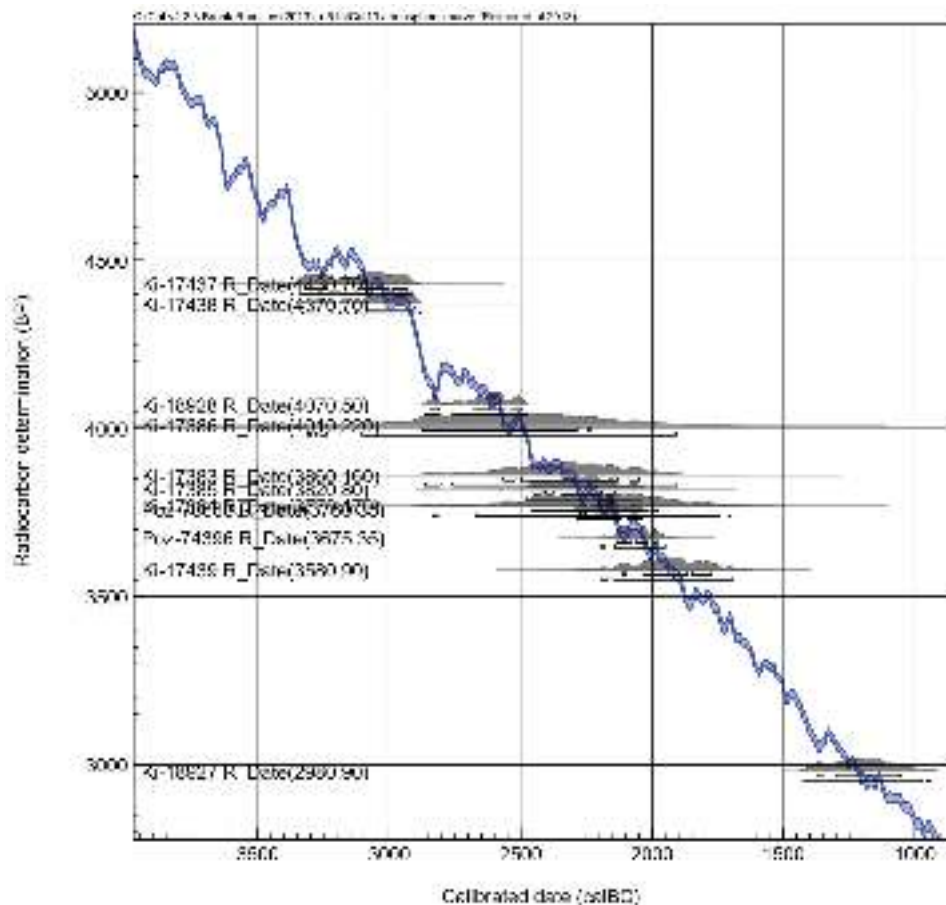


Fig. 8. Calibration results of ^{14}C ages inconsistent with the chronometric model of the Porohy 3A site, shown against the Intcal13 calibration curve. The position of probability distributions of calibrated dates in respect of the vertical axis corresponds to the ^{14}C ages of samples

dating results of some samples raised doubts, the Kyiv laboratory repeated the dating of three samples (sample from feature 10 was re-dated twice) and two of these samples were dated also in Poznań (Tab. 3). In the case of all re-dated samples, successive dating attempts undertaken in Kyiv yielded divergent results and only one (for sample from feature 1: Ki-17384 and for sample from feature 10: Ki-18928) was consistent with the result obtained in Poznań. For this reason, the Kyiv dates for these three samples were left out from the Bayesian approach. Moreover, the model ignored Kyiv dating results for feature 20 (Ki-17385), clearly different from the two – consistent with each other – ^{14}C dates obtained in the Poznań laboratory, and feature 2 (Ki-18927).

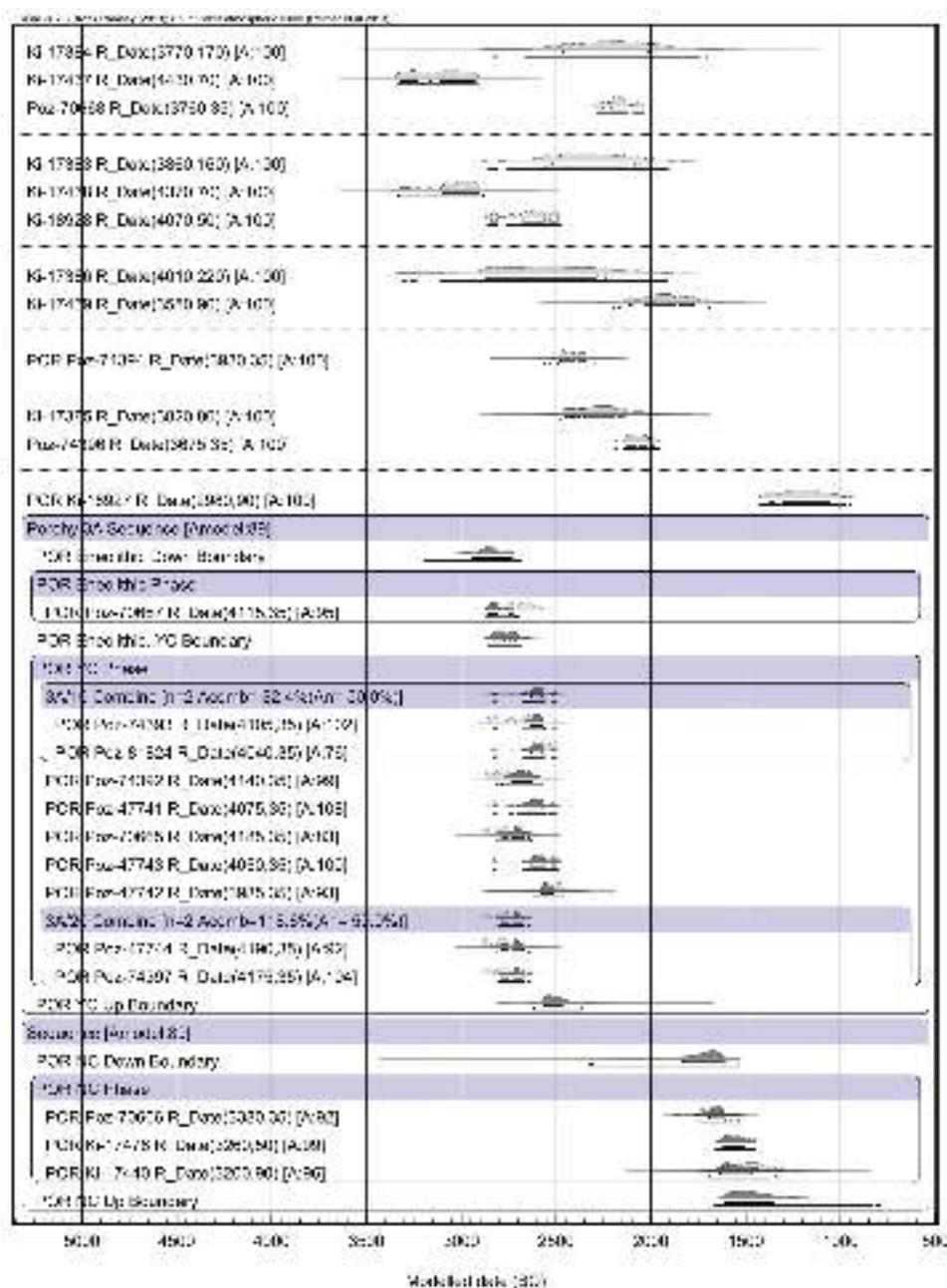


Fig. 9. Calibration results of ^{14}C dates of samples from Porohy 3A. The dates of samples not included in the chronometric model are represented as light-grey silhouettes in the upper section of the diagram

From among the Poznań dating results, in the chronometric model, the following exclusions were made: ^{14}C age of a sample from feature 3A/14, because the feature could not be assigned to a specific phase, the result Poz-70668 of the dating of a sample from feature 3A/1, because it was far too young to be assigned to a YC feature, and the result Poz-74394, because of too low collagen extraction efficiency. It must be admitted that the number of dates excluded from the chronometric model of the Porohy 3A site is quite large. The reasons for this may be a few:

(a) The first Kyiv ^{14}C analyses of samples from features 3A/1, 3A/10 and 3A/15 (Ki-17384, Ki-17383, Ki-17386) were performed on very small amounts of collagen, which was reflected in the reported, high uncertainty of dates (Tab. 3; *see* Figs. 8, 9), but could also contribute to the contamination of the dated fraction and distort the dating further. Due to the low collagen extraction efficiency too, uncertainty affects the first Poznań date for feature 3A/17 (Poz-74394),

(b) The result of ^{14}C dating is wrong due to the insufficient collagen purity (for instance when no ultrafiltration was used to lower the content of degraded collagen fragments in the extract) or accidental mistakes made in the laboratory dating process,

(c) Dated features are not homogeneous and bones found in them come from various periods. A special case of non-homogeneity is feature 3A/2, which was dated in Kyiv at the last stage of investigations (already after agreeing the details of practical chemistry with the Poznań laboratory in May 2015), using bones from a badly damaged grave pit – feature 3A/2.

Besides the obvious reason (a), when discussing the accuracy of dating results (b), it must be admitted that among the ^{14}C dates – which do not match the chronometric model – there is result Poz-70668 which was obtained following all the rules of the art of dating and using collagen of very high purity. Furthermore, if one does not count the results mentioned in (a), none of ^{14}C ages excluded from the model has fallen on the steep sections of the calibration curve (Fig. 8), which in the light of an earlier discussion concerning Figure 1 seems to testify to the accuracy of dating results. The question of the interpretation of the dates excluded from the model presented today certainly calls for further study.

The Bayesian model of the chronology of the Porohy 3A site (Fig. 9) places the age of the Eneolithic sample in the interval of 2864-2731 BC (68.2%), while the ages of YC and NC samples are placed in the 2723-2543 and 1710-1470 BC (68.2%) ranges, respectively. Hence, the range of the YC phase corresponds rather well to the 68% range of the YC late ritual phase dated in Prydnistrianske 1.

Table 4

Results of ^{14}C dating of Eneolithic, 'Early Bronze' and 'Late Bronze' features from the Klembivka Site. Dates left out from the Bayesian modelling are given in italics.

FEATURE	Lab No.	^{14}C Age BP	Calendar Age BC (68.2%)	Calendar Age in model BC (68.2%)	Collagen Extraction Efficiency (%)	Collagen C/N (at)
Eneolithic						
1/15	Poz-77470	4290±35	2920-2885	2912-2885	0.6	3.26
<i>1/15</i>	<i>Poz-70669</i>	<i>3505±35</i>	<i>1886-1772</i>	---	5.8	2.93
1/14 (wood)	Poz-52422	4260±40	3012-2898	2876-2812		
1/14 mound 2	Poz-52605	4135±35	2863-2630	2876-2812	1.9	2.94
1/5	Poz-70670	4225±35	2898-2761	2901-2792	7.6	2.64
BC						
1/12	Poz-74400	3645±35	2117-1952	2117-1952	5.0	3.21
1/3	Poz-74398	3495±35	1880-1771	1880-1771	3.3	3.22
NC						
1/7	Poz-74399	3130±35	1443-1311	1443-1311	1.3	2.92
?						
<i>1/11</i>	<i>Poz-70672</i>	<i>4370±40</i>	<i>3022-2918</i>	---	0.6	3.07
<i>1/11</i>	<i>Poz-72043</i>	<i>4345±35</i>	<i>3011-2908</i>	---	<i>as above</i>	<i>as above</i>

2.3. KLEMBIVKA 1

The site is located 15.0 km north of the Dniester and comprises a cluster of five barrows. In 2012, one mound was excavated, revealing a series of 13 graves (and two ritual features) which, on the strength of typo-chronology, the funerary rite and grave goods, were linked to the Eneolithic, BC and NC [Klochko *et al.* 2015c]. The Eneolithic graves – of the founders of the necropolis – correspond to two mounds (1 = a small mound over grave 1/15; 2 = mound over grave 1/14) and one of them (1/5) was sunk into the central portion of the barrow. BC graves were sunk into mounds, while NC graves were located outside mounds – at their edges.

Almost all (but one) dated samples from this site were taken from human bones (Tab. 4) and the ^{14}C age of the only wood sample fits into the range covered by the dates of bones attributed to the same culture. The content of stable carbon and

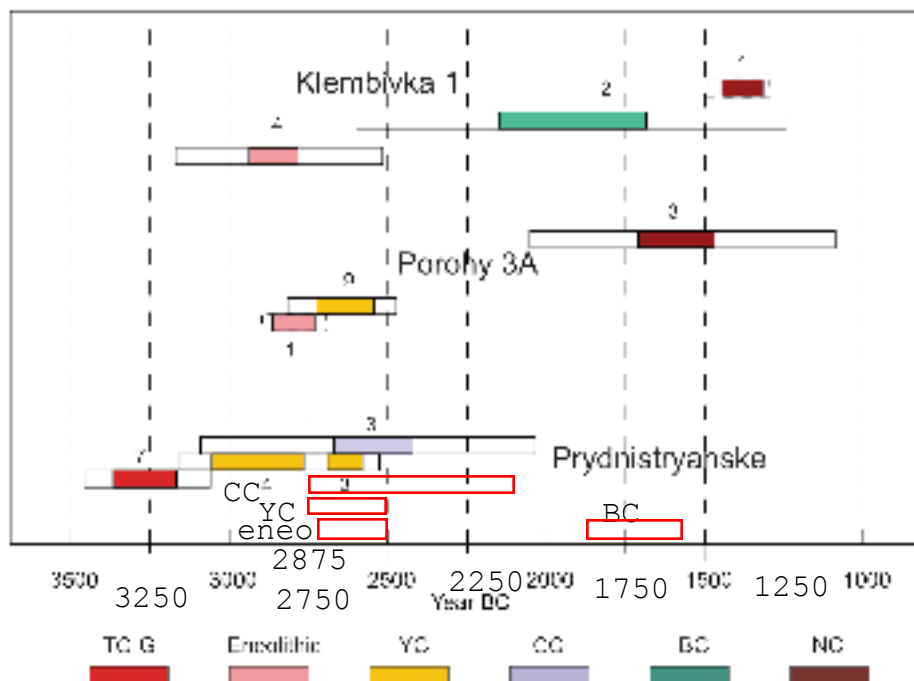


Fig. 11. The 68%-ranges (marked in colour) and 95%-ranges (without colour) of phases corresponding to particular cultures found on the Prydnistrianske 1, Porohy 3A and Klembivka 1 sites. The numbers of dated samples corresponding to particular cultures are given. On Prydnistrianske 1, two phases (early and late) of the Yamnaya culture were distinguished

chronicity, however, ought to be approached with caution due to the small number of dated samples.

The cultural attribution of feature 1/5 from Klembivka 1 is debatable. By reason of the arrangement of the deceased and the shape of the grave pit, it was linked to the Eneolithic rite. The ^{14}C determination for this grave would suggest that it be linked to the decline stage of the Eneolithic or the beginnings of the Early Bronze Age. Less probable as it seems, the linking of this feature to the early CC [Otroshchenko 2013: 25-27] would assign to it an exceptionally early date (2898-2761 BC) within this cultural complex. However, this result should be treated with caution, because the C/N ratio in the dated collagen (2.65, *see* Tab. 3) considerably differs from the range accepted as normal.

The results of chronometric modelling of the Prydnistrianske 1, Porohy 3A and Klembivka 1 sites are synthetically illustrated in Fig. 11. The diagram shows 68% and 95% time intervals respectively, corresponding to cultures the graves of which were dated using the radiocarbon method.

It must be noted that the phase limits presented here result from model calculations in which the grouping of ^{14}C dates into a phase reflects the approximation that the dated samples represent events uniformly spread within the phase. The quality of such an approximation is poor if the number of samples from a given phase is small. It is for this very reason that phases represented by no more than four samples each (Klembivka 1 – Eneolithic and the BC, Porohy 3A – NC, Prydnistrianske – CC) have 95% time frames, which are several times broader than the 68% time frames. It can be expected that the 95% intervals of these phases would be considerably narrowed down if a larger number of representative samples were available. An exception in this respect is the phase of the YC late ritual (YC-LR) in Prydnistrianske the 95% interval of which is narrow despite the small number of samples. This is so thanks to a chronological connection to the early ritual phase (YC-ER) on the same site. A different quality is shared by intervals corresponding to cultures represented by single samples (Porohy 3A – Eneolithic, Klembivka 1 – NC). These intervals may be treated only as a ‘spot signal’ by no means reflecting the time a given culture functioned.

In the light of the above, as best substantiated, one should consider the respective time frames of TC-G on Prydnistrianske 1 and YC ones on Prydnistrianske 1 and Porohy 3A. It must be added that the YC phase from Porohy 3A appears to correspond to the YC-LR on Prydnistrianske 1 (ca. 2700-2550 BC), while the Eneolithic graves from Klembivka 1 seem to be of the same age as the YC-ER on Prydnistrianske 1 (ca. 3000-2750 BC).

The dating results for the Prydnistrianske 1 and Porohy 3A sites justify a claim that the chronometry (Poz) of wood and bones from features 1A +1Aa on Pidlisivka 1 [Ch. 1 and Goslar *et al.* 2014] fits into the well-defined interval of YC functioning in the region. Whereas the dating of features 4 and 11 on Pidlisivka 1 (Ch. 1) do not find any time equivalents on the other three sites. The question of relationships between periods when particular barrows functioned after ca. 2500-2400 BC calls therefore for further study.

3. THE CONTEXT OF YAMPIL CEMETERY CHRONOMETRY ON THE SCALE OF THE NORTHERN PONTIC AREA: SECOND HALF OF THE 4TH – FIRST HALF OF THE 3RD MILLENNIUM BC.

We shall focus below on the time frames the communities belonging to the older stages of ‘barrow cultures’ developed in. The *Yampil research project* has contributed a lot of new and inspiring information to make these time frames more accurate.

3.1. GENERAL REMARKS

The sequence of radiocarbon determinations obtained for materials from a barrow cluster in the vicinity of Yampil makes a significant contribution to the discussion of the chronology of cultural phenomena in the Eneolithic and the prologue of the Bronze Age in the Northern Pontic Area. Published in the early 20th century, the works by V.A. Gorodtsov [1905, 1907] laid the foundations for the scheme of the general succession of three great cultural blocks of the Pontic steppe: Yamnaya, Catacomb and Timber-Grave (Srubna) cultures. However, the time frames of these cultures and the question whether they overlapped have been discussed ever since. Gradually, an ever greater role in the relevant research has been played by ^{14}C dating results. Despite a large number of determinations [e.g. Telegin *et al.* 2003: 142-148, Tab. 1; Chernykh, Orlovskaya 2004: 86-92, Tab. 1-2; Rassamakin, Nikolova 2008: 81-87, Tab. 1], the discussed questions have not been made any clearer. On the contrary, new and barely surmountable controversies have arisen, caused by the significant expansion of the time frames of particular cultural phenomena [Rassamakin, Nikolova 2008: 65]. Alas, the situation has not been helped either by the fact that arguments used in the discussion are often weakened by the unclear context of sample procurement and the fact that a large number of dated graves have not been published in full. To make matters worse, the recent results of radiocarbon dating in some cases are inconsistent with earlier determinations [Bratchenko 2003; Rassamakin, Nikolova 2008: 62], while in others a hardly explainable difference is noticeable between measurement results and the stratigraphic position of a grave in the barrow [Rassamakin, Nikolova 2008: 62, 63]. Such inconsistencies may result from both different kinds of dated materials and various imperfections of laboratory methodology.

Attempts to verify and make date determinations more specific are currently made, using results obtained for various materials (wood and bone) and allowing

for the reservoir effect, affecting ^{14}C measurements. Such comprehensive research has been carried out in respect of Caspian finds [Shishlina *et al.* 2000; 2007; 2009]. For the Northern Pontic Area, major significance is attached to a series of results obtained for the barrow Sugokleyska Mogila in Kirowograd [Nikolova, Kaiser 2009; Nikolova 2012] supported by dendrochronological dating results [Heußner 2009]. This research indicates that radiocarbon dating results can be fine-tuned by focusing on materials from specific settlement micro-regions and treating them comprehensively. The effects of such research are far better than adding up even a large number of single results obtained for barrows from an entire macro-region. This opinion is borne out by date series from *Yampil barrows* as well.

3.2. ENEOLITHIC

The results for Prydnistrianske 1 barrows put the age of the Eneolithic materials of the Gordineşti/Kasperovtsy type at ca. 3350-3200 BC. These are the first determinations for the cemeteries of this group and also the only ones for Eneolithic barrows from the Podolia Upland [Ivanova *et al.* 2015]. The time gap separating the rise of the Gordineşti-type barrows and the oldest YC graves is not large. The age of grave IV/4 from Prydnistrianske 1 is estimated at the late 4th/early 3rd millennium BC. These results of course do not illustrate all important processes related to the decline of the Eneolithic and the beginnings of the Early Bronze Age in Podolia. There are still few determinations for the assemblages of other Eneolithic traditions, including extended burials (Okniŭsa, graves 6/24 and 7/14, Timkovo, grave 1/5) [Manzura *et al.* 1992; Manzura 2010; Ivanova, Toshev 2015; Ivanova *et al.* 2015]. It would be crucial, too, to be able to date culturally ambiguous phenomena: some central burials and barrow structures as well (Mocra, barrow 1, or Porohy barrow 3A) [Kashuba *et al.* 2001-2002; Klochko *et al.* 2015b]. Supported by vertical and horizontal stratigraphy, the chronological model for the Prydnistrianske site is naturally sequential in character. A still unsolved problem remains the time overlapping of the discussed cultural phenomena: the possibility that Eneolithic traditions had survived in the YC barrow rites.

Eneolithic graves have been also identified on the other recently investigated *Yampil sites* (Pidlisivka 1, Klembivka 1 and Porohy 3A). A short series of radiocarbon determinations was obtained only for barrow 1 in Klembivka. Exposed there, the graves, on account of burial arrangement traits, represent the Lower Mikhailovka/Cernavoda I type tradition (graves I/5 and I/15) [Ivanova 2015: 280] as well as Late-Tripolye or Zhivotilovka ones (grave I/14). Their dates point to the first centuries of the 3rd millennium BC, that is to the period which is clearly

younger than the TC-G phase Prydnistrianske. At the same time, this age is similar to that of the older YC phase in the region in question.

The radiocarbon determinations allow us to distinguish the Eneolithic horizons of barrow cemeteries in the Yampil district. An older horizon (ca. 3350-3150 BC) is represented by the Prydnistrianske graves, having clear affinities with the Gordinești type. A younger horizon (ca. 3000-2800 BC), in turn, is represented on the Klembivka site and possibly on the Pidlisivka one as well. The younger horizon in all likelihood overlaps with the beginnings of the Bronze Age and the emergence of graves displaying YC traits.

3.3. YAMNAYA CULTURE

The import of the determinations for YC graves on three *Yampil barrow* sites is interesting: they indicate an interval between the decline of the 4th millennium BC and the middle of the 3rd millennium BC. This time frame is narrower than determined earlier for this culture, including finds from the North-Western Black Sea Region [Ivanova 2013a; Ivanova *et al.* 2015]. Especially meaningful is the final date – older than the age determined for Budzhak phase graves as defined by V.A. Dergachev [1986] or the late phase of the Budzhak culture according to the proposition of S.V. Ivanova [2013a]. This may be explained by the absence of any burials corresponding to this period from *Yampil sites*. The investigated barrows yielded no materials that would suggest so late a chronological position. Similar characteristics are shared by finds from the nearby region of Kamenka [Yarovoy 1981; Manzura *et al.* 1992; Bubulich, Khakheu 2002]. The abandoning of the entire *Yampil cemetery complex* ca. 2500 BC is seen also in the presence of only single CC graves. Furthermore, for feature I/4 from Prydnistrianske 1, representing this tradition, dates were obtained pointing to the middle of the 3rd millennium BC or the time corresponding to the youngest YC burials in the area in question.

In the interval of about 500 years, in which *Yampil YC graves* were built, no clear internal periodization can be made using radiocarbon dates. This is so in part because of the ‘outstanding’ plateau of the calibration curve, covering almost 300 calendar years of the 1st half of the 3rd millennium BC. In the group of obtained results, those concerning grave IV/4 from Prydnistrianske 1 stand out, owing to its older age; it is probably connected with the add-on phase of the Eneolithic barrow mound. Its dating refers to the late 4th and early 3rd millennia BC. Determinations obtained for graves occupying similar stratigraphic positions on other sites (feature 3A/2, Porohy, and feature 1/1A, Pidlisivka 1, i.e. central graves for younger mounds) are slightly younger and because of their falling on the above-mentioned calibration curve plateau indicate a broad interval of ca. 2900-2600 BC. If referred

to the older portion of this interval, they even make it possible to create an older horizon together with the features from Klembivka 1 and Prydnistryanske 1 mentioned earlier.

Cemeteries comprising YC graves sunk into mounds were discovered in Prydnistryanske 1 and Porohy 3A. The date series obtained for them can be subjected to comprehensive analyses. In general, these results resemble one another and are in the range of ca. 2900-2500 BC. This is almost the same interval as in the case of younger graves from the older horizon mentioned earlier. So broad an interval (about 400 years) means also that actual time differences between the date determinations of particular graves in this interval may be considerable and reach several hundred years. This is borne out by the situation encountered in the barrow Sugokleyska Mogila in Kirowograd, in which for two secondarily sunk graves nos. 5 and 20, markedly different dendrochronological determinations were obtained (2548 BC and $2845 \pm 5 \text{ BC}$, respectively) [Heußner 2009: 237].

In our case, too, differences between both sites and particular graves found on them can be considerable. With strong stratigraphic arguments lacking (due to advanced mound levelling off), the existence of such differences may be presumed only from the differences in funerary rite traits. In this regard, there are a few differences between graves from Prydnistryanske 1 and Porohy 3A. On the former site, one can see clearer differences in grave structures and burial arrangements. The classical supine position of the deceased with extended upper limbs and bent, originally pointing upwards lower limbs is encountered in three features: IV/4, IV/6 and IV/3. Other arrangements can be observed in two other graves (IV/8 and IV/9), with the differences being underscored by a different structure of the two latter graves (with a wooden boarding of side walls). In Porohy 3A, in contrast, the dominant position of the deceased is crouched on the side. Keeping in mind the consistency in the use of this position, it is understandable that Porohy 3A graves are younger than the 'older portion' of Prydnistryanske 1 features. The radiocarbon dates permit such a reconstruction and some of the younger results obtained for Porohy 3A graves (features 3A/12 and 3A/17) seem to bear out this hypothesis. Taking into account the older position of feature 3A/2 (central for the second mound) and accepting rather early determinations for feature 3A/20 (which is connected with the late mound add-on), the age of graves sunk into the barrow may be linked to the younger portion of the above-mentioned broad interval (2900-2500 BC), thus generally to ca. 2650-2500 BC. In the model suggested here, it has been assumed that the youngest phase of the graves dated using the radiocarbon method is formed by a group of features sunk into the younger mound (3A/7, 3A/10, 3A/11, 3A/12, 3A/15 and 3A/17). These graves form a characteristic arch, suggesting that whole lay-out had been planned [Klochko *et al.* 2015b].

The overall time interval determined for the three YC cemeteries in the 'Yampil Complex' is ca. 3050-2500 BC. This result corresponds to ranges determined for other regions in recent years, including in particular the western zone. Similar con-

clusions can be drawn from date series for materials from Bulgaria [Kaiser, Winger 2015: 127, Tab. 1], Romania [Frînculeasa *et al.* 2015: 58, 59, Tab. 2] and Hungary [Horvath *et al.* 2013: 165, Table 3]. Most of the series were obtained for bones from human burials using the AMS ^{14}C method. In all these cases, there are also determinations indicating an earlier, Eneolithic beginning of the rise of barrow cemeteries. In the context of these new series, it is necessary to verify earlier models assuming a much broader time frame, including a clearly later final date [Rassamakin 1999; Telegin *et al.* 2003; Rassamakin, Nikolova 2008; Ivanova 2013a]. These are based on ^{14}C results obtained in the Kyiv Radiocarbon Laboratory for quite many sites. They lack, however, longer series referring to selected complexes – micro-regions. An open question remains the dating of graves displaying the late, Budzhak YC variety. The new series of dates did not concern such features.

3.4. CATACOMB CULTURE

A date fitting into the range of 2669-2419 BC was obtained for CC grave I/4 in Prydnistrianske 1. The arrangement of burials (with only slightly bent lower limbs) and the type of grave goods suggest its connection with the territories on and beyond the Dnieper, specifically the CC Donetsk group. A thought should be also given, however, to its link to the Ingul CC, appearing more frequently on the Dniester and Danube, in particular on the Budzhak steppe. The date fits into a small set of older determinations for this group, generally referred to the range of ca. 2600-2000 BC, with a vast majority of the determinations being made for ‘classic’ Ingul burials indicating the period of 2400-2000 BC [Kaiser 2009: 65, 66].

The early dating of burial I/4, Prydnistrianske 1, suggests also its contemporaneity with, or possibly a temporal proximity to, the age of the late YC phase in the Yampil district (especially in respect of the grave dating results for barrow 3A, Porohy). An analogous meaning is carried by determinations for sites located on the Dnieper: Tarasova Mogila in Orikhiv [Govedarica *et al.* 2006] and barrow 24 in Vinogradnoye [Görsdorf *et al.* 2004], although in these cases ^{14}C determinations refer to features associated with the early CC.

On account of corpse arrangement traits and grave pit shape, the CC rite is also believed to have been followed in the case of grave 1/7, Pidlisivka, in earlier publications linked to the BC [Harat *et al.* 2014; Razumov 2014]. What is more, the ^{14}C determination obtained (Poz-38531: 4120 ± 35 BP, or 2858-2621 BC) makes researchers refer it to the early CC [Otroshchenko 2013: 25-27]. From the Middle Dniester Area, we know only of single features of this type (e.g. Kuzmin, grave 2/5) [Bubulych, Khakheu 2002: 132]. They are clearly different from the only fully

distinctive Early Catacomb feature from barrow 3 in Okniŭsa [Klochko 1990] to be found in the area in question. In terms of corpse arrangement, however, they point to connections with the type dominating on northern Moldavian cemeteries [Kaiser 2003: 40, 42]. Burials and grave structures on these sites share traits with the 'Donets Catacomb culture' [Ivanova 2013b]. The dating of early assemblages of this type to ca. 2800-2500 BC on the Dnieper and further east has already been documented well [Kaiser 2009: 63-65]. Whereas, on the North-Western Black Sea Region, the radiocarbon dating results have until now indicated a clearly later range: from ca. 2600 BC to the end of the 3rd millennium BC [Kaiser 2009; Ivanova 2013b; Ivanova *et al.* 2015]. The adoption of the early dating of some CC materials in the Dniester-Prut interfluvium significantly alters several crucial cultural issues related to both the situation on the Black Sea Coast and its repercussions for central Europe [Bratchenko 2001: 53, 54]. Due to the very small number of samples, the results cited here must, however, be approached with great caution.

The research into the *Yampil chronometry* of the oldest builders and users of barrows could be said to introduce us to the temporal position of barrow architecture and associated issues in the Podolia cultural interchange across the second half of the 4th and first half of the 3rd millennia BC. The subsequent research conclusions and further questions these may elicit in relation to the above shall no doubt provide a particular fulcrum of interest. Specifically, research inspirations concern the development coincidences of the TC-G and the eastern group of the Globular Amphora culture, as well as the YC and the so-called Sub-Carpathian culture/group and, as a continuation, also the Małopolska group(s) of the Corded Ware culture. Attempts to read the indicated research problems anew and from a fresh perspective in terms of the current literature were taken up in separate papers published in this volume of *Baltic-Pontic Studies* [Ivanova *et al.* 2015].

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REFERENCES

Bratchenko S.N.

2001 *Donetska katakombna kultura rannioho etapu*. Luhansk.

2003 Radiocarbon chronology of the Early Bronze Age of the middle Don. Svatove, Luhansk Region. In: A. Koško (Ed.), *The Foundation of Radiocarbon Chronology of Cultures Between the Vistula and Dnieper: 4000-1000 BC. Baltic-Pontic-Studies* 12: 185-208.

Brock F., Higham T., Ditchfield P., Bronk Ramsey C.

2010 Current pretreatment methods for AMS radiocarbon dating at the Oxford Radiocarbon Accelerator Unit (ORAU). *Radiocarbon* 51: 337-360.

Brock F., Wood R., Higham T., Ditchfield P., Bayliss A., Bronk Ramsey C.

2012 Reliability of nitrogen content (%N) and carbon:nitrogen ratios (C:N) as indicators of collagen preservation suitable for radiocarbon dating. *Radiocarbon* 54: 879-886.

Bronk Ramsey C.

2009 Bayesian analysis of radiocarbon dates. *Radiocarbon* 51: 337-360.

Bronk Ramsey C., Lee S.

2013 Recent and Planned Developments of the Program OxCal. *Radiocarbon* 55: 720-730.

Bubulych V.G., Khakheu V.P.

2002 Issledovanya kurhanov v Kamenskom rayone na levoberezhe Srednego Dnestra. In: N.A. Ketraru (Ed.) *Severnoe Prichernomore ot eneolitiki antichnosti*, 112-148. Tiraspol.

Chernykh E.N., Orlovskaya L.B.

2004 Radiouglerodnaya khronologiya katakombnoy kulturno-istoricheskoy obshchnosti (sredniy bronzoviy vek). *Rossiyskaya Arkheologiya* 2: 15-29.

Dergachev V.A.

1986 *Moldaviya i sosedniye territorii v epokhu bronzy*. Kishiniev.

Frînculeasa A., Preda, B., Heyd V.

2015 Pit-Graves, Yamnaya and kurgans along the lower Danube: disentangling IVth and IIIrd Millennium BC burial customs, equipment and chronology. *Præhistorische Zeitschrift* 90 (1-2): 45-113.

Geyh M.A.

- 2001 Bomb radiocarbon dating of animal tissues and hair. *Radiocarbon* 43: 723-730.

Gorodtsov V.A.

- 1905 Rezultaty arkheologicheskikh issledovaniy v Iziuskom uezdie Khar'kovskhoy gubernii 1901 goda. In: *Trudy XII Arkheologicheskogo syezda*, vol. 1, 174-225. Moskva.
- 1907 Rezultaty arkheologicheskikh issledovaniy v Bakhmutskom uezde Ekaterinoslavskoy gubernii v 1903 g. In: *Trudy XIII arheologicheskogo syezda*, vol. 1, 211-285. Moskva.

Görsdorf J., Rassamakin Y., Häusler A.

- 2004 ¹⁴C dating of mound 24 of the kurgan group near Vinogradnoye village, Ukraine. In: T. Higham, Bronk Ramsey C., Owen C. (Eds) *Radiocarbon and archaeology. Fourth International Symposium. St Catherine's college, Oxford 9-14 April 2002*, 127-134. Oxford.

Goslar T., Koško A.

- 2011 Z badań nad chronologią i topogenezą kujawskich kurhanów starszno-wych. Krusza Zamkowa. In: H. Kowalewska-Marszałek, P. Włodarczyk (Eds) *Kurhany i obrządek pogrzebowy w IV-II tysiącleciu p.n.e.*, 407-416. Kraków, Warszawa.

Goslar T., Koško A., Razumow S.

- 2014 Identyfikacja kulturowo-chronologiczna cmentarzysk „wczesnobrązowych” na stanowisku Pidlisiwka 1. In: A. Koško, M. Potupczyk, S. Razumow (Eds) *Naddniestrzańskie kompleksy cmentarzysk kurhanowych społeczności z III i z pierwszej połowy II tysiąclecia BC w okolicach Jampola, obwód winnicki. Z badań nad północno-zachodnią rubieżą osadnictwa społeczności kręgu kultur „wczesnobrązowych” strefy pontyjskiej. Badania z lat 1984-2010. Archaeologia Bimaris – Monografie* 6. Poznań.

Govedarica B., Kaiser E., Rassamakin Y.Y., Samar V.A.

- 2006 Der Grabhügel „Tarasova Mogila“ bei der Stadt Orechov. Neue Angaben zur Periodisierung und Chronologie der äneolithischen und bronzzeitlichen Steppen-kulturen im Azovgebiet. *Eurasia Antiqua* 12: 63-112.

Harat K., Potupczyk M., Razumow S.

- 2014 Charakterystyka źródeł archeologicznych pozyskanych w latach 1984-1993. In: A. Koško, M. Potupczyk, S. Razumow (Eds) *Naddniestrzańskie kompleksy cmentarzysk kurhanowych społeczności z III i z pierwszej połowy II tysiąclecia BC w okolicach Jampola, obwód winnicki. Z badań*

nad północno-zachodnią rubieżą osadnictwa społeczności kręgu kultur „wczesnobrązowych” strefy pontyjskiej. Badania z lat 1984-2010. Archaeologia Bimaris – Monografie 6, 45-204. Poznań.

Heußner K.-U.

- 2009 Dendrochronologische Untersuchungen zu den Scheibenrädern aus dem Kurgan “Sugokleja”, Stadt Kirovograd/Ukraine. *Eurasia Antiqua* 15: 235-237.

Horvath T., Dani J., Petö A., Pospieszny Ł., Svingor E.

- 2013 Multidisciplinary contributions to the study of Pit Grave Culture kurgans of the Great Hungarian Plain. In: V. Heyd, G. Kulcsár, V. Szeverényi (Eds) *Transition to the Bronze Age. Interregional interaction and socio-cultural change in the third millenium BC. Carpathian Basin and neighbouring regions*, 153-179. Budapest.

Ivanova S.V.

- 2013a Kulturno-istoricheskie kontakty naseleniya Severo-Zapadnogo Prichernomoria v rannem bronzovom veke: Zapad-Vostok. Kulturno-istoricheskie kontakty naseleniya. *Stratum plus* 2: 158-248.
- 2013b Katakombnye kultury. In: S. Hansen, J. Chodorowski, S.D. Kryzhytskiy, G.Y. Ivakin (Eds) *Drevnie kultury Severo-Zapadnogo Prichernomoria*, 255-275. Odessa.
- 2015 Protobudzhakskiy gorizont Severo-Zapadnogo Prichernomoria, *Stratum plus* 2: 275-294.

Ivanova S.V., Klochko V.I., Koško A., Szmyt M., Toshev G.N., Włodarczak P.

- 2015 ‘Yampil inspirations’ in the study of the Dniester cultural contact area at the frontier of Pontic and Baltic drainage basins. In: A. Koško (Ed.). *Podolia as a Cultural Contact Area in the 4th/3rd-2nd Millennium BC. Baltic-Pontic Studies* 20: 406-424.

Ivanova S.V., Toshev G.N.

- 2015 Late Eneolithic and Bronze Age prologue Pontic societies. Forest-steppe Middle Dniester and Prut drainage basins in the 4th/3rd-2nd millennium BC: A history of investigations. In: A. Koško (Ed.) *Podolia as a Cultural Contact Area in the 4th/3rd-2nd Millennium BC. Baltic-Pontic Studies* 20: 7-39.

Kaiser E.

- 2003 Studien zur Katakombengrabkultur zwischen Dnepr und Prut. In: *Archäologie in Eurasien* 14. Mainz.
- 2009 Problemy absolutnogo datirovaniya katakombnoy kultury Severnogo Prichernomoria. *Tyragetia. Serie nouă* 3 (18/1): 59-70.

Kaiser E., Winger A.

- 2015 Pit graves in Bulgaria and the Yamnaya Culture. *Praehistorische Zeitschrift* 90 (1-2): 114-140.

Kashuba M.T., Kurchatov S.Y., Scherbakova T.A.

- 2001-2002 Kochevniki na zapadnoy granitse Velikoy stepi (po materialam kurganov u s. Mocra). *Stratum plus* 4: 180-252.

Klochko E.O.

- 1990 Redkiy pogrebalnyi kompleks katakombnoy kultury na Srednom Dnestre. In: O.G. Shaposhnikova, V.V. Otroschenko, S.Z. Pustovalov, G.N. Toshchev, G.I. Shapovalov (Eds) *Problemy izuczeniya katakombnoy kulturno-istoricheskoy obschnosti*, 28-30. Zaporozhe.

Klochko V.I., Koško A.

- 2013 The Baltic drainage basin in the reconstruction of the mental map of Central Europe held in common by Northern-Pontic Early – Bronze Civilization Communities: 3200-1600 BC. An outline of the research programme. In: A. Koško, V.I. Klochko (Eds), *The Ingul-Donets Early Bronze Civilization as Springboard for Transmission of Pontic Cultural Patterns to the Baltic Drainage Basin 3200-1750 BC. Baltic-Pontic Studies* 18: 9-20 .

Klochko V.I., Koško A., Potupchyk M.V., Włodarczak P., Żurkiewicz D. Ivanova S.V.

- 2015 Tripolye (Gordinești group), Yamnaya and Catacomb culture cemeteries, Prydnistrianske, site 1, Yampil Region, Vinnitsa Oblast: an archaeometric and chronometric description and a taxonomic and topogenetic discussion. In: A. Koško (Ed.) *Podolia as a Cultural Contact Area in the 4th/3rd-2nd Millennium BC. Baltic-Pontic Studies* 20: 183-255.

Klochko V.I., Koško A., Razumov S.M., Włodarczak P., Żurkiewicz D.

- 2015a Eneolithic, Yamnaya, Catacomb and Babyno culture cemeteries, Pidlisivka, barrow 1, Yampil Region, Vinnitsa Oblast: archaeometry, chronometry and taxonomy. In: A. Koško (Ed.) *Podolia as a Cultural Contact Area in the 4th/3rd-2nd Millennium BC. Baltic-Pontic Studies* 20: 40-77.
- 2015b Eneolithic, Yamnaya and Noua culture cemeteries from the first half of the 3rd and the middle of the 2nd millennium BC, Porohy, site 3A, Yampil Region, Vinnitsa Oblast: archaeometric and chronometric description, ritual and taxonomic-topogenetic identification. In: A. Koško (Ed.) *Podolia as a Cultural Contact Area in the 4th/3rd-2nd Millennium BC. Baltic-Pontic Studies* 20: 78-141.

- 2015c Eneolithic, Babyno and Noua culture cemeteries, Klembivka, site 1, Yampil Region, Vinnitsa Oblast: archaeometry, taxonomy and topogenetics. In: A. Koško (Ed.) *Podolia as a Cultural Contact Area in the 4th/3rd-2nd Millennium BC. Baltic-Pontic Studies* 20: 142-182.

Koško A., Potupczyk M., Razumow S. (Eds)

- 2014 *Naddniestrzańskie kompleksy cmentarzysk kurhanowych społeczności z III i z pierwszej połowy II tysiąclecia BC w okolicach Jampola, obwód winnicki. Z badań nad północno-zachodnią rubieżą osadnictwa społeczności kręgu kultur „wczesnobrzązowych” strefy pontyjskiej. Badania z lat 1984-2010. Archaeologia Bimaris – Monografie* 6. Poznań.

Koško A., Potupczyk M., Razumow S.

- 2014 Wstęp. In: A. Koško, M.V. Potupczyk, S.M. Razumow (Eds) *Naddniestrzańskie kompleksy cmentarzysk kurhanowych społeczności z III i z pierwszej połowy II tysiąclecia BC w okolicach Jampola, obwód winnicki. Z badań nad północno-zachodnią rubieżą osadnictwa społeczności kręgu kultur „wczesnobrzązowych” strefy pontyjskiej. Badania z lat 1984-2010. Archaeologia Bimaris – Monografie* 6, 11-13. Poznań.

Koško A., Razumov S., Żurkiewicz D.

- 2014a Cechy formalno-typologiczne obiektów oraz ich wyposażenia. In: A. Koško, M.V. Potupczyk, S.M. Razumow (Eds) *Naddniestrzańskie kompleksy cmentarzysk kurhanowych społeczności z III i z pierwszej połowy II tysiąclecia BC w okolicach Jampola, obwód winnicki. Z badań nad północno-zachodnią rubieżą osadnictwa społeczności kręgu kultur „wczesnobrzązowych” strefy pontyjskiej. Badania z lat 1984-2010. Archaeologia Bimaris – Monografie* 6, 213-235. Poznań.

Larina O.

- 2003 Pozdnetripolskie pogrebeniya gordineshtskogo tipa na Dnestre. In: E. Sava (Ed.) *Interferențe cultural-chronologice în spațiul nord-pontic*, 57-80. Chișinău.

Manzura I.V.

- 2010 „Vytyanutyie” pogrebeniya epokhi eneolita v Karpato-Dnestrovskom regione. *Tyragetia. Serie nouă* 4 (1): 35-47.

Manzura I.V., Klochko O.V., Savva E.N.

- 1992 *Kamenskie kurgaany*. Kishinev.

Nikolova A.V.

- 2012 Absolutna khronologyya yamnoi kultury pivnichnogo Nadcharnomoria v svitli dendrodat. *Arkheologiya* 4 (2012): 14-31.

Nikolova A.V., Kaiser E.

- 2009 Die absolute Chronologie der Jamnaja Kultur im nördlichen Schwarzmeergebiet auf der Grundlage erster dendrochronologischer Daten. *Eurasia Antiqua* 15: 209-240.

Otroshchenko V.V.

- 2013 The Catacomb Culture Phenomenon. In: A. Koško, V.I. Klochko (Eds) *The Ingul-Donets Early Bronze Civilization as Springboard for Transmission of Pontic Cultural Patterns to the Baltic Drainage Basin 3200-1750 BC. Baltic-Pontic Studies* 18: 21-38.

Potupczyk M., Razumov S.

- 2014 Zgrupowanie cmentarzysk kurhanowych w rejonie jampolskim. In: A. Koško, M.V. Potupczyk, S.M. Razumov (Eds) *Naddniestrzańskie kompleksy cmentarzysk kurhanowych społeczności z III i z pierwszej połowy II tysiąclecia BC w okolicach Jampola, obwód winnicki. Z badań nad północno-zachodnią rubieżą osadnictwa społeczności kręgu kultur „wczesnobrązowych” strefy pontyjskiej. Badania z lat 1984-2010. Archaologia Bimaris – Monografie* 6, 35-39. Poznań.

Rassamakin Y.Y.

- 1999 The Eneolithic of the Black Sea Steppe: Dynamics of Cultural and Economic Development 4500 -2300 BC. In: M. Levine, Y. Rassamakin, N. Kislenko, N. Tatarintseva (Eds) *Late Prehistoric Exploitation of the Eurasian Steppe*, 59-182. Cambridge.
- 2013 From the Late Eneolithic period to the Early Bronze Age in the Black Sea steppe: what is the Pit Grave Culture (late fourth to mid-third millennium BC)? In: V. Heyd, G. Kulcsár, V. Szeverényi (Eds) *Transition to the Bronze Age. Interregional interaction and socio-cultural change in the third millennium BC. Carpathian Basin and neighbouring regions*, 113-138. Budapest.

Rassamakin Y.Y., Nikolova A.

- 2008 Carpathian Imports and Imitations in Context of the Eneolithic and Early Bronze Age of the Black Sea Steppe Area. In: P.F. Biehl, Y.Y. Rassamakin (Eds) *Import and Imitation in Archaeology*, 51-87. Langenweißbach.

Razumov S.

- 2014 Komponent tradycji kultury jamowej. In: A. Koško, M. Potupczyk, S. Razumov (Eds) *Naddniestrzańskie kompleksy cmentarzysk kurhanowych społeczności z III i z pierwszej połowy II tysiąclecia BC w okolicach Jampola, obwód winnicki. Z badań nad północno-zachodnią rubieżą osad-*

nictwa społeczności kręgu kultur „wczesnobrązowych” strefy pontyjskiej. Archaeologia Bimaris – Monografie 6, 341-346. Poznań.

Reimer P.J., Bard E., Bayliss A., Beck W.J., Blackwell P.G., Bronk-Ramsey C., Buck C.E., Cheng H., Edwards R.L., Friedrich N., Grootes P.M., Guilderson T.P., Hafidason H., Hajdas I., Hattè C., Heaton T.J., Hoffmann D.L., Hogg A.G., Hughen K.A., Kaiser K.F., Kromer B., Manning S.V., Niu M., Reimer R.W., Richards D.A., Scott E.M., Southon J.R., Staff R.A., Turney S.M., Van der Plicht J.
2013 IntCal13 and Marine 13 radiocarbon age calibration curves 0-50,000 years cal BP. *Radiocarbon* 55: 1869-1887.

Shishlina N.I., Alexandrovsky A.L., Chichagova O.A., van der Plicht J.
2000 Radiocarbon chronology of the Kalmykia Catacomb culture of the west Eurasian steppe. *Antiquity* 74, 793-799.

Shishlina N.I., van der Plicht J., Hedges R.E.M., Zazovskaya E.P., Sevastyanov V.S., Chichagova O.A.

2007 The Catacomb cultures of the North-West Caspian steppe: ^{14}C chronology, reservoir effect, and paleodiet. *Radiocarbon* 49(2): 713-726.

Shishlina N.I., Zazovskaya E.P., van der Plicht J., Hedges R.E.M., Sevastyanov V.S., Chichagova O.G.

2009 Paleoeecology, subsistence, and ^{14}C chronology of the Eurasian Caspian Steppe Bronze Age. *Radiocarbon* 51(2): 481-499.

Telegin D.Y., Pustovalov S.Z., Kovalyukh N.N.

2003 Relative and absolute chronology of Yamnaya and Catacomb monuments. The issue of coexistence. In: A. Koško (Ed.), *The Foundations of Radiocarbon Chronology of Cultures Between the Vistula and Dnieper: 4000-1000 BC. Baltic-Pontic Studies* 12: 132-184.

van Klinken G.J.

1999 Bone collagen quality indicators for palaeodietary and radiocarbon measurements. *Journal of Archaeological Science* 26: 687-695.

Yarovoy E.V.

1981 Kurhan yamnnoi kultury u s. Khrustovaia. In: *Arkheologicheskie issledovaniya v Moldavii (1974-1976 gg.)*, 45-58. Kishinev.

Yarovoy E.V., Tserna S.V., Popovici S.S.

2012 Pozdnetripolskiy mogilnik u s. Oksentia (Dubossarskiy rayon, Respublika Moldova). *Stratum plus* 2: 287-302.

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ANTHROPOLOGICAL DESCRIPTION OF SKELETAL MATERIAL FROM THE DNIESTER BARROW- CEMETERY COMPLEX, YAMPIL REGION, VINNITSA OBLAST (UKRAINE)

ABSTRACT

Anthropological examinations were performed on skeletal material from four barrow necropolises located in the Yampil Region (Ukraine) and dated to the Eneolithic, Bronze Age and Iron Age. The purpose of the examinations was the determination of sex and age at death of individuals, reconstruction of their stature and assessment of their status of health. The examinations covered 61 individuals: 17 children

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and 44 adults. Their health status was assessed using four common indicators: linear enamel hypoplasia, *cribra orbitalia*, porotic hyperostosis and dental caries.

Key words: Eneolithic, Yamnaya culture, Bronze Age, anthropology, Ukraine

In 2010–2014, a Polish-Ukrainian archaeological expedition investigated seven barrows situated on the middle Dniester, in the vicinity of the town of Yampil, Ukraine. The investigations formed part of a research project devoted to the exploration of Podolia as a cultural interchange in the 4th/3rd and 2nd millennia BC. An important aspect of the project was its interdisciplinary character which enhanced the cultural and biological picture of communities practising the barrow funerary rite.

The area of investigations probing a section of the Middle Dniester Area, administratively restricted to the Yampil Region (Vinnitsa *Oblast*), is characterized by a considerable concentration of barrow features. The area coincides with the north-western range of ‘Early-Bronze’ barrows, associated with eastern Europe’s steppe and forest-steppe.

A detailed surface survey of the Yampil Region and earlier excavations carried out as part of conservation efforts helped reconstruct the cultural landscape of this space fragment. A recent summary of these efforts [Koško *et al.* 2014] shows that the building of most barrows in this area can be linked to Yamnaya culture (YC) communities, while the history of their later ‘use’ covers successive millennia: it involves later cultural units (Catacomb culture – CC; Babyno culutre – BC and Noua culture – NC) as far as modern times. From the perspective of a single barrow, this presents a picture that is difficult to interpret for it encompasses an extensive funerary zone (cemetery), grouping successive burials, traces of ritual activities related to the cult of the dead and later funerary attempts to architecturally fashion the mound form.

About the biology of the builders and their successors of most tombs located in the area in question very little is known now. Relying on what is known about the YC eastern frontier in this context, specifically about the Middle Volga (over 1,500 km NE of Yampil), it can be concluded that the representatives of *Yampil communities* were taller and heavier than average. The results of investigations hitherto carried out show that about 40 per cent of individuals inhabiting the area under discussion in the Early Bronze Age had *cribra orbitalia*¹. Interestingly enough, for earlier and later communities the figure is only about 10 per cent. In addition, the ‘Yamnaya’ community on the Middle Volga was characterized by an almost absolute absence of caries [Anthony 2007: 326].

The high frequency of *cribra orbitalia* and low frequency of dental caries could have resulted, in the opinion of Anthony [2007], from the diet of mostly car-

¹ Resulting from iron deficiency, among other reasons.

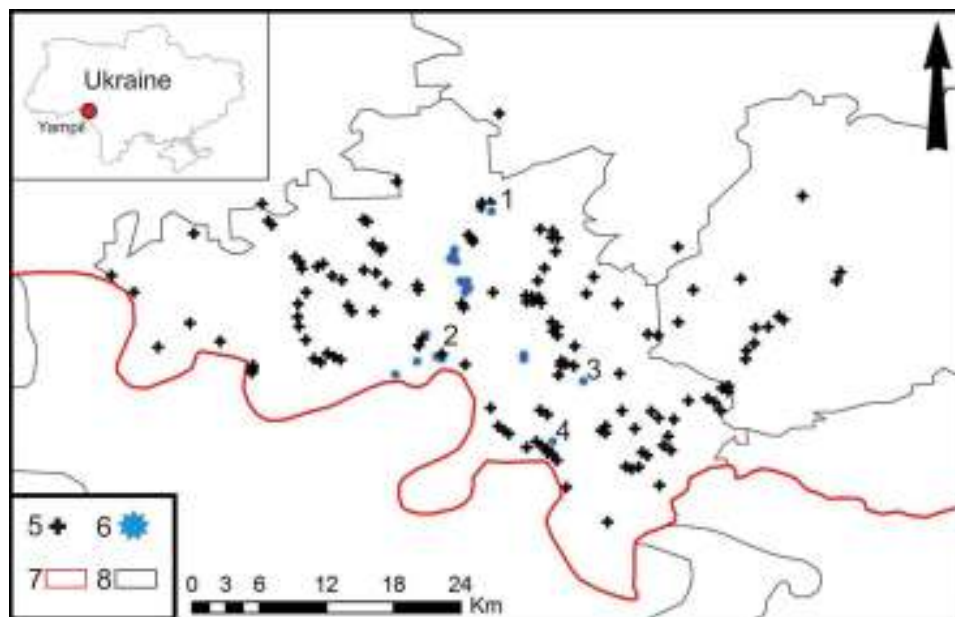


Fig. 1. Map of *Yampil* barrows, showing administrative borders: 1 – Klembivka barrow 1; 2 – Porohy, barrow 3A; 3 – Pidlisivka, barrow 1; 4 – Prydnistryanske, barrows 1-4; 5 – barrows; 6 – excavated barrows; 7 – Ukrainian-Moldovan frontier; 8 – Yampil Region border

bohydrate-poor (cereals) and protein-rich foods (blocking the assimilation of iron). The diet of past populations was strongly tied to their economic and settlement system. Mobile animal herding involving movement along large distances in wagons or on horseback supposedly resulted in the absence of any larger permanent settlements. Consequently, these populations' daily diet had only a small share of cereal products.

These observations correspond well to the widely adopted picture of YC communities, held to have consisted of patriarchal itinerant nomads-herders, living on a diet of mainly animal products, as well as mounted warriors defending their possessions.

Only slightly visible or totally obliterated today, mound forms were once a significant element of cultural landscapes, being loci around which everyday life centred. The study of central burials, around which the mound structure was formed and the other funeral space was built, indicates the dominant position of adult males to which barrows were dedicated. The patrilineal and patrilocal character of these communities follows also from the linguistic studies of Proto-Indo-European vocabulary [Anthony 2007: 304].

It is very hard to decide if a barrow was treated as a family cemetery and whether all the members of a given family were entitled to be buried in it. The

examination results of mtDNA fragments belonging to individuals from barrow 1, the Pidlisivka site (features 1A and 11), point to the possibility of relationship in the female line between two males buried in the central grave and in a feature placed underneath the mound later [Juras 2014]. However, to build a complete picture of the social structure and funerary rites of this community, more research is necessary.

The sites from which the studied material comes are located on the left bank of the Dniester. The barrows in Prydnistrianske (site 1, barrows I-IV) and Porohy (barrow 3A) lie on the edge of the river valley, while the barrows from Pidlisivka (barrow 1) and Klembivka (barrow 1) are located in the drainage basins of smaller watercourses emptying into the Dniester. The distances between particular sites are small, ranging from 7 to 22 km (Fig. 1). When the archaeological investigations began most mounds had already been largely levelled off. Their diameter ranged from about 25 to 49 m, while their height stayed between almost 1 m to about 4 m. By far, the greatest surviving height was that of barrow IV from Prydnistrianske. Features from this site, associated with the Eneolithic populations of the Gordinești group of the Tripolye culture (TC-G) and the Early Bronze YC make up the most developed chronological sequence of the ceremonial-funerary centre the beginnings of which are dated to the second half of the 4th millennium BC, while the decline of continuous use falls on the first half of the 3rd millennium BC. It grew in importance, however, yet again in the Iron Age. The chronology of the other sites also fits into the mentioned time interval [Goslar *et al.* 2015], adding to this sequence the burials of the Babyno and Noua communities from the 2nd millennium BC.

The skeletal material from the above-named sites were studied to determine sex and age at death as well as to reconstruct the stature of particular individuals and evaluate their status of health.

1. DESCRIPTION OF SOURCES

Analyses were performed altogether on 61 individuals: 13 from Pidlisivka 1, 11 from Klembivka 1, 20 from Porohy 3A and 17 from Prydnistrianske 1. There were far more adults than children (Tab. 1 and Supplement 1). The skeletal material was poorly preserved and incomplete for the most part, which greatly limited research possibilities. Out of all individuals, only 23 could be subjected to the examination of *cribra orbitalia* (36.5%), 11 to porotic hyperostosis (17.5%), 21 to linear enamel hypoplasia (33.3%) and 30 to dental caries (47.6%) (*see* Supplement 2).

Table 1

Number of individuals studied

Site	Children		Adults		Total	
	N	%	N	%	N	%
Pidlisisivka 1	6	35.3	7	15.9	13	21.3
Klembivka 1	3	17.6	8	18.2	11	18.0
Porohy 3A	5	29.4	15	34.1	20	32.8
Prydnistrianske 1	3	17.6	14	31.8	17	27.9
Total	17	27.9	44	72.1	61	100

2. ANTHROPOLOGICAL METHODS

Age at death and sex of individuals were determined using standard anthropological methods [Baker *et al.* 2005; Buikstra, Ubelaker 1994; Schaefer *et al.* 2009; White, Folkens 2005]. The age of subadults was determined by evaluating the tooth development and eruption, skeleton ossification as well as bone measurements. The age of adults, in turn, was determined on the basis of the degree of obliteration of cranial sutures, the tooth wear and changes on the surface of the pubic symphysis. It was necessary to use various methods of age determination because the skeletal material was rather poorly preserved and incomplete. The sex of adult individuals was determined, referring to the morphological characteristics of the skull and pelvis. Additionally, a molecular determination of sex assignment was performed for some of the individuals, in particular for infants and juveniles as well as for those specimens where anthropological sex determination was uncertain (*see* ancient DNA analysis).

For the purpose of evaluating the state of health, the following indicators were used: linear enamel hypoplasia (LEH), *cribra orbitalia* (CO), porotic hyperostosis (PH) and dental caries. Hypoplastic defects were assessed on incisors, canines, and premolars according to the recommendations of Goodman and Rose [1990]. To assess the age of particular lines, the method of Goodman and Rose [1990] was used. The degree of intensity of *cribra orbitalia* was assessed by applying the active/healing scale together with the scale of the Global History of Health Project (GHHP) [Steckel *et al.* 2005]. The degree of intensity of PH was also assessed by applying the GHHP scale [Steckel *et al.* 2005]. Caries was assessed on all tooth categories, both deciduous and permanent. Teeth were examined macroscopically without using any magnifying instruments.

Furthermore, data on injuries, degenerative lesions and inflammations, were collected together with information on other pathologies of the masticatory organ (dental calculus and abscesses). With respect to adult individuals, their stature was reconstructed, using the method developed by Trotter and Gleser [1952].

2.1. ANCIENT DNA ANALYSIS

Samples. In order to obtain molecular determination of sex, we performed ancient DNA (aDNA) analysis of 10 specimens from archaeological sites in Pidlisivka 1 (2 individuals), Porohy 3A (2 individuals), Klembivka 1 (2 individuals) and Prydnistrianske 1 (4 individuals). Two intact teeth from each individual were collected using gloves and face masks to minimize the possibility of contaminations from modern humans. Molecular studies were conducted in the laboratory, at the Adam Mickiewicz University in Poznań, which is dedicated exclusively to the analysis of ancient DNA. All the precautions against modern DNA contaminations were taken as described earlier [Juras *et al.* 2014].

DNA extraction and library preparation. Prior to the extraction of a DNA, each tooth was cleaned with the use of ~5% NaOCl, followed by UV irradiation and drilling with Dremel® drill bits. DNA was extracted using the silica-based method according to Yang *et al.* [1998], modified by adding urea as in Svensson *et al.* [2008]. Twenty microliters of DNA were used to build blunt-end libraries [Mayer and Kircher 2010], skipping the initial nebulization step. Amplification and purification was conducted as in [Günther *et al.* 2015] with minor modifications. Concentrations and length distribution of DNA fragments were estimated using High Sensitivity D1000 Screen Tape assay on 2200 Tape Station system (Agilent). DNA libraries were shotgun sequenced on Illumina's HiSeq2500 (1250bp, pair end) or on Hi Seq X Ten (150bp, paired-end) at the SNP & SEQ technology platform Sci Life Sequencing Centre in Uppsala, Sweden. Obtained paired-end reads were demultiplexed, merged, and trimmed. The merged and trimmed reads were subsequently mapped to the human reference genome using BWA [Li, Durbin 2009]. The reads were then filtered for duplicates using Python scripts provided by Kircher [2012], and all reads with a minimum length of 35 base pairs were analyzed using same tools [Li *et al.* 2009].

Molecular sexing. Molecular sex was determined using the method of Skoglund *et al.* [2013] based on the analysis of the ratio of sequence reads mapping to Y and X chromosomes (R_y) and restricted only to reads with mapping qualities of at least 30.

3. RESULTS

3.1. PIDLISIVKA 1

From the Pidlisivka 1 site, skeletal material belonging to 13 individuals were recovered: seven adults and six children (Tab. 2) [Bednarek *et al.* 2014; Klochko *et al.* 2015a].

3.1.1. ENEOLITHIC BURIALS

Barrow 1, feature 1b

A poorly-preserved skeleton with a damaged skull. The preserved bones include large skull fragments, including facial bones, large fragments of lower and upper limb bones, small fragments of the pelvis, the sternum, scapula, foot bones, vertebrae and ribs. The skeleton belonged to a male aged 22-25 years (*adultus*). The molecular analysis corroborated the morphological sex assessment. Due to the poor state of preservation of long bones, it was not possible to reconstruct his stature.

Palaeopathological lesions: LEH on the upper left medial incisor (age of the individual at the time of defect: 2.5-3.0 years); a deformation of the left mastoid process.

Barrow 1, feature 10

A poorly-preserved skeleton with a badly damaged skull. The preserved bones include small fragments of the cranial vault, maxillae and the mandible, as well as vertebrae and ribs. The skeleton belonged to a child aged 0-9 months (*infans I*). No palaeopathological lesions were observed.

3.1.2. YAMNAYA CULTURE BURIALS

Barrow 1, feature 1a

Skeleton 1. A poorly-preserved skeleton with a badly damaged skull. Three small fragments of cranial vault bones and lower and upper limb bones have been preserved. The skeleton belonged to a child aged 7-8 years (*infans II*). No palaeopathological lesions were observed.



Skeleton 2. A poorly-preserved skeleton with a badly damaged skull. Small fragments of cranial bones (cranial vault and mandible) were recovered together with the bones of upper and lower limbs and fragments of the pelvis. The skeleton belonged to a male aged 30-40 years (*adultus/maturus*). Due to the poor state of preservation of long bones, it was not possible to reconstruct his stature.

Palaeopathological lesions: dental calculus, degenerative lesions at proximal and distal ends of tibiae and femora.

Barrow 1, feature 9

A poorly-preserved skeleton with a badly damaged skull. The preserved skeletal material include small fragments of skull and long bones (ulna and tibia) and a fragment of a scapula. The skeleton belonged to a child aged 0-1 years (*infans I*). No palaeopathological lesions were observed.

Barrow 1, feature 11

A poorly-preserved skeleton with a badly damaged skull. The preserved bones include small fragments of the cranial vault and the mandible, as well as small fragments of upper and lower limb bones and the pelvis. The skeleton belonged to a male aged 35-40 years (*maturus*). Due to the poor state of preservation of long bones, it was not possible to reconstruct his stature.

Palaeopathological lesions: dental calculus; considerable lowering of alveolar processes

Barrow 1, feature 5

A poorly-preserved skeleton with a badly damaged skull. The preserved bones include small fragments of the skull (bones of the cranial vault and the facial skeleton), large fragments of long bones, small fragments of the pelvis, ribs and foot bones. The skeleton belonged to a male aged 30-35 years (*adultus*). Due to the poor state of preservation of long bones, it was not possible to reconstruct his stature.

Palaeopathological lesions: LEH on both upper incisors, the right upper first premolar and right lower canine (age of the individual at the time of respective defects: 3.5-4.0, 2.5-3.0, 2.5-3.0 years).

Barrow 1, feature 13

A poorly-preserved skeleton with a badly damaged skull. The preserved bones include small fragments of the skull (bones of the cranial vault and maxillae), large fragments of upper and lower limb bones (epiphyses are damaged). The skeleton most probably belonged to a female aged 20-25 years (*adultus*). The molecular analysis corroborated the morphological sex assessment. Due to the poor state of preservation of long bones, it was not possible to reconstruct her stature. No palaeopathological lesions were observed.

3.1.4. CATACOMB CULTURE BURIAL

Barrow 1, feature 4

A poorly-preserved skeleton with a badly damaged skull. The preserved bones include small fragments of the cranial vault, fragments of upper limb bones, small fragments of the pelvis, ribs, vertebrae and foot bones. The skeleton belonged to a child aged 11-12 years (*infans II*).

Palaeopathological lesions: LEH on the upper left canine and lower right first premolar (age of the individual at the time of both defects: 4.5-5.0 years).

Barrow 1, feature 7

A poorly-preserved skeleton with a badly damaged skull. The preserved bones include small fragments of the cranial vault, a small fragment of the mandible, as well as small fragments of upper and lower limb bones. The skeleton could have belonged to a male aged 25-30 years (*adultus*). Due to the poor state of preservation of long bones, it was not possible to reconstruct his stature.

Palaeopathological lesions: dental calculus; LEH on all upper premolars and lower first premolars (age of the individual at the time of respective defects: 5.0-5.5, 4.5-5.0, 4.5-5.0, 4.5-5.0, 4.0-4.5, 3.5-4.0 years); injury sustained during the individual's lifetime recorded on a small fragment of the nasal bone (no traces of inflammation were recorded).

3.1.5. IRON AGE BURIAL

Barrow 1, feature 12

A well-preserved skeleton with a badly damaged skull. The preserved bones include small fragments of the cranial vault (occipital bone and left parietal bone), a small fragment of the mandible, as well as large fragments of upper and lower limb bones, pelvis, foot bones, phalanges, vertebrae and ribs. The skeleton belonged to a male aged 50-55 years (*maturus*). Due to the poor state of preservation of long bones, it was not possible to reconstruct his stature.

Palaeopathological lesions: the upper left second molar showed signs of caries; thoracic vertebrae had Schmorl's nodes, while lumbar vertebrae carried Schmorl's nodes and osteophytes; dental calculus and a considerable lowering of alveolar processes could be observed. The upper left third molar was lost *antemortem*. On the left maxilla, over the upper second molar, dental abscesses were recorded. Degenerative lesions of the left acetabulum of the hip joint, proximal end of a hand phalanx and ribs were observed.

3.1.6. BURIALS OF AN INDETERMINATE CHRONOLOGY

Barrow 1, mound

A poorly-preserved skeleton with a badly damaged skull. The preserved bones include a fragment of the right temporal bone and maxilla, small fragments of the

scapula and pelvis, large fragments of upper and lower limb bones (epiphyses are not fused). The skeleton belonged to an individual aged 15-20 years (*juvenis*).

Palaeopathological lesions: dental calculus.

Barrow 1, feature 8

A poorly-preserved skeleton: a fragment of the right femur, a small fragment of the ulna and fine fragments of ribs were recorded. The skeleton belonged to a child aged 1-6 years (*infans I*). No palaeopathological lesions were observed.



Table 2

Basic information on skeletal material from barrow 1, Pidlisivka site

Site	Grave	Anthropological Age Determination	Anthropological Sex Assignment	Molecular Sex Assignment	Archaeological Culture
Pidlisivka	Mound	<i>Juvenis</i> (15-20 years)	---	Not done	?
Pidlisivka	Feature 1a Skeleton 1	<i>Infans II</i> (7-8 years)	---	Not done	YC
Pidlisivka	Feature 1a Skeleton 2	<i>Adultus/maturus</i> (30-40 years)	Male	Not done	YC
Pidlisivka	Feature 1b	<i>Adultus</i> (22-25 years)	Male	XY	Eneolithic
Pidlisivka	Feature 4	<i>Infans II</i> (11-12 years)	---	Not done	CC
Pidlisivka	Feature 5	<i>Adultus</i> (30-35 years)	Male	Not done	BC
Pidlisivka	Feature 7	<i>Adultus</i> (25-30 years)	Male?	Not done	CC
Pidlisivka	Feature 8	<i>Infans I</i> (1-6 years)	---	Not done	?
Pidlisivka	Feature 9	<i>Infans I</i> (0-1 year)	---	Not done	YC
Pidlisivka	Feature 10	<i>Infans I</i> (0-9 months)	---	Not done	Eneolithic
Pidlisivka	Feature 11	<i>Maturus</i> (35-40 years)	Male	Not done	YC
Pidlisivka	Feature 12	<i>Maturus</i> (50-55 years)	Male	Not done	Iron Age
Pidlisivka	Feature 13	<i>Adultus</i> (20-25 years)	Female?	XX	BC

3.2. POROHY 3A

From the Porohy site, skeletal material belonging to 20 individuals were recovered: 15 adults and 5 children (Tab. 3) [Klochko *et al.* 2015b].

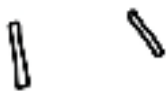
3.2.1. ENEOLITHIC BURIALS

Barrow 3A, feature 14

Individual 1. Bones found in the feature fill were very poorly preserved. They included a few fragments of the cranial vault. The skeleton belonged to a child. Due to the poor state of bone preservation, it was not possible to determine the exact age of the individual. No palaeopathological lesions were observed.

Barrow 3A, feature 14

Individual 2. Bones found in the feature fill were very poorly preserved. They included a few fragments of the skull, a fragment of the ulna and another of the fibula, and a fragment of the sacrum, as well as foot phalanges. The skeleton belonged to an adult. Due to the poor state of bone preservation, it was not possible to reconstruct the individual's stature nor estimate his or her age-at-death nor determine sex. No palaeopathological lesions were observed.

Barrow 3A, feature 18

A very poorly-preserved skeleton: only small fragments of long bones were recovered. The skeleton most probably belonged to a child aged 0-7 years (*infans I*). No palaeopathological lesions were observed.

3.2.2. YAMNAYA CULTURE BURIALS

Barrow 3A, feature 1

A poorly-preserved skeleton with a badly damaged skull. The preserved bones include very small fragments of the skull, upper and lower limbs, pelvis and foot. The skeleton belonged to a male aged 30-35 years (*adultus*). Due to the poor state of preservation of long bones, it was not possible to reconstruct his stature.

Palaeopathological lesions: dental calculus and lowering of alveolar processes. The frontal bone bears traces of a compression fracture (located in the middle of the bone) and three

perforations (one located on the right side, two on the left), showing no traces of obliteration (healing). These can be traces of a ritual skull 'division'. Traces of artificial bone working can be also seen on the fragments of the parietal bones, occipital bone and the mandible; degenerative lesions were observed on vertebrae and phalanges.

Barrow 3A, feature 2



A very poorly-preserved skeleton with a badly damaged skull. The preserved bones include small fragments of the cranial vault, humerus, radius and ulna. The skeleton most probably belonged to a male aged 35-55 years (*maturus*). Due to the poor state of preservation of long bones, it was not possible to reconstruct his stature. No palaeopathological lesions were observed.

Barrow 3A, feature 10



A very poorly-preserved skeleton with a badly damaged skull. The preserved bones include small fragments of the cranial vault and mandible and larger ones of the upper and lower limbs, pelvis fragments and vertebrae. The skeleton belonged to a female aged 25-30 years (*adultus*). Due to the poor state of preservation of long bones, it was not possible to reconstruct her stature.

Palaeopathological lesions: LEH on both lower canines (age of the individual at the time of both defects: 4.5-5.0 years); caries on the upper left third molar.

Barrow 3A, feature 11



A poorly-preserved skeleton with a badly damaged skull. The preserved bones include small fragments of the skull, upper and lower limbs, small fragments of the pelvis. The skeleton belonged to a male aged 25-30 years (*adultus*). Due to the poor state of preservation of long bones, it was not possible to reconstruct his stature.

Palaeopathological lesions: dental calculus; amidst pelvis fragments, a flint arrow point was found, but due to the poor state of bone preservation, it is not possible to determine its original location.

Barrow 3A, feature 12

Skeleton 1. A poorly-preserved skeleton with a badly damaged skull. The preserved bones include fragments of the cranial vault, large fragments of upper limb bones (epiphyses are damaged), small fragments of the pelvis, and foot bones. The skeleton belonged to a female aged 22-25 years (*adultus*). The molecular analysis corroborated the morphological sex assessment. The stature of the individual was approx. 160 cm.

Palaeopathological lesions: porotic hyperostosis (1st degree according to GHHP) of the right parietal bone; dental calculus.

Skeleton 2. A well-preserved skeleton with a badly damaged skull. The preserved bones include small fragments of the skull, upper and lower limbs, pelvis, vertebrae and ribs. The skeleton belonged to a child (foetus). No palaeopathological lesions were observed.

Barrow 3A, feature 15

A poorly-preserved skeleton with a badly damaged skull. The preserved bones include small fragments of the skull, upper and lower limbs, and vertebrae. The skeleton belonged to a male aged 25-30 years (*adultus*). Due to the poor state of preservation of long bones, it was not possible to reconstruct his stature.

Palaeopathological lesions: degenerative lesions on the proximal ends of metatarsal bones and two phalanges.

Barrow 3A, feature 17

A poorly-preserved skeleton with a badly damaged skull. The preserved bones include small fragments of the skull, upper and lower limb bones (epiphyses are partly damaged) and small fragments of the pelvis and vertebrae. The skeleton belonged to a male aged 30-35 years (*adultus*). Due to the poor state of preservation of long bones, it was not possible to reconstruct his stature.

Palaeopathological lesions: osteophytes on the olecranon of the right ulna; degenerative lesions on cervical vertebrae.

Barrow 3A, feature 19

A poorly-preserved skeleton with a badly damaged skull. The preserved bones include very small fragments of the skull, upper and lower limb bones, pelvis and vertebrae. The skeleton belonged to a child aged 0-18 months (*infans I*).

Palaeopathological lesions: caries of the upper right second deciduous molar; *cribra orbitalia* (1st degree according to GHHP, type: healed) on the right orbital roof.

Barrow 3A, feature 20

Skeleton 1. A very poorly-preserved skeleton with a badly damaged skull. The preserved bones include small fragments of the skull and lower limbs. The skeleton belonged to a male aged 50-55 years (*maturus*). Due to the poor state of preservation of long bones, it was not possible to reconstruct stature. No palaeopathological lesions were observed.

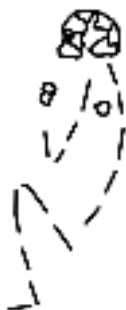


Skeleton 2. A very poorly-preserved skeleton with a badly damaged skull. The preserved bones include small fragments of the skull and lower limbs. The skeleton belonged to an adult aged 20-55 years (*adultus/maturus*). Due to the poor state of bone preservation, it was not possible to reconstruct the individual's stature. The results of molecular analysis implied this individual to be female. No palaeopathological lesions were observed.

3.2.3. NOUA CULTURE BURIALS

Barrow 3A, feature 5

A very poorly-preserved skeleton with a badly damaged skull. The preserved bones include small fragments of the skull, upper and lower limbs, pelvis fragments, vertebrae and foot bones. The skeleton belonged to a male aged 25-30 years (*adultus*). The stature of the individual was approx. 178 cm. No palaeopathological lesions were observed.

Barrow 3, feature 8

A poorly-preserved skeleton with a badly damaged skull. The preserved bones include small fragments of the skull and lower and upper limbs, as well as small fragments of the pelvis. The skeleton belonged to a male aged 20-55 years (*adultus/maturus*). Due to the poor state of preservation of long bones, it was not possible to reconstruct his stature. No palaeopathological lesions were observed.

Barrow 3A, feature 22

A poorly-preserved skeleton with a badly damaged skull. The preserved bones include small fragments of the cranial vault, mandible fragments, small fragments of upper and lower limb bones. The skeleton belonged to a male aged 30-35 years (*adultus*). Due to the poor state of preservation of long bones, it was not possible to reconstruct his stature. No palaeopathological lesions were observed.

Barrow 3A, feature 3

A very poorly-preserved skeleton with a badly damaged skull. The preserved bones include small fragments of the skull and of long bones. The skeleton belonged to a child aged 0-3 years (*infans I*). No palaeopathological lesions were observed.

Barrow 3A, feature 7

A very poorly-preserved skeleton with a badly damaged skull. The preserved bones include small fragments of the cranial vault, pelvis and fragments of long bones. The skeleton most probably belonged to a male aged 35-55 years (*maturus*). Due to the poor state of preservation of long bones, it was not possible to reconstruct his stature.

Palaeopathological lesions: degenerative lesions were observed on vertebrae and phalanges.

3.2.4. IRON AGE BURIAL

Barrow 3A, feature 21

A poorly-preserved skeleton with a badly damaged skull. The preserved bones include small fragments of the skull and lower and upper limbs, as well as small fragments of the pelvis and vertebrae. The skeleton belonged to a female aged 45-50 years (*maturus*). Due to the poor state of preservation of long bones, it was not possible to reconstruct her stature.

Palaeopathological lesions: degenerative lesions on vertebrae.

Table 3

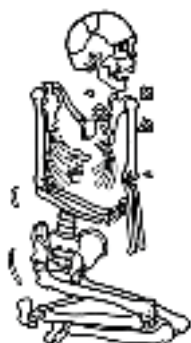
Basic information on skeletal material from Barrow 3A, Porohy site

Site	Grave	Anthropological Age Determination	Anthropological Sex Assignment	Molecular Sex Assignment	Archaeological Culture
Porohy 3A	Feature 1	<i>Adultus</i> (30-35 years)	Male	Not done	YC
Porohy 3A	Feature 2	<i>Maturus</i> (35-55 years)	Male?	Not done	YC
Porohy 3A	Feature 3	<i>Infans I</i> (0-3 years)	---	Not done	NC
Porohy 3A	Feature 5	<i>Adultus</i> (25-30 years)	Male	Not done	NC
Porohy 3A	Feature 7	<i>Maturus</i> (35-55 years)	Male?	Not done	NC
Porohy 3A	Feature 8	<i>Adultus/maturus</i> (20-55 years)	Male	Not done	NC
Porohy 3A	Feature 10	<i>Adultus</i> (25-30 years)	Female	Not done	YC
Porohy 3A	Feature 11	<i>Adultus</i> (25-30 years)	Male	Not done	YC
Porohy 3A	Feature 12 skeleton 1	<i>Adultus</i> (22-25 years)	Female	XX	YC
Porohy 3A	Feature 12 skeleton 2	Child (Foetus)	---	Not done	YC
Porohy 3A	Feature 14	Child (below 20 years)	---	Not done	Eneolithic
Porohy 3A	Feature 14	Adult (above 20 years)	?	Not done	Eneolithic
Porohy 3A	Feature 15	<i>Adultus</i> (25-30)	Male	Not done	YC
Porohy 3A	Feature 17	<i>Adultus</i> (30-35)	Male	Not done	YC
Porohy 3A	Feature 18	<i>Infans I</i> (0-7 years)	---	Not done	Eneolithic
Porohy 3A	Feature 19	<i>Infans I</i> (0-18 months)	---	Not done	YC
Porohy 3A	Feature 20 skeleton 1	<i>Maturus</i> (50-55 years)	Male	Not done	YC
Porohy 3A	Feature 20 skeleton 2	<i>Adultus/maturus</i> (20-55 years)	?	XX	YC
Porohy 3A	Feature 21	<i>Maturus</i> (45-50 years)	Female	Not done	Iron Age
Porohy 3A	Feature 22	<i>Adultus</i> (30-35 years)	Male	Not done	NC

From the Klembivka 1 site, skeletal material belonging to 11 individuals were recovered:² eight adults and three children (Tab. 4) [Klochko *et al.* 2015c].

3.3.1. ENEOLITHIC BURIALS

Barrow 1, feature 5



A poorly-preserved skeleton with a badly damaged skull. The preserved bones include small fragments of the skull and large fragments of upper and lower limb bones. The skeleton belonged to a male aged 50-55 years (*maturus*). Due to the poor state of preservation of long bones, it was not possible to reconstruct his stature.

Palaeopathological lesions: caries of both upper first molars, second upper left premolar, upper right second molar, both lower first molars, second left lower molar, both lower third molars; both lower first molars were lost *antemortem*; bilateral maxillary sinusitis; extreme lowering of alveolar processes; ossified ligaments on the right patella (enthesopathy); osteophytes on lumbar vertebrae; degenerative lesions on the right acetabulum of the hip joint and the odontoid process.

Barrow 1, feature 14



A poorly-preserved skeleton with a badly damaged skull. The preserved bones include small fragments of the skull, fragments of upper and lower limb bones, small fragments of the pelvis. The skeleton belonged to a male aged 25-30 years (*adultus*). Due to the poor state of preservation of long bones, it was not possible to reconstruct his stature.

Palaeopathological lesions: caries of the upper right first molar, upper left third molar, both lower second molars, both lower molars, lower right molar; porotic hyperostosis (1st degree according to GHHP) of the right parietal bone; dental calculus and lowering of alveolar processes; degenerative lesions of the proximal end of a hand phalanx.

² The anthropological report, due to the destruction of materials, ignored the remains of presumably, a child discovered on the Klembivka site within feature 6.

Barrow 1, feature 15

A poorly-preserved skeleton with a badly damaged skull. The preserved bones include small fragments of the cranial vault and fragments of upper and lower limb bones. The skeleton belonged to child aged 15-20 years (*juvenis*). No palaeopathological lesions were observed.

3.3.2. BABYNO CULTURE BURIALS

Barrow 1, feature 2

A poorly-preserved skeleton. The preserved bones include small fragments of lower limb bones. The skeleton belonged to an adult individual. Due to the poor state of bone preservation, it was not possible to reconstruct the individual's stature nor estimate his or her age-at-death nor determine sex. No palaeopathological lesions were observed.

Barrow 1, feature 3

A poorly-preserved skeleton with a badly damaged skull. The preserved bones include fragments of the skull and lower limbs. The skeleton most probably belonged to a male aged 35-45 years (*maturus*). Due to the poor state of preservation of long bones, it was not possible to reconstruct his stature. No palaeopathological lesions were observed.

Barrow 1, feature 7

The pit fill contained the human skeletal remains of three individuals.

Skeleton 1. A poorly-preserved skeleton with a badly damaged skull. The preserved bones include small fragments of the cranial vault and two fragments of the femur. The skeleton belonged to a male aged 35-55 years (*maturus*). Due to the poor state of preservation of long bones, it was not possible to reconstruct his stature. No palaeopathological lesions were observed.



Skeleton 2. A poorly-preserved skeleton with a badly damaged skull. The preserved bones include small fragments of the skull and upper and lower limbs. The skeleton belonged to a child aged 4-5 years (*infans I*). No palaeopathological lesions were observed.

Skeleton 3. A poorly-preserved skeleton with a badly damaged skull. The preserved bones include large fragments of lower limbs. The skeleton most probably belonged to a female aged 35-55 years (*maturus*). Due to the poor state of preservation of long bones, it was not possible to reconstruct her stature.

Palaeopathological lesions: extreme lowering of alveolar processes.

Barrow 1, feature 11

A well-preserved skeleton with a badly damaged skull. The preserved bones include small fragments of the skull, upper and lower limbs, the pelvis and a foot. The skeleton belonged to a male aged 20-25 years (*adultus*). The molecular analysis not corroborated the morphological sex assessment. The stature of the individual was approx. 174 cm.

Palaeopathological lesions: dental calculus, Schmorl's nodes on thoracic vertebrae, degenerative lesions of the proximal end of the 1st metatarsal bone.

Barrow 1, feature 12

A very poorly-preserved skeleton with a badly damaged skull. The preserved bones include small fragments of the skull and upper and lower limbs, as well as small fragments of the pelvis. The skeleton belonged to a child aged 12-14 years (*infans II*). The results of molecular analysis implied this individual to be female.

Palaeopathological lesions: LEH on the upper right second premolar (age of the individual at the time of defect: 4.5-5.0 years).

Barrow 1, feature 13



A very poorly-preserved skeleton: only small fragments of long bones (femur and tibia) were recorded. The skeleton belonged to an adult. Due to the poor state of bone preservation, it was not possible to reconstruct the individual's stature nor estimate his or her age nor determine sex. No palaeopathological lesions were observed.

Table 4

Basic information on skeletal material from Barrow 1, Klembivka site

Site	Grave	Anthropological Age Determination	Anthropological Sex Assignment	Molecular Sex Assignment	Archaeological Culture
Klembivka 1	Feature 2	Adult (20+ years)	?	Not done	BC
Klembivka 1	Feature 3	<i>Maturus</i> (35-45 years)	Male	Not done	BC
Klembivka 1	Feature 5	<i>Maturus</i> (50-55 years)	Male	Not done	Eneolithic
Klembivka 1	Feature 7 skeleton 1	<i>Maturus</i> (35-55 years)	Male	Not done	NC
Klembivka 1	Feature 7 skeleton 2	<i>Infans I</i> (4-5 years)	---	Not done	NC
Klembivka 1	Feature 7 skeleton 3	<i>Adultus/maturus</i> 20-55 years)	Female?	Not done	NC
Klembivka 1	Feature 11	<i>Adultus</i> (20-25 years)	Male	XX	NC
Klembivka 1	Feature 12	<i>Infans II</i> (12-14 years)	---	XX	NC
Klembivka 1	Feature 13	Adult (+20 years)	?	Not done	NC
Klembivka 1	Feature 14	<i>Adultus</i> (25-30 years)	Male	Not done	Eneolithic
Klembivka 1	Feature 15	<i>Juvenis</i> (15-20 years)	---	Not done	Eneolithic

From the Prydnistryanske site 1, skeletal material belonging to 17 individuals were recovered: 14 adults and 3 children (Tab. 5) [Klochko *et al* 2015].

3.4.1. BARROW I

3.4.1.1. CATACOMB CULTURE BURIALS

Feature I/4, skeleton 1

A poorly-preserved skeleton with a badly damaged skull. The following skull bones or their fragments were preserved: frontal bone, occipital bone, sphenoid bone, mandible, parietal bones, temporal bones, zygomatic bones, maxillary bones. The postcranial skeleton was represented by the following bones or their fragments: clavicles, scapulae, patellae, sternum, ilia, ischia, pubis, sacrum, vertebrae, ribs, humeri, ulnae, radii, femora, tibiae, fibulae, hand and foot bones. The skeleton belonged to an adolescent aged about 15 years (*ju-venis*). The results of molecular analysis implied this individual to be male.

Palaeopathological lesions: LEH on both lower medial incisors (age of the individual at the time of both defects: 2.0-2.5 years).

Feature I/4, skeleton 2

A well-preserved skeleton with a badly damaged skull. The following skull bones or their fragments were preserved: frontal bone, occipital bone, sphenoid bone, mandible, parietal bones, temporal bones, zygomatic bones, maxillary bones and left palatine bone. The postcranial skeleton was represented by the following bones or their fragments: clavicles, scapulae, patellae, sternum, ilia, ischia, pubis, sacrum, vertebrae, ribs, humeri, ulnae, radii, femora, tibiae, fibulae, hand and foot bones. The skeleton most probably belonged to a male aged 35-50 years (*maturus*). The results of molecular analysis implied this individual to be female. The stature of the individual was approx. 165 cm.

Palaeopathological lesions: osteophytes on three lumbar vertebrae; ossified ligaments on both patellae and both calcanei (enthesopathy).

3.4.1.2. IRON AGE BURIALS

Feature I/2

A very poorly-preserved skeleton. The following bones or their fragments were recorded: right maxilla, left zygomatic bone, vertebrae, right ilium, right femur. The skeleton belonged to a child aged about 4 years (*infans I*). No palaeopathological lesions were observed.

Feature I/3

A poorly-preserved skeleton with a badly damaged skull. The following skull bones or their fragments were preserved: frontal bone, occipital bone, sphenoid bone, mandible, both parietal bones, temporal bones, right zygomatic bone, maxillary bones, right palatine bone. The postcranial skeleton was represented by the following bones or their fragments: clavicles, scapulae, patellae, ilia, ischia, pubis, sacrum, vertebrae, ribs, humeri, ulnae, radii, femora, tibiae, fibulae, hand and foot bones. The skeleton belonged to a female aged 45-55 years (*maturus*). The stature of the individual was approx. 162 cm.

Palaeopathological lesions: degenerative lesions of the spinal column (spondylosis) observable on three cervical vertebrae (C3-5); caries of the right upper first molar, lower left first molar, lower left second molar; upper right second molar, upper left second premolar, upper left first molar, upper left second molar, lower right second premolar were lost *antemortem*.

3.4.2. BARROW II

3.4.2.1. ENEOLITHIC BURIAL

Feature II/1

A very poorly-preserved skeleton. The following bones or their fragments were recorded: a vertebra, metacarpals, and ilium. The skeleton must have belonged to an adult. Due to the poor state of bone preservation, it was not possible to reconstruct the individual's stature nor estimate his or her age-at-death nor determine sex. No palaeopathological lesions were observed.

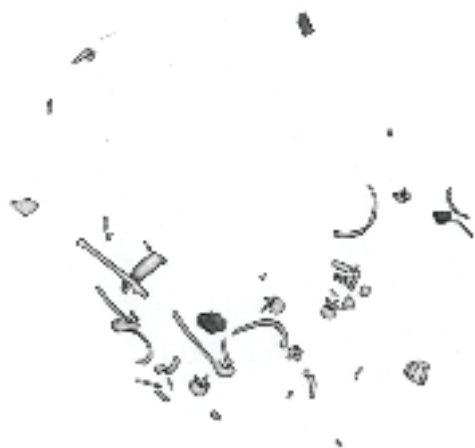
3.4.2.2. BURIAL OF AN INDETERMINATE CHRONOLOGY

Feature II/3

A very poorly-preserved skeleton. Only very fine fragments of human bones were recorded. The skeleton must have belonged to an adult. Due to the poor state of bone preservation, it was not possible to reconstruct the individual's stature nor estimate his or her age-at-death nor determine sex. No palaeopathological lesions were observed.

3.4.3. BARROW III

3.4.3.1. ENEOLITHIC BURIALS

Feature III/1

A very poorly-preserved skeleton. The following bones or their fragments were recorded: the sternum, ribs, scapulae, vertebrae, ulnae, femora, left ischium, left pubic bone, sacrum, carpal bones, tarsals, metacarpals, metatarsals, phalanges. The skeleton belonged to an adult. Due to the poor state of bone preservation, it was not possible to reconstruct the individual's stature nor estimate his or her age-at-death nor determine sex.

Palaeopathological lesions: healed fracture of the left ulna; block of two thoracic vertebrae, osteophytes on cervical and thoracic vertebrae.

Feature III/2

Very poorly-preserved skeletal material. The following bones or their fragments were recorded: the sternum, ribs, scapula, vertebrae, femora, fibulae, tibia, right patella, carpals, metacarpals, tarsals, metatarsals, phalanges. The skeletal material belonged to two individuals: a child aged 9-10 years (*infans II*) and an adult. Due to the poor state of bone preservation, it

was not possible to reconstruct the adult individual's stature nor estimate his or her age nor determine sex. No palaeopathological lesions were observed.

Feature III/3

Very poorly-preserved skeletal material. Only a small fragment of a human bone, belonging to an adult, was recorded. Due to the poor state of bone preservation, it was not possible to reconstruct the individual's stature nor estimate his or her age-at-death nor determine sex. No palaeopathological lesions were observed.

3.4.3.2. IRON AGE BURIAL

Feature III/4



A poorly-preserved skeleton with a badly damaged skull. The following skull bones or their fragments were preserved: frontal bone, occipital bone, sphenoid bone, mandible, parietal bones, temporal bones, left zygomatic bone, maxillary bones, left palatine bone. The postcranial skeleton was represented by the following bones or their fragments: clavicles, scapulae, patellae, sternum, ilia, ischia, pubic bones, sacrum, vertebrae, ribs, humeri, right ulna, radii, femora, tibiae, fibulae, hand and foot bones. The skeleton belonged to a male aged 30-40 years (*adultus/maturus*). The stature of the individual was approx. 169 cm.

Palaeopathological lesions: caries of the upper right third molar, lower right second molar, lower right first molar and lower left first molar; telltale wearing of the tooth crowns due to occupational stress of the upper right second premolar (distal surface) and upper right first molar (mesial surface); lower left second molar and lower left third molar were lost *antemortem*; osteophytes were recorded on two thoracic (Th9-10) and two lumbar (L4-5) vertebrae.

3.4.4. BARROW IV

3.4.4.1. ENEOLITHIC BURIAL

Feature IV/10

A very poorly-preserved skeleton of an adult. The following bones or their fragments were recorded: skull bones, a rib, vertebra, carpals, tarsals, metatarsals, phalanges. Due to the poor state of bone preservation, it was not possible to recon-

struct the individual's stature nor estimate his or her age-at-death nor determine sex. No palaeopathological lesions were observed.

3.4.4.2. YAMNAYA CULTURE

Feature IV/3



A very poorly-preserved skeleton with a badly damaged skull. The following skull bones or their fragments were preserved: frontal bone, occipital bone, mandible, parietal bones, temporal bones. The postcranial skeleton was represented by the following bones or their fragments: scapulae, patellae, ilia, pubic bones, sacrum, vertebrae, ribs, humeri, right radius, right ulna, femora, tibiae, fibulae, hand and foot bones. The skeleton belonged to an adult aged over 40 years (*maturus/senilis*). Due to the poor state of bone preservation, it was not possible to reconstruct the individual's stature nor determine his or her sex. No palaeopathological lesions were observed.

Feature IV/4



A well-preserved skeleton with a badly damaged skull. The following skull bones or their fragments were preserved: frontal bone, occipital bone, sphenoid bone, mandible, parietal bones, temporal bones, zygomatic bones, and maxillae. The postcranial skeleton was represented by the following bones or their fragments: clavicles, right scapula, patellae, sternum, ilia, ischia, pubic bones, sacrum, vertebrae, ribs, humeri, ulnae, radii, femur, tibiae, fibulae, hand and foot bones. The skeleton belonged to a male aged 35-50 years (*maturus*). The molecular analysis corroborated the morphological sex assessment. The stature of the individual was approx. 187 cm.

Palaeopathological lesions: osteoarthritis of the left carpals (scaphoid, lunate, triquetrum, capitate, trapezoid, hamate), sternal ends of the left and right clavicle, right clavicular notch of the manubrium sterni, articular surfaces of both scapulae, head of the left humerus, articular surface of the distal end of the left radius, articular surface of the distal end of the right ulna and articular surface of the distal end of the right radius. These lesions are related to the individual's great physical activity and the mechanical stress he must have been subjected to [Molnar *et al.* 2011; Weiss, Jurmain 2007]. Other lesions include: blocks of cervical vertebrae (C1-2 and C3-4), spondylosis of two cervical and five thoracic vertebrae, and of the fifth lumbar vertebra (L-5) and the base of the sacrum; Schmorl's nodes on the first thoracic vertebra; osteophytes on three lumbar vertebrae; ossified ligaments (enthesopathy) on the right calcaneus.

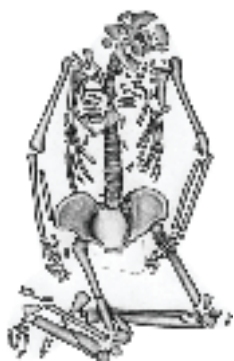
Feature IV/6



A poorly-preserved skeleton with a badly damaged skull. The following skull bones or their fragments were preserved: frontal bone, occipital bone, sphenoid bone, mandible, parietal bones, temporal bones, zygomatic bones, maxillary bones. The postcranial skeleton was represented by the following bones or their fragments: clavicles, scapulae, patellae, sternum, ilia, left ischium, pubic bones, vertebrae, ribs, humeri, ulnae, radii, femora, tibiae, right fibula, hand and foot bones. The skeleton belonged to a male aged above 45 years (*maturus/senilis*). Due to the poor state of preservation of long bones, it was not possible to reconstruct his stature.

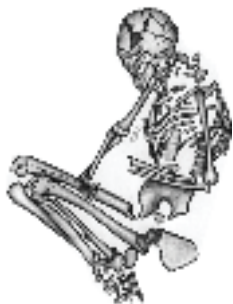
Palaeopathological lesions: lower left medial incisor was lost *antemortem*; telltale wearing of the tooth crowns, due to occupational stress, of the upper right third molar (mesial surface), upper right second molar (distal surface), upper right first molar (mesial and distal surfaces), upper right second premolar (distal surface), upper right first premolar (distal surface), lower left second premolar (distal surface), lower right second premolar (distal surface), lower right first molar (mesial and distal surfaces), lower right second molar (distal surface); osteophytes on three fragments of vertebra bodies; ossified ligaments (enthesopathy) on both patellae.

Feature IV/8



A poorly-preserved skeleton with a badly damaged skull. The following skull bones or their fragments were preserved: frontal bone, occipital bone, sphenoid bone, mandible, parietal bones, temporal bones, zygomatic bones, maxillae. The postcranial skeleton was represented by the following bones or their fragments: clavicles, scapulae, patellae, sternum, ilia, ischia, pubic bones, sacrum, vertebrae, ribs, humeri, ulnae, radii, femora, tibiae, fibulae, hand and foot bones. The skeleton belonged to a male aged 35-50 years (*maturus*). Due to the poor state of preservation of long bones, it was not possible to reconstruct his stature.

Palaeopathological lesions: Schmorl's nodes on four thoracic vertebrae; *cribra orbitalia* (1st degree on the GHHP 2006 scale, type: healed) on the right orbital roof; ossified ligaments (enthesopathy) on both patellae.

Feature IV/9

A poorly-preserved skeleton with a badly damaged skull. The following skull bones or their fragments were preserved: frontal bone, occipital bone, sphenoid bone, mandible, parietal bones, temporal bones, right zygomatic bone, maxillary bone. The postcranial skeleton was represented by the following bones or their fragments: clavicles, scapulae, patellae, sternum, ilia, ischia, pubic bones, vertebrae, ribs, humeri, ulnae, radii, femora, tibiae, fibulae, hand and foot bones. The skeleton belonged to a male aged 25-35 years (*adultus*). The molecular analysis corroborated the morphological sex assessment. Due to the poor state of preservation of long bones, it was not possible to reconstruct his stature.

Palaeopathological lesions: osteoarthritis on the sternal end of the left clavicle. These lesions are related to the individual's great physical activity and the mechanical stress he must have been subjected to [Molnar *et al.* 2011, Weiss, Jurmain 2007]. Schmorl's nodes were recorded on two vertebrae.

3.4.4.3. IRON AGE BURIAL

Feature IV/1

A poorly-preserved skeleton. The following bones or their fragments were recovered: occipital bone, left femur, fibula, hand phalanx, as well numerous fragments of the shafts and epiphyses of long bones. The skeleton belonged to an adult. Due to the poor state of bone preservation, it was not possible to reconstruct the individual's stature nor estimate his or her age-at-death nor determine sex. No palaeopathological lesions were observed.

Table 5

Basic information on skeletal material from the Prydnistrianske site

Site	Grave	Anthropological Age Determination	Anthropological Sex Assignment	Molecular Sex Assignment	Archaeological Culture
Prydnistrianske 1	I/2	<i>Infans I</i> (about 4 years)	---	Not done	Iron Age
Prydnistrianske 1	I/3	<i>Maturus</i> (45-55 years)	Female	Not done	Iron Age
Prydnistrianske 1	I/4S1	<i>Juvenis</i> (14-15 years)	---	XY	CC
Prydnistrianske 1	I/4S2	<i>Maturus</i> (35-50 years)	Male?	XX	CC
Prydnistrianske 1	II/3	<i>Adultus</i> (20+ years)	?	Not done	Iron Age
Prydnistrianske 1	III/1	<i>Adultus</i> (20+ years)	?	Not done	Eneolithic
Prydnistrianske 1	III /2S1	<i>Adultus</i> (20+ years)	?	Not done	Eneolithic
Prydnistrianske 1	III/2S2	<i>Infans II</i> (9-10 years)	---	Not done	Eneolithic
Prydnistrianske 1	III/3	<i>Adultus</i> (20+ years)	?	Not done	Eneolithic
Prydnistrianske 1	III/4	<i>Adultus/maturus</i> (30-40 years)	Male	Not done	Iron Age
Prydnistrianske 1	IV/1	<i>Adultus</i> (20+ years)	?	Not done	Iron Age
Prydnistrianske 1	IV/3	<i>Maturus/senilis</i> (+40 years)	?	Not done	YC
Prydnistrianske 1	IV/4	<i>Maturus</i> (35-50 years)	Male	XY	YC
Prydnistrianske 1	IV/6	<i>Maturus/senilis</i> (45+ years)	Male	Not done	YC
Prydnistrianske 1	IV/8	<i>Maturus</i> (35-50 years)	Male	Not done	YC
Prydnistrianske 1	IV/9	<i>Adultus</i> (25-35 years)	Male	XY	YC
Prydnistrianske 1	IV/10	<i>Adultus</i> (20+ years)	?	Not done	Eneolithic

Table 6

Frequencies of health status indicators

Site	Age	CO			HP			LEH ¹			Caries ¹		
		N	n	%	N	n	%	N	n	%	N	n	%
Pidlisivka 1	Subadult	2	0	0.0	1	0	0.0	2	1	50.0	2	0	0.0
	Adult	3	0	0.0	3	0	0.0	6	3	50.0	7	1	14.3
	Total	5	0	0.0	4	0	0.0	8	4	50.0	9	1	11.1
Klembivka 1	Subadult	1	0	0.0	1	0	0.0	2	1	50.0	2	0	0.0
	Adult	4	0	0.0	2	1	50.0	2	0	0.0	5	2	40.0
	Total	5	0	0.0	3	1	33.3	4	1	25.0	7	2	28.6
Porohy 3A	Subadult	2	1	50.0	0	0	0.0	0	0	0.0	0	0	0.0
	Adult	5	0	0.0	2	1	50.0	4	1	25.0	5	1	20.0
	Total	7	1	14.3	2	1	50.0	4	1	25.0	5	1	20.0
Prydnistryan-ske 1	Subadult	1	0	0.0	0	0	0.0	1	1	100.0	1	0	0.0
	Adult	6	1	16.7	2	0	0.0	4	0	0.0	8	2	25.0
	Total	7	1	14.3	2	0	0.0	5	1	20.0	9	2	22.2

¹ data for permanent teeth; N – number of individuals included in the study; n – number of individuals in whom a given indicator was observed; % – percentage of individuals in whom a given indicator was observed

4. SUMMARY

4.1. STATE OF HEALTH ANALYSIS

For the purpose of evaluating the status of health of the human population under investigation, the following indicators were used: linear enamel hypoplasia (LEH), *cribra orbitalia* (CO), porotic hyperostosis (PH) and dental caries. Table 6 presents the frequencies of indicators for individual sites divided into adults and children.

In the studied group, LEH was observed in 7 among 21 individuals whose permanent teeth were available for examination, which represents 33.33 per cent. LEH indicates nutrient deficiencies and infectious diseases in early childhood [Goodman *et al.* 1980; Lanphear 1990]. In turn, the reconstruction of the time when hypoplastic defects occurred informs about the period when the child was particularly exposed to detrimental environmental factors. In the studied group the

Table 7

Incidence of state of health indicators divided into archaeological cultures

	Culture/Age	Eneolithic			YC			BC			CC			NC			IA			?		
	*	N	n	%	N	n	%	N	n	%	N	n	%	N	n	%	N	n	%	N	n	%
CO	Pidlisivka 1	1	0	0.0	1	0	0.0	1	0	0.0	1	0	0.0	0	0	0.0	0	0	0.0	1	0	0.0
	Porohy 3A	0	0	0.0	7	1	14.3	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	Klembivka 1	2	0	0.0	0	0	0.0	0	0	0.0	1	0	0.0	2	0	0.0	0	0	0.0	0	0	0.0
	Prydrydnistryanske 1	0	0	0.0	4	1	25.0	2	0	0.0	0	0	0.0	0	0	0.0	1	0	0.0	0	0	0.0
HP	Pidlisivka 1	0	0	0.0	1	0	0.0	0	0	0.0	1	0	0.0	0	0	0.0	1	0	0.0	1	0	0.0
	Porohy 3A	0	0	0.0	2	1	50.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	Klembivka 1	1	1	100.0	0	0	0.0	0	0	0.0	0	0	0.0	2	0	0.0	0	0	0.0	0	0	0.0
	Prydrydnistryanske 1	0	0	0.0	0	0	0.0	1	0	0.0	0	0	0.0	0	0	0.0	1	0	0.0	0	0	0.0
LEH*	Pidlisivka 1	1	1	100.0	1	0	0.0	2	2	100.0	2	1	50.0	0	0	0.0	1	0	0.0	1	0	0.0
	Porohy 3A	0	0	0.0	4	1	25.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	Klembivka 1	2	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	2	1	50.0	0	0	0.0	0	0	0.0
	Prydrydnistryanske 1	0	0	0.0	3	0	0.0	1	1	100.0	0	0	0.0	0	0	0.0	1	0	0.0	0	0	0.0
Caries*	Pidlisivka 1	1	0	0.0	2	0	0.0	2	0	0.0	2	0	0.0	0	0	0.0	1	1	100.0	1	0	0.0
	Porohy 3A	0	0	0.0	4	1	25.0	0	0	0.0	0	0	0.0	1	0	0.0	0	0	0.0	0	0	0.0
	Klembivka 1	3	2	66.7	0	0	0.0	0	0	0.0	1	0	0.0	3	0	0.0	0	0	0.0	0	0	0.0
	Prydrydnistryanske 1	0	0	0.0	5	0	0.0	2	1	50.0	0	0	0.0	0	0	0.0	2	1	50.0	0	0	0.0

* data for permanent teeth; N – number of individuals included in the study; n – number of individuals in whom a given indicator was observed;
 % – percentage of individuals in whom a given indicator was observed

largest number of defects occurred at the ages of 2.5-3.0 and 4.5-5.0. It was at these ages that young individuals were subjected to the strongest stressors.

In the examined skeletal material, *cribra orbitalia* was observed only in 2 out of 24 individuals included in the study (8.3%). These lesions are believed to be related to various types of anaemia (resulting, for instance, from iron deficiency in food). The low value of this stress indicator may show that the population under investigation did not suffer much from iron deficiency in their diet. This view is supported by a relatively low incidence of porotic hyperostosis (19%). These lesions, similarly to *cribra orbitalia*, are identified with bone marrow hypertrophy caused by anaemia [Cohen, Armelagos 1984].³

Out of 30 examined individuals having permanent teeth, 6 were found to have had caries (20%). In the population under investigation, caries was recorded on 11 out of 553 teeth (4.5%). Carious defects are commonly linked to a sugar-rich diet. Higher caries incidence is attributed to the consumption of carbohydrate-rich foods, while its low incidence is commonly associated with a sugar-poor diet.⁴ The small number of individuals with caries suggests that the examined population may have subsisted on a diet of largely animal-derived food [Turner 1979].

Table 7 shows the incidence of individual state of health indicators divided according to the cultural affiliation of individuals. *Cribrā orbitalia* was found only in the representatives of the Yamnaya culture (n=2, N=12). Porotic hyperostosis was found in the individuals of the Endolithic (n=1, N=1) and YC (n=1, N=3). LEH on permanent teeth was found in Endolithic individuals (n=1, N=3), YC (n=1, N=8), CC ones (n=3, N=3), BC ones (n=1, N=2) and NC (n=1, N=2). Tooth caries on permanent teeth was recorded in the individuals of the Eneolithic (n=2, N=4), YC (n=1, N=11), CC (n=1, N=4) and those dated to the Iron Age (n=2, N=3). Unfortunately, it cannot be determined if there were any statistically significant differences between the state of health of individuals representing various archaeological cultures due to the meagreness of materials available for examination.

³ More recent research shows that such lesions may also result from nutrient deficiencies (vitamins B12, B6, C, D, and folic acid), parasite activity or diarrhoea [Lallo *et al.* 1977; Mensforth *et al.* 1978; Facchini *et al.* 2004; Cucina *et al.* 2006; Walker *et al.* 2009].

⁴ This is a result of the fact that microorganisms found in the dental plaque, when they metabolize carbohydrates, produce organic acids which, in turn, lower the pH of the mouth. This damages tooth tissues and brings about caries [Powel 1985; Šlaus *et al.* 2010]. Whereas populations relying for their diet on animal-derived food are characterized by a low incidence of carious defects, because proteins and calcium contained in it protects teeth against their development [Pedersen 1938; Turner 1979; Walker, Erlandson 1982].

4.2. MOLECULAR EXAMINATIONS

Molecular sex determination. Examinations were performed on individuals chronologically related to the 4th/3rd and 2nd millennia BC. We were able to confidently determine molecular sex for 10 specimens involving two individuals from Pidlisivka 1, two individuals from Porohy 3A, two individuals from Klembivka 1 and four individuals from Prydnistrianske 1 (*see* Table 1 for locations and Table 2-5 for results). Estimated R_y values were lower than 0.016 in females and higher than 0.075 in males [Skoglund *et al.* 2013]. For each individual, molecular sex identification was in accordance with anthropological determinations (Pidlisivka 1/16, Porohy 3A/12 skeleton 1, Prydnistrianske I/4 and Prydnistrianske I/4 skeleton 2). For additional two individuals, molecular sex identification strengthened previous uncertain morphological assessments (Pidlisivka Feature 13 and Prydnistrianske I/4 skeleton 2). In three cases, two 12-15 year-old-children and an adult, sex was estimated solely by molecular analyses (Klembivka 1/12, Porohy 3A/20 skeleton 2 and Prydnistrianske I/4 skeleton 1). The state of bone preservation was very poor among these individuals. The two sex assessment methods gave contradicting results for one individual (Klembivka 1/11). This type of discordance between the methods has been noticed also in other studies [eg. Skoglund *et al.* 2013, Allentoft *et al.* 2015, Mathieson *et al.* 2015]. Varying degrees of bone preservation in diagnostic bone elements and differences between modern reference populations and the ancient populations investigated, could, for example result in morphological misclassifications [Kjellström 2004].

CONCLUSIONS

Health status indicators were recorded in a relatively small number of individuals among those included in the study, which could indicate their relatively good health and confirm that the community in question relied chiefly on animal products for their diet. However, it must be noted that the meagreness of the skeletal material, its poor state of preservation as well as the broad chronological range, prevent us from drawing any definite conclusions at this stage of research.

Building a complete picture of the biological structure of the Yamnaya culture community calls for further research. Only a greater number of analyzed individuals will make any firm conclusions concerning the community possible.

Molecular sex determination is an important complement to the anthropological sex assessments. This is especially true for young individuals that can be difficult to determine morphologically as well as for individuals that lack preserved diagnostic features. Although next-generation sequencing is costly in general, quite little sequence data is needed for molecular sex determination purposes.

SUPPLEMENT 1

Number of individuals studied from to the Eneolithic and Bronze Age

Site	Children		Adults		Total	
	N	%	N	%	N	%
Pidlisivka 1	6	35.3	6	15.0	12	22.2
Klembivka 1	3	17.6	8	20.0	11	20.4
Porohy 3A	5	29.4	14	35.0	19	35.2
Prydnistryan-ske 1	2	11.8	10	58.9	12	22.2
Total	16	29.6	38	70.4	54	100.0

SUPPLEMENT 2

Basic information for antropological description

	Archaeological site	Grave	Age	CO	HP	LEH	Car-ies
1	Pidlisivka 1	Barrow 1 Mound	<i>Subadult</i>	+	+	+	+
2	Pidlisivka 1	Barrow 1 Feature 1a Skeleton 1	<i>Subadult</i>	-	-	-	-
3	Pidlisivka 1	Barrow 1 Feature 1a Skeleton 2	<i>Adult</i>	-	-	-	+
4	Pidlisivka 1	Barrow 1 Feature 1b	<i>Adult</i>	-	-	+	+
5	Pidlisivka 1	Barrow 1 Feature 4	<i>Subadult</i>	-	-	+	+
6	Pidlisivka 1	Barrow 1 Feature 5	<i>Adult</i>	+	-	+	+
7	Pidlisivka 1	Barrow 1 Feature 7	<i>Adult</i>	+	-	+	+
8	Pidlisivka 1	Barrow 1 Feature 8	<i>Subadult</i>	-	-	-	-
9	Pidlisivka 1	Barrow 1 Feature 9	<i>Subadult</i>	-	-	-	-
10	Pidlisivka 1	Barrow 1 Feature 10	<i>Subadult</i>	+	-	-	-
11	Pidlisivka 1	Barrow 1 Feature 11	<i>Adult</i>	+	+	+	+
12	Pidlisivka 1	Barrow 1 Feature 12	<i>Adult</i>	-	+	+	+
13	Pidlisivka 1	Barrow 1 Feature 13	<i>Adult</i>	-	+	+	+
14	Klembivka 1	Barrow 1 Feature 2	<i>Adult</i>	-	-	-	-
15	Klembivka 1	Barrow 1 Feature 3	<i>Adult</i>	+	-	-	+

16	Klembivka 1	Barrow 1 Feature 5	<i>Adult</i>	+	-	-	+
17	Klembivka 1	Barrow 1 Feature 7 Skeleton 1	<i>Adult</i>	-	-	-	-
18	Klembivka 1	Barrow 1 Feature 7 Skeleton 2	<i>Subadult</i>	-	-	-	-
19	Klembivka 1	Barrow 1 Feature 7 Skeleton 3	<i>Adult</i>	-	-	-	+
20	Klembivka 1	Barrow 11 Feature 11	<i>Adult</i>	+	+	+	+
21	Klembivka 1	Barrow 1 Feature 12	<i>Subadult</i>	+	+	+	+
22	Klembivka 1	Barrow 1 Feature 13	<i>Adult</i>	-	-	-	-
23	Klembivka 1	Barrow 1 Feature 14	<i>Adult</i>	+	+	+	+
24	Klembivka 1	Barrow 1 Feature 15	<i>Subadult</i>	-	-	+	+
25	Porohy 3A	Barrow 3 Feature 1	<i>Adult</i>	-	-	-	-
26	Porohy 3A	Barrow 3 Feature 2	<i>Adult</i>	-	-	-	-
27	Porohy 3A	Barrow 3 Feature 3	<i>Subadult</i>	-	-	-	-
28	Porohy 3A	Barrow 3 Feature 5	<i>Adult</i>	-	-	-	-
29	Porohy 3A	Barrow 3 Feature 7	<i>Adult</i>	-	-	-	+
30	Porohy 3A	Barrow 3 Feature 8	<i>Adult</i>	-	-	-	-
31	Porohy 3A	Barrow 3 Feature 10	<i>Adult</i>	+	+	+	+
32	Porohy 3A	Barrow 3 Feature 11	<i>Adult</i>	+	-	+	+
33	Porohy 3A	Barrow 3 Feature 12 Skeleton 1	<i>Adult</i>	+	+	+	+
34	Porohy 3A	Barrow 3 Feature 12 Skeleton 2	<i>Subadult</i>	+	-	-	-
35	Porohy 3A	Barrow 3 Feature 2/14	<i>Subadult</i>	-	-	-	-
36	Porohy 3A	Barrow 3 Feature 2/14	<i>Adult</i>	-	-	-	-
37	Porohy 3A	Barrow 3 Feature 15	<i>Adult</i>	+	-	+	+
38	Porohy 3A	Barrow 3 Feature 17	<i>Adult</i>	+	-	-	-
39	Porohy 3A	Barrow 3 Feature 18	<i>Subadult</i>	-	-	-	-
40	Porohy 3A	Barrow 3 Feature 19	<i>Subadult</i>	+	-	-	-
41	Porohy 3A	Barrow 3 Feature 20 Skeleton 1	<i>Adult</i>	-	-	-	-
42	Porohy 3A	Barrow 3 Feature 20 Skeleton 2	<i>Adult</i>	-	-	-	-
43	Porohy 3A	Barrow 3 Feature 21	<i>Adult</i>	-	-	-	-
44	Porohy 3A	Barrow 3 Feature 22	<i>Adult</i>	-	-	-	-
45	Prydnistrianske 1	Barrow 1 Feature 2	<i>Subadult</i>	-	-	-	-
46	Prydnistrianske 1	Barrow 1 Feature 3	<i>Adult</i>	+	+	-	+
47	Prydnistrianske 1	Barrow 1 Feature 4 Skeleton 1	<i>Subadult</i>	+	-	+	+

48	Prydnistryanske 1	Barrow 1 Feature 4 Skeleton 2	<i>Adult</i>	+	+	-	+
49	Prydnistryanske 1	Barrow 2 Feature 3	<i>Adult</i>	-	-	-	-
50	Prydnistryanske 1	Barrow 3 Feature 1	<i>Adult</i>	-	-	-	-
51	Prydnistryanske 1	Barrow 3 Feature 2 Skeleton 1	<i>Adult</i>	-	-	-	-
52	Prydnistryanske 1	Barrow 3 Feature 2 Skeleton 2	<i>Subadult</i>	-	-	-	-
53	Prydnistryanske 1	Barrow 3 Feature 3	<i>Adult</i>	-	-	-	-
54	Prydnistryanske 1	Barrow 3 Feature 4	<i>Adult</i>	-	-	+	+
55	Prydnistryanske 1	Barrow 4 Feature 1	<i>Adult</i>	-	-	-	-
56	Prydnistryanske 1	Barrow 4 Feature 3	<i>Adult</i>	+	-	-	+
57	Prydnistryanske 1	Barrow 4 Feature 4	<i>Adult</i>	+	-	+	+
58	Prydnistryanske 1	Barrow 4 Feature 6	<i>Adult</i>	+	-	-	+
59	Prydnistryanske 1	Barrow 4 Feature 8	<i>Adult</i>	+	-	+	+
60	Prydnistransk	Barrow 4 Feature 9	<i>Adult</i>	-	-	+	+
61	Prydnistryanske 1	Barrow 4 Feature 10	<i>Adult</i>	-	-	-	-
Total				23	11	21	30

Translated by Piotr T. Żebrowski

REFERENCES

Allentoft M.E., Sikora M., Sjögren K.G., Rasmussen S., Rasmussen M., Stenderup J., Damgaard P.B., Schroeder H., Ahlström T., Vinner L., Malaspinas A.S., Margaryan A., Higham T., Chivall D., Lynnerup N., Harvig L., Baron J., Della Casa P., Dąbrowski P., Duffy P.R., Ebel A.V., Epimakhov A., Frei K., Furmanek M., Gralak T., Gromov A., Gronkiewicz S., Grupe G., Hajdu T., Jarysz R., Khartanovich V., Khokhlov A., Kiss V., Kolář J., Kriiska A., Lasak I., Longhi C., McGlynn G., Merkevičius A., Merkyte I., Metspalu M., Mkrtchyan R., Moiseyev V., Paja L., Pálfi G., Pokutta D., Pospieszny Ł., Price T.D., Saag L., Sablin M., Shishlina N., Smrčka V., Soenov V.I., Szeverényi V., Tóth G., Trifanova S.V., Varul L., Vicze M., Yepiskoposyan L., Zhitenev V., Orlando L., Sichevitz-Pontén P., Brunak S., Nielsen R., Kristiansen K., Willerslev E.

2015 Population genomics of Bronze Age Eurasia. *Nature* 522(7555): 167-172.

Anthony D.W.

2007 *The Horse, the Wheel, the Language: How Bronze-Age Riders from the Eurasian Steppes the Modern World*. Oxford.

Baker B.J., Dupras T.L., Tocheri M.W.

2005 *The Osteology of Infants and Children*. College Station. Texas.

Bednarek R., Hildebrandt-Radke I., Jankowski M., Juras A., Koško A., Langer J., Makohonienko M., Pietrzak S., Razumow S., Sikorski A., Żurkiewicz D.

2014 Charakterystyka źródeł archeologicznych i przyrodniczych z kurhanu Pidlisivka 1 (badania z roku 2010). In: A. Koško, M. Potupczyk, S. Razumow (Eds), *Naddniestrzańskie kompleksy cmentarzysk kurhanowych społeczności z III i z pierwszej połowy II tysiąclecia przed Chr. w okolicach Jampola, obwód winnicki. Z badań nad północno-zachodnią rubieżą osadnictwa społeczności kręgu kultur „wczesnobrzązowych” strefy pontyjskiej. Badania z lat 1984-2014*. *Archaeologia Bimaris – Monografie* 6, 205-297. Poznań.

Buikstra J.E., Ubelaker D.H.

1994 Standards for data collection from human skeletal remains. Proceedings of a seminar at the field Museum of Natural History. *Arkansas Archaeological Survey Research Series* 44. Arkansas.

Cohen M.N., Armelagos G.J.

1984 *Paleopathology at the Origins of Agriculture*. Florida.

Cucina A.

- 2002 Brief communication: diachronic investigation of linear enamel hypoplasia in prehistoric skeletal samples from Trentino, Italy. *American Journal of Physical Anthropology* 119(3): 283-7.

Facchini F., Rastelli E., Brasili P.

- 2004 Cribra orbitalia and cribra cranii in Roman skeletal remains from the Ravenna area and Rimini (I–IV century AD). *International Journal of Osteoarchaeology* 14(2): 126-136.

Goodman A.H., Armelagos G.J., Rose J.C.

- 1980 Enamel hypoplasias as indicators of stress in three prehistoric populations from Illinois. *Human Biology* 52(3): 515-528.

Goodman A.H., Rose J.C.

- 1990 Assessment of systemic physiological perturbation from dental enamel hypoplasias and associated histological structures. *American Journal of Physical Anthropology* 33: 59-110.

Goslar T., Klochko V.I., Koško A., Włodarczak P., Żurkiewicz D.

- 2015 Chronometry of Late Eneolithic and 'Early Bronze' cultures in the Middle Dniester area: investigations of the Yampil Barrow Complex. In: A. Koško (Ed.). *Podolia as a Cultural Contact Area in the 4th/3rd-2nd Millennium BC. Baltic-Pontic Studies* 20: 256-291.

Günther T., Valdiosera C., Malmström H., Ureña I., Rodriguez-Varela R., Sverrisdóttir Ó.O., Daskalaki E.A., Skoglund P., Naidoo T., Svensson E.M., Bermúdez de Castro J.M., Carbonell E., Dunn M., Storå J., Iriarte E., Arsuaga J.L., Carretero J. M., Götherström A., Jakobsson M.

- 2015 Ancient genomes link early farmers from Atapuerca in Spain to modern-day Basques. *Proc Natl Acad Sci U S A*, 112: 11917-11922.

Juras A.

- 2014 Badania kopalnego DNA z cmentarzysk społeczności „wczesnobrązowych” na stanowisku Pidlisiwka 1 In: A. Koško, M. Potupczyk, S. Razumow (Eds), *Naddniestrzańskie kompleksy cmentarzysk kurhanowych społeczności z II i z pierwszej połowy II tysiąclecia przed Chr. w okolicach Jampola, obwód winnicki. Z badań nad północno-zachodnią rubieżą osadnictwa społeczności kręgu kultur „wczesnobrązowych” strefy pontyjskiej. Archaeologia Bimaris – Monografie* 6, 297-300. Poznań.

Juras A., Dabert M., Kushniarevich A., Malmström H., Raghavan M., Kosicki J.Z., Metspalu E., Willerslev E., Piontek J.

- 2014 Ancient DNA Reveals Matrilineal Continuity in Present-Day Poland over the Last Two Millennia. *PLoS ONE*: 9(10):e110839.

Kircher M.

- 2012 Analysis of high-throughput ancient DNA sequencing data. *Methods in Molecular Biology* 840: 197–228.

Kjellström A.

- 2004 Evaluations of Sex Assessment using Weighted Traits on Incomplete Skeletal Remains. *International Journal of Osteoarchaeology* 14: 360–373.

Koško A., Potupczyk M., Razumow S. (Eds)

- 2014 *Naddniestrzańskie kompleksy cmentarzysk kurhanowych społeczności z III i z pierwszej połowy II tysiąclecia przed Chr. w okolicach Jampola, obwód winnicki. Z badań nad północno-zachodnią rubieżą osadnictwa społeczności kręgu kultur „wczesnobrązowych” strefy pontyjskiej. Badania z lat 1984-2014. Archaeologia Bimaris – Monografie 6. Poznań.*

Klochko V.I., Koško A., Potupchik M.V., Włodarczak P., Żurkiewicz D., Ivanova S.V.

- 2015 Tripolye (Gordinești group), Yamnaya and Catacomb culture cemeteries, Prydnistrianske, site 1, Yampil Region, Vinnitsa Oblast: an archaeometric and chronometric description and a taxonomic and topogenetic discussion. In: A. Koško (Ed.) *Podolia as a Cultural Contact Area in the 4th/3rd-2nd Millennium BC. Baltic-Pontic Studies* 20: 183-255.

Klochko V.I., Koško A., Razumov S.M., Włodarczak P., Żurkiewicz D.

- 2015a Eneolithic, Yamnaya, Catacomb and Babyno culture cemeteries, Pidlisivka, barrow 1, Yampil Region, Vinnitsa Oblast: archaeometry, chronometry and taxonomy. In: A. Koško (Ed.) *Podolia as a Cultural Contact Area in the 4th/3rd-2nd Millennium BC. Baltic-Pontic Studies* 20: 40-77.
- 2015b Eneolithic, Yamnaya and Noua culture cemeteries from the first half of the 3rd and the middle of the 2nd millennium BC, Porohy, site 3a, Yampil Region, Vinnitsa Oblast: archaeometric and chronometric description, ritual and taxonomic-topogenetic identification. In: A. Koško (Ed.) *Podolia as a Cultural Contact Area in the 4th/3rd-2nd Millennium BC. Baltic-Pontic Studies* 20: 78-141.
- 2015c Eneolithic, Babyno and Noua culture cemeteries, Klembivka, site 1, Yampil Region, Vinnitsa Oblast: archaeometry, taxonomy and topogenetics. In: A. Koško (Ed.) *Podolia as a Cultural Contact Area in the 4th/3rd-2nd Millennium BC. Baltic-Pontic Studies* 20: 142-182.

Lallo J.W., Armelagos G.J., Mensforth R.P.

- 1977 The role of diet, disease, and physiology in the origin of porotic hyperostosis. *Human Biology* 49(3): 471-83.

Lanphear K.M.

- 1990 Frequency and distribution of enamel hypoplasias in a historic skeletal sample. *American Journal of Physical Anthropology* 81(1): 35-43.

Li H., Durbin R.

- 2009 Fast and accurate short read alignment with Burrows–Wheeler transform. *Bioinformatics* 25(14): 1754-1760.

Li H., Handsaker B., Wysoker A., Fennell T., Ruan J., Homer N., Marth G., Abecasis G., Durbin R.

- 2009 The Sequence Alignment/Map format and SAM tools. *Bioinformatics* 25(16): 2078–2079.

Mathieson I., Lazaridis I., Rohland N., Mallick S., Patterson N., Roodenberg S.A., Harney E., Stewardson K., Fernandes D., Novak M., Sirak K., Gamba C., Jones E.R., Llamas B., Dryomov S., Pickrell J., Arsuaga J.L., de Castro J.M., Carbonell E., Gerritsen F., Khokhlov A., Kuznetsov P., Lozano M., Meller H., Mochalov O., Moiseyev V., Guerra M.A., Roodenberg J., Vergès J.M., Krause J., Cooper A., Alt K.W., Brown D., Anthony D., Lalueza-Fox C., Haak W., Pinhasi R., Reich D.

- 2015 Genome-wide patterns of selection in 230 ancient Eurasians. *Nature* 528(7583): 499-503.

Mensforth R.P., Lovejoy C.O., Lallo J.W., Armelagos G.J.

- 1978 Part Two: The role of constitutional factors, diet, and infectious disease in the etiology of porotic hyperostosis and periosteal reactions in prehistoric infants and children. *Medical Anthropology* 2(1): 1-59.

Meyer M., Kircher M.

- 2010 Illumina sequencing library preparation for highly multiplexed target capture and sequencing. *Cold Spring Harb Protoc* 6: t5448.

Molnar P., Ahlstrom T.P., Leden I.

- 2011 Osteoarthritis and Activity – An Analysis of the Relationship between Eburnation, Musculoskeletal Stress Markers (MSM) and Age in Two Neolithic Hunter-Gatherer Populations from Gotland, Sweden. *International Journal of Osteoarchaeology* 21: 283-291.

Pedersen P.O.

- 1938 Investigations into dental conditions of about 3000 ancient and modern Greenlanders. *Dental record* 24(7): 702-704.

Powel M.L.

- 1985 The Analysis of Dental Wear and Caries for Dietary Reconstruction. In:

- R.I. Gilbert, J.H. Mielke (Eds), *The Analysis of Prehistoric Diets*, 307-338. Orlando.
- Schaefer M., Black S., Scheuer L.
2009 *Juvenile Osteology: a Laboratory and Field Manual*. Oxford.
- Skoglund P., Storå J., Götherström A., Jakobsson M.
2013 Accurate sex identification of ancient human remains using DNA shotgun sequencing. *Journal of Archaeological Science* 40: 4477-4482.
- Steckel H., Larsen C.S., Sciulli P.W., Walker P.L.
2005 Data collection codebook. *The Global History of Health Project* <http://global.sbs.ohio-state.edu/docs/Codebook-12-12-05.pdf>.
- Svensson E.M., Anderung C., Baubliene J., Persson P., Malmström H., Smith C., Vretemark M., Daugnora L., Götherström A.
2007 Tracing genetic change over time using nuclear SNPs in ancient and modern cattle. *Animal Genetics* 38: 378-383.
- Šlaus M., Bedić Ž., Rajić Šikanjić P., Vodanović M., Domić - Kunić A.
2010 Dental health at the transition from the Late Antique to the early Medieval period on Croatia's eastern Adriatic coast. *International Journal of Osteoarchaeology* 21(5): 577-590.
- Trotter M., Gleser G.C.
1952 Estimation of stature from long bones of American Whites and Negroes. *American Journal of Physical Anthropology* 10(4): 463-514.
- Turner C.G.
1979 Dental anthropological indications of agriculture among the Jomon people of central Japan. X. Peopling of the Pacific. *American Journal of Physical Anthropology* 51(4): 619-635.
- Yang D.Y., Eng D., Wayne J.S., Dudar J.C., Saunders S.R.
1998 Technical note: Improved DNA extraction from ancient bones using silica based spin columns. *American Journal of Physical Anthropology* 105: 539-54.
- Weiss E., Jurmain R.
2007 Osteoarthritis Revised: A Contemporary Review of Etiology. *International Journal of Osteoarchaeology* 17: 437-450.
- Walker P.L., Erlandson J.M.
1986 Dental evidence for prehistoric dietary change on the northern Channel Islands, California. *American Antiquity* 51(2): 375-83.

Walker P.L., Bathurst R.R., Richman R., Gjerdrum T., Andrushko V.A.

- 2009 The Causes of Porotic Hyperostosis and Cribra orbitalia: A Reappraisal of the Iron-Deficiency-Anemia Reappraisal of the Iron-Deficiency-Anemia Hypothesis. *American Journal of Physical Anthropology* 139(2): 109-25.

White T.D., Folkens P.A.

- 2005 *The human bone manual*. Oxford.

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THE MIDDLE-DNIESTER CULTURAL CONTACT
AREA OF EARLY METAL AGE SOCIETIES.
THE FRONTIER OF PONTIC AND BALTIC DRAINAGE
BASINS IN THE 4TH/3RD-2ND MILLENNIUM BC.

ABSTRACT

The paper discusses the taxonomy and autogenesis of the cycle of early 'barrow cultures' developed by the *local* communities of the Middle Dniester Area or, in a broader comparative context, the north-western Black Sea Coast, in the 4th/3rd-2nd millennium BC. The purpose of the study is to conduct an analytical and conceptual entry point to the research questions of the Dniester Contact Area, specifically the contacts between *autochthonous* 'Late Eneolithic' communities (Yamnaya, Catacomb and Babyno cultures) and *incoming* communities from the Baltic basin. The discussion of these cultures continues in other papers presented in this volume of *Baltic-Pontic Studies*.

Key words: Eneolithic, Yamnaya, Catacomb and Babyno cultures, Dniester, north-western Black Sea Coast

The Middle Dniester Area, situated on the south-western frontier of Podolia (abutting on Bessarabia – Moldavia) is one of the two currently recognizable contact areas of the societies of Late Eneolithic and 'Early Bronze' cultures identified with the Pontic area and 'Late Neolithic' (Eneolithicized) ones traceable to the

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Baltic drainage basin [see Klochko, Koško 2013].¹ The present paper attempts to give a ‘taxonomic picture’ of the contact area in the 4th/3rd-2nd millennium BC from the perspective of *local*, mostly Pontic, societies.

A motivation for this approach is provided by the conclusions of the *Yampil Programme*: interdisciplinary field investigations of the north-westernmost complex of barrow cemeteries on the Dniester, associated with the societies of Pontic Eneolithic and ‘Early Bronze’ cultures [Koško *et al.* (Eds) 2014]². The major research inspirations came in this case from the innovative chronometric (radiocarbon) determinations and new possibilities for topogenetic analyses offered by the ‘Yampil’ diagnostic corpus of sources [Goslar *et al.* 2015].

Mentioned in the title, the prologue of the Bronze Age embraces four levels of barrow taxa related to the Eneolithic: Yamnaya culture (YC), Catacomb culture (CC) and Babyno culture (BC). The authors’ intention is to outline the research scope for the correspondence analysis of the societies in question and those of the cultural area of the Baltic drainage basin. Specifically, this applies for the most part to the populations of the Globular Amphora culture (GAC) and Corded Ware culture (CWC) [see Ivanova *et al.* 2015].

1. LATE ENEOLITHIC AND EARLY BRONZE AGE IN THE MIDDLE DNIESTER AREA

The Late Eneolithic/Early Bronze Age on the northern Black Sea Coast is traditionally held to embrace the sites that are dated between 3400/3200 and 2750 BC or to stage CII on the taxonomic chronological scale of the Tripolye culture [Videiko 1999; Rassamakin 2004]. It is this time interval that researchers believe to have coincided with the dawn of the Bronze Age (ca. 3200 BC) [Otroshchenko *et al.* 2008: 219]. It follows that there co-existed cultures, formally contemporaneous, but belonging to different ages. This is an illustration of the fact that prehistoric societies not only developed unevenly but also that periods distinguished by archaeologists reflect, apart from chronology, the evolution of societies as well.

The sites dating to the Late Eneolithic and Early Bronze Age³ are unevenly distributed throughout the north-western Black Sea Coast. Some were recorded

¹ To the other contact area – the drainage basin of the Ros’ and middle Dnieper rivers (Podolia on the Dniester) – a separate study will be devoted and published as BPS vol. 22.

² The programme was carried out in cooperation by the Institute of Prehistory, Adam Mickiewicz University in Poznań, and the Institute of Archaeology, Ukrainian NAS in Kyiv.

³ This paper uses two perspectives on the Early Bronze period: **conventional**, considering it one in the sequence of three periods (early, middle and late) and **essential**, one of ‘Early Bronze cultures’, such as YC, CC, and BC, i.e. cultural units corresponding to the period of composite metal use.

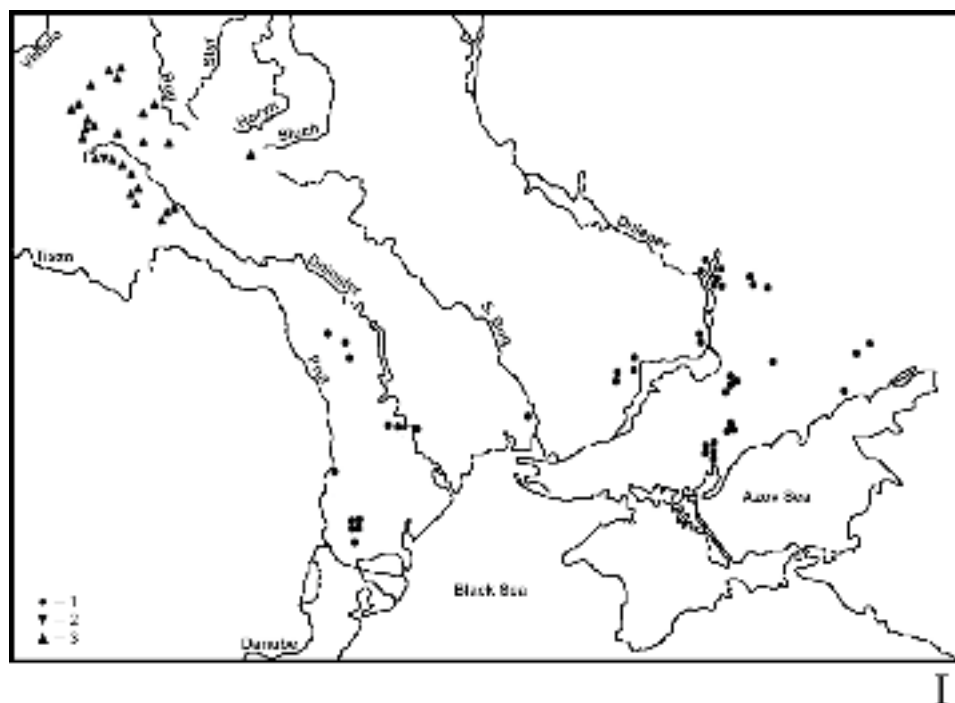


Fig. 1 a. North-western and northern Black Sea Coast in the Late Eneolithic and Early Bronze Age I. Territorial connections between the Zhyvotilovka-Volchansk group – 1, and the CWC – 2, 3 [after Koško 2000: 342, Fig. 1]

only in the south, mostly on the Budzhak Steppe. These are the complexes of the Usatovo culture, burials of the Černavoda culture (Khadzider cultural group) and the ‘Katarzhyno type’ sites (post-Sredny Stog) (Fig. 1). Others are known only from the northern portion of the north-western Black Sea Coast (forest-steppe in the interfluvium between the Dniester and Prut rivers). These are sites belonging to the late stage of the Tripolye culture (stage C II): the Gordinești group in the Prut drainage basin and the Chirileni group in the Prut-Dniester interfluvium (Fig. 2). Finally, some Late Eneolithic sites were discovered throughout the north-western Black Sea Coast: in both its northern and southern parts. These are burials of the ‘Zhyvotilovka type’ (Zhyvotilovka-Volchansk) and ones known as ‘extended burials’ (Figs. 1-3). Moreover, a quite significant number of burials found in the north-western Black Sea Coast are dated by researchers simply to the ‘Late Eneolithic’; determining their cultural affiliation within this age is rather troublesome.

Vykhvatintsy-type sites, represented by settlements and flat (ground) cemeteries, are known from the middle Dniester drainage basin, specifically from the

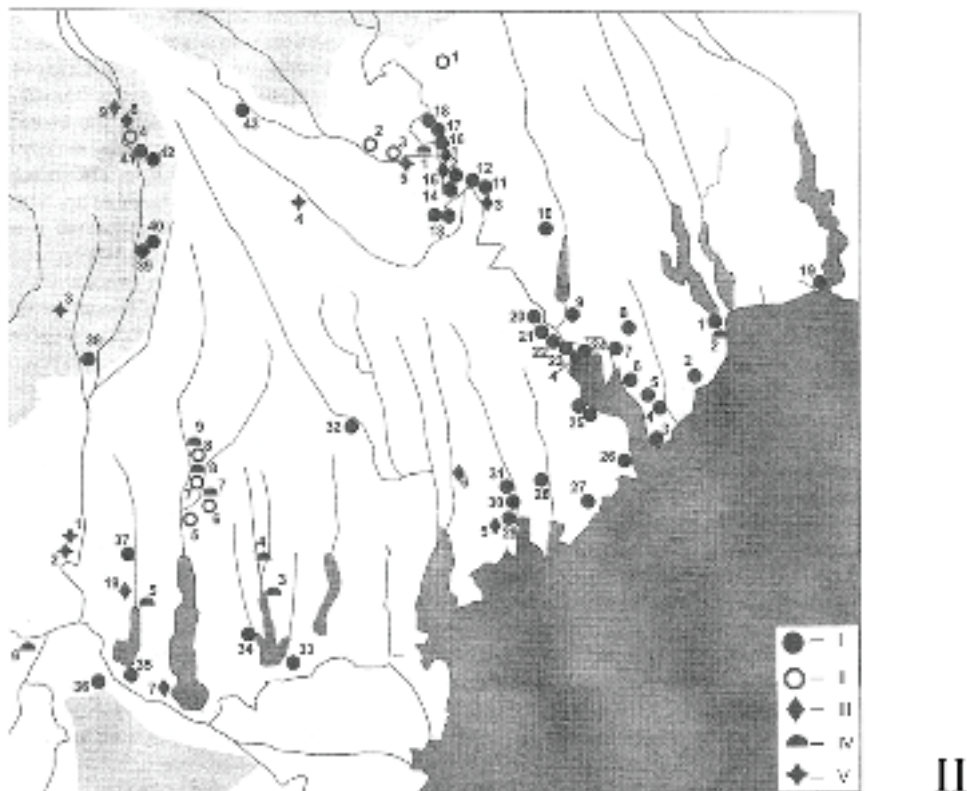


Fig. 1 b. North-western and northern Black Sea Coast in the Late Eneolithic and Early Bronze Age
II. Usatovo culture and major synchronous sites of selected types

- I Usatovo culture 1 – eponymous site, Usatovo complex – Bolshoi Kuyalnik (stronghold and cemeteries); 2 – Aleksandrovskiy barrow; 3 – Karolino-Bugaz; 4 – Dalnik II; 5 – Nikolaevka; 6 – Efimovka; 7 – Mayaki site complex (stronghold, cemetery); 8 – Mayaki-Mirnoe; 9 – Gradanitsy settlement-stronghold (?); 10 – Nikolskoe; 11-12 – Tiraspol; 13-15 – Tîrnauca; 16 – Ploskovskiy; 17 – Crasnogorca; 18 – Speia; 19 – Koshary II-Zmeinaya Balka; 20 – Răscăieții; 21 – Purcari; 22 – Olănești; 23 – Tudora; 24 – Palanka site complex (?); 25 – Sadovoe-Mologa; 26 – Popova Mogila; 27 – Shabolat; 28 – Alkaliya; 29 – Zholtyi Yar; 30 – Zakharkin; Mogila; 31 – Diviziya; 32 – Berezino; 33 – Kislitsa; 34 – Utkonosovka; 35 – Orlovka; 36 – Isacceia; 37 – Gavanoasa; 38 – Risești; 39 – Tochile-Răducani; 40 – Sărata-Răzeși; 41-42 – Dancu 1-2; 43 – Dănceni
- II Khadzhiber type: 1 – Crasnoe; 2 – Mereni II; 3 – Roșcani; 4 – Sărățeni; 5 – Kubey; 6 – Kurchy; 7 – Taraclia II; 8 – Cazaclia
- III Post-Mariupol culture (extended burials): 1-2 – Parcani; 3 – Sucleia; 4 – Tudora; 5 Vishnevoe; 6 – Sărata; 7 – Chaush barrow (Novoselskoe); 8 – Sărățeni; 9 – Vishan; 10 – Etulia
- IV Zhyvotilovka-type sites: 1 – Gura Bukului; 2 – Slobodka Romanovka; 3 – Suvorovo I; 4 – Kale; 5 – Bolgrad; 6 – Brăilița; 7-8 – Taraclia; 9 – Cazaclia
- V Florești type: 1 – Foltești; 2 – Stoicani; 3 – Grumezoaia; 4 – Ruseștii Noi; 5 – Calfa [after Petrenko 2013: 169, Fig. 28]

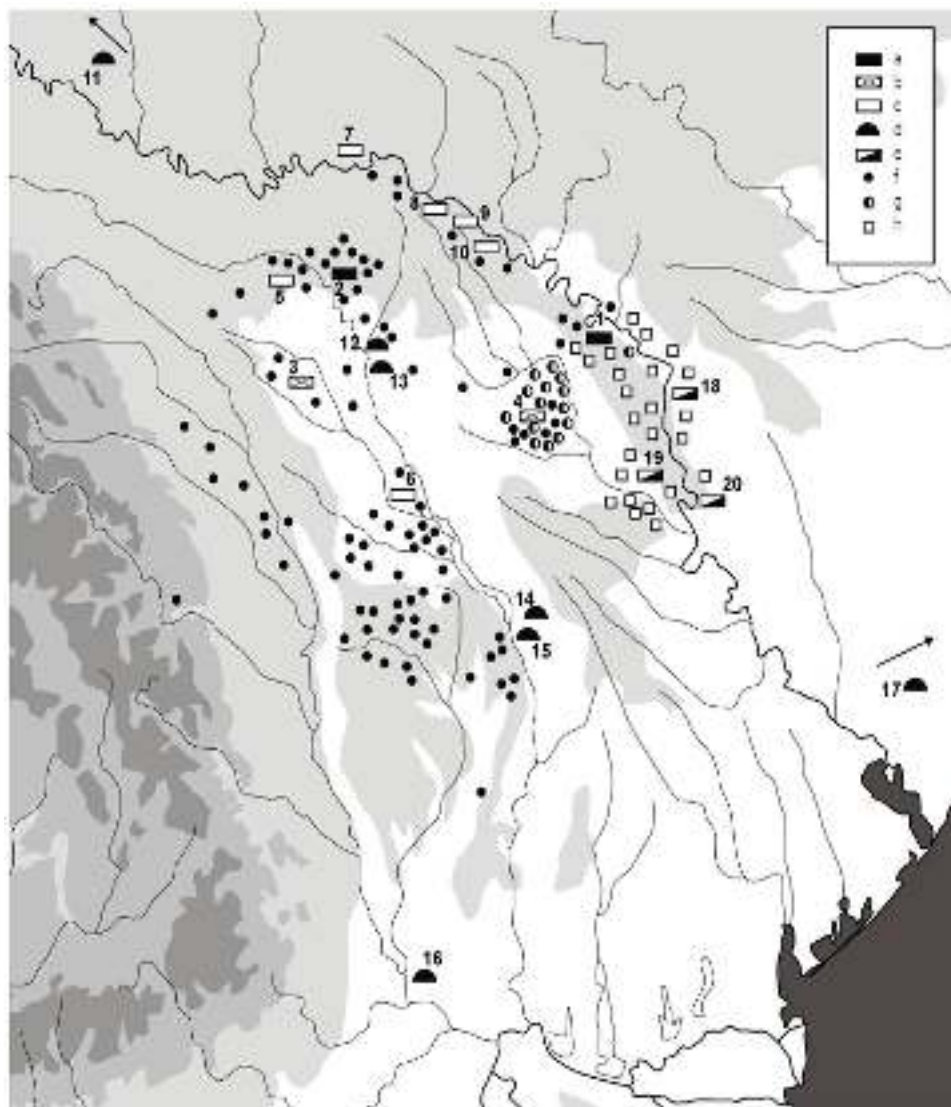


Fig. 2. Late Tripolye sites: (a-e) cemeteries and (f-h) settlements in the region

a – Gordinești age flat cemeteries: (1 – Cunicoa; 2 – Gordinești – promontory); **b** – single Gordinești age flat burials (3 – Boroșoaia; 4 – Tăucra Nouă); **c** – Gordinești age intra muros burials (5 – Horodiștea; 6 – Cîrniceni pe Coaste; 7 – Tsviklovtsy; 8 – Mereshovka; 9 – Tătărăuca Nouă XV; 10 – Pokrovka V); **d** – Gordinești age burials beneath barrows (11 – Zavishnia; 12 – Dumeni 16, 17, 18/3; 13 – Costești 4/1; 14 – Obileni 4/8; 15 – Sărățeni 2/11; 16 – Liești 78/22; 17 – Vishnevatoe); **e** – Vykhatintsy age cemeteries (18 – Vykhatintsy; 19 – Oxentea; 20 – Holercani I); **f** – Gordinești-Horodiștea sites; **g** – Vykhatintsy type sites; **h** – Chirileni type sites [after Topal, Tserna 2010: 294, Fig. 6]

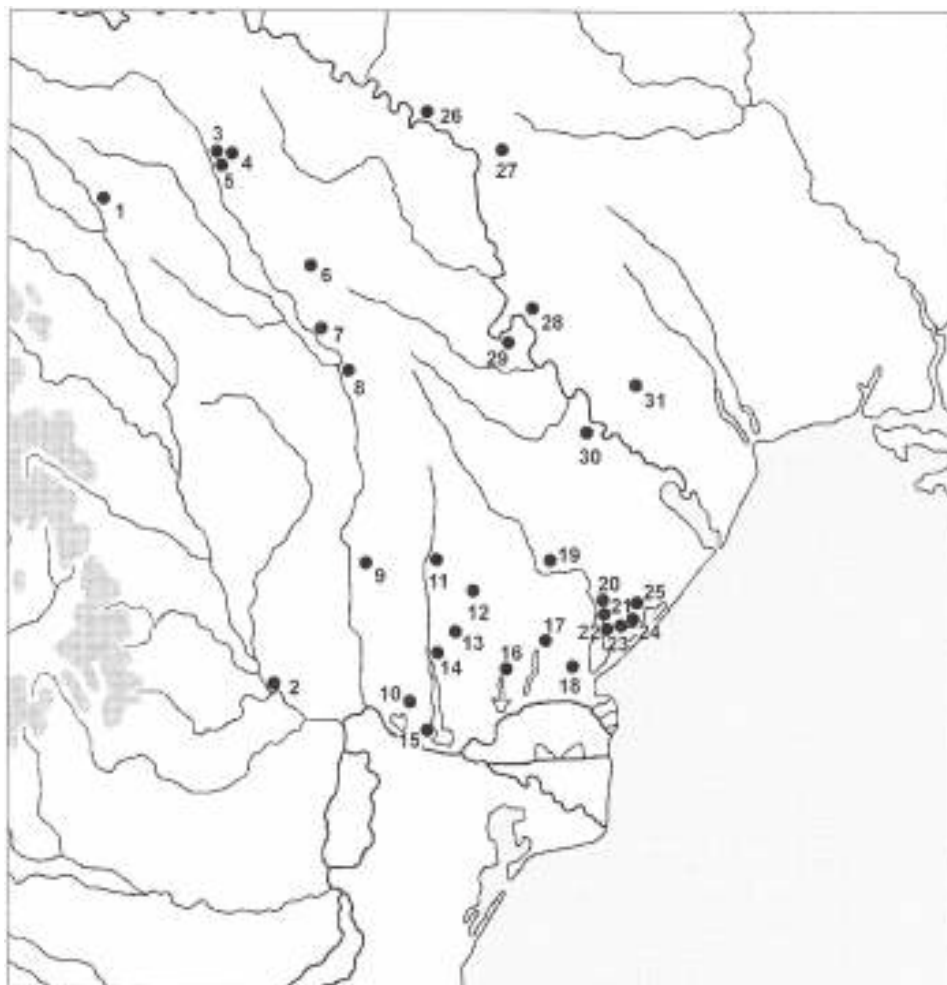


Fig. 3. Map of Eneolithic and Bronze Age prologue extended burials in the Carpathian-Dniester Region. 1 – Corlăteni; 2 – Lungoci-Fundeni; 3 – Dumeni; 4 – Văratci; 5 – Duruitoarea Nouă; 6 – Bursuceni; 7 – Petrești; 8 – Sărățeni; 9 – Crihana Veche; 10 – Etulia; 11 – Cazaclia; 12 – Ogorodnoe III; 13 – Kubey; 14 – Bolgrad; 15 – Novoselskoe; 16 – Suvorovo; 17 – Kholmskoe; 18 – Desantnoe; 19 – Artsyz; 20 – Belolesie; 21 – Novoselitsa; 22 – Trapovka; 23 – Vishnevoe; 24 – Kochkovatoe; 25 – Zheltyi Yar; 26 – Ocnița; 27 – Timkovo; 28 – Crasnoe; 29 – Bălăbănești; 30 – Talmaz; 31 – Nikolskoe [after: Manzura 2013: 140, fig. 23]

confluence with the Reut River in the south to the town of Soroca in the north. We know of about 50 Vykhatintsy-type sites. On the settlements of this type, traditional ‘Tripolye’ *ploshchadki* and pithouses are found while flat cemeteries feature inhumations in oval and rectangular pits. The dead usually lie crouched on

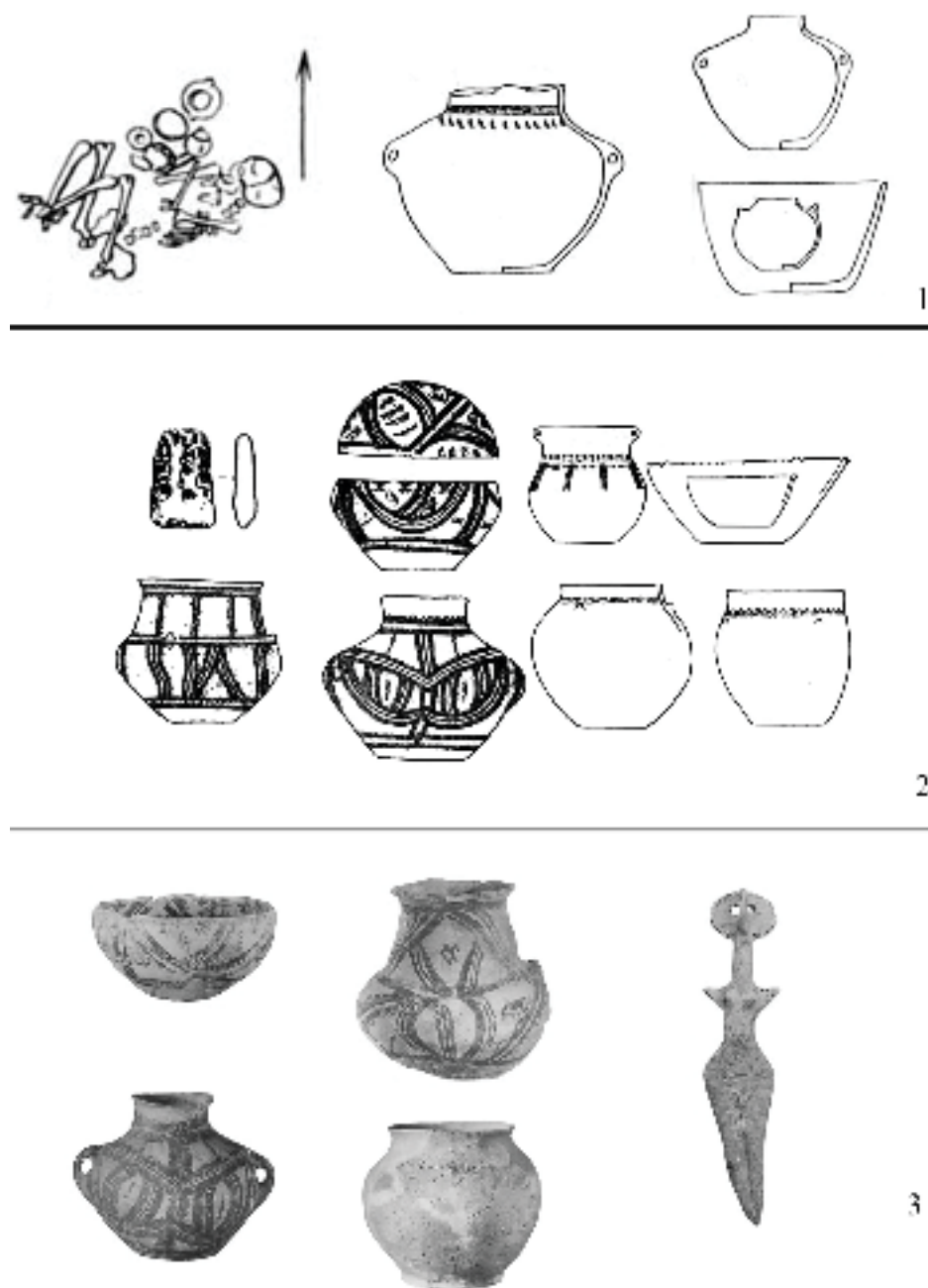


Fig. 4. Vykhatinty cultural type

1 – Vykhatinty cemetery, burial 5; 2 – materials characteristic of Vykhatinty type settlements; 3 – Vykhatinty type painted ware and an anthropomorphic statuette [after: 1, 2 – Dergachev 1986: 195, Fig. 28; 2 – Dergachev, Manzura 1991: 224, Fig. 4; 3 – Petrenko 2004: 90-91]



Fig. 5. Chirileni cultural type

1-9 – Cunicea, burial 1; 10-11 – Cunicea, burial 2; 12-13 – Cunicea, settlement; 14-20 – Oxentea cemetery; 21-24 – materials characteristic of Chirileni type sites [after: 1-13 – Topal, Tserna 2010; 14-20 – Yarovoy *et al.* 2012; 21-24 – Bikbaev 1994: 67, Fig. 2]

their left side although crouched supine burials are also known; they are oriented northeast in most cases. The set of tools and weapons is small, metal is rare, grave inventories feature mostly pottery (Fig. 4). Characteristic ornaments, made using dark brown and red paints are usually arranged horizontally. Anthropomorphic designs are considered a separate (realistic) Vykhvatintsy type [Dergachev, Manzura 1991: 10].

Chirileni-type sites are believed to be transitional (from the perspective of chronology) between the Vykhvatintsy and Gordinești types, hence researchers also refer to them by the terms ‘post-Vykhvatintsy’ and ‘pre-Gordinești’⁴. The pottery shows similarities to Usatovo and Vykhvatintsy materials, on the one part, and to Gordinești materials on the other (Fig. 5). The similarities concern both pottery forms and painting. The origins of Chirileni-type sites can be linked to the impact of genetically different traditions, which were present in the Vykhvatintsy and Brînzei types and of the Usatovo, Černavoda I and Foltești cultures [Bikbaev 1994: 68-69]. Recent years have witnessed the publication of materials from two cemeteries [Chirileni: Cuncea; Topal, Tserna 2010 and Oxentea; Yarovoy *et al.* 2012]. Both cemeteries are flat and are situated in the middle Dniester drainage basin; the former has been partly investigated while from the latter available materials have been collected in various years. Only fragmentarily does the pottery reflect the combination of Vykhvatintsy and Gordinești traits. Close to the Cuncea cemetery, there are several Late Tripolye settlement sites [Topal, Tserna 2010: 289-292].

Gordinești-type sites were distinguished almost at the same time under various names such as ‘northern’ [Movsha 1971] and ‘Kasperovtsy’ [Zakharuk 1971] groups of the late stage of the Tripolye culture. Only later did V.A. Dergachev propose the name ‘Gordinești’, because in his opinion it was the excavated Gordinești site that could serve as the paragon of traits characteristic of this type of sites [Dergachev 1980: 117]. In Romania, sites of this type are combined into the Horodiștea group, although some Romanian researchers distinguish a group or even a culture named Horodiștea-Erbiceni-Gordinești-Kasperovtsy [Alaiba 2004: 78; 2007: 130]. The Horodiștea site has yielded the following radiocarbon dates:

Horodiștea I Hd 14785: 4495 ±18 BP; 3331-3101 (1 sigma), 3340-3046 BC (2 sigma)

Horodiștea II Hd 15024: 4377 ±21 BP; 3035-2924 (1 sigma), 3091-2920 BC (2 sigma)

Horodiștea II Hd 14898: 4235 ±30 BP; 2908-2783 (1 sigma), 2916-2703 BC (2 sigma) [Mantu 1998:252]

V.A. Dergachev thought that Gordinești-type sites were located in the middle and upper Prut and Dniester drainage basins, and on the upper Southern Bug River

⁴ Interestingly enough, most of Chirileni-type sites also in terms of geography are transitionally located for they are found in the central part of the Dniester-Prut interfluvium, with Gordinești-type sites gravitating towards the Prut, while those of the Vykhvatintsy type towards the Dniester (Fig. 2).



Fig. 6. Tsviklovtsy treasure [after Burdo 2004: 588]

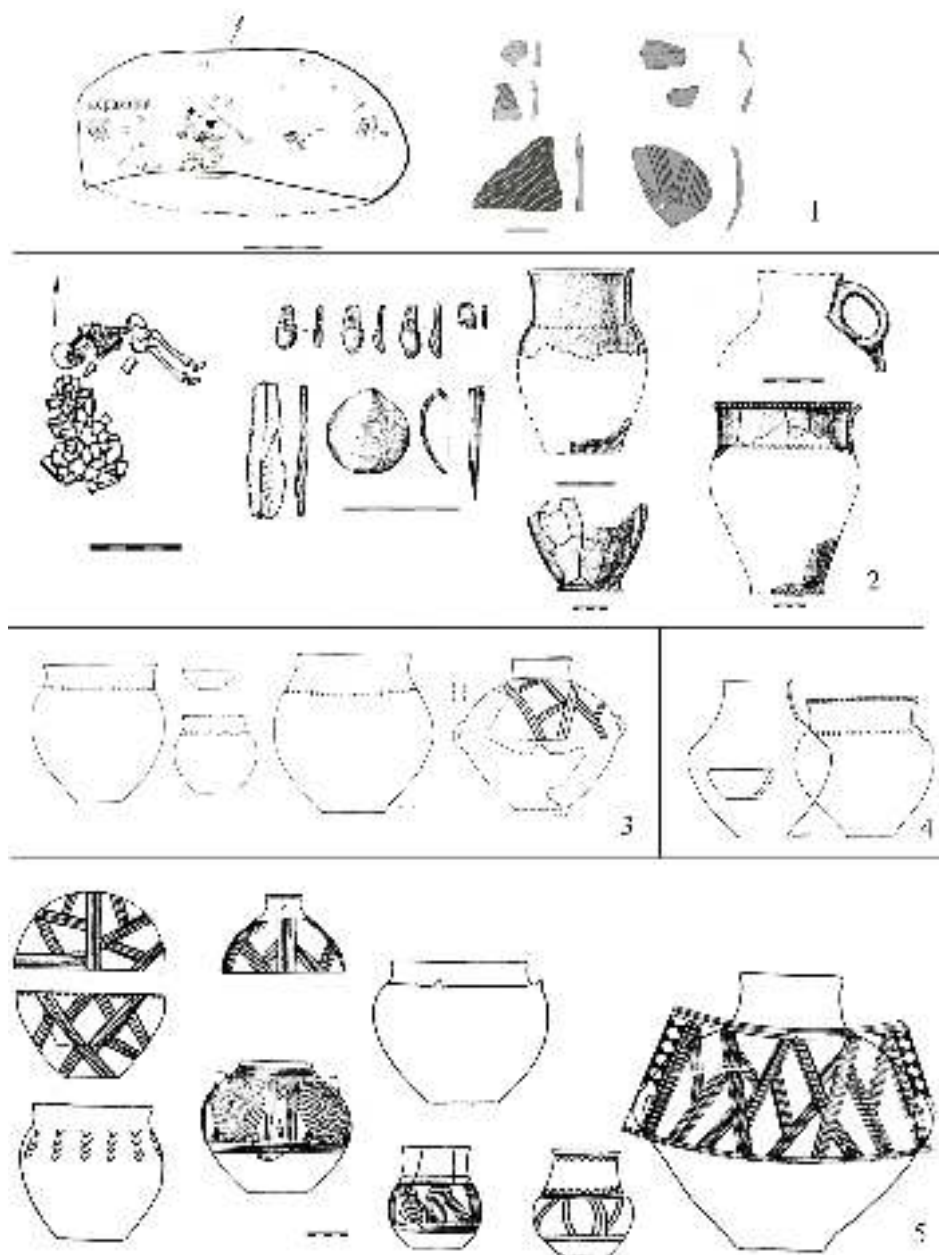


Fig. 7. Gordinești cultural type

1 – flat burial, Tătărauca Nouă XV; 2 – burial, Gordinești-promontory; 3 – vessels from ritual burial (offering), Tsviklovtsy; 4 – vessels from burial on Mereshovka settlement; 5 – materials characteristic of Gordinești type settlements [after: 1 – Larina 1989: 59, 61 Fig. 2, 3; 2 – Manzura, Telnov 1992: 122, Fig. 1; 3 – Dergachev, Manzura 1991: 309, Fig. 88; 4 – Dergachev, Manzura 1991: 310, Fig. 89; 5 – Dergachev 1980: 198, Fig. 31]

[Dergachev 1980:119]. Worth mentioning in this context, the opinion of S.N. Ryzhov, who has analyzed pottery from the settlements of the late stage of the Tripolye culture in the Southern Bug-Dniester interfluvium, holds that the Gordinești group should be restricted to sites with Gordinești-Horodiștean-Erbiceni-type pottery to be found in the drainage basins of the Moldova, Siret, Prut and partially Dniester rivers and that sites situated in the upper and partially middle Dniester drainage basin and in western Podolia ought to be excluded from it [Ryzhov 2001-2002: 198].

The sites of the Gordinești group include settlements, burials and a hoard found on the Tsvilkovtsy site (Fig. 6). The ceramics complex consists of painted serving ceramics and unpainted cooking ceramics (Fig. 7). A characteristic trait of painted ornaments is their geometric style while relief ornaments on the unpainted ceramics take the form of single and double appliqué bosses on the upper portion of the belly, as well as pinched ornaments and nail impressions along the bottom edge. As typical of this group are considered lids with a mushroom top and bowls with a profiled lip.

V.A. Dergachev believed that the Gordinești group was genetically linked to the Brînzei group [1980: 85, 89]. The discovery of Chirileni sites justified a belief that it was they that could be considered the genetic base of the Gordinești cultural group [Bikbaev 1994: 68-69]. However, the development stages of the Late Tripolye groups of Vykhatintsy, Chirileni and Gordinești, and any transitional forms or contacts between them, have not been sufficiently studied [Yarovoy *et al.* 2012: 298].

Researchers identify also the influence of the Baden culture on the rise of the Gordinești group, as well as the impact of the Funnel Beaker culture (FBC) and GAC traditions [Videiko 2000: 36, 46, 47], visible in the form and ornamentation of pottery and other artefacts. A number of ornamentation elements on Gordinești pottery have analogies in the Vistula drainage basin in the Żłota and Rzućewo cultures [*see* Pribrezhnoe: Koško 2014: Fig. 7], which may have influenced the frontiers of the Pontic and Baltic drainage basins [Videiko 2000: 46].

Gordinești-type anthropomorphic representational art includes single statuettes. Ornaments of this type are known from a hoard found on the Tsvilkovtsy site (Fig. 6.). Objects making up the hoard, 822 in number, were found in a globular amphora with two handles on the upper portion of the belly. Copper had been used to make 68 objects: bracelets, and long tube-like and cylindrical beads. Other objects included a necklace of 122 red deer teeth, 275 mollusc shell beads and 367 limestone beads. Tools were represented by a metal adze, stone axe-hammers, grindstones, fabricators, flint scrapers, sickles, drill bits, and axes. There were also flint arrow points, bone knobbed shaft-hole axes, perforators, slicks and hoes [Dergachev 1980: 121-122].

In principle, Gordinești-type sites are represented by settlements in which *intra muros* burials were recorded, with few flat funerary complexes outside settlements also being known. Generally speaking, however, it can be said that the funerary rite

of the Gordinești-group tribes as such has not been identified yet. Burials within settlements are rather an exception than a rule. Skeleton remains were discovered in homesteads on a settlement in Horodiștea (Romania), a burial of a woman aged 18-20 was found within a settlement in Mereseuca, Republic of Moldova [Dergachev, Manzura 1991: 142-143]. A human sacrifice of an 18-20-year-old individual (partially cremated) was recorded on the Tsviklovtsy site, Ukraine [Movsha 1964] and radiocarbon dated: Ki-6751: 3960±50 BP, 2450±89 BC [Videiko 1999: 43].

A collective burial of three senile women was discovered on a site in Pocrovca, Dondușeni district, Republic of Moldova⁵. Researchers presume that similar burial complexes have a ritual aspect [Larina 2003: 62]. Single flat *extra muros* burials are known from Boroșoaia [Chirica, Tanasachi 1985: 306], Cârniceni Pe Coaste [Alaiba, Grădinaru 1999], Romania, Tăura Nouă, Sîngerei district,⁶ Tătărauca Nouă XV, Dondușeni district, Republic of Moldova [Larina 2003: 57-60, 67].

Out of flat burials, the Gordinești-promontory site, located near Gordinești, Edineț district, stands out where one burial was excavated, but the presence of a cemetery is suspected. It may have formed a complex with the Gordinești settlement located nearby [Manzura, Telnov 1992: 124]. The corpse lay contracted on its right side, with the head pointing west and hands raised towards the face. The inventory encompassed pottery (fragments of seven vessels), ornaments such as a necklace of split deer teeth and a sea shell as well as tools: a bone perforator and flint blades (Fig. 7:2).

The Tătărauca Nouă XV site is interpreted as a seasonal settlement designated for economic-production purposes as no homesteads were found within its perimeter. The site is linked by researchers to the Tătărauca Nouă V settlement located 1.5-2.0 km away and counted among the Gordinești cultural group [Larina 2003: 58]. A burial on this site was exposed in the course of cleaning a cliff. Its pit was semi-oval, with the longer axis extending west-east; the arrangement of the corpse could not be reconstructed (Fig. 7:1). On the pit bottom, in its fill, there were fragments of painted and cooking ceramics. An anthropological examination shows that the buried individual was a woman, aged 45-55 years and belonging to the Mediterranean type [Varzar, Pezhemskiy 2003].

The burial from Tăura Nouă was a chance discovery made in the course of construction work. Its pit was semi-oval, with its longer axis extending west-east, while its walls were charred. The skeleton most likely lay crouched on its side. The inventory encompassed a black-coloured bowl, a flint axe and a battle-axe with a pointed-down butt made of white stone. The closest settlement contemporaneous with the burial is 1.0-1.5 km away [Larina 2003: 62-64].

Very few Gordinești-group burials have been discovered. Consequently, there is not enough evidence to answer the question about the typical funerary rite of this

⁵ Author of excavations: M.B. Schukin, unpublished [after Larina 2003]

⁶ Author of excavations: V.M. Bikbaev, unpublished [after Larina 2003].

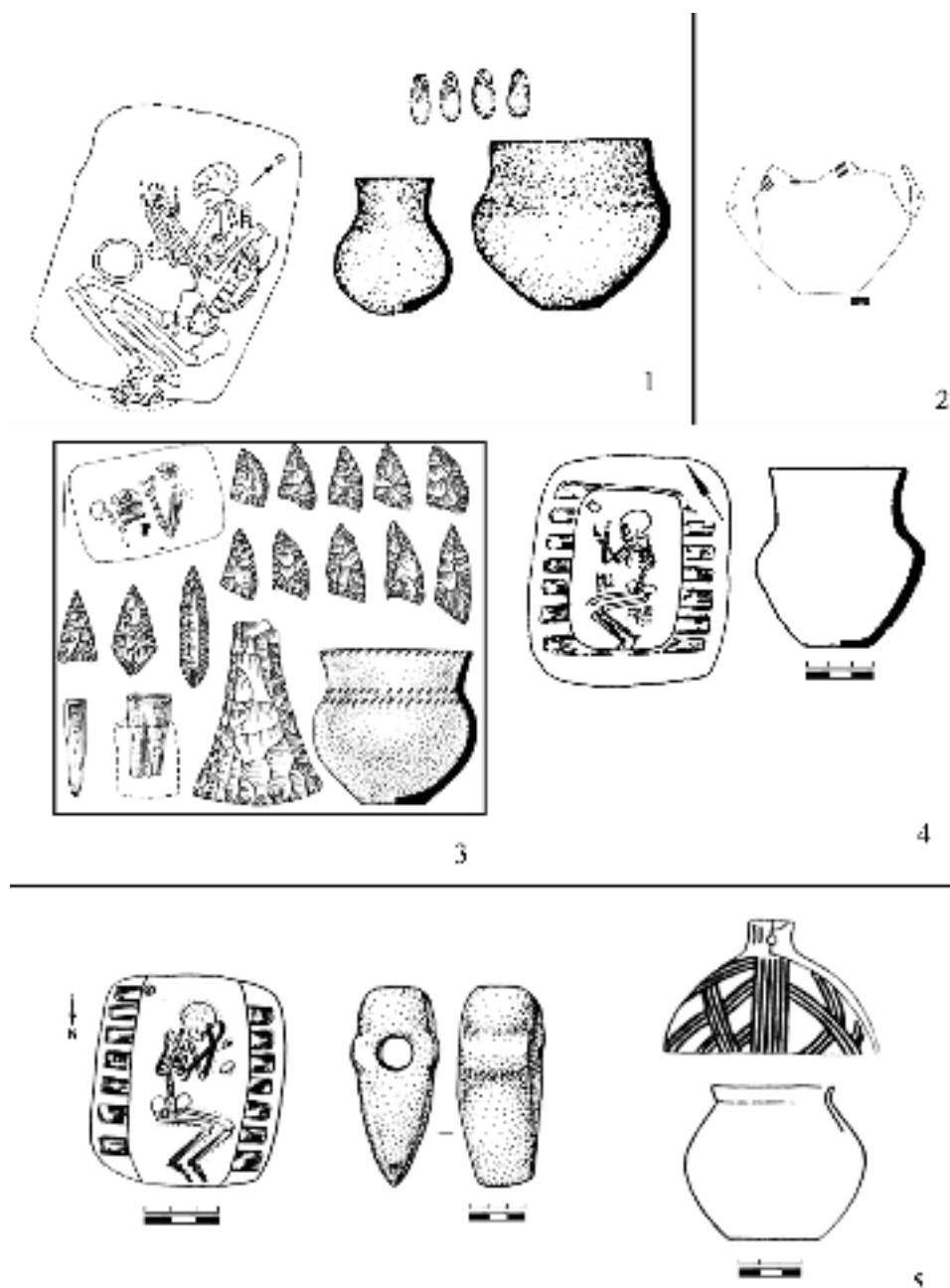


Fig. 8. Zhyvotilovka-Volchansk cultural group

1 – Corlăteni 1/1; 2 – Costești 4/1; 3 – Costești 2/2; 4 – Taraclia II 10/16; 5 – Taraclia II, 10/17
 [after: 1 – Dumitroaia 2000: 284-285, Fig. 76-77; 2 – Dergachev 1982: 15, Fig. 4; 3 – Dergachev 1982: 13, Fig. 3; 4, 5 – Dergachev, Manzura 1991: 256, Fig. 35]

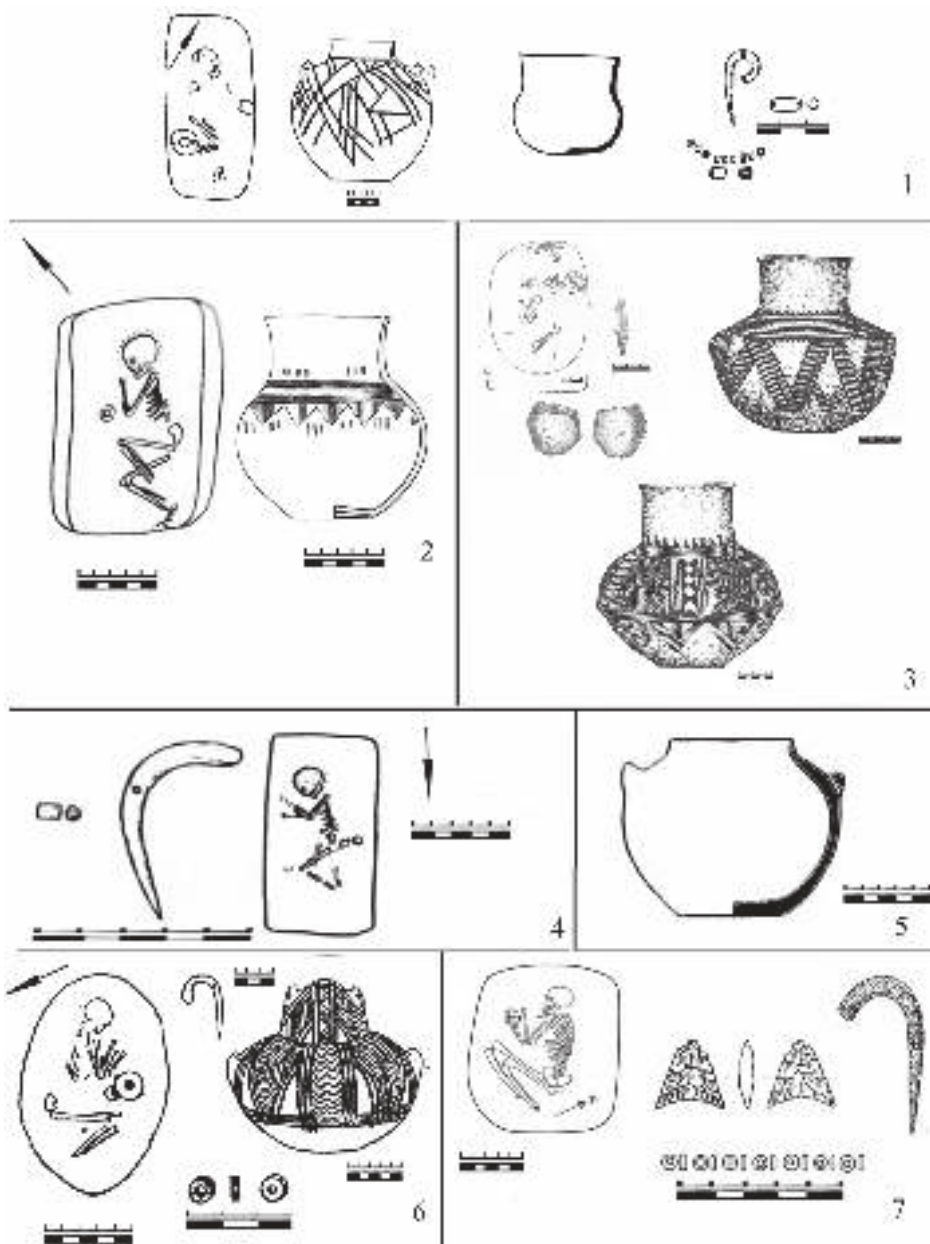


Fig. 9. Zhyvotilovka-Volchansk cultural group

1 – Taraclia II, 10/2; 2 – Gura Bukului 8/15; 3 – Sărățeni (Obileni) 4/8; 4 – Tiraspol II, 3/27; 5 – Bursuceni 1/20; 6 – Bolgrad 6/1; 7 – Kale 1/3 [after: 1 – Dergachev, Manzura 1991: 256, Fig. 35; 2 – Dergachev, Manzura 1991: 281, Fig. 264, Fig. 43, 3 – Levițki *et al.* 1996: 143-144, Fig. 40, 41; 4 – Dergachev, Manzura 1991: 271, Fig. 50; 5 – Dergachev, Manzura 1991: 260, Fig. 39; 6 – Dergachev, Manzura 1991: 258, Fig. 37; 7 – Russev *et al.* 2013: 159, Fig. 2]

community. There is no sufficient evidence as to whether burials with Gordinești-type ceramics (in the Prut-Dniester area), but lacking the peculiar Caucasian inventories, belong to the Gordinești or Zhyvotilovka group.⁷ In this context some important questions arise. Did the Gordinești community adopt the barrow rite or did it use only cemeteries and flat burials? Do Zhyvotilovka-type burials form a separate cultural group or are they merely a type within the Gordinești cultural group? Should barrows, where burials follow a similar funerary rite but lack any grave goods, be assigned to one of the two groups in question or should a separate group be distinguished? Perhaps, in consequence, we should revisit the idea proposed by I.V. Manzura [Manzura, Telnov 1992: 127] and distinguish a *Gordinești cultural-chronological horizon* which would encompass all the sites that show one way or another any connections to the Gordinești group of the Late Tripolye culture.

It will be possible no doubt to answer these questions as soon as a sufficiently comprehensive database is accumulated.

Zhyvotilovka-Volchansk cultural group. We also know of burials with Gordinești pottery located in barrows. They were joined together to form a ‘Zhyvotilovka cultural group’.⁸ Its characteristic trait can be seen in a peculiar funerary rite – a strongly contracted position on the right side (although cases of placing the corpse on the left side are also known), with the hands placed in front of the face or the chest (Figs. 8, 9). The pit is usually rectangular or oval, sometimes with a rather narrow step running around it. The western and southern orientations dominate. It is believed that the traits of this group show both pre-Caucasian (Maikop) and Late Tripolye influence. The latter is believed to include pottery having a Kasperovtsy/Gordinești look. To the southern (Maikop) influence, researchers attribute bone (more rarely metal) hook- or crosier-shaped pendants, cylinder-shaped beads, slick-surface pottery and southern orientation. I.F. Kovaleva, who distinguished Zhyvotilovka-type sites, explains their emergence with the movement of ‘Late Tripolye’ (Gordinești) communities southeast as far as the lower course of the Samara River, on the left bank of the Dnieper [1978, 1991]. The north-western movement is evidenced by a burial in a barrow on the Zavishnia site, Lviv oblast [Dergachev, Manzura 1991: 143].

Furthermore, it is observed that ‘Caucasian imports’ (slick-surface beakers, bone and metal hooked pendants) moved in the opposite direction as well. Researchers record a concentration of such syncretic sites close to the south-eastern frontier of the Tripolye culture and in the north-western periphery of Maikop culture communities. In the central portion of the territory in question, such finds are rarer [Gey 2011: 14].

⁷ We know of burials with a similar funerary rite but lacking any grave goods; should they be assigned to one of the two groups in question or should a separate group be distinguished?

⁸ Only later did Y.Y. Rassamakin call it Zhyvotilovka-Volchansk.

Not all the sites classified as the Zhyvotilovka-Volchansk type demonstrate the co-occurrence of all the 'obligatory' components of the funerary rite and inventory. For example, there are burials with pottery but without any bone pendants (Figs. 8; 9:2, 3), and vice versa (Fig. 9: 4, 7).

On the eastern bank of the Dnieper, on the middle course of the Samara, a locally-made amphora was found (Boguslav 23/12), which displays analogies to the GAC [Kovaleva 1991; Szmyt 1999: 151]. In the west of the area in question, amphorae characteristic of the entire Late Tripolye horizon stand out (Fig. 9:5). In Gordinești-type settlements and Zhyvotilovka-group burials, there are encountered beakers with a tall cylindrical neck and globular belly, sometimes bearing an ornament of thin lines incised (or impressed with a thin cord) to form a band of triangles. The beakers are made of cohesive clay whose slick surface ranges from orange to black in colour (Fig. 9:2). We also know of beakers with flanged lips (Fig. 8:4). Some researchers link their origins to the FBC. They also record the impact of Carpathian and Central European cultures on shaping the ceramic complex of the Zhyvotilovka cultural group [Rassamakin 1997: 293].

Researchers believe that the Zhyvotilovka community played a special role in establishing contacts ('bridge') between rather distant areas; the North Caucasus, on the one part, and the Southern Bug and Dniester rivers, on the other part. Y.Y. Rassamakin [2002: 50] sees in this process a more active role of Caucasian tribes, although he admits that the first impulse originated from Gordinești. A.N. Gey in turn, discussing Zhyvotilovka-type assemblages, believes that the role of migrations should not be overestimated in this case. Finds of objects may be a sign of long-standing interactions and relations of various kinds. Moreover, migrations could have consisted of the series of small shifts or 'shuttle' movements. Such movements and contacts could have had various purposes: exchange, trade, spoils of war, borrowing of technological devices, etc. [Gey 2011: 16-17].

The cultural attribution of these sites presents a problem, though. Researchers tend to assign one and the same burials, located in barrows, to the Zhyvotilovka type and the Late Tripolye Gordinești group. The criteria of distinguishing 'Gordinești-type burials' vary from author to author; they include pit shape, dimensions and orientation [Larina 2003:64], or the presence of Gordinești pottery or a bone 'pendant-hook', as well as corpse arrangement and orientation [Manzura, Telnov 1992: 121, 127].

A more cautious approach to this problem is taken by D.A. Topal and S.V. Tserna. They distinguish a group of sites using the criterion of 'Gordinești time', believing that today there are no other clear criteria for distinguishing Gordinești-type burials [Topal, Tserna 2010: 294].

However, there still remains the question of distinguishing between Zhyvotilovka and Usatovo burials without any grave goods. In the Usatovo culture, about 60 per cent of corpses lie on their left side, about 10 per cent on the right, and about 20 per cent lie supine. In 30 per cent of burials, the skeleton lay in the position of

adoration, i.e. its hands were close to the face [Patokova *et al.* 1989: 95-96]. The Zhyvotilovka rite, in turn, is characterized by the placing of the dead on their right side, with the hands arranged close to the face as well, but there are also corpses found lying on the left side. Sometimes, both arrangements are recorded in a single grave. In terms of orientation, the Usatovo funerary rite is known for the preference for north-eastern and north-western directions. It is believed, in contrast, that in the Zhyvotilovka rite, western and southern orientations dominate, but arrangements according to various points of the compass (Figs. 8, 9) are recorded as well. As a result, it is not always possible to determine the cultural attribution of burials deprived of any grave goods.

Some burials of the Zhyvotilovka group from the north-western Black Sea Coast have radiocarbon dates, coinciding with period CII of the Tripolye culture:

[Petrenko, Kovaliukh 2003: 108]

Bursuceni 1/20 (Hd-19362: 4548±28 BP; 3345-3120 (1 sigma), 3360-3100 BC (2 sigma),

Bursuceni 1/21 Hd-19933: 4462±22 BP; 3110-3030 (1 sigma), 3130-3030 BC (2 sigma)

Crasnoe 9/10 Hd-19389: 4467±34 BP; 3295-3040 (1 sigma), 3335-2925, BC (2 sigma),

Sărățeni 4/8 (LU) -2455: 4410±50 BP; 3148-3018 (1 sigma), 3213-2953 BC (2 sigma).

They are supplemented by a burial from the Vinogradnyi 2/4 site on the north-eastern Azov Sea Coast: Ki-15166: 4020±60BP; 2630-2460 (1 sigma), 2900-2300 BC [Rassamakin 2009: 290].

At this juncture it is relevant to observe similarly dated burials. In the Bursuceni 1/20 grave [Manzura, Dergachev 1991: 59], a semicircular bowl and an amphora with unpainted handles were found (Fig. 9:5). The Bursuceni 1/21 feature held the burial of one adult and three children. Its grave goods included three vessels, a bone pendant-hook, a gold ring twisted 1.5 times, a flint flake and ten circular shell beads. One of the vessels was shaped like a beaker with a globular belly and a tall, funnel-shaped neck [Yarovoy 2000: 17]⁹.

The Crasnoe 9/10 burial, in which a woman has been deposited, grave goods were included: a red-deer antler digging tool or club, a 'carpenter's kit' (term suggested by G.F. Korobkova), consisting of a stone adze to work wood, flint chisel to work wood, six flint knife insets, flint carving knife, flint adze, three clubs made of animal cut antlers, polished and painted with a red and black paint. The burial was located in a catacomb.

In the Sărățeni (Obileni) 4/8 burial (Fig. 9:3), the skeleton was badly damaged while the grave goods included a hammerstone, miniature copper knife, amphora and beaker with a tall neck. Both vessels bore a geometric ornament made using

⁹ The Bursuceni cemetery was excavated by E.V. Yarovoy in 1979. It has not been published yet.

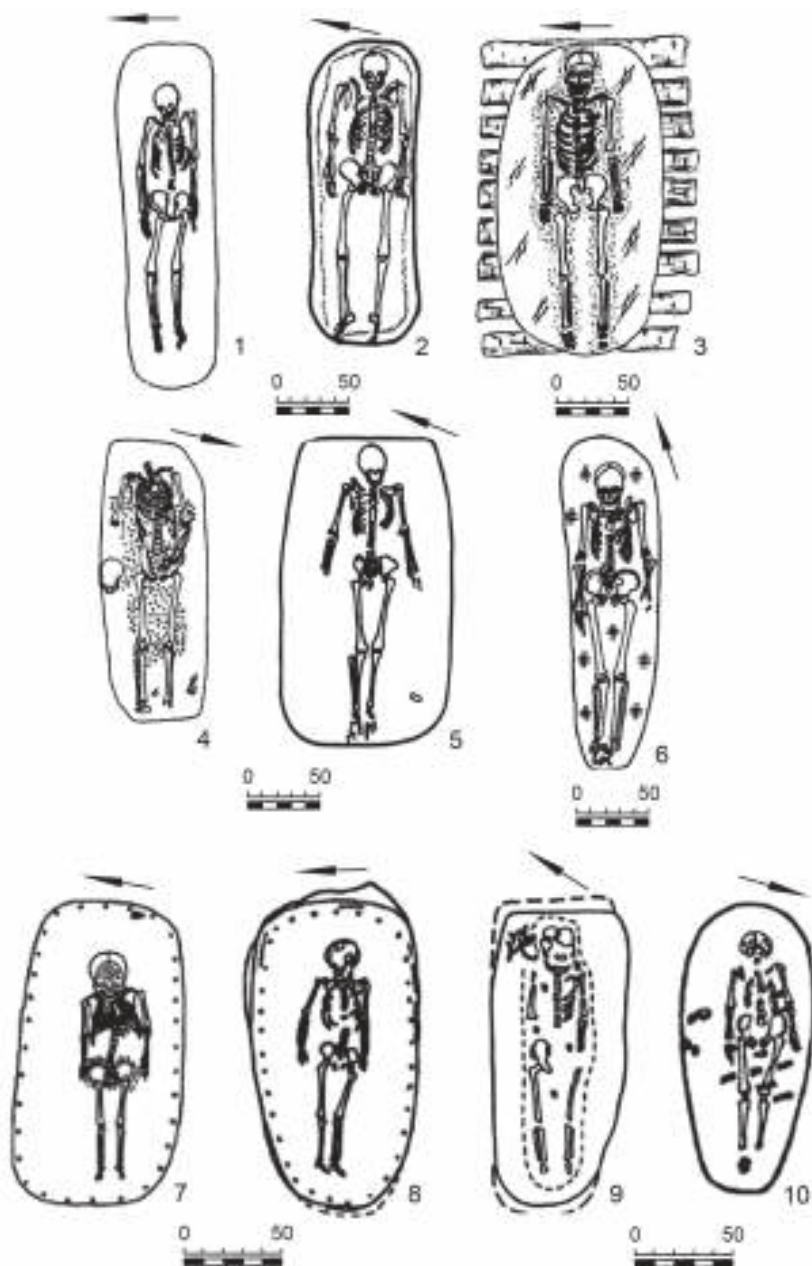


Fig. 10. Late Eneolithic and Early Bronze Age extended burials on the north-western Black Sea Coast

1 – Ogorodnoe III 1/12; 2 – Timkovo 1/5; 3 – Etulia 1/14; 4 – Ocnița 1/14; 5 – Vishniovoe 11/10; 6 – Nikolskoe 8/7; 7 – Ocnița 1/14; 8 – Sărățeni 2/3; 9 – Cahul 1/15; 10 – Kochkovatoe 30/2 [after Manzura 2010: 37, Fig. 2]

a technique of monochromatic painting. Relying on morphological and stylistic traits, the pottery from this burial is linked to the Gordinești culture and analogies are drawn to a beaker from a burial on the Gura Bukului 8/15 site [Levițki *et al.* 1996: 82-83].

In the north of the Prut and Danube interfluvium, only single barrow burials represent the Zhyvotilovka cultural group. These are: Bursuceni 1/20, 1/21, 1/25, Vărătic2/1, Costești 2/2, 4/1. They are supplemented by a burial from Corlăteni 1/1, Romania. The inventory from a grave in Costești 2/2 (Fig. 8:3) – asymmetrical, triangular arrows – is linked to North Caucasus sites [Dergachev 1982: 11-12, 27], in particular the Maikop culture [Larina 1989: 74].

The latest discoveries of Zhyvotilovka-Volchansk group features have been made by the *Yampil Expedition* of the Adam Mickiewicz University in Poznań and the Institute of Archaeology, Ukrainian NAS in Kyiv [see Klochko *et al.* 2015; Goslar *et al.* 2015; Ivanova *et al.* 2015].

Group of extended burials (post-Mariupol/Kvitanska group). Sites of this type are spread throughout the north-western Black Sea Coast, both in the steppe and forest-steppe zones (Fig. 3). The group of extended burials is not homogeneous in terms of both chronology and typology (Fig. 10). There are primary and secondary (sunk) burials. Sunk burials always succeed Late Eneolithic crouched or extended burials. Their inventories are rather uncharacteristic (flint goods, pottery tempered with crushed shells and ornamented with combing patterns on the surface). A few extended burials were also observed, judging by stratigraphy, in the mass of YC features in this region. They are the latest in this rather diversified and time-varied group.

It is presumed that extended burials were practised over a long period of time (Eneolithic and Bronze Age) and in different cultures on the north-western Black Sea Coast [Subbotin 1991: 72]. I.F. Kovaleva, however, formed them into a territorial group of the post-Mariupol burials of the north-western Black Sea Coast marked by a later chronological position in comparison with other regions [2002]. Y.Y. Rassmakin linked the extended burials to the Kvitanska culture by observing that in the Dniester-Prut interfluvium and on the lower Dniester the set of principal traits was lost [2000: 163-164] and synchronized the extended burials of the Dniester-Danube interfluvium with the Usatovo culture [2013: 29]. He dated the Kvitanska culture in the broad chronological framework of the Tripolye culture to phases BII–CI/CII–CII [2013: 38]. I.V. Manzura on the other hand, believes that from the chronological perspective extended burials can be tied to the various periods of the Eneolithic [Rassamakin 2013: 139-153; Levițki *et al.* 1996: 59–61]. He traces the tradition of extended burials to the influence exerted by the populations living on the lower Danube or to the local (i.e. of the Prut-Dniester) Mesolithic tradition. The discovery of a Mesolithic cemetery in Sacarovca, northern Moldova, featuring an analogous funerary rite, proves his point [Mazura 2013: 151]. Some late period burials may be attributed to the

post-Mariupol culture [Manzura 2010: 44]. Furthermore, one may argue Manzura is very right to believe that such burials do not represent a uniform archaeological culture but may be considered as belonging to several typological groups or ones existing at various times.

Besides stratigraphic data, the form of the grave chamber is important. To the variants of its corners (generally examined throughout the Black Sea Coast), researchers turned their attention already some time ago [Nikolova, Rassamakin 1985: 52–53].

I.V. Manzura, having analyzed barrow stratigraphy, concluded that the most archaic group was made up of burials deposited in wide, oval pits. This tradition continued for a long time, practically throughout the Eneolithic and until the Early Bronze Age, i.e. from the second half of the 5th to the end of the 4th millennium BC. The second group of burials, ones placed in narrow, elongated pits, may in his opinion be preliminarily dated to the 4th millennium BC. The latest of burial groups, comprising burials placed in rectangular pits, should be considered as belonging already to the Early Bronze Age, within the YC, which can be dated to the first half of the 3rd millennium BC [Manzura 2013: 150–151].

In the middle Dniester drainage basin, we know of only two extended burials: Očnița (Camenca) 6/24 and 7/14 [Manzura *et al.* 1992: 82–89]. These barrows are located in close proximity to the *Yampil Barrow Cemetery Complex* [Potupczyk, Razumow 2014].

Extended burials without any grave goods on the north-western Black Sea Coast have yielded a few radiocarbon dates:

Sărățeni 2/3 LU-2477: 4530±40 BP [Yarovoy 2000:18]; 3360–3110 (1 sigma), 3370–3090 BC (2 sigma)¹⁰

Vapniarka 4/4 Ki-15013: 4100±80 BP; 2870–2560 (1 sigma), 2880–2480 BC (2 sigma) [Ivanova 2009: 53]

Aleksandrovka 1/17 Ki-9526: 4010±60 BP; 2621–2463 (1 sigma), 2900–2300 BC (2 sigma) [Petrenko, Kovaliukh 2003: 106]

For areas lying further north, there has been no radiocarbon dates until recently. The situation has been changed by the studies on the chronometry of the *Yampil Barrow Cemetery Complex*. They have made the findings concerning the lifespan of ‘Late Eneolithic’ communities significantly more accurate [Goslar *et al.* 2015].

¹⁰ Calibrated using the Oxcal Software

2. YAMNAYA CULTURE IN THE MIDDLE DNIESTER AREA

The sites in the interfluvium between the middle Dniester and Prut rivers stand out against those located on the north-western Black Sea Coast because of some special traits of their funerary rite and grave goods. However, these differences are not strong enough to justify the distinguishing of a separate YC variety. Such a distinction is justified in the case of the sites of the entire north-western Black Sea Coast, which are interpreted as a local variety [Merpert 1974] or a separate culture [Klein 1975; Cherniakov 1979; Alekseeva 1992] on the strength of a complex of traits.¹¹ They include a strong domination of flat-bottomed pottery, western orientation of the dead in principal burials, and the scatter pattern of secondary burials. The pottery is dominated by flat-bottomed pots (Fig. 11:1), with vessels reflecting the impact of other culture standing out: amphorae, beakers (Figs. 11:8-11; 12:1-3) and vessels associated with the Balkan-Carpathian Region (Fig. 12:5-15). There also occurs pottery characteristic above all of the north-western Black Sea Coast, such as amphora-like vessels ('small amphorae') (Fig. 11:5-7) 'Budzhak pots' ('jars') and pot-like vessels (Fig. 11:2-4). Some types are so rare that only single specimens occur (Figs. 11:12; 12:5-15), while others are quite common, for instance, bowls (Fig. 12:4). Among other inventory categories, silver temple pendants and stone and flint shaft-hole axes (Fig. 13:1-11; 14:11, 12, 16, 21), concentrated in the region, merit to be mentioned. In other YC regions similar artefact categories do not occur at all or only as single specimens. Barrows containing a large number of graves display a peculiar scatter pattern. Burials are often grouped around the first grave (the major one among pit burials), spreading like an arch (or several arches) or a circle. There occur ditches, cromlechs or stone kerbs around barrow mounds.

The other traits of sites on the north-western Black Sea Coast are common to other YC regions. Grave chambers are usually rectangular with rounded corners. About 30 per cent of pits have a step running around its walls. Grave pits often have a stone or wooden cover, lying along or across the pit. There are examples of anthropomorphic stelae found in covers, cromlechs or barrow mounds. Skeletons most often lie crouched on their back, only less often do they lean to one side or lie crouched on their side. Grave goods include work tools and weapons made of stone, flint, copper/bronze and bone. Copper was used to make ornaments, usually temple pendants, tubes and beads for bracelets. Among other finds, there are bone ornaments: beads, pipe-like beads, small maces, necklaces and pendants made of animal teeth (deer, wolf, dog).

¹¹ The major traits of YC materials from the north-western Black Sea Coast were described in Ivanova 2013: 83-94.

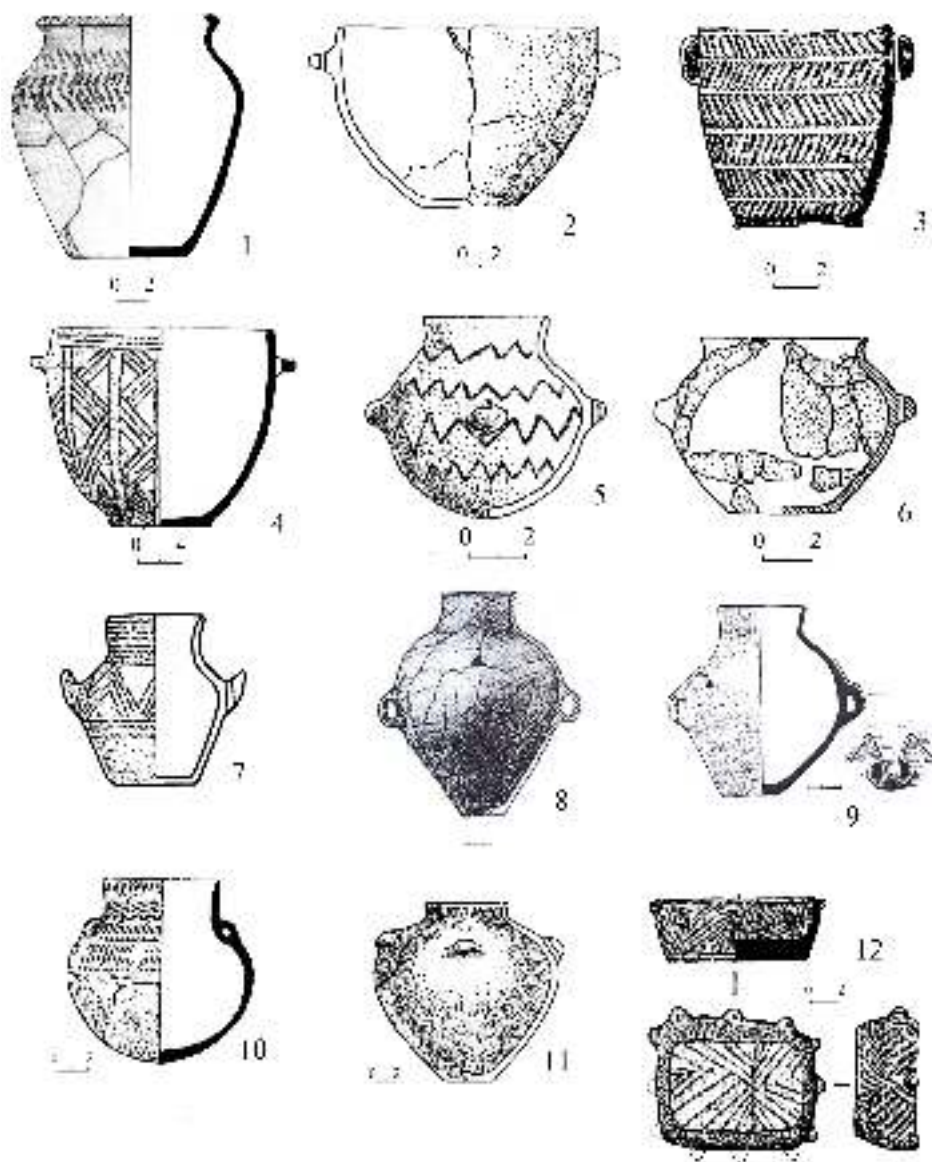


Fig. 11. Yamnaya culture pottery from the north-western Black Sea Coast

1 – Sychavka 1/10; 2 – Revova 3/7; 3 – Purcari 1/23; 4 – Diviziya 6/3; 5 – Baranovo 1/9; 6 – Liubasha g. 2; 7 – Mikhailovka 3/6; 8 – Cazacilia 3/13; 9 – Gradeshka 1,5/11; 10 – Mocra 3/4; – Corpaci 2/13; 12 – Grigorăuca 1/8 [after: 1 – Ivanova, Savelev 2011; 2,5,6 – Ivanova *et al.* 2005; 3 – Yarovoy 1990; 4 – Subbotin *et al.* 2001-2002; 7 – Subbotin 2000; 8 – Agulnikov 2008; 9 – Subbotin *et al.* 1995; 10 – Kashuba *et al.* 2001-2002; 11 – Yarovoy 1984; 12 – Agulnikov, Popovich 2010]



Fig. 12. Yamnaya culture pottery from the north-western Black Sea Coast

1 – Bashtanovka 7/12; 2 – Kholodnaya Balka 1/13; 3 – Bashtanovka 7/21; 4 – Baranovo 1/9; 5 – Vinogradovka (former Kurchy) 3/8; 6 – Primorskoe 1/34; 7 – Novogradkovka 5/14; 8 – Taraclia 16/5; 9 – Nerushay 9/49; 10 – Glubokoe 2/11; 11 – Taraclia 14/16; 12 – Taraclia 14/1; 13 – Bolgrad 5/6; 14 – Vishnevoe 52/3; 15 – Novogradkovka 1/10 [after: 1, 3, 9, 10 – Shmagliyi, Cherniakov 1970; 2 – Petrenko 2010; 4 – Ivanova *et al.* 2005; 5 – Toshev 1992; 6 – Chebotarenko *et al.* 1993; 7, 15 – Subbotin *et al.* 1986; 8, 11, 12 – Agulnikov 1995; 13 – Subbotin, Shmagliyi 1970; 14 – Subbotin *et al.* 1998]

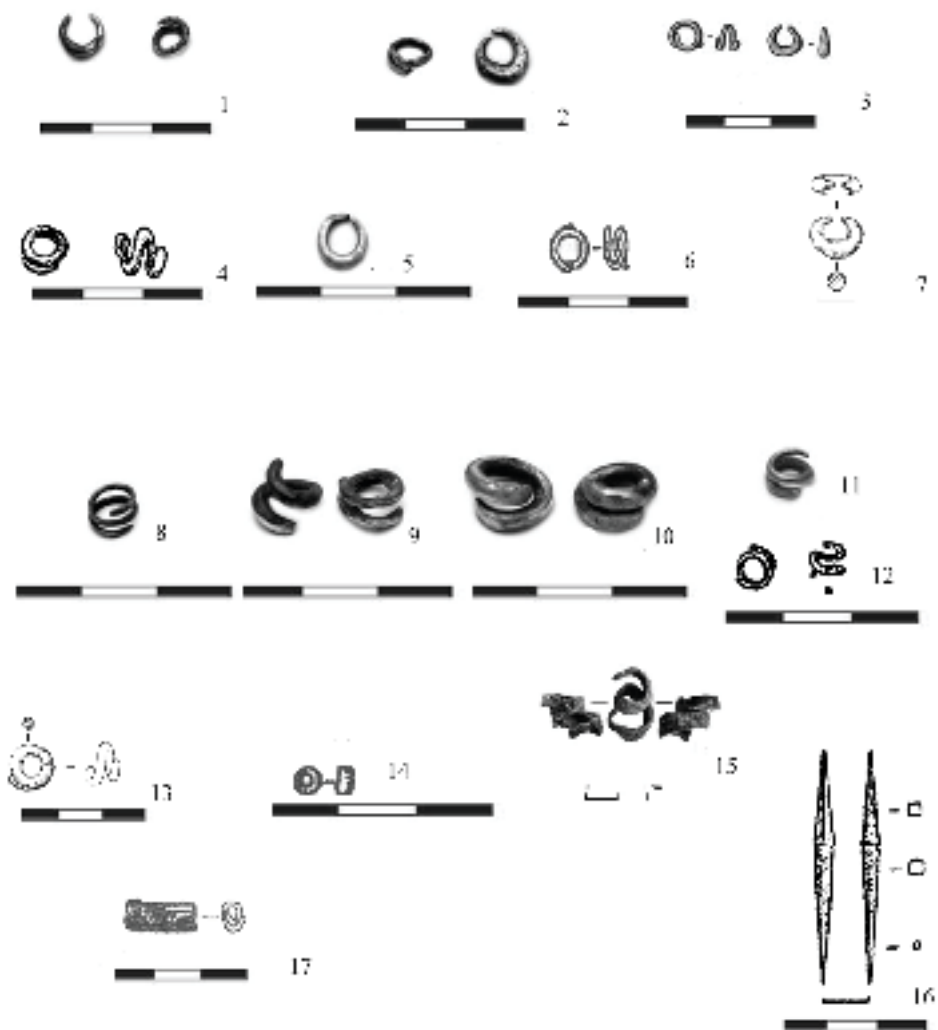


Fig. 13. Yamnaya culture metal goods in the Dniester-Prut basins

(1-10 – silver, 11-12 – gold, 13-17 – copper/bronze); 1 – Brăviceni 7/2; 2 – Corpaci 2/12; 3 – Pysarivka 5/1; 4 – Brăviceni 2/8; 5 – Teșcani 1/10; 6 – Cuzmin 3/2; 7 – Orhei 1/2; 8 – Bădragii Vechi 25/12; 9 – Bădragii Vechi 13/7; 10 – Bădragii Vechi 6/7; 11, 12 – Brăviceni 4/4 (11 – photo, 12 – drawing); 13 – Orhei 1/6; 14 – Cuzmin 3/2; 15 – Brînzezii Noi 1/4; 16 – Brăviceni 2/7; 17 – Mocra 1/3 [after: 1, 2, 5, 8–11, 16 – Nikulitsa 2009; 3 – Harat *et al.* 2014; 4, 12, 16 – Larina *et al.* 2008; 6, 14 – Bubulich, Khakheu 2002; 7, 13 – Dergachev 1973; 17 – Kashuba *et al.* 2001–2002]

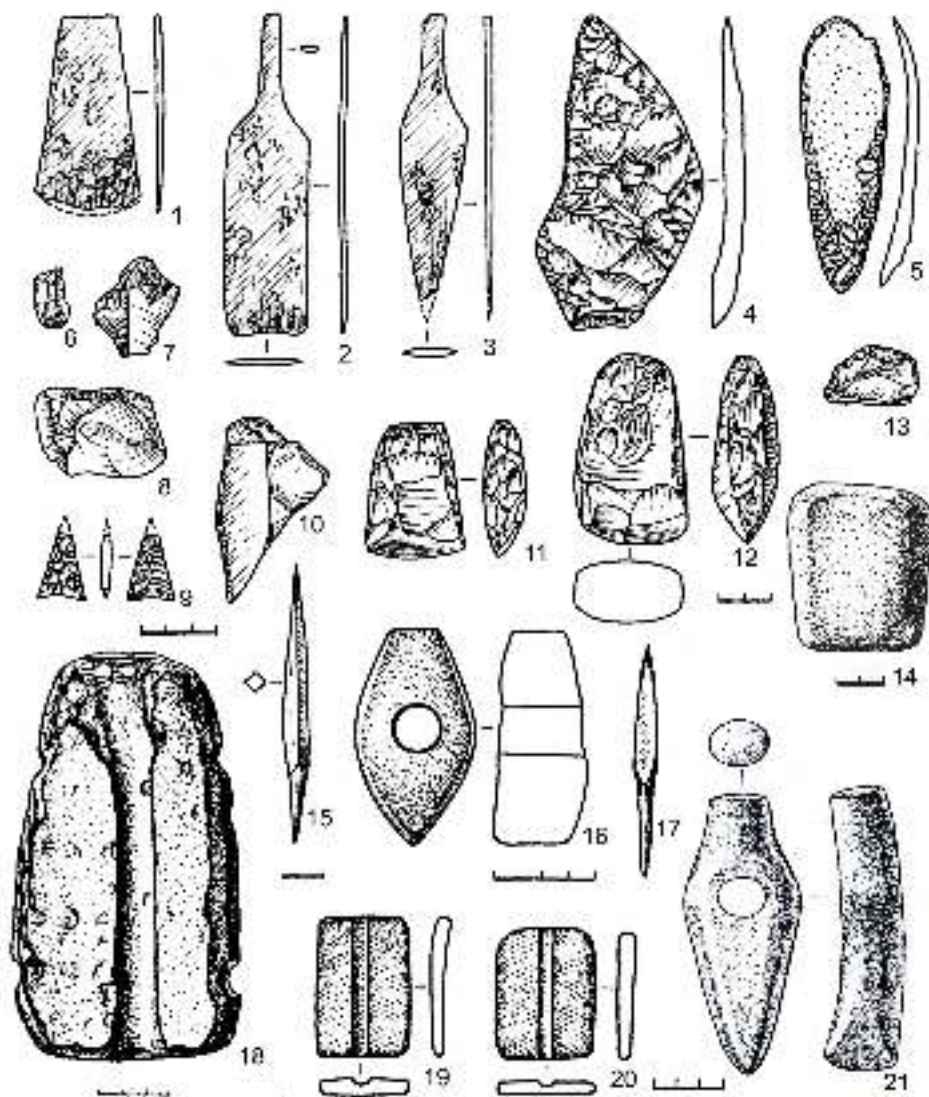


Fig. 14. Work tools from Yamnaya culture burials on the north-western Black Sea Coast (1-3, 15 – copper, bronze; 4-13 – flint, 14, 16, 18-21 – stone, 17 – bone);
 1 – Alkaliya 35/6, axe; 2 – Taraclia II, 10/19, knife-razor; 3 – Frikatsey 4/12, knife-dagger;
 4 – Utkonosovka 1/6, sickle; 5 – Kholmskoe 2/8, blade knife; 6 – Nagornoe 14/16, flint artifact;
 7 – Vishnevoe 17/43, flint artifact; 8 – Vishnevoe 1/43, flint artifact; 9 – Congaz 11/5, arrowhead;
 10 – Chaush 20/2, flint artifact; 11 – Kholmskoe 5/14, axe; 12 – Grigorievca 1/10, axe; 13 – Vishnevoe 17/43, scraper; 14 – Shevchenkovo 3/11, copper-ore grindstone; 15 – Brăviceni 7/2, awl; 16 – Svetlii 3/25, stone axe; 17 – Hlinaia 1/1, arrowhead; 18 – Chervonyi Yar I, 1/6, arrow-shaft smoother;
 19, 20 – Olănești 6/2, arrow-shaft smoother; 21 – Alkaliya 5/6, stone axe [after Subbotin 2003]

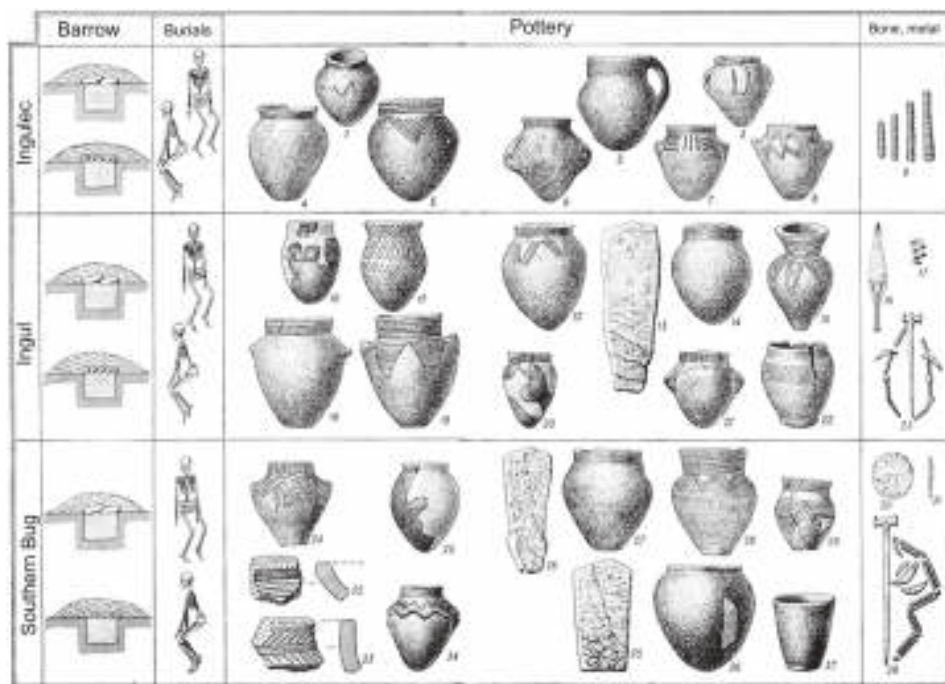


Fig. 15. Yamnaya culture materials in the Southern Bug-Inhul interfluvium [after Shaposhnikova 1985]

In various regions, in comparison to other YC territories, specific rite elements or artefacts may either dominate or, on the contrary, be absent. For instance, in the Dnieper-Southern Bug interfluvium, one can notice a concentration of anthropomorphic stone stelae and hammerhead pins. Stelae are known on the north-western Black Sea Coast, while pins occur there in single specimens only. The north-western Black Sea Coast stands out from the entire YC not only because of specific pottery traits or particular artefacts but also the number of graves with wooden wagons [Ivanova, Tsimidanov 1993].

The most significant inventory category is pottery. It reflects best the differences between YC (pit-grave historical-cultural community) regions and local varieties (Figs 15; 16).

The sites in the forest-steppe portion of the Dniester drainage basin are similar no doubt to those in the Prut drainage forest-steppe and may be considered a specific *territorial group* within the Dniester-Prut interfluvium. The group is characterized by the same ritual traits and grave-goods composition as those found in the entire north-western Black Sea Coast. The structure of barrows displays the same approach to the organization of sacred space: some barrows have ditches and crom-

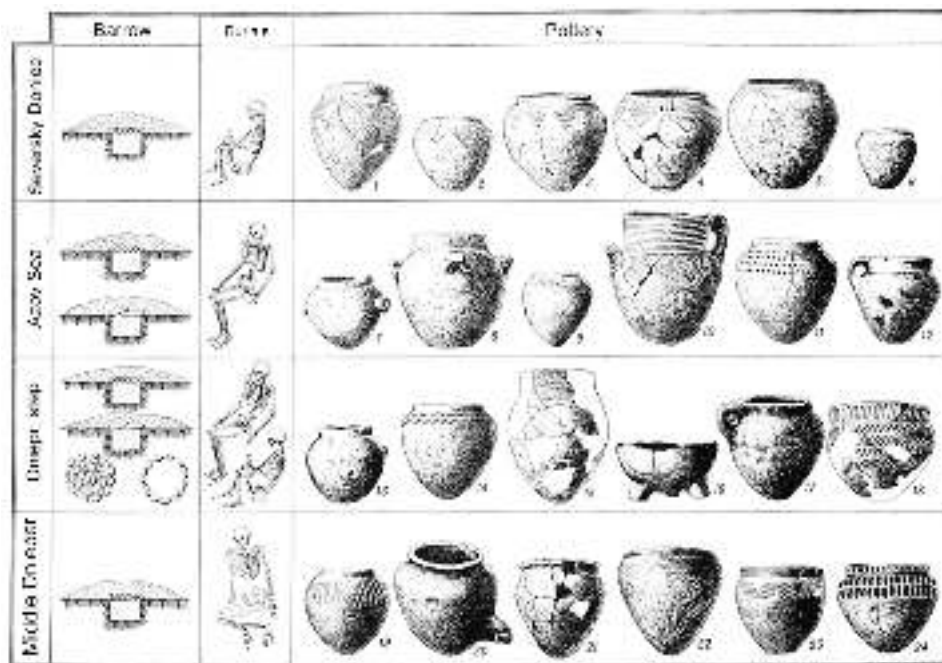


Fig. 16. Yamnaya culture Pottery in the Dnieper-Donetsk Region [after Shaposhnikova 1985]

lechs, and burials are arranged along arches or circles (Fig. 17: 1, 2). The deceased were deposited in simple pits and ones with a step, with the rectangular shape of the chamber prevailing. Stone and wooden covers (placed along and across graves), and organic padding on the grave chamber bottom were used. The body arrangement variants do not differ from traditional ones. Skeletons lay crouched on their back, leaning to the left or right side, and also on their right or left side (Figs. 18-20; 21; 19). Burials with disarticulated skeletons are known as well (Ocnița 1/1, 6/25, 3/17). Pottery is dominated by various forms of pots (Fig. 23). There occur small amphorae, 'Budzak pots' ('jars') and pot-like vessels (Figs. 24:16,17,21-25), as well as ceramics showing connections to other cultures (Fig. 24:1-15). There are only few metal goods; they include silver, copper and gold artefacts, with ornaments dominating (Fig. 13). Finds include also work tools and weapons made of stone, bone, and flint; flint flakes are relatively common (Fig. 25). Ornaments of animal bones and teeth are encountered as well.

Generally speaking, it can be observed that materials from sites in the forest-steppe zone are more meagre in number than those from the steppes. They contain much fewer metal goods, the set of finds is more limited, there are fewer vessels as well. Out of 2,632 YC burials discovered on the north-western Black Sea Coast, 464 burials, or 17.6 per cent, are located in the forest-steppe zone of

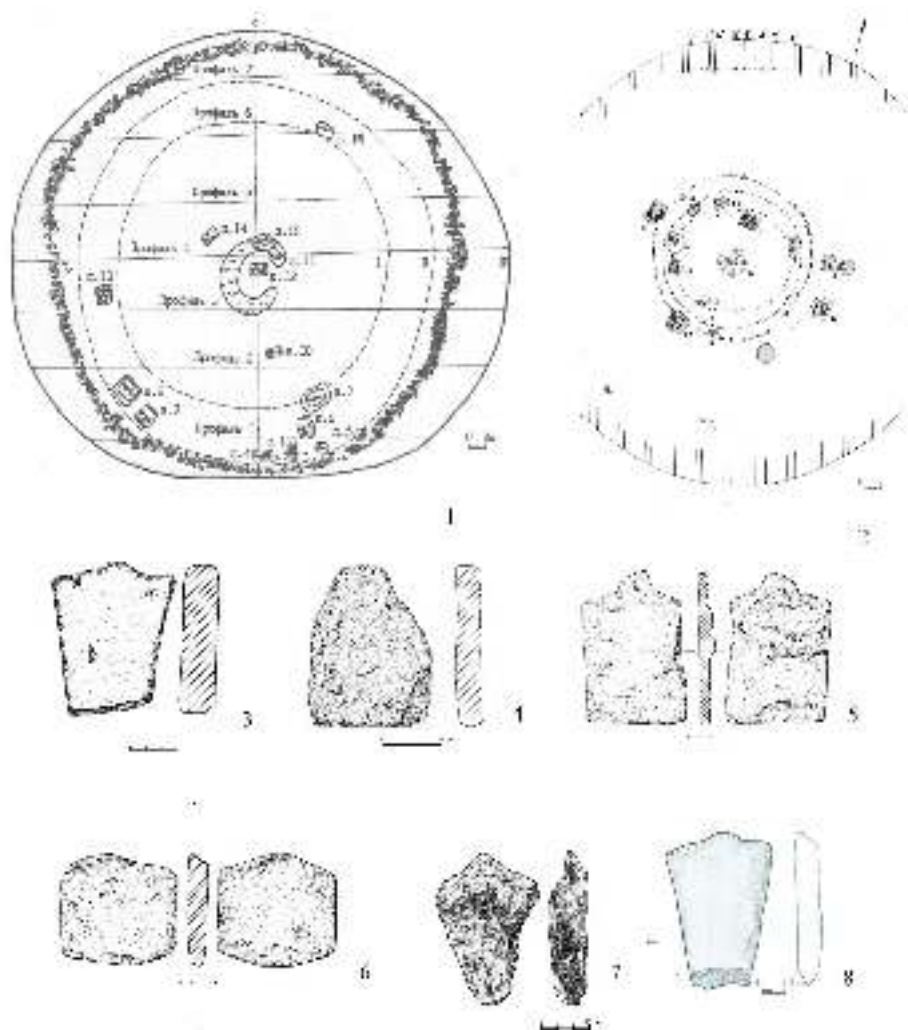


Fig. 17. Yamnaya culture barrows and stelae in the Dniester-Prut basins.

1 – Corpaci, barrow 2; 2 – Ocnița, barrow 3; 3 – Ocnița, barrow 4, mound; 4 – Cuconești Vechi 1/3; 5 – Mărculești 1/2; 6 – Mărculești 1/1; 7 – Brînzanii Noi, platform at the barrow base 1; 8 – Porohy, barrow 3A, mound [after: 1 – Yarovoy 1984; 2, 3 – Manzura *et al.* 1992; 4 – Ketraru *et al.* 1975; 5, 6 – Levinskiy, Tentiuk 1990; 7 – Agulnikov, Mistreanu 2014; 8 – Klochko *et al.* 2015a]

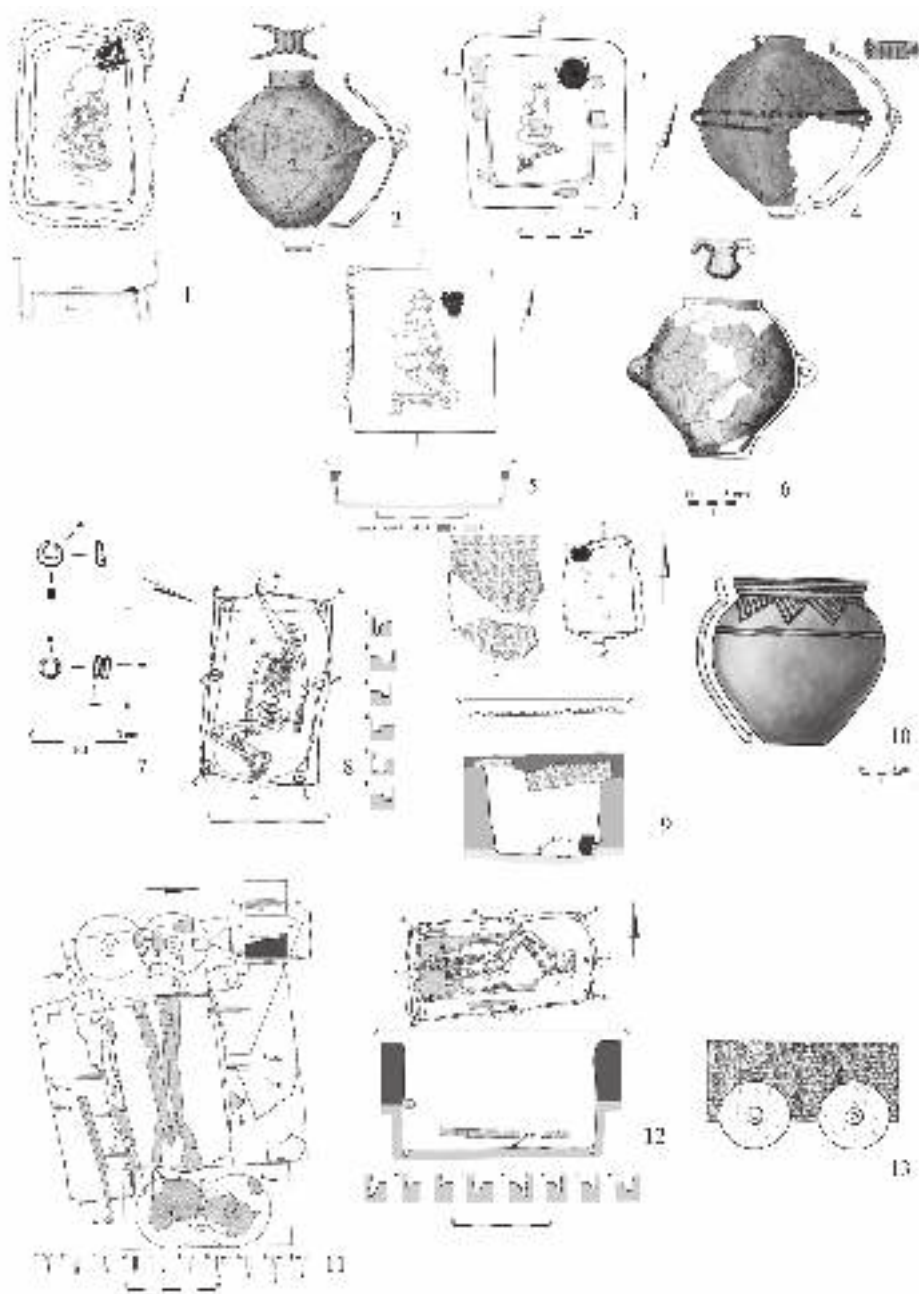


Fig. 18. Yampil Ceremonial Centre grave assemblages

1,2 – Porohy 4/8; 3,4 – Porohy 2/6; 5,6 – Porohy 3/4; 7,8 – Pysarivka 5/1; 9,10 – Pysarivka 2/3; 11-13 – Pysarivka 6/2 [after Harat *et al.* 2014]

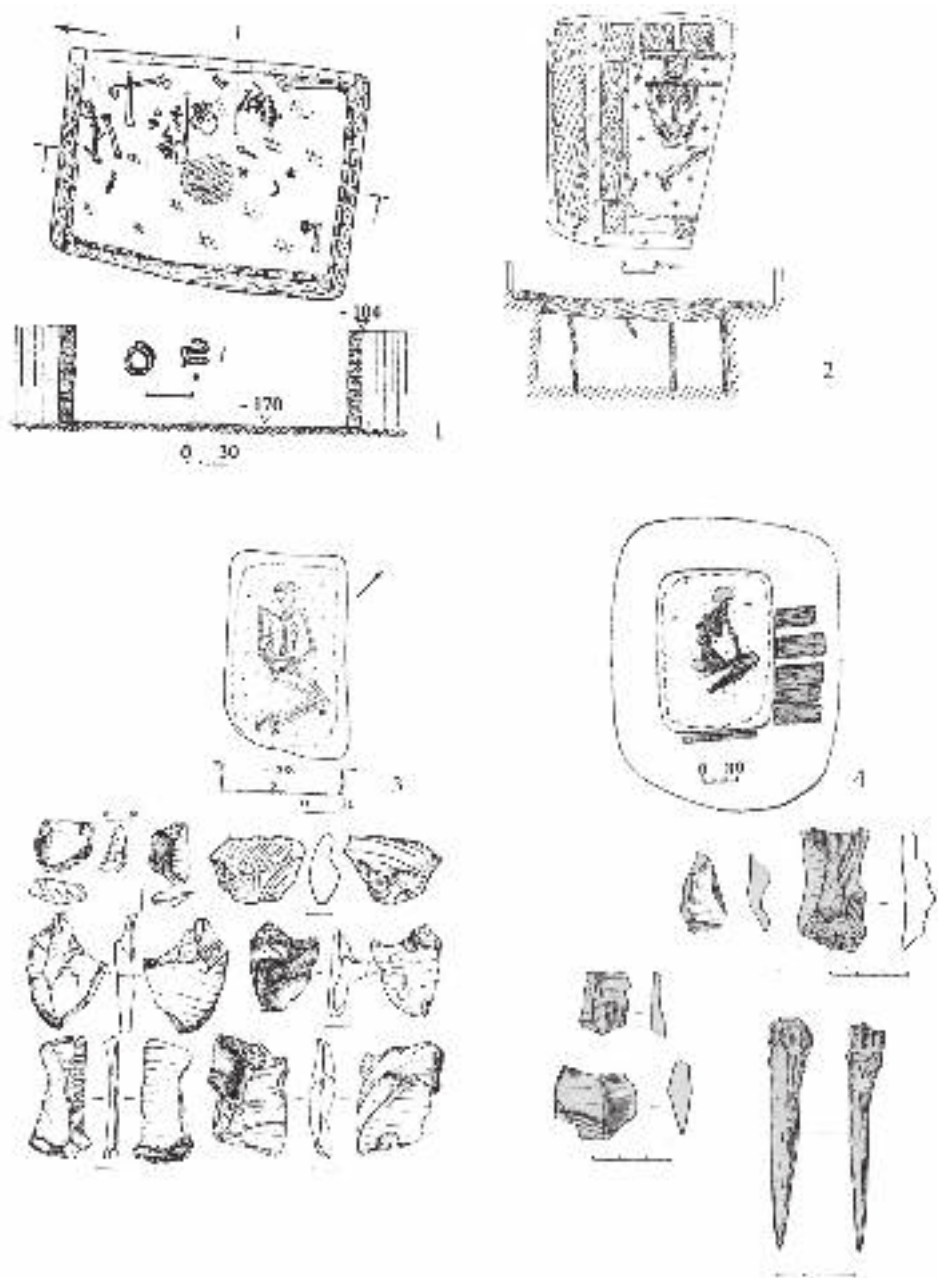


Fig. 19. Yamnaya culture funerary assemblages in the Dniester-Prut basins
 1 – Brăviceni 4/4; 2 – Brînzanii Noi 1/4; 3 – Brăviceni 17/3; 4 – Ocnița 7/8 [after: 1, 3 – Larina *et al.* 2008; 2 – Agulnikov, Mistreanu 2014; 4 – Manzura *et al.* 1992]

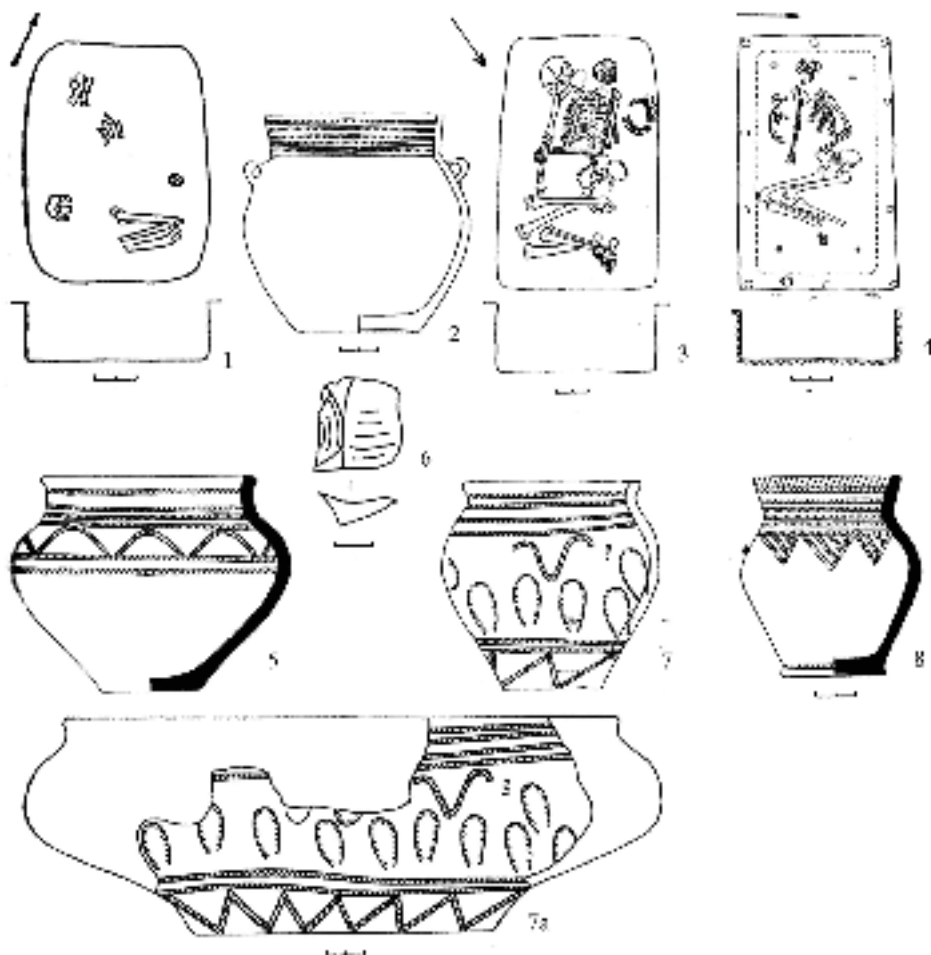


Fig. 20. Barrows 1 and 2 in the vicinity of Pererîta

1, 2, 6 – burial 1/9; 3, 5, 7 – burial 1/10; 7a – vessel projection from burial 1/10; 4, 8 – burial 2/1
[after Kurchatov 2006]

the Dniester-Prut interfluvium. It will be logical to assume that the major categories of finds will represent the same percentage. Of 467 vessels unearthed in the entire region, the forest-steppe zone yielded 55 items (including those recovered in the course of excavations carried out by the *Yampil Expedition* in 2010-2014)¹², or 11.8 per cent. This figure is by one-third lower than expected.

The most common pottery forms on the north-western Black Sea Coast are pots

¹² We do not take into account vessels found outside burials in barrow mounds (e.g. Ocnîța, barrow 3, barrow 7 and others), although their YC provenance is highly probable.

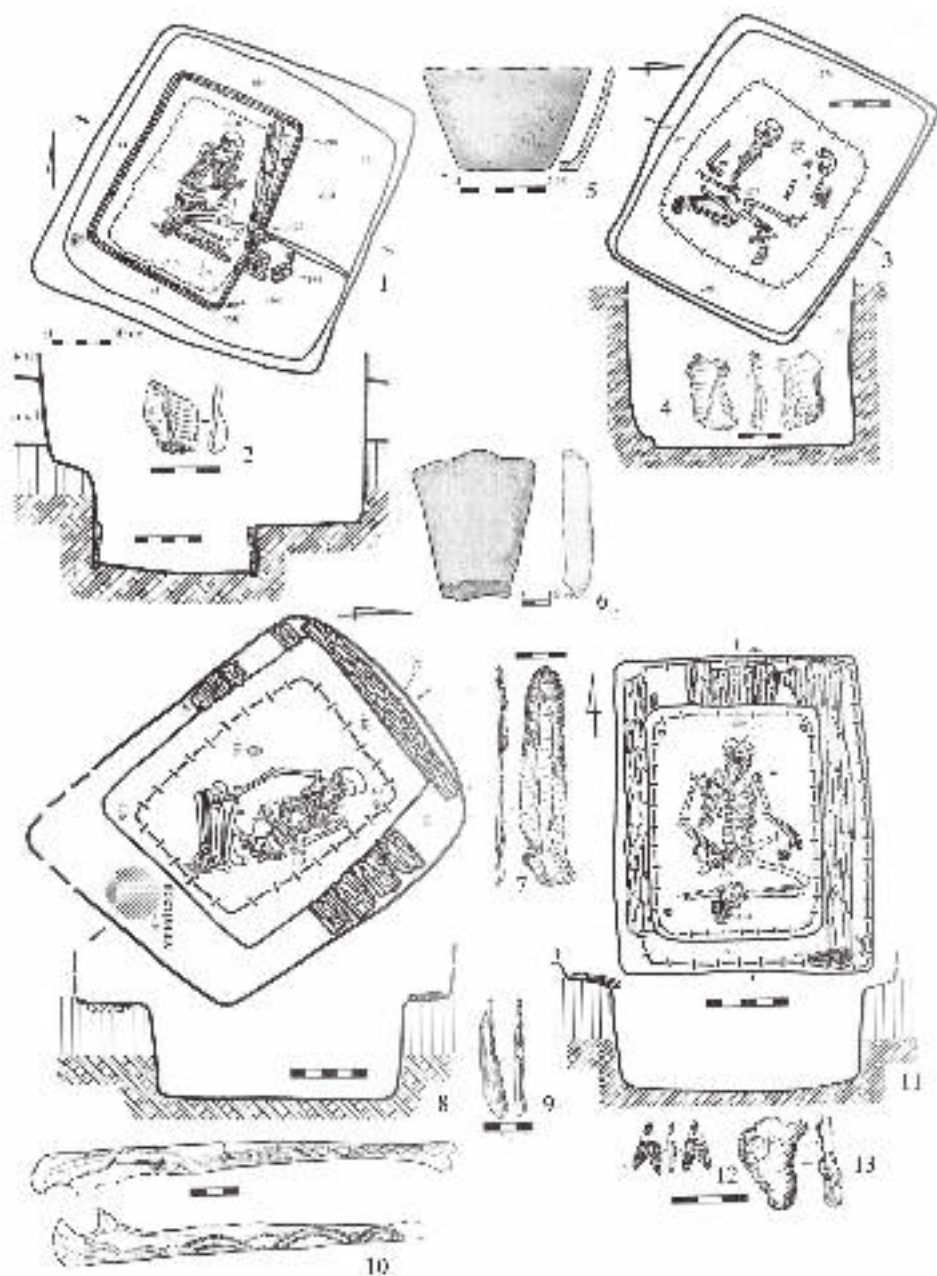


Fig. 21. Yamnaya culture burials and materials on the Dniester-Podolia (forest steppe).
 1, 2 – Porohy 3A/1; 3, 4 – Porohy 3A/20; 5 – Porohy 3A/18; 6 – Porohy 3A/mound; 7 – Porohy 3A/15; 8–10 – Porohy 3A/10; 11–13 – Porohy 3A/11 [after Razumov *et al.* 2012; Klochko *et al.* 2015a]

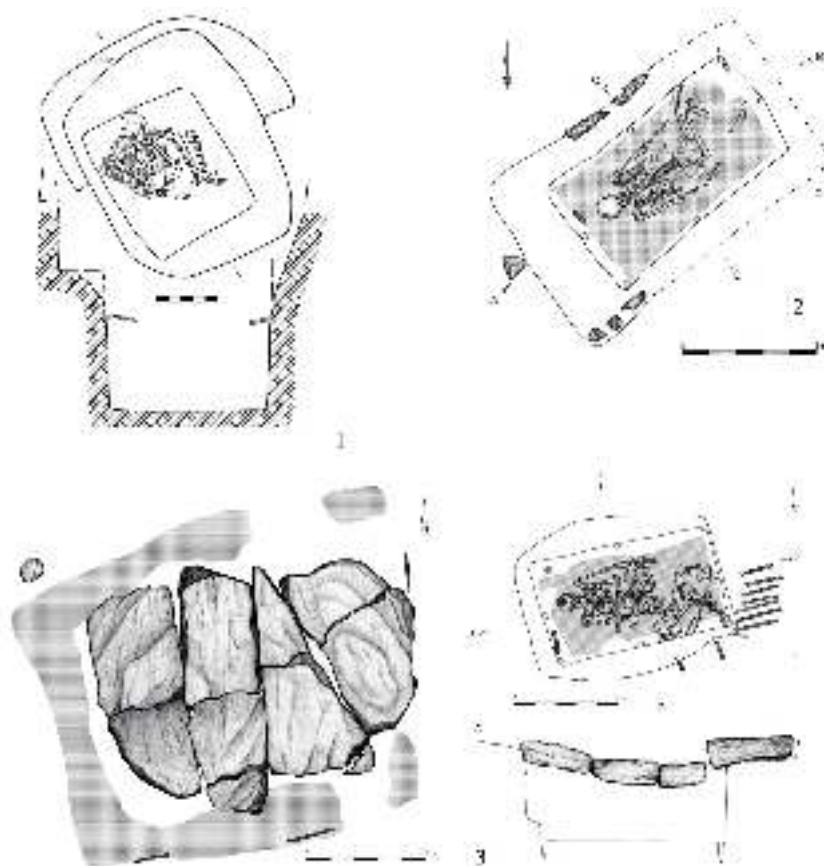


Fig. 22. Yamnaya culture burials on the Dniester-Podolia (forest steppe)

1 – Klembivka 1/14; 2 – Prydnistrianske 4/6; 3 – Prydnistrianske 4/4 [after Klochko *et al.* 2015; 2015b]

(34.5%), ‘Budzhak pots’ (‘jars’) (18%), small amphorae and amphora-like vessels (12.2%), bowls (12%), large-size (‘corded’) amphorae (4.5%), GAC vessels (2%). In the Dniester-Prut interfluvium, percentage shares of individual pottery forms are as follows: pots – 45%, ‘Budzhak pots’ (‘jars’) and pot-like vessels – 9%, small amphorae and amphora-like vessels – 4.5%, and bowls – 5.5%. The interfluvium yielded one-third of all large-size amphorae, about two-thirds of all GAC vessels, but only one beaker (of 39 beakers and beaker-like vessels recovered on the north-western Black Sea Coast), which was found in a grave on the Pererîta 2/1 site (Fig. 20:4, 8).

Five copper (bronze) goods were unearthed, including one tool (awl) and four ornaments (Fig. 13:13-17). No large metal artefacts were encountered. Instead, 19 silver temple ornaments were found (Fig. 13:1-10), which represent 15.7 per cent of all silver goods (121 objects from 61 graves) found on the north-western

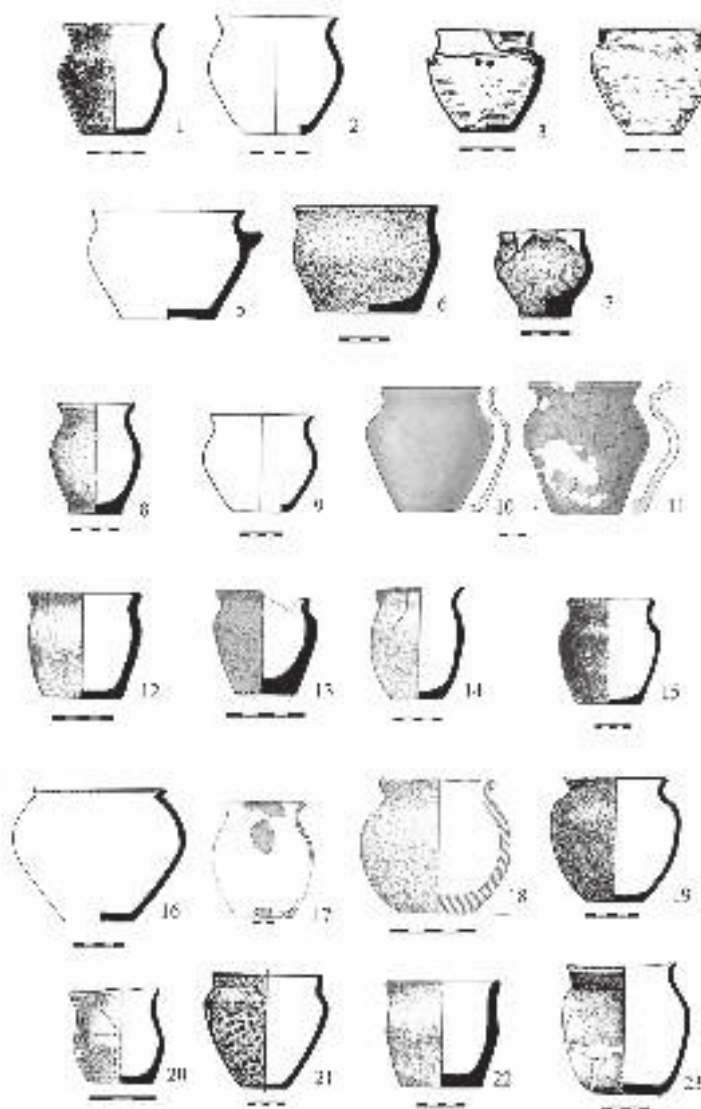


Fig. 23. Yamnaya culture pottery from the Dniester-Prut basins

1 – Chirileni 3/22; 2 – Brăviceni 16/4; 3 – Medveja 1/4; 4 – Stavchany 3/1; 5 – Pererîta 2/11; 6 – Duruitoarea Nouă 4/2; 7 – Corpaci 2/9; 8 – Brăviceni 7/13; 9 – Brăviceni 6/4; 10 – Pysarivka 5/2; 11 – Pidlisivka 1/10; 12 – Ocnîța 7/4; 13 – Ocnîța 5/4; 14 – Ocnîța 5/6; 15 – Mocra 1/6; 16 – Pererîta 2/12; 17 – Severynivka 2/9; 18 – Podoima 3/6; 19 – Brăviceni 2/3; 20 – Brăviceni 1/10; 21 – Burlănești barrow 2, mound; 22 – Ocnîța 7/4; 23 – Brăviceni 23/3 [after: 1 – Abyzova, Klocho 2003–2004; 2, 8, 9, 19, 20, 23 – Larina *et al.* 2008; 3 – Savva, Dergachev 1984; 4 – Zbenovich 1967; 5, 16 – Kurchatov 2006; 6 – Demchenko 2007; 7 – Yarovoy 1984; 10, 17 – Harat *et al.* 2014; 11 – Koško *et al.* (Eds) 2014; 12–14, 22 – Manzura *et al.* 1992; 15 – Kashuba *et al.* 2001–2002; 18 – Bubulich, Khakheu 2002; 21 – Demchenko, Levitskiy 2006]

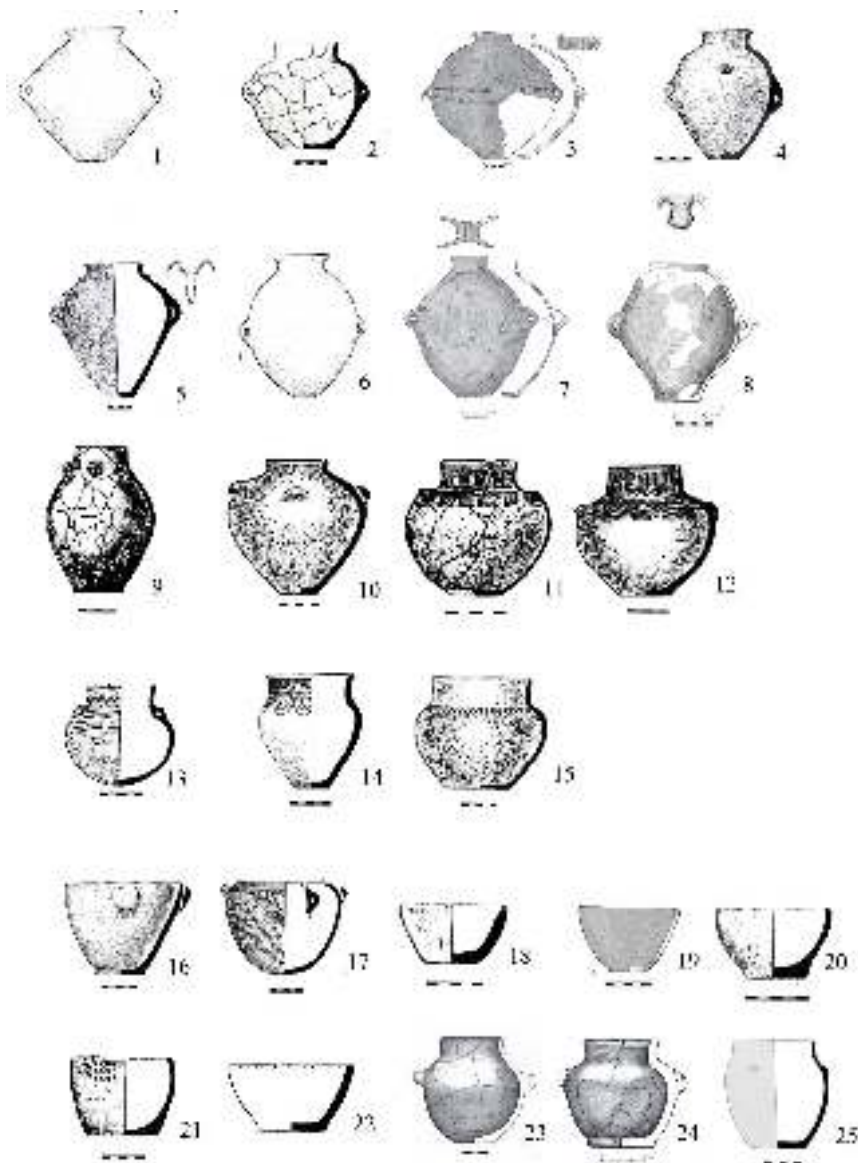


Fig. 24. Yamnaya culture pottery from the Dniester-Prut basins

1 – Bursuceni 1/19; 2 – Iabloana 1/1; 3 – Porohy 2/6; 4 – Ocnîța 3/13; 5 – Ocnîța 6/18; 6 – Bursuceni 1/14; 7 – Porohy 4/8; 8 – Porohy 3/4; 9 – Mărculești 3/4; 10 – Corpaci 2/13; 11 – Ocnîța 3/14; 12 – Corpaci 2/7; 13 – Mocra 3/4; 14 – Orhei 1/3; 15 – Camenca (Kamenka) 445/7; 16 – Brăviceni 16/9; 17 – Mocra 1/3; 18 – Ocnîța 7/4; 19 – Dobrianka 1/4; 20 – Ocnîța 3/15; 21 – Ocnîța 4/4; 22 – Pererîta 2/6; 23 – Rogojeni 1/1; 24 – Rogojeni 1/2; 25 – Mîndrești 1/1 [after: 1,6 – Yarovoy 1985; 2 – Yarovoy 1983; 3, 7, 8, 19 – Harat *et al.* 2014; 4, 5, 11, 18, 20, 21 – Manzura *et al.* 1992; 9 – Beylekchi 1992; 10, 12 – Yarovoy 1984; 13, 17 – Kashuba *et al.* 2001–2002; 14, 25 – Dergachev 1973; 22 – Kurchatov 2006; 23, 24 – Agulnikov *et al.* 2004]

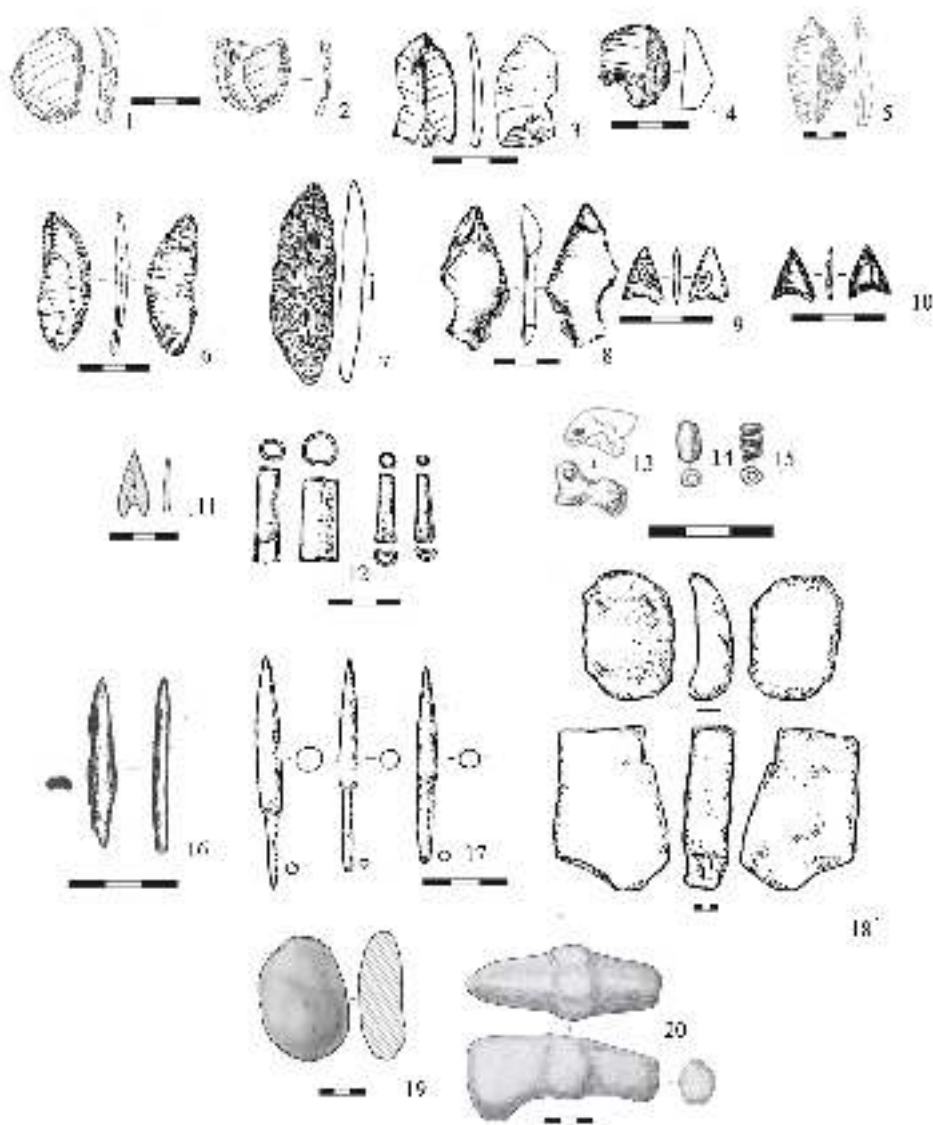


Fig. 25. Yamnaya culture flint, stone and bone goods in the Dniester-Prut basins (1–11 – flint, 12–17 – bone, 18–20 – stone); 1–4 – scrapers; 5–7 – knives, 8 – blade; 9–11 – arrow points; 12 – tube-like beads; 13 – animal-tooth pendant; 14 – bead; 15 – tube-like bead with notches; 16, 17 – arrow points; 18 – quern with grindstone; 19 – hammer; 20 – semi-finished boat-axe
 1 – Cuzmin 2/2; 2 – Podoima 3/8; 3 – Brăviceni, 5/7; 4 – Brăviceni, 12/7 5 – Cuzmin 2/2; 6 – Brăviceni, 17/5; 7 – Brăviceni, 16/6; 8 – Brăviceni, 2/17; 9, 10 – Brăviceni, 18/3; 11 – Ocnița, 6/18; 12 – Brăviceni, 12/2; 13–15 – Pysariwka 3/2; 16 – Ocnița, 4/2; 17 – Brăviceni, 16/9; 18 – Brăviceni, 11, kurgan mound; 19 – Dobrianka 1/4; 20 – Seweryniwka 2/10 [after: 1, 2, 5 – Bubulich, Khakheu 2002; 3, 4, 6–10, 12, 17, 18 – Larina *et al.*, 2008; 11, 16 – Manzura *et al.*, 1992; 13–15 – Harat *et al.* 2014; 19 – Harat *et al.* 2014; 20 – Harat *et al.* 2014]

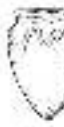




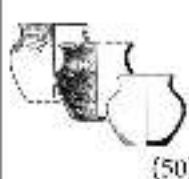



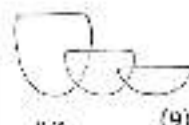












Southern Bug variety (931 graves)	Budzhak culture (2632 graves)	Southern Bug variety (931 graves)	Budzhak culture (2632 graves)
 (8)	 (4)	 (5)	 (3)
 (31)	 (50)	 (5)	—
 (32)	 (4)	 (9)	 (2)
 (53)	 (63)	 (2)	—
 (10)	 (1)	 (6)	 (13)
 (15)	 (1)	 (2)	—
		 (1)	

Fig. 26. Comparative analysis of the basic pottery forms of the Southern Bug variety of the Yamnaya culture [after: Shaposhnikova 1985] and Yamnaya culture vessels on the north-western Black Sea Coast (number of finds is given in parentheses)

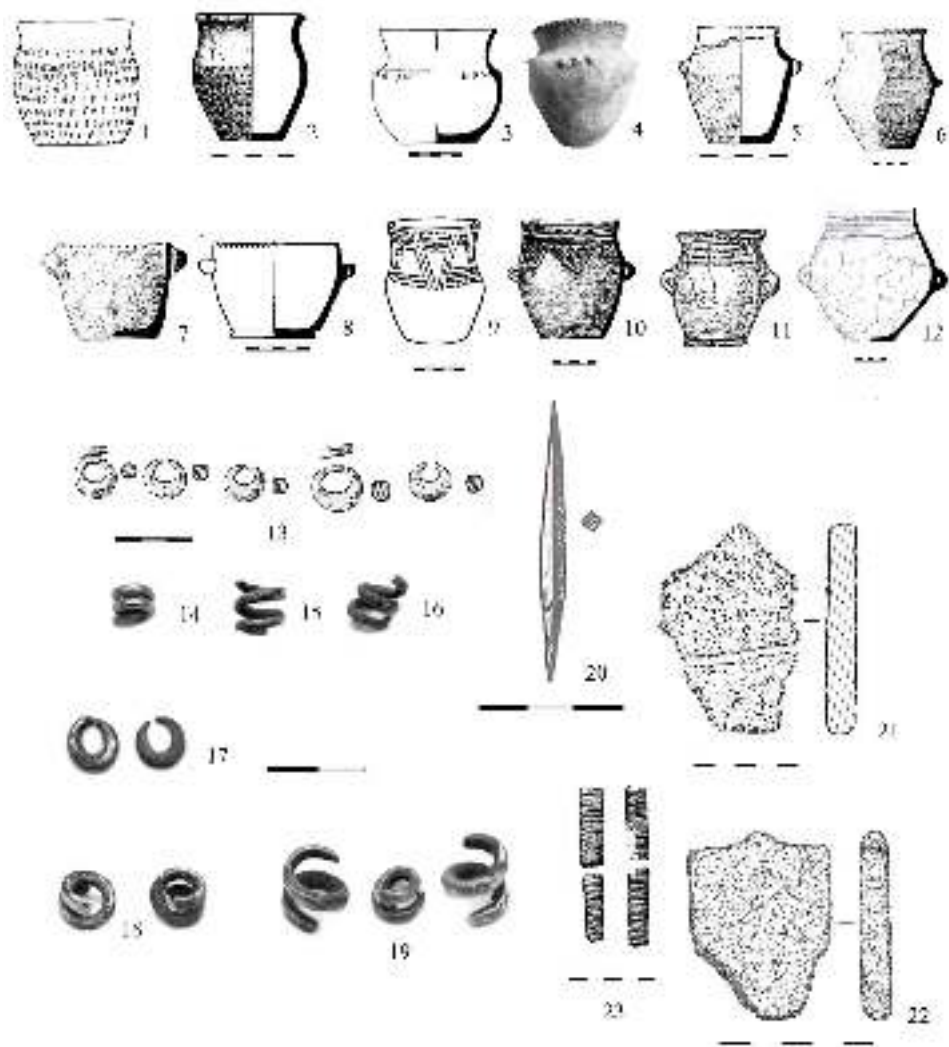


Fig. 27. Artifacts from "Carpathian copper", Yamnaya culture: 1 – Černavoda II/Foltești; 11-12 – Corded Ware culture; 13 – Zimnicea; 2-10, 14-23 – Yamnaya culture (1-12 – pottery; 13-19 – silver, 20 – copper/bronze; 23 – bone)

1 – Černavoda II/Foltești II; 2 – Sărățeni 1/4; 3 – Plavni 9/7; 4 – Petrodolinskoe 1/4; 5 – Gradeshka I, 5/2; 6 – Olănești 1/27; 7 – Olănești 1/26; 8 – Strumok 5/6; 9 – Bashtanovka 7/12; 10 – Purcari 1/28; 11 – Abtbessingen; 12 – Viktorov, barrow 8; 13 – Zimnicea; 14 – Taraclia 14/3; 15 – Tiraspol 3/18; 16 – Cazaclia 3/7; 17 – Roșcani 1/19; 18 – Talmaz 3/4; 19 – Giurgiulești 1/9; 20 – Frikatsey 4/12; 21 – Semenovka 8/8; 22 – Starye Beliary 1/16; 23 – Bugskiy 4/15 [after: 1 – Berciu *et al.* 1973; 2 – Levițki *et al.* 1996; 3 – Andrukh *et al.* 1985; 4 – Alekseeva 1992; 5 – Subbotin *et al.* 1995; 6, 7, 10 – Yarovoy 1990; 8 – Vetchinnikova 1996; 9 – Shmagliy, Cherniakov 1970; 11 – Dresely, Müller 2001; 12 – Machnik 1960; 13 – Alexandrescu 1974; 14-19 – Nikulitsa 2009; 20 – Subbotin 2003; 21 – Subbotin 1985; 22 – Petrenko 1991; 23 – Shaposhnikova *et al.* 1986]

Black Sea Coast. In the Dniester-Prut interfluvium, one of four known gold pendants was discovered as well (Fig. 13:12). However, many silver and bronze goods are related to cemeteries, lying in the borderland between the forest-steppe and steppe (Brăviceni, Orhei).

On the north-western Black Sea Coast, including the west bank of the Southern Bug, a 2011 list comprised 123 stelae, originating from Budzhak culture burials¹³. In almost all instances, they were part of a grave chamber cover, only less often were they located in a barrow mound or cromlech. In those instances where the sex of the deceased was determined, the stelae were connected to male burials [Ivanova 2001: 106]. In the Dniester-Prut interfluvium, such finds are few (Fig. 17:3-8).

In general terms, the pottery of the Dniester-Prut interfluvium is no doubt comparable to that of the north-western Black Sea Coast. It differs from the pottery of the neighbouring Southern Bug-Inhul Region (Fig. 15); its connections to the Southern Bug drainage basin are indicated by only single finds, for instance, a vessel from the Pysarivka 2/3 burial (Fig. 18:10). Bone tube-like beads, decorated with notches, from the Pysarivka 13/2 burial (Fig. 25:15) resemble those found in the barrows of the Southern Bug YC variety (Fig. 27:23).

In this context it is appropriate to list some analogies of rare pottery forms. An 'amphora-like' vessel from the Pererîta 1/9 burial (Fig. 20:2) is similar to a vessel from Purcari 1/28 (Fig. 16:10) and to a vessel from a Late-Corded grave, the Victorov site, barrow 8 (Fig. 27:12). The latter, in turn, resembles pottery known from the Elbe and Saale drainage basins (Fig. 27:11). A burial with a similar vessel from Abtessingen is dated to the interval of 2600–2500 BC: KI-4139, 3960±85 BP [Dressely, Müller 2001: 296, Fig. 3; 310, Fig. 17]. A vessel from a grave at Medveja 1/4 site (Fig. 23:3), bearing a pea-like relief ornament, resembles vessels from Plavni 9/7 and Petrodolinskoe 1/4 (Fig. 27:3, 4). An amphora-like vessel from Mîndreşti 1/1 (Fig. 24:25) shows similarities to vessels from Olăneşti 1/27 and Gradeshka I, 5/2 (Fig. 27:5, 6). Dents decorating the surface of a vessel found in the mound of barrow 2 in the Burlăneşti cemetery and that of another vessel from Brăviceni 1/10 (Fig. 23:20, 21) find analogy in a vessel from Sărăţeni 1/4 and pottery belonging to the Folteşti II cultural group (Fig. 27: 1, 2). A pot-like vessel ('jar') with a marked bottom and notches on the lip edge from the Pererîta 2/6 site (Fig. 24:22) bears likeness to pottery from Olăneşti 1/26 and Strumok 5/6 (Fig. 27:7, 8)¹⁴. What differs them is the absence of handles. On the lip of a beaker from the Pererîta 2/1 site (Fig. 20:8), there are notches; this ornament was found on only one more beaker: in a burial from the Bashtanovka 7/12 site (Fig. 27:9). There are also pots with lip notches: Ocniţa 5/4, 5/6, 7/4, Mocra 1/6 (Fig. 23:12-15). This lip ornament is rather common on pottery from the lower Danube Region; on the north-western Black Sea Coast, about 30 per cent of pots bear notched, pinched or dented ornaments on their lip edges.

¹³ I wish to thank Mr. Popovich for making information from his personal archive available to us.

¹⁴ Grave Strumok 5/6 belongs to the BC.

In the Dniester-Prut interfluvium, as on the entire north-western Black Sea Coast, craftsman graves are found in which various flint and bone tool kits are discovered (Fig. 19:3, 4), but only rarely are they subjected to a use-wear analysis. Consequently, it is not always possible to determine the craft practised by the deceased. One example of a successful determination is that of a craftsman from Brăviceni 17/3, who, it transpired, worked with wood (Fig. 19:3).

Anthropomorphic stelae resemble other specimens from the north-western Black Sea Coast, too (Fig. 27:21, 22). Spiral temple pendants made of various metals (Fig. 13) do not differ at all from the other ornaments of this type found on the north-western Black Sea Coast (Fig. 27:14-16, 18, 19). They are twisted both clockwise and anticlockwise. Silver crescentic pendants resemble the 'Zimnicea type' and are known from the eponymous site (Fig. 27:13) and graves on the north-western Black Sea Coast, for instance, Roșcani 1/19 (Fig. 27:17). A copper awl from Brăviceni 2/7 (Fig. 13:16) shows similarity to an awl from Friktsey 4/12 (Fig. 27:20).

A diagnostic trait is provided by burials with holes in the grave chamber bottom, which may be the traces of mortuary houses (Figs. 18: 8, 12; 21:11; 22:2, 3). Various arrangements of such holes were recorded in over 150 YC graves on the north-western Black Sea Coast [Ivanova 2001]. Postholes are known from 11 graves in the Ocnița cemetery and six *Yampil Complex burials* (Severynivka, Pysarivka, including Pysarivka 6/2 – burial with a wagon) [Manzura *et al.* 1992; Harat *et al.* 2014]. One such burial was located in the Porohy 3A barrow and two others on the Prydnistrianske 1 site, barrow IV [Klochko *et al.* 2015]. Nineteen more graves featuring this trait of the funerary rite were recorded on the other forest-steppe sites. As a rule, the postholes are empty, which suggests that after some time the structure may have been taken down. Only in single cases were post remains observed. A unique case was recorded on the Brînzeni Noi 1/4 site where posts have survived intact (Fig. 19:2). A further detail needs to be stressed, namely that with the traditional domination of four-post structures (and the presence of four holes in the pit bottom), *Yampil barrows* usually feature eight to ten holes.

The funerary rite and grave goods encountered on Dniester-Prut interfluvium sites show also other rather peculiar traits. Above all, one should mention here grave chamber boarding. In the barrows on the Ocnița cemetery, boarding was recorded in five burials. In three (Ocnița 3/13, 6/13, 6/27), boards were fastened vertically, in Ocnița 6/9, boarding resembled a horizontal log structure, while Ocnița 3/6 featured a wooden chest separated from grave chamber walls by a stone filling. The authors of the excavations presume that this funerary rite element is a local peculiarity of YC sites on the middle Dniester [Manzura *et al.* 1992: 89]. Grave wall boarding was also found in the Porohy 2/6 burial, while a deep ditch (approx. 0.5 m), circumventing the grave chamber, was discerned in Porohy 4/8 [Harat *et al.* 2014]. Recent investigations have added a burial to the unique series of wooden chest features, namely Porohy 3A/1 (Fig. 21:1). In this case, the encircling ditch

was not deep, in contrast to other similar features, and the boards have survived up to the height of 0.6 m [Klochko *et al.* 2015; 2015a].

This group can be expanded by several other sites. In the Brăviceni 4/4 burial, walls were faced with horizontal roughed-out logs 8-10 cm thick (Fig. 19:1). In the Duruitoarea Nouă 4/3 burial, the grave chamber was encircled by a shallow ditch (5 cm wide and deep), in which decayed wood was found but no traces of boards on chamber walls.

Outside the Dniester-Prut interfluvium, only a grave from the Tiraspol 3/19 site must have been furnished with a vertical boarding; its impressions and remains have been preserved in the fill. The ditch was approx. 0.5 m deep while its width was 0.15-0.20 m [Savva 1988: 52]. There are also known burials with ditches running along the grave chamber circumference (Semenovka 1/6, Trapovka 4/13, Ursoaia 1/1). As a rule, they are not very wide and deep. Hence, it is believed that they encircled the bier and are not related to wall boarding [Subbotin 2000: 357]. In the steppe zone, there are cases of padding walls with rush mats or vertically arranged rush stalks (Revova 3/15, Nerushay 9/31,32). Possibly, this fact points to different homestead varieties in the steppe and forest-steppe zones.

Unique on the scale of the entire north-western Black Sea Coast, spiral copper pendants from Brînzeni Noi 1/4 (Fig. 13:15) were made, unlike all other metal pendants, from a flat band and not a round-section wire. From the Pysarivka 3/2 feature, a bone pendant with thread notches was recovered – the only such specimen in the entire region (Fig. 25:15) [Harat *et al.* 2014:118]. On the north-western Black Sea Coast, only six graves yielded bone arrowheads, two such graves (Brăviceni 16/9, Ocnița 4/1) are located in the Dniester-Prut interfluvium (Fig. 14:16, 17). In six north-western Black Sea Coast barrows, querns were found, while a find of a quern and grindstone as a set was recorded in barrow 11, Brăviceni cemetery (Fig. 25:18). A semi-finished boat-axe from Severynivka 2/10 (Fig. 25:20) is the only of its kind and is compared to the axes of the Donetsk CC [Razumov 2014: 345]. The graves located on the north-western Black Sea Coast have yielded four semi-finished axes but they are not linked to the CC. Two axes (Semenovka 8/16; Alkaliya 5/6) were called ‘Yamnaya-Catacomb of the Akkerman type’ by V.I. Klochko.¹⁵ A semi-finished axe showing CC traits has been found for the first time. The recycling of Late Palaeolithic flints, in particular a core from the Pidlisivka 1/11 burial, is remarkable. The present authors know of a single case of recycling a tool from the Stone Age, but it is associated with the CC (Dumeni 1/9 grave).

Researchers working on it are absolutely right to mark out the compact territory of the *Yampil Barrow Complex* as a ‘ceremonial centre’ [Koško, Razumov 2014: 341]. As the criteria for the distinction serve its peculiar traits vis-à-vis the Upper Dniester Area [Włodarczak 2014: 317-324].

¹⁵ We wish to thank Prof. V.I. Klochko, for consultation and the taxonomic designation.

In *Archaeological Typology*, L.S. Klein gives the following definition of the variety of an archaeological culture: a part of an archaeological culture formally (typologically) distinguished, relying on distinct materials, either different or partly different from others, originating with a certain group of features [Klein 1991: 392]. The *Yampil Complex* (understood broadly as comprising barrows and barrow cemeteries lying the closest) does not display any clearly distinct traits that are found to exist between two neighbouring YC varieties, for example, between the north-western Black Sea Coast (which was called a separate south-western YC variety by N.Y. Merpert) and the Southern Bug-Inhul interfluvium (where the sites of the Southern Bug variety, distinguished by O.G. Shaposhnikova, of the YC are located). In our opinion, therefore, a more adequate name is *Yampil (Podolia) territorial centre* and not YC variety.

On the north-western Black Sea Coast, we have distinguished four such territorial centres characterized by a greater concentration of 'rich' or 'prestige' graves [Ivanova 2001]. What makes them special is the accumulation of prestige grave goods and funerary rite traits in single barrows, barrow groups or microregions. Above all, these are remains of wooden wagons, silver temple pendants, special grave structures ('mortuary houses'), such as holes in the bottom of a grave chamber or on its step, as well as metal goods. These centres extend around the barrow cemeteries of Yasski-Mayaki, Kholmskoe, Nicolscoe, Taraclia-Balaban. It would be wrong to presume that all such finds are concentrated in these centres only: YC sites, as well as richly furnished burials are distributed across the north-western Black Sea Coast. Nevertheless, there are quite clear concentrations of 'prestige' barrows; they are related to burials with diverse inventories which give the centres their peculiar character. The division of some finds within the centres is rather uniform (polished stone shaft-hole axes, manufacturing tool kits). In each centre, however, specific weapon, ornament and ritual artefact categories can be distinguished.

For instance, in the lower Dniester drainage basin (Yasski-Mayaki barrow centre), more often than in other such clusters, bronze knives and copper awls were found. There were no barrows with astragals, shell pendants or bone beads. Among the finds of metal goods, silver spirals – but not copper or bronze ones – deserve to be mentioned, with solid copper bracelets or ones made from curled-up copper beads being encountered nonetheless. The finds of weapons are dominated by flint shaft-hole axes. The centre is associated with the finds of three wooden wagons.

Upstream the Dniester, another concentration of prestige objects is found close to the Nicolscoe barrow cemetery (on the river's left bank), known for the find of a wooden wagon. There are no flint arrow or spear points, but there are bone ones instead. Less often than in other centres, discoveries are made of metal knives, with awls not being encountered at all, but a set of a knife and an awl did occur once. There were twice as few silver spirals found than in the centre located further south (Yasski-Mayaki), but copper ones, instead, are more frequent than in other centres. More often than in other centres, too, pendants made from animal teeth

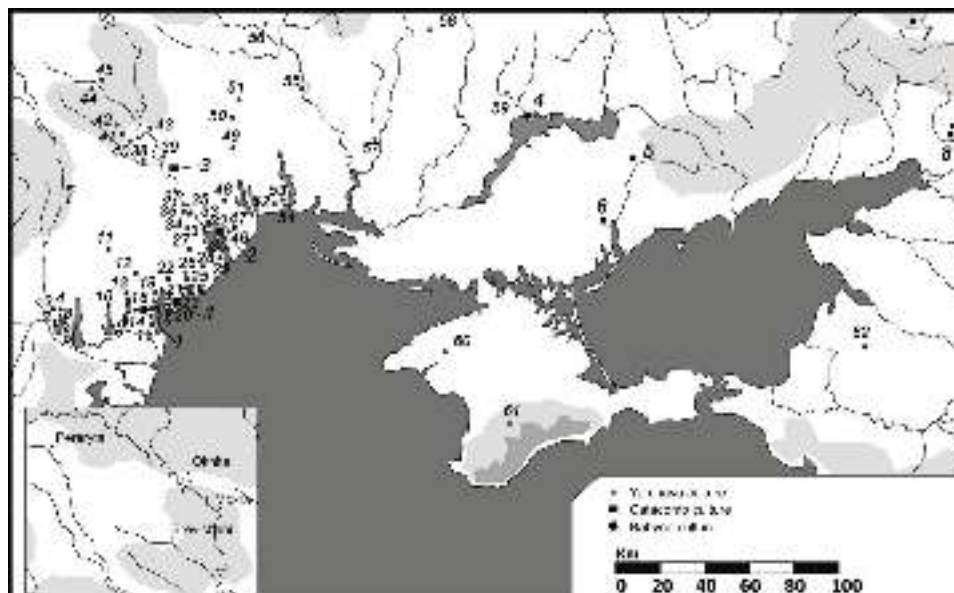


Fig. 28. Map of the finds of “Budzhak pots (jars)” and jar-like vessels

Yamnaya culture 1 – Independența/Murighiol (Romania); 2 – Frikatsey; 3 – Giurgiulești; 4 – Etulia; 5 – Sărățeni; 6 – Gradeshka; 7 – Plavni; 8 – Nagornoe; 9 – Kislitsa; 10 – Novokamenka; 11 – Svetlîi; 12 – Kholmskoe; 13 – Dzinilor; 14 – Chervonyi Yar; 15 – Primorskoe; 16 – Nerushay; 17 – Glubokoe; 18 – Strumok; 19 – Bashtanovka; 20 – Trapovka; 21 – Novoselitsa; 22 – Belolesie; 23 – Vishnevoe; 24 – Zholti Yar; 25 – Liman; 26 – Diviziya; 27 – Sergeevka; 28 – Alkaliya; 29 – Mologa; 30 – Sadovoe; 31 – Semenovka; 32 – Efimovka; 33 – Yasski; 34 – Caplani; 35 – Olănești; 36 – Răscăieții Noi; 37 – Purcari; 38 – Ursoaia; 39 – Nicolscove; 40 – Roșcani; 41 – Gura Bukului; 42 – Chirca; 43 – Corjova; 44 – Crasnoe; 45 – Brăviceni; 46 – Novogradkovka, Dobroaleksandrovka; 47 – Novaya Dolina; 48 – Scherbanka; 49 – Velikoziminovo; 50 – Revova; 51 – Grigorievka; 52 – Vapniarka; 53 – Starye Beliary; 54 – Sychavka; 55 – Kovalevka; 56 – Konstantinovka; 57 – Baratovka; 58 – Krivoy Rog; 59 – Ordzhonikidze; 60 – Krasnoyarskoe; 61 – Chistenkoe; 62 – Ovalnyi.

Catacomb culture 1 – Vishnevoe; 2 – Beliaevka; 3 – Tiraspol; 4 – Kruglaya Mogila, 5 – Vinogradnoe; 6 – Vladimirovka; 7 – Zhelobok; 8 – Kastyrskiy

Babyno cultural circle 1 – Strumok

and shells are encountered. It is here, too, that two of the three hammerhead pins were recovered.

In the coastal part of Budzhak (Kholmskoe barrow centre), three burials with wagons were discovered. Weapons are dominated by flint arrow and spear points. Metal knives occur but awls are absent. Animal tooth and shell pendants are rare; more often than in other centres, silver temple pendants, copper bracelets, copper temple pendants made from tube-like beads and clasps are recorded.

In the centre which took shape near the Taraclia-Balaban cemeteries, finds embraced four wagons, two stone shaft-hole axes, a set of a knife and awl, an awl

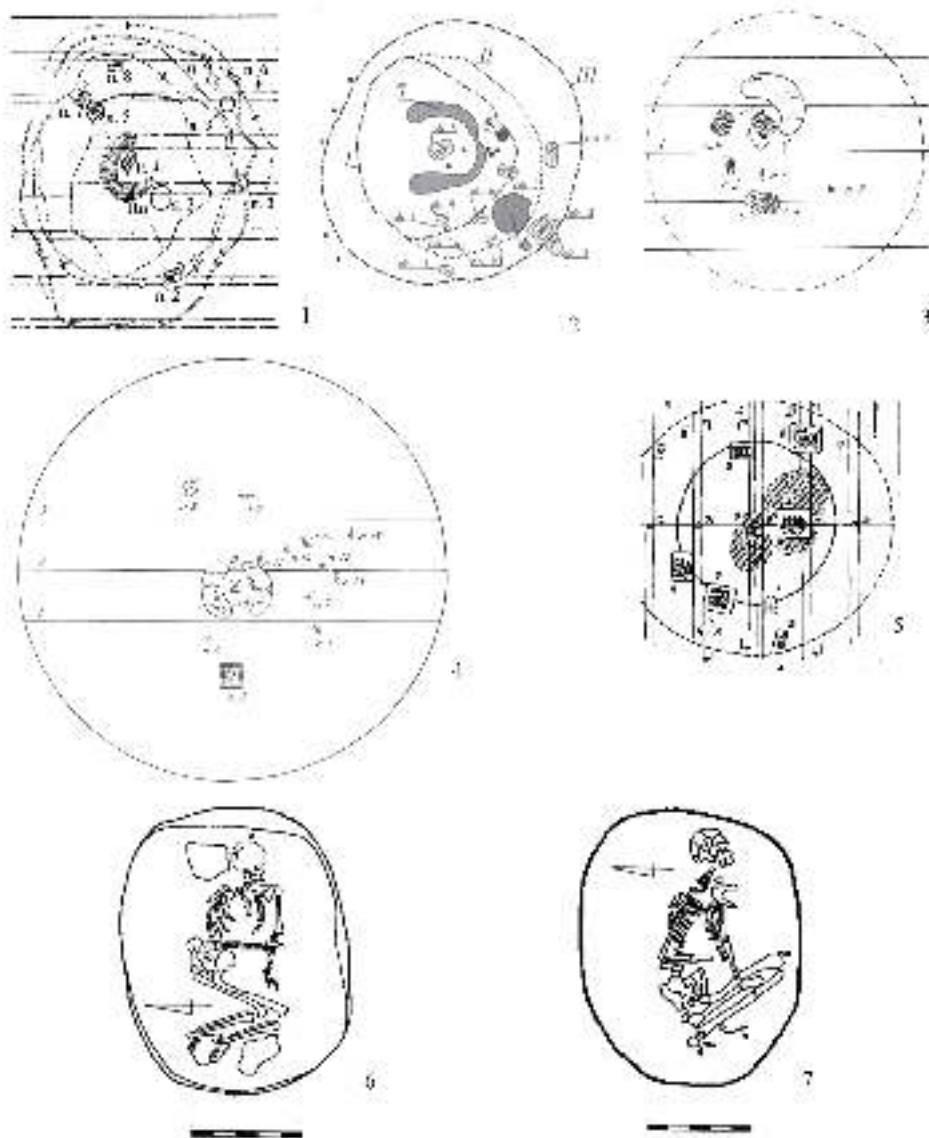


Fig. 29. Yamnaya culture barrows plans (1-5) and Eneolithic burial (6-7): contrast in “funerary architecture”. The present (1-5) or its lack (6-7) the Inhumation site, of earth mounds from grave excavations (ukr. “wykid’s”) 1 – Brăviceni, barrow 2; 2 – Dobrianka, barrow 1; 3 – Olănești, barrow 8; 4 – Olănești, barrow 6; 5 – Belolesie, barrow 6; 6 – Sărățeni 1/7; 7 – Trapovka 10/14 [after: 1 – Larina *et al.* 2008; 2 – Harat *et al.* 2014; 3, 4 – Yarovoy 1990; 5 – Subbotin *et al.* 1998; 6 – Levițki *et al.* 1996; 7 – Subbotin *et al.* 1995]

and a flint arrow. Other finds included tooth pendants, a bone bead and a spiral gold pendant.

The distinguishing of the *Yampil centre* appears to be fully justified in the context of its characteristic traits and the marking out of the other regional centres. This can be seen in the distribution of pottery among the distinguished centres. 'Corded' amphorae are found in the *Yampil and lower-Dniester Yasski-Mayaki centres*, but they are absent from the Nicolscoe centre. There are finds from the Taraclia and Cazaclia sites located close to one another. One amphora was discovered in Ostrovnoe, near Kholmskoe [Ivanova *et al.* 2014: 359, Fig. 4.3. 3:3]. GAC amphorae are found mostly in the north, while in the south such finds are only sporadic (Novoselitsa 19/13, Tatarbunary 1/2). This distribution of pottery, related to the impact of the GAC and CWC, appears logical. However, beakers with a corded ornament were found only on the Yasski site and the nearby Beliaevka, Efimovka and Mirnoe barrows. Practically, they were recovered from various steppe zone barrows (Trapovka cemetery is one), while only one (Fig. 20:8) was found in the forest-steppe (Pererîta 2/1).

It is only natural that pottery reflecting links to the lower Danube cultures was more often discovered in the steppe zone of the Dniester-Danube interfluvium.

'Budzhak pots' ('jars') and 'pot-like vessels' are connected mainly to the south of the steppe zone and the Dniester and Reut rivers (Fig. 28). There are cemeteries with the concentrations of this type of pottery (e.g. Semenovka, Novogradkovka, Plavni, Yasski with Efimovka close nearby), and others with single finds (Kholmskoe, Belolesie, Glubokoe). A similar situation is encountered in the case of small amphorae ('amphora-like vessels'). Several small amphorae were found on each of the following cemeteries: Olănești, Semenovka, Bolgrad, and Novokamenka, with single finds occurring as well. Examples of the latter in the forest-steppe zone include Mîndrești 1/1, Mocra 1/3, Rogojeni 1/1 and 1/2.

Interestingly enough, the concentration of vessel finds of these two types is recorded in the lower Dniester drainage basin.

Perhaps, from the group of 'Yamnaya' burials of the *Yampil centre*, the Severynivka 1/5 and Porohy 3/2 burials should be excluded [Harat *et al.* 2014]. A number of traits make them closer to the Eneolithic burials of the north-western Black Sea Coast. This connection is indicated by the co-occurrence of the oval pit with the corpse lying on its side. Very similar in appearance no doubt, two Eneolithic graves are located in Sărățeni 1/7 and Trapovka 10/14 (Fig. 29:6, 7). In addition, in the Trapovka grave, the undisturbed soil dug out from the grave pit was placed simply next to its edge [Subbotin *et al.* 1995: 66] as it is the case in the Severynivka 1/5 burial [Harat *et al.* 2014: 171, Fig. 2.15.4:5]. In 'Yamnaya' graves, soil excavated when digging a pit may have various shapes: that of a horseshoe or a bank and may surround the grave on one, two or three sides, sometimes occupying quite a large surface. Usually, the soil was placed some distance from the pit (Fig. 29:1-5). The variety found in the Severynivka 1/5 grave is not characteristic of the YC.

3. THE CATACOMB CULTURE IN THE MIDDLE DNIESTER AREA

In the area in question, CC sites are represented solely by burials. They make up 22 per cent of CC complexes known on the north-western Black Sea Coast. Settlements, as in the steppe zone, are not known.

In total, we know of over 30 barrows, containing more than 70 CC burials. These are graves sunk into the barrow mounds of earlier cultures, mostly the YC. The barrows stand in groups or alone on high river banks, uplands or watersheds.

In one mound, there are from one to six grave assemblages (Codrul Nou, barrow 2). As a rule, they are concentrated in the southern portion of the mound. Usually, the entrance shaft was dug in the lower portion of the mound, with grave chambers pointing towards its centre. No case of imposition of one burial over another has been recorded, which suggests the use of grave markers.

Two grave groups can be distinguished, differing in their structure and skeleton arrangement. The first group comprises assemblages with a rectangular entrance shaft and crouched skeletons lying on their back (side). The other group is made up of graves with a circular entrance shaft and an oval grave chamber in which corpses lie extended on their back.

In relation to the adopted division, the burials may be considered as early (group 1) and late (group 2). In terms of number, late assemblages dominate. They were discovered on practically all sites under discussion.

A rather compact group of early burials was exposed in the Bezeda and Tețcani barrows, while single ones were recorded in other barrows, too (Fig. 30). Their characteristic trait is believed to be the covering of the entrance to the grave chamber with stone slabs.

The skeletons of adults and children usually lay crouched on their back, far less often on their left side. As a rule, these were single graves, only rarely double.

The orientation of the dead according to the points of the compass varies; generally, a southern orientation with some deviations dominates. The use of ochre, as shown by materials from the Tețcanii and Bezeda site, is very limited. On the bottom of grave chambers, rotten remains of padding are recorded, sometimes accompanied by charcoals.

Inventories comprise mostly pot-like vessels, only seldom are they decorated with cord impressions. A rare find is that of a small amphora, bearing a corded and incised ornament (Corjeuți 4/10). Other finds include stone maces, arrowheads, animal tooth ornaments, a bronze awl, adze and beads. In a triple grave (burial 5), barrow 3 at Camenca-Ocnița, a rare set was found, which included a fragment of a bronze bracelet and knife with a sharp-ending handle. Rather rare on the scale of the entire north-western Black Sea Coast, this find is strongly believed by the authors of the original publication to be analogous to the goods from Bakhmut sites in eastern Ukraine [Manzura *et al.* 1992: 92].

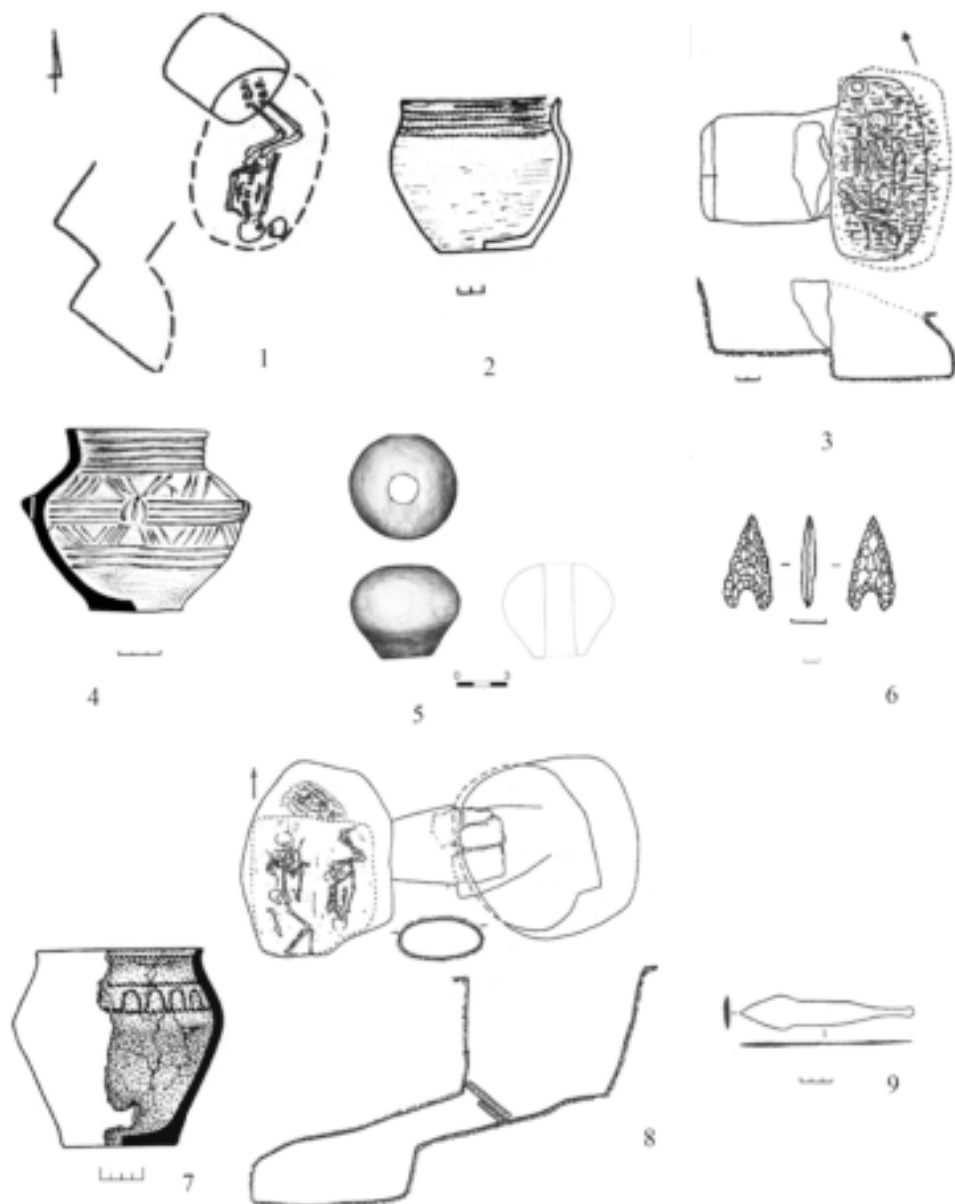


Fig. 30. Catacomb culture graves assemblages from 'early sites'

1-2 – Medveja 4/6; 3-4 – Corjeuți 4/10; 5 – Prydnistrianske 1/4; 6 – Cuzmin 2,5; 7 – Duruitoarea Nouă 3/2; 8-9 – Ocnîța 3,5 [after: 1-2 – Savva, Dergachev 1984; 3-4 – Levițki, Demcenko 1994; 5 – Włodarczak *et al.* 2015; 6 – Bubulich, Khakheu 2002; 7 – Demchenko 2007; 8-9 – Manzura *et al.* 1992]



Fig. 31. Late Catacomb culture materials, burial plan maps and grave goods
 1-3 – Dumeni 1/9; 4, 4 – Cotiujeni 1/1; 5 – Dumeni 1/4; 7 – Duruitoarea Nouă 1/4; 6,8 – Corpaci 3/7
 [after: 1-3, 5 – Dergachev 1986; 4 – Agulnikov 1992; 7 – Demchenko 1988; 6,8 – Yarovoy 1984]

In terms of all markers (structure, corpse position, inventory), the group of catacombs discussed above corresponds to features encountered in the south, in the steppe zone.

The burials of group 2 are more numerous (up to 70%). They are found in barrow mounds together with earlier ones or they make up separate cemeteries. Individual graves dominate with supine extended skeletons. Collective burial 2, barrow 2, Codrul Nou, held four skeletons. In this case, a rare custom of adding the dead to a grave was encountered, with the bones of those buried earlier being moved aside. In grave 4, barrow 3, of the same site, the bones of the deceased were placed as a 'package'.

Grave inventories are dominated by pottery, with stone goods being rare: a mace (Corpaci 3/7) and shaft-hole axes (Cotiujeni 1/1). In the Hancăuți 1,8 bur-

ial, next to the skeleton, three hollow-base points were found. Other flint goods were represented by a knife (Dumeni 1/9). Bronze goods are very rare. A set of beads was discovered in grave 9, barrow 1, on the Dumeni site. Cenotaphs are also known (Duruitoarea Nouă 2/5; Dumeni 3/4).

‘Catacomb’ materials from the forest-steppe zone are fully consistent with better-known materials from the Dniester-Prut interfluvial steppe. This is only natural as the protracted conquest of territories lying further north originated in the south and southeast, with the Prut drainage basin being conquered more intensively. It was there in fact that a site concentration was recorded on the left bank of the Prut. On the other hand, isolated sites in Romanian Moldavia testify to single cases of penetration of the right bank [Burtănescu 2002]. A similar situation can be observed further south, in the steppe zone.

In the forest-steppe portion of the Dniester drainage basin, the situation is different. However, the presence of only single CC assemblages may be explained by the small range of excavations.

So far, the north-westernmost point of the CC area is the site of Świąte in the upper Vistula drainage basin on which the traits of both YC and CC have been recorded [Koško *et al.* 2012].

Generally speaking, it must be observed that in CC grave assemblages, in the forest-steppe portion of the Dniester-Prut interfluvial zone, both early (corner entrance shafts, corpse arrangement) and late (oval grave chambers, grave goods) traits occur (Fig. 31). This trait co-occurrence can be explained by the prolonged settlement of the area by CC communities.

Further, the find of a CC vessel in a YC burial apparently testifies to the co-occurrence of the YC and CC in this zone (burial 2, barrow 1, Pererîta, Briceni district) [Kurchatov 2006: 285]. Similar cases were recorded on steppe zone sites [Toshev 2013]. In general, they bear out the conclusions of researchers about the co-existence of the late YC and CC in a specific period.

A small series of ^{14}C dates for the CC in the north-western Black Sea Coast fits into the interval of 2580-2341 to 2267-1981 BC [Ivanova *et al.* 2012]. Relying on materials from the Dniester-Prut interfluvial zone, E. Kaiser [2003] dated CC sites to the interval of 2450-1950 BC.

Directly for the area under discussion, ^{14}C dates were obtained for a single assemblage: Prydnistrianske 1/I-4 [Goslar *et al.* 2015], found in a barrow forming part of the *Dniester Barrow Site Group*. This assemblage is the only to be recorded among those discovered in this group (four Late Eneolithic and Early Bronze mounds were excavated) and among all *Yampil barrows* as well¹⁶.

The ‘catacomb’ burial with two skeletons which was excavated on the Prydnistrianske site was furnished with a mace head. It has analogies in ‘catacomb’

¹⁶ Most sites were excavated in the 1980s; it cannot be ruled out that peculiar catacomb assemblages located on mound edges were not noticed at that time [Harat *et al.* 2014].

burials from various stages [Klochko 2006: 105, Figs. 37, 45]. Corpse arrangement (crouched on their back and leaning sideways) provides grounds to assign this burial to the final portion of the early 'catacomb period'. This conclusion is not contradicted either by four dates obtained for bones (3) and wood (1): 2726-2493; 2633-2495; 2566-2406; 2565-2406 BC (68.2%) [Goslar *et al.* 2015], which generally fit into the brackets set by the dates mentioned earlier.

The forest-steppe materials known so far do not supply any data on direct contacts between the CC and the Central European CWC [Włodarczak 2006; Toshev 2013].

4. THE BABYNO CULTURE IN THE MIDDLE DNIESTER AREA

The overall number of studied funerary features associated with the BC amounts to 60. Most of the time they are discovered in barrows situated on the forest-steppe of the Dniester and Prut drainage basins. There are no data on any settlements.

There is no clear rule of attributing a larger series of assemblages to the BC. The problem of the cultural attribution of barrow burials with skeletons crouched on their side and deprived of any grave goods was raised by V.A. Dergachev [1986: 122-126, 175]. In spite of the lapse of several decades, the question remains open. Some researchers attribute such assemblages to the BC [Lytvynenko 2009], while others refer those which are located on the steppe to the Sabatinovka culture [Savva 1992; Sava, Agulnikov 2003].

Later on, in the forest-steppe zone, barrow burials linked to the Komarov (Corpaci, Medveja) and Noua (Corjeuți, Burlănești) cultures appeared, while further south, in the Dniester-Prut interfluve, there extended the domain of 'Sabatinovka' tribes [Dergachev 2010: 296-305].

It should not come as a surprise that in most cases a peculiar material served as a marker for determining the cultural attribution of a funerary assemblage. The absence therefore of grave goods leads to various conclusions. In a number of cases, the presence of a vessel having a pot- or jar-like form next to a crouched skeleton is not a precise marker [Savva 1992: 115]. Frequently, the pit structure cannot be discerned, sometimes, skeletons are damaged and only the inventory (usually a buckle) helps to determine the cultural attribution. For this reason, numerical data given by various authors always differ. In the zone under discussion,

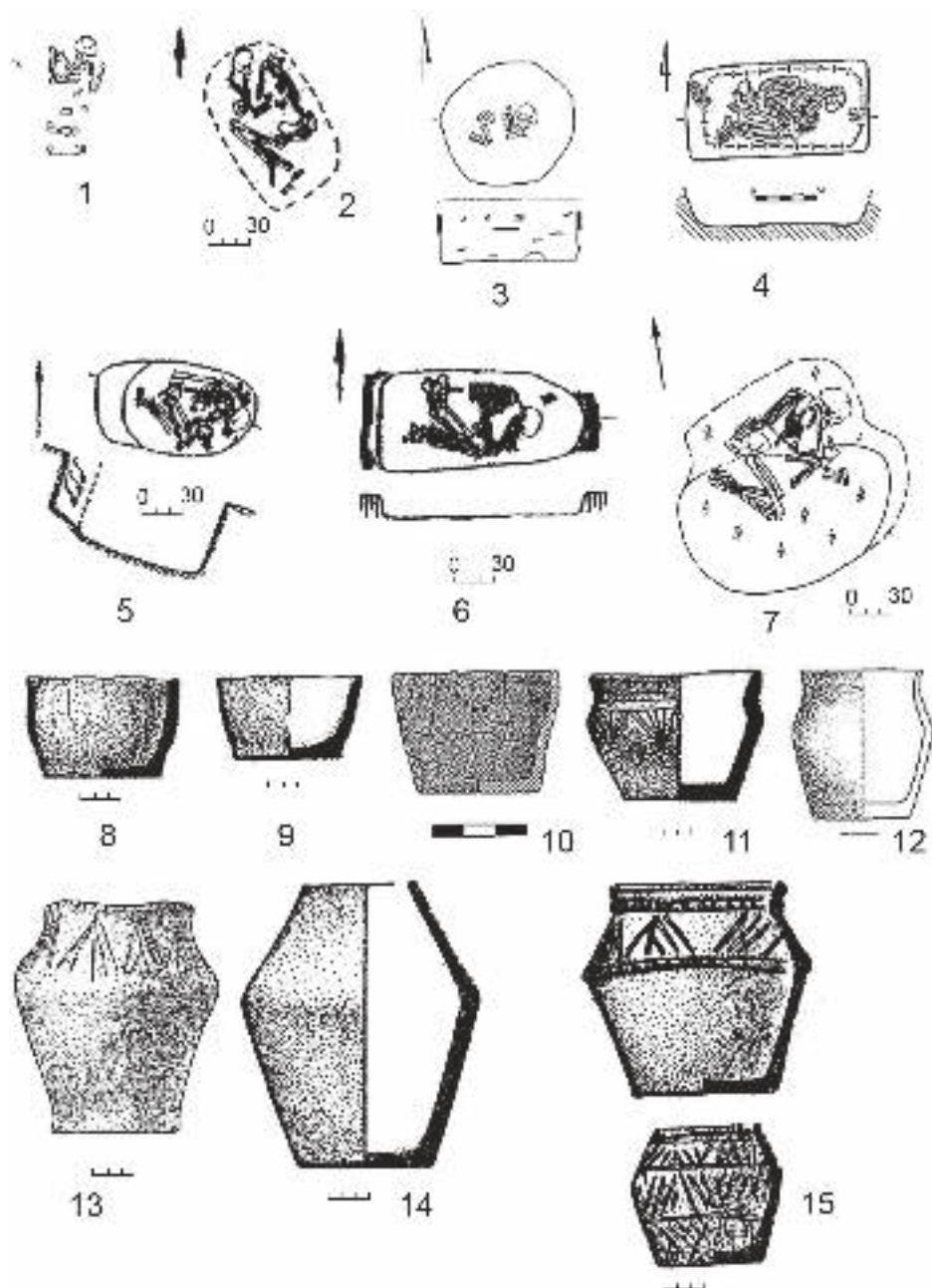


Fig. 32(A). Babyno culture funerary assemblages in the Dniester-Prut basins. 1, 19 – Brăviceni 15/1; 2, 9, 26 – Ocnița 6/7; 3, 22, 23 – Severynivka 1/4; 4, 17 – Porohy 3A/5; 5, 11, 24, 25, 27 – Ocnița 7/13; 6, 8 – Ocnița 3/2; 7, 10 – Porohy 4/1; 12, 21 – Brăviceni 7/7; 13, 20 – Brăviceni 15/2; 14 – Cotujeni 3/1; 15 – Cuconești Vechi 9/31; 16 – Klembivka 1/11; 18 – Ocnița 2/2; 28 – Brăviceni 3/2; 29 – Dobrianka 1/3; 30 – Cuconești Vechi 9/28

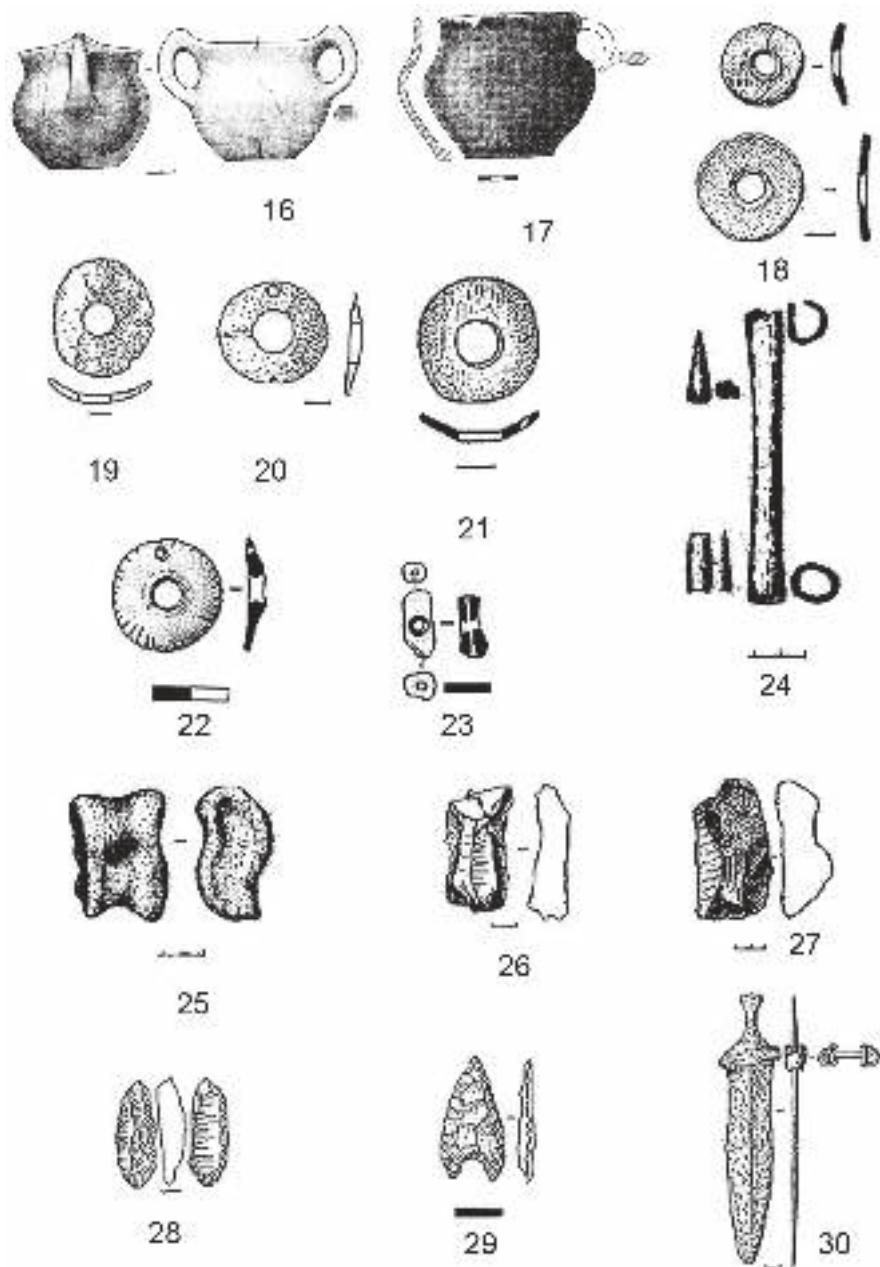


Fig. 32(B). Babyno culture funerary assemblages in the Dniester-Prut basins. [after: 1,19 – Larina *et al.* 2008; 2,9,26 – Manzura *et al.* 1992; 3,22,23 – Harat *et al.* 2014; 4,17 – Harat *et al.* 2014; 5,11,24,25,27 – Manzura *et al.* 1992; 6,8 – Manzura *et al.* 1992; 7,10,29 – Harat *et al.* 2014; 12,21 – Larina *et al.* 2008; 13,20 – Larina *et al.* 2008; 14 – Agulnikov 1992; 15 – Dergachev 1986; 16 – Razumov *et al.*, 2013; 18 – Manzura *et al.* 1992; 28 – Larina *et al.* 2008; 30 – Dergachev 1986]

BC burials were sunk into barrows built earlier by YC representatives¹⁷. In the mound, as a rule, they are concentrated in its southern portion. In single cases, they are arranged to form an arch and in barrow 15 in the Brăviceni site, they were situated in the mound centre.

Credible observations of grave structure are available for 30 per cent of features. Simple structures dominate: oval or rectangular pits. Graves with a wooden structure (Severynivka 2/2; Ocnița 3/2), stone cist (Ocnița 3/7) or a niche (Dobrian-ka 1/3, Brăviceni 3/2) are single occurrences (Fig. 32: 1-7). They are found in mounds together with graves of different structures.

Skeletons were usually placed in the crouched position on their left side (less often on the right), sometimes twisted with the chest facing down, with their hands variously arranged; occasionally both hands were raised to the face. An eastern orientation with deviations dominates.

Grave goods comprise pottery and bone buckles, with a single or double perforation, characteristic of this culture, and flints. The set of pottery is rather meagre; these are chiefly pot- or jar-like vessels in different varieties and pot-like vessels, with biconical ones being rare (Fig. 32: 13-15). Usually, a burial contained a single vessel, but in Porohy 4/1 there were two. In the Cuconești Vechi 9/32 burial, a discovery was made of two vessels richly ornamented with coils and incised lines. Incised lines, too, forming a pattern of triangles decorated vessels from Brăviceni 15/2 and Ocnița 7/13.

Very rich grave goods were recovered from burial 13, barrow 7, the Ocnița site. They included an ornamented vessel and bone and flint goods [Manzura *et al.* 1992].

A rather popular category of finds is made up of bone buckles. Next to a skeleton, there usually lay one buckle (Duruitoarea Nouă 3/1; Brăviceni 7/1; 7/7; 15/1; 15/2; 16/2; Cuconești Vechi 4/2; Văratice 1/5), only in one feature were two discovered (Ocnița 2/2). One buckle was ornamented (Severynivka 1/4); this feature yielded also a deer-tooth fibula with oblique perforations (Fig. 32: 23). The last-mentioned find is unique as it helps give a clearer answer to the question about the purpose of such objects as fastenings (fibulae). The buckles lay next to the deceased (man, woman or child) in various places.

The buckles belong to several different types according to E.N. Savva: round with a single perforation (type I), round with two perforations (type II) and single 'others' with an edge and perforation (Fig. 32: 18-21). Type I is interpreted as being earlier [Savva 1992: 131-133].

Among bone goods, let us also mention here a rather rare object in the assemblages of this culture, namely a case with a perforator (perforation?) inside

¹⁷ The authors of *Kurhany Brăviceni* interpret burial 2, barrow 16, as 'Babyno' and connect it to the adding of more earth to the barrow. In this case, it seems plausible to treat this feature as 'late Yamnaya'. It forms a referential arch with burials 6, 8 and 9, which is typical of this period [Larina *et al.* 2008: 77]. The cases of placing corpses on their left/right side were recorded many times in late YC burials.

– Ocnița 7/13 (Fig. 32: 24). The same burial contained a whole set of astragals: 21 specimens, with some of them bearing traces of working (Fig. 32: 25).

A rare find in both this region and the entire BC area is believed to be a tanged knife-dagger with a long ribbed blade and a narrowing (Fig. 32: 30) from burial 28, barrow 9 in Cuconești Vechi (1974 excavations). In this grave, the skeleton lay on its left side, with the head directed towards NNE and the hands placed close to the chest. The range of analogies for this object is very broad and the opinions of researchers are varied [Lytvynenko 2006: 42, 46].

In one of the burials (Dobrianka 1/3), amid the bones of the deceased, a Baby-no-type arrow point was found (Fig. 32: 29). S.M. Razumov cites information about five other similar finds of points, which were seen to have inflicted injuries, from four graves [Razumov 2014: 350].

Flints as grave goods were found in a number of burials; they are represented by flakes and blades, and a fabricator – Ocnița 6/7; Ocnița 7/13; Brăviceni 3/2 (Fig. 32: 26-28). There are also cases of the occurrence of animal bones in burials (Pidlisivka 1/5, 1/7; Ocnița 3/2; 7/13; Brăviceni 3/2, Porohy 3A/5). In addition, small amounts of ochre were recorded in single burials; there are also single instances of finding charcoals (Brăviceni 7/7).

BC materials from the area under discussion (funerary rite, grave goods) are fully consistent with those originating from the areas located further south, in the steppe-zone. They support the belief that it took BC representatives a long time to settle these territories.

One ought to notice characteristic traits as well: absence of central burials, additions of earth to barrows or pits with a step. This series of observations (about 20 features) comes from the steppe zone stretching between the Danube and Dniester. Furthermore, grave goods appear more meagre; they are made up for the most part of rather uncharacteristic pottery, bone buckles, rare flints and a single bronze object. Among the grave goods of the latter no objects originating with other cultures have been recorded (a possible exception might be the knife from Cuconești Vechi), which may testify to the certain isolation of BC communities in this region.

It must be also noted that on the strength of two vessels – bowls with one or two handles (Fig. 32: 16-17) – found in burials included in the Babyno cultural circle (Klembivka 1/11 and Porohy 3A/5), researchers arrived at a conclusion about “the overlapping of the Babyno and Trzcinec (Komarov) cultural circles” [Lysenko, Razumov 2014: 14, 19]. While in BC materials in the southern zone (Olănești 1/22) one can certainly speak of Komarov imports, similar ‘bowls’ with one or two handles are very common among various cultures of the Carpathian-Danubian Basin towards the end of the Middle and in Late Bronze Age. This fact is described in sufficient detail also by the researchers quoted above.

Let us note, too, that from among Late Bronze Age burials exposed in a barrow on the Klembivka site, five were classified as BC, while another five were attrib-

uted to the Sabatinovka culture [Razumov *et al.* 2013; for a different approach see Klochko *et al.* 2015b].

In respect of Porohy 3A/5, S. Lysenko and S. Razumov [2014: 15] give a radiocarbon date obtained for human bones in the Kyiv laboratory: Ki-17440: 3200±90 BP = 18 - 1610-1550, 1540-1380, 1340-1320; 28 - 1690-1250 BC. This time determination is very broad and covers the lifespan of various cultures. Hence, it is more reasonable to consider most assemblages from the Klembivka barrow within the general bracket of the Late Bronze Age.

The sites in the Dniester-Prut interfluvium were dated by E.N. Savva [1992: 178] to the period from the 17th to the turn of the 15th century BC, while I. Pâslaru [2006: 168-169] referred the Delacău-Babyno culture to the 17th-15th century BC. In the light of new chronological analyses, R.A. Lytvynenko [2009: 26], in turn, believes it to be possible to date all Babyno circle sites to the 2200-1800 BC bracket. The question of the dating of BC sites in the Dniester-Prut interfluvium remains open, arguably, as it is necessary to obtain a series of new radiocarbon measurements from features of undisputable cultural attribution.

We also know of BC sites lying further northwest, in Lviv, Rivne and Tarnopil *oblasts*. They include both settlement and funerary assemblages, sometimes lying together with Strzyżów and sub-Carpathian CWC materials. As to a degree contemporaneous with the BC on the Volhynia and western Podolia forest-steppe, one can consider the following cultures: Strzyżów, Sub-Carpathian and late Gródek-Zdołbice [Sveshnikov 1990: 74-77; Bandrivskiy 1997; 2006; Okhrimenko *et al.* 2012; Lytvynenko 2009]. The investigations in this region produced both single funerary complexes (Ostapie, Palikorovo, Zhorniv) and the finds of pottery and bone buckles within settlements, in the latter case, not infrequently together with the materials of other cultures (Svitiaziv, Pereveredovo, Zvenigorod). For a long time, they were used to synchronize the BC with local cultures [Sveshnikov 1990; Berezanskaya 1986; Toshev 1987]. They also show that single 'Babyno' population groups penetrated the upper Dniester drainage basin, that is territories settled by neighbouring tribes [Lytvynenko 2009: 12]. Admittedly, another opinion holds that the upper Dniester drainage basin should be incorporated into the BC area [Pâslaru 2006: 233]. However, insufficient exploration of the area in question prevents us, for the time being, from drawing unequivocal conclusions.

The purpose of the study of the middle Dniester (or sometimes, in broader approaches, north-western Pontic) area of 'barrow cultures' from the Late Eneolithic and the prologue of the Bronze Age (4th/3rd-2nd millennium BC) was to conduct an analytical and conceptual entry point to the questions of contacts, considered in terms of taxonomy and autogenesis, subsisting between *local* communities of the 'Late Eneolithic', YC, CC and BC and *incoming, neighbouring* communities from the Baltic basin and traceable mainly to the Vistula and Oder drainage basins (chiefly the GAC and CWC).

The proposals advanced in the text concerning the correspondence of civilization experiences of both community groups, settling the north-western Black Sea Coast and the Baltic basin, should be treated as an important voice in the necessary discussion that is continued in this volume of *Baltic-Pontic Studies* in the next paper. It puts a ‘central European’ perspective on the *Dniester Contact Area* of interest to us here [Ivanova *et al.* 2015].

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REFERENCES

Abyzova E.N., Klochko E.O.

2003-2004 Kurgannyi mogilnik u s. Kirileny. *Stratum Plus* 2: 266-319.

Agulnikov S.M.

1992 Issledovanie kurganov u s. Kotiuzhen. In: *Archeologicheskie issledovaniya v Moldavii (1986 g.)*, 104-120. Kishinev.

1995 Importuri de pe cursul inferior al Dunării în complexele arheologice ale bronzului timpuriu din stepa Bugeacului. *Cercetării arheologice în aria Nord-Traca*, V-I: 81-86.

2008 Arkheologicheskoe nasledie Budzhaka. *Revista de Etnologie și Culturologie* 3: 227-244.

Agulnikov S., Mistreanu E.

2014 Novye nakhodki kamennykh orudiy na pamyatnikakh pozdnego bronzovogo veka stepnoy zony Moldovy. *Revista Arheologică serie nouă* 9(1-2): 203-209.

Agulnikov S., Mistreanu E., Popovici S.

2014 Cercetări de salvare la tumulul de la Rogojeni, r-nul Șoldănești. *Arheologia Preventivă în Republica Moldova* 1(1-2): 35-42.

Agulnikov S., Popovich S.

2010 Obriad demembratsii v yamnoy kulture Pruto-Dnestrovskogo mezhdurechya. In: *Problemy okhrany i izucheniya pamyatnikov arkheologii stepnoy zony Vostochnoy Evropy. Sbornik statey*, 323-344. Lugansk.

Alaiba R.

2004 Ceramica de tip Cucuteni C. In: M. Petrescu-Dîmbovița, M.C. Văleanu (Eds) *Cucuteni-Cetățuie. Săpăturile din anii 1961-1966. Monografie arheologică*, 229-243. Piatra-Neamț.

Alaiba R., Grădinaru I.

1999 Cercetări arheologice din anii 1995-1996 de la Cărnicești Pe-Coastă jud. Iași, *Cercetări arheologice în aria nord-tracă* 3: 7-15.

Alekseeva I.L.

1992 *Kurgany epokhi palleometalla v Severo-Zapadnom Prichernomore*. Kyiv.

Alexandrescu A.D.

1974 La nécropole du bronze ancien de Zimnicea [départ. de Teleorman]. *Dacia* 18: 79-93.

Andrukh S.I., Dobroliubskiy A.O., Toshev G.N.

- 1985 *Kurgany u s. Plavni v nizoviakh Dunaya*. Moskva (held in the INION AN SSSR 13.06.85, No 21110).

Bandrivskiy M.S.

- 1997 Vidkrittia pamiatok kultury bahatovalikovoyi keramiki na Lvivschyni. *Arkheologiya* 1: 138-142.
- 2006 Pivnichno-zakhidna periferiya kulturnoho kola Babyno: sposterezhennia za khronolohieyu ta pokhovalnym obriadom. In: *Istoriya relihiy v Ukraini. Naukovyi schorichnyk*, vol. I, 8-21. Lviv.

Berciu D., Morintz S., Roman P.

- 1973 Cultura Cernavoda II. Așezarea din sectorul b de la Cernavoda. *Studii și cercetări de istorie veche (și arheologie)* 24(3): 373-405

Berezanskaya S.S.

- 1986 Kultura mnogovalikovoy keramiki. In: S.S. Berezanskaya, V.V. Otroschenko, N.N. Cherednichenko, I.N. Sharafutdinova (Eds) *Kultury epokhi bronzы na territorii Ukrainy*, 5-43. Kyiv.

Beylekchi V.S.

- 1992 Raskopki kurgana 3 u s. Mierkulesht. In: *Archeologicheskie issledovaniya v Moldavii (1986g.)*, 72-87. Kishinev.

Bikbaev V.M.

- 1994 Predgordineshtskie pamiatniki tipa Kirilen v Severnoy Moldove. In: E.V. Yarovoy (Ed.) *Drenevneyshie obschnosti zemledeltsev i skotovodov Severnogo Prichernomoria V tys. do n.e. – V v. n.e.*, 64-69. Tiraspol.

Bubulich V., Khakheu V.

- 2002 Issledovanie kurganov v Kamenskom rayone na levoberezhie Srednego Dnestra. In: N.A. Ketraru (Ed.) *Severnoe Prichernomorie: ot eneolita k antichnosti*, 112-148. Tiraspol.

Burdo N.

- 2004 Tsviklovetskyi skarb. In: M.Y. Videyko (Ed.) *Entsyklopediya trypil'skoyi tsyvilizatsiyi*, vol. II, 587-588. Kyiv.

Burtănescu F.

- 2002 *Epoca timpurie a bronzului între Carpați și Prut cu unele contribuții la problemele perioadei premergătoare epocii bronzului în Moldova*. București.

Chebotarenko G.F., Cherniakov I.T., Toshev G.N.

- 1993 Kurgany u s. Primorskoe. *Drevnosti Stepnogo Prichernomoria i Kryma* 4: 46-61

Cherniakov I.T.

- 1979 Kulturno-khronologicheskie svoeobrazie pamiatnikov epokhi bronzy Severo-Zapadnogo Prichernomoria. In: *Problemy epokhi bronzy yuga Vostochnoy Evropy: Tezisy dokladov konferentsii 3-6 dekabria 1979 g.*, 8-10. Donetsk.

Chirica V., Tanasachi M.

- 1985 *Repertoriul arheologic al județului Iași*, vol. I-II. Iași.

Demchenko T.A.

- 1988 Issledovaniya kurganov v Ryshkanskom rayone. In: *Archeologicheskie issledovaniya v Moldavii (1988g.)*. Kishinev.
2007 Arheologicheskie issledovaniya kurganov levoberezhia Srednego Pruta (raskopki 1982 i 1984 gg.). *Tyragetia. Serie nouă* 1(XVI): 195-215.

Demchenko T.I., Levitskiy O.G.

- 2006 Kurgany u sela Burlienesht. *Revista Arheologică. Serie nouă* 2 (1-2): 293-327.

Dergachev V.A. (=Dergaciov V.)

- 1973 Pamiatniki epokhi bronzy. *Arheologicheskaya karta Moldavii*, vol. 3. Kishinev.
1980 *Pamiatniki pozdnego Tripolia*. Kishinev.
1982 *Materialy raskopok arkheologicheskoy ekspeditsii na Srednem Prute (1975-1976 gg.)*. Kishinev.
1986 *Moldaviya i sosednie territorii v epokhu bronzy*. Kishinev.
2010 Evoluția comunităților patriarhale. Epoca bronzului. In: V. Dergaciov *et al.* (Eds) *Istoria Moldovei. Epoca preistorică și antică: (până în sec. V)*, 265-311. Chișinău.

Dergachev V.A., Manzura I.V.

- 1991 *Pogrebalnye komplekсы pozdnego Tripolia*. Kishinev.

Dresely V., Müller J.

- 2001 Die absolutchronologische Datierung der Schnurkeramik im Tauber- und im Mittelbe-Saale-Gebiet. In: J. Czebreszuk, J. Müller (Eds) *The Absolute Chronology in Central Europe 3000-2000 BC*. Poznań-Bamberg-Rahden/Westf.

Dumitroaia Gh.

- 2000 *Comunități preistorice din nord-estul României. De la cultura Cucuteni până în bronzul mijlociu. Bibliotheca Memoriae Antiquitatis*, vol. 7. Piatra-Neamț.

Gey A.N.

- 2011 Spornye voprosy i perspektivy izucheniya katakombnoy kulturno-istoricheskoy obschnosti. *Kratkie soobscheniya Instituta arkheologii* 225: 3-15.

Goslar T., Klochko V.I., Koško A., Włodarczak P., Żurkiewicz D.

- 2015 Chronometry of Late Eneolithic and 'Early Bronze' cultures in the Middle Dniester area: investigations of the Yampil Barrow Complex. In: A. Koško (Ed.) *Podolia as a Cultural Contact Area in the 4th/3rd-2nd Millennium BC. Baltic-Pontic Studies* 20: 256-291.

Harat K., Potupczyk M., Razumow S.

- 2014 Charakterystyka źródeł archeologicznych pozyskanych w latach 1984-1993. In: A. Koško, M. Potupczyk, S. Razumow (Eds) *Naddniestrzańskie kompleksy cmentarzysk kurhanowych społeczności z III i z pierwszej połowy II tysiąclecia przed Chr. w okolicach Jampola, obwód winnicki. Archaeologia Bimaris – Monografie* 6, 45-204. Poznań.

Ivanova S.V.

- 2001 *Sotsialnaya struktura naseleniya yamnoy kultury Severo-Zapadnogo Prichenpmoria*. Odessa.
- 2009 Istoricheskie protsessy v Yugo-Vostochnoy Evrope (eneolit-ranniy bronzovyi vek). In: *Problemy izucheniya kultur bronzovogo veka stepnoy zony Vostochnoy Evropy*, 49-58. Orenburg.
- 2013 Connections between the Budzhak Culture and Central European Groups of the Corded Ware Culture. In: A. Koško (Ed.) *The Ingul-Donets Early Bronze Age Civilization as Springboard for Transmission of Pontic Cultural Patterns to the Baltic Drainage Basin. Baltic-Pontic Studies* 18: 86-120.

Ivanova S.V., Klochko V.I., Koško A., Szmyt M., Toshev G.N., Włodarczak P.

- 2015 'Yampil inspirations' in the study of the Dniester cultural contact area at the frontier of Pontic and Baltic drainage basins. In: A. Koško (Ed.) *Podolia as a Cultural Contact Area in the 4th/3rd-2nd Millennium BC. Baltic-Pontic Studies* 20: 406-424.

Ivanova S.V., Ostroverkhov A.S., Savelev O.K., Ostapenko P.V.

- 2012 *Ocherki istorii i arkheologii Dnestro-Bugskogo mezhdurechia*. Kyiv.

Ivanova S.V., Petrenko V.G., Vetchinnikova N.E.

- 2005 *Kurgany drevnikh skotovodov mezhdurechia Yuzhnogo Buga i Dnestra*. Odessa.

Ivanova S.V., Savelev O.K.

- 2011 Kurgan bilya s. Sichavka Odeskoyi oblasti. *Arkheolohiya* 3: 70-82.

Ivanova S.V., Tsimidanov V.V.

- 1993 O sotsiologicheskoy interpretatsii pogrebeniy s povozkami yamnoy kultur-no-istoricheskoy obschnosti. *Arkheologicheskii almankh* 2: 23-34.

Iwanowa S., Koško A., Włodarczak P.

- 2014 Komponent tradycji kultur ceramiki sznurowej. Amfory w północno-zachodnio-nadczarnomorskich grobach kultury jamowej. In: A. Koško, M. Potupczyk, S. Razumow (Eds) *Naddniestrzańskie kompleksy cmentarzysk kurhanowych społeczności z III i z pierwszej połowy II tysiąclecia przed Chr. w okolicach Jampola, obwód winnicki. Archaeologia Bimaris – Monografie* 6, 351-386. Poznań.

Kaiser E.

- 2003 Studien zur Katakombengrabkultur zwischen Dnepr und Prut. *Archeologie in Eurasien* 14. Mainz am Rhein.

Kashuba M.T., Kurchatov S.I., Scherbakova T.A.

- 2001-2002 Kochevniki na zapadnoy granitse Velikoy stepi (po materialam kurganov u s. Mocra). *Stratum plus* 4: 180-252.

Ketraru N.A., Nikolaeva N.A., Podolskiy N.L., Safronov V.A.

- 1975 Kurgany u s. Starye Kukoneshty Edinetskogo rayona MSSR. *Arheologicheskie otkrytiya* (1974 g.): 438.

Klein L.S.

- 1975 Retsenziya na: Kurgany stepnoy chasti mezdurechia Dunaya i Dnestra. Materialy po arkheologii Severnogo Prichernomoria 6, Odessa. *Sovetskaya arkheologiya* 1: 297-304.
- 1991 *Arkheologicheskaya tipologiya*. Leningrad.

Klochko V.I.

- 2006 *Ozbroennia ta viyskova sprava davnoho naselennia Ukrayiny*. Kyiv.

Kloczko V.I., Koško A.

- 2013 The Baltic Drainage basin in the reconstruction of the mental map of Central Europe held in common by Northern-Pontic Early-Bronze civilization communities: 3200-1600 BC. An outline of the research programme.

In: A. Koško (Ed.) *The Ingul-Donets Early Bronze Age Civilization as Springboard for Transmission of Pontic Cultural Patterns to the Baltic Drainage Basin. Baltic-Pontic Studies* 18: 9-20.

Klochko V.I., Koško A., Potupchuk M.V., Włodarczak P., Żurkiewicz D. Ivanova S.V.

2015 Tripolye (Gordinești group), Yamnaya and Catacomb culture cemeteries, Prydnistrianske, site 1, Yampil Region, Vinnitsa Oblast: an archaeometric and chronometric description and a taxonomic and topogenetic discussion. In: A. Koško (Ed.) *Podolia as a Cultural Contact Area in the 4th/3rd-2nd Millennium BC. Baltic-Pontic Studies* 20: 183-255.

Klochko V.I., Koško A., Razumov S.M., Włodarczak P., Żurkiewicz D.

2015a Eneolithic, Yamnaya and Noua culture cemeteries from the first half of the 3rd and the middle of the 2nd millennium BC, Porohy, site 3A, Yampil Region, Vinnitsa Oblast: archaeometric and chronometric description, ritual and taxonomic-topogenetic identification. In: A. Koško (Ed.) *Podolia as a Cultural Contact Area in the 4th/3rd-2nd Millennium BC. Baltic-Pontic Studies* 20: 78-141.

2015b Eneolithic, Babyno and Noua culture cemeteries, Klembivka, site 1, Yampil Region, Vinnitsa Oblast: archaeometry, taxonomy and topogenetics. In: A. Koško (Ed.) *Podolia as a Cultural Contact Area in the 4th/3rd-2nd Millennium BC. Baltic-Pontic Studies* 20: 142-182.

Koško A.

2000 From research into the issue of the development dependencies of the Corded Ware culture and Yamnaya culture In: S. Kadrow (Ed.) *A Turning of Ages / Im Wandel der Zeiten. Jubilee Book Dedicated to Professor Jan Machnik on His 70th Anniversary*, 337-346. Kraków.

2014 Traits of "Early Bronze" Pontic Cultures in the development of Lowland and Eastern European forest cultural environment in the Baltic southern drainage basin. An outline of the state of research. In A. Koško (Ed.) *Reception Zones of "Early Bronze Age" Pontic Cultures Traditions: Baltic Basin – Baltic and Black Sea Drainage Borderlands, 4/3 mil. to first half 2 mil. BC. Baltic-Pontic Studies* 19: 53-73.

Koško A., Klochko V.I., Olszewski A.

2012 Ritualniy obiekt naselennia prichornomorskoyi kulturnoyi spilnoty doby rannoyi bronzы na r. Sian, *Arkheolohiya* 2: 67-75.

Koško A., Potupczyk M., Razumow S. (Eds)

2014 *Naddniestrzańskie kompleksy cmentarzysk kurhanowych społeczności z III i z pierwszej połowy II tysiąclecia przed Chr. w okolicach Jampola, obwód winnicki. Archaeologia Bimaris – Monografie* 6. Poznań.

Kovaleva I.F.

- 1978 Pogrebeniya zhyvotilovskogo tipa v Prisamarie. In: I. Kovaleva (Ed.), *Kurgannye drevnosti stepnogo Podneprov'ia III-I tys. do n.e.*, 46-49. Dnepropetrovsk.
- 1991 Pogrebeniya s maykopskim inventarem v levoberezhe Dnepra (k vydeleniyu zhyvotilovskogo kulturnogo tipa). In: *Problemy arkheologii Podneprov'ia*, 69-88. Dnepropetrovsk.
- 2002 K vydeleniyu territorialnykh grupp v postmariupolskoy kulture. In: R.M. Munchaev, N.Ya. Merpert (Eds) *Problemy arkheologii Evrazii*, 51-67. Moskva.

Kurchatov S.

- 2006 Issledovanie kurganov epokhi bronzы na Srednem Prute. *Revista Arheologică. Serie nouă* 2(1-2): 263-292.

Larina O.V.

- 1989 Novye kurgannye materialy eneolita-ranney bronzы na Srednem Prute. In: *Arheologicheskie issledovaniya v Moldavii (1989 g.)*, 61 -78. Kishinev.
- 2003 Pozdnetripolskoe pogrebenie gordineshtskogo tipa na Dnestre. In: E. Sava (Ed.) *Interferențe cultural-chronologice în spațiul nord-pontic*, 57-80. Chișinău.

Larina O., Manzura I., Khakheu V.

- 2008 *Brevichenskiye kurgany*. Kishinev.

Levițki O., Demcenko T.

- 1994 Grupul tumular de la Corjeuți-Briceni (R. Moldova). *Memoria antiquitatis* 19: 213-233.

Levițki O., Manzura I., Demcenko T.

- 1996 *Necropola tumulara de la Săreteni*. București.

Levinskiy A.N. Tentiuk I.S.

- 1990 Issledovanie kurganov u s. Mierkulesht. In: *Issledovaniya molodykh uchenykh Moldavii*, 93-100. Kishinev.

Lysenko S.D., Razumov S.M.

- 2014 K voprosu o kontaktakh naseleniya Nizhnego i Srednego Podnestrovia v pervoy polovine II tys. do n.e. *Rusin* 2 (36): 8-27.

Lytvynenko R.O.

- 2009 *Kulturne kolo Babyne (za materialamy pokhovalnykh pamiatok)*. Avtoreferat na zdobuttia stupenia doktora istorichnykh nauk. Kyiv.
- 2006 Pokhovannia kulturnoho kola Babiynе z metalevymy nozhamy. *Donetskiy arkheologicheskii sbornik* 12: 32-61.

Machnik J.

- 1960 Zabytki z kurhanów kultury ceramiki sznurowej w Wiktorowie (USSR). *Materiały Archeologiczne* 2: 69-72.

Mantu C.-M.

- 1998 *Cultura Cucuteni. Evoluție, cronologie, legături. Bibliotheca Memoriae Antiquitatis* V. Piatra Neamț.

Manzura I.V.

- 2010 „Vytianutye” pogrebeniya epokhi eneolita v Karpato-Dnestrovskom Regione. *Tyragetia. Serie nouă IV*(1): 35–47.
- 2013 Kultury stepnogo eneolita. In: S. Hansen, J. Chochorowski, S.D. Kryzhytskiy, G.Y. Ivakin (Eds) *Drevniye kultury Severo-Zapadnogo Prichernomoria*, 115-153. Odessa.

Manzura I.V., Dergachev V.A.

- 1991 *Pogrebalnye komplekсы позднего Tripolia. Svod istochnikov*. Kishinev.

Manzura I.V., Klochko E.O., Savva E.N.

- 1992 *Kamenskie kurgany*. Kishinev.

Manzura I.V., Telnov N.P.

- 1992 Problema pozdnetripolskogo obriada lesostepnoy zony Dnestrovsko-Karpatykh zemel (nekotorye itogi i perspektivy izucheniya). In: V.I. Grosu (Ed.) *Materialy i issledovaniya po arkheologii i etnografii Moldovy*, 118-130. Kishinev.

Merpert N.Y.

- 1974 *Drevneishie skotovody Volgo-Uralskogo mezhdurechia*. Moskva.

Movsha T.G.

- 1964 Trypilske pokhovannia v s. Tsviklivtsi. *Arkheolohiya XVI*: 213-222.
- 1971 O severnoy gruppe pozdnetripolskikh pamyatnikov. *Sovetskaya Arkheologiya* 5: 31-54.

Nikolova A.V., Rassamakin Y.Y.

- 1985 O pozdnetripolskikh pamyatnikakh Pravoberezhia Dnepra. *Sovetskaya Arkheologia* 3: 37-56.

Nikulitsa A.

- 2009 Yuvelirnye izdeliya iz zolota i serebra, obnaruzhennyye pri raskopkakh pamyatnikov epokh eneolita i bronzy (po materialam fondov NM AIM). *Tyragetia. Serie nouă III [XVIII]*, nr 1: 157-168.

Okhrimenko G., Skliarenko N., Lokaychuk S.

- 2012 Okremi pytannia babinskoy kultury na Volyni. *Volyno-Podilski arkheolohichni studiyi* 3: 2-12.

Otroschenko V.V., Rassamakin Y.Y., Chernykh L.A.

- 2008 Doba bronzы na terenakh Ukrayiny. In: P.P. Tolochko *et al.* (Eds) *Ukrayina. Khronolohiya rozvytku*, vol. I., 219–331. Kyiv.

Pâslaru I.

- 2006 *Cultura Delacău-Babino*. Mangalia.

Patokova E.F., Petrenko V.G., Burdo N.B., Polischuk L.Y.

- 1989 *Pamiatniki tripolskoy kultury Severo-Zapadnogo Prichernomoria*. Kyiv.

Petrenko V.G.

- 1991 Kurgan bronzovogo veka u s. Starye Beliary. In: V.P. Vanchugov, A.G. Zaginailo, V.G. Kushnir, V.G. Petrenko (Eds), *Voronovka II. Poseleniye pozднеbronzovogo veka v Severo-Zapadnom Prichernomorie*, 77–91. Kiev.
- 2004 Vykhatynskyi typ. In: *Entsyklopedia trypilskoyi tsyvilizatsii*, vol. 2, 90–91. Kyiv.
- 2010 Kurgan epokhi paleometalla na poberezhie Khadzhibeiskogo limana. *Materialy po arkheologii Severnogo Prichernomoria* 11: 303–368.
- 2013 Usatovskaya kultura. In: In: S. Hansen, J. Chodorowski, S.D. Kryzhytskiy, G.Y. Ivakin (Eds) *Drevnie kultury Severo-Zapadnogo Prichernomoria*, 163–210. Odessa.

Petrenko V.G., Kovaliukh N.N.

- 2003 Novye dannye po radiouglerodnoy khronologii eneolita Severo-Zapadnogo Prichernomoria. In: *Trypilski poselennia-giganty v Ukraini. Talianky*.

Potupczyk M., Razumow S.

- 2014 Zgrupowanie cmentarzysk kurhanowych w rejonie jumpolskim. In: A. Koško, M. Potupczyk, S. Razumow (Eds) *Naddniestrzańskie kompleksy cmentarzysk kurhanowych społeczności z III i z pierwszej połowy II tysiąclecia przed Chr. w okolicach Jampola, obwód winnicki. Archaologia Bimaris – Monografie* 6, 35–40. Poznań.

Rassamakin Y.Y.

- 1997 Svit skotariv. In: *Davnia istoriya Ukrayiny*. vol. 1, 273–301. Kyiv.
- 2000 Kvitienskaya kultura: istoria i sovremennoe sostoyanie problemy. *Stratum plus* 2: 117–177.
- 2002 Aspects of Pontic Steppe Development (4550–3000 BC) in Light of the New Cultural-chronological Model. In: K.V. Boyle, C. Renfrew, M.A. Levine (Eds), *Ancient interactions: east and west in Eurasia*. 49–73. Cambridge.
- 2004 Stepy Prychornomoria v konteksti rozvytku pershykh zemlerobskykh suspilstv. *Arkheolohiya* 2: 3–26.
- 2009 Novye daty k absoliutnoy khronologii epokhi eneolita stepnogo Pricher-

- nomoria (predvaritelnaya informatsiya). *Arkheologicheskiy almanakh* 20: 289-296.
- 2013 Pokhovannya kvitianskoyi kultury v konteksti absoliutnoyi khronolohiyi. *Arkheolohiya* 4(2013): 17-41.
- Razumow S.M.
- 2014 Komponent tradycji kultury jamowej. In: A. Koško, M. Potupczyk, S. Razumow (Eds) *Naddniestrzańskie kompleksy cmentarzysk kurhanowych społeczności z III i z pierwszej połowy II tysiąclecia przed Chr. w okolicach Jampola, obwód winnicki. Archaeologia Bimaris – Monografie* 6, 341-346. Poznań.
- Razumov S.M., Koško A., Karnaukh E.G.
- 2012 *Doslidzhennia kurhanu bilia s. Porohy Yampilskoho rayonu Vynytskoy Oblasti* (held in the archives of IA NANU). Kyiv.
- Razumov S.M., Koško A., Karnaukh E.G., Manigda O.
- 2013 *Zvit pro robotu spilnoyi ukrayinsko-polskoyi Yampilskoyi arkheolohichnoyi ekspeditsii v 2012 rotsi* (held in the archives of IA NANU). Kyiv.
- Russev N., Fokeev M., Manzura I.
- 2013 Kurgan eneolita-bronzy u s. Suvorovo Odesskoy oblasti. *Tyragetia. Serie nouă*, VII [XXII], nr. 1: 157-162.
- Ryzhov S.N.
- 2001-2002 Pozdnetripolskie pamiatniki Bugo-Dneprovskogo mezhhdurechia. *Stratum Plus* 2: 187-196.
- Savva E.N.
- 1988 Issledovanie kurgana u g. Tiraspol. In: *Archeologicheskie issledovaniya v Moldavii v 1983 godu*, 44-59. Kishinev.
- 1992 *Kultura mnogovalikovoy keramiki Pruto-Dnestrovskogo mezhhdurechia*. Kishinev.
- Sava E., Agulnikov S.
- 2003 Contribuții noi la definirea titlului funerar de tip Sabatinovka. In: *Interferențe cultural-cronologice în Spațiul nord-pontic*, 113-138. Chișinău.
- Savva E.N., Dergachev V.A.
- 1984 Raskopki kurganov u s. Medvezha. In: *Kurgany v zonakh novostroek Moldavii*, 98-108. Kishinev.
- Shaposhnikova O.G.
- 1985 Yamnaya kulturno-istoricheskaya obschnost. In: D.Y. Telegin (Ed.) *Arkheologiya Ukrainskoy SSR*, vol. I, 336-352. Kyiv.

Shaposhnikova O.G., Fomenko V.N., Dovzhenko N.D.

1986 *Yamnaya kulturno-istoricheskaya Oblast (yuzhnobugskiy variant)*. Kyiv.

Shmagliy N.M., Chernyakov I.T.

1970 *Kurgany stepnoy chasti mezhdurechia Dunaya i Dnestra, Materialy po arkheologii Severnogo Prichernomoria 6*, Odessa.

Subbotin L.V.

1985 Semenovskiy mogilnik epokhi eneolita-bronzy. In: *Novye materialy po arkheologii Severo-Zapadnogo Prichernomoria*, 45-95. Kiev.

1991 O kulturno-khronologicheskome meste drevneyshykh vytyanutykh pogrebeniy Budzhakskoy stepi. In: E.V. Yarovoy (Ed.), *Drevneyshiye obschnosti zemledeltsev i skotovodov Severnogo Prichernomoria (V tys. do n.e. – V v. n.e.)*. *Materialy mezhdunarodnoy konferentsii 10–14 dekabria 1990 g.*, 71–72. Tiraspol.

2000 Severo-Zapadnoe Prichernomore v epokhu ranney i sredney bronzy. *Stratum Plus 2*: 350-387.

2003 *Orudiya truda, oruzhie i ukrasheniya yamnoy kultury Severo-Zapadnogo Prichernomoria*. Odessa.

Subbotin L.V., Dzigovskiy A.N., Ostroverkhov A.S.

1998 *Arkheologicheskie drevnosti Budzhaka. Kurgany u sel Vishnevoe i Belolesie*. Odessa.

Subbotin L.V., Fokeev M.M., Sapozhnikov I.V.

1986 *Otchet o rabote Dunay-Dnestrovskoy novostroechnoy ekspeditsii IA AN USSR v 1986 godu* (held in the archive of IA NANU, nr 1986/20). Kiev.

Subbotin L.V., Ostroverkhov A.O., Dzygovskiy A.N.

1995 *Arkheologicheskie drevnosti Budzhaka. Kurgany u s. Trapovka i Novoselitsa*. Odessa.

Subbotin L.V., Sapozhnikov I.V., Subbotin A.V.

2001-2002 Kurgannyi mogilnik Diviziya II v mezhdureche Khadzhidera i Alkali. *Stratum Plus 2*: 563-581.

Subbotin L.V., Shmagliy N.M.

1970 Rozkopky kurhannoho mohylnya v m. Bolhradi Odeskoy oblasti. *Arkheolohiya 24*: 123-128.

Sveshnikov I.K.

1990 Kultura mnogovalikovoy keramiki. In: E.A. Balaguri, O.P. Chernykh (Eds) *Arkheologiya Prikarpatia, Volyni i Zakarpattia. Eneolit, bronza i rannee zhelezo*, 74-76. Kyiv.

Szmyt M.

- 1999 *Between West and East. Globular Amphorae Culture in Eastern Europe, Baltic-Pontic Studies* 8.

Topal D.A., Tserna S.V.

- 2010 Pozdnetripolskiy mogilnik i poseleniya u s. Kunicha (Floreshtskiy r-n, Respublika Moldova). *Stratum plus* 2: 281-298.

Toshev G.N.

- 1987 *Sredniy period bronzovogo veka Yugo-Zapada SSSR*. (held in the archives of INION AN SSSR.19.06.1987 g., № 29903.). Kyiv.
- 1991 Zapadniy areal pamiatnikov katakombnoy kultury. In: *Katakombnye kul'tury Severnogo Prichernomoria*, 85-100. Kyiv.
- 1992 *Kurgany epokhi bronzы mezhdurechia Yalpuga i Kaluga*. Zaporozhe.
- 2013 In the West of the Catacomb Area. In: A. Koško, V.I. Klochko (Eds) *The Ingul-Donets Early Bronze Civilization As Springboard For Transmission Of Pontic Cultural Patterns To The Baltic Drainage Basin 3200-1750, Baltic Pontic Studies* 18: 72-85.

Varzar A., Pezhemskiy D.

- 2003 Paleoantropologicheskiy material iz pozdnetripolskogo kompleksa Tetereuke Noue XV. In: E. Sava (Ed.) *Interferențe cultural-cronologice în spațiul Nord-Pontic*, 81-88. Chișinău.

Vetchinnikova N.E.

- 1996 Pokhovannia epokhy bronzы z kurhaniv poblyzu s. Strumok Odeskoyi oblasti. *Arkheolohiya* 1: 141-146.

Videiko M.Y.

- 1999 Radiocarbon Dating Chronology of the Late Tripolye Culture. In: A. Koško (Ed.), *The Foundations of Radiocarbon Chronology of Cultures Between the Vistula and Dnieper in 3150-1850 BC, Baltic-Pontic Studies* 7: 34-71.
- 2000 Tripolye and the cultures of Central Europe: facts and character of interactions: 4200-2750 BC. In: A. Koško, V. Klochko (Eds) *The Western Border Area of the Tripolye Culture, Baltic-Pontic Studies* 9: 13-68.

Włodarczak P.

- 2006 *Kultura ceramiki sznurowej na Wyżynie Małopolskiej*. Kraków.
- 2014 Sekwencja czynności obrzędowych: problem korespondencji tradycji funeralnych kultury jamowej i kultury ceramiki sznurowej na Wyżynie Południowej. In: A. Koško, M. Potuńczyk, S. Razumow (Eds) *Naddniestrzańskie kompleksy cmentarzysk kurhanowych społeczności z III i z pierwszej połowy II tysiąclecia przed Chr. w okolicach Jampola, obwód winnicki. Archaeologia Bimaris – Monografie* 6, 313-340. Poznań.

Włodarczak P., Klochko V.I., Koško A., Potupchik M.V.

- 2015 *Zvit pro rozkopky kurhaniv bilia sela Prydnistryanske Yampilskoho rayonu Vinnitskoyi Oblasti u 2014 rotsi* (held in the archives of IA NANU). Kyiv.

Yarovoy E.V.

- 1984 Pogrebalnyi obriad nekotorykh skotovodcheskikh plemen Srednego Pruta (po materialam raskopok kurganov u s. Korpach). In: I.I. Artmenko (Ed.) *Kurgany v zone novostroek Moldavii*: 37-75. Kishinev.
- 1990 *Kurgany eneolita-bronzy Nizhnego Podnestrovia*. Kishinev.
- 2000 *Skotovodcheskie naselenie Severo-Zapadnogo Prichernomoria epokhi rannego metalla. Avtoreferat na soiskanie uchonoy stepeni doktora istoricheskikh nauk*. Moskva.

Yarovoy E.V., Tserna S.V., Popovich S.S.

- 2012 Pozdnetripolskiy mogilnik u s. Oksentia (Dubossarskiy rayon, Respublika Moldova). *Stratum plus* 2: 287-302.

Zakharuk Y.M.

- 1971 Pamiatky sofiiivskoho typu. In: *Arkheolohiya Ukrainskoyi RSR* vol. 1. Kyiv.

Zbenovich V.G.

- 1967 Raskopki kurganov u s. Stavchany Chernovitskoy oblasti. *Arkheologicheskie issledovaniya v Ukraine* 1: 49-55.

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**‘YAMPIL INSPIRATIONS’:
A STUDY OF THE DNIESTER CULTURAL
CONTACT AREA AT THE FRONTIER OF PONTIC
AND BALTIC DRAINAGE BASINS**

ABSTRACT

The article presents the present state of research on the general issue of the Dniester Region of cultural contacts between communities settling the Baltic and Pontic drainage basins. Some five domains of research shall be brought to discussion in which it is possible to see fresh opportunities for archaeological study, on the basis of ‘Yampil studies’ on Dniester-Podolia (forest-steppe) barrow-culture ceremonial centres from the latter half of the 4th millennium and first half of the 3rd millennium BC. This relates to the peoples of the Eneolithic and the Early Bronze Age. In terms of topogenesis, embracing the

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Pontic-Tripolye, Yamnaya and Catacomb cultures, as well as Globular Amphora and Corded Ware in central prehistoric Europe.

Key words: ‘barrow cultures’; Eneolithic; Early Bronze Age; Tripolye, Yamnaya, Catacomb, Globular Amphora and Corded Ware cultures, Middle Dniester Area, Podolia

In subsequent articles of this ‘Podolia’ volume of *Baltic-Pontic Studies* the issue of *Yampil inspirations* appears in the light of the **Dniester cultural contact area**. The respective articles have documented the present state of research, embracing studies of materials based on newly found excavation sources from *Yampil barrow cemetery complex*, radiocarbon dating, the anthropological nature of ‘barrow communities’ as creators and users of the local network of barrows, as well as the contextualisation of this Dniester region cultural phenomenon at the turn of the Eneolithic and Bronze Age into the wider cultural frame formed in line with communities differing in topogenesis, arising from the North-West Pont and the Baltic drainage basin¹.

This outline represents an attempt to synthesise a number of research questions based on the analysis of the above mentioned studies and related data, in the main corroborated through a new chronometric record (Goslar *et al.* 2015) with respect to the sequence of the Pontic lineage of ritual funerary customs² understood as archaeological taxa. It is the latter therefore that our research shall focus on – 4th millennium to 3rd millennium BC, where the *Yampil phenomenon* becomes bolder in relief. This by no means, however, signifies a resignation from further discussion on the impact of research results pertaining to ‘Yampil studies’ of the 2nd millennium BC. The presented outline – **having identified five domains of relevant research interest** – can therefore be considered as an introduction to the general question of the aforementioned *Yampil inspirations*.

1. In the light of research, the ‘Yampil’ concept of ‘round barrows’³ arises in the Middle Dniester Area (in the broader context no doubt also in the interfluvium of the Dniester and Prut rivers) in 3350-3200 BC in the context of ‘Late Tripolye’ (broadly speaking: Late Eneolithic) units present in the Dniester forest-steppe.⁴ In the classical categorisation of taxa representative of the CII phase of the Tripolye culture (TC) according to T.G. Movsha [1971], this sub-acreage was identified as its northern group. In later research, it was referred to as the Gordinești-Kasperovtsy-Horodiște group [Dergachov 2004].

¹ See Koško *et al.* Eds 2014.

² See the concept of ‘funerary traditions’ in Rassamakin 2004; 2011.

³ See the ‘*process of Kurganization*’ according to M. Gimbutas 1977 – also for discussion of conception.

⁴ Goslar *et al.* 2015; see Ivanova, Toshev 2015a – a record of earlier radiocarbon determinations of corresponding phenomena from the north-western Black Sea Coast.

In the present taxonomy of ‘early barrow phenomena’ according to Y.Y. Rassamakin, the Eneolithic barrow graves in the forest-steppe are situated mainly in the context of the syncretic Zhyvotilovka-Volchansk group (type), representing a hypothetical community integrating traditions such as Late Tripolye (Kasperovtsy and Gordinești), Caucasian (Maikop), as well as Central European (mainly Baden) [Rassamakin 1994; 1999; 2002]⁵.

Out of Yampil sites, the majority of data on the chronometry of the Eneolithic beginnings of barrow architecture was yielded by Prydnistrianske 1. The data relates to four barrows (I, II, III and IV) with relatively modest mounds (20-30 m in diameter), very poorly preserved, measuring some 0.3-0.4 m deep (extremely difficult to identify in terms of archeometry). These have been classified, both on the basis of a ceramic ware inventory and radiocarbon dating as belonging to the Late TC horizon (CII phase) [Klochko *et al.* 2015]. The technological and stylistic analyses of ceramic ware best lending themselves to taxonomic diagnosis of ceramics from grave III/3 point to cultural analogies relating to Tsviklovtsy, Gordinești, Brînzei and Zhvanets communities⁶.

The complete dimension of the chronology of growth of *Yampil Eneolithic round barrows* remains an open question if it is taken into account that the end date for the TC is most often placed around 2750/2700 BC [Videiko 2002]. Already on account of this, it is possible to assume the co-existence of Eneolithic and ‘Yamnaya’ barrows in the studied Yampil funerary space. Further, a consequence of this is the presence of clearly marked Eneolithic traits in YC funerary rites [Ivanova 2015: 285, 286].

The list of Eneolithic barrows/graves on the forest-steppe of the Middle Dniester Area appears highly promising in respect to their concentration near Camenca in Moldova [Manzura *et al.* 1992], as well as in the neighbouring north complex in the Yampil Region in Ukraine [Koško *et al.* 2014]. These were excavated in the previous century but alas, there is no radiocarbon dating available. In respect of the former barrow cluster, two Eneolithic barrows were identified (Ocnița, features 6/24 and 7/14), which represent some 25 per cent of excavated mounds, though only 2.63 per cent of Eneolithic and Bronze Age graves in general; in total 76 inclusive of the horizon of Babyno culture, according to Manzura *et al.* [1992: 82-88, 95].

Initially, in the taxonomy of *Yampil concentration funerary features* there was a lack of graves first classified as Eneolithic [Harat *et al.* 2014], though in further discussion and analysis at the publication stage there also arose other views on this matter. They became more pronounced upon expanding the team of experts and learned colleagues researching the *Yampil Project* to embrace Svetlana V. Ivanova,

⁵ Also see Koško 2000; Włodarczak 2008; 2014; Ivanova, Toshev 2015 in respect of the Dniester as a cultural contact area.

⁶ In this place we are beholden to acknowledge the generosity of scholarship on the part of Dr. Serhiy Ryzhov: see Klochko *et al.* 2015.

Viktor I. Klochko and Gennadiy N. Toshev. In the view of V.I. Klochko, one could attribute Eneolithic ritual traits in the earlier published record of ‘Yampil’ barrows to the following sites: Dobrianka 1/6; 1/9 (?); Porohy 1/1; 1/2; Porohy 3/2; 3/5; Pysarivka 1/1(?); Pysarivka 4/2; Pysarivka 5/2; Pysarivka 6/1; Pysarivka 9/2; 9/3 [Harat *et al.* 2014], as well as Pidlisivka 1/10; 1/11; 1/13⁷.

In this opinion, next to ritual traits (architecture of grave pits, positioning of skeleton and grave goods), destruction itself can be said to play a significant role in terms of diagnosis (= effects of robbery), as noted at the Prydnistrianske 1 site as being repetitive (apart from this site this was also confirmed in the case of grave 2/12 in Severynivka), the political-ritual act defining a chronological division (?) – taking over Eneolithic funerary sites (for discussion see point 3). The views of S.V. Ivanova and G.N. Toshev proceeded in a similar vein, though limited to two funerary features (Porohy 3/2 and Severynivka 1/5) among those published in 2014 (investigated in 1985) [Harat *et al.* 2014], as well as others excavated in 2010–2012, hitherto qualified as YC graves: Pidlisivka 1/1B and 1/10 (perhaps also 1/4 and 1/7), Porohy 3A/7 and 3A/14, as well as Klembivka 1/5, 1/14 and 1/15 [Klochko *et al.* 2015a; 2015b; 2015c].

In summing up the taxonomic outline discussed above, it is worth noting three aspects in particular. First, with respect to earlier comments, the case for a clear line of demarcation between the Eneolithic (‘Tripolye’) and Early Bronze Age (in this context, ‘Yamnaya’) funerary rites relating to the use of rounded burial mound(s) is doubtful as to both ‘chronometric proof’ – evidence of date overlapping [Goslar *et al.* 2015; Ivanova, Toshev 2015a] and studies of material culture – the anthropological documentation of long-term *neighbour correspondence* leading to the syncretisation of cultural systems.

Secondly, further research on the part of the above mentioned scholars has given birth to a significant change of opinion with respect to the growth of the Eneolithic in ‘ceremonial experiences’ to around 20 per cent of excavated Yampil graves – 12 Eneolithic out of 60 features explored before 2010 [Harat *et al.* 2014]. This strengthens the case for the proposition that the forest-steppe of the Dniester area (or more precisely the area settled by the Late Tripolye Gordinești, Kasperovtsy and Vykhatintsy groups) can be viewed as a potentially significant genetic centre of the idea of ‘round barrows’, creatively developing vis-à-vis the South, as exemplified by the steppe TC Usatovo group [Klochko *et al.* 1999: 265] and more broadly, the early barrows of the Balkans and Carpathian Basin [Heyd 2011].

The above proposition should be understood as an argument for a wider exploration of small mounds constituting the horizon of the oldest forms of ‘barrow architecture’ in Late TC communities in the Middle Dniester Area [Dergachev, Manzura 1991]. One particular research direction of interest is the attempt to identify early manifestations of barrow trend on the Podolia Upland and in Volhynia,

⁷ See Koško *et al.* 2014.

situated north-west of the *Yampil agglomeration*. In this context of special interest remains the hitherto one-off discovery in this region of ceramic ware from the Gordinești/Kasperovtsy group in the barrow in Zawisznia, Sokal Region [Antoniiewicz 1925: 240].

Although enigmatic data on the presence of TC ceramic ware in several other Podolian barrows, as for example in Liczkowce on Zbrucz [Sulimirski 1968: 173], cannot be verified, in the context of Yampil finds the latter, it may be argued, present a stronger case for verification. The case for discovering earlier barrow features in the central and western Podolia Upland is bolstered by the growth of cultural contacts between the Middle and Lower Dniester (CI and CII TC phases), resulting in the rise of new funerary ritual elements such as the catacomb grave in Bilshivtsy [Tkachuk 2001-2002].

Thirdly, Middle Dniester Eneolithic burials clearly differ in terms of funerary ritual, which points to their respective differing chronologies and – first and foremost – to their links to various types/traditions of funerary ritual. Apart from the above discussed graves associated with the ‘Late Tripolye’ Gordinești group, there are also features present that demonstrate other steppe varieties of the Eneolithic. The highly indicative positioning of the dead in this context points to analogies in the post-Mariupol/Kvitanska burial group (such as Ocnîța, graves 6/24 and 7/14) [Manzura *et al.* 1992], Zhyvotilovka-Volchansk burial group (Porohy, grave 1/7 and Klembivka, grave 1/14) [Klochko *et al.* 2015b; 2015c], Lower-Mikhailovka/Khadzider/Cernavoda 1 burial group (Severynivka, grave 1/5) [Harat *et al.* 2014], or post-Stog (Pidlisivka, grave 1/1B; Klembivka, grave 1/15) [Klochko *et al.* 2015a; 2015c].

All of the above represent the ‘main types’ of Eneolithic burials documented in the north-western Black Sea Coast [Rassamakin 1998; 2004; Manzura 2013; Ivanova 2015]. The chronology of at least some of these is late – radiocarbon determinations for Klembivka 1 graves point to the beginnings of the 3rd millennium BC [Goslar *et al.* 2015]. Among Podolia barrows presenting these varying steppe traditions there as yet has not been documentation of those whose chronology could have preceded the establishment of a ceremonial centre in Prydnistrianske (3350-3200 BC) and whose chronology is also defined by the presence of Tripolye ceramic ware from phase CII. Taking into account, however, the actual number and differentiation in taxa of Eneolithic barrows, a search for older barrow complexes providing an inspiration for ‘Late Tripolye’ ritual centres would appear to have some basis. Few such, it should be noted, have been documented in the Dniester-Prut part of the forest-steppe [Levițki *et al.* 1996: 69-73] and it could be argued that their chronology could have preceded the formation of the Gordinești group [Larina 2003: 72].

On the other hand, the Yampil finds point to the survival of various Eneolithic funerary traditions right up to the beginning of the Bronze Age, as well as a significant unification in Yamnaya culture (YC) funerary rituals [Rassamakin 2013]. The

barrow funerary custom therefore became for long periods thereafter one of the ritual elements of communities differing in terms of topogenesis, ones that settled the Middle Dniester Area from the beginnings of the latter half of the 4th up to the middle of the 3rd millennium BC.

2. In the light of the above outline therefore one should argue that the ‘architecture of barrows’ associated in the *Yampil landscape* of the Middle Dniester Area with the Eneolithic (specifically, mainly with the TC), precedes the development of a similar phenomenon that can be observed from 2900/2800 BC in the Upper Dniester Area and drainage basin of the Upper Vistula, associated with the Corded Ware culture (CWC) [Włodarczak 2006; 2007; 2008; Jarosz, Włodarczak 2007; Goslar *et al.* 2015]. The most consuming research question therefore is whether ritual customs making use of Eneolithic (Tripolye) ‘barrow architecture’ could have penetrated northwards along the Dniester route, where Globular Amphora culture (GAC) communities functioned. One could also ask what role the rituals played among the autochthons [Koško 2000; Włodarczak 2008; 2014: 335; Ivanova, Toschev 2015b]⁸.

This issue has already been discussed with a resulting tentative systemic taxonomy in the studies of P. Włodarczak, arguing for the Złota culture (ZC) in the Vistula Region as an illustration of one of the reception centres of civilization inspirations from the oldest Pontic ‘barrow culture’ circle associated with the Eneolithic and Early Bronze Age [Małopolska: Włodarczak 2008]. Notably, it is in the ZC that one can notice a set of cultural traits (catacomb grave construction, burial details, forms and decoration of vessels) analogous to those shared by the north-western Black Sea Coast groups of the forest-steppe Eneolithic (chiefly Zhyvotilovka-Volchansk) and the Late Tripolye circle (chiefly Usatovo-Gordinești-Horodiștea-Kasperovtsy).

One of the main signposts of the continuity of this phenomenon in a later period corresponding to the early phases of the CWC and YC, remains the striking correspondence of style in respect of type A amphorae from the Vistula area (Złota, ‘Nad Wawrem’ site, grave 436) and the Middle Dniester Region, from *Yampil barrow concentrate on* (Porohy, barrow 2, grave 2) [Ivanova *et al.* 2014]. The discovery of flint artefacts from barrows in Porohy (3A/15) and Prydnistryanske (IV/7) points, moreover, to the important role of raw materials from Upper Dniester areas, as well as to technology serving as an inspiration for flint working by CWC communities [Razumov 2011: 141-148]. The number of finds documenting CWC – YC ties, alas is modest and clearly less than finds testifying to GAC – YC cultural exchange.

The above two relations of communities of the Northern Pont with cultures deriving from Central Europe are, however, similar with respect to: (a) the dating of their signs on YC cemeteries and (b) analogical manifestations in the funerary

⁸ For a different view see Bandrivskiy 2005.

rituals of the north-western Black Sea Coast communities (the same basic types of objects used in the same way in funerary rites). Although to date it has not been possible to gain absolute date determinations for GAC and CWC graves and associated artefacts, one can suggest that on the basis of the relative stratigraphy of barrow constructions, these finds can be dated in general to 2800-2600 BC.

The above date determinations for these burials can be precisely set as: younger than central barrow burials (Eneolithic and YC, dated foremost to 3050-2800/2700 BC), at the same time older than graves associated with the late or decline Yamnaya phase (approx. the middle of the 3rd millennium BC and later ?). A good illustration in this context is the corresponding chronology of vessel grave goods featuring GAC and CWC traits in barrows documented in barrows in Corpaci and Ocnița, where in a similar stratigraphic context burials were discovered with amphorae that demonstrated stylistic analogies to the above two cultural groups [Yarovoy 1984; Manzura *et al.* 1992].

The presence of Central European elements of cultural complexes in YC graves relates to the stage of the crystallisation of CWC models (= 'horizon A' – in the traditional view). Of special research interest therefore is the role of communication between the Black Sea Coast and the drainage basin of the Baltic Sea in the formation of a new set of barrow rituals: the old Corded Ware horizon. In this context, the Middle Dniester Area would have played the role of a cultural exchange, though scarcity of finds from the south-eastern reaches of the CWC constitutes a barrier in providing more details (between the *Yampil agglomeration* of Eneolithic barrows of the YC and the Zbrucz River, where the easternmost CWC barrows are found, there is a belt of 'no man's land', measuring some 150 km across).

The marginal concentrations of CWC barrows in the Zbrucz area and also Upper Dniester communities further to the west have thus far provided few materials dated to the first half of the 3rd millennium BC [Jarosz 2012]. The majority of graves are dated to younger phases of the CWC [Machnik 1979; Bunyatyan 2010]. Hence, it is Małopolska at present that provides an insight into the importance of relations between the Northern Pontic Area and the Final Neolithic of Central Europe. It is on this basis that attempts at genetic interpretation are made [Włodarczak 2014]. Importantly, this does not negate the fundamental significance of Podolia together with the main Dniester cultural contact route.

3. Of special research note for an assessment of the autogenesis of Eneolithic 'round barrows' may be radiocarbon dated observations of the extent of the destruction ('robberies') in their grave chambers that were conducted in Prydnistrianske 1 [Klochko *et al.* 2015]. Here, it is worth noting the repetition of this phenomenon (feature III/3 is an exception), which at the same time does not find comparison in the territorially continuing YC. Assessing this phenomenon of particular interest in a broader perspective – that of the 'barrow observation' of the 4th to 3rd millennium BC on the north-western Black Sea Coast – one ought to

opine that apart from acts of destruction, these ‘main burials’ that were destroyed (in the first, sometimes also in the second mound) are also more often tied to the Eneolithic rather than the YC.

At this juncture it is worth placing the above observations in the wider context of Pontic research and note that there are two basic conceptions of how this phenomenon is interpreted.

In the first, there can be observed the clearing of the grave of earlier burials (Eneolithic) by communities of the YC [Subbotin 2000: 356]. Intuitively, such intrusions are explained by robbery of valuable objects (foremost metal). Examples of richly furnished central graves are not a rarity (such as grave 1/21 from Purcari), especially in the Late Tripolye steppe circle (Usatovo group) and may be considered to constitute proof also for such an interpretation.

Scholars working in this particular school of interpretation devote themselves to comparative studies of the destruction of burials among various cultures of the Bronze Age, proposing various reasons for this phenomenon: ritual or symbolic robbery for the purposes of clearing [Kupriyanova 2014: 589], fear of the dead and finally, as a symbol of conflicting systems of communication – ‘us versus them’ [Novozhenov 2014: 622-623]. These scholars emphasise the differing nature of causes according to differing cultures [Podobed *et al.* 2014: 629]. Ethnographic data often indicate the destruction of graves as a means of ‘disarming’ the dead, while the removed bones were later used as ritual attributes. Often such ‘clearings’ were undertaken during the taking of new territories accompanied by exploiting a ‘foreign’ barrow and the destruction of a ‘foreign’ grave – ‘us versus them’ [Podobed *et al.* 2014: 630].

The second hypothesis according to T.M. Potemkina, argues that the ‘destroyed’ burials in fact document the Eneolithic ‘pole temples’ of that time. They were sacrificed by humans, marking the choice of place and the beginning of temple construction as one where rituals were to be conducted regularly, tied to funerary and calendar rituals. Over time, the place of worship transformed into a mound, functioning in the barrow cemetery system, preserving a defined tradition of ritual practices [Potemkina 2004: 221-243].

The above author also notes that in the context of spatial organisation in differing barrows all the later burials defined by scholars as ‘Early Yamnaya’ and ‘Yamnaya’ can be seen to be clearly associated with the main Eneolithic burials and ritual ‘pole-complexes’. This might well indicate the existence of common points of orientation in the model of the World; a common spatial model of *sacrum* shared by Late Eneolithic and YC communities. The following sites are to serve as diagnostic proof for this conception: Krasnoe 9, Kubey 1, Akkermen 11, Revovo 3 [Potemkina 2004: 224-240; 2005: 196-198].

4. In the light of ‘classical’ propositions of generating forces in the ‘disintegration’ of the Late TC (CII phase), and more broadly the closing stage of its autogenesis, it is worth highlighting the associated process of activity of the eastern GAC

circle. Chronometric data from the Podolian and Moldavian Uplands indicates that the communities of the GAC appeared in the neighbourhood of the Middle Dniester Area no later than around 2900 BC [Szmyt 1999: Fig. 2, 17; Mihailescu-Birliaba, Szmyt 2003] – though the beginning date cannot at present be established with any precision. The ‘intrusion’ of foreign communities with a genesis in Central Europe took place therefore, it could be argued, during the time of *Yampil builders* and users of barrows, both Late Eneolithic and Early Bronze Age (YC).

The co-occurrence of these differing communities in terms of topogenesis is probable, even likely, though as yet a clear proof in archaeological sources that would be of relevant interest has not been found. One should note, however, the above mentioned (see point 1) important growth in the number of features from the Late Eneolithic, including those which can be associated with the Zhivotilovka-Volchansk group. This is of particular importance, for this group is seen as one of the main potential partners of the GAC communities in the beginning stage of their influence on the Eastern European forest-steppes and steppes [Szmyt 1999; 2013: 100]. The confirmation of the presence of Zhivotilovka-Volchansk features in the Middle Dniester Area ought to provide an impetus to an intensification of research on the steppe and forest-steppe borderlands of drainage basins of such rivers as the Southern Bug, Ingul, Ingulets and Dnieper.

The present state of data on GAC – YC relations can be said to be quite different. Thus, north of Yampil, in the Dniester-Prut interfluvium, the material evidence for contacts between the GAC and barrow communities of the YC is growing⁹. The burgeoning register of syncretic (GAC – YC) funerary features is alas, as yet, not accompanied by a precise chronometry, which significantly limits the relevant interpretations.

For the time being, the *Yampil complex* has not contributed to the above data, though observations conducted during research on neighbouring concentrations in the region of Camenca and Ocnița on the upper Prut testify to the potential for discovering further sources, ones testifying to YC burial deposits of vessels stylistically related to the GAC [Ocnița, grave 3/14 – Manzura *et al.* 1992: Fig. 12: 6, 7; Camenca, grave 445/7 – Kachalova 1974: Tab. 7, 2]. Moreover, flint axes of analogical relations [Camenca, grave 444/3 – Kachalova 1974: Tab. 7, 1] have been identified there. The intriguing question that arises therefore is whether *Yampil data*, pointing to the presence of YC communities throughout the first half of the 3rd millennium BC [Goslar *et al.* 2015], can find relevance in neighbouring territories.

The above limitations notwithstanding, it may be argued that the present store of knowledge in this context allows for the proposition that it was GAC communities at the threshold of the 3rd millennium BC that activated the meridian axis of cultural contacts in respect of the peoples of the Middle Dniester Area, thus activating the Dniester route – strictly speaking, the Dniester-Prut. Its course, testified to

⁹ See Szmyt 2013: 100-104 for older literature.

by the location of GAC and syncretic features (GAC – YC), embraced not only the upper reaches of the Western Bug, Dniester and Prut, but also the middle portions of the Dniester and Prut drainage basins in the network circulating heterogeneous cultural patterns. One could argue therefore that further research should have as its focus the issue of GAC communities penetrating the lower – steppe – sections of the drainage basins of both rivers. In the broader perspective this relates to the hitherto as yet unresolved problem of topogenesis of a particular form of graves, namely stone cists¹⁰.

5. The turning point of the beginnings of ‘catacomb burial’ use in respect of Yampil barrow architecture can be said to be dated to 3350–3175 BC, which corresponds to the Eneolithic horizon of the oldest signs of this funerary ritual on the Northern Black Sea Coast [Rassamakin 2004; Goslar *et al.* 2015]. A grave with a catacomb construction was identified as the central feature in the hypothetically oldest barrow within the Prydnistrianske 1 (feature IV/10) necropolis and one should not exclude the fact that the semi-niche constructions of graves 1/4 and 1/7 in Pidlisivka, can also be attributed to the Eneolithic.

The appearance of the CC in the left-bank Dniester area can therefore be dated to the middle of the 3rd millennium BC. This assessment relates to both typo-chronological findings from Ocnîța, Camenca Region, barrow 3, where a grave was found to relate to ‘early CC’ traditions [Otroschenko 2013], as well as the radiocarbon dated feature-grave I/4 from Prydnistrianske 1 (associated with the Donets-Ingul CC traditions): 2600–2450 BC [Klochko 1990; Manzura *et al.* 1992: 92; Goslar *et al.* 2015]. The above chronological determination confirms one of the possible chronometric variants proposed for the CC in the Dniester and Prut inter-fluve as being in the period 2450–1950 BC [Kaiser 2003; 2009] or 2600–2200 BC [Ivanova 2014: 22; Ivanova, Toshev 2015].

In discussing typo-chronological interpretations, recent research argues that in the area there occur in common earlier cultural traits (corner entrance shafts, positioning of the dead), as well as later ones (oval grave chambers, grave goods). This has been interpreted as a consequence of an extended settlement process in this region by CC populations. Another particularity of this region supposedly was the long co-existence of the YC and CC [Toshev 1991: 96; Ivanova, Toshev 2015]. The above interpretation in turn has consequences in the analysis of culture-making effects produced by the Dniester route in the transmission of CC models into the Upper Vistula drainage basin. In this context, one can point to grave 1149 at Święte 11 site on the San River as a worthy example, which may be dated to around 2200–2050 BC [Koško *et al.* 2012] and which could – besides reflecting the local context of the CWC – serve as an example of the fusion of exogenic traditions of the YC and CC [Ivanova, Toshev 2015a].

¹⁰ See Szmyt 2014 for older literature.

The possibility of discovering features demonstrating an ambiguous taxonomy among the *Yampil barrow cemetery complex* – hypothetically syncretic – which could be attributed to the YC or CC, was already at the forefront of research propositions at the stage of field work during 1984 -1993¹¹. Upon publication of research results in 2014 the so-called dominant of YC traditions was recognised [Harat *et al.* 2014]. This particular question was revisited in the context of subsequent analyses undertaken by a team of scholars, which was brought together in 2015 (see point 1). Present research emphasises the presence of ‘atypical’ features in the analysed ‘barrow locus’ in the context of the YC (?) or indeed, showing CC traits (mainly from the later phase) for the sites of Pysarivka 8/4; Severynivka 1/4 and Pidlisivka 1/7 (classification by V.I. Klochko).

The question remains therefore as to what population groups, representing the ‘catacomb funerary tradition’ and in which period of prehistory, set foot on the territories of the Baltic drainage basin, making their way across the **Dniester cultural contact area**? Did this phenomenon relate purely to the decline phase (syncretic) of the CC as exemplified by the site of Święte 11?

In the beguiling panoply of questions that arise in the above discussion – as marked bold by field research in the *Yampil barrow cemetery complex* – the above are not the only ones that ask how one can and ought to answer these question marks in the process of ongoing research in the continuum of this particular archaeological project.

Translated by Piotr T. Żebrowski

¹¹ See for further discussion, the relevant conservation report.

REFERENCES

Antoniewicz W.

- 1925 Eneolityczne groby szkieletowe we wsi Złota w pow. Sandomierskim. *Wiadomości Archeologiczne* 9: 191-242.

Bandrivskyi M.

- 2005 Rol azovo-prychornomorskykh stepovykh kultur u pokhodzhenni i rozvytku skotarskoyi spilnoty na zakhodi Podilskoyi vysochyny (3700-2900 rr. do narodzhennia Khrysta). *Materialy i doslidzhennia z arkheolohiyi Prykarpattia i Volyni* 9: 135-173.

Bunyatyan K.

- 2010 Pidkarpatska kultura shnurovoyi keramiky. *Arkheolohiya* 2: 18-30.

Dergachov V.O.

- 2004 Pizniy period trypilskoyi kultury. In: M.Y. Videiko (Ed.) *Entsyklopediya trypilskoyi tsyvilizatsiyi*, 109-111. Kyiv.

Dergachev V.A., Manzura I.V.

- 1991 *Pogrebalnye komplekсы позднего Tripolia*. Kishinev.

Gimbutas M.

- 1977 The First Wave of Eurasian Steppe Pastoralists into Copper Age Europe. *The Journal of Indo-European Studies* 5-4: 277-338.

Goslar T., Klochko V.I., Koško A., Włodarczak P., Żurkiewicz D.

- 2015 Chronometry of Late Eneolithic and 'Early Bronze' cultures in the Middle Dniester area: investigations of the Yampil Barrow Complex. In: A. Koško (Ed.) *Podolia as a Cultural Contact Area in the 4th/3rd-2nd Millennium BC*. *Baltic-Pontic Studies* 20: 256-291.

Harat K., Potupczyk M., Razumow S.

- 2014 Charakterystyka źródeł archeologicznych pozyskanych w latach 1984-1993. In: A. Koško, M. Potupczyk, S. Razumow (Eds) *Naddniestrzańskie komplekсы cmentarzysk kurhanowych społeczności z III i z pierwszej połowy II tysiąclecia przed Chr. w okolicach Jampola, obwód winnicki. Z badań nad północno-zachodnią rubieżą osadnictwa społeczności kręgu kultur „wczesnobrązowych” strefy pontyjskiej. Badania z lat 1984-2014*. *Archaeologia Bimaris – Monografie* 6, 45-204. Poznań.

Heyd V.

- 2011 Yamnaya Groups and Tumuli West of the Black Sea. In: E. Borgna, S. Müller-Celka (Eds) *Ancestral Landscapes: Burial mounds in the Copper and Bronze Ages*, 529-549. Lyon.

Ivanova S.V.

- 2014 Stan badań nad osadnictwem kultur jamowej i katakumbowej w zlewni dolnego Dniestru. In: A. Koško, M. Potupczyk, S. Razumow (Eds) *Naddniestrzańskie kompleksy cmentarzysk kurhanowych społeczności z III i z pierwszej połowy II tysiąclecia BC w okolicach Jampola, obwód winnicki. Z badań nad północno-zachodnią rubieżą osadnictwa społeczności kręgu kultur „wczesnobrązowych” strefy pontyjskiej. Badania z lat 1984-2014. Archaeologia Bimaris – Monografie 6*, 17-33. Poznań.
- 2015 Protobudzhakskiy gorizont Severo-Zapadnogo Prichernomoria. *Stratum plus* 2: 275-294.

Iwanowa S., Koško A., Włodarczak P.

- 2014 Komponent tradycji kultur ceramiki sznurowej. Amfory w północno-zachodnio-nadczarnomorskich grobach kultury jamowej. In: A. Koško, M. Potupczyk, S. Razumow (Eds) *Naddniestrzańskie kompleksy cmentarzysk kurhanowych społeczności z III i z pierwszej połowy II tysiąclecia przed Chr. w okolicach Jampola, obwód winnicki. Z badań nad północno – zachodnią rubieżą osadnictwa społeczności kręgu kultur „wczesnobrązowych” strefy pontyjskiej. Badania z lat 1984-2014. Archaeologia Bimaris – Monografie 6*, 351-386. Poznań.

Ivanova S.V., Toshev G.N.

- 2015 «Budzhakskie banki» kak markery: transkulturnyi i transterritorialnyi aspekt. In: P.P. Tolochko, S.S. Andrukh, G.N. Toshev (Eds) *Starozhytnosti Stepovoho Prychornomoria i Krymu XVIII*, 17-36. Zaporizhzhia.
- 2015a The Middle-Dniester cultural contact area of early metal age societies. The frontier of Pontic and Baltic drainage basin in the 4th/3rd-2nd millennium BC. In: A. Koško (Ed.) *Podolia as a Cultural Contact Area in the 4th/3rd-2nd Millennium BC. Baltic-Pontic Studies* 20: 336-405.

Jarosz P.

- 2012 Wczesne etapy osadnictwa kultury ceramiki sznurowej w strefie karpackiej. In: *Fortetsia: zbirnyk zapovidnyka „Tustan”*, vol. 2, 322-332. Lviv.

Jarosz P., Włodarczak P.

- 2007 Chronologia bezwzględna kultury ceramiki sznurowej w Polsce południowo-wschodniej oraz na Ukrainie. *Przegląd Archeologiczny* 55: 71-108.

Kachalova N.K.

- 1974 Ermitazhnaya kollektsiya N.E. Brandenbura. Epokha bronzy. In: *Arkheologia SSSR. Svod arkheologicheskikh istochnikov*, V4-12. Moskva.

Kaiser E.

- 2003 *Studien zur Katakombengrabkultur zwischen Dnepr und Prut. Archäologie in Eurasien*, vol. 14. Mainz am Rhein.
- 2009 Problemy absoliutnogo datirovaniya katakombnoy kultury Severnogo Prichernomoria. *Tyrageia. Serie nouă. III [XVIII], nr. 1, Arheologie. Istorie Antică*: 59-70.

Klochko E.O

- 1990 Redkiy pogrebalnyi kompleks katakombnoy kultury na Srednem Dnestre. In: O.G. Shaposhnikova, V.V. Otroschenko, S.Z. Pustovalov, G.N. Toshev, G.I. Shapovalov (Eds) *Problemy izucheniya katakombnoy kulturno-istoricheskoy obschnosti*, 28-30. Zaporozhe.

Klochko V.I., Koško A., Potupchuk M.V., Włodarczak P., Żurkiewicz D. Ivanova S.V.

- 2015 Tripolye (Gordinești group), Yamnaya and Catacomb culture cemeteries, Prydnistrianske, site 1, Yampil Region, Vinnitsa Oblast: an archaeometric and chronometric description and a taxonomic and topogenetic discussion. In: A. Koško (Ed.) *Podolia as a Cultural Contact Area in the 4th/3rd-2nd Millennium BC. Baltic-Pontic Studies* 20: 183-255.

Klochko V.I., Koško A., Razumov S.M., Włodarczak P., Żurkiewicz D.

- 2015a Eneolithic, Yamnaya, Catacomb and Babyno culture cemeteries, Pidlisivka, barrow 1, Yampil Region, Vinnitsa Oblast: archaeometry, chronometry and taxonomy. In: A. Koško (Ed.) *Podolia as a Cultural Contact Area in the 4th/3rd-2nd Millennium BC. Baltic-Pontic Studies* 20: 40-77.
- 2015b Eneolithic, Yamnaya and Noua culture cemeteries from the first half of the 3rd and the middle of the 2nd millennium BC, Porohy, site 3a, Yampil Region, Vinnitsa Oblast: archaeometric and chronometric description, ritual and taxonomic-topogenetic identification. In: A. Koško (Ed.) *Podolia as a Cultural Contact Area in the 4th/3rd-2nd Millennium BC. Baltic-Pontic Studies* 20: 78-141.
- 2015c Eneolithic, Babyno and Noua culture cemeteries, Klembivka, site 1, Yampil Region, Vinnitsa Oblast: archaeometry, taxonomy and topogenetics. In: A. Koško (Ed.) *Podolia as a Cultural Contact Area in the 4th/3rd-2nd Millennium BC. Baltic-Pontic Studies* 20: 142-182.

Klochko V.I., Koško A., Szmyt M.

- 1999 A Comparative Chronology of the Prehistory of the Area between the Vistula and Dnieper: 3150-1850 BC. In: A. Koško (Ed.) *The Foundations of*

Radiocarbon Chronology of Cultures Between the Vistula and Dnieper: 3150-1850 BC, Baltic-Pontic Studies 7: 264-282.

Koško A.

- 2000 From research into the issue of the development dependencies of the Corded Ware culture and Yamnaya culture In: S. Kadrow (Ed.) *A Turning of Ages / Im Wandel der Zeiten. Jubilee Book Dedicated to Professor Jan Machnik on His 70th Anniversary*, 337-346. Kraków.

Koško A., Klochko V.I., Olshevskiy A.

- 2012 Rytualnyi obiekt naselennia prychnomorskoyi kulturnoyi spilnoty doby rannoyi bronzы na r. Sian. *Arkheolohiya* 2: 67-75.

Koško A., Potupczyk M., Razumow S. (Eds)

- 2014 *Naddniestrzańskie kompleksy cmentarzysk kurhanowych społeczności z III i z pierwszej połowy II tysiąclecia przed Chr. w okolicach Jampola, obwód winnicki. Z badań nad północno-zachodnią rubieżą osadnictwa społeczności kręgu kultur „wczesnobrązowych” strefy pontyjskiej. Badania z lat 1984-2014. Archaeologia Bimaris – Monografie 6. Poznań.*

Koško A., Razumov S., Żurkiewicz D

- 2014 Nasyp kurhanu: morfometria, stratygrafia oraz planigrafia obiektów. In: A. Koško, M. Potupczyk, S. Razumow (Eds) *Naddniestrzańskie kompleksy cmentarzysk kurhanowych społeczności z III i z pierwszej połowy II tysiąclecia BC w okolicach Jampola, obwód winnicki. Z badań nad północno-zachodnią rubieżą osadnictwa społeczności kręgu kultur „wczesnobrązowych” strefy pontyjskiej. Badania z lat 1984-2014. Archaeologia Bimaris – Monografie 6*, 209-212. Poznań.

Kupriyanova E.V.

- 2014 Manipulyatsii s predmetami v pogrebeniyah epohi bronzы: ograblenie ili ritual (po materialam mogilnika Stepnoe-7). In: A.G. Sitdikov, N.A. Markarov, N.P. Derevyanko (Eds) *Trudy IV (XX) Vserossiyskogo arheologicheskogo s'ezda v Kazani*, vol. I, 588-589. Kazan.

Larina O.V.

- 2003 Pozdnetripolskoe pogrebenie gordineshtskogo tipa na Dnestre. In: E. Sava (Ed.) *Interferențe cultural-chronologice în spațiul nord-pontic*, 57-80. Chișinău.

Levițki O., Manzura I., Demcenko T.

- 1996 *Necropola tumulara de la Sarateni*. București.

Machnik J.

- 1979 Ze studiów nad kulturą ceramiki sznurowej w dorzeczu górnego Dniestru. *Acta Archaeologica Carpathica* 19: 51-71.

Manzura I.V.

- 2013 Kultury stepnego eneolita. In: S. Hansen, J. Chodorowski, S.D. Kryzhytskiy, G.Y. Ivakin (Eds) *Drevnie kultury Severo-Zapadnogo Prichernomoria*, 115-153. Odessa.

Manzura I.V., Klochko E.O., Savva E.N.

- 1992 *Kamenskie kurgany*. Kishinev.

Mihailescu-Birliba V., Szmyt M.

- 2003 Radiocarbon Chronology of the Moldavian (Siret) Subgroup of the Globular Amphora Culture. In: A. Koško, V.I. Klochko (Eds) *The Foundations of Radiocarbon Chronology of Cultures Between the Vistula and Dnieper: 4000–1000 BC*, *Baltic-Pontic Studies* 12: 82-123.

Movsha T.G.

- 1971 O severnoy gruppe pozdnetripolskikh pamyatnikov. *Sovetskaya Arkheologiya* 1: 31-54.

Novozhenov V.A.

- 2014 Ograblenie mogily kak kommunikativnyi messedzh (po materialam bronzovykh pogrebeniy Kazakhstana) In: A.G. Sitdikov, N.A. Makarov, N.P. Derevianko (Eds) *Trudy IV (XX) Vserossiyskogo arkheologicheskogo syezda v Kazani*, vol. I, 622-627. Kazan.

Otroschenko V.V.

- 2013 The catacomb culture phenomenon. In: A. Koško, V.I. Klochko (Eds) *The Ingul-Donets Early Bronze Civilization as Springboard for Transmission of Pontic Cultural Patterns to the Baltic Drainage Basin 3200-1750 BC*. *Baltic-Pontic Studies* 18: 21-38.

Podobed V.A., Usachuk A.N., Tsimidanov V.V.

- 2014 «Ograblenie» mogil v kulturakh epokhi bronzy stepnoy i lesostepnoy Evrazii. In: A.G. Sitdikov, N.A. Makarov, N.P. Derevianko (Eds) *Trudy IV (XX) Vserossiyskogo arkheologicheskogo syezda v Kazani*, vol. I, 628-630. Kazan.

Potemkina T.M.

- 2004 Osobennosti struktury sakralnogo prostranstva eneoliticheskikh kurhanov so stolbovymi konstruktsiyami (po materialam Severnogo Prichernomoria).

moria). In: A.N. Gey (Ed.) *Pamiatniki arkheologii i drevnego isskusstva Evrazii*, 215-250. Moskva.

Rassamakin Y.Y.

- 1994 The main directions of the development of early pastoral societies of northern Pontic Zone: 4500-2450 BC (Pre-Yamnaya Cultures and Yamnaya Culture). In: A. Koško (Ed.) *Nomadism and Pastoralism in the Circle of Baltic-Pontic Early Agrarian Cultures: 5000-1650 BC. Baltic-Pontic Studies* 2: 29-70.
- 1998 Stanitsa Novosvobodnaya i pontiyskaya step: novyi istochnik resheniya aktualnoy problemy. In: V.Ya. Kiyashko, V.A. Larenok, V.V. Potapov (Eds) *Problemy arkheologii Yugo-Vostochnoy Evropy*, 64-66. Rostov-na-Donu.
- 1999 The Eneolithic of the Black Sea Steppe: Dynamics of Cultural and Economic Development 4500 -2300 BC. In: M. Levine, Y. Rassamakin, N. Kislenko, N. Tatarintseva (Eds) *Late Prehistoric Exploitation of the Eurasian Steppe*, 59-182. Cambridge.
- 2002 Aspects of Pontic steppe development (4550-3000 BC) in the light of the new cultural-chronological model. In: K. Boyle, C. Renfrew, M. Levine (Eds) *Ancient interactions: east and west in Eurasia*, 49-73. Cambridge.
- 2004 *Die nordpontische Steppe in der Kupferzeit (Gräber aus der Mitte des 5. Jt.–Ende des 4. Jt. v. Chr.). Archäologie in Eurasien* 17. Mainz am Rhein.
- 2011 Eneolithic Burial Mounds in the Black Sea Steppe: From the First Burial Symbols to Monumental Ritual Architecture. In: E. Borgna, S. Müller-Celka (Eds) *Ancestral Landscapes: Burial mounds in the Copper and Bronze Ages*, 293-306. Lyon.
- 2013 From the Late Eneolithic Period to the Early Bronze Age in the Black Sea Steppe: What is the Pit Grave Culture (Late Fourth to Mid-Third Millennium BC)? In: V. Heyd, G. Kulcsár, V. Szeverényi (Eds) *Transitions to the Bronze Age. Interregional Interaction and Socio-Cultural Change in the Third Millennium BC Carpathian Basin and Neighbouring Regions*, 113-138. Budapest.

Razumov S.M.

- 2011 *Flint Artefacts of Northern Pontic Populations of the Early and Middle Bronze Age: 3200-1600 BC. Baltic-Pontic Studies* 16.

Subbotin L.V.

- 2000 Severo-Zapadnoe Prichernomore v epokhu ranney i sredney bronzy. *Stratum Plus* 2: 350-387.

Sulimirski T.

- 1968 *Corded Ware and Globular Amphorae North-East of the Carpathians*. London.

Szmyt M.

- 1999 *Between West and East. People of the Globular Amphora Culture in Eastern Europe, Baltic-Pontic Studies* 8. Poznań.
- 2013 View from the Northwest: Interaction Network in the Dnieper-Carpathian Area and the People of the Globular Amphora Culture in the Third Millennium BC. In: V. Heyd, G. Kulcsár, V. Szeverényi (Eds) *Transitions to the Bronze Age. Interregional Interaction and Socio-Cultural Change in the Third Millennium BC. Carpathian Basin and Neighbouring Regions*, 93-111. Budapest.
- 2014 Fourth-third millennium BC stone cist graves between the Carpathians and Crimea. An outline of issues. In: A. Koško (Ed.) *Reception zones of Pontic Culture traditions: Baltic Basin – Baltic and Black Sea Drainage Borderlands, 4/3 mil. to First Half 2 mil. BC. Baltic-Pontic Studies* 19: 108-147.

Toshev G.N.

- 1991 Zapadniy areal pamyatnikov katakombnoy kultury. In: *Katakombnye kultury Severnogo Prichernomoria*, 85-100. Kyiv.

Tkachuk T.M.

- 2001-2002 Konets etapu CI i nachalo CII tripolskoy kultury verkhnego Podnestrovia (na materialakh poselenia Bilshivtsi. *Stratum plus* 2: 196-217.

Videiko M.Y.

- 2002 *Trypilska tsyvilizatsiya*. Kyiv.

Włodarczak P.

- 2006 *Kultura ceramiki sznurowej na Wyżynie Małopolskiej*. Kraków.
- 2007 Problem chronologii radiowęglowej kultury ceramiki sznurowej w świetle dendrochronologicznych datowań późnoneolitycznych osad palafitowych ze Szwajcarii. *Archeologia Polski* 52: 35-80.
- 2008 Kultura złocka i problem genezy kultury ceramiki sznurowej w Małopolsce. In: J. Bednarczyk, J. Czebreszuk, P. Makarowicz, M. Szmyt (Eds) *Na pograniczu światów. Studia z pradziejów międzymorza bałtycko-pontyjskiego ofiarowane Profesorowi Aleksandrowi Koško w 60. rocznicę urodzin*, 555-576. Poznań.
- 2014 Sekwencja czynności obrzędowych: problem korespondencji tradycji funeralnych kultury jamowej i kultury ceramiki sznurowej na Wyżynie Podolskiej. In: A. Koško, M. Potupczyk, S. Razumow (Eds) *Naddniestrzańskie kompleksy cmentarzysk kurhanowych społeczności z III i z pierwszej*

połowy II tysiąclecia przed Chr. w okolicach Jampola, obwód winnicki. Z badań nad północno-zachodnią rubieżą osadnictwa społeczności kręgu kultur „wczesnobrązowych” strefy pontyjskiej. Badania z lat 1984-2014. Archaeologia Bimaris – Monografie 6, 314-340. Poznań.

Yarovoy E.V.

- 1984 Pogrzebalnyi obriad nekotorykh skotovodcheskikh plemen Srednego Pruta (po materiałam raskopok kurganov u s. Korpach). In: I.I. Artemenko (Ed.) *Kurgany v zone novostroek Moldavii*, 37-75. Kishinev.

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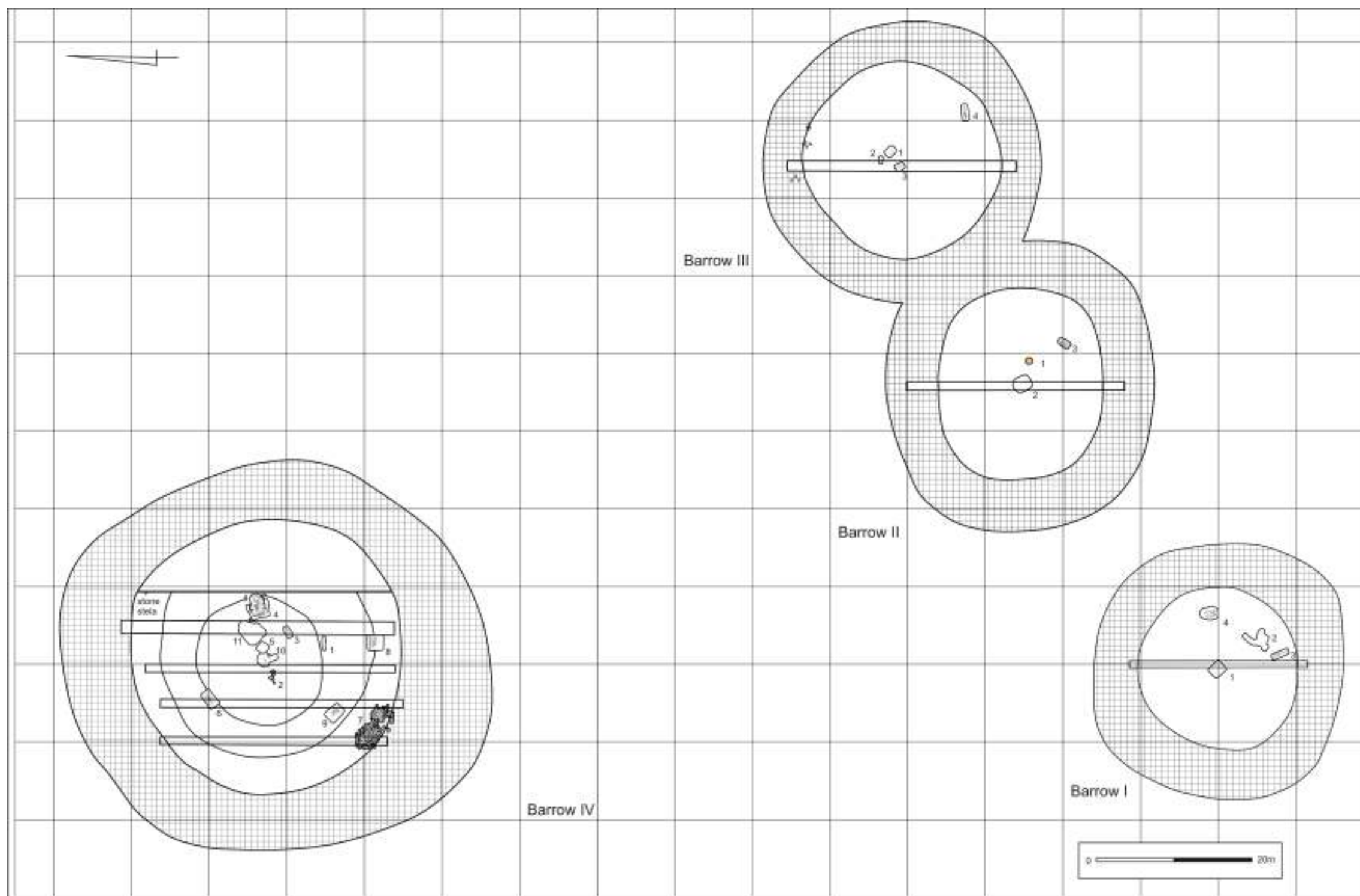


Fig. 4. Prydnistrianske, Yampil Region. Plan of barrows I-IV