



Newly discovered Late Bronze Age settlement in the vicinity of Kamenovo, Kubrat municipality, northeastern Bulgaria: preliminary results

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ABSTRACT

This article presents the preliminary results of several consecutive studies conducted in the period 2021–2024. The area of the Ludogorsko Plateau is characterised by one of the highest concentrations of Late Bronze Age finds discovered in present-day Bulgaria. Unfortunately, more than 100 years after the first discoveries, no large-scale studies focusing on the period of the 2nd millennium BC have been carried out. The fieldwork strategy included combination of various research methods – from remote and non-destructive methods (LiDAR, geophysics, field surveys) to conventional archaeological excavations (trenches and long-term excavations over a larger area) for the sites selected for these studies.

The archaeological site in the locality of Yurtluka near the village of Kamenovo was registered during the first campaign (2021). Its identification as promising for future more detailed fieldwork led to the successive implementation of large-scale geomagnetic surveys and the first regular excavations in 2023.

The results presented are diverse and allow analyses and interpretations of various research questions relating to the settlement environment, the internal organisation of the site, the characteristics of the pottery assemblage and the main groups of artefacts. Initial hypotheses about chronology, possible supra-regional contacts and interactions in this part of the Ludogorsko Plateau during the Late Bronze Age are also put forward.

KEYWORDS

Late Bronze Age, Ludogorie area, Kamenovo, multi-disciplinary approach, settlement environment, pottery complex and important find groups



Fig. 1. Parts of the Balkans and Asia Minor with the area of investigations in the municipalities of Kubrat, Razgrad, Zavet and Isparih (author D. Sandeva)

Обр. 1. Частии от Балканите и Мала Азия с обозначен ареал на изследването на територията на общини Кубрат, Разград, Завет и Исперих (автор Д. Сандева)

Introduction

This paper presents the results of multi-disciplinary archaeological investigations of a Late Bronze Age (LBA) settlement in the locality of Yurtluca, near the village of Kamenovo, Kubrat municipality¹. These are the results of the first phase of work on a long-term research program in the municipalities of Kubrat, Razgrad, Zavet and Isparih in the Razgrad region of northeastern Bulgaria (fig. 1). The aim of the project is high-precision survey and ground registration of archaeological sites in a hitherto largely unexplored area by means of a multi-disciplinary approach and the combined application of various remote-controlled and non-destructive methods in several consecutive campaigns (Popov, Georgiev in press a; Popov, Georgiev in press b).

The focus of the present paper is the Late Bronze Age site discovered during the first field surveys in 2021. In 2022 and 2024 we conducted geophysical survey. The aim of this publication is to present the results obtained during this phase and to provide a summary and analysis of the settlement environment, the internal organisation of the site and the characteristics of the first archaeological structures investigated during the trench excavations. The focus is on the chronological classifi-

¹ The publication is part of the realisation of a project “Non-destructive archaeology: an interdisciplinary study of the settlement pattern of the Ludogorsko Plateau in the Bronze and Early Iron Age”, contract between NAIM-BAS and the Bulgarian National Science Fund no. КП-06-Н80/12 from 15.12.2023. Part of the studies at different stages were carried out within the framework of the Ministry of Culture program (Group II) and within the framework of the INFRAMAT project for some of the most important studies related to the use of non-destructive methods.

We would also like to thank Georgi Hristov and Ivan Ivanov for their help during the work in the Kubrat region.

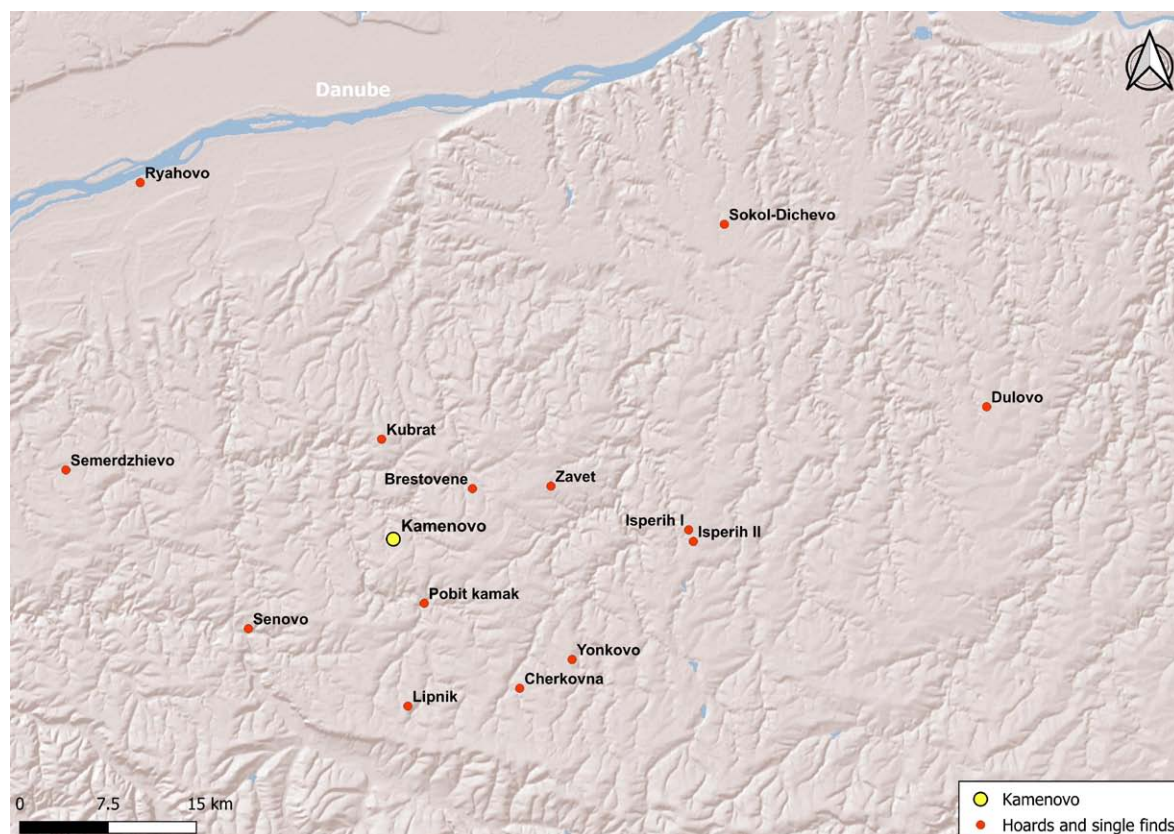


Fig. 2. Location of some of the main hoards and single finds from the LBA mentioned in the text
(author D. Sandeva)

Обр. 2. Локализация на някои от основните колективни и единични находки от КБЕ,
споменати в текста (автор Д. Сандева)

cation, cultural affiliation and preliminary interpretation of some of the main groups of finds (from both the field survey and the first excavations) – the pottery assemblage, small clay finds, clay wheel models and clay stoppers for vessels, flint tools, stone moulds, etc. The preliminary results from the archaeological excavations at Kamenovo shed new important light on the material culture of the Late Bronze Age in present-day northeastern Bulgaria.

The archaeological site near Kamenovo is located in the Ludogorie area where important artefacts were discovered. These include the finds from Pobit Kamak hoard (Leshtakov 2016; 2018a), the Cypriot ingots found in the Kamenovo area (Athanasov et al. 2020 with references), the collective and individual finds of metal tools and weapons from Semerdzhievo, Sokol–Dichevo, Zavet, Vetrino, Ispirih, Yonkovo (Hristova 2018 with references), the hoard of pottery vessels from Cherkovna (Hänsel 1976; Dimitrova, Dilov 2018 with references) (which gave the name to the main period of the Late Bronze Age in present-day Bulgaria and Romania – the Zimnicea – Plovdiv – Cherkovna group) and many other finds (fig. 2). Some of the above finds were interpreted as key markers in the inter-regional network, linking the areas of the Eastern Alps, the Carpathians and the lower Danube on the one hand with the Aegean region, Anatolia and the eastern Mediterranean on the other.

Despite the clear evidence and numerous stray finds, the area is still unknown and far less researched in comparison to southern Romania, northwestern Bulgaria, eastern and central Serbia, Bosnia and Herzegovina and present-day southern Bulgaria (including the Rhodope Mountains and the Upper Thracian Plain). Despite these indirect indications for the importance of the area, no consistent and organised attempts have been made in Bulgarian archaeology to identify and record the archaeological sites from which these finds originate.

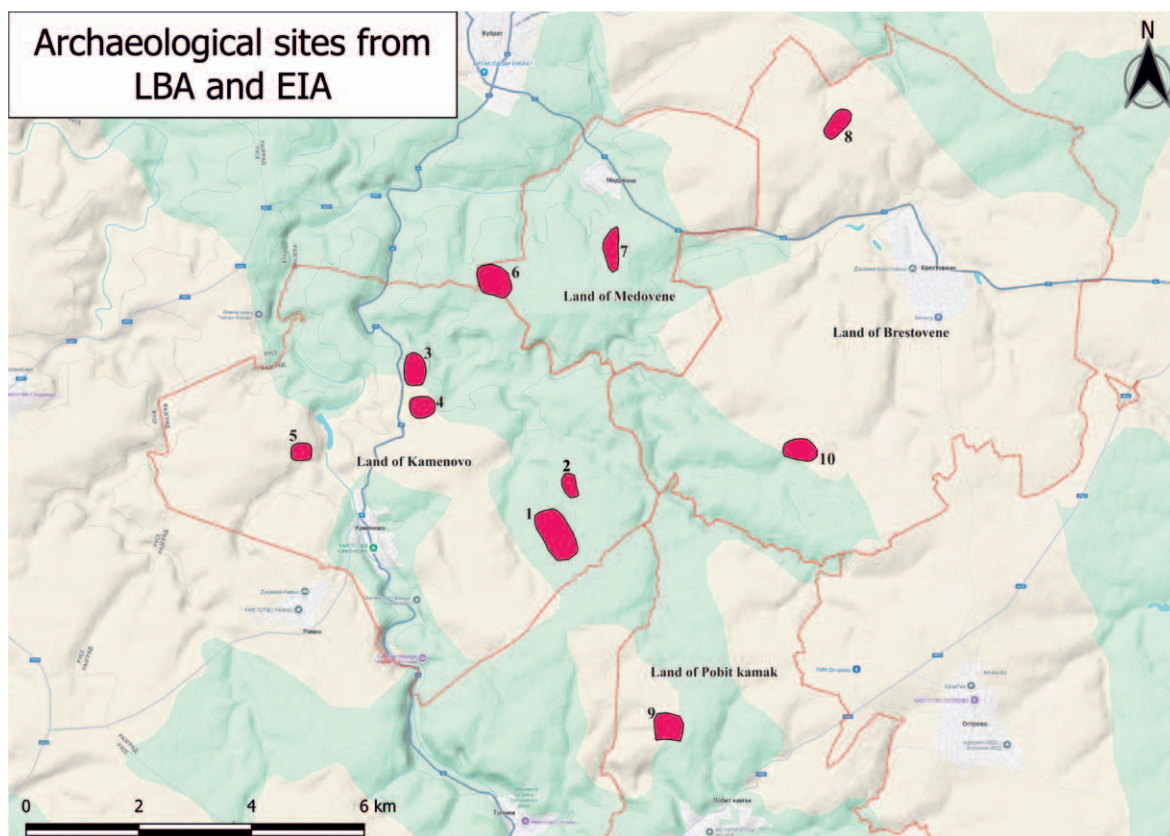


Fig. 3. Map of the registered settlement sites during the regular field surveys in 2021 and 2022 related to the LBA, EIA and LIA. 1. Kamenovo, Yurtluka (LBA); 2. Kamenovo, Malkiat Yurtluk (LBA–EIA); 3. Kamenovo, Balaksart 1 (EIA–LIA); 4. Kamenovo, Balaksart 2 (LBA–LIA); 5. Kamenovo 3 (LBA); 6. Medovene 2 (EIA); 7. Medovene, Sayaorman (LBA); 8. Brestovene 2 (EIA); 9. Pobit Kamak, Dabravata (LBA); 10. Brestovene, Kodzha ekinlik (LBA) (author P. Georgiev)

Обр. 3. Карта на регистрираните при теренните издирвания през 2021 и 2022 г. селищни обекти от КБЕ, РЖЕ и КЖЕ. 1. Каменово, Юртлука (КБЕ); 2. Каменово, Малкият Юртлук (КБЕ–РЖЕ); 3. Каменово, Балъксърт 1 (РЖЕ–КЖЕ); 4. Каменово, Балъксърт 2 (КБЕ–КЖЕ); 5. Каменово 3 (КБЕ); 6. Медовене 2 (РЖЕ); 7. Медовене, Саяорман (КБЕ); 8. Брестовене 2 (РЖЕ); 9. Побит камък, Дъбравата (КБЕ); 10. Брестовене, Коджа екенлик (КБЕ) (автор П. Георгиев)

The various stages of the archaeological investigation of the Kamenovo site (prospection, geophysics and regular excavations) have shed a new light on the settlement characteristics in this area during the Late Bronze Age.

Geographical location, natural environment and settlement environment

The site is located in the Ludogorie area, part of the eastern Danube plain. The region is divided into three parts – Ludogorsko Plateau, Ludogorsko Heights and hilly Ludogorie (Doykov 1965, 21). The phytogeographical factor, i.e. the distribution of forests, is often used to define the boundaries (Doykov 1965, 14).

Until 1942, the district was called Deliorman (Iliev 2007, 34). This name means “crazy forest” (Iliev 1999, 9). In the past, there were dense forests in this area with predominantly deciduous species, including oak, beech, hornbeam, etc., with oak being the most common (Doykov 1965, 40; Georgiev 1985, 248; Doykov, Doykov 2017, 7). Until 1950 it was called Polesie, followed by Ludo-

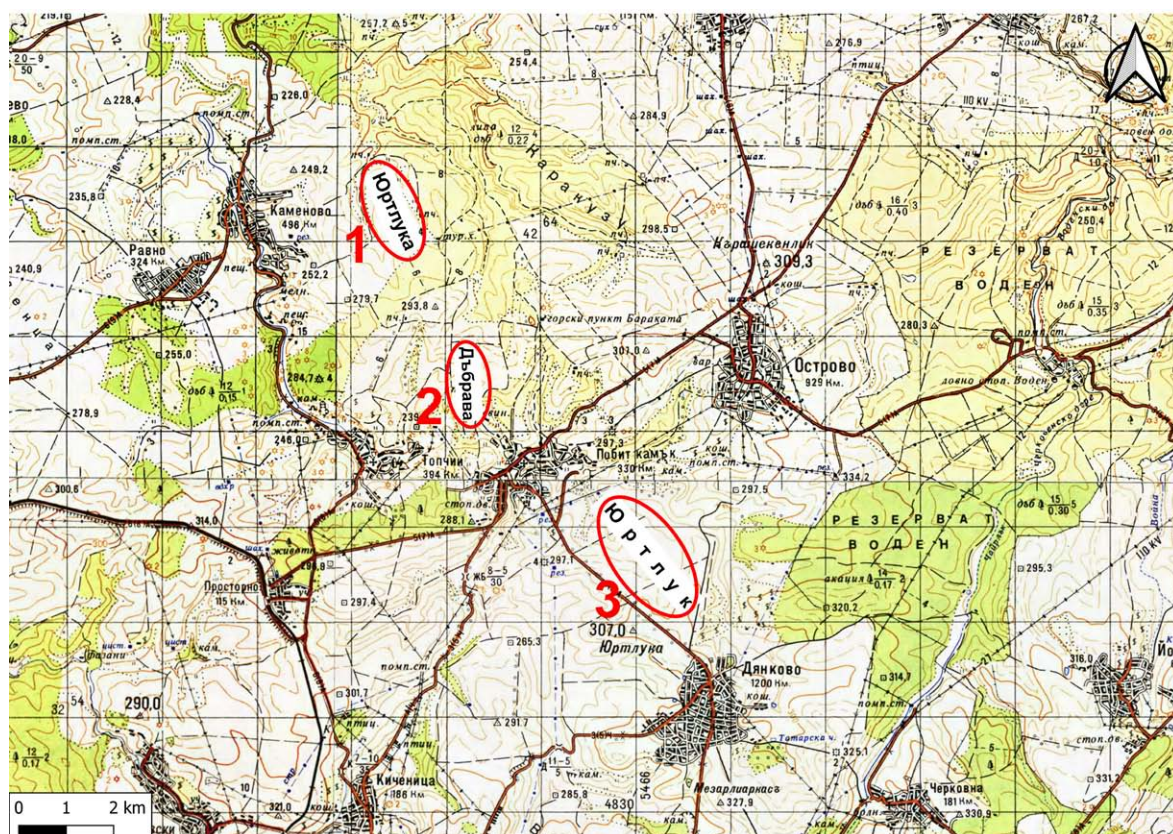


Fig. 4. Detailed map of the villages Kamenovo, Topcii, Pobit Kamak, Ostrovo. The localities of Yurtluca (01), Dabravata (02), Yurtluk (03) (author D. Sandeva)

Обр. 4. 1. Карта на части от землищата на села Каменово, Топчии, Побит Камък, Острово. Местности Юртлука (01), Дабравата (02), Юртлук (03) (автор Д. Сандева)

gorie (Doykov, Doykov 2017, 10).

The region features a temperate continental climate characterised by hot summers and cold winters (Iliev 1999, 15). There are periods of drought, which inevitably have a negative impact on crop cultivation (Doykov 1965, 30).

As far as soils are concerned, dark grey forest soils predominate but chernozems are also found in the area (Doykov 1965, 38–39). In the Ludogorie region, yellow-brown loam-loess is also found (Doykov 1965, 25; Doykov, Doykov 2017, 15).

The excavated site is located around 3 km east/northeast of the village of Kamenovo, Kubrat municipality, in the locality of Yurtluca (figs 3.1; 4.1). At about the same distance, the Topchiyska River flows through the centre of the village. It is defined as the westernmost river of the Ludogorie (Doykov 1965, 33; Doykov, Doykov 2017, 17). The other rivers flowing through the Ludogorie include Tsaratsar, Senkovets, Krapinets, Kulak, etc., and they are shallow and dry in some sections (Georgiev 1985, 241).

The terrain is very uneven and lies at an altitude of between 252 and 259 m.a.s.l. Modern land use is related to the cultivation of crops – wheat, corn, etc. To the east and northeast, the natural boundary of the archaeological site is a dry ravine that is part of a system of drylands. It is a flat area with a northwest-southeast orientation and a slight slope to the south–southeast.

It should be noted that this archaeological site is not the only one registered during field surveys in 2021 and 2022 (fig. 3). One of the main reasons for doing the surveys is the team's scientific interest to try to identify the specific archaeological sites from which some of the most important



Fig. 5. Aerial photo. The locality of Yurtluka – view from south. The boundaries of the archaeological site are clearly visible on the ground (author V. Valchev)

Обр. 5. Въздушна снимка. Поглед от юг към м. Юртлука. На терен ясно се забелязват петна, маркиращи границите на археологическия обект (автор В. Вълчев)

Late Bronze Age finds briefly mentioned above originated. The region is of special interest due to the proximity of the locality “Dabravata”, which is located 3–4 km to the northwest as the crow flies from Pobit Kamuk (fig. 4.2). The locality of “Dabravata” gained fame with the discovery of the hoard of stone moulds for casting bronze objects (Leshtakov 2016; 2018a, 383–387). The locality of Yurtluka, where the currently discussed settlement is located, is around 3–3.5 km to the northwest of the locality of Dabravata.

It is noteworthy that there is another site, currently at a preliminary stage of investigation with the same name “Yurtluk”, located to the southeast of the modern village of Pobit Kamak and at 6–7 km as the crow flies to southeast of site 01 – Kamenovo (fig. 4.3). The chronological and spatial data about this site is still being refined. During the first survey campaigns carried out in 2021 and 2022 in the area of the villages of Kamenovo, Medovene, Pobit Kamak and Brestovene, a total of 10 archaeological sites has been registered so far, whose relative chronology has been determined as Late Bronze Age (7) and/or Early Iron Age (4 – at one of the sites there is LBA and EIA) on the basis of the collected material, indicating a significant regional density of sites from these periods in the area. It should be noted, however, that large areas of these settlements are still unexplored – Kamenovo (western parts), Brestovene (north and east), Medovene (north), Pobit Kamak (east and south). A significant part of the areas between the four villages is also covered by dense deciduous forests, which in turn greatly limits the survey possibilities in these areas.

However, the number of sites identified so far which can be assigned to the second half of the second millennium BC and the first century of the first millennium BC is impressive and corresponds to the high intensity of the known stray finds that have been regularly discovered in the area over the last 120 years or more. Of course, on the basis of a preliminary relative chronological determination, it is impossible to say how many of these sites are synchronous and how many differ and diverge in the period of their existence.

However, as a preliminary estimate, these quantitative features, even if relative, far exceed the

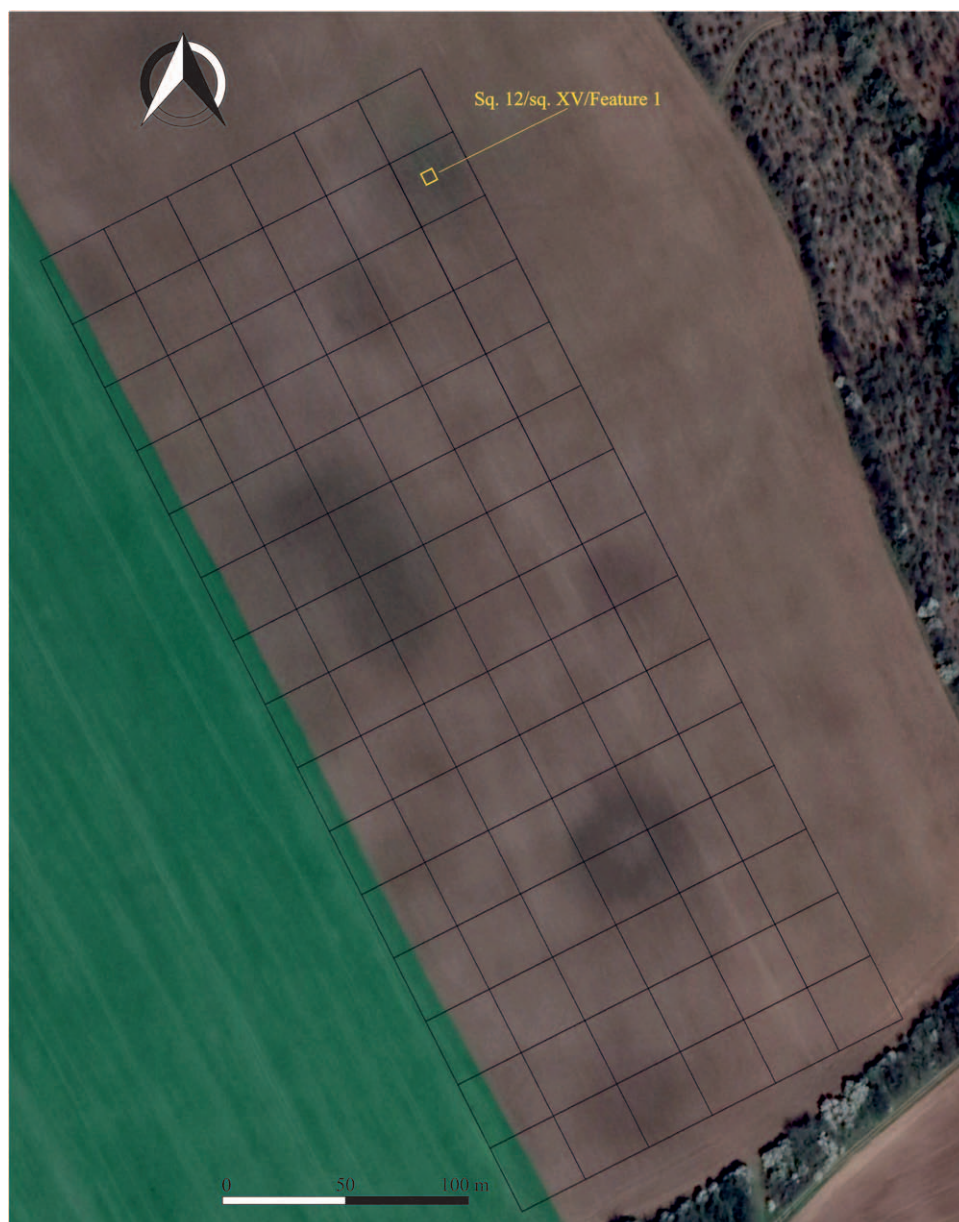


Fig. 6. Kamenovo, the locality of Yurtluca – grid of the geophysical surveys, carried out during season 2022 (authors D. Sandeva, V. Valchev, N. Tonkov)

Обр. 6. Каменово, м. Юртлука – полигон на геофизичните проучвания, осъществени през кампания 2022 г. (автори Д. Сандева, В. Вълчев, Н. Тонков)

number of sites recorded so far (e.g. from the Late Bronze Age) from other important areas of the Eastern Balkans, which often cover a much larger territory, such as the Upper Thracian Plain and the middle reaches of the Maritsa and Tundzha rivers with their adjacent tributaries (Georgiev in press).

Description of the site. Registration and geophysical surveys

The archaeological site in the locality of Yurtluca, near Kamenovo was identified during regular archaeological field surveys carried out in 2021 by a team from NAIM–BAS (Popov, Georgiev in press a). The site was registered in the AIS Archaeological Map of Bulgaria no. 10008508. The entire area where the archaeological remains are located is regularly cultivated (agriculture), is freely ac-

cessible and offers very good conditions for surface observations during a large part of the year when there is no vegetation or when sowing has not yet taken place. What is immediately noticeable is that under suitable conditions the archaeological site can be visually recognized as a concentration of dark patches of varying size, density and intensity (fig. 5). Often these patches also appear as swellings in the terrain. This pattern is regularly observed in the other archaeological sites recorded in the area at this phase (regardless of their chronological affiliation). At this stage, the clearly recognisable visual anomalies can be interpreted as areas with a greater accumulation of deposits of decomposed organic materials at the site, directly related to human presence and occupation over longer periods of time. As a rule, there are pronounced concentrations of archaeological material, even at the site near Kamenovo and often the latter are found mainly in the patches recognisable on the surface. During the field surveys of Kamenovo, traces of archaeological structures with high to medium concentration of archaeological materials were recorded – sherds of pottery vessels, burnt daub debris, flint tools, clay finds, stone moulds, etc. The recorded remains were interpreted as a Middle Bronze Age (MBA) and LBA settlement. The total area on which archaeological materials were found exceeds 12 ha.

In this case, a further detail should be mentioned in connection with the gradual accumulation of preliminary field information. As practice also shows in other projects related to field registration, regular field visits and observations under different terrain conditions and different moisture and vegetation conditions provide the opportunity to significantly enrich and refine the general information picture and modify initial impressions (Kecheva 2024, 203–207). The site in the locality of Yurtluka was visited several times in the period 2022–2024 in connection with the preparation of the two geophysical campaigns and the implementation of regular archaeological excavations in 2023. Each new visit provided additional important information about the general characteristics of the settlement. Another example was found during the preparation of the 2024 geophysical campaign: a double-sided mould for casting small metal ingots (fig. 20).

On the basis of the multi-stage survey, it was established that the site occupies an elongated area with a NW–SE orientation, following the curves of the left bank defining the northern direction of part of the former Topchiiska River. The concentration of materials in the southern half of the site is significantly higher. These observations formed the basis for the geophysical surveys, which were carried out in two campaigns in 2022 and 2024 (fig. 6). The geomagnetic method was applied and the field surveys were carried out with a dual-sensor fluxgate Bartington 601 gradiometer¹².

Magnetometry is certainly the most preferable geophysical technique used in archaeology. It is based on the registration of the Earth's magnetic field anomalies caused by the differences in the magnetic properties (magnetic susceptibility and remanent magnetisation) between the buried features and the host medium. Magnetic prospection successfully detects a wide variety of archaeological features: all kinds of negative contexts such as ditches, grave pits, ritual and rubbish pits, etc., as well as features subjected to heating in the past like pottery and smelting kilns or furnaces, heaps of slag and pottery, remains of adobe walls, remains of burned dwellings, stone and brick walls. The power of the method is in detecting features located within the first metre beneath the surface. In return, it successfully meets the need for covering vast areas in a short amount of time. The principal devices used in geomagnetic survey are fluxgate gradiometers. Gradiometer configuration provides

2 The geophysical surveys were carried out by assoc. prof. Nikola Tonkov, PhD (Department of Interdisciplinary Studies and Archaeological Map of Bulgaria, NAIM–BAS) and Anton Atanasov (Branch NAIM Veliko Tarnovo). The first geophysical surveys from 2022 are financed under a program of the Ministry of Culture of the Republic of Bulgaria, and the second part are financed under a project “Non-destructive archaeology: an interdisciplinary study of the settlement pattern of the Ludogorsko Plateau in the Bronze and Early Iron Age”, contract between NAIM–BAS and the Bulgarian National Science Fund no. KII-06-H80/12 from 15.12.2023.

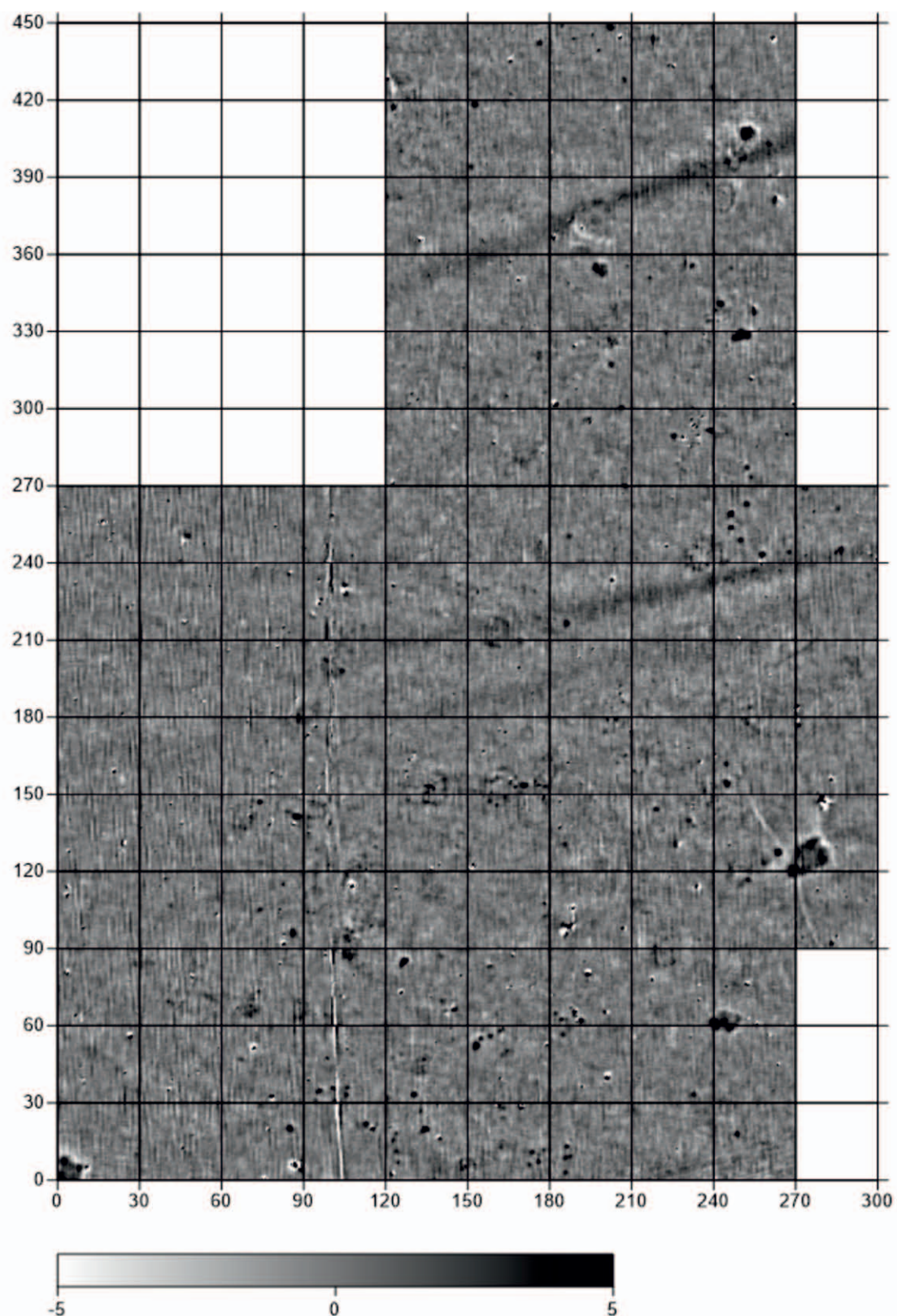


Fig. 7. Final results from the geomagnetic surveys of Kamenovo, the locality of Yurtluca – campaigns 2022–2024 (authors N. Tonkov, A. Atanasov)

Обр. 7. Крайни резултати от геомагнитно изследване на Каменово, м. Юртлука, кампании 2022–2024 г. (автори Н. Тонков, А. Атанасов)

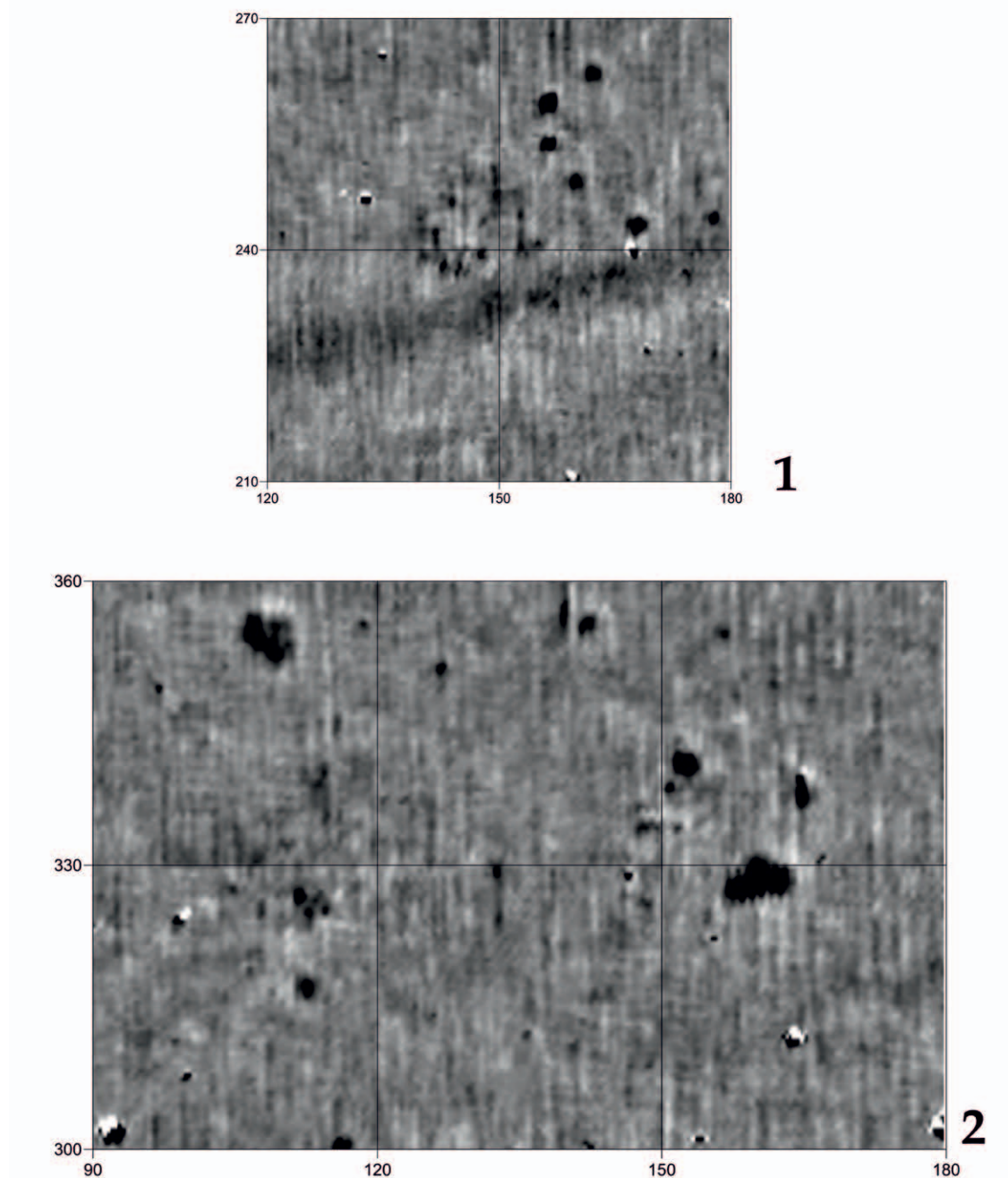


Fig. 8. Results from the geomagnetic surveys – details. Outlines of the probable dug-out (negative) structures. The contours of probable ground structures – building? are recognisable in the central part of fig. 8.1 (authors N. Tonkov, A. Atanasov)

Обр. 8. Резултат от геомагнитно проучване – детайл. Очертания на предполагаеми вкопани (негативни) структури. В централната част на обр. 8.1 се разпознават контури на предполагаема наземна структура – постройка? (автори Н. Тонков, А. Атанасов)

simultaneous rejection both of diurnal variations of the Earth's magnetic field and the regional background from deeply occurring geological deposits, thus registering only the changes caused by the archaeological features.

The gradiometer used in the current survey (the Bartington Grad 601) possess a declared accuracy of 0.01 nT. Measurement density was 8 points per 1 m². Field data were post-processed by the specialized computer programs ArcheoSurveyor&TerraSueyvor (DW Consulting, the Nederland) and

Surfer (Golden Software, USA).

During the geophysical survey of the first sector of the site, an area of 7.11 hectares was recorded (Minkov et al. in press). During the subsequent geophysical survey in 2024, new sections were added for better definition of the western and eastern boundaries of the site. The total area, covered with geomagnetic surveys in the period 2022–2024 is 10.53 hectares, or 117 squares of 30 x 30 m. The total surveyed area covers the majority of the site, which exceeds 12 ha. The results obtained offer interesting possibilities for analysis and interpretation (fig. 7).

Based on the results of the geophysical survey, two zones of concentrated anomalies can be distinguished. The dispersion is highest in the southern half of the site. The concentration of anomalies is also consistent with the observations made during field registration on the surface. A second zone with a relatively high concentration of anomalies can be seen in the northeastern part of the site. Numerous oval anomalies of low magnitude (from 4–5 to 9–10 nT) are registered. The characteristics of the anomalies (size and values of magnetic gradient) lead to the conclusion that most of them represent negative structures. The anomalies, up to 1÷2 m in plan, are most likely due to small negative structures (pits). Other, larger, 4÷5 and more metres are also registered, most likely caused by dug-out parts or house walls. At the same time, some of the structures that can be interpreted in advance as dug-outs have considerable dimensions, exceeding a length of 4–5 m and a width of more than 3–4 m (fig. 8). The two long linear anomalies of low intensity in the central and northern part of the area are probably of geological origin.

The site shows an extremely large number (several dozen) of seemingly chaotically scattered anomalies of different sizes and intensities (from 4–5 to 20–30 and more nT). Some of these anomalies are much larger and have an elongated, square or elliptical shape (fig. 9). They could be interpreted as the remains of ground structures houses (?), but at this stage, before correlation with the results of the archaeological excavations, the question of their function and interpretation remains open. Their number is far less than that of the negative structures. At this stage, no more than 10 can be identified as such. At the same time, the dimensions of some of them are impressive, reaching a length and width of 10–12 m and even more.

A further regularity in the correlation of observations on the ground surface and the results of the geophysical investigations should be made. It appears that the concentrations of anomalies detected below the surface of the site during the geophysical surveys often do not correspond to the locations and concentrations of archaeological material observed and recorded on the surface. Even beneath some of the most intense patches, clearly identifiable anomalies are often not recorded. The reasons for this may vary. On the one hand, the slight slope of the terrain to the east and south suggests that there is a “shift” in the deposits as a result of gradual erosion and tilling of the terrain, and that these do not fully correspond with the remains beneath the ploughed soil. On the other hand, this “discrepancy” could be due to the different characteristics and functions of the archaeological structures – accordingly, there are numerous remains of negative structures (pits) and far fewer remains of supposed ground structures (buildings with different functions?). An answer to this question would only be possible if archaeological excavations were carried out covering a larger area and characteristically different structures.

Archaeological context

Two archaeological structures were investigated as part of the regular archaeological excavation in 2023. Their selection is determined by the preliminary results of the field investigations, which depend on the type and character of the pottery assemblage and finds, as well as on the results of the geophysical investigations. These are Feature no. 1, located in square 12/ square XV, and Fea-

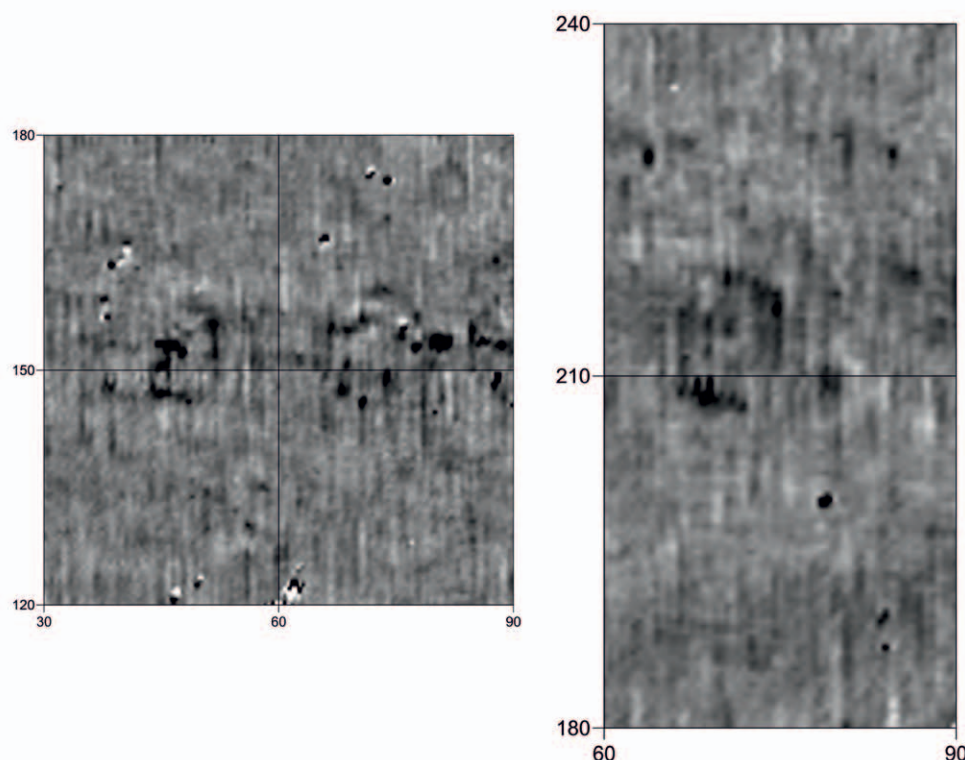


Fig. 9. Results from the geomagnetic surveys – details. Outlines of the probable ground structures – buildings? (authors N. Tonkov, A. Atanasov)

Обр. 9. Резултат от геомагнитно проучване – детайл. Очертания на предполагаеми наземни структури – постройки? (автори Н. Тонков, А. Атанасов)

ture no. 2, located in square 83/ square XXXV³. The limited scope of the drilling excavations in 2023 is also due to the limited financial and time resources, which is why it was decided to work only in individual structures that can be better explored within the limited scope of the campaign.

The finds and the materials examined and analysed in the research are found during the field surveys 2021–2024 as well as the regular excavations of Feature no. 1, located in square 12/ square XV in 2023.

Based on the results of the geophysical investigations, it was assumed that one of the most pronounced anomalies in the northeastern part of the site is a large underground structure. The trench excavations are consistent with the results of the geomagnetic study and the initial hypotheses (fig. 10). It is a negative feature with an irregular rectangular shape and dimensions of 4.50 m (NE–SW) x 4.50 m (NW–SE). During the first season of regular archaeological excavations, only the western half was explored (figs 11–12).

The following stratigraphic elements and stratifications were found in the profiles of the feature. At the top, a plough-zone 0.30–0.35 m in thickness is observed, representing a brown, clayey and very compact soil, in which there are individual limestone pieces 0.03–0.04 m in size. Under the plough-zone follows a layer of brown/grey-brown soil with a high concentration of pottery sherds and burnt daub debris. This layer is 0.50–0.60 m thick and can be described as a cultural layer. It should be noted that recent and current agricultural activity has not disturbed or affected the cultural layer. The negative structure is dug into the cultural layer from the surface. The fill is extremely het-

³ Feature no. 2, located in square 83/squareXXXV – is a shallow pit from the Late Iron Age. It is not the subject of our current publication. Scanty materials from the Late Iron Age can be found only on the southern edge of the archaeological site, near the ravine that forms its southern boundary.

erogeneous and consists of individual thin layers of soil of different colours – white, yellow, grey, grey-brown, beige – as well as strips of charred soil and organic material. A very high proportion of ash and charcoal is also visible. In profile, these layers appear as relatively horizontal bands with distinct boundaries in the area of the main fill, with a slight dip in the centre. The structure has a depth of 3.25 m from the modern surface and 2.45 m from the ancient surface. Its base has a west-east slope of 10° in the exposed part and a slope of 37° in the higher part on the walls. No traces of bioturbation are visible on the surface of the soil, as these were found on the edges of the feature, where the softest areas are located. The sterile sediment obtained is a brown to yellow-brown loamy and very compact soil with a medium concentration of limestone and white particles.

The archaeological material found during the investigation of the feature includes sherds of pottery vessels, chipped stone, charcoal, animal bones⁴ and archaeological finds⁵.

Although the feature has only been partially explored, some assumptions can be made about its function. The depth at which it was excavated suggests that in its original form it was probably related to housing – a cellar or a storeroom. Finds from the feature included a bone awl, a stone hammer etc. However, there are no records of a preserved, intact floor level, a hearth and other attributes that would allow a definitive interpretation of the feature as a dwelling. A parallel to Feature 1/Kamenovo 01 is found in a LBA structure found at Orlovets, Tarnovo region (Petrova et al. 2020, 315, fig. 5), for which there is also no precise (unambiguous?) interpretation.

The pottery assemblage and relative chronology

The preliminary dating of the site is determined by the characteristics of the pottery assemblage⁶ and the finds, which point to the LBA. When the entire complex from an excavated feature is available, the pottery processing begins during the archaeological campaign and is based on the statistical analysis of the distinctive features of the vessels and fragments found – function, technology, shape, and decoration (Shepard 1985; Leshtakov 1988; Orton et al. 1993; Horejs et al. 2010; Dimitrova 2014, 9; Horejs 2017, 209–210; Dimitrova 2024). The excavation of Feature no. 1 started in the 2023 season and until the publication of this paper has yet to be completed. Nevertheless, the material accumulated was characteristic enough to be determined technologically, typologically, and chronologically. Here, some of the characteristics of the pottery complex relevant to the chronological affiliation of the excavated unit are presented. After the archaeological research and the restoration work are completed, the entire complex will be processed and published. For the typological and technological determination, 58 sherds were chosen as a sub-sample of the 638 processed sherds⁷. The fragments were assigned to three ware groups, as determined by the concentration of the inclusions, wall thickness, fracture characteristics and surface treatment, as well as six categories. The groups are coarse ware (345 sherds, of them – 31 diagnostic) with three sub-groups, medium (179 sherds, of them – 16 diagnostic) and fine ware (114 sherds, of them – 11 diagnostic). Since there are no complete profiles as yet, shape categories are based on rim sherds⁸. Coarse ware is represented by

4 The osteological analysis was carried out by assist. prof. Nadezhda Karastoyanova, PhD (NAIM–BAS), for which we thank her. The animal bones belong to horse, large ruminants, sheep, goat and pig.

5 In addition to the finds in this article, two further fragmentary wheel models and a partially preserved stone form were discovered in April 2024 during geophysical surveys in the southern part of the site. They were discovered while reviewing this article, which is why we consider it appropriate to mention and illustrate them here.

6 The pottery assemblage of site 01 near Kamenovo is analysed by assist. prof. Yana Dimitrova, PhD, Exhibitions, NAIM–BAS.

7 Some 9% of the processed finds comprise diagnostic sherds.

8 For the classification levels used in the pottery processing of the LBA pottery complexes from the Rhodope

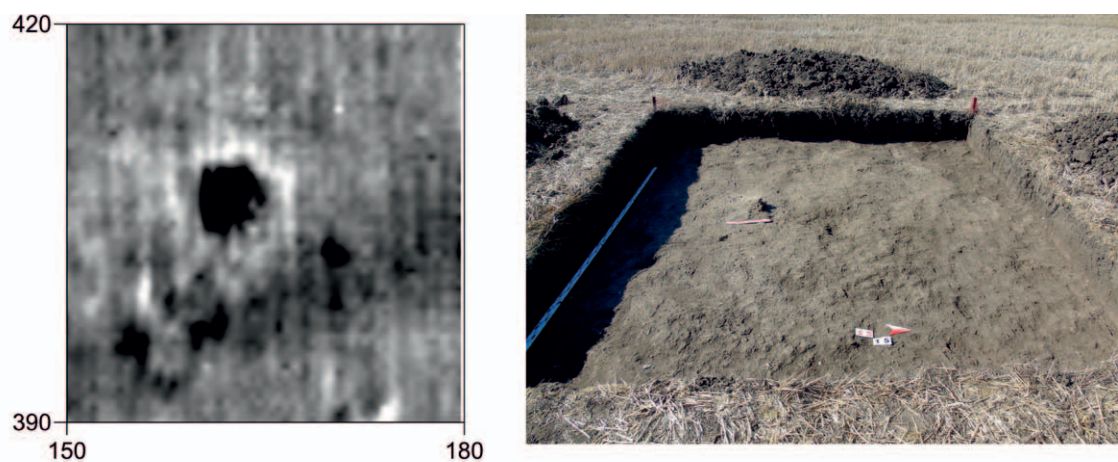


Fig. 10. Feature no 1. Results from the geomagnetic surveys – detail. Registration during the regular trench excavations in 2023 (authors N. Tonkov, A. Atanasov, Zh. Vasileva)

Обр. 10. Структура № 1. Резултати от геомагнитното проучване – детайл. Процес на регистрация по време на сондажните археологически проучвания през 2023 г. (автори Н. Тонков, А. Атанасов, Ж. Василева)



Fig. 11. A plan and stratigraphic profile of Feature no. 1. 3D and photo of the structure (authors D. Sandeva, Zh. Vasileva)

Обр. 11. Общ план и стратиграфски разрез на структура № 1. 3D и фото заснемане на структурата (автори Д. Сандева, Ж. Василева)

rim fragments with high concentrations of large grain sizes in the clay (grains over 0.7 mm and even small stones). The three sub-groups are determined according to wall thickness and surface treatment. The first two subgroups comprise fragments with wall thicknesses between 1 and 2 cm. They differ by surface treatment: the first one is uneven, coarse, or poorly smoothed, while the other is uneven but well smoothed. These two subgroups belong to vessels for long-term storage of products. The first are storage vessels with the same forms and decoration as the cooking jars but are bigger in

Mountains, see Dimitrova 2014, 9 and the bibliography. The categories are related to the supposed functional characteristic of the vessels. For the functional interpretation made “on morphological, technological and contextual evidence” (Dimitrova 2024) and in accordance with the actualisation principle of the names of the categories, see Leshtakov 1988, 6; Nekhrizov 2008, 115.

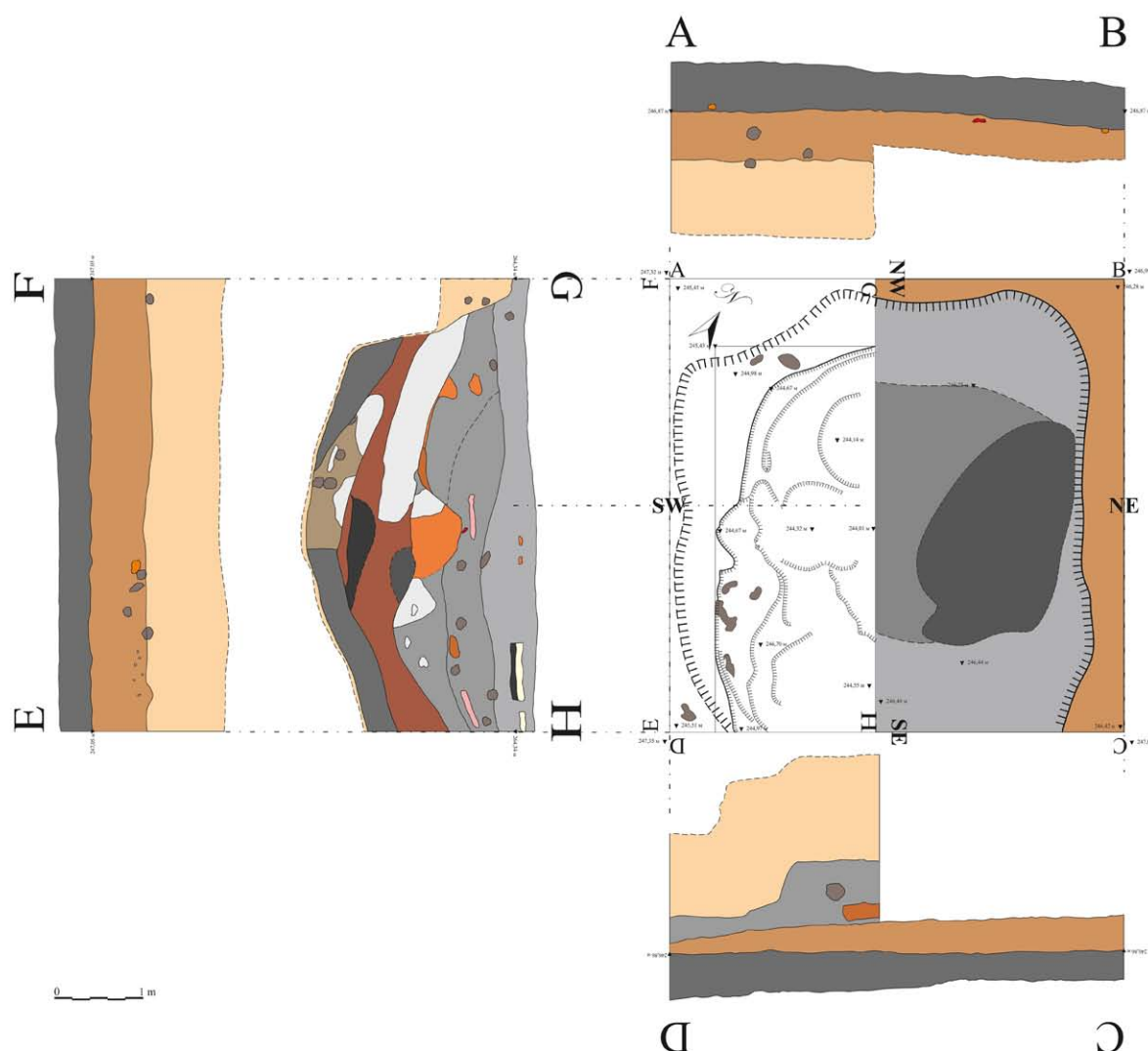


Fig. 12. A plan and stratigraphic profile of Feature no. 1. Graphic plan (authors D. Sandeva, P. Minkov)

Обр. 12. Общ план и стратиграфски разрез на структура № 1. Графично заснемане (автори Д. Сандева, П. Минков)

size (fig. 13.1–11). They are in two forms: beehive-shaped vessels (fig. 13.1–8), sometimes with lug handles (fig. 13.1), decorated with plastic bands (fig. 13.1–8) and oval or conical knobs (fig. 13.4) and vessels with funnel-like mouths (fig. 13.9–11). The second subgroup comprises storage vessels of coarse ware with smoothed surfaces and open, funnel-like mouths (fig. 13.12–15). They were probably with vertical handles with a triangular cross-section (fig. 13.18–19) or with, thick, conical knobs (fig. 13.16–17). The third subgroup of the coarse ware is represented by cooking jars – vessels with wall thicknesses between 0.6 cm and 1 cm. They are in three forms: with S-shaped profile (fig. 15.1–6), beehive-shaped (fig. 15.7–8) and with funnel-shaped mouth (fig. 15.9–10). They have lug handles (fig. 15.1, 6) and are decorated with plastic bands in different forms (fig. 15) and/or small spherical (fig. 15.4) or conical knobs (fig. 15.5).

The medium wares consist of vessels whose clay paste is mixed with low concentrations of small or medium-sized grains, with wall thicknesses between 0.6 cm and 1 cm and a burnished surface. The vessels in this group are represented by rim sherds and handles of amphorae (fig. 14) and bowls (fig. 16.1–2) – i.e., vessels used for short-time storage of liquids and food consumption.

Only single rim and handle sherds belong to the fine ware. They are fragments from vessels for

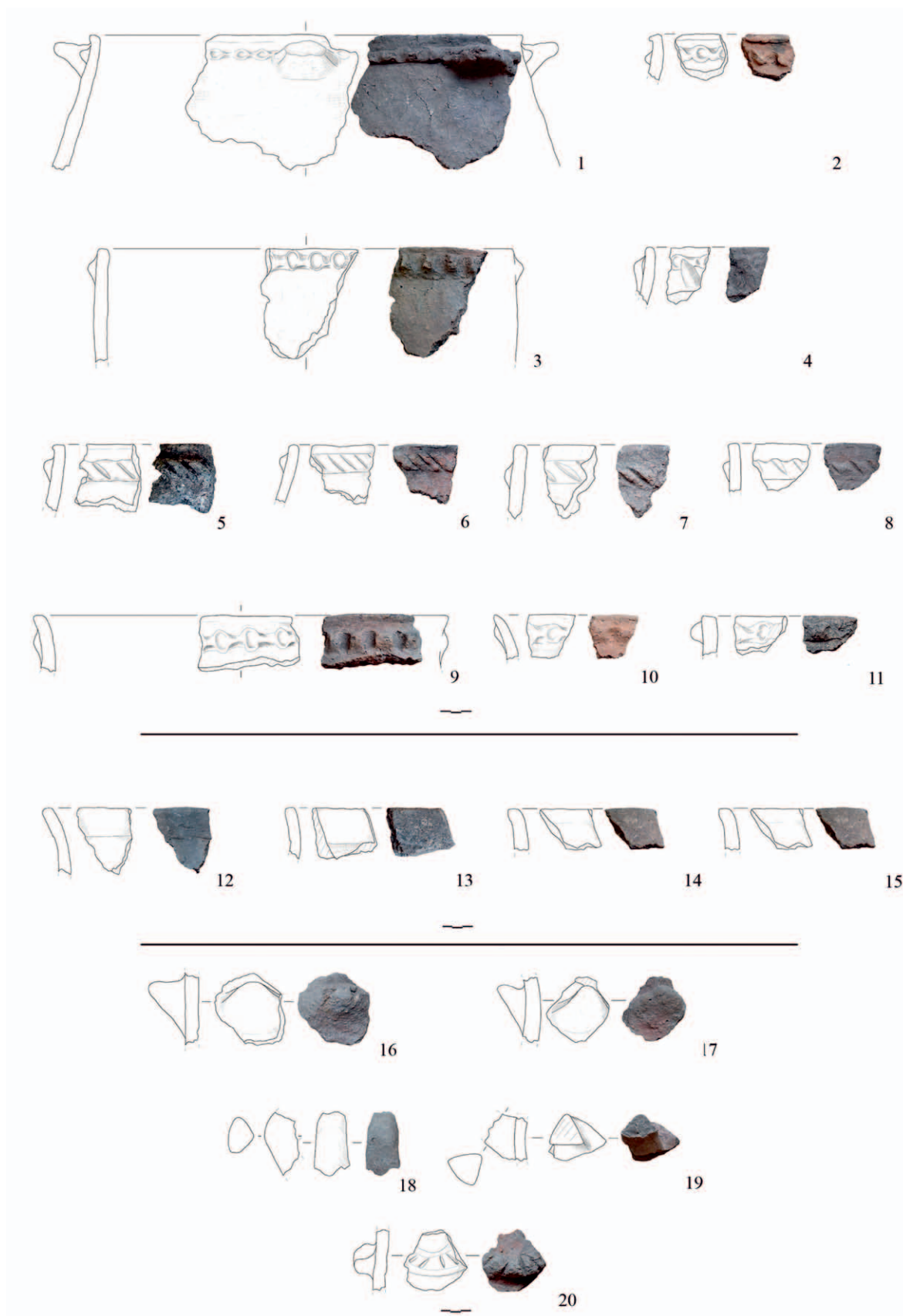


Fig. 13. Kamenovo, Feature no. 1. 1–20 – Storage vessels. Scale 1:5 (drawings Y. Dimitrova)
 Обр. 13. Каменово, Структура № 1. 1–20 – съдове за съхранение. Мащаб 1:5 (рисунки Я. Димитрова)

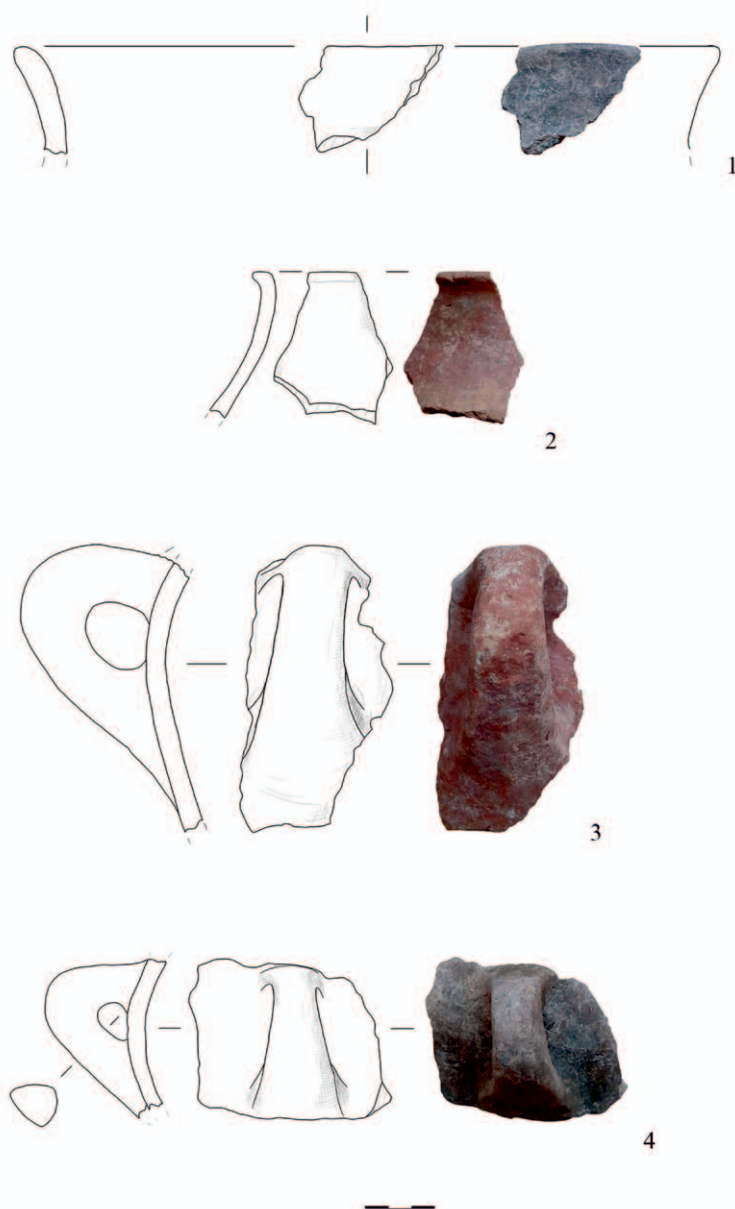


Fig. 14. Kamenovo, Feature no. 1. 1–4 – Amphora-like vessels. Scale 1:3 (drawings Y. Dimitrova)
Обр. 14. Каменово, Структура № 1. 1–4 – амфоровидни съдове. Мащаб 1:3 (рисунки Я. Димитрова)

drinking – cups or kantharos-like vessels⁹ (fig. 16.3–11) made from fine clay with few, small grains, thin walls (0.6/0.8 cm and less) and burnished or polished surfaces.

Fine ware decoration comprises only plastic decoration – bands (figs 13.1–11; 15) and/or smaller (fig. 15.4–5), or bigger knobs (fig. 13.16–17).

The statistical processing of the pottery assemblage from Kamenovo is forthcoming and the observations on its chronological affiliation (with lack of radiocarbon dates) are still preliminary.

The fragmentary state of the materials makes the comparative analysis somewhat provisional. Still, very close parallels to all the characteristic sherds can be found in the assemblage of Site no. 1 near the village of Panayot Volovo, Shumen region, located some 50 kilometers from Kamenovo and

9 When the materials from the complex are heavily fragmented and lacking handles, the sherds are placed in a medium category named “cups or kantharos-like vessels”. The forms are the same as those of the two separate categories.

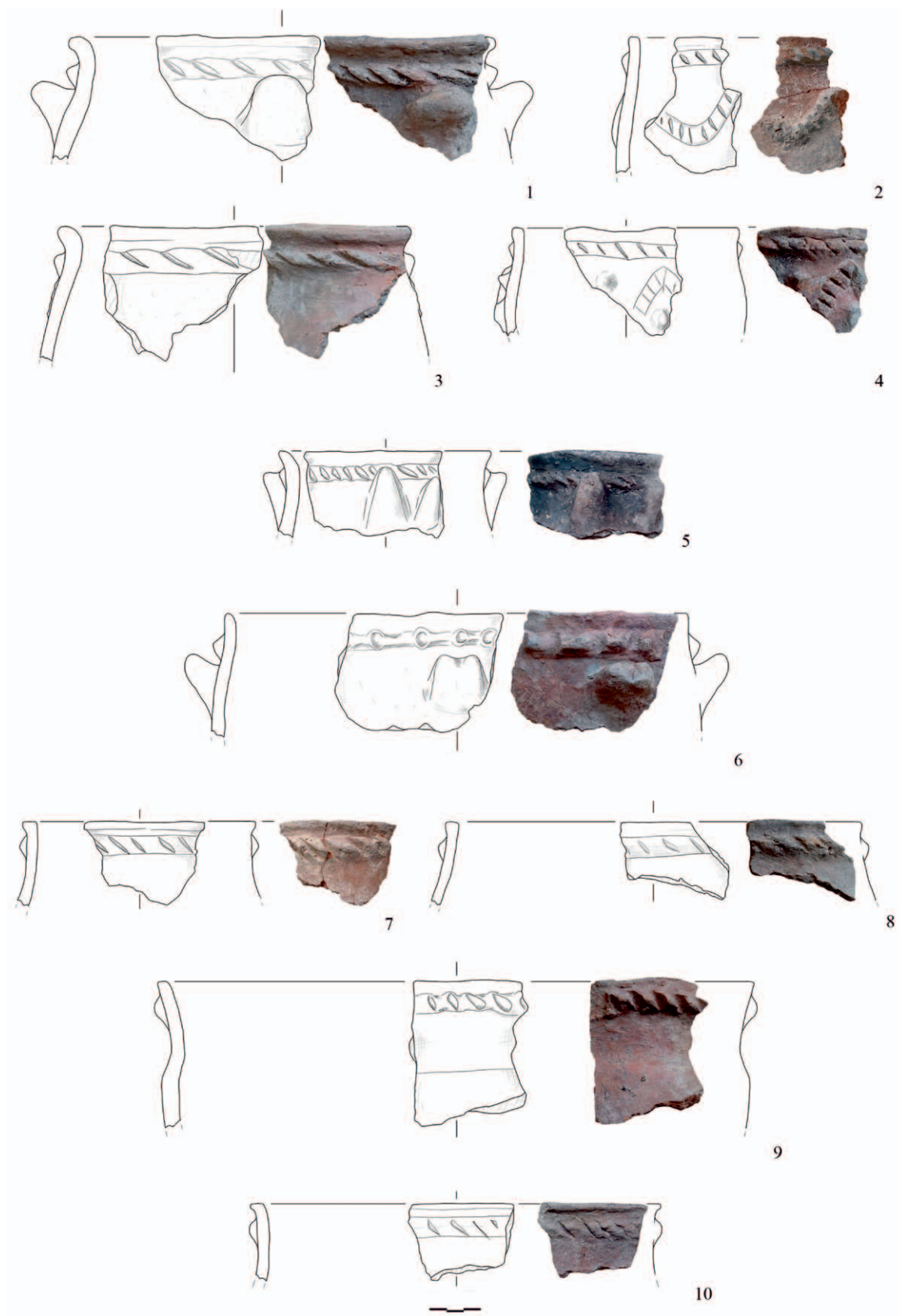


Fig. 15. Kamenovo, Feature no. 1. 1–10 – Cooking jars. Scale 1:3 (drawings Y. Dimitrova)
 Обр. 15. Каменово, Структура № 1. 1–10 – гърнета. Мащаб 1:3 (рисунки Я. Димитрова)

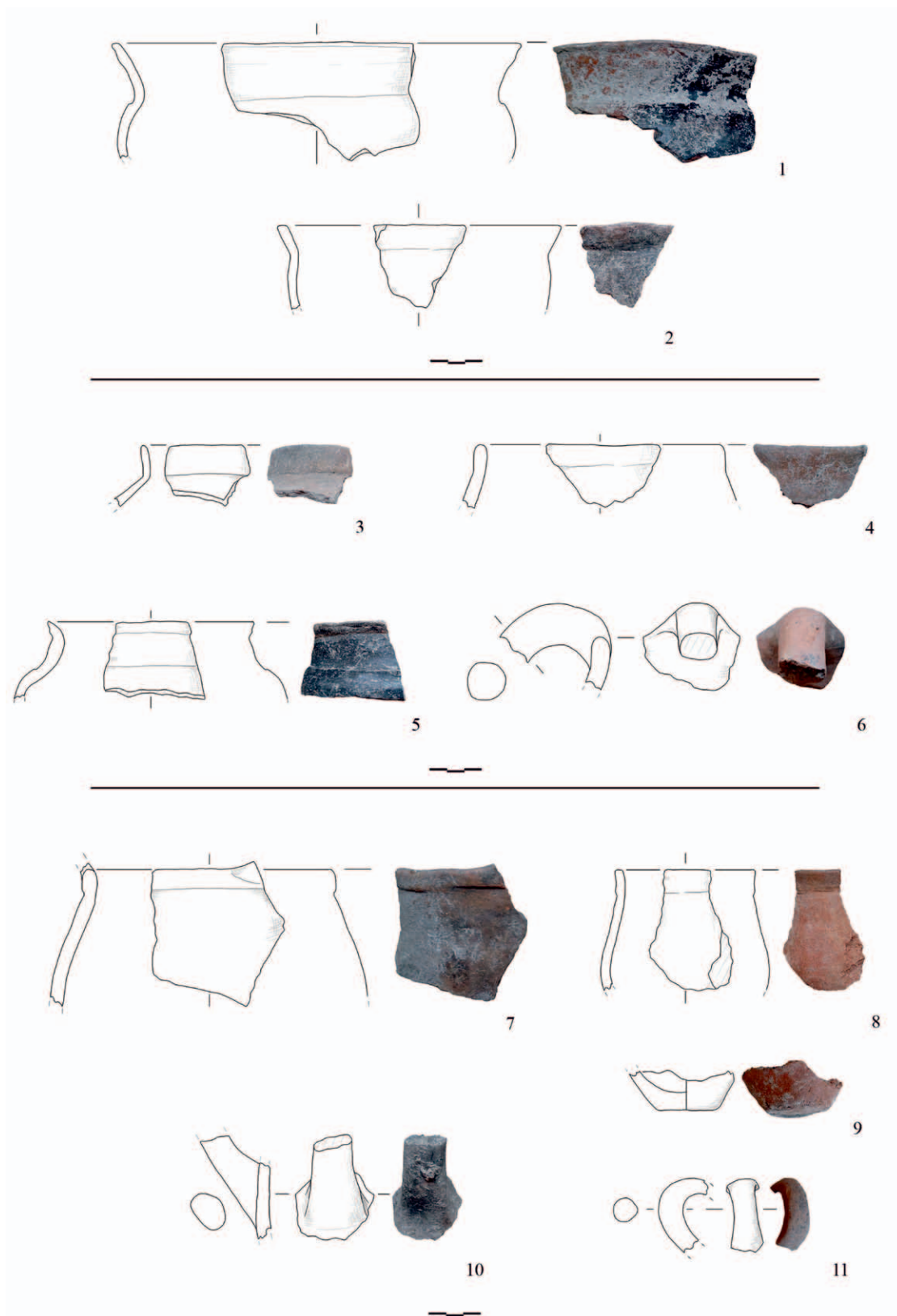


Fig. 16. Kamenovo, Feature no. 1. 1-2 – Bowls; 3-6 – Cups or kantharoi; 7-11 – cups. Scale 1:3 (drawings Y. Dimitrova)

Обр. 16. Каменово, Структура № 1. 1-2 – купи; 3-6 – чаши или кантароси; 7-11 – чаши. Мащаб 1:3 (рисунки Я. Димитрова)

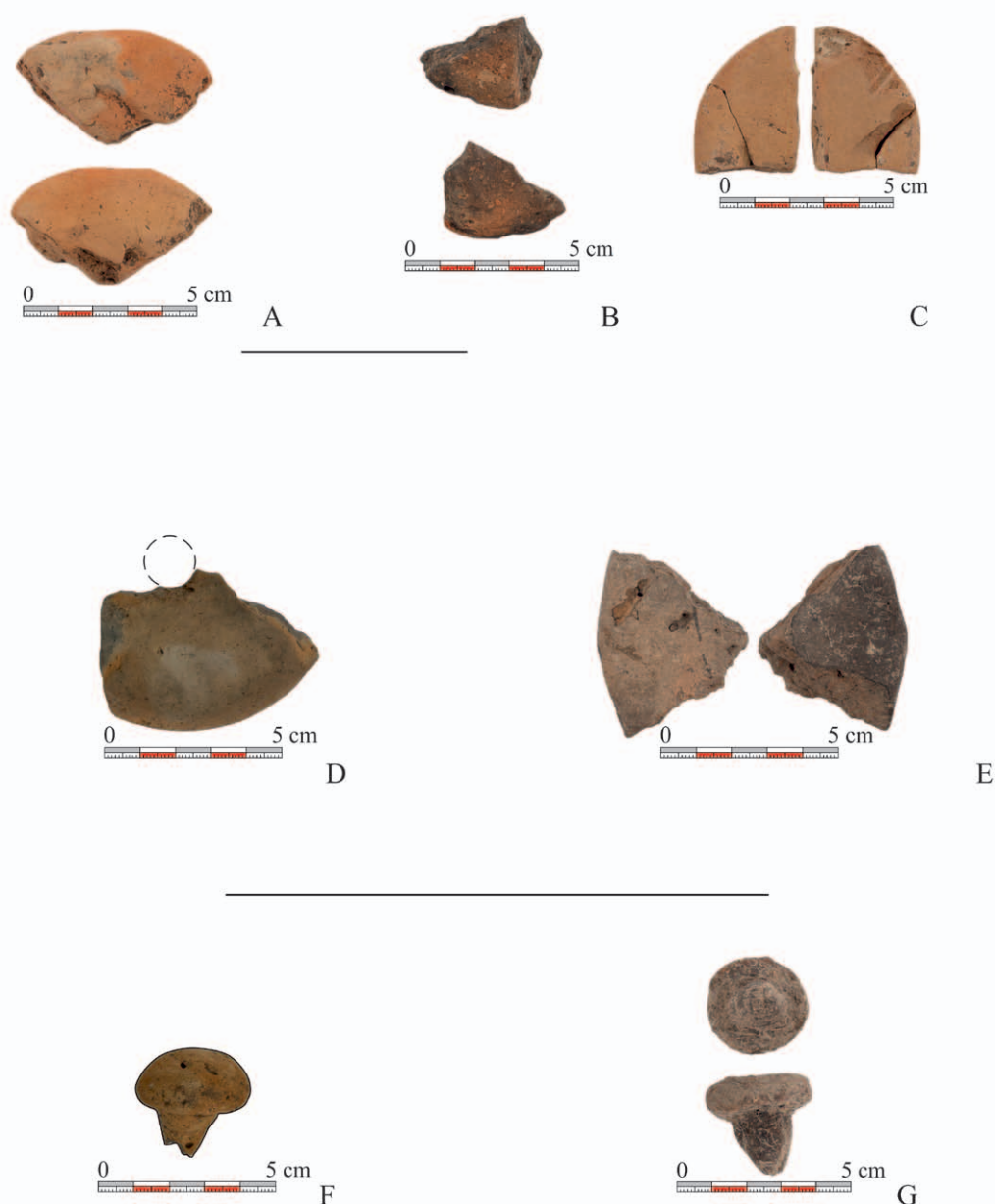


Fig. 17. Kamenovo, the locality of Yurtluca, Feature no. 1. Small clay objects: A/E clay disc fragments; F/G – clay stoppers (photos M. Raykovksa)

Обр. 17. Каменово, м. Юртлука, Структура № 1. Малки керамични предмети: A/E керамични дискове (фрагментирани); F/G – керамични тапи/запушалки (снимки М. Райковска)

dated with radiocarbon dates to 13th and 12th c. BC (Dzhurkowska 2023)¹⁰. Some similarities with separate rim fragments could also be found in the Coslogeni culture: “Coslogeni–Yagnilo group” (Bolohan 2016, Pl. 3 (map); Pl. 10–14, 17–18, 21, 23, 27–35 (pottery); Yagnilo: Tončeva 1977, Pl.

¹⁰ The author of the paper finds close parallels of the assemblage to Coslogeni culture (Dzhurkowska 2023, 197). The author also finds the closest analogies of the pottery assemblage with the finds from Belokopitovo, which is located only a few kilometres from Site no. 1. Still, the authors of this paper find this comparison controversial, due to the earlier date of the Belkokopitovo complex in 16th–15th c. BC (Leshtakov 2019, 176). Another parallel noted by the author concerns a LBA site in the same area – near the village of Gradishte (Dzhurkowska 2023, 196–197; Leshtakov et al. 2021, 365).

III–b; Pl. IV–VII) and Radovanu phase (Morintz, Șerbănescu 1985, figs 4.1–11; 5.1–5; 8).

Moreover, some chronological observations made for the assemblages from other (even quite distant) regions, also give some hint for the possible dating of Kamenovo. For example, the S-shaped open bowl (fig. 16.1) appeared in the 14th–13th c. BC period and became one of the emblematic pottery shapes in the Rhodope Mountains (Dimitrova 2014, 11–12 with references; 2024). Some examples of bowls with identical shapes could be found north of the Danube River (Zimnicea: Alexandrescu 1973, 97, Pl. XII.14, 16). A decorative element is also assumed for a chronological marker for the Rhodope Mountains – oval, or conical knobs, pressed to the walls of the cooking jars (fig. 15.5; Popov et al. 2024). Taking into consideration three characteristics: (1) the analogies of the pottery assemblage; (2) the lack of specific datable elements (e.g., fluted decoration applied on the bowls with inverted mouth rim) found on sites dating to the end of the LBA, or the LBA – EIA transition (Alexandrov et al. 1998, 19, Pl. 10.1–3); and (3) the slightly later dating of some of the other materials from the feature¹¹: we suggest a wider date range of the 14th–13th/12th c. BC for this feature.

Ceramic discs and stoppers

The small clay finds found in Feature no. 1 can be divided into two groups: Group I – clay discs; Group II – clay stoppers.

Group I contains fragments of six hand-made discs (fig. 17.A–E). From what has survived, it appears that the discs were about the same size, between 5–7 cm, with a hole diameter of 1 cm. The colour after firing was grey/grey-brown (4 fragments) and beige/beige-brown (2 fragments) with a high proportion of inclusion (quartz pebbles, white and red-brown particles (chamotte?)) and a moderately polished surface. An opening is only preserved in one of the discs (fig. 17.D). Its shape is conical with straight walls and an even lateral rim with rounded edges, on which surface irregularities are visible that were considered in the modeling. No profiling can be seen on the sleeve with the drive axle and the decoration on the surface of the disc.

The poor state of preservation of the finds raises the question of the interpretation of the objects. It cannot be ruled out that they are weights, lids or checkers. Due to certain peculiarities of the silhouette of the discs¹² and the presence of holes in some of them, the present study hypothesises that these disc fragments probably originate from ceramic wheel models. The following analysis refers to this preliminary interpretation of the fragmented discs as wheel models.

The existence of clay wheels in the later periods of the Bronze Age in Bulgaria is attested up to this point, though with fewer finds. Similar finds have been found at several sites in northern and southern Bulgaria – Bagachina, Tatul, Kush Kaya, Ada Tepe, Shikhanov Bryag, Semercheto (Ignatov, Kancheva-Ruseva 2007, 122–123, fig. 1; Ovcharov et al. 2008, fig. 8–A.2–3, 5; Petrova 2008, 94–95; Borislavov 2011, 13, 34a–b¹³). As can be seen, most of the examples come from southern and south-eastern Bulgaria. This is due to the fact that research in northern Bulgaria is very limited and similar finds are lacking at the few sites that have been investigated (tell Ruse, Tutrakan, Durankulak). This inevitably requires comparisons and correlations with finds from an area where ceramic wheel patterns have been proven to occur, such as the Upper Thracian Plain. In the above examples, the surface of the discs is decorated in the negative techniques of Furchenstich and Kerbschnitt. In

11 The dates of the clay stoppers proposed in the literature (van Damm 2019, 110–112).

12 The silhouette and profile of the discs from Kamenovo are consistent with types of wheels 3, 6, 7 according to the classification of A. Häusler (Häusler 1981, 598).

13 The clay model of a wheel was assigned by the researcher to the EIA (10th–9th c. BC), although its features are very similar to the Bronze Age finds. The clay wheel is included in the analysis because it is one of the most recent representatives of this type of find.

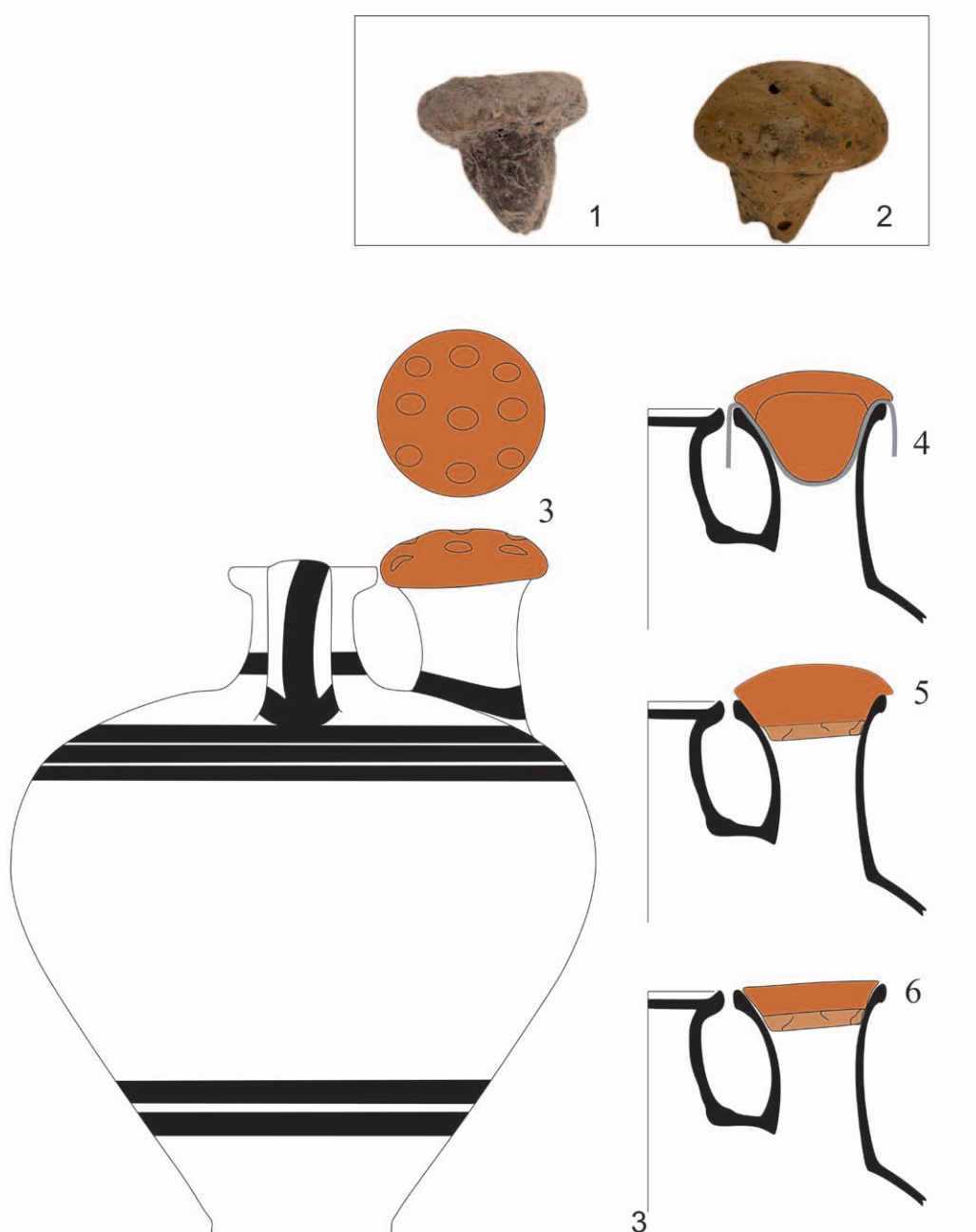


Fig. 18. Kamenovo, the locality of Yurtluca, Feature no. 1. Clay stoppers. Clay stoppers and seals of transport stirrup jar – sealing reconstructions: 1–2. Kamenovo, stoppers; 3. Ceramic stopper; 4. Doomed sealing with plug and string; 5. Doomed sealing with stopper; 6. Flat sealing with stopper (after van Damme 2019, 95, fig. 1)

Обр. 18. Каменово, Юртлука, Структура 1 – керамични тапи/запушалки. Керамични тапи и печати на транспортни съдове stirrup jar – реконструкция на запечатването: 1–2. Каменово, запушалки; 3. Керамична запушалка; 4. Затворен печат с тапа и нишка; 5. Затворен печат със запушалка; 6. Плосък печат със запушалка (по van Damme 2019, 95, fig. 1)

shape and profile, the finds are very similar to those from the previous period. Only from the Ada Tepe site was an undecorated model found alongside the decorated wheel, which resembles the finds from the 3rd–2nd mil. BC. The function of the LBA wheels is said to be similar to that of the previous period (Shalganova 2005).

The number of artefacts related to the LBA does not allow for a detailed analysis. It is hardly

possible to speak of a continuation of the tradition of producing clay wheel models. This is probably due to different circumstances, such as changes in settlement patterns or socio-economic and demographic changes. During this period, Bulgaria was part of a very well developed and active network of inter-regional exchange of contacts, goods and populations. In this context, a global change can be introduced into the discussion, which is related to the emergence of a new “know-how”, such as the chariot, to which most peoples adopted over time and whose use was associated with military action from the 18th c. BC. The appearance of the chariot evolved from a four-wheeled chariot with a platform (Grigoriev 2023, 167). Grigoriev links the emergence of this new technology to the fulfillment of a specific need or challenge. According to recent research, the earliest evidence for the appearance of a chariot in eastern Iran dates from the second half of the 3rd millennium BC (Grigoriev 2023, 171). In this way, the areas between Syria and Anatolia and eastern Iran are assumed to be the earliest homeland of chariots. The penetration of chariot technology into Greece, northern, central and south-eastern Europe took place via the Carpathian Basin, earlier or in the period of the Sintashta Formation (Grigoriev 2023, 179; Minkov 2023, 198–199).

This means that the appearance of material culture, the living environment and the economic situation in the Upper Thracian changed completely. The processes of change described above in various areas of life and in material culture are probably the reason why the reproduction of this specific group of objects has drastically declined to a few specimens found mainly in the Rhodopes (see above). The above remarks show a strong contrast in the number and distribution of ceramic wheel patterns. While their distribution in the 3rd millennium BC is mainly concentrated in southern Bulgaria – a few specimens in large settlement sites – their number dwindles during the Late Bronze Age to individual finds.

Based on these observations, it can be cautiously assumed that the presence of clay wheels at site 01 near Kamenovo could be related to the horse bones discovered in Structure 1 at the Kamenovo 01 site, Yurtluca, and, on the other hand, with the bone elements of cheek pieces from the Tutrakan, Durankulak and Belokopitovo region, unique to northeast Bulgaria, attributed to the use of chariots (Athanasov et al. 2012, 54; Leshtakov 2021; Minkov 2023)¹⁴. The connection to the chariots was established by means of specific grooved cheekflaps (the *Platenknebeln* type), the use of which was mainly associated with the chariots. This means that in this period it is hypothetically possible to depict ceramic wheels that are not so much associated with the ordinary transportation of wagons and carts as with the technological innovation of the chariot. An example of this would be an unpublished four-spoked wheel from Kush Kaya, which is dated to the Late Bronze Age.

Group II contains two hand-made clay stoppers (fig. 17.F–G). The dimensions of the first stopper (fig. 17.F) are: Diam. = 3.1 × 3.3 cm; Length = 3.00 cm; Thickness = 1.2 cm. The colour after firing is beige-brown with a grey residue and a medium concentration of inclusion (quartz pebbles and particles up to 0.1–0.2 cm). It has a hemispherical tip (“mushroom-shaped”) and a triangular shift with a rectangular cross-section, the tip of which is partially broken off. The dimensions of the other stopper (fig. 17.G) are: Length = 2.9 cm; Diam. = 2.8 cm; Thickness = 1.5 cm. The colour after firing is grey/grey-brown with numerous carbonate deposits on the surface and medium concentrations of inclusions of quartz pebbles and white particles. The shape of the upper part is flat, and the shift has an irregular triangular shape.

The fragmentary state of the ceramic wheels from Kamenovo makes it difficult to draw direct

14 There is an extensive literature on the subject of cheekbones, examining examples and specimens from various parts of Europe – Central and Eastern Europe, the Carpathian Basin, continental Greece, etc.: Collon et al. 1976; Littauer, Crouwel 1979; Crouwel 1981; Werner 1988; Crouwel 1992; Dietz 1998; Boroffka 1998; Harding 2000; 2005; Maran 2020a; 2020b; Przybyła 2020; Metzner-Nebelsick 2021; Grigoriev 2021; 2022; 2023. Only the studies concerning present-day Bulgaria, especially from northeastern Bulgaria, are mentioned here.

parallels. However, analogies can be drawn with various objects from the area of present-day Romania (Shuster 1996, 131–133; 137, Pl. 4–13; Pl. 5–3, 4, 5; Pl. 6–1, 9, 10; Pl. 10–2). The finds cited come from settlements and necropolises. The wheels cannot be typologically determined, but they illustrate the occurrence of these artefacts in the LBA, as shown by their similarity with Häusler's typology.

For all phases of the Bronze Age in northern Bulgaria, three pieces from Hotnitsa and a single find from the Bagachina were found (Bonev, Aleksandrov 1996; Ilcheva 2005, 46–55). No other examples are known from northern Bulgaria that could be used for comparison and correlation.

The clay models of wheels generally show parallels among 3rd–2nd millennium BC artefacts. Their number decreased considerably, only a few examples are related to the LBA. These are the artefacts from Shikhanov Bryag, Kush Kaya, Tatul, Perperikon, Ada Tepe¹⁵ and Semercheto. All of them are from the area of the Upper Thracian Plain (Ignatov, Kancheva-Russeva 2007, 123, fig. 1; Petrova 2008, 94–95, 98, fig. 3). It should be noted that, similar to the latter examples, artefacts were found in LBA sites north of the Danube (Boroffka 1994, Taf. 64, 11–12, Taf. 137, 6; Petrova 2008, 95).

There are no published direct parallels for the clay stoppers found during the excavations of Site 01/Feature no. 1. A generally similar find, but with clear differences, was published from the Vratitsa region (Leshtakov 2009, 76, fig. 6). No similar objects have been published from northern Bulgaria or from sites associated with the Coslogeni culture in Bulgaria (Tutrakan, Durankulak etc. (Alexandrov et al. 1998; Todorova 2011) and Romania. It should be noted that both stoppers are of similar size and proportion and probably served to cover/close a vessel with an extremely narrow neck. No similar vessels have been observed. This suggests that the use of this type of object may be associated with leather bladders/vessels. Careful analysis of the preserved LBA vessel categories in south-eastern Europe shows that the category of vessels to be sealed with such stoppers are the so-called stirrup jar and, more precisely, its transportation version (fig. 18) (van Damm 2019, 93–117).

In the archaeological literature, there are various discussions about the classification and interpretation of this interesting group of finds. For example, due to the fact that the earliest examples of stoppers are made from recycled fired clay, there is some hesitation about assigning the plugs to small finds or to the ceramic repertoire of a particular site (van Damm 2019, 100). The earliest examples are dated to the Late Helladic III. Stoppers were first identified as a separate artefact class in the study of the Menelaion at Sparta, Akrotiri, Kommos, Tiryns, Kynos, Eleon, etc. (Dawkins, Woodward 1909/1910; Marinatos 1969; 1970; 1971; 1972; 1976; Rutter 2006; 2017; van der Moortel 2006; Rahmstorf 2008; Dakoronia, Kounouklas 2012). In the example from Eleon, dome-shaped seals were also found covering the stoppers. The vessels associated with stoppers and seals are not always identifiable. Nevertheless, T. van Damm associated the stoppers with so-called stirrup jars/Bügelkannen (whose usual dimensions are around 16 cm in height) (van Damm 2019, 100–101).

The information on the finds from the research on Eleon is particularly important for the interpretation of this object type. There, the finds were found in Room 1 and Room 5 on the floor level above demolished structures dating to Late Helladic IIIC. The rooms were interpreted as cellars or storerooms. Most striking is the concentration of stoppers in Room 5, which is interpreted as a small kitchen area with several fireplaces. The second largest concentration is in Room 1, which is interpreted as an extensive courtyard space. At the same time, an extremely large number of clay stoppers was also found in features A and B, which are dated to the early Late Helladic IIIC layer. The researchers associate the use of these finds with the sealing of vessels for the transportation of wine and other liquids, as well as with the increase in transportation and communication possibilities

15 The finds from Kush Kaya and Ada Tepe are currently unpublished.

during this period (van Damm 2019, 110–112).

When discussing the interpretation of ceramic plugs, a few remarks are in order. The first relates to the diameter of the pins of corks and the diameter of the necks of stirrup jars. The examples presented have a diameter of about 5 cm or slightly more than 5 cm. However, stoppers with a diameter of less than 2 cm and closures with a diameter of up to 0.7 cm are mentioned (van Damm 2019, 96, 100), which refer to the necks of small vessels, the diameters of which approach the diameters of the stoppers of Kamenovo corks, which do not exceed 1.00–1.50 cm.

The data presented suggest that the clay objects from the LBA site of Kamenovo identified as stoppers were most likely used to seal a vessel with a narrow neck. Their use as plugs/stoppers for containers for storing liquids made of non-durable material – leather, textiles, wood, such as leather bellows, etc. – is by no means excluded. So far, research has found no or unrecognized fragments with such narrow necks and rims that can be directly associated with such use. However, as a preliminary hypothesis and based on the physical parallels from the Aegean, it can be assumed that the objects presented are stoppers for transportation vessels. The chronology of the stoppers from Kamenovo slightly precedes or corresponds to the dating proposed in the literature for the artefacts from the Aegean – Late Helladic IIIC early or 1200/1100 BC.

Flint artefacts

Flint artefacts are among the common finds recorded at the site. They are found on a regular basis both during the initial field surveys and during the subsequent geophysical surveys and trench archaeological excavations in 2023. So far, the flint collection is relatively small, comprising 46 artefacts. Nevertheless, its accumulation is in progress, and it can be stated that flint is among the main group of finds directly linked to a local raw material source. The flint finds from Kamenovo presented here come from field surveys (20 pieces) and excavation (26 pieces).

The assemblage of the survey comprises 20 artefacts, belonging to the following techno-typological groups:

- Typological tools – 5 ex., representing retouched blades. One of the blades has abrupt retouch on the right edge, semi-abrupt, slightly denticulated retouch and polished on the left edge; there are truncations on the distal edge, and on the opposite edge there is a burin on a truncation (fig. 19.1). One blade has a steep, partially denticulated retouch and polish on the right edge and preserved cortex on the left (fig. 19.3). Another blade has partial, slightly denticulated retouch on the right edge and partial abrupt retouch on the left edge (fig. 19.8). Two of the blades show partial retouching and slight polishing of the edges (fig. 19.2, 4).

- Debitage products include 8 blades (1 of which is complete, and the rest are fragments); 5 large flakes (6–7 cm in length), 2 of which have partial cortex, as well as 2 fragments of flakes.

The flint artefact assemblage from the 2023 excavations contains 26 specimens. They are all from different stratigraphic levels of Structure 1 (see description above). This assemblage comprises the following techno-typological groups:

- Typological tools – 7 ex., are only represented by retouched blades. One of the blades has marginal retouch on the right edge and preserved cortex on the left edge (fig. 19.5). Another blade has a notch on the edges (fig. 19.7). One blade has slight polish on the right edge and another has polish and semi-flat retouch on the left edge. Some of the other blades have abrupt or semi-abrupt retouch on the edges.

- Debitage products include 11 blades, of which only one is complete and 8.4 cm long. The rest are fragments: 5 proximal, 4 medial and 1 distal (fig. 19.6). Four of the blades have partially preserved cortex. There are 8 flakes, most of which are between 4–6 cm long.

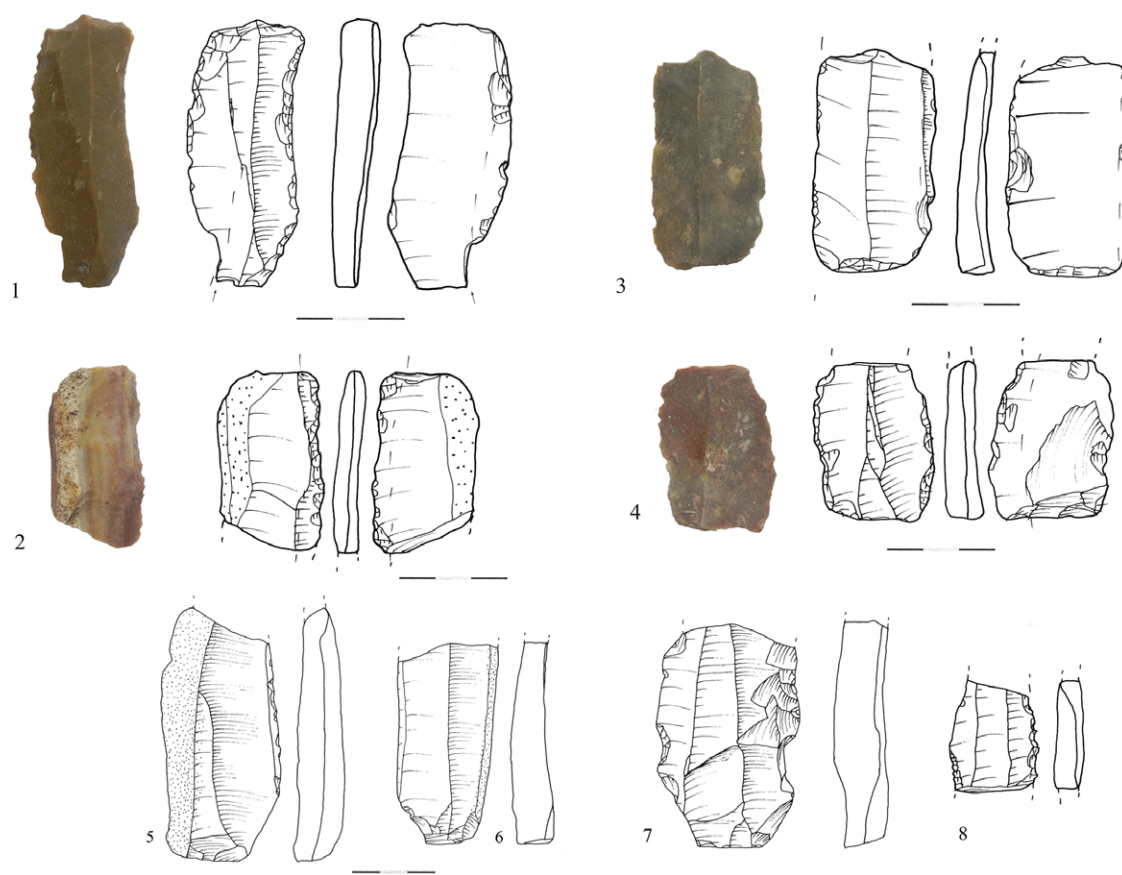


Fig. 19. Flints artefacts from the field surveys (1–4) and from Feature no. 1 (5–8) (drawings S. Taneva)
Обр. 19. Кремъчни артефакти от теренни обхождания (1–4) и от проучванията на структура № 1 (5–8) (рисунки С. Танева)

Flakes and blades predominate in the assemblage, some of which are cortical pieces. The blades are massive, with parallel edges. Although denticulates are the characteristic diagnostic type for Bronze Age assemblages (Gurova 2005; 2020; 2021), they could not be identified, despite the existence of blades with slightly denticulated retouch.

The study of the Bronze Age assemblage provides an opportunity to supplement the information about the life of people in this period on a regional scale (Alexandrov et al. 1998; Sirakova et al. 2001; Zlateva-Uzunova 2005; Sirakova 2006; Gurova 2020; 2021; Gurova et al. 2023).

The hypothesis that the flint raw material, for which the Ludogorie region is famous, continued to play a significant economic role during the late prehistoric periods, is reasonable. This is evident by the common discovery of flint tools and remains from the processing of flint raw materials on LBA and EIA sites in the region (Popov, Georgiev in press a, b).

A similar example for the late prehistoric periods concerns the sites in the Pleven region (Muselievo and Dolni Chiflitsi), where deposits of high-quality flint raw material and sites with a large number of flint artefacts have been recorded (Sirakova 2006; Sirakova et al. 2001; Taneva, Popov in press).

Sites with a predominance of flint artefacts (Osum, Dolni Chiflitsi) from the Bronze and Iron Ages show that flint still played an important role in the lives of later prehistoric people (Sirakova 2006; Taneva, Popov in press). Finally, the ongoing work on the current project will shed new light on the subject and propose some answers.



Fig. 20 Two-sided stone mould, found during geophysics surveys at Kamenovo, the locality of Yurtluka in 2024 (photo M. Raykovska)

Обр. 20. Двустранен каменен калъп, открит при геофизично заснемане Каменово, м. Юртлука през 2024 г. (снимка М. Райковска)

The stone mould

One of the important finds from the site, although discovered by chance and without context, is a two-sided stone mould that was probably intended for casting small metal ingots (fig. 20). It was found in spring 2024 during a further inspection of the site and the preparation of the last geomagnetic survey campaign in the outline of one of the prominent large patches in the southern half of the site. Examination using the X-ray fluorescence (XRF) method shows elevated levels of copper (Cu), which is another indicator of the functional properties and technological operation of the arteact¹⁶. Moulds are an integral technological component of the Bronze Age foundry industry (Jockenhövel 2018, 171–173) and their presence as chance finds or those found during archaeological investigations of sites from the Late Prehistoric period is relatively common. It is significant that one of the reasons for initiating the long-term research program of this part of the Ludogorie is precisely the Pobit Kamak hoard of moulds (Leshtakov 2018a), which became the eponymous site for the Late Bronze Age. The famous stone moulds discovered in Bulgaria include several chance finds and finds from archaeological sites. Moulds for ingots of various sizes and shapes can be found in the hoards of Pobit Kamak finds (Leshtakov 2018a; Alexandrov et al. 2018, Cat. no. 271), Sokol (Leshtakov 2018b, 388, fig. 1), and Mogilitsa (Damyanov 2018, fig. 2), as well as single finds from the region of Nova Zagora (Leshtakov 2018b, 390, fig. 3) and from the rescue excavations of Ada Tepe (Popov 2018, 413; Alexandrov et al. 2018, Cat. no. 328).

The mould from Kamenovo is more of a technological tool intended for processing a small amount of metal. In recent years, more and more small workshops have been found that met the

¹⁶ We would like to express our gratitude to assist. prof. Petya Penkova (NAIM–BAS) for the analyses and the scientific consultation.

needs of the various settlements at that time, as with the example of the rescue excavations at Belokopitovo (Leshtakov et al. 2016, 165). The finding presented here is an important indicator that metallurgical activity was carried out at Kamenovo. In turn, it raises questions for future investigations of the settlement.

Conclusions

The initial results of the multi-disciplinary studies carried out at the newly discovered LBA settlement near Kamenovo and its micro-region show the site to be extremely interesting and promising for future longer-term studies. The geomagnetic surveys provide a broad preliminary basis for the analysis of the interior of the site and its presumed organisation. The different types of structures inferred from varied magnetic values, sizes and densities indicate a site with an intense life and differing economic manifestations. One of the main discussions in Bulgarian and foreign historiography revolves around the short lifespan and mobility of late prehistoric settlements in the Eastern Balkans and the Lower Danube (Athanasov 2011, 180–181; Popov et al. 2015 with references). The literature even attempts to introduce terms such as “architectural boundary”, referring to the differences between the open, thinly-layered settlements of the Balkans, including Thrace, and those of the Aegean–Anatolian zone, which form settlement mounds and have more permanent architecture and fortification (Athanasov, Krauß 2015, 74–75). At this stage, before the first radiocarbon dates from the Kamenovo site are available and before larger surveys are carried out to allow more precise observations and analysis, it is difficult to answer the exact absolute chronological values and the approximate life expectancy in the settlement. However, the parallels of the ceramic assemblage and the characteristics of some of the main finds groups clearly indicate a date of 14th–13th/12th c. BC. The high density of LBA settlements in the micro-region is impressive. It is still difficult to answer how many of them are coeval. On the other hand, the numerous recorded sites testify to the high economic potential of the area, which also corresponds to the large number of stray hoard finds and single finds from this period.

The palaeobotanical samples collected will provide further details about the economic profile and potential of the settlement in the future. The preliminary analysis of the available bone material (*Bos taurus*, *Ovis carpa*, *Sus scrofa*) indicates a developed animal husbandry characterised by the predominance of cattle.

The question of what this apparently high demographic and economic potential can be attributed to remains open and offers the opportunity for more detailed future analyses. Initial observations show that the famous Ludogorie flint was also an important economic resource in the Bronze Age. The area is poor in metal sources, but rich in metal finds, which in turn opens up the discussion of trade, trans-regional contacts and economic corridors along which vital goods, people and technology reached this apparently important region of the eastern Balkans in the late 2nd millennium BC.

Future investigations of the settlement structure in this part of Ludogorie and especially the archaeological excavations near the village of Kamenovo may in the future answer some of the interesting and important scientific questions related to the principal characteristics of settlement during the LBA here.

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Новооткрито селище от късната бронзова епоха в района на Каменово, община Кубрат, Североизточна България: предварителни резултати

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(резюме)

Статията представя предварителни резултати от археологически изследвания, проведени в рамките на няколко последователни кампании в периода 2021–2024 г. Районът на Лудогорското плато в Североизточна България се характеризира с една от най-високите концентрации на находки от късната бронзова епоха, открити на територията на днешна България. За съжаление, повече от 100 години след първите открития не са провеждани мащабни проучвания, фокусирани върху периода на II хилядолетие пр.Хр. През 2021 г. екип от Националния

археологически институт с музей при Българската академия на науките, подпомогнат от специалисти от музеите в Разград и Исперих, започна работа по дългосрочна програма за изследване на селищния живот през бронзовата и желязната епохи в района на селата Побит камък, Каменово и Топчии, където са направени най-значимите открития. Стратегията за теренна работа предвижда използването и комбинирането на различни изследователски подходи – от дистанционни и недеструктивни методи (LiDAR, геофизика, теренни издирвания) до конвенционални археологически разкопки (сондажи и дългосрочни разкопки на по-голяма площ) за избраните обекти.

Обектът при с. Каменово, м. Юртлука се намира в географската област Лудогорие. Регионът е разделен на три части – Лудогорското плато, Лудогорските височини и хълмистото Лудогорие. До 1942 г. година районът е наричан Делиорман („луда гора“), до 1950 година – Полесие, а след това Лудогорие.

Археологическият обект в м. Юртлука край село Каменово е регистриран при първата кампания през 2021 г. Идентифицирането му като обещаващ за бъдещи по-подробни теренни проучвания доведе до провеждане на мащабни геомагнитни изследвания и първите редовни разкопки през 2023 г. Въпреки предварителния характер на проучванията, може да се каже, че вече е събрана значителна информация в четирите кампании.

През 2023 г. е проучена западната половина на негативна структура с неправилна правоъгълна форма. Интерпретацията ѝ се свързва с жилищни или стопански функции, за което косвено свидетелстват находките, които могат да се определят като жилищен инвентар – костено шило, каменна чукалка, каменна гладилка. Керамичният материал е представен от фрагменти, обособени в три групи (определени въз основа на концентрацията на примесите, дебелината на стените, лом и обработката на повърхността на стените) и шест категории. Групите включват груба керамика с три подгрупи, средно груба и фина керамика. Въз основа на аналозиите на керамичния ансамбъл (вкл. и липсата на някои елементи в него), с други обекти от региона, отнасящи се към края на КБЕ, или прехода между КБЕ и РЖЕ, бихме могли да предложим по-широк хронологичен диапазон – XIV–XIII в. пр.Хр.

Малките керамични артефакти, открити в структура № 1, могат да се обособят в две групи: група I фрагменти от керамични дискове, за които е възприета предварителна хипотеза, че биха могли да са фрагменти от модели на колела; група II – две глинени запушалки. Присъствието на глинени колела на обект 01 край Каменово, би могло да бъде разгледано в светлината на откритите конски кости в Структура 1 от една страна, и от друга страна – с елементи на костни псалии от Тутракан, Дуранкулак и Белокопитово, които са уникални находки за Североизточна България и се свързват с използването на колесници. Това означава, че през този период хипотетично е възможно чрез керамичните колела да се илюстрира не толкова обикновеното превозване чрез каруци, колкото употребата на новата технологична иновация, като колесницата.

Находките от обекта при Каменово, идентифицирани като запушалки, най-вероятно са били използвани за запечатване на съдове с тесни гърла. Тяхното използване като тапи за съдове за съхранение на течности, изработени от нетрайни материали – кожа, текстил, дърво, като например кожени мехове и др. – също не е изключено. При проучванията на обекта не са открити или разпознати фрагменти от съдове с тесни гърла и ръбове, които да могат директно да се свържат с такава употреба. Въпреки това, като предварителна хипотеза и въз основа на физическите паралели от Егейския регион, може да се предположи, че представените предмети са били запушалки за транспортни съдове. Хронологията на запушалките леко предхожда или съответства на предложената в литературата – Раннохеладски IIIС или около 1200/1100 г. пр. Хр.

Една от важните находки от обекта, макар и открита случайно и без контекст, е двустранен калъп, вероятно предназначен за отливане на малки метални слитъци. Представеният артефакт е важен индикатор, че в границите на обекта при Каменово е била извършвана металургична дейност. От своя страна това поставя отворени въпроси за бъдещи изследвания на селището.

Представените резултати са разнообразни и позволяват анализи и интерпретации по различни изследователски задачи, свързани със селищната среда, вътрешната организация на изследвания обект, характеристиките на керамичния ансамбъл и основните групи артефакти. Поставени са и първоначални хипотези за хронологията, възможните надрегионални контакти и процесите на влияние, в тази част на Лудогорското плато през късната бронзова епоха.