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SETTLEMENT PATTERNS DURING THE LATE ENEOLITHIC AND THE EARLY BRONZE AGE IN THE CENTRAL BALKANS

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ОБРАСЦИ НАСЕЉАВАЊА У ПОЗНОМ ЕНЕОЛИТУ И РАНОМ БРОНЗАНОМ ДОБУ НА ТЕРИТОРИЈИ ЦЕНТРАЛНОГ БАЛКАНА

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Захвалница

Својој менторки, др Марији Љуштини, дугујем захвалност на подршци, стрпљењу, саветима и преданом раду током докторских студија и приликом израде ове докторске дисертације.

Колегама Александру Булатовићу и Војиславу Филиповићу захвалан сам на деценијском усмеравању и стрпљењу, подршци, критикама, и необавезним разговорима који су неизмерно допринели стварању ове дисертације. Захвалност дугујем и колегама Александру Капурану, Драгану Милановићу, Петру Милојевићу, и Ивану Нинчићу, који су свако на свој начин допринели и усмерили моје истраживање.

За подршку и дуге канцеларијске разговоре охрабрења захвалност дугујем колегама Угљеши Војводићу, Драгани Вуловић, Селени Витезовић и Игору Бјелићу. Захвалност на пријатељским и професионалним саветима дугујем и колегама Адаму Црнобрњи, Мирку Вранићу, Јасминки Богић, Катарини Ивковић, Гордани Топић, Филипу Стефановићу, и Давиду Блатнеру.

Колегама из Аустријског археолошког института, на челу са др Барбаром Хорејш, захвалан сам на подршци приликом израде докторске дисертације.

Мојим најближим пријатељима, и мојој породици, који су поднели највећи део терета приликом израде ове дисертације дугујем бескрајну захвалност. За свакодневну подршку и подстрек највећу захвалност дугујем својој супрузи Мини и оцу Ђорђу. На сталној инспирацији захвалан сам мајки Анки и брату Урошу, којима посвећујем ову дисертацију.

Settlement Patterns during the Late Eneolithic and the Early Bronze Age in the Central Balkans

Abstract

The subject of the study are archaeological remains of settling during the Late Eneolithic and the Early Bronze Age within the context of their natural environment, available resources, mutual relationships, and economic tendencies and potentials in the territory of the Central Balkans. The study aims to question the current model of socio-economic changes that presumably occurred within the transition from the Copper to the Bronze Age.

In order to question nature and intensity of the proposed shift between the Late Eneolithic and the Early Bronze Age, the study included the analyses of typology, locations, spatial disposition, and mutual spatial and visual relations of settlements, as well as the economic affinities and potentials of sites, both within the micro and macro-regional, and diachronic perspective. Further, the acquired data were contrasted to the cultural development of the given territory, to additionally compare the proposed parameters within each of the periods. The study included a total of 126 Late Eneolithic, and 48 Early Bronze Age sites.

The results of the study have highlighted certain differences both in terms of settling topography and the economic affinities of Late Eneolithic and Early Bronze Age populations. In general, a dichotomy in topographic positions, and a tendency for regional settling, is noticed in both of the researched periods, indicating significantly lower differences in settlement trends and subsistence strategies compared to traditional interpretations. The existing differences are rather caused by regional geomorphology and traditions of certain populations.

Keywords: settlement patterns, subsistence strategies, Late Eneolithic, Early Bronze Age, Central Balkans.

Scientific field: Archaeology

Scientific subfield: Prehistoric archaeology

UDC number:

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Обрасци насељавања у позном енеолиту и раном бронзаном добу на територји централног Балкана

Сажетак

Предмет истраживања ове дисертације су археолошки остаци насељавања из позног енеолита и раног бронзаног доба на територији централног Балакана, у контексту њиховог природног окружења, доступних ресурса, узајамних односа, и економских тенденција и потенцијала. Циљ истраживања је да преиспита постојећи модел претпостављених социо-економских промена које су се одиграле током прелаза из бакарног у бронзано доба.

Како би испитали природу и интензитет тих промена током позног енеолита и раног бронзаног доба, истраживања су обухватила анализе типологије, положаја, просторне дистрбуције, и међусобних просторних и визуелних односа између насеља, као и економске афинитете и потенцијале локалитета. Анализе су спроведене дијахроно, микро и макрорегионално. Прикупљени подаци упоређени су са културним развојем на датој територији, како би се добила компаративна слика анализираних параметара у оквиру сваког од истраживаних периода. Студија је обухватила 126 локалитета из позног енеолита и 48 локалитета из раног брозаног доба.

Резултати истаживања показали су одређене разлике како и погледу топографије насељавања тако и у погледу економских афинитета популација позног енеолита и раног бронзаног доба. Дихотомија у топографским положајима локалитета, и тенденција за регионалним насељавањем заступљени су у оба истраживана периода, и указују на мање разлике у трендовима насељавања и стратегијама преживљавања у односу на постојеће интерпретације. Постојеће разлике радије представљају узрок регионалне геоморфологије и традиције одређених популација.

Кључне речи: обрасци насељавања, стратегије преживљавања, позни енеолит, рано бронзано доба, централни Балкан

Научна област: Археологија

Ужа научна област: Праисторијска археологија

УДК број:

УДК број:

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1. Introduction

Settlement archaeology, with its numerous sub-disciplines and analytical methods, aims to investigate the social and economic parameters of past societies based on relations between different forms of their material remains and the surrounding landscapes. Postulated during the end of the 19^{th} century, settlement archaeology has come a long way from simple mapping of archaeological remains to multidisciplinary research complemented by various specialist analyses (e.g. absolute dating, archaeozoology, botanical, and paleoclimate studies) and modern mapping technologies, intending to provide a solid reconstruction of relations between humans and their natural surroundings and interpret the social and economic reasoning behind those relations.[1]

Although settlement archaeology has been within the scopes of the Central Balkans and Serbian archaeology since the 80s of the past century, its integration as one of the trending methods of reconstruction of past societies has only recently been fully recognized. Therefore, more and more papers and dissertations are being published with a focus on settlement archaeology, yet the lack of state-of-the-art methodology, especially regarding the wider utilization of digital technologies, still poses a significant problem within the Serbian archaeological domain. However, it is important that settlement archaeology is slowly but steadily becoming more and more accepted and additionally recognized as an important tool for reconstructing the human past.

This study represents an attempt to reconstruct the presumed social and economic transitions during the later prehistory of the Central Balkans, with the main focus on the period between the Late Eneolithic and the Early Bronze Age (c. 3200-2000 BC). The study is based on the collection of the existing and complemented data on the period-related sites and settlements within the eastern part of the Central Balkans, and the diachronic and regional analyses of their settlement patterns, including their topography, mutual relations, and economic preferences. The study relies on the newly proposed methodology of site catchment analyses, which proved useful when dealing with a large sample.

[1] As described in Chapter 2.

2. Theoretical and Methodological Framework for the Research of the Eneolithic and Bronze Age

Compared to Central and Western Europe, and the Aegean Mediterranean, where the Neolithic directly precedes the Bronze Age, the beginning of the Metal Ages in the territory of Southeastern Europe formally begins with the exploitation of copper ores, the utilization of smelting processes, and the appearance of copper artifacts during the 5th millennium BC.[2] The Eneolithic (Chalcolithic or the Copper Age), has not always been treated as an independent period within Southeastern Europe, as it was due to the lack of research and the tradition of tripartite periodization of prehistory, rather regarded as a transitional period between the Neolithic and the Bronze Age.[3] Following a number of systematic excavations after World War II (e.g. Gomolava, Vinkovci), and the following interpretations of relations and chronology of „transitional" Eneolithic communities in the Central Balkans and the neighboring regions, it became clear that the Eneolithic represents a significantly longer period than previously thought and does not represent a transitional phase.[4] The internal periodization of the Eneolithic period in Southeastern Europe is not uniform in both cultural and chronological sense, as it varies in different geographical regions. It is widely accepted that the Eneolithic developed in three distinct phases (Early, Middle, and Late), although the relative and absolute chronology of those phases differs depending on the researched territory.[5] This especially implies in the adjacent territories of Romania and Bulgaria where certain Early Eneolithic groups are regarded as Late Eneolithic, while Late Eneolithic groups are positioned into the beginning of the Bronze Age (e.g. Coţofeni III is considered as Early Bronze Age in Bulgaria but Late Eneolithic group in the territory of Serbia).[6] Due to such discrepancies, and the current lack of proper solutions and synchronizations, the chronological studies of the Eneolithic are mostly based on the existing absolute dates, which suggest that the Early Eneolithic (Late Eneolithic) in the Central Balkans started in the mid-5th millennium BC with the appearance of the Bubanj-Sălcuta-Krivodol complex and lasted until the first quarter of the 4th millennium BC, while the dates for the Late Eneolithic (Early Bronze Age) within the researched area indicate that the period lasted between the 34th and the 26th century BC.[7]

The utilization of copper mining and related *chaîne opératoire*,[8] attested during the Late Neolithic,[9] represents one of the defining characteristics of the Eneolithic period, although not the one that enabled its separation as an independent period. The Eneolithic

[2] Parkinson 2003; Težak Gregl 2018.
[3] Garašanin 1961; Гарашанин 1973, 161-163.
[4] Tasić, Dimitrijević 1979; Tasić 1995, 9-18.
[5] *Cf.* Tasić, Dimitrijević 1979, 19-23; Тасић 1985; Marković 1994; Tasić 1995.
[6] Boyadziev 1995; Todorova 2003; Reingruber 2015. The other problem is related to different terminology of the same or closely related Eneolithic groups in Southeastern Europe depending on the area of research. Bayesian modeling of Eneolithic absolute dates from the eastern part of the Carpathian Basin is in accordance with absolute dates for the Central Balkans (Raczky, Siklósi 2013).
[7] Bulatović *et al.* 2018; Bulatović, Vander Linden 2020; Bulatović *et al.* 2020a.
[8] Ottaway 2001.
[9] Jovanović 1971a, 17-21; Šljivar *et al.* 2006; Radivojević *et al.* 2010; Overview in Porčić 2019b, 22-24, with cited literature

copper metallurgy is well attested, especially regarding its early phase, while on the other hand, copper artifacts from the Late Eneolithic are scarce in the Central Balkans, as a general decline in copper production is noticed.[10] Such a decline in copper procurement and production has been connected with either the economic strategies of the Late Eneolithic communities which did not rely on copper as a staple resource or as a result of a depletion of easily processible oxidic copper ores during that period,[11] as recently suggested.[12]

The transition between the Late Neolithic Vinča group and the Early Eneolithic Bubanj-Sălcuta-Krivodol complex in the Central Balkans was gradual, with certain traditions in material culture prevailing through both periods.[13] Excluding the intensified utilization of copper objects, the Eneolithic period was presumably marked by a series of socio-economic changes. The changes in settlement patterns and structure can be observed through the abandonment of long-lasting Late Neolithic (tell) settlements and the formation of a larger number of small settlements within new environments suitable for different subsistence strategies, the appearance of cooperative settlements, and communication hubs.[14] Those changes were perceived within the A. Sherratt's hypothesis of the so-called *Secondary Products Revolution*,[15] which implied that the evolution within the economy of the post-Neolithic communities was characterized by the introduction of scratch-plow into agriculture and the gradual emergence of specialized pastoralism. This further implied that the introduction of the plow, carts (wheeled vehicles),[16] and equids provided a more efficient agricultural production and transportation of goods, and the focus of animal exploitation shifted from primary (meat, hide, and bone) to secondary products (milk, wool, and draught),[17] resulting in more efficient animal production.[18] A series of archaeozoological studies based on animal age profiles and kill-patterns as well as settlement pattern studies of the post-Neolithic (Early Eneolithic and Bronze Age) communities in the Central Balkans does indicate a possibility for an increased production of secondary products and the possible emergence of (semi)mobile pastoralism as one of

[10] Тасић 1990a, 12-13; Antonović 2009.
[11] Jovanović 1971, 16-23.
[12] Powell *et al*. 2017.
[13] Tasić 1995, 12; Bulatović *et al*. 2020b.
[14] Bankoff, Winter 1990; Brukner 1990; Tasić 1995, 10; Borić 2015 for potential causes and mechanisms of such transition; Милановић 2017; Капuran *et al*. 2018; Bulatović *et al*. 2020b; Porčić 2019a.
[15] Sherratt 1981.
[16] Bondár 2018, with complete literature.
[17] Recent studies confirmed that the onset of milking was during the Neolithic period (Vigne, Helmer 2006), but as Greenfield and Arnold highlight, the *secondary products revolution* does not imply the introduction of milk, but rather the intensification of its production. (Greenfield, Arnold 2015, 793-794, with cited literature). In their comprehensive study on milk as a secondary product, Vigne and Helmer propose the terms *final products* (primary) and *lifetime products* (secondary), regarding Sherratts' terminology as linear in chronological aspect (Vigne, Helmer 2006, 36).
[18] Sherratt 1981; Sherratt 1983. H. Greenfield considers that the *secondary product revolution* was one of the key factors of productive specialization and intensification essential for the development of complex and urban societies (Greenfield 2017, 50).

the dominant subsistence strategies during the Eneolithic.[19] The data is contrasted by strontium isotope analyses from the Neolithic and Eneolithic of the adjacent Great Hungarian Plain,[20] where no significant changes have been noticed regarding the mobility of animals, utilization of secondary products (stable minor contribution of dairy products), or dietary habits,[21] yet increased interregional mobility of individuals is attested during the Early and Middle Eneolithic, possibly indicating growing independence of smaller socio-economic units (small settlements compared to large tell-settlements of the Late Neolithic).[22] As seen, such changes should not be perceived as swift and uniform, but rather observed on different regional and microregional scales, as several studies suggested that the human-animal relationships went through different stages in various chronological and geographical settings.[23]

Such a shift in the economy during the Eneolithic period was traditionally connected with new ethnic elements and several successive migrational movements from the east. The appearance of characteristic elements of material and spiritual culture such as corded ware, long flint blades, and stone scepters, as well as the appearance of tumular graves,[24] especially during the later phases of the Eneolithic (Middle/Late), and its progress from the east towards Central Europe, Central Balkans, and further to Pelagonia, was taken as the key factor in the transformation of later Eneolithic and Early Bronze Age societies.[25] In general, the authors have argued that the migrational movements of nomadic stock-breeders resulted in the formation of Middle and Late Eneolithic groups of Southeastern Europe (particularly the Carpathian Basin), or their displacement towards the west, and subsequently introduced the practice of transhumant and/or semi-nomadic pastoralism in this area,[26] although there are stances that the change was caused by a number of other factors rather than migrations.[27] It is those migrational movements that are considered the mechanism that caused the formation of the Late Eneolithic Coţofeni-Kostolac group in the

[19] Greenfield 1984; Greenfield 1988; Greenfield 1989; Greenfield 1999; Greenfield 2005; Arnold, Greenfield 2006; Bulatović 2018. Recent studies of tibial cross-sectional geometry in Central Europe (c. 2900-1700 BC) provided no evidence of increased mobility of Eneolithic individuals compared to the Early Bronze Age (Sladek *et al*. 2006).
[20] Great Hungarian Plain is often used as a comparative region for the Central Balkans, especially due to the high degree of research, although it should be highlighted that the geomorphology of those two regions is completely opposite (lowland and dominantly highland), and thus could negate all of the comparisons.
[21] Dietary habits remain approximately identical from the Late Neolithic to the Early Bronze Age in this area (Gamarra *et al*. 2018.).
[22] Giblin *et al*. 2013; Giblin, Yerkes 2016.
[23] Marciniak 2011; Greenfield, Arnold 2015; Spiteri *et al*. 2016; Gaastra *et al*. 2018.
[24] Refer to the chapter on the Coţofeni-Kostolac group (5.1). Phase Coţofeni III (Late Eneolithic/Early Bronze Age) is characterised by the appearance of new funerary custom, specifically tumular graves with pottery characteristc for the Coţofeni group.
[25] Kristiansen *et al*. 2017, 335-340.
[26] Transhumant pastoralism and semi-nomadic pastoralism are often misinterpreted as the same, even though there are substantial differences, one of those being that transhumant pastsoralism is based on vertical seasonality, as higlighted by Arnold and Greenfield (Arnold, Greenfield 2006, 7-8, with cited literature).
[27] Garašanin 1954; Garašanin 1961; Јовановић 1976; Jovanović 1979; Тасић 1982-1983; Bankoff, Greenfield 1984; Тасић 1990; Garašanin 1994, 11; Govedarica 2006; Spasić 2008; Bulatović 2014b; Kaiser, Winger 2015; Diaconescu 2020; Koledin *et al*. 2020, with cited literature.

Central Balkans, and a similar trend has been attested in the territories of Bulgaria and Romania.[28] Save for the utilization of *secondary products*, the presumed migrations introduced the domesticated horse and wool into the Carpathian Basin and the Central Balkans during the Eneolithic/Early Bronze Age.[29] A. Bulatović separates a total of three chronological horizons for the occurrence of corded ware pottery in the Central and Southern Balkans: The first horizon corresponds to the Early Eneolithic, the second to the end of the Middle and the beginning of the Late Eneolithic, and the third corresponding to the end of the Late Eneolithic and the beginning of the Early Bronze Age according to the Serbian chronology.[30] Such chronological horizons match the three waves of horse expansion towards the west, proposed by S. Bökönyi. The first two waves are connected with the Copper Age of the Carpathian Basin, and the third wave represents the Early Bronze Age introduction of the domestic horse in the Central Balkans.[31] Such a presumed migrational sequence is further complemented by the absolute dates and stratigraphy of Late Eneolithic and Early Bronze Age burrows of the Carpathian and Pannonian basins, in which the Yamnaya culture graves are later than graves related to the Corded Ware culture and burials related to the final phase of the Coţofeni group.[32] Recent studies of strontium isotopes and spatial studies from the Corded Ware period in central-eastern Europe (c. 2900-2500 BC)[33] indicate the eastern origin of both people and horses and the possible onset of mobile husbandry,[34] while similar studies of the Bell Beaker phenomenon (c. 2500-2000) from Central and Southeastern Europe indicate an increased degree of migration.[35] Remains of horses in the Central Balkans, and within the researched territory have indeed been attested starting from the Early Bronze Age (Ljuljaci, Novačka Ćuprija, Crkvina, Bubanj) (Bubanj-Hum II/Bubanj-Hum III group), which coincides with the appearance of a larger species of sheep in the region (wooly sheep).[36]

The final wave of the presumed Eneolithic migrations was supposedly the cause behind the formation of the Early Bronze Age groups in Southeastern Europe.[37] Within the researched region, such migrations are observed during the earlier phase of the Early Bronze Age, which in fact represent a sort of transitional period between the Late Eneolithic and Early Bronze Age in the Central Balkans, represented by the Bubanj-Hum II group whose material culture bears Late Eneolithic traditions and certain ceramic

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[28] Roman *et al*. 1992; Todorova 2003, 292-293; Капуран, Булатовић 2012, 2-3.
[29] Sherrat 1983, 100; Greenfield 2006.
[30] Bulatović 2014b, 105
[31] Bökönyi 1991, 89-90
[32] Włodarczak 2021.
[33] Chronologically corresponds to the transition from the Late Eneolithic to the Early Bronze Age in the Central Balkans (Coţofeni-Kostolac – Bubanj-Hum II – Bubanj-Hum III sequence), according to Serbian chronology.
[34] Pelisiak 2016; Belka *et al*. 2018, with cited literature.
[35] Price *et al*. 2004.
[36] Greenfield 1986; Greenfield 1988, 581-585; Bökönyi 1991, 90-91; Bulatović 2020a. Horses become relatively common within faunal assemblages of Central/Eastern Europe during the Early Bronze Age (Harding 2000, 135-136).
[37] Gimbutas 1965, 21-22; Гарашанин 1975; Garašanin 1983c; Gumă 1997, 95-102; Todorova 2003, 292-293; Koledin 2008; Булатовић, Станковски 2012, 323-327; Gerling *et al*. 2012; Horváth *et el*. 2013.

elements which will evolve into the characteristic elements of the material culture of the Early and Middle Bronze Age groups (Bubanj-Hum III, Armenochori, Bubanj-Hum IV-Ljuljaci).[38] As in the case with the Eneolithic period, the chronology of the Bronze Age in Southeastern Europe is even more regionally inconsistent. In the territory of Serbia, the tendency existed to synchronize the chronology with Reinecke's Central European chronology.[39] The chronology of the Bronze Age proposed by D. Garašanin included the division into Bronze Age I, II, and III, meaning Early, Middle/Developed, and Late, which corresponded to Reinecke's phases Br A, Br A2-C, and Br C-D.[40] Such formal separation into the Early, Middle, and Late Bronze Age is still in use, although with certain alterations regarding the duration of the Bronze Age compared to Reinecke's phases for Central Europe.[41] Slightly different relative chronologies are applied in the adjacent regions, in the territories of Bulgaria and Romania, wherein Bulgaria the beginning of the Bronze Age is positioned significantly earlier, to the middle of the 4th millennium BC (Middle/Late Eneolithic in Serbian chronology), and the Romanian Early Bronze Age in western parts of the country, usually discussed parallel to the Bronze Age in the Serbian and Hungarian part of the Carpathian Basin, is slightly earlier than the Early Bronze Age in the Central Balkans and corresponds to the so-called Bubanj-Hum II-Bagacina-Pelince I horizon.[42] However, regarding the Lower Danube Region, authors tend to shift the onset of the Early Bronze Age in Romania to the mid-4th millennium BC, similar to Bulgarian chronology. Such differences in chronology are caused by the criteria that are taken as the mark for the beginning of the Bronze Age. In the Lower Danube Region (parts of Romania and Bulgaria), the presumed migrations of eastern steppe populations and the occurrence of copper objects attributed to those populations, the appearance of mound burials, and the socio-cultural changes that those migrations caused are considered the beginning of the Bronze Age,[43] contrary to the area of the Central Balkans, where the appearance of tin-bronze marks the formal beginning. The synchronization between Serbian, Romanian, and Bulgarian Bronze Age chronology has not yet been achieved, although recent studies are focusing primarily on the comparisons of the ever-growing base of absolute dates. According to those dates, the Early Bronze Age in the Central Balkans, is positioned into the second half of the 3rd millennium BC, and the first quarter of the 2nd millennium BC.

The socio-economic changes that mark the earlier phases of the Bronze Age, were not as intensive, substantial, or extensively studied compared to the Eneolithic period in the Central Balkans. Within the wider European scope, the Bronze Age economy is marked by mixed agricultural-pastoral subsistence,[44] with an emphasized regional character. Such a regional differentiation is observed in the cattle-based character of temperate Europe,

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[38] Bulatović, Milanović 2020, 224-226.

[39] The relative and absolute chronology of each group is provided in designated subchapters.

[40] Garašanin 1967.

[41] This primarily refers to the questions of the existence of the so-called "Transitional Phase" between the Bronze and Iron Age, which would encompass Reinecke's phases Ha A-B.

[42] *Cf.* Alexandrov 1995; Boyadziev 1995; Roman 1986; Gogâltan 1996; Gumă 1997; Gogâltan 1998; Gogâltan 1999; Todorova 2003; Gogâltan 2015; *Szabó 2017; Kiss et al. 2019.*

[43] Băjenaru 2018, 127, with cited literature.

[44] For the existing studies of nomadic pastoralism in the Early Bronze Age of Northwestern Serbia refer to Porčić 2008, with complete cited literature.

and the caprid-base character of Mediterranean Europe, which displays substantial differences represented by less regularity in terms of representation of certain animal species within faunal assemblages compared to the Eneolithic.[45] Based on finds of antler hoes and the topography of settlements, (re)increased importance of agriculture is presumed for the Bronze Age in the Central Balkans, while archaeozoological studies record a higher utilization of cattle and possible mixed subsistence.[46]

The eponymous metal of the Bronze Age in Europe, tin-bronze,[47] represents a novelty that consists of two important innovations, procurement, and processing of both tin and copper. Tin is a rare metal essential for the production of bronze. The origin of tin in bronze artifacts of the Old World has been a subject of debate for more than a century, and even nowadays represents a trending topic in prehistoric archaeology.[48] The recently endorsed idea of the Balkan origin of Bronze Age tin, supported by recent studies, indicates that Southeastern Europe might have represented a region engaged in long-distance trade of tin and/or bronze objects.[49] Although copper extraction has been attested in the area since the Late Neolithic, if the proposed *Copper Hiatus* between c. 3500 and c. 2500 BC is accepted, which implied the exhaustion of oxide copper ores utilized during the Neolithic and Eneolithic,[50] the Bronze Age communities had to acquire the knowledge of copper extraction and the processing of sulfide copper ores,[51] as attested on Bronze Age metallurgical sites in Eastern Serbia.[52]

For the first time in human history, the staple material, in this case, bronze, was an alloy that required either direct exchange/trade of semi-finished (bronze) or finished product or the procurement of two different metals, copper and tin. As copper and tin are not compatible in terms of mineralization and deposits and do not occur together, certain Bronze Age communities were presumably forced to obtain those metals from at least two different sources. According to some authors, this conditioned a higher level of both micro and macro-regional interactions, especially from c. 1600 BC, resulting in the so-called comparative advantages of certain regions regarding raw resources which further led to complex economies and systems of trade and exchange (**Fig. 1**). Additionally, this

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[45] Harding 2000, 125-143.
[46] Гарашанин 1973; Greenfield 1986; 182; Булатовић, Станковски 2012, 327-333.
[47] The possible occurrence of tin-bronzes in the Balkans during the 5th millennium BC will not be discussed in this work, since the debate on the context of such finds is still ongoing (*Cf.* Radivojević *et al.* 2013; Šljivar, Borić 2014; Radivojević *et al.* 2014.). As seen in subchapters on Early Bronze Age groups within the researched territory, bronze artifacts are quite rare during this period, and therefore, similar to the Eneolithic, cannot be considered the key factor in its separation as an independent period.
[48] e. g. Smith 1863; Gaul 1942; Penhallurick 1986; Nessel *et al.* 2015; Младеновић 2017б, 3-7, with cited literature.
[49] Durman 1997; Huska *et al.* 2014; Mason *et al.* 2016; Powell *et al.* 2018; Nessel *et al.* 2019; Mason *et al.* 2020; Powell *et al.* 2020.
[50] Powell *et al.* 2017.
[51] Interestingly, it seems as if not all Bronze Age communities mastered copper extraction, as seen from examples from Scandinavia, where despite locally available copper, Bronze Age people of Sweden and Norway imported it (Earle *et al.* 2015, 639).
[52] Kapuran 2019.

presumably resulted in social stratification based on the control and distribution of staple resources (e.g. the *bottleneck* concept,), which will be discussed below.[53] Such trends were also noticed in the territory of Southeastern Europe, which becomes integrated into the Bronze Age systems of trade and exchange.[54] The rise of civilizations in the Eastern Mediterranean during the 2nd millennium BC posed an important factor in the growing connections between Bronze Age societies due to the ever-increasing requirement for various raw materials.[55] Besides copper and tin, other goods were circulating throughout Europe during the Bronze Age, such as gold, silver, textiles, salt, and amber.[56] Southeastern Europe and the Central Balkans were not excluded from those interactions and acted as a market for both the import and the export of various raw materials such as copper, amber and salt, weaponry, and possibly even tin.[57] The onset of long-distance trade or exchange, emerging elites, and the stratification of Bronze Age societies provided and still provide a solid substrate for the development of a number of theoretical frameworks and models, of which the two most common and contemporary are presented.

[53] Earle *et al*. 2015; Unfortunately, the authors do not analyze the Balkans in terms of tin deposits; Radivojević *et al*. 2019, with complete literature on the circulation of metals during the Bronze Age. For the latest insight on social vertical and horizontal stratification of Early Bronze Age society in Southeastern Europe, as reflected on the Mokrin necropolis refer to Porčić, Stefanović 2009; Порчић 2010; Žegarac *et al*. 2021.
[54] Powell *et al*. 2018; Kiss 2020.
[55] Harding 1984; Harding 2013b, 386 and further.
[56] Harding 2013a; Cwaliński 2014; Earle *at al*. 2015.
[57] Паровић-Пешикан 1986; Harding, Kavruk 2010; Harding 2011; Cavrcuc, Harding 2012; Палавестра, Крстић 2004; Powell *et al*. 2018; Nessel, Pernicka 2018; Vasilache *et al*. 2020; Ljuština, Dmitrović 2020.

Figure 1. Raw materials comparative advantages of certain regions in Bronze Age Europe (modified after Earle *et al*. 2015).

One of the currently most utilized models regarding the socio-economic nature of the European Bronze Age is the so-called *World System Theory* or *Core-Periphery Theory*. The theory originated from H. Wallerstein in 1974, who developed it based on the economy of 16th-century Europe. Such a model provides insights into understanding and/or describing how certain areas become economically dependent on each other, and how such dependence further reflects in the development of those areas. The introduction of prestige goods from the "core" to the "periphery" represents a fine example of such a model since those goods can play an important role within the social systems of the "periphery". The concept was endorsed by archaeologists quite early, and several renowned scholars applied it to prehistoric societies of the Old World, where the name Kristian Kristiansen stands out.[58] The concept emphasizes interactions as a key to cultural formation and transformation. In a sense, most of the archaeological works that are based on long-distance trade/exchange rely on provenance studies operate within a variation of this model. A. Harding refers critically to *World System Theory* as a "top-down" approach that looks to identify interactions on a large scale, neglecting the small-scale nodes of trade/exchange networks, therefore seemingly removing the autonomy of "peripheral" communities.[59] He proposes an opposite "bottom-up" approach which relies upon the study of local datasets (micro-regional) and the contextualization of objects in their original setting (procurement-manufacture-trade/exchange), prior to connecting them to the large-scale networks.[60]

The aforementioned *bottleneck* concept of Bronze Age trade was introduced fairly recently by Timothy Earle,[61] as a possible model for the emergence and restriction of Bronze Age commodity chains necessary for long-distance trade (**Figs. 1 and 2**). According to Earle, *bottlenecks* represent constriction points in commodity chains, limiting access to commodities through ownership of resources, technologies, or knowledge, further resulting in the formation of elites, stratification of society, and the extraction of surpluses by emerging elites (**Fig. 2**). Regarding the European Bronze Age, a total of five *bottlenecks* were proposed:

1. Control over mining and extraction of metal from ores.
2. Constriction of flow or payments for safe passage on transport routes.
3. Transport technology – the rise of maritime trade.
4. Warriors – protection of production, movement, and storage of wealth.
5. Craftsmen – specialized knowledge of the production of metal artifacts.
6. Local exports in exchange for metal goods.

The proposed *bottlenecks* were unevenly spread through Europe during the Bronze Age, creating numerous commodity chains and commodity control points which were most likely both global (bottlenecks 1 and 2) and local (bottlenecks 1-6). However, T. Earle concludes that some of the regions might have not been able to create a comparative advantage due to the lack of goods in demand, and therefore remained isolated from the long-distance commodity chains of the Bronze Age.[62]

[58] Kristiansen 1987; Kristiansen 1994.
[59] Harding 2013, 382-391.
[60] Harding 2013, 391-394.
[61] Earle 2002.
[62] Earle *et al*. 2015, 639-648.

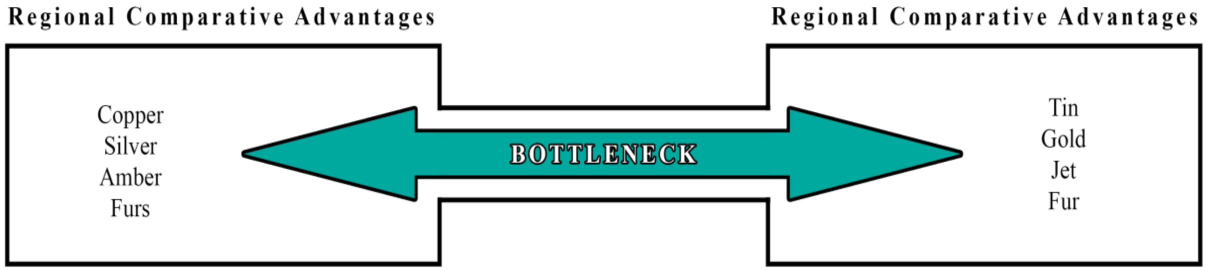

Figure 2. Bottleneck concept (modified according to Earle *et al.* 2015).

The presented models, as well as numerous other archaeological studies related to prehistoric long-distance connectivity and socio-economic changes, independent of the applied methods or combinations of methods (e.g. mapping, surveying, excavations, isotropy, the cultural-historical definition of cultural groups based on analogies in material culture), have one thing in common, as all of the studies deal with connecting points of origin, distribution and final deposition of various archaeological remains in a chronological and spatial context. Distribution maps underline the issues of trade, diffusion, and culture and prevail as the most powerful weapon of prehistorians, as the collection of archaeological data from various spatial contexts (micro and macro-regions, archaeological trenches, house floors) is at the core of archaeological research. Spatial archaeology encompasses a variety of complementary methods such as **settlement pattern studies**, site system analyses, regional studies, **site catchment analyses**, distribution mapping, and others, which can all be applied to different scales and contexts (e.g. micro and macro-regional studies), often determined by the dominant archaeological trends. The onset of spatial archaeology is connected with the end of the 19th century and the Austro-German school of "anthropo-geographers" who applied the mapping of artifacts and their attributes to interpret the cultural complexes and their mutual relations. A further step in spatial archaeology was taken in the USA, where the focus of scholars shifted from geographical to the anthropological background of spatial distribution, resulting in the pioneering works on settlement patterns and their potential in archaeology by Gordon Wiley who combined aerial photography, architectural observations and regional maps of site distributions to reconstruct the sociopolitical organization in the Viru Valley.[63] Contemporary development of spatial archaeology primarily in the USA and Europe was strongly affected (and still is) by local schools of archaeology, resulting in different areas of interest and the development of different methods which resulted in the regional character of studies, with the visible lack in cross-cultural spatial comparisons.[64] The introduction of GIS (*Geographic Information System*) into spatial archaeology during the 80s and early 90s, and the rise of its utilization and availability during the 2000s,

[63] Wiley 1953; Wiley (ed.) 1956.
[64] Parsons 1972, 127-137, with cited literature; Hodder, Orton 1976, 1 and further; Clarke 1977, 1 and further.

positioned it as an indispensable tool for the manipulation of spatial archaeological data.[65] Further, the relatively recent development and implications of various remote-sensing technologies (e.g. LiDAR, satellite imagery, and ground-penetrating radars) have increased our potential for the collection of relevant archaeological data that can be combined with standard archaeological field surveys,[66] thus enabling the possibility of a finer sample for spatial studies in archaeology.[67]

Settlement pattern studies[68] imply the multidisciplinary research into the distribution of archaeological traces of past human activities on micro and macro-scale (e.g. pottery, architecture, settlements, mounds) within the landscape and its spatial relationships with the natural and social environment, intending to explain human behavior in the past within the context of its surrounding environment, through the appearance of significant patterns in those relations.[69] B. Trigger defines settlement archaeology as the study of social relationships using archaeological data, including synchronic and diachronic aspects of those relationships as functioning economical and political systems. He separates three main levels of analyses in spatial archeology: individual structure, settlement, and settlement distribution. Individual structure analyses provide answers to questions such as family structure, household activity zones, social stratification, and specialization within a community, while settlement and settlement distribution analyses are oriented towards the explanations of functional use of space, social differentiation within settlements, ecological and economical potentials of settlements and cross-cultural diversity.[70] Further, settlement pattern studies can provide preliminary insight into the diachronic population change and distribution of populations.[71]

John Kantner highlighted four general analytical techniques utilized by settlement archaeologists based on their common application: locational models, settlement pattern data (catchment analyses), network analyses (e.g. falloff models), and ethnographic analogies. However, he likewise highlights that all of these analytical techniques are based on **expectations** of human behavior and should rather be regarded as a **descriptive tool**, which provides solid starting points for further investigations. Locational models (e.g. ecotone models)[72] and site settlement pattern data are based on a cost-benefit perspective

[65] Maschner 1996; Novakovič 2003, 154-167; Verhagen 2017, 12-13, with cited literature. For applications of GIS in archaeology refer to Conolly, Lake 2006.
[66] Ammerman 1981; Howard 2007; Wiseman, El-Baz (eds.) 2007; Agapiou, Lysandrou 2015.
[67] For example, one of the constraints of the settlement pattern method is the visibility of sites, and the ability to survey those sites. Therefore, the most successful settlement pattern studies have been conducted in arid regions with scarce vegetation. Such constraints are being overcome by the application of remote-sensing methods. (Feinman 2015, 656).
[68] Detailed review of settlement pattern studies in Kowalewski 2008, with cited literature.
[69] Wheatley, Gillings 2002, 2-3; Kantner 2012.
[70] Trigger 1967, 151-152; Трипковић 2007, 10-14; Feinman 2015, 655-656, with cited literature.
[71] Feinman 2015, 656.
[72] Ecotones represent transitional zones between adjacent ecological systems that possess a set of characteristics defined by space and time scales and by the strength of the interactions between adjacent ecological systems (Gosz 1993, 369).

in which humans position settlements and organize their activities in order to conserve energy required to access a variety of necessary resources.[73]

Site catchment analyses, as part of settlement pattern studies, represent one of the most common analytical tools, introduced to archaeology in 1970 by Vita-Finzi and Higgs.[74] It emphasizes the availability, abundance, spacing, and seasonality of resources (plant, animal, mineral) as an important determinant of site locations, regarded within a clearly defined area (*catchments*).[75] Site catchment analyses rely on the assumption based on ethnographic studies, that the further the resource is from the settlement, the greater consumption of energy is required for its procurement, thus, with the greater distance the intensity of exploitation of a resource declines until it reaches the point of unprofitable exploitation (e.g. a 5 km radius for agriculturalist according to Vita-Finzi and Higgs).[76] A different stance, from a practical point of view, is proposed by A. Papayianis, that the most important factor in the size of the site catchment is the ability to reach the settlement (starting point) before nightfall.[77] Geoff Bailey highlights the importance of differentiating the *Site Catchment Analyses* from *Site Territorial Analyses* (likewise introduced by Higgs and Vita-Finzi). The main difference is that the *Site Catchment Analyses* are defined based on the areas in the surrounding landscape from which materials preserved in archaeological deposits of the site derive, while *Site Territorial Analyses* are defined as an area habitually used for daily subsistence from a given point (site).[78] Several authors have highlighted key problems with site catchment analyses, which likewise highly relate to this study, and still represent one of the greatest lacks of this method:[79]

1. **Simultaneity of sites** – if we are to compare site catchments of a number of sites, or relations between settlement patterns of seemingly concurrent sites in two different regions, we are facing the problem of exact chronological correspondence of those sites. Traditional chronological schemes established based on the stylistic and typological characteristics of material culture (often pottery), which still count for the majority of sites, provide only approximate chronological relations, especially when dealing with long periods of unchanged material culture. Such presumed simultaneity of sites can pose significant problems in interpretations within comparison studies such as central-place and network analyses. Therefore, without a precisely defined chronological frame, if possible based on a series of absolute dates, such analyses are preferable for overall cross-cultural and cross-regional studies operating within a wider chronological span.

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[73] Kantner 2012.
[74] Vita-Finzi, Higgs 1970. Also Vita-Finzi 1969, as the first indirect site catchment study related to archaeology.
[75] Roper, 1979, 120.
[76] Roper 1979, 120-121.
[77] Papayiannis 2017, 343, footnote 22.
[78] Bailey 2005, 172.
[79] *Cf.* Roper 1979, 125; Ammerman 1981, 80-81; Bailey 2005, 172-175, with cited literature.

2. State of research – a problem usually connected with cross-regional comparisons of site catchment and settlement pattern analyses. The under-researched nature of one of the regions taken into comparison could shift the final interpretations regarding the number and nature of sites. For example, one could argue the depopulation of a region or a specific selection of settlement environment, based on the lack of sites, which is possibly a direct consequence of a lower degree of research.

3. Soil distribution – site catchment analyses often rely on the present distribution and characteristics of soil within catchment areas to define the economic preferences of a settlement or a population.[80] The problem with soils is the nature of their formation, which is not uniform in either time or conditions.[81] Although some areas of soil cover certainly remained unchanged for a long period, it is not often the case. Some soils are formed over a millennium, while certain soils can be formed and transformed within centuries. Further, the formation of soils is heavily influenced by climate and vegetation, and additionally by anthropogenic influence, and therefore without extensive data on paleoclimate and vegetation, it is ungrateful to predict the soil formation processes in the past.

4. Catchment size and shape – observed as a hypothesized economic range of a settlement,[82] site catchment usually represents an arbitrary category, defined by authors based on time-energy expenditure, as applied by Vitta-Finzi and Higgs, who highlight that the distance from the site should be measured in terms of time taken.[83] One of the major problems is that the radius of the site catchment is usually the same for all of the sites in the study, and therefore independent of the settlement or population size at the site.[84] Similarly, the shape of the catchment area is usually measured radially from the central point at the site (if known), which takes no notice of the influence of the landscape and passability on the approximation of time taken to reach certain resources. Such problems are being partially solved by the application of certain spatial GIS models.

For the possible reconstruction of economic interactions between a number of sites, falloff models or trend surface analyses are applied (network analyses). Such analyses rely on the distribution of resources and artifacts to identify potential sources, and economic boundaries and to reconstruct mechanisms and routes of trade/exchange. Similarly, network analyses provide insights into systems of transportation by quantifying linkages between settlements in a defined region, creating a settlement system that might indicate the centrality and possible importance (social, economic, political) of certain sites. Further, the centrality of certain sites, based on the central-place models,[85] can be examined through the spatial organization of related sites and the evaluation of their hierarchical

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[80] Roper 1979, 126-127.
[81] Refer to the subchapter on soils in the Central Balkans (4.5.).
[82] Kantner 2012.
[83] Vita-Finzi, Higgs 1970, 7.
[84] Ammerman 1981, 81.
[85] Nakoinz 2010, with complete cited literature.

networks through rank-size analyses, or tools such as Thiessen polygons/Voronoi diagrams, XTENT, or Bubble models which identify potential territorial boundaries, site catchments and spatial relations between autonomous settlements or groups of settlements.[86] Finally, **ethnographic analogies** are often used to develop models based on the interpretation of acquired settlement data.[87]

Ethnographic analogies have been a fundamental part of archaeological research since the 19th century and were primarily based on the so-called *formal analogies,* which imply that if two objects have several common attributes; it is most likely that they possess other common attributes.[88] Numerous critiques and debates regarding the nature and function of such analogies were published, and one of the proposed ways to overcome all of the flaws of formal analogies was the so-called *middle-range theory*, borrowed from sociology and postulated in archaeology by Luis Binford.[89] Simplified, *the middle-range theory* can be observed as a model that documents the relations between the dynamic past and the static present we can observe in the archaeological record, as the record is self is the result of different dynamic processes in past. It implies the recognition of certain patterns in the static archaeological remains and their causal relations to the dynamic past. The gap between the dynamic past and the static archaeological record observed in present is where ethnography provides valuable insight. Due to the nature of its research which is based on the observation of those dynamics in living societies and the possibility of their isolation, it is possible to determine their potential archaeological records. Therefore, the idea is that certain classes of archeological finds are transferred into the archaeological record in specific manners and conditions, which can then be correlated with other classes of material in the archaeological record. The key is to determine that specific activities represent a sufficient and necessary condition for the formation of the characteristic archaeological record.[90]

Although never explicitly addressing it, studies of the post-Neolithic transhumant pastoralism, as one of the presumably defining characteristics of the Eneolithic period within the *Secondary Products Revolution* in the Central Balkans were based on ethnographic analogies and the *middle-range* theory.[91] The comprehensive study by Arnold and Greenfield hypothesizes the existence and mechanism of prehistoric transhumant pastoralism (dynamic past) in the Central Balkans through the analyses of faunal remains and settlement locations (a static archaeological record). The study, along with numerous

86 Alessandri 2015; Borders modeled in such a manner can be dependent on numerous factors such as specific finds, burial mounds, topography, watersheds, or viewsheds, thus referred to as weighted Thiessen polygons (Nakoinz 2010, 255).

87 Kantner 2012. As seen, the site catchment analyses are likewise based on ethnographic observations.

88 Kuzmanović 2009, 135-138, with cited literature.

89 Binford 1977.

90 Raab, Goodyear 1984; Porčić 2006, with cited literature; Kuzmanović 2009, with cited literature.

91 Porčić 2007, with cited literature.

other studies,[92] is heavily based on direct ethnographical observations of pre-Industrial societies that practice transhumant pastoralism in various environments and regions.[93] Similarly, M. Garašanin reaches for ethnographic analogies when discussing the transhumant pastoralism in Early Bronze Age societies of the Western Balkans based on the static archaeological record (lack of permanent settlements, mound burials, the occurrence of specific types of pottery in the non-local environment), and even provides a possible reconstruction of seasonal movements and patriarchal social structure of Bronze Age pastorals (dynamic past) based on ethnographic observations.[94] Advances in isotropy (strontium, oxygen, carbon) and applications of GIS-driven spatial analyses have provided another valuable method for the research into the possible land use, dietary habits, and seasonal movements of livestock, although again underlined by ethnographic studies.[95]

The research of **transhumant pastoralism** in prehistoric societies of the Central Balkans has been observed within the aforementioned idea of the *Secondary Products Revolution*, as H. Greenfield primarily connected it with the post-Neolithic period, the utilization of secondary products, and settling in agriculturally marginal highlands.[96] Transhumant pastoralism represents one of the many variants of semi-nomadic pastoralism, which implies a periodic shift of pastures during the greater part of the year. In societies that have adopted such a practice, pastoralism is the dominant activity, although agriculture is known as a secondary or supplementary activity, which differs from proper nomadic pastoralism where agriculture is completely unknown.[97] What separates transhumant pastoralism from other variants of semi-nomadic pastoralism, is the fact that the seasonal movement of herds is based on vertical migrations in order to exploit attitudinally different and complementary pastures. It is a part of a more broadly based and complex economic system that incorporates both agriculture and pastoralism, and it can be practiced solely by specialized groups within agricultural communities (e.g. specialized shepherds, women, and men).[98] If the society in which transhumant pastoralism is practiced is predominantly agricultural, it then falls under the category of so-called semi-sedentary pastoralism.[99] The origin of transhumant pastoralism and pastoral nomadism, in general, remains a highly debated subject, as the ideas of its emergence shifted from climate change, conflicts between different groups (political instability), secondary products revolution, population pressure, and the pressure of ever-rising herds which resulted in the constant need for new and seasonally available pastures. A. Khazanov highlights its emergence during the Neolithic under a set of regionally and chronologically

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[92] e.g. the volume edited by L. Bartosiewicz and H. J. Greenfield (Bartosiewicz, Greenfield (eds.) 1999) includes studies in archaeology, history, and ethnology (ethnoarchaeology). Bankoff, Palavestra 1986; Papayiannis 2017.

[93] Arnold, Greenfield 2006, 7-18.

[94] *Cf.* Garašanin 1994; Porčić 2008.

[95] e.g. Gerling *et al.* 2012; Mashkour 2013; Valenzuela-Lamas *et al.* 2016; Makarewicz *et al.* 2017; Sklavou *et al.* 2017.

[96] Greenfield 1986a, 256-257.

[97] Khazanov 1983, 19-20.

[98] Arnold, Greenfield 2006, 8-10.

[99] Khazanov 1983, 21-22.

different circumstances.[100] Transhumant pastoralism is a familiar practice across the world, and in Southeastern Europe as well, where it has been accustomed up to the mid-20th century, from the Aegean Islands to the Carpathian Basin and from the Adriatic Coast to the Black Sea. In this vast area, the practice of transhumant pastoralism had developed under different circumstances (geomorphological, climate, social, etc.), and resulted in numerous variants, each possessing its specifics, migratory systems, sets of rules, customs, and social contexts.[101] Considering the researched territory, which was unfortunately almost completely omitted from the subject-related comprehensive works of Arnold and Greenfield, the substrate for the existing archaeological research into the practice of transhumant pastoralism in prehistoric societies,[102] is provided by studies of D. Antonijević. Again, those studies are based on ethnographic observation of several transhumant-related ethnic/social groups in the Central Balkans.[103]

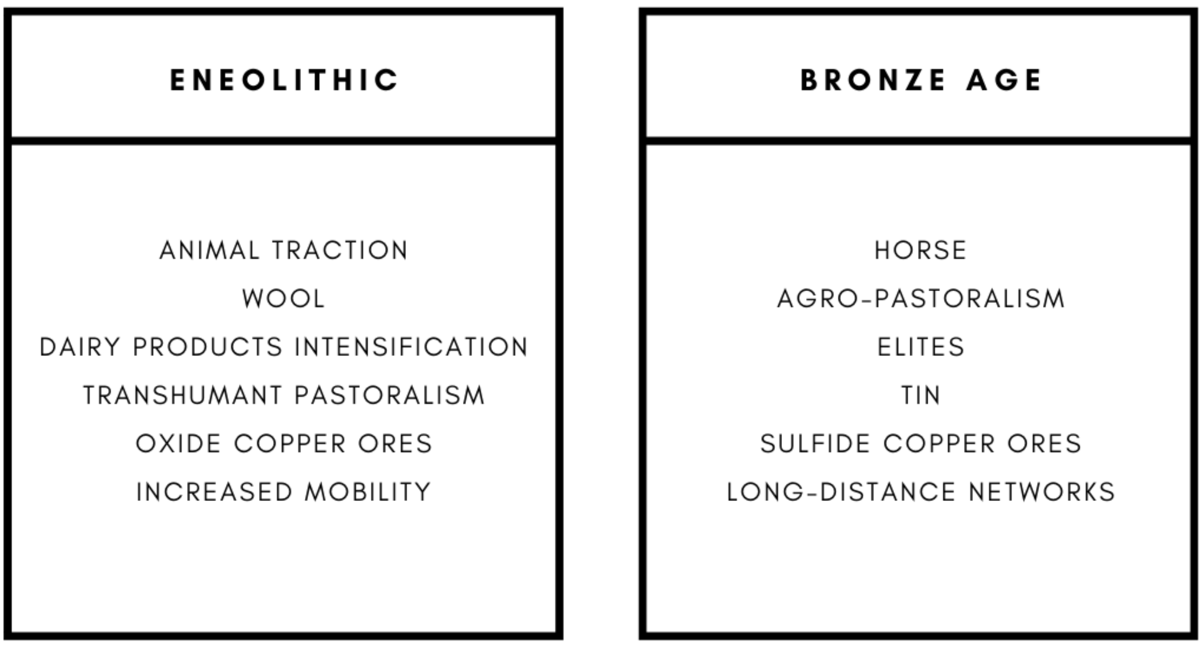

Figure 3. Traditional markers of the Eneolithic and the Bronze Age in the Central Balkans based on the existing literature.

[100] Khazanov 1983, 85 and further.

[101] *Cf*. Чубриловић 1976 (ed.); Лутовац 1977; Halstead 1987; Bartosiewicz, Greenfield (eds.) 1999; Juler 2014; Carrer, Migliavacca 2019.

[102] Kapuran 2014, 47-48.

[103] Антонијевић 1982.

3. Goals and methodology

3.1. Subject of the Study

The main subject of the study are archaeological remains of settling of the Late Eneolithic and Early Bronze Age communities within the context of their natural environment, available resources, mutual relationships, and economic potentials and tendencies in the territory of the Central Balkans. Previous archaeological research within the territory presented in this study has recorded approximately 126 Late Eneolithic and 48 Early Bronze Age sites (**Figs. 4 and 5**). The nature of available data varies, as certain sites were and/or are currently being systematically excavated, while others were excavated on a small scale or solely surveyed.[104]

Based on the current state of research, it has been suggested that a shift in the selection of settling locations occurs during the transition from the Eneolithic to Bronze Age. Late Eneolithic sites are often positioned on higher altitudes and hardly accessible locations (the so-called hilltop settlements), with the relatively frequent occurrence of cave settling. On contrary, Early Bronze Age sites tend to be positioned in lowland plains, on terraces of major rivers, with hilltop and cave sites representing rather an exception than a rule. Such a selection of settling locations has been interpreted through changes in economic affinities between the Late Eneolithic and the Early Bronze Age populations.[105]

Within a generally accepted model of the transition from the Copper to Bronze Age in Southeastern Europe, the settlements located on higher altitudes, especially during the Late Eneolithic, have been interpreted as pastoral settlements related to the practice of transhumant and semi-nomadic pastoralism.[106] On the other hand, lowland settlements located on river terraces have been observed as a consequence of a (re)increased degree of the economic importance of agriculture at the onset of the Bronze Age. Such a model is further accompanied by the idea of the so-called *Secondary Products Revolution*,[107] intensified degree of trade and exchange, changes in burial practice, and the formation of the first political groups/elites. It is particularly important to highlight that such a model of socio-economic changes between the Copper and Bronze Age currently prevails dominantly in the territory of Southeastern Europe. Within the Central European framework, the model went through substantial critiques and modifications based on a number of multidisciplinary settlement patterns, isotope, and provenance studies which

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[104] Гарашанин, Гарашанин 1951; Гарашаниин, Ивановић 1958; Garašanin et al. 1971; Гарашанин 1973; Simoska, Sanev 1976, Tasić 1979a; Tasić 1982; Tasić 1995; Garašanin 1983a; Garašanin 1983b; Гарашанин, Ђурић 1983;Богдановић 1985; Stojić 1996; Стојић 1998; Срејовић, Лазић 1997; Лазић 2004; Стојић, Чађеновић 2006; Стојић, Јоцић 2006; Стојић, Јацановић 2008; Стојић, Илијић 2010; Булатовић 2007; Булатовић, Јовић 2010; Булатовић et al. 2013; Булатовић et al. 2017; Капуран, Булатовић 2012a; Kapuran et al. 2014a; Horejs et al. 2018; Милојевић, Кузмановић, Цветковић 2019.

[105] Roman 1976; Tasić 1978; Kapuran 2014; Булатовић, Станковски 2012; Капуран, Булатовић 2012a; Kapuran *et al*. 2018.

[106] Roman 1976, Tasić 1978; Tasić 1995; Greenfield 1999; Arnold, Greenfield 2006; Kapuran 2014.

[107] Sherrat 1981; Sherratt 1983; Greenfield 1984; Greenfield 1989.

negate the assumed lesser mobility of Bronze Age populations or significant changes in settlement topography and economy between the Copper and Bronze Age.[108]

Previous studies of the Late Eneolithic and Early Bronze Age economy in the territory of the Central Balkans were primarily based on observations of site topography and stratigraphy and its comparisons with the existing ethnographic data for certain regions.[109] In such a manner, changes in the settlement topography represented an indicator of economic changes within societies. Certain types of Late Eneolithic settlements, such as hilltop, high altitude, or cave settlements were considered seasonal residences of a mobile population engaged in the practice of transhumant pastoralism, and the settlements on terraces of major rivers indicated the practice of intensive agriculture. Those studies were often based solely on the topography of sites, without considering other relevant parameters such as geological (e.g. clay pits and mineralization) and pedological factors (saltmarshes, types, and prevalence of soil). Unfortunately, a significant lack of archeozoological and archaeobotanical analyses, which are of utmost importance for such studies, is still typical for the Central Balkans.

[108] More detailed in the chapter on research frameworks (**Chapter 2**).
[109] E.g. Bankoff, Palavestra 1986; Garašanin 1994; Булатовић 2009a; Капуран, Булатовић 2012a; Kapuran 2014; Kapuran *et al*. 2018.

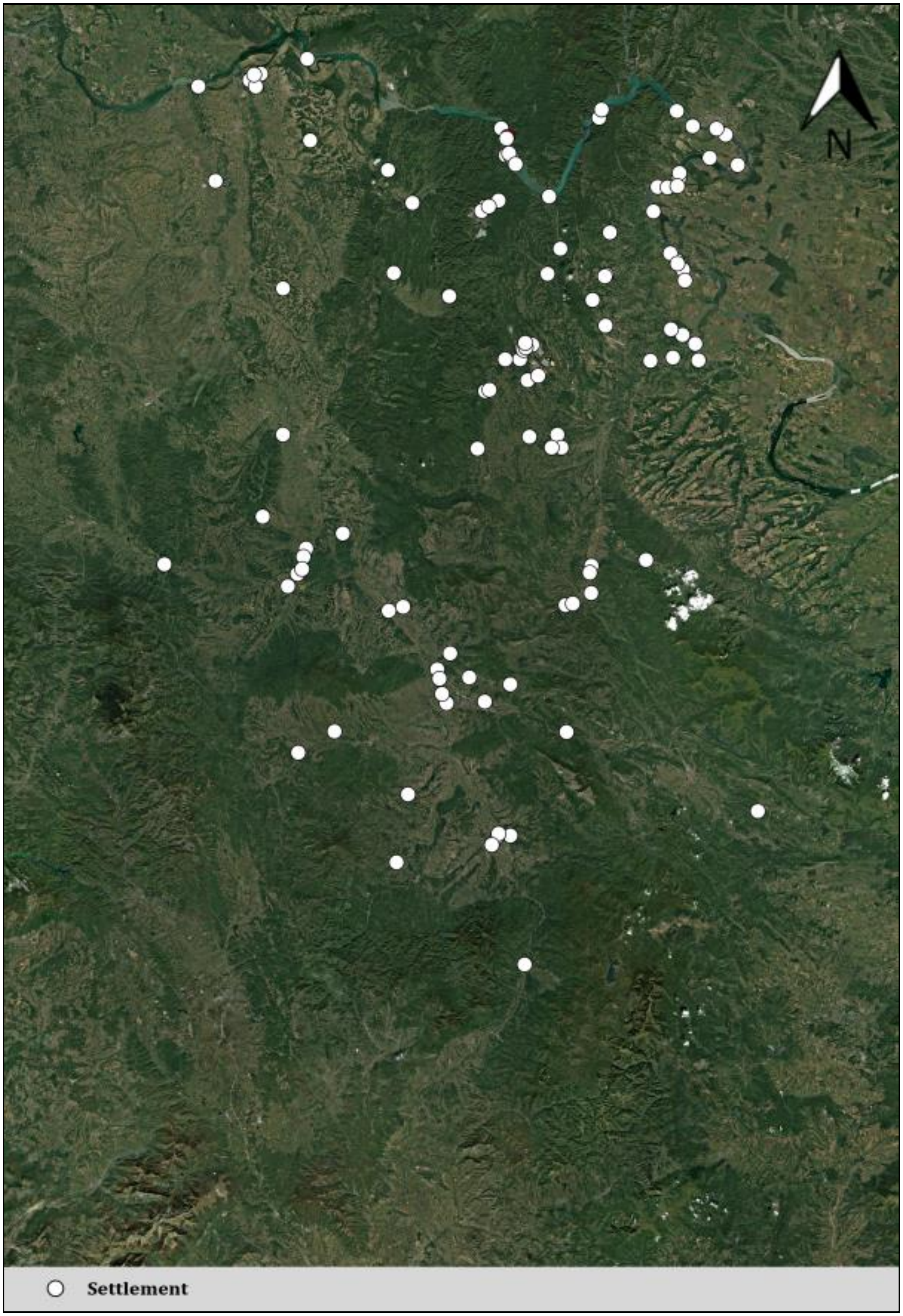

Figure 4. Late Eneolithic sites within the researched territory.

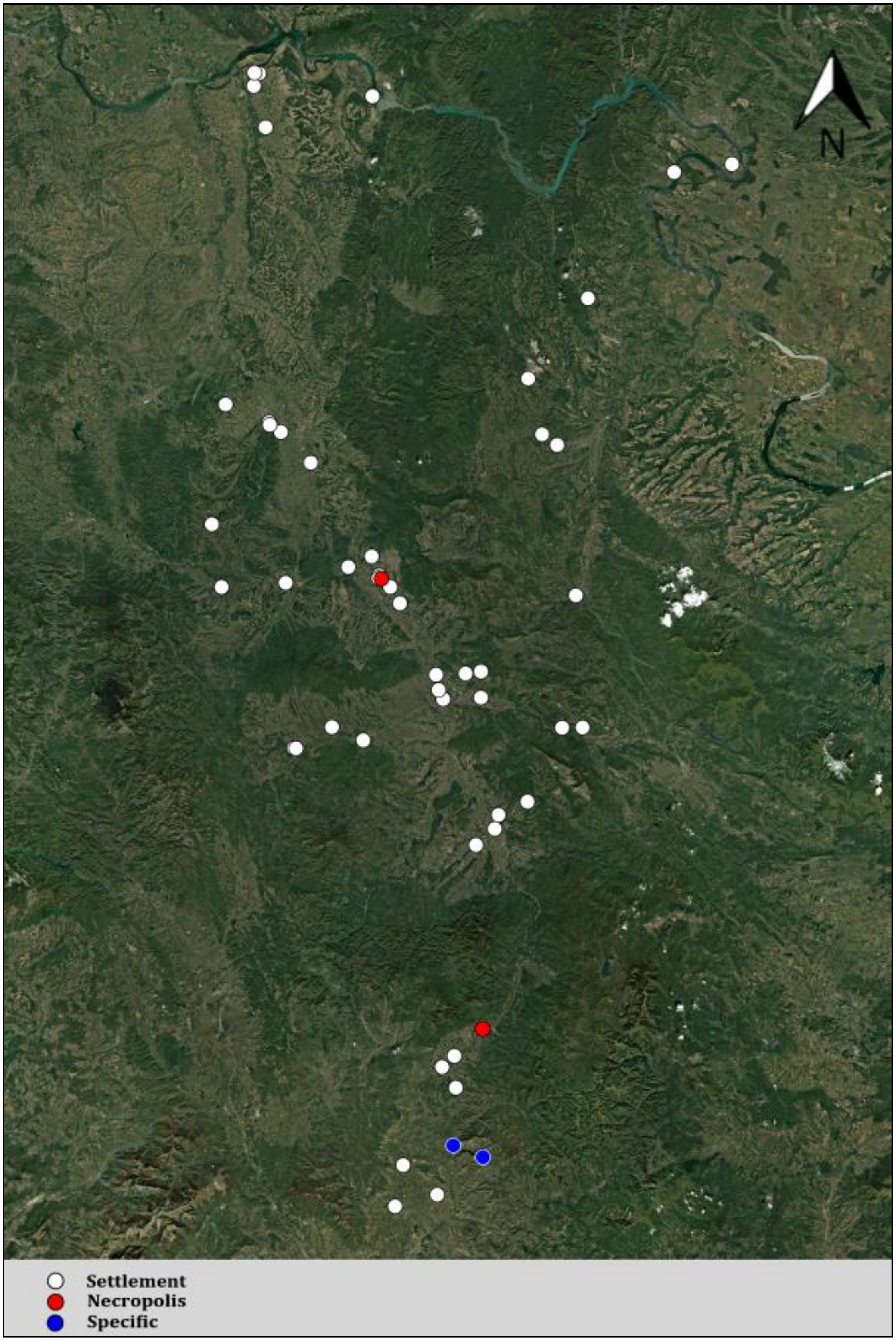

Figure 5. Early Bronze Age sites within the researched territory.

3.2. Research Goals

The primary goal of the research is to examine the characteristic settlement patterns that marked the Late Eneolithic and the Early Bronze Age in the Central Balkans, based on the analysis of settlement remains in the context of their natural environment. Further, to examine the topographic, economic, and cultural affinities of communities that inhabited the region through the comparative analyses of settlement patterns within the established (and complemented) cultural-historical framework. Such an analysis might provide data on the dominant procurement strategies, exploitation of mineral resources, and preferences regarding the topography of settling in each of the researched periods, as well as indicators of eventual socio-cultural changes that marked the researched territory (migrations, increased sedentarisation, social stratification, burial customs, etc.).

To determine the potential economic and socio-cultural changes within the transition between the Late Eneolithic and the Early Bronze Age through the analyses of settlement patterns, and based on the existing models, a total of three hypotheses are formed, which will be tested based on the research question related to each of the hypotheses.

1. Settlement types, locations, disposition, and mutual relations differ during the Late Eneolithic and the Early Bronze Age.

The hypothesis rests on the research of topography and settlement patterns which indicate the mid-3rd millennium BC is marked by a shift in the selection of settlement locations, types, quantities, and their mutual relations. Testing of the first hypothesis implies clearly defined research questions to determine the characteristic types of settlements in the researched periods, and their mutual spatial and visual relations. Such an analysis might indicate eventual regularities in the mutual relations of concurrent settlements, the existence of central and satellite settlements, or the intensified settling or depopulation of certain regions/microregions in one of the presented periods. Therefore, it could be possible to determine whether the aforementioned changes in the settlement topography during the 3rd millennium BC can be traced to the territory of the Central Balkans. The following research questions are formed for the testing of the first hypothesis:

- What are the quantitative representations and which types of settlements are characteristic of the Late Eneolithic and the Early Bronze Age in each of the researched regions?
- What are the mutual relations of settlements in each of the researched periods?

2. Changes in settlement locations and types are conditioned by different economic affinities of populations from the Late Eneolithic and the Early Bronze Age.

Changes in settlement patterns and topography that occurred during the 4th and 3rd millennium BC in the Central Balkans have been interpreted as the consequence of changes in economic affinities of the Late Eneolithic and the Early Bronze Age populations.[110] In the territory of Transylvania, which is characterized by a high degree of research, and similar

[110] *Cf*. Tasić 1978; Bankoff, Greenfield 1984; Kapuran 2014; Капуран, Булатовић 2012; Kapuran *et al*. 2018.

cultural-historical development, and will therefore be used as a comparative frame for this study, the period from the first half of the 4th millennium BC is characterized by settlements oriented towards high altitudes and types of soil suitable for stockbreeding, while during the mid-3rd millennium BC, or the transition from the Late Eneolithic to the Early Bronze Age in the Central Balkans, settlements are erected in the vicinity of major rivers, ore deposits and soil types suitable for agriculture.[111] The research questions related to the second hypothesis aim to determine the economic potentials and affinities of settlements in all of the researched periods, in order to examine if the eventual changes in settlement topography are correlated with the shift in economic affinities:

- In which catchment zones are settlements from all of the researched periods located?
- What is the spatial relation of settlements with mineral resources?
- How do material remains from the settlements reflect the economic practices of its inhabitants?
- What is the spatial relationship between settlements and natural communications in all of the researched periods?

3. The characteristic settlement patterns are manifested on the level of cultural areas (groups) within the same period.

Based on the characteristic forms of material culture, primarily stylistic and typological characteristics of the ceramic inventory, a total of five archaeological groups have been defined within the researched periods. The Late Eneolithic and the transition to the Bronze Age are marked by Coţofeni-Kostolac and Bubanj-Hum II groups, followed by the Early Bronze Age Bubanj-Hum III and Armenochori groups, and the sites attributed to the Pančevo-Vatrogasni Dom Horizon.[112] Although some of those groups have been defined more than half a century ago, their economy and topography have been insufficiently examined, while the lack of definition and comparisons of characteristic settlement patterns between concurrent groups is represented. Therefore, it is necessary to determine if there is a common feature of the settlement patterns for each of the groups, which could differ from the concurrent groups in the surroundings, meaning the cultural demarcation of certain elements correlated to survival strategies:

- What are the settlement patterns of the Coţofeni-Kostolac and Bubanj-Hum II groups?
- What are the settlement patterns of Bubanj-Hum III and Armenochori groups?

[111] Quinn, Ciugudean 2018.
[112] Heurtley 1936; Гарашанин 1973; Roman 1976; Tasić 1979a; Tasić 1979; Roman 1980; Garašanin 1983a; Garašanin 1983b; Булатовић, Станковски 2012, Bulatović 2021; Љуштина 2022.

3.3. Methodology

The initial stage of the research implied the formation of a database containing archaeological and non-archaeological data essential for the research questions. The archaeological data included a detailed review of published materials on the researched sites, as well as unpublished material available to the author through the engagement on several projects.[113] Besides the collection of data, the formation of the database included the revalorization of the data and its incorporation into the current cultural-chronological frames. The other type of collected data, the non-archaeological data, is collected from actual topographic, geological, and pedological, maps of the researched area.

The quantitative representation of sites from all of the researched periods, as well as their topographic (typological) characteristics, implied the collection of data on the exact position of the site (longitude, latitude, and altitude), and their surface, horizontal and vertical stratigraphy when available. The collection of data was carried out based on the existing literature, from the aforementioned projects and field surveys, and additionally refined from the *Digital Elevation Model*.[114]

The mutual spatial relations between concurrent sites were observed in the context of topographic characteristics and visual communications by the means of a *Viewshed Analysis*.[115] Due to certain problems with the exact simultaneity of sites, all of the sites within a region attributed to the same archaeological group were treated as concurrent, as a clearly defined chronological separation of archaeological material was not possible through stylistic and typological analyses or existing absolute dates.

The determination of economic potentials and affinities of the population in all of the researched periods, and their relation to natural communications, was based on the location of settlement in the presumed pedological, geological and hydrological surroundings. Due to the ever-changing nature of soil cover, and the uncertainty of the existence of certain soil types in certain locations during the researched periods, as described in **Chapter 4.5.**, the simplified model published by C. Quinn and H. Ciugudean is applied in this study.[116] Such a model differs from the standard *Site Catchment Analysis*,[117] in a way that it does not define the radius of the site catchment and potentially procured resources within it (soil types, saltmarshes, springs), generally limited by several factors,[118] but rather examines the proximity of settlements towards catchment zones which are defined on the basis of land use and pedology (1-3), communications (4), and geology (5). The catchment zones are: **(1) agricultural, (2) pastoral, (3) mixed, (4) natural communications, and (5) mineral deposits**.

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[113] Systematic excavations of the site of Velika Humska Čuka near Niš. "NEOTECH" (Neolithic technological trajectories in the Balkans) project, in which multidisciplinary excavations are conducted at the site of Svinjarčka Čuka near Lebane.
[114] SRTM Worldwide Elevation Data (1-arc-second Resolution, SRTM Plus V3) in Global Mapper.
[115] The viewshed analyses will encompass the area of 10 km surrounding the site, with a 360° arc.
[116] Quinn, Ciugudean 2018.
[117] Refer to Chapter 2.
[118] Refer to Chapter 2.

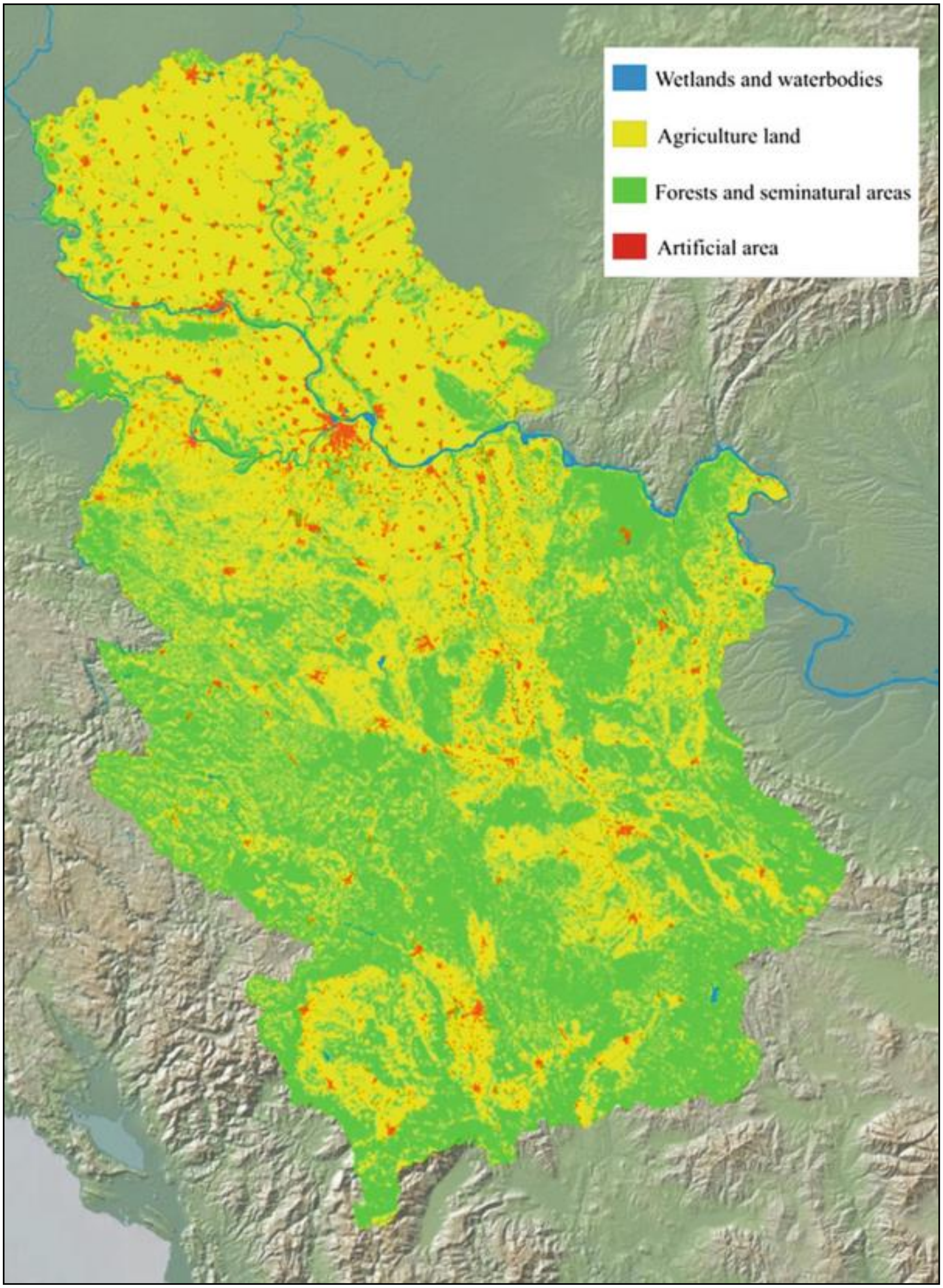

Figure 6. Land use in present-day Serbia (according to Pavlović *et al*. 2017).

The land use, meaning the suitability of an area for agriculture or pastoralism is based on the slope of the terrain, as the authors highlight that all slopes with six degrees or higher are considered unsuitable for intensive agriculture due to erosion, low water retention, and the processes of soil formation. Likewise, areas within presumed flooding systems of major rivers were omitted from agricultural land.[119] The model is supported by research on modern agriculture, which indicates that the slope of the terrain plays an important role in the productivity of the soil.[120] Soils formed on slopes are less prone to water retention and therefore yield fewer crops, especially in pre-industrial times. Such areas are susceptible to fluvial erosion due to increased precipitation and climate change, which results in the thinning of fertile soil horizons, especially in arid regions such as the Mediterranean. Save for the natural causes, anthropogenic soil erosion represents an important factor since the Neolithic or the presumed intensification of agriculture. In such conditions the tillage increases the degree of erosion, especially from the introduction of the animal-driven plow, thus making arable land unusable for cultivation, even in the conditions of crop rotation.[121] Another important factor involved in soil erosion is deforestation, connected with the Bronze Age period in Europe. However, erosion is not only connected with agricultural land as increased grazing and deforestation in hilly terrains can lead to erosive processes (e.g. Greece), which on the other hand likewise influence the fertility of lowland soils due to the increased formation of colluvial soils.[122] Not all soil types are prone to intensive erosion, as for example luvisols and fluvisols are easily renewable through flooding and regular accumulation of deposits, and deep fertile soils such as cambisols and vertisols, suitable for agriculture and which can form on flat terrain, are likewise less prone to erosion.[123] Ayele and colleagues have demonstrated the correlation between soil types, slope degree, and land use. As one of the factors of soil formation, the degree of slope dictates which soils can be formed, thus dictating the potential fertility and cultivation potentials of soil. As presented in the mentioned study, agricultural land use was dominantly limited to terrain with a slope between 1-10°.[124] Similarly, the slope model[125] used in this study corresponds to the contemporary land use map of the Republic of Serbia (**Fig. 6**). Therefore, the reasoning behind the model that Quinn and Ciugudean proposed is proper and provides an innovative approach for the analyses of larger settlement datasets spreading over significant periods. Likewise, it provides a solid base for cross-regional and cross-cultural comparisons.

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[119] Quinn, Ciugudean 2018, 937-938.

[120] As suggested, slopes over 7° significantly decrease the cultivation potential of soil even in modern conditions (e.g. Van Orshoven *et al*. 2012; Jarasiunas 2016).

[121] The examples of regulations of erosion processes are terraces which are still common for parts of Asia and South America.

[122] Dotterweich 2013, with the complete overview of the literature on the subject.

[123] Vanwalleghem *et al*. 2017, Table 2.

[124] Ayele *et al*. 2019.

[125] SRTM Worldwide Elevation Data (1-arc-second Resolution, SRTM Plus V3) in Global Mapper. Atlas Shader customised to the desired slope data.

1. **Agricultural catchment zone** – this zone encompasses areas that are set on a slope below six degrees. Due to the geomorphology of the researched area, this zone corresponds to lowland river terraces, rich in fertile soil. Further, certain areas which are positioned on an elevation below six degrees, yet within a different setting (hilly or mountainous) are considered either pastoral or mixed.

2. Pastoral catchment zone – this zone implies areas set on a slope higher than six degrees, usually located within hilly and mountainous relief. Such areas are usually positioned in the hinterland of the main river valleys, on a karst relief, and with soil types less suitable for agriculture.

3. Mixed catchment zone – this zone includes locations that are set on slopes both lower and higher than six degrees, and in the proximate vicinity of another catchment zone.

4. Presumed communications – zones that lie in the vicinity of the presumed natural communications described in **Chapter 4**.

5. Mineral Deposits – locations that are in the immediate vicinity of staple mineral resources of the period (copper, tin), according to the geological map of Serbia. However, other resources such as clay pits and saltmarshes will not be considered as stample resources. Namely, without absolute dating and petrological analyses, it is undeteminable which of those clay pits were utilised by prehistoric populations.[126] Further, bearing in mind the ammount of pottery recorded at archaeological excavations, especially from the Neolithic onwards, it seems highly impropable that prehistoric sites were not in the proximity of clay pits, since such scenario would imply an almost unimaginable degree of trade/exchange for such common objects. It was demonstrated by Earle and colleagues that Bronze Age pottery within the Benta Valley in Hungary was traded/exchanged to a certain extent, although there was no specialisation in its production.[127]

Further, the analyses of the economic potentials and affinities of prehistoric populations in the Central Balkans will be supplemented with the existing specialist studies from the researched and the neighboring regions. Those will include an overview of faunal and botanical assemblages and tools made of bone and stone which could indicate certain activities related to the economy of those populations.

Finally, all of the collected data will be compared on the level of cultural manifestations within each of the periods and incorporated into the final model of potential changes in settlement patterns between the Late Eneolithic and the Early Bronze Age in the Central Balkans. The final data will be diachronically observed and confronted with the existing narratives.

[126] For example, recent collection of clay samples for project **THE FLOW - Interactions-Transmission-Transformation: Long-distance connections in Copper and Bronze Age of the Central Balkans**, have indicated that several clay pits are located in the vicinity of sites of Bubanj, Velika Humska Čuka and Svinjarička Čuka.
[127] Earle *et al*. 2011.

4. Central Balkans

The term Central Balkans was coined and defined by J. Cvijić in 1904, who considered it as the area from the Taor George in the south to the present-day Niš in the north and from the Sofia Basin in the east to Kosovska Mitrovica in the west.[128] However, the term itself became quite popular within the ex-Yugoslav archaeological literature in the past century, and it is even nowadays preferred in larger systematic works and doctoral theses. In those works, the authors have defined the territory of the Central Balkans according to their research preferences, the state of research, and in general within the archaeological context of the Central Balkans, which as it seems surpasses its original geographical borders.[129]

4.1. Regional Division

Although this work encompasses most territories that are formally defined as the Central Balkans, it also surpasses them. Again, this is conditioned by the state of archaeological research and the development and presumed mutual relations between prehistoric communities during the Eneolithic and the Bronze Age.

The northern border of the researched territory is the Danube River, from the confluence of the Great Morava River in the west, until it leaves the territory of Serbia in the east. From that point, the eastern and southern borders are artificial and represented by state borders between Serbia and North Macedonia with Romania, Bulgaria, and Greece. The western border is represented by the Vardar, South, and Great Morava rivers, up to the confluence of the Great Morava and Danube rivers. However, the researched territory is not as strict as highlighted, as the analyses required the incorporation of certain regions (e.g. West Morava Valley and Leskovac Basin) and data which surpass the mentioned borders.

Due to the specific and geomorphological features of the researched territory, the presumed natural communications, the degree of archaeological research, the development of prehistoric communities, the regional publications, and the more effective manipulation of data in the dissertation, the researched territory will be divided into eight regions presented clockwise (**Fig. 7**).

4.1.1. Region 1

The region encompasses the Great Morava Valley and its immediate hinterland, from the confluence of the South and West Morava rivers in the south (regions 6 and 8), to the confluence with the Danube river to the north. The Great Morava Valley is composite and consists of sequences of basins and gorges. From the south to the north, it is composed of Upper Great Morava Valley, Bagrdan Gorge, and Lower Great Morava Valley which significantly widens towards the Danube confluence. The river bed is 80-200 m wide and it represents one of the most meandering rivers in Europe, although significant numbers of meanders were cut and the river was straightened during the second half of the 20th century. It is characterized by great inter-annual variability of water levels, depending on

[128] Цвијић 1904.
[129] *Cf*. Palavestra 1993; Tasić 1995; Vitezović 2010 Милановић 2017; Bulatović 2018.

the season and the precipitation, and therefore often floods during the spring. The climate of the Great Morava Valley is moderate continental, although due to its basin nature, it is influenced by the climate of the surrounding regions (regions 2, 3, and 4).[130]

4.1.2. Region 2

The region is bordered by the Great Morava Valley to the west, the Danube River to the north and east, Region 3 to the south, represented by a mountainous border comprised of Beljanica Mt., Homoljske Mts., and Gornjačke Mts. The region is characterized by a lowland valley relief filled with several sands (Ram, Zatonje, Golubac, Požarevac), which are incorporated within the lowland Stig and Braničevo regions. The climate of the region is moderate continental, although influenced by steppe continental from the north and subalpine from the Carpathian Region 3. The region is poor in hinterland watercourses with the main ones being the lower courses of the Mlava and Pek Rivers.[131]

4.1.3. Region 3

Region 3 or the Carpathian/Timok part of Serbia is bordered by the lowland Region 2 (Braničevo and Stig) to the north and artificially separated by state borders with Romania and Bulgaria to the east. Essentially, this part of Serbia represents the continuation of Carpathians into the territory of Serbia. In this way, portions of this region represent a direct geomorphological continuation of certain Carpathian regions in present-day Romania. The southern border towards Region 4 is presented by the mountainous line Ražanj-Rtanj-Tupižnica-Stara Planina and the western border is the Great Morava Valley (Region 1). The region is characterized by numerous micro-regions (e.g. Negotinska Krajina, Ključ) of which Đerdap (Iron Gates) is the most prominent one, and the karst relief which comprises approximately 1/3 of the territory and creates numerous gorges, canyons, sinkholes, caves, and cavelets. Due to its geomorphological characteristics, the climate of the region is complex and comprised of moderate continental, continental, continental-steppe, and subalpine climates in the mountains. Likewise, the geomorphology of the region is reflected in microclimatic areas (e.g. Đerdap, Negotin Basin). The most important watercourses in the region are the Danube, Mlava, Pek, and Timok rivers.[132] The historical data indicates that the region was covered in dense forests until the 20th century.[133]

4.1.4. Region 4

Region 4 represents a combination of several geomorphological entities, connected in this work to better reflect the development of the prehistoric communities in the area. In a sense, the region could be divided into the northern and southern parts, both regarded as transitional and/or integral parts of adjacent regions (regions 3, 5, and 6). The region is separated from Region 3 by the aforementioned mountainous line Ražanj-Rtanj-Tupižnica-Stara Planina, eastern and southern borders are artificial and represent state borders with

130 Marković 1980, 304-306; Гавриловић, Дукић 2002, 62-64.
131 Мишовић 2011, 187-188.
132 Marković 1980, 337-353; Kapuran 2014, 7-9.
133 Вујадиновић 1954, 14.

Bulgaria and Northern Macedonia, and the western border of the region is represented by the South Morava Valley (Region 6).

The geomorphology of the northern part of the region represents the so-called Balkan Serbia, which is the continuation of the Carpathian Serbia in Region 3. The most prominent feature of Region 4 is the composite valley of the Nišava River with Sićevac Gorge, as well as Niš, Sokobanja, and Svrljig Basins. Similar to Region 3, Region 4 is abundant in speleological objects, thanks to the developed karst relief. The main watercourses of the region are Nišava and Svrljiški Timok rivers, connecting them with the regions 3 and 6. The climate of the region is moderate-continental to continental and subalpine and alpine in the mountains to the east (Stara Mt.). The precipitation levels are amongst the lowest within the researched territory.[134]

The southern part of the region represents a buffer zone between the northern part of Region 6, and Region 5, and in an archaeological context, it is one of the least researched regions, at least in its northern parts. The prominent feature of the region is the Vlasina Plateau surrounded by numerous mountains which in fact represent the continuation of North Macedonian Rhodopes and deep gorge-like valleys formed between the mountain peaks. The major watercourses of this area are Vlasina and Pčinja rivers which connect it with Region 6, Region 7, and Region 5. The climate of this part of the region is dominantly subalpine and alpine.[135]

4.1.5. Region 5

Practically, the region represents the eastern part of present-day North Macedonia. Its border towards the north, regions 4 and 6, is the state border between Serbia and North Macedonia. The eastern and southern borders are the state borders with Bulgaria and Greece, and the western border is the Vardar Valley. The valley is characterized by composite geology, comprised of valleys and gorges, of which Skoplje Basin and Taor Gorge are the most prominent. The valley is partly dominated by karst relief rich in speleological features. The climate of the valley is subtropical (Aegean variant). From the valley towards the east, the region is characterized by a series of microregions (e.g. Ovče Polje) and a high mountainous region to the east which in fact represents the Macedonian Rhodopes. This part of the region continues almost directly to mountainous areas of regions 3 and 4. The climate is likewise subtropical (Aegean variant), save for the mountainous regions which are characterized by alpine and subalpine climates. The major watercourses of the region are Vardar, Bistrica, Strumica, and Pčinja rivers.[136]

4.1.6. Region 6

The region represents the South Morava Valley, from Stalać and the confluence with West Morava in the north to the Preševo Pass in the South. It is a composite valley of the South Morava River comprised of a series of basins (Aleksinac, Niš, Leskovac) and gorges (Stalać, Grdelica) and the direct continuation of the Great Morava Valley (Region 1). The

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[134] Marković 1980, 357-362.
[135] Marković 1980, 383-386.
[136] Marković 1980, 468-475, 485-489.

valley of South Morava is surrounded by mountainous regions to the east and the west, which separate it from the other regions (regions 3, 4, and 7). The climate of the region is subtropical (Aegean variant) in the south and moderate continental in the north.[137]

4.1.7. Region 7

Region 7 encompasses two geographically different, yet geomorphologically similar regions, Toplica and Jablanica. Their western border is represented by the border towards the Kosovo and Metohija, the northern border towards Region 8 is the Jastrebac Mountain and the eastern and southern borders are represented by the South Morava Valley. The region is characterized by numerous gorge-like valleys and basins such as Toplica Valley and Leskovac Basin which both open towards the South Morava Valley. The geomorphology of the region, cut by the westernmost reaches of Rhodopes and numerous valleys resulted in a number of micro-regions of which the most prominent one being the Pusta Reka Region which in fact connects the Toplica and Jablanica Valleys. The climate of the regions is likewise micro-regional with numerous areas of mixed moderate continental and alpine climates. The major watercourses are Toplica and Jablanica rivers.[138]

4.1.8. Region 8

The region encompasses the lower course of the West Morava River. It spreads from the confluence of the West and South Morava rivers near Stalać in the east to Trstenik in the west.[139] The southern border towards Region 7 is the Jastrebac Mountain and the northern border is Juhor Mountain which runs in a southwest-northeast direction toward the Great Morava Basin. The region encompasses the Kruševac Basin and the part of the composite valley of the West Morava River, and its immediate surroundings. Within this region, two of the most important watercourses are West Morava and its right tributary Rasina, which meet in the center of the Kruševac Basin. The climate of the region can be considered as moderated continental[140] and subalpine in the mountains.[141]

[137] Marković 1980, 369-374.
[138] Marković 1980, 468-475, 388-391; Мишовић 2011, 202-203.
[139] The westernmost site analysed in this work is Nemrak, which is located approximately 3 km northwest of Trstenik.
[140] The climate is more similar to the Pannonian variant of the moderate continental climate than to the moderate continental climate of the regions to the south and east (regions 6 and 7).
[141] Marković 1980, 264-268.

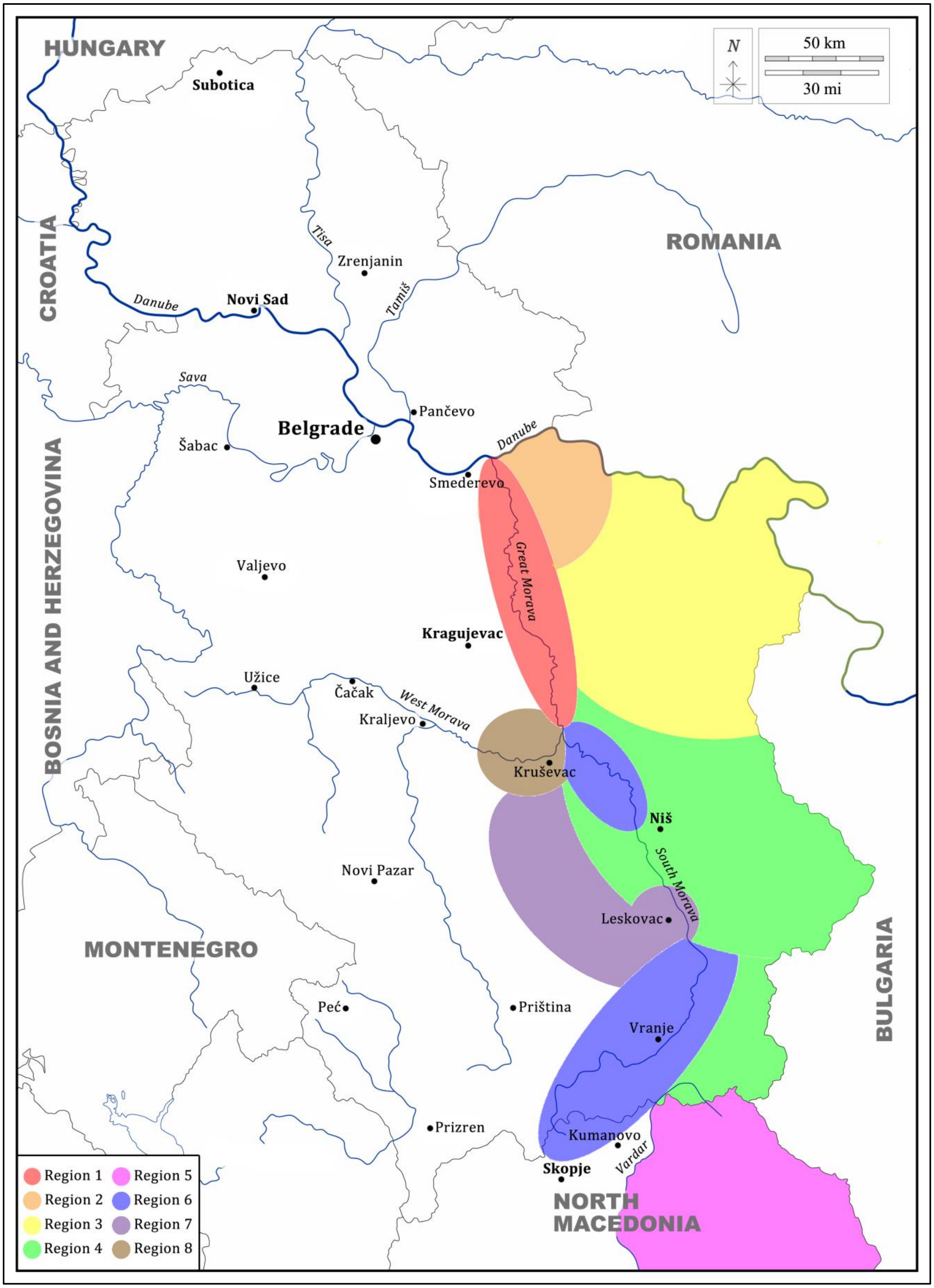

Figure 7. Regional division of the Central Balkans used in this study.

4.2. Natural Communication Routes

The reconstruction of the potential prehistoric communication and trade routes usually relies on three basic methods,[142] all quite inconclusive yet complementary. The first method is based on the geomorphology of the region in question, which can potentially indicate the possible natural routes which provided the most effective options in terms of connecting two points in space. The second method is based on the distribution maps of prehistoric sites and specific non-local finds, which presumably indicate lines in which the sites are distributed and therefore indicate the main communications in those regions.[143] The third method relies on the premise that prehistoric communications followed the same patterns as the Roman roads and pre-Industrial roads (or vice-versa in fact), which are on the other hand in direct correlation with the geomorphology of the region in question.[144]

Starting from the north to the south, the main route within our researched territory is the Morava-Vardar axis, which is considered as one of the most important natural communications throughout prehistory and historic periods and which connected the Aegean with Central Europe.[145] However, recent archaeological and historical research has pointed out a different possibility. Due to the nature of the Upper Great Morava Valley, and especially the portion near the confluence with the Danube (marshy and flood-prone terrain), and judging by the distribution of archaeological sites and finds, it seems as if the Mlava Valley (regions 2 and 3) had its part as the main communication of the north-south axis in the region, as a later part of the Roman *Via Militaris* road.[146] Similarly, historical data indicate that the Mlava Valley was crucial for any massive transportation and that the Morava Valley was not as suitable for large-scale movement. The road within the Mlava Valley led from the Danube river in the north (near the antique legionary fort and city of *Viminacium*, present-day Selo Kostolac), in the Stig Region (Region 2), around the Bagrdan Gorge, parallel to the Great Morava Valley, and the present-day city of Ćuprija (antique *Horreum Margi*) (Region 1).[147] Again, starting from the north and going towards the east, the Antique route followed the Danube's right bank to the legionary fort of *Viminacium* and further to the east and the Iron Gates Region (Region 3). Interestingly, F. Kanitz highlights that parts of that Roman road were discovered in the 19th century and that the road was distanced from the Danube's' bank due to the existence of impassable dunes formed by the constant influence of the eastern winds in the area.[148] The Antique roads in northeastern Serbia (Region 3) are quite under-researched, although judging by the distribution of prehistoric sites within this region A. Kapuran proposes several natural communications that followed the valleys of Poreč, Urovica, and Timok rivers. The importance of the presumed communications in this region lies in the fact that those could relatively easily connect the Danube River with the Great Morava, South Morava, and Nišava valleys, and in

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[142] The term “basic” refers to methods excluding state-of-the-art analyses recently conducted by various spatial analyses-based software.
[143] e.g. Tasić (ed.) 1980; Palavestra 1994; Палавестра, Крстић 2004, with complete literature on the critique of such an approach; Cwaliński 2014.
[144] e.g. Petrić 1992.
[145] Милојевић 1951, 44-46; Јовановић *et al*. 1969.
[146] Vasić Milošević 2000; Filipović, Mladenović 2019, 15-21.
[147] Мишић, Ђокић 2011, 111-112.
[148] Каниц 1985а, 189.

fact connect the adjacent regions to the east and northeast with the hinterland of the Balkans.[149] Another road that might have connected the Great Morava Valley with the Timok Region is the road through Grza Valley and across the Čestobrodica Pass.[150] Further to the south, in the South Morava Valley, the Niš Basin (Region 4), a separated morphotectonic entity within the Nišava Valley, surrounded by higher grounds and mountains,[151] represents the junction of roads in the Central Balkans, from the Antique Period to the present day.[152] The openness of the Niš Basin towards the west and the South Morava Valley connected the region with Roman roads coming from the north (*Viminacium-Naissus*) and the west (*Lissus-Naissus*) and going to the south (*Naissus-Scupi*).[153] From the Niš Basin, which was the hub for numerous roads, the road towards the northeast led through Niševac (*Timacum Maius*) and Knjaževac (*Timacum Minus*) and further to Bulgaria (*Naissus-Ratiaria*) (regions 3 and 4).[154] The other important road that passed through the Niš Basin is the road towards the east, the famous *Via Militaris*, which started in Belgrade (*Singidunum*), followed the Great Morava/Mlava Valley,[155] and from the Niš Basin turned towards the east, avoiding the Sićevac Gorge, to Bela Palanka (*Remesiana*) and further to the Sofia Plain (*Serdica*).[156] To the west, three main natural connections run along the east-west axis from the South Morava Valley. The most prominent one is the Roman *Lissus-Naissus* road that connected the South Morava Valley (Region 6), Toplica Valley (Region 7), and the Adriatic coast further to the southwest.[157] Parallel to this is the Jablanica Valley (Region 7), again connecting the South Morava Valley with the western parts of the Balkan Peninsula.[158] This natural communication is connected with the *Lissus-Naissus* road through the Pusta Reka Valley.[159] The other natural communication on the east-west axis is the West Morava Valley which connects its confluence with South Morava Valley near Stalać and the northwestern parts of Serbia (Region 8). Cutting it in the north-south axis is the road between present-day Jagodina and Trstenik, which is embedded between Juhor Mountain to the east and Gledićke Mountains to the west, thus connecting the West and Great Morava valleys (regions 8 and 1).[160] Going further to the south, down the South Morava Valley, following the Roman *Naissus-Scupi* road, one would reach the Vardar Valley through the Preševo Pass, one of the most important communication features that are represented by the lowest and the most accessible part of the Preševo-Kumanovo

[149] Kapuran 2014. 20, 42.
[150] Каниц 1985b, 392-397. Filipović, Milojević, *forthcoming*.
[151] Костић 1967, 295-296.
[152] Каниц 1985b 137.
[153] The researchers have still debate on the exact route of the Naissus-Scupi road. Although the Morava-Vardar direction is confirmed, the western route of the road is still debatable. It either led through the Kuršumlija Region or directly to *Upliana* and then further to the south (Петковић 2012, with cited literature).
[154] Петровић 1976; Јовановић 1998; Petrović, Filipović 2007; Petrović *et al*. 2014.
[155] Refer to the Region 1 in this chapter and the short discussion on the Mlava River as the main road within the lower course of the Great Morava Valley.
[156] Каниц 1985b, 197-200; Remains of this road have been recently excavated and published in Лазић 2017b; Лазић, Миљковић 2017. Also refer to Пејић 2006 for the Roman station on the aforementioned road.
[157] Каниц 1985b, 283-317.
[158] Јовановић 1978, 14-21.
[159] Каниц 1985b, 318-332; Јовановић 1975, 14-16.
[160] Каниц 1985a, 620-638. For a detailed study of this region and its Late Antique and Ealy Byzantine sites and communications refer to Рашковић 2002.

Basin (Region 5). J. Cvijić notes that the road running from Niš to Vranje, a portion of the *Naissus-Scupi* road, avoids the Grdelica George and runs through the Veternica Valley from Leskovac to Vranje.[161] All of the watercourses and routes of eastern Macedonia run towards the Vardar River, therefore strengthening its importance in the north-south communication of the Central Balkans. However, due to the composite nature of the Vardar Valley filled with narrow gorges, the pre-Industrial roads avoided the valley itself and followed the East-Macedonian Valley that runs parallel with the Vardar Valley (similar to the Morava-Mlava road disposition in regions 1 and 2).[162] Another geomorphological feature that connects eastern Macedonia with the northern regions is the Pčinja Valley.

4.3. Mineral Resources

The main mineral resources which are connected with the production of metals during the Eneolithic and Bronze Age are copper and tin, whose deposits have been registered both within the researched region and the neighboring regions.

Copper deposits are relatively abundant in Southeastern Europe and the Central Balkans, where it is distributed in three metallogenic zones: Carpathian-Balkan, Serbian-Macedonian, and Dinaric (**Fig. 8**). Within the Carpathian-Balkan zone, the richest copper deposits have been registered within the Bor and Majdanpek regions, meaning the Carpathian-Balkans in Eastern Serbia (Region 3), as well as minor gold deposits, often connected with placer deposits of the Pek and Tumanska rivers, as well as within the Timok Region.[163] Copper deposits in this area were exploited from the Late Neolithic (Rudna Glava), throughout the Antique and Medieval periods, with copper being distributed throughout Southeastern Europe.[164] Within the Serbian-Macedonian metallogenic zone, copper deposits are connected with Rudnik Mountain in Šumadija Region and Lece near Medveđa. Prehistoric exploitation of those copper deposits is connected with the Eneolithic period, and the published materials indicate that the Prljuša copper deposits at Mali Šturac (Rudnik) were utilised during the Early Bronze Age. Namely, the published beakers possess forms typical of the Bubanj-Hum III group.[165] In the Dinaric zone, copper has been recorded in Jarmovac, which was likewise exploited from the Late Neolithic,[166] and reported in the northwestern parts of Serbia, in Jadar, Azbukovica, and Rađevina regions and the vicinity of Valjevo (Rebelj location), whose prehistoric exploitation is possibly attested at the Srebrne Rupe location.[167] Copper deposits have also been reported in the southern parts of the researched territory, in North Macedonia (Region 5), within the Macedonian Rhodopes area and eastern part of the country

[161] Цвијић 1922, 12.
[162] Цвијић 1922, 12; Marković 1980, 472. Similar to the Morava-Mlava relations regarding natural communications.
[163] Вујадиновић 1953, 56; Мишић, Ђокић 2011, 95-97.
[164] *Cf.* Jovanović 1980; Jovanović 1982; Кондић 1990; Pernicka *et al.* 1993; Pernicka *et al.* 1997; Petković 2009, with cited literature; Filipović 2015; Antonović 2018; Siklósi, Szilágyi 2019.
[165] Antonović, Vukadinović 2012, with cited literature; Antonović, Dimić 2017, Fig. 9; Антоновић et al. 2020, 68; Also refer to journal *Arheologija u Srbiji*, where annual reports on the excavations at the site are published.
[166] Дерикоњић 2005.
[167] Jovanović 1971a; 17; Филиповић 20105b, 17-18; Булатовић *et al.* 2017, 236.

(Rhodopes the metallogenic zone of the Eastern Balkans), between Demir Kapija and Đevđelija (Ogražden Mountain), and Radovište and Zletovo regions.[168] Prehistoric copper deposits and traces or possibilities of prehistoric exploitation have also been recorded in the surrounding areas, such as Šuplja Stena near Belgrade,[169] Ai Bunar (Sredna Gora) in Bulgarian Rhodopes, and the Strandža Region in Southeastern Bulgaria, Mračaj and Maskara in Bosnia and Herzegovina, and the Carpathians in Romania.[170]

However, the question of the availability of copper ores in the Central Balkans during the transition from the Late Eneolithic to the Bronze Age has recently been raised. In general, a lack of copper and bronze objects has been recorded to correlate with the Late Eneolithic/Early Bronze Age (Coţofeni-Kostolac, Bubanj-Hum II, and Bubanj-Hum III groups) in the Central Balkans. Recent isotopic studies suggest that there was an almost millennium-long *Copper Hiatus* (c. 3500-2500 BC) caused by the depletion of surface oxide ores (malachite) due to the extensive exploitation during the preceding periods. The end of the hiatus coincides with the beginning of the Bronze Age when sulfide copper ores (chalcopyrite-bornite) are being utilized for the production of copper and bronze objects.[171]

Deposits of tin-ore cassiterite[172] have been reported in several locations within the researched territory, as well as in several surrounding regions. Going from the west towards the east placer cassiterite deposits have been recorded on Vranica, Motajica, and Prosara mountains (Bosnia and Herzegovina),[173] on Cer and Bukulja mountains (Serbia), and within the Bujanovac Granite Massif (Region 6). In the Region 5, certain placer deposits have been reported in connections with the Ogražden Mountain in the three-state area between North Macedonia, Bulgaria, and Greece.[174] The research within the past decade questioned the existing data on placer tin deposits and the existing concentrations of cassiterite, and together with the isotopic analyses of tin provided an insight into the prehistoric tin exploitation in the area.[175] Although several samples were taken from streams within the areas of proposed tin placer deposits, solely Cer and Bukulja mountains yielded sufficient values that would have been necessary for the development of a mineable placer deposit. Such origin of tin exploitation is also confirmed through the isotopic studies of bronze artifacts from the Balkans.[176]

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[168] Spasovski *et al*. 2011, 489.
[169] Primarily connected with the exploitation of cinnabar (Durman 1988).
[170] Antonović 2018, 191-192, 201-202, with cited literature;Dimitrov, Stoychev 2018, with cited literature; Băjenaru 2018, with cited literature.
[171] Powell *et al*. 2017, with cited literature.
[172] SnO_2 – oxide tin ore suitable for exploitation and relatively easy non-industrial processing.
[173] Durman 1997, 9, footnote 3; Gavranović 2012; Gavranović, Mehofer 2016.
[174] Durman 1997: 8-10.
[175] Huska *et al*. 2014; Mason *et al*. 2016; Powell *et al*. 2018; Mason *et al*. 2020;
[176] Powell *et al*. 2020.

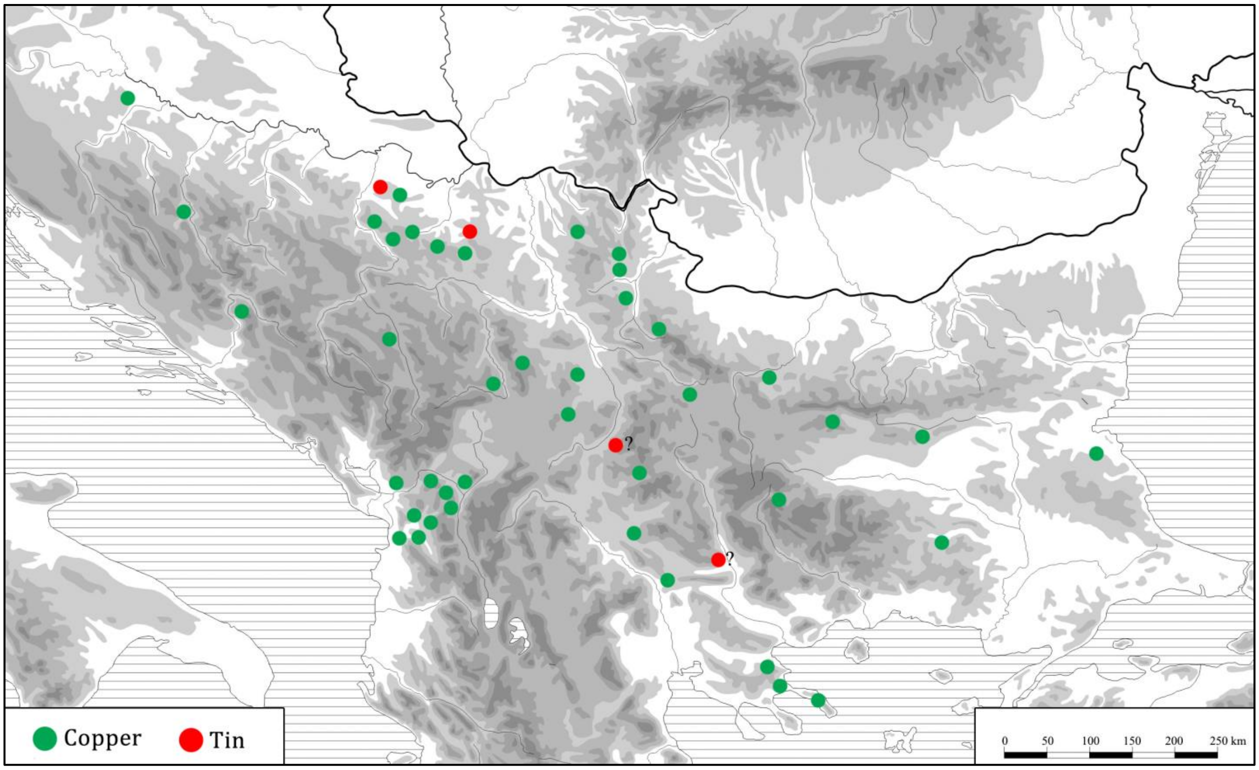

Figure 8. Copper and Tin deposits in the Balkans (modified after Филиповић 2015b Antonović 2018).

4.4. Paleoclimate and Climate

The periods that are the focus of this work fall within the youngest and current geological epoch, the Holocene interglacial (10000 BC – present-day). Up until relatively recently, the Holocene was considered a relatively stable period in terms of climate. The periods that are researched belong to the Atlantic and Subboreal climate phases of the Holocene, which are generally characterized by more humid and 2-3°C warmer climates than present (pre-Industrial).[177] However, recent and ongoing climate research, based on the palynological analyses and the analyses of lacustrine and cave sediments, indicates that the Holocene was interrupted by a series of climate changes spanning from the 10th to the 1st millennium BC, which considerably affected the climate and which are characterized by high-altitude cooling, low-altitude aridity, and reduced precipitation.[178] The cause of those changes is sought through the shift of cold air masses from the Siberian steppes towards the southeast and southwest. The southeastern route of Siberian cold air masses followed the northern fringe of the Himalayas towards the Northpontic Steppe, Ukraine, and further towards Southeastern Europe.[179] Due to the differences in climate conditions of the European continent and the Mediterranean Basin, the arid periods and changes in the level of precipitation did not uniformly affect those regions. A demarcation line has been recently suggested, corresponding to the 40° latitude, separating the region into two zones in which the rapid climate changes had different effects. The latitudes north of the 40°

[177] Burroughs 2005, 47-51.
[178] Mayewski *et al*. 2004, 249-250; Wanner *et al*. 2008; Weninger *et al*. 2009, 8; Bini *et al*. 2019.
[179] Weninger, Harper 2015.

meridian were characterized by wet winters and arid summers and the southern latitudes were characterized by wetter winters and summers. Likewise, it has been suggested that the eastern portions of the Mediterranean Basin were much more susceptible to prolonged arid periods.[180]

Two of those rapid climate changes during the Holocene are chronologically concurrent with the researched periods, the 5.2 and 4.2 ka BP climatic events. The 5.2 ka BP climatic event, known as the Piora Oscillation, is connected with certain cosmic impacts that resulted in the abrupt melting of polar caps, flooding, warming, and volcanic activities.[181] The effects of the 5.2 ka BP climatic event (the Piora Oscillation) (c. 4000-3200 BC) in the territory of Southeastern Europe, which lies on the corridor of the Siberian cold air masses, are interpreted in connection with numerous socio-economic changes of prehistoric societies. In the territory of Romania, the 5.2 ka BP climatic event is correlated with the appearance of the bearers of the Cernavodă group. In the territory of Bulgaria and particularly western Bulgaria, the climate event is connected with the disappearance of lowland sites and the presumed shift towards pastoralism, and the transition between the Late Eneolithic and the Early Bronze Age.[182] A similar trend is registered in the territory of Thessaly in Greece, where an approximately 800 years-long hiatus in the settling of lowland regions and the presumed transition to pastoralism has been registered during the Chalcolithic, which lasted until the Early Bronze Age.[183]

The effects of the younger, 4.2 ka BP climatic event (c. 2200 BC) have been registered throughout the Mediterranean Basin. In Mediterranean Spain and Italy, the event is correlated with the transition from the Late Copper Age to the Early Bronze Age.[184] An arid period has been recorded in the territory of the northern Levant which is again reflected in certain changes in settlement patterns during that period.[185] Similar changes have been registered in the territory of western Anatolia. In that period the development of the Troy settlement ceases,[186] while the parts of western Anatolia are in a colder phase with less precipitation, which increased the role of pastoralism on the overall economy.[187]

Unfortunately, the paleoclimate reconstruction in the Balkans, and especially the territory of Serbia,[188] still lacks systematic research, especially regarding its central regions. The analyses of sediments from lakes Prespa and Ohrid report a slightly humid period around 4.2 ka BP,[189] while sediments from Lake Skadar point to somewhat arid conditions from the end of the 3rd millennium BC, which started with a short humid period

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180 Magny *et al*. 2013.
181 Sokeland 2017, with cited literature.
182 Todorova 2003, 290-291; Marinova *et al*. 2012.
183 Weninger *et al*. 2009, 36, 39-40.
184 Leonardi *et al*. 2015; Hinz *et al*. 2019.
185 Kaniewski *et al*. 2018.
186 Jung, Weninger 2015.
187 Massa, Şahoğlu 2015.
188 The only speleothem isotopic analyses from Serbia originate from the Ceremošnja Cave, and the data is referred to the later stages of the Holocene, respectively the 1st millennium BC (Kacanski *et al*. 2001).
189 Wagner *et al*. 2010.

between 4200 and 4000 BP, which might correspond to the Prespa and Ohrid data.[190] The analyses of a stalagmite from Alilica cave in western North Macedonia support such data,[191] and several pollen and speleothem analyses from Romania indicate several slightly colder periods matching the 8.2 ka, 5.2 ka, and 4.2 ka BP climate events.[192]

As presented above, the current climate of the researched regions is quite complex, as it is influenced by various outer factors, such as the Arctic, Siberia, Atlantic Ocean, and the Mediterranean Basin, but also inner factors, meaning the relief of the Balkans itself, which resulted in numerous microclimatic areas and *refugiums*. In general, the climate within the researched region is separated into two large climate zones, the northern *Pannonian continental*, and the southern *moderate continental* and *mountainous (Alpine)* climates.[193] The influence of the *Pannonian continental* climate on the researched region is observed in the reach of the strong Košava wind in its southern parts. Košava is a vigorous wind, characterized by clear, cold, and arid weather, which occurs in the northern, eastern, and southern regions of Serbia, and its influence can even be tracked to the Morava Valley and Niš Basin in the south, although in significantly lower intensity.[194] It is important to highlight that recent studies of dust deposition in Pannonia have pointed out the prevalence of the Košava wind during the Holocene.[195] The *moderate continental* and *mountain (Alpine)* climates are represented throughout the sub-Pannonian parts of the Balkans, although with various variants and microclimatic regions, due to the nature of the relief and/or the proximity of warm Mediterranean influence. The moderate continental climate is represented between the altitudes of 400 and 1400 m. It is characterized by moderately warm summers and cold winters and autumns warmer than springs. The mountain (Alpine) climate, represented above the altitude of 1400 m is characterized by long and cold winters and short and fresh summers. Basins and high-altitude karst fields are characterized by different climates, represented by harsh winters and relatively cooler summers. Basins that are relatively protected from the outer influences, especially winds, are characterized by a climate between the moderate continental climate and mountain climate and are usually warmer than the surroundings (**Table 1**).[196]

Table 1. Average temperatures of the researched regions, excluding the and microclimatic regions. *Refers to data for Kumanovo Basin (Marković 1980; Мишовић 2011).

Region	Average °C annual	Average °C July	Average °C January
1	11.3	21.9	-0.6
2	11.2	22.1	-1
3 - 4	10.4	21.5	-0.9
5*	12	23	-0.3
6	10.25	20.1	-0.5
7	11.5	22.1	-0.3
8	11.2	22	-1

190 Zanchetta *et al*. 2012.
191 Ragattieri *et al*. 2019.
192 Feurdean *et al*. 2008, 500; Drăgușin *et al*. 2014.
193 Мишовић 2011, 80.
194 Мишовић 2011, 82-83; Romarić *et al*. 2016, 956-958.
195 Gavrilov *et al*. 2018.
196 Мишовић 2011, 83-84.

4.5. Pedology

Due to various conditions that influenced the formation of certain soils, the soil cover of the researched region is particularly diverse. The variations in climate, geomorphological characteristics, parent materials, and vegetation all had a crucial influence on the formation of different types of soils.[197]

The classification of soils in the territory of former Yugoslavia and present-day Serbia and North Macedonia is still under scholarly debate and differs from the existing WRB (World Reference Base) classification. The classification addressed in this study refers to the territories of Serbia and North Macedonia, and it is established by Škorić and colleagues.[198] The classification is comprised of six categories (orders, classes, types, subtypes, varieties, and forms) each corresponding to certain characteristics of the soil. For this type of study, three orders of soil are of particular notice: automorphic, hydromorphic, and halomorphic. Automorphic soils are soils that are wetted solely through precipitation without additional retention of water, and hydromorphic soils are characterized by temporary or permanent saturation with water. Halomorphic soils are characterized by additional wetting through saline and alkaline ground.[199]

Table 2. Distribution and productivity of relevant soils (Hadžić 2012; Pavlović *et al.* 2017, modified).

Soil	Order	Major Distribution / Region	Productivity
Regosol	automorphic	5	low-medium
Arenosol	automorphic	1, 2	low-medium
Colluvium	automorphic	1, 2, 3, 6	low-medium
Kalkomelanosol	automorphic	3, 4	low-medium
Rendzina	automorphic	3, 4	low-medium
Ranker (Leptosol)	automorphic	3, 4, 5, 6	medium (pastures and meadows)
Chernozem	automorphic	2, 3	high
Vertisol	automorphic	1, 3,5, 6, 8	high
Euteric Cambisol	automorphic	1, 2, 3, 4, 8	medium
Dystric Cambisol	automorphic	3, 4, 5	low-medium
Kalkocambisol	automorphic	3, 4	low-medium
Red Soil (Terra Rossa)	automorphic	3, 4	medium
Luvisol	automorphic	1, 2, 3	medium-low
Brown Podzolic Soils	automorphic	sporadically	low (medium for forests)
Pseudogley	hydromorphic	2, 3, 4, 6, 7, 8	low-medium
Fluvisol (Alluvium)	hydromorphic	1, 2, 3, 4, 5, 6, 7, 8	high with melioration
Humofluvisol	hydromorphic	1	conditionally high
Humogley	hydromorphic	1, 2, 3	high with melioration
Solonchak	halomorphic	5	low (low-quality pastures)
Solonetz	halomorphic	5	extremely low

197 Pavlović et al. 2017, 25.
198 Škorić *et al*. 1985.
199 Pavlović *et al*. 2017, 88-99.

The territory of Serbia is divided into three pedo-geographic regions. The first pedo-geographic region encompasses steppe and forest-steppe areas of the Pannonian Basin and Peripanonian Serbia (Mačva and Stig regions).[200] The second pedo-geographic region encompasses the undulating terrain of Central Serbia, dominated by Tertiary lacustrine sediments and a semi-humid climate. The third paleogeographic region is characterized by mountainous areas of Western and Eastern Serbia dominated by dolomite karst.[201] The pedological division of the territory of North Macedonia is far more elaborate and comprised of ten so-called vertical belts which in fact represent separate climate-vegetation-soil zones (**Table 3**).[202]

Table 3. Climate-vegetation-soil belts in North Macedonia (Mitkova, Mitrikeski 2005).

Nr.	Climate	Altitude a.s.l.
1	Sub-Mediterranean	50-100 m
2	Continental-sub-Mediterranean	up to 600 m
3	Warm-Continental	600-900 m
4	Cold-Continental	900-1100 m
5	Piedmont-Continental-Mountainous	1100-1300 m
6	Mounain-Continental	1300-1650 m
7	Sub Alpine-Mountainous	1650-2250 m
8	Alpine Mountainous	over 2250 m

[200] Stig Region is located within Region 2.
[201] Hadžić *et al*. 2001, 45-46.
[202] Mitkova, Mitrikeski 2005, 225-226.

5. Cultural Groups of the Late Eneolithic and the Early Bronze Age

5.1. Coțofeni-Kostolac group

5.1.1. The History of Research

Unlike numerous prehistoric groups, the history of research of the Coțofeni-Kostolac group was tightly connected with the research of its two eponymous groups, the Coțofeni and Kostolac groups. The comprehensive overview of those histories of research was provided by P. Roman for the Coțofeni and D. Nikolić for the Kostolac group.[203] As the research of both groups reaches back to the end of the 19th and the beginning of the 20th century, the chapter will solely present those works crucial for the definition of the Coțofeni-Kostolac group and the mutual relations of the Coțofeni and Kostolac groups**.**

Interestingly, both groups owe their name to eponymous sites which are far from being crucial sites regarding the century-long research of both groups. The site of Kostolac was excavated in 1903 when several pits filled with burnt red soil were recorded, but according to M. Vasić, both pits were material free, and their dating remains unknown. The author connects those pits with characteristic prehistoric pottery recorded in the layer surrounding them. The pottery, nowadays attributed to the Kostolac group, was decorated with *Furchenstich* ornament and white incrustation and the author attributed it to the Bronze Age.[204] On the other hand, the eponymous site of the Coțofeni group had a different faith. Namely, the site of Botul mic in the village of Coțofeni near Craiova was excavated during the First World War in 1917, by C. Schuchhardt. The archaeological material from those excavations ended up in Berlin, in the collection of the Museum for prehistory and early history (*Museum für Vor- und Frühgeschichte*) and remains unpublished even nowadays.[205]

The first publication that discussed the occurrence of certain elements of the Kostolac group within the Coțofeni ceramic inventory in the Romanian Banat Region was published in 1923 by L. Franz, who considered such elements as indicators of "nordic" migrations. This was further elaborated by H. Reinerth in 1929 who considered the *Furchenstich* ornament typical for the Kostolac group earlier (*ältere Art*) and the incised ornament typical for the Coțofeni group younger (*jüngere Art*), belonging to the migration of "nordic" tribes towards the south. In 1933, H. Schroller separated two different groups based on the previous works of H. Reinerth – *Furchenstichkeramik* and *Linsenkeramik*, and followed his idea of migrations from Central Europe into Transylvania. Unlike Reinerth, Scholler considered that both groups are contemporaneous. In the same year, such ideas were criticized by I. Nestor, who established the term Coțofeni culture but more importantly reversed the chronology proposed by Reinerth and considered that the *Furchenstichkeramik* is younger than the *Linsenkeramik*, which was accepted by A. Prox. The first step towards the definition of the Coțofeni-Kostolac group in Romania was provided in 1943 when I. and D. Berciu pointed out that the *Furchenstichkeramik* and

[203] Roman 1976, 9-11; Nikolić 2000, 3-7.
[204] Васић 1906, 56-61.
[205] Nestor 1933, 61; Roman 1976, 9.

Linsenkeramik occur together in parts of Transylvania and the Romanian Banat Region, and that the term Coțofeni culture can not be considered as suitable for those areas. Further, D. Berciu (1961) indicated that the Coțofeni group is closely related to the Kostolac group in the territories of Oltenia and the Romanian Banat Region. In his periodization of the Coțofeni group in Transylvania, K. Horedt once again connects it with the Kostolac horizon in former Yugoslavia.[206] V. Boroneanț studied the Kostolac group in the territory of Romania (primarily Banat and Oltenia) and determined that the occurrence of the elements of Kostolac group can not be observed as imports and proposed a regional variant of the Coțofeni group,[207] which was later accepted and confirmed based on stratigraphy by P. Roman, who attributed those finds into the final phases of the Coțofeni group.[208]

The first finds which are attributed to the Kostolac group have been collected at the beginning of the 20th century, but the term Kostolac culture which marked the occurrence of characteristic pottery decorated with *Furchenstich* ornament was not coined until the work of V. Milojčić in 1943, who was also the first author to discuss its relation with the Coțofeni group.[209] The extensive archaeological works that were conducted at the sites of Vučedol and Gomolava provided a solid basis for further work on the question. In the years to follow, the works of S. Dimitrijević, N. Tasić, and B. Jovanović were crucial for the formal definition and the periodization of the Kostolac group as well as its relationships with the surrounding Eneolithic groups, including the Coțofeni. S. Dimitrijević based his discussions primarily on ornamental techniques and at first considered that the *Furchenstich* ornament is typical for the Vučedol group, and sought its origin within the later phases of the Baden group, the so-called Baden-Kostolac phase. Therefore, he considered that the Kostolac group represents solely the later phase of the Baden group, which will be included in the formation of the Vučedol group. Interestingly, when discussing the *Furchenstich* ornament, S. Dimitrijević notes that such ornament also occurs within the Coțofeni group in Romania.[210] In the same year, in his report on Vučedol group sites within the Vinkovci region, Dimitrijević once again highlights the Baden origin of the *Furchenstich* ornament and considers it as a mark of the transition from the Baden group to the Vučedol group, the so-called proto-Vučedol phase.[211] In 1962, S. Dimitrijević quite alters his opinion and considers that the *Furchenstich* ornament typical for the Baden-Kostolac phase (late phase of Baden group) originates from the east, from the Coțofeni group.[212] Finally, in 1966, S. Dimitrijević recognizes the Kostolac group as an independent manifestation and separates it from Baden and Vučedol groups.[213] Similarly, N. Tasić accepted and further elaborated on the tight connections between the Baden and Kostolac groups, as he considered the latter as a peripheral manifestation of the Baden group formed under its influence on the later phases of the Vinča group.[214] In a similar manner, B. Jovanović primarily discussed the

[206] Roman 1976, 9-11.
[207] Boroneanț 1966.
[208] Roman 1976, 54-55; Roman 1980.
[209] Milojčić 1943.
[210] Dimitrijević 1956a, 25, 30-32.
[211] Dimitrijević 1956b, 419.
[212] Dimitrijević 1962, 251.
[213] Dimitrijević 1966, 22.
[214] Tasić 1967, 47-48.

Kostolac group as an integral part of the later phase of the Baden group (Baden-Kostolac group),[215] but later separates is as an independent group within the Late Eneolithic of the Pannonian-Danube Region.[216] As presented, the Kostolac group was often regarded as a regional variant of the later phases of the Baden group, and its relations with the Coțofeni group were often perceived within that concept. In the 60s and the 70s, when the extensive archaeological excavations in eastern Serbia were conducted due to the construction of Iron Gate I and II hydroelectric power stations, reports from new sites along the Danubes' right bank and generally within the Bor and Negotin regions have brought to the attention of scholars the particular mixture of the material culture of Coțofeni and Kostolac groups in this region. In his papers on Kostolac and Coțofeni groups, N. Tasić highlighted this group[217] and finally separated it as an independent manifestation in 1981 and 1982.[218] Finally, the most comprehensive analyses of the Kostolac group, including its relations with the Coțofeni group in the territory of Serbia was published in 2000 by D. Nikolić.[219]

The interest in the Coțofeni-Kostolac group was renewed quite recently, followed by more comprehensive studies regarding the Coțofeni-Kostolac group in eastern Serbia, and its position within the new theoretical framework of the Late Eneolithic in southeastern Europe,[220] and subsequently the publication of collections of archaeological material from museums in eastern Serbia (Bor, Majdanpek, Negotin, Zaječar).[221]

5.1.2. Territory

The territory in which the Coţofeni-Kostolac group can be observed encompasses the "peripheral" areas of the Coţofeni group, which are western Romanian and eastern Serbian Banat, southwestern Oltenia, and northwestern Bulgaria.[222] Such territorial distribution of the Coţofeni-Kostolac sites is still actual, although recent research has provided additional data. Within the researched territory, the highest density of Coţofeni-Kostolac sites has been recorded in eastern Serbia, from the Mlava and Danube confluence in the west to the Iron Gates Region to the east, and further to the south in the area of Kučaj Mountains, Bor, and Zaječar.[223] Further to the south, the sites that have yielded Coţofeni-Kostolac material have been recorded within the Nišava Valley (Bubanj, Velika Humska Čuka, Čardak-Donja Vrežina, Ciganski Ključ, Selište, Jasenovik, etc.).[224] West of Great and South Morava, such sites have been recorded in the Leskovac Basin (Svinjarička Čuka, Gradac-Zlokućane, Izvorište-Bobište, etc.),[225] within the lower reaches of West Morava River, especially in the vicinity of present-day Kruševac (Bedem-Maskare, Jazbine-

[215] Јовановић 1966.
[216] Jovanović 1974, 165.
[217] Tasić 1979a; Tasić 1979b.
[218] Tasić 1981, 8; Tasić 1982, 20.
[219] Nikolić 2000, with a complete history of research of the Kostolac culture.
[220] Spasić 2010; Капуран, Булатовић 2012.
[221] Булатовић et al. 2013; Kapuran 2014; Капуран *et al*. 2014a. Unfortunately, it is noticeable that those studies primarily refer to Roman 1976, and not the more recent literature on the Coțofeni group by Romanian authors (*cf*. Ciugudean 2000, Pătroi 2017; Pătroi 2019).
[222] Roman 1976, 13-14.
[223] Капуран, Булатовић 2012, 2.
[224] Стојић, Јоцић 2006.
[225] Булатовић, Јовић 2010.

Makrešane, Lazarev Grad, etc.)[226] and Great Morava Valley (Ostrikovac).[227] Certainly, sites on which the elements of the Coţofeni-Kostolac group are recorded to exist further to the west (Ostenjak-Likodra),[228] yet the problem lies in the insufficient number of publications and overall quality of existing data related to the matter.

To summarize, the Coţofeni-Kostolac group encompasses a wide area from northwestern Bulgaria and southeastern Oltenia to the east and most likely to the eastern fringes of the Dinarides to the west. Judging by the distribution of sites, the southern border lies in the Nišava Valley-Leskovac Basin line, and the northern border lies somewhere in the Serbian Banat Region, south of Timiș River.

5.1.3. Periodization: Relative and Absolute Chronology

The periodization of the Kostolac and Coţofeni groups, as well as their mutual chronological relationship, has been minutely discussed,[229] despite the problems of numerous single-layered Kostolac sites which to a certain degree prevented the perception of its relative chronological position in comparison to the preceding and following cultural manifestations. However, several multilayered sites have provided the basis for both the relative and absolute chronological positions of both groups.

The Kostolac group

The site of Vučedol in present-day Croatia provided the basic relative and subsequently the absolute chronological position of the Kostolac group. First, S. Dimitrijević, amongst others, briefly considered that the Kostolac does not stand as an independent Eneolithic group in the Central Balkans and that the Kostolac-related archaeological material from the site of Vučedol originates from horizons attributed to other cultural manifestations. He separated two phases in which the archaeological material characteristic for the Kostolac group occurs at the site of Vučedol, earlier belonging to Baden B-2 and Vučedol A horizons and the later belonging to Vučedol B-1 and B-2 horizons,[230] neglecting the existence of an independent Kostolac settlement at the site. Such a position was accepted or dismissed in discussions to follow, until the renewed excavations between 1984 and 1990, when a thick Kostolac group layer was registered at the site.[231] In 2003 and 2004, renewed excavations were directed towards the exploration of the Kostolac group layer at the site.[232] A 40 cm thick layer, with several pits and above-ground dwellings, attributed to the Kostolac group was recorded, interpolated between the following 30-50 cm thick Vučedol group leveling layer and a preceding layer containing pits of the Baden group.[233] The absolute dates for this site have been published on several occasions. The absolute dates for the Kostolac horizon reported for the excavations during

[226] Стојић, Чађеновић 2006.
[227] Стојић 1989.
[228] Garašanin 1997; For example, the author has seprated pottery decorated in both the Coţofeni and Kostolac manners from the site of Naselje ispred Male Pećine in Petnica (Western Serbia) during an autopsy in 2020.
[229] Nikolić 2000, 56-79, with cited literature.
[230] Dimitrijević 1979, 230.
[231] Durman 1984; Durman 1985; Durman 1987; Durman 1987a; Durman, Forenbaher 1989.
[232] Balen 2004.
[233] Balen 2005a, 26.

the 1980s are 3320-2790 calBC and 3310-2920 calBC.[234] Interestingly, there are another three dates reported from the western suburbs at site of Vučedol (Vineyard Streim),[235] originating from pits 2/1985, 6/1985, and 14/1985 that yielded slightly lower values 3040-2785 calBC, 3077-2787 calBC, and 3040-2703 calBC. According to the authors, pit 6/1985 is associated with certain elements (ceramic?) of the Kostolac and Coţofeni III groups.[236] Two absolute dates from the latest excavations yielded values 3100-2880 calBC and 3300-2900 calBC.[237]

The other absolute dates for the Kostolac group within present-day Croatia originate from the sites of Đakovo-Franjevac and Kaznica-Rutak. A total of five samples have yielded acceptable values at the site of Đakovo-Franjevac,[238] all falling between 3335 and 2630 calBC.[239] The absolute dates from the site of Kaznica-Rutak yielded values 3031-2910 calBC.[240] Two more absolute dates for the Kostolac group come from the site of Pivnica in Odžak[241] in present-day Bosnia and Herzegovina and yield values 4500 BP (3020 calBC, with 95.4% probability) and 4290 BP (2847 calBC, with 80.3% probability).[242]

A vertical stratigraphy similar to the site of Vučedol was determined at the multilayered site of Gomolava in the Srem region. Namely, the Kostolac horizon (Gomolava IIIb) with three phases ($IIIb_1$, $IIIb_2$, and $IIIb_3$) is positioned between the Baden horizon (Gomolava IIIa) and Vučedol group horizon (Gomolava IIIc).[243] Two samples from the earliest Kostolac phase at the site ($IIIb_1$) are calibrated to 3038-2903 BC (GrN-7371) and 3108-2877 BC (GrN-7372).[244] The third absolute date comes from a pit belonging to the second Kostolac horizon ($IIIb_2$), and it is calibrated to 2786 ± 92 BC (68% probability).[245]

The multilayered tell site of Bubanj, in southeastern Serbia, possesses a slightly different vertical stratigraphy. Namely, the Coţofeni-Kostolac group cultural layer (IV), divided into three horizons, lies above the younger horizon of the Cernavodă III-Boleraz-Baden cultural layer (III).[246] According to the Bayesian modelling of absolute dates the Cernavodă III-Boleráz-Baden at the site of Bubanj ended between 3366 and 3227 calBC (95.4% probability) or between 3360 and 3322 calBC (68.2% probability).[247] The Bayesian

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[234] Benkő *et al*. 1989, 998-999, Table 1.
[235] Vineyard Streim in fact represent one of the plateaus of the site of Vučedol. Due to the specific horizontal stratigraphy, this part of site was crucial for the definition of an independent Kostolac cultural layer of the site.
[236] Durman, Obelić 1989, 1006, Table 1.
[237] Balen 2005a, 31; Đukić 2019, 89.
[238] The other values listed in Horvath, Balen 2012 are not accepted by the authors due to the old-wood effect.
[239] Horvath, Balen 2012, 19, table. 1.
[240] Rajković, Balen 2016, 69, footnote 61.
[241] Benac 1962.
[242] Bojadžiev 1992: cited from Bulatović, Vander Linden 2017, table A4. The calibration was conducted via OxCal online calibration programe, https://c14.arch.ox.ac.uk/oxcal/OxCal.html, on 19.10.2020.
[243] Petrović, Jovanović 2002, 8, 363-364.
[244] Petrović, Jovanović 2002, 298.
[245] Waterbolk 1988. The calibration was conducted via CalPal online calibration programe, http://www.calpal-online.de/, on 5.6.2020.
[246] Milanović 2013; Bulatović, Milanović 2020, 94-98.
[247] Bulatović, Vander Linden 2020, 1054-1055, Table A3; Bulatović, Vander Linden 2020, 243.

modeling for the Coțofeni-Kostolac cultural layer at the site (IV) indicates that it began in 3341-3103 calBC (95.4% probability) or 3329-3109 calBC (66.2 probability) and ended in 3301-2943 (95.4% probability) or 3091-2821 calBC (68.4% probability).[248] The Coțofeni-Kostolac cultural layer (IV) is followed by cultural layer V attributed to the Early Bronze Age Bubanj-Hum II and Bubanj-Hum III groups.[249] The dates for the Ealy Bronze Age Bubanj-Hum III group are available[250] and the Bayesian modeling positions the beginning of the Early Bronze Age horizon at the site between 2463-2028 calBC (95.4% probability) or 2192-2050 calBC (68.2% probability) and 2139-1801 calBC (95.4% probability) or 2108-1920 (68.4% probability).[251]

Additionally, three more sites in present-day Serbia have yielded absolute dates that would correspond to the Coțofeni-Kostolac group, unfortunately two without suitable vertical stratigraphy or enclosed archaeological contexts that could simultaneously establish the relative chronology. First, the site of Mokranjske Stene yielded two absolute dates for the Coțofeni-Kostolac group which fall in the range of 3123-3011 calBC (with 51.5% probability) and 3121-3009 calBC (with 52.5% probability).[252] The date from the Rudna Glava prehistoric mine in eastern Serbia, acquired from a hafted/perforated antler mattock from shaft 10, yielded values 2910-2880 calBC (68.2 % probability). This date might indicate the sporadic utilization of mining shafts by the Late Eneolithic populations, although the lack of context does represent a certain problem in terms of the attribution of the date.[253] The third date originates from the site of Belovode, located in the lowland parts of eastern Serbia, in the Mlava Valley. The sample from the uppermost layers at the site yielded values 3330-3210 calBC (25.3% probability) or 3190-3150 calBC (3.6% probability).[254]

Similar relative stratigraphy has been recorded on several other sites. At Sarvaš (Gradac) in Croatia, the Kostolac horizon (4) is also interpolated between the Baden (3) and the Vučedol horizons (5).[255] At the renowned site of Vinča-Belo Brdo near Belgrade, the Eneolithic and following horizons are quite devastated, yet provide some overall data on the relative stratigraphy. The detailed analysis of Eneolithic finds (both from the cultural layer and one enclosed context-pit) at the site by M. Spasić, indicates a possibility that there could be two Kostolac horizons at the site. Earlier, represented by finds from the cultural layer, possibly contemporaneous with the late Baden group at the site, and a later

[248] Bulatović, Vander Linden 2017, 1055-1057, Table A4; Vander Linden, Bulatović 2020, 243.
[249] Bulatović, Milanović 2020, 116-121; Bulatović, Vander Linden 2020, 243.
[250] There are indeed absolute dates for the lower portion of the cultural layer V at the site, attributed to the Bubanj-Hum II group, which are quite specific and will be discussed within the subchapter on the Bubanj-Hum II group (5.2.).
[251] Bulatović, Vander Linden 2017, 1057, Table A5.
[252] Bulatović *et al*. 2020, 1168, Table 1. The calibration of three final dates was conducted via OxCal online calibration program, https://c14.arch.ox.ac.uk/oxcal/OxCal.html, on 20.10.2020.
[253] Borić 2009, 198.
[254] Borić 2009, 208-209. The finds from the site remaini unpublished. I would like to thank A. Bulatović for providing me with the information on the existance of archaeological material attributed to the Coțofeni-Kostolac group.
[255] Balen 2005b, 34-35. Similar to the other sites, S. Dimitrijević has previously defined the Kostolac cultural layer as younger Baden horizon, neglecting the existance of Kostolac horizon (Dimitrijević 1971).

horizon represented by finds from the pit. In general, the finds from Vinča would correspond to the horizons $IIIb_1$ and $IIIb_2$ at the site of Gomolava.[256]

The problem of relative chronology and periodization of the Kostolac group was primarily related to the specific view of the group not as an independent cultural manifestation, but rather a phase or a peripheral segment of larger cultural complexes, such as Baden group or Vučedol group. Therefore, based on the pioneer excavations at the site of Vučedol, S. Dimitrijević proposed a tripartite periodization of the Baden group, with Kostolac elements attributed to the final, III phase.[257] A similar tripartite periodization was proposed by N. Tasić who considered the Kostolac group as the final phase, phase III of the Baden group, characterized by the formation of peripheral groups of the Baden complex.[258] Later, S. Dimitrijević includes the Kostolac elements into the periodization of the site of Vučedol, although as previously mentioned attributes those to Baden and Vučedol horizons. Likewise, he proposes two phases of the Kostolac group – the earlier Pivnica-Cerić horizon which corresponds to Baden B-2 and Vučedol A horizons and later that corresponds to Vučedol B-1 horizon at the site of Vučedol.[259] Both B. Brukner and N. Tasić have based their periodizations of the Kostolac group on the excavations at the tell site of Gomolava in the Srem Region.[260] The relative position of the Kostolac horizon (IIIb) and its phases between the Baden (IIIa) and the Vučedol horizon (IIIc) at the site of Gomolava is well defined. Based on the appearance of characteristic ceramic elements within three phases of the Kostolac horizon ($IIIb_1$, $IIIb_2$, and $IIIb_3$), N. Tasić has defined two phases of the Kotolac group. The earlier that encompasses phases $IIIb_1$ and $IIIb_2$, characterized by Baden ceramic elements, and a later phase represented by phase $IIIb_3$ characterized by certain ceramic elements of the Vučedol group.[261] According to N. Tasić, the first phase would correspond to the emergence and stabilization of the group in the regions of Srem, Slavonia, and in northern Bosnia, and the later second phase would correspond to the expansion towards the Carpathian Basin and Slovakia to the north, and Serbian and Romanian Danube Region towards the east.[262] On the other hand, B. Brukner separated three phases – Baden-Kostolac I, Kostolac II, and Kostolac III-Vučedol, which corresponded to phases I-III of the Coțofeni group.[263] A comprehensive study of the Kostolac group by D. Nikolić that included the detailed analyses of material culture, relative chronological relations with the surrounding groups, and the existing absolute dates resulted in the most complete and currently accepted periodization. According to such analysis, the early phase of the Kostolac group (Kostolac I), or the formative phase is represented by solely several sites (Jerinino Brdo and Popović) that display certain ceramic characteristics of the preceding Cernavodă III culture. The second phase or the classical phase (Kostolac II) is represented by the expansion of the Kostolac group towards the north (Srem, Slavonia, and northern Bosnia), south (Morava Region), and east towards the territory of the Coțofeni

[256] Spasić 2009, 32-34, 36-37.
[257] Dimitrijević 1962, 240.
[258] Tasić 1967, 30-34.
[259] Dimitrijević 1979, 230.
[260] Brukner 1979; Tasić 1979.
[261] Tasić 1979, 245-246.
[262] Tasić 1995, 64.
[263] Brukner 1979.

group. The late phase of the Kostolac group is represented by smaller territory, limited to the southeastern Pannonia and the Romanian Banat Region.[264] According to such periodization, the phases Kostolac II and III are particularly in the focus regarding the formation of the Coțofeni-Kostolac group.

The Coțofeni group

On the other hand, the periodization of the Coțofeni group did not go through such turbulent changes and attributions, as it was separated as an independent group quite early, during the first half of the 20th century.[265] P. Roman proposed a tripartite periodization of the Coțofeni group, based on a detailed study of vertical stratigraphy, ceramic forms, and ornamentation from a large number of sites, which is widely accepted even nowadays, although with certain modifications. Namely, according to Roman, phase Ia is the formative phase, phase IIa is a phase of expansion when the first elements of the Baden and Kostolac groups are recorded, and finally phase IIIa which is characterized by the expansion of the Coțofeni group towards Oltenia, Banat, Transylvania and further to the west, where it establishes tight connections with the Kostolac group.[266] A slightly altered opinion, especially considering the territory of the western Romanian Banat and the Danube Region, i.e. the contact zone between the Coțofeni and Kostolac groups is recently proposed by H. I. Ciugudean. Namely, based on the well-defined stratigraphy of the Hoţilor cave site he considers that the Kostolac group elements within the Coțofeni group should be entirely attributed to phase III of the Coțofeni group.[267] Such constatation is in line with the P. Romans' opinion that phases I and II of the Coțofeni correspond to phases Baden B-D according to the periodization proposed for the Baden group by E. Neustupný.[268]

Even though the number of excavated and published Coțofeni group sites is formidable,[269] due to the wide area that the Coțofeni group encompasses (from Serbian Banat Region to present-day Ukraine), the relative periodization based on the vertical stratigraphy is not uniform and varies greatly from one geographic region to the other, depending on the regional development of preceding and following groups. By observing solely the sites within southwestern Romania and northwestern Bulgaria, i.e. the sites within the so-called "contact zone" between the Kostolac and the Coțofeni groups, the stratigraphy resemble the aforementioned stratigraphy at the site of Bubanj. Namely, the Coțofeni horizon is interpolated between the preceding Cernavodă III and the following Early Bronze Age horizons (Glina, Verbiciora, Bubanj Hum III).[270] For example, this is not the case with the Hoţilor cave, where the Coțofeni layer lies on top of the Salkuca IV layer, yet there an sterile layer might correspond to the time of the Cernavodă III group at the other sites.

[264] Nikolić 2000, 63-66.
[265] Nestor 1933.
[266] Roman 1976, 36-54.
[267] Ciugudean 2000, 53-54.
[268] Neustupný 1969; Roman 1976, 55.
[269] For example Ciugudean 2000 provides a catalogue of 688 Coțofeni-related sites/finds in Transylvania and the Romanian part of Banat and Pătroi 2017 lists 223 sites for the territory of Oltenia.
[270] Капуран, Булатовић 2012, 11-13, with cited literature.

Unfortunately, solely several absolute dates are currently available for those sites which fall within the interest area of this research. Three dates originate from the site of Ostrovul Corbului that fall within values 3373-3021 calBC (with 94.2% probability), 3133-2915 calBC (with 65.3% probability), and 3134-2902 calBC (with 70.9% probability). Four dates originate from Băile Herculane and fall within values 3373-2900 calBC (with 94.6% probability), 3359-2857 calBC (with 91.3% probability), 3107-2879 calBC (with 87.6% probability) and 3099-2849 calBC (with 85.5% probability). Finally, five dates originate from Poiana Ampoiului and fall within values 2930-2850 calBC (with 95.4% probability), 2920-2860 calBC (with 95.4% probability), 2785-2473 calBC (with 79.7% probability), 2781-2398 calBC (with 81.9% probability) and 2352-1971 calBC (with 90.9% probability).[271] These dates correspond to the available absolute dates of the phase III of the Coțofeni group in the territory of Romania which fall between the 34th and the 27th century BC.[272]

Table 4. The absolute dates for the Kostolac and Coțofeni-Kostolac groups.

Site	Attribution	Sample	calBC/BP	Cited from
Vučedol	Kostolac	-1820	3320-2970	Benkő *et al*. 1989
Vučedol	Kostolac	-1821	3310-2920	Benkő *et al*. 1989
Vučedol	Kostolac	Z-1621	3040-2785	Durman, Obelić 1989
Vučedol	Kostolac	Z-1637	3077-2787	Durman, Obelić 1989
Vučedol	Kostolac	Z-1447	3040-2703	Durman, Obelić 1989
Vučedol	Kostolac	Beta-201767	3100-2880	Balen 2005a
Đakovo-Fra.	Kostolac	Beta 234044	3335–2925	Horvath, Balen 2012
Đakovo-Fra.	Kostolac	Beta 233118	3265–2700	Horvath, Balen 2012
Đakovo-Fra.	Kostolac	Beta 241652	2905–2665	Horvath, Balen 2012
Đakovo-Fra.	Kostolac	Beta 241653	2905–2665	Horvath, Balen 2012
Đakovo-Fra.	Kostolac	Beta 241651	2895–2630	Horvath, Balen 2012
Kaznica-Rutak	Kostolac	-	3031-2910	Rajković, Balen 2016
Pivnica	Kostolac	Kn-232	3020	Bulatović, Vander Linden 2017
Pivnica	Kostolac	GrN-8010	2847	Bulatović, Vander Linden 2017
Gomolava	Kostolac	GrN-7371	3038-2903	Petrović, Jovanović 2002
Gomolava	Kostolac	GrN-7372	3108-2877	Petrović, Jovanović 2002
Gomolava	Kostolac	-	2786 ± 92	Waterbolk 1988
Bubanj	C-K	SUERC-69296	3335-3018	Bulatović, Vander Linden 2017
Bubanj	C-K	SUERC-69297	3108-2826	Bulatović, Vander Linden 2017
Bubanj	C-K	MAMS 31462	3376-3334	Bulatović *et al*. 2020
Bubanj	C-K	MAMS 31466	3343-3097	Bulatović *et al*. 2020
Bubanj	C-K	MAMS 31465	3339-3207	Bulatović *et al*. 2020
Bubanj	C-K	MAMS 31458	3096-2919	Bulatović *et al*. 2020
Bubanj	C-K	MAMS 31459	3093-2922	Bulatović *et al*. 2020
Bubanj	C-K	MAMS 31464	2924-2881	Bulatović *et al*. 2020
Mokranjske Stene	C-K	MAMS 31469	3123-3011	Bulatović *et al*. 2020
Mokranjske Stene	C-K	MAMS 31468	3121-3009	Bulatović *et al*. 2020
Rudna Glava	Late Eneolithic	-	2910-2880	Borić 2009
Belovode	Late Eneolithic	-	3330-3210	Borić 2009

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[271] Bulatović, Vander Linden 2017, 1057, Table A5; Ciugudean 2000, Pl. 153. The calibration of three final dates was conducted via OxCal online calibration programe, https://c14.arch.ox.ac.uk/oxcal/OxCal.html, on 20.10.2020.

[272] Frînculeasa 2020, Table 2.

Ostrovul Corbului	C-K	Lj-3797	3373-3021	Breunig 1987
Ostrovul Corbului	C-K	Lj-3798	3133-2915	Breunig 1987
Ostrovul Corbului	C-K	Lj-3799	3134-2902	Breunig 1987
Băile Herculane	C-K	Lj-3533	3373-2900	Breunig 1987
Băile Herculane	C-K	Lj-3534	3359-2857	Breunig 1987
Băile Herculane	C-K	Lj-3535	3107-2879	Breunig 1987
Băile Herculane	C-K	Lj-3536	3099-2847	Breunig 1987
Poiana Ampoiului	C-K	Bln-4621	2930-2850	Ciugudean 2000
Poiana Ampoiului	C-K	Bln-4620	2920-2860	Ciugudean 2000
Poiana Ampoiului	C-K	UZ-2869/ETH-9277	2785-2473	Ciugudean 1996
Poiana Ampoiului	C-K	UZ-2870/ETH-9278	2781-2398	Ciugudean 1996
Poiana Ampoiului	C-K	UZ-2668/ETH-9276	2352-1971	Ciugudean 1996

The Coțofeni-Kostolac group

Regarding the periodization and absolute chronology of the Coțofeni-Kostolac group, there are several issues such as the lack of absolute dates or well-stratified and systematically excavated sites, especially in the territory of eastern Serbia, which represents the core territory for this group.

N. Tasić has proposed the first internal periodization of the Coțofeni-Kostolac group in the territory of Serbia by separating two phases. Phase I is marked by the complete absence of Kostolac-related ceramic forms and ornaments such as *Furchenstich* and represents phase Ia of the Coțofeni according to the periodization proposed by P. Roman.[273] The lack of Kostolac elements indicates that Phase I is the expansion of the "pure" Coțofeni towards eastern Serbia. On the other hand, Phase II according to N. Tasić represents the mixture of Kostolac and Coțofeni elements and corresponds to Romans' phases IIa and IIIa.[274] Recently, several authors agreed with such an opinion and periodization as the latest research has proven that there are no settlements with solely Kostolac material culture in eastern Serbia. Likewise, A. Kapuran and A. Bulatović accept the separation of two phases based on the ceramic forms and ornamental techniques, the so-called pre-*Furchenstich* and *Furchenstich* phases.[275] The same authors warn of such periodization based on the absence or presence of certain ceramic forms or ornamental techniques since such finds in this case mostly originate from surface surveys and short-term excavations.[276] For example, recent studies of ceramic material from the Krajina Museum in Negotin have determined that there is Kostolac-related pottery at the site of Donje Butorke, which was according to the proposed periodization attributed to the earlier phase, Phase I according to N. Tasić.[277] However, it is important to highlight that the aforementioned periodisation refers to the so-called second phase of contacts between the

273 Roman 1976, 36-54. N. Tasić considers that phases IIa and IIIa of the Coțofeni group should not be separated as both display elements of the Kostolac group.
274 Tasić 1979, 116-117.
275 Капуран, Булатовић 2012, 8-9.
276 Капуран, Булатовић 2012, 9, footnote 45.
277 Булатовић *et al*. 2013

bearers of the Coțofeni and Kostolac groups, since the first phase is connected with regions such as Banat, which are not in the focus of this study.[278]

Regarding the stratigraphic position of the Coțofeni-Kostolac group, N. Tasić has highlighted that the Coțofeni-Kostolac horizon follows the Cernavodă III horizon on sites within the Romanian and Serbian Banat region and Bubanj-Salkuca-Krivodol horizon in eastern and southeastern Serbia.[279] Such a claim does not completely correspond to the results of new research as Cernavodă III horizons have been recorded preceding the Coțofeni-Kostolac horizon at several sites outside of Banat, such as Bubanj near Niš and Radomir-Vahovo in Struma Valley.[280] In general, the stratigraphic position of the Coțofeni-Kostolac group within the researched territory is well defined as it is preceded by either Bubanj-Salkuca-Krivodol horizon or Cernavodă III horizon and followed by the Final Eneolithic (Bubanj-Hum II) or Early Bronze Age horizons (Bubanj-Hum III).

Unfortunately, the absolute chronological positioning of the group in the researched territory is currently impossible due to the low number of existing absolute dates. The dates recently acquired for the site of Bubanj near Niš position the Coțofeni-Kostolac group into the final three centuries of the 4^{th} millennium BC and the first two centuries of the 3^{rd} millennium BC. The other absolute dates acquired from the Romanian sites (Ostrovul Corbului, Băile Herculane),[281] as well as the existing absolute dates for the preceding and following horizons, position the Coțofeni-Kostolac group into the final quarter of the 4^{th} millennium BC and the first and/or second quarter of the 3^{rd} millennium BC. The Bayesian modelling of all of the available dates for Coțofeni-Kostolac group the from the sites of Belovode, Băile Herculane, Bubanj, Gomolava, Mokranjske Stene, Pivnica, Ostrovul Corbului, Poiana Ampoiului and Vučedol[282] position the beginning of the group between 3207 and 3105 calBC (with 68.2% probability) or between 3344 and 3097 calBC (with 95.4% probability) and the end of the group between 2864 and 2806 calBC (with 68.2% probability) or 2878 and 2739 calBC (with 95.4% probability).[283]

Table 5. Relative chronological relations of internal periodization between the Kostolac, Cotofeni and Cotofeni-Kostolac groups.

Nikolić 2000	**Tasić 1979**	**Капуран, Булатовић 2012**	**Roman 1976**	**Ciugudean 2000**
Kostolac I			*Coțofeni I*	*Coțofeni I*
Kostolac II	*C-K I*	*Pre-Furchenstich*	*Coțofeni II*	*Coțofeni II*
Kostolac II	*C-K II*	*Furchenstich*	*Coțofeni III*	*Coțofeni III*
Serbia	Serbia	Eastern Serbia	Romania	Transylvania/Banat

[278] Spasić 2010, 164; Капуран, Булатовић 2012, 8-9;
[279] Tasić 1979, 118.
[280] Alexandrov 1995; Bulatović, Milanović 2020.
[281] The three dates from the site of Poiana Ampoiului (UZ-2668/ETH-9276, UZ-2870/ETH-9278 and UZ-2869/ETH-9277) are quite low compared to the other dates, and display low probability following the calibration.
[282] The Bayesian modelling also included an absolute date from the site of Polje in Glogovac.
[283] Bulatović *et al*. 2020, 1173, Figure 4.

5.1.4. Material Culture

In general, the material culture of the Coțofeni-Kostolac group is well known, since the material culture of both groups separately is well defined. The most representative form of material culture is **pottery**, which has been minutely discussed in previous publications.

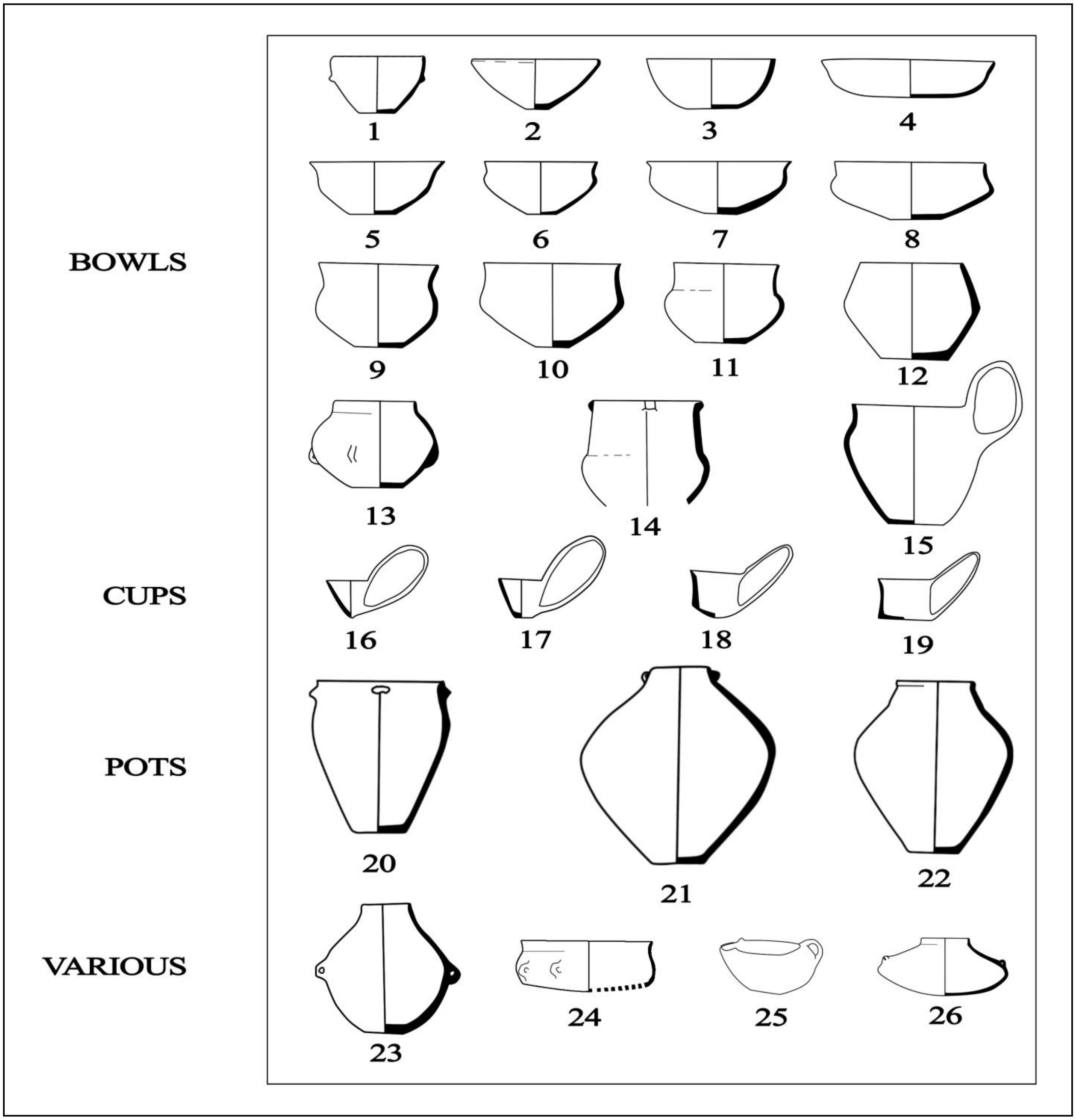

Plate 1. The typology of the Kostolac group (Nikolić 2000, modified).

D. Nikolić provides a detailed analysis of the Kostolac group pottery, where she divides the ceramic inventory of the Kostolac into two basic categories – coarse ware and fine ware. Coarse ware pottery is represented by large conical pots with emphasized neck and everted rim, pear-shaped pots with slightly emphasized neck (Pl. 1/20-22), amphorae with a cylindrical or conical neck with ribbon-like handles (Pl. 1/23), and conical bowls with or without horn-shaped handles (Pl. 1/1). The fine ware pottery, which is dominant, is represented primarily by bowls which can be conical (Pl. 1/2), shallow or deep biconical (Pl. 1/4, 5), biconical with funneled neck (Pl. 1/6), biconical S-profiled (Pl. 1/7), biconical with cylindrical neck (Pl. 1/8), deep biconical with funneled neck (Pl. 1/9), biconical with concave neck (Pl. 1/10, 11), deep biconical without neck (Pl. 1/12), deep biconical with cylindrical neck (Pl. 1/13), deep bowls with straight or everted rim and deep biconical bowls with high ribbon-like handle (Pl. 1/14, 15). Other fine ware forms are represented by colanders (Pl. 1/24), cups with high ribbon-like handle (Pl. 1/16-19), sauce boats (Pl. 1/25) and *Fischbutte* (Pl. 1/26). One of the main characteristics of the Kostolac group is how the vessels are decorated. The most common ornamental technique for the Kostolac group is *Furchesnstich*, which is usually combined with white incrustation and represents the most recognizable element of the Kostolac group. Other represented ornamental techniques are circular or triangular stamping, crescent-shaped incisions, and rarely summary performed incisions. The motifs which the aforementioned techniques form are quite uniform and comprise of rectangular fields, metopes, hanging triangles, and chess-fields, which are all usually positioned on the shoulder of the vessels.[284]

The detailed typology of the ceramic inventory of the Coțofeni group is provided by P. Roman, who likewise distinguishes fine and coarse ware pottery. The typology is quite elaborate and encompasses all of the phases of the Coțofeni group in the original territory. P. Roman distinguishes several basic types of vessels, such as bowls, cups, amphorae, and beakers. Bowls can be deep conical, biconical, with a rounded or flat base (Pl. 2/1, 6), semi-globular (Pl. 2/3), funnel-shaped (Pl. 2/4), basin-shaped (Pl. 2/5), and large (variants) (Pl. 2/7). Cups are with straight rim and ribbon-like handle on the neck or the belly (Pl. 2/14), amphorae can be with the emphasized belly (Pl. 2/8), cylindrical neck and inverted rim and conical neck and everted rim (Pl. 2/9, 10), while beakers can be with conical neck and a flat base (Pl. 2/11), with a funneled mouth, with a globular body and trumpet-shaped mouth (Pl. 2/12) and pear-shaped with everted rim (Pl. 2/13). Save for the basic and dominant types of vessels, P. Roman distinguishes jugs (Pl. 2/15), household vessels (Pl. 2/16), vessels for liquid, *askoi* (Pl. 2/17), jars (Pl. 2/18), kitchen and storage vessels (Pl. 2/19), miniature vessels (Pl. 2/20), imitations of metal vessels, conical vessels (Pl. 2/21), bottle-shaped vessels (Pl. 2/22), large vessels, deep vessels, bowl-shaped vessels (Pl. 2/23), oval-shaped vessels (Pl. 2/24), vase-shaped vessels (Pl. 2/25) and cups on the foot. Basic ornamental techniques are based on incisions, polished grooves (channels), and modeled applications such as bands, proturbations, and lentil-shaped applications (*Linsen* ornament). Additionally, incrustation, painting, and barbotine are recorded. The ornamental motifs of the Coțofeni group pottery follow the *horror vacui* principle, as the ornaments are applied to all available spaces on the vessel. Such motifs consist of triangles, hatched bands, incised bands, fish scale motifs, fir branch motifs, spirals, concentric circles, chess-fields, vertical strips, rows of impressions, and relief.[285]

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[284] Nikolić 2000, 48-53.
[285] Roman 1976, 18-30.

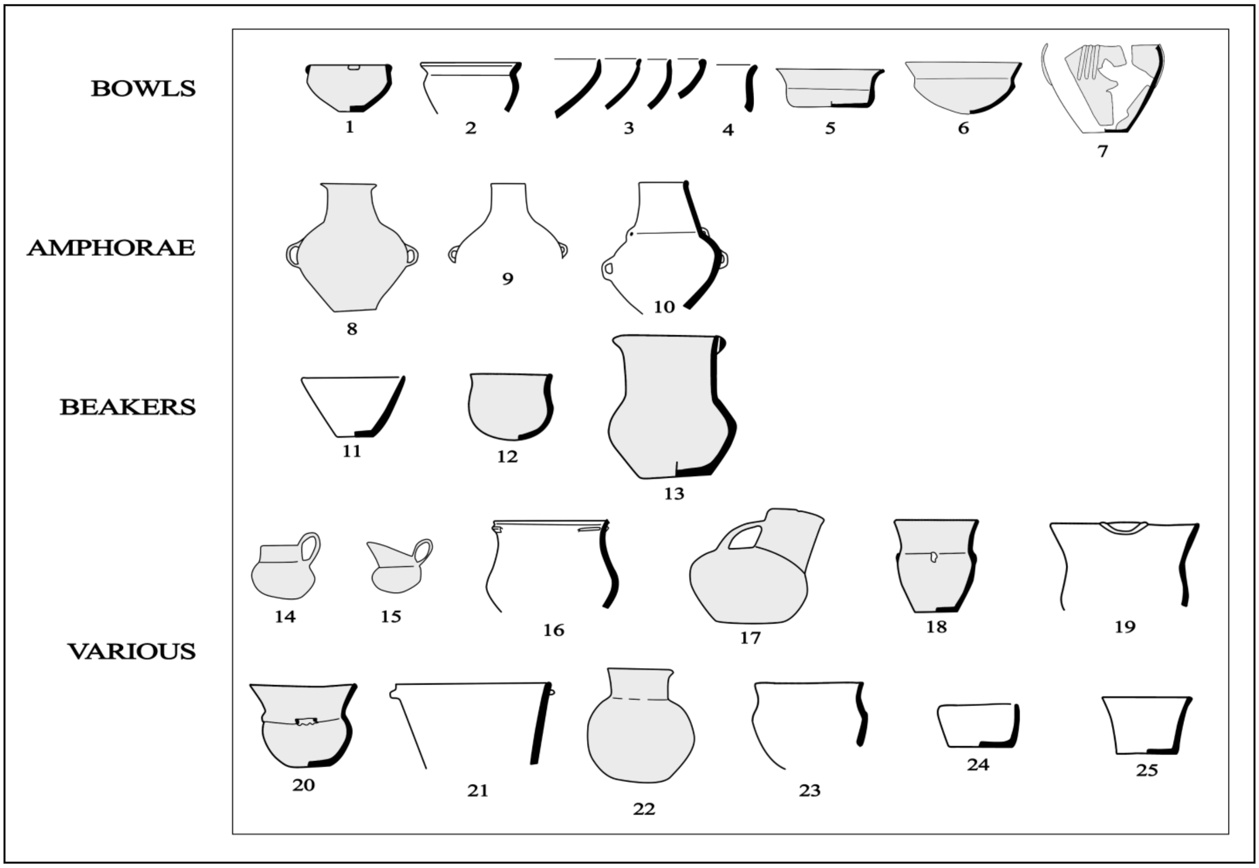

Plate 2. The typology of the Coțofeni group (Roman 1976, modified).

Other clay objects typical for the Coțofeni group are spindle-whorls, spools, spoons, representations of cartwheels, anchor-shaped objects, beads, anthropomorphic and zoomorphic figurines.[286] The anthropomorphic figurines are flat, with a circular lower portion, raised arms, and discoid head, decorated with incisions and notches. In general, the form of anthropomorphic figurines resembles the ones attributed to the Baden group.[287] The zoomorphic representations are made simply and without exception represent cattle.[288] No such finds have been recorded within the researched territory.

Tasić summarises the typology of the Coțofeni group ceramic inventory for the territory of Serbia. He distinguishes three types of cups characteristic for the area – conical cup with the funneled recipient and a ribbon-like handle high above the rim, globular cup with flattened rim, and globular cup with the slantwise positioned rim (Pl. 3/8-10). Other characteristic vessels are conical bowls with slightly inverted rim (Pl. 3/1-4), amphorae, and pots with cylindrical neck and differently profiled bodies (Pl. 3/5-7, 11), and sauce

[286] Roman 1976, 30-31;
[287] Rișcuța 1996; Popa 2012; Popa, Ciută 2016.
[288] Ciugudean 2000, 39-40.

boats (Pl. 3/12). The decoration on Coțofeni group vessels is represented by incised lines and lentil-shaped applications.[289]

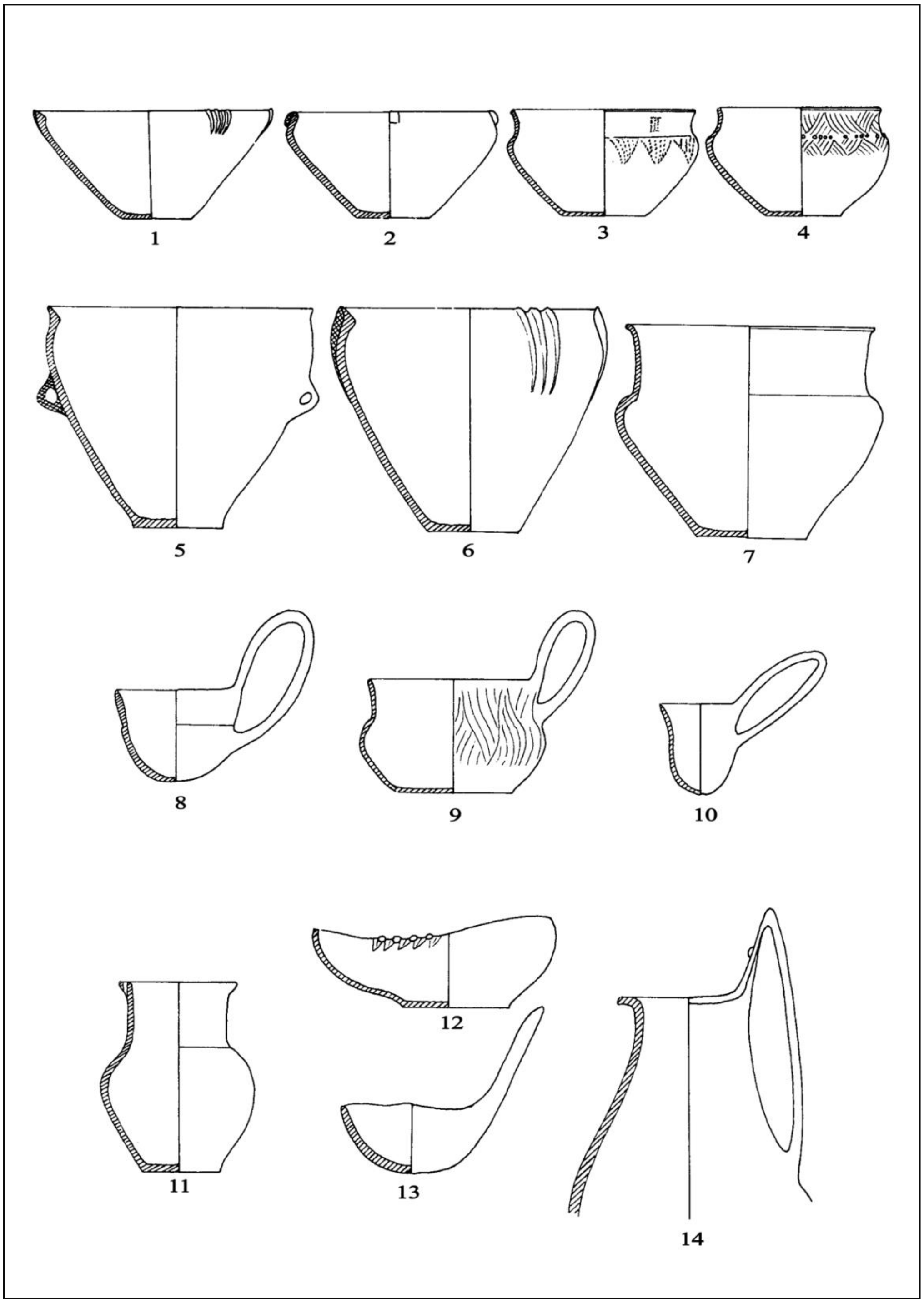

Plate 3. Common ceramic forms of the Coțofeni group in Serbia (Tasić 1979).

[289] Tasić 1979, 120-122.

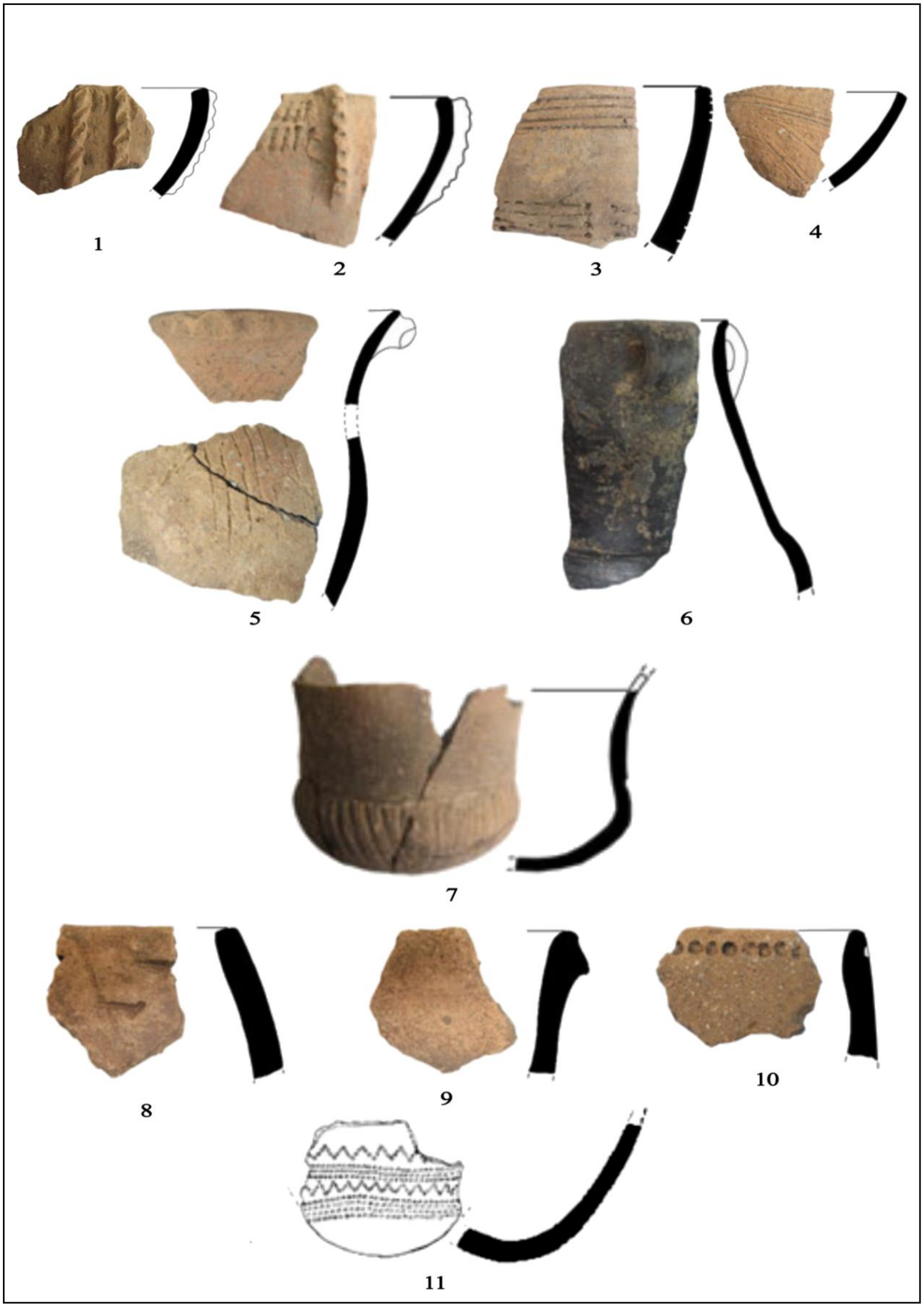

Plate 4. Ceramic forms of the Coţofeni -Kostolac group in eastern Serbia (Капуран, Булатовић 2012, modified).

Regarding the researched territory, an overall typology of the Coțofeni-Kostolac group ceramic inventory was recently provided by A. Kapuran and A. Bulatović. In general, one of the main ceramic characteristics of the group is a mixture of forms and decorations typical for both cultural groups, as the *Furchesnstich* technique, so typical for the Kostolac group appears on vessels characteristic for the Coțofeni group. The dominant type of vessel recorded within the researched territory is an amphora with a funneled neck which is decorated with incised lines, notches, fish-bone motif, *Furchesnstich*, and dotted pricks (Pl. 4/5). Besides those, amphorae with the long cylindrical or conical neck are also represented, usually decorated with a row of incised notches. The bowls are semi-globular with flat, triangularly of T-shaped rim, decorated with vertical ribs, incisions, and notches, semi-globular with inverted rim decorated with vertical ribs on the rim, incisions, and notches, semi-globular or globular with funneled neck and everted rim usually decorated with *Furchesnstich* (Pl. 4/1-4). Beakers are biconical, funneled or pear-shaped with arched handles decorated with *Linsen* applications or pear-shaped with one handle decorated with vertical grooves (Pl. 4/6-7). Pots are barrel-shaped and globular, decorated with incisions, horizontally modeled bands, and circular impressions (Pl. 4/8-10). Cups are with a rounded base and with one handle that surpasses the rim (Pl. 4/11). Sauce boats have also been recorded, as well as jugs with bent handles (Pl. 4/12, 14).[290] As seen, most of the ceramic forms correspond to the Coțofeni group in Romania, especially later phases II and III according to P. Roman.

The **bone and antler industry** of the Coțofeni group in Romania is well documented both in settlements and graves. It consists of awls, axes/adzes, farming tools, points, spatulas, handles, serrated tools for pottery ornamentation and personal ornaments such as pendants made of animal teeth.[291] A similar industry consisting of awls, heavy points, axes/adzes, spatulae, scrappers, spatula chisels, handles, and spoons was recorded within the Coțofeni-Kostolac horizon at the site of Bubanj,[292] while Zlot Cave yielded many agricultural tools made of bone within the Coțofeni-Kostolac horizon.[293]

The **lithic industry** of the Coțofeni-Kostolac group is one of the most under researched aspects of the material culture. The **chipped stone industry** of the Coțofeni group in Romania is well documented and displays significant deterioration in terms of the production and the selection of raw materials compared to the preceding periods of the Early Eneolithic and Neolithic.[294] The only chipped stone assemblage analyzed within the researched territory originates from the site of Bubanj, where pre-cores, cores, blades, scrapers, projectiles, combined tools, and elements of composite tools have been recorded within the Coțofeni-Kostolac horizon.[295] Similarly, the **ground stone industry** of the Late Eneolithic within the researched territory has not been systematically analyzed so far.[296]

[290] Капуран, Булатовић 2012, 8-11.
[291] Roman 1976, 18; Ciugudean 2000, 32.
[292] Vitezović 2018, 174-176; Vitezović 2020, 376-379.
[293] Tasić 1995, 172.
[294] Ciugudean 2000, 29-30.
[295] Šarić 2020, 401-405. The assemblage refer to the Coțofeni-Kostolac-Bubanj Hum II horizon.
[296] There are numerous finds of stone axes within the researched region, which could be attributed to a period from the Late Eneolithic to the Late Bronze age (Антоновић, Ђорђевић 2011), but unfortunately most

The ground stone industry of the Coţofeni group in the territory of Romania was however minutely discussed, and several typologies have been offered. Such an industry is comprised of perforated axes, ax-adzes, cutters, grindstones, beads, and perforated pendants,[297] which are quite specific for the final phase of the Coţofeni group. In general, perforated ground stone tools are characteristic for the Late Eneolithic/Early Bronze Age, which can also be observed within the researched territory.[298]

The **copper metallurgy** of the Coţofeni group (Coţofeni-Kostolac group) displays an evident decrease compared to the Early Eneolithic.[299] However, judging by the published material, such a decrease was particularly noticeable for the territory of eastern Serbia. Namely, Romanian authors report a significant number of copper objects (daggers, awls, axes, knives, pendants, bracelets, necklaces, beads, plaques, etc.) from the territory of Romania,[300] and a similar situation is observed for the territory of northwestern Bulgaria.[301] Copper objects and copper metallurgy related finds attributed to the Coţofeni-Kostolac group have been recorded at the sites of Bubanj (a pin?),[302] Grabar-Svračar (a pin, a hook, a wire, and copper slag),[303] Lepenska Potkapina (a dagger),[304] Manastir-Gospođin Vir (an awl),[305] and Klokočevac (needle).[306] Likewise, the copper-arsenic axe of the *Kozarac* type from the site of Boljetin, usually regarded as an Early Bronze Age find, should rather be connected with the Coţofeni-Kostolac group in the area.[307] This type of axes is connected with the Corded Ware complex and the presumed migrations during the Late Eneolithic and the Early Bronze Age.[308]

5.1.5. Settlements and Architecture

Types of settlements of the Coţofeni-Kostolac group within the researched area seem to completely follow the basic typological division for the Coţofeni in its original region, with certain modifications that are dependent on the geomorphological characteristics of the area in question. Unlike the typology of settlements for the Kostolac group which emphasizes three main types of settlements – lowland settlements in river valleys, settlements on terraces of main rivers, and hilltop settlements,[309] the settlement typology of the Coţofeni group is more elaborate. The basic settlement typology for the Coţofeni group was established by P. Roman and later accepted by N. Tasić regarding the

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of those axes are recorded and published without the archaeological context (*Cf*. Гарашанин, Гарашанин 1951; Јацановић 1985; Стојић 1986; Стојић, Јоцић 2006)

[297] Roman 1976, 17-18; Ciugudean 2000, 30-32; Popa 2013.

[298] Антоновић, Ђорђевић 2011.

[299] Тасић 1990a, 12-13; Sava 2015, 276-277.

[300] Roman 1976, 16-17; Ciugudean 2000, 33-38; Ciugudean 2002; Sava 2015, 283.

[301] Капуран, Булатовић 2012, 8, footnote 42.

[302] Bulatović, Milanović 2020, 207.

[303] Tasić 1982, 21.

[304] Јевтић 1984a, 202.

[305] Spasić 2010, 171, with cited literature.

[306] Spasić 2010, 160.

[307] Булатовић *et al*. 2013, 31.

[308] *Cf*. Dani 2013; Klochko 2020.

[309] Nikolić 2000, 40-41.

territory of eastern Serbia.[310] Such a typology encompasses four basic types of settlements (types a-d): a) lowland settlements (with Danubes' islands); b) settlements on terraces and plateaus of rivers; c) high altitude settlements; d) cave and cavelet settlements. The proposed division is widely accepted nowadays, although with certain alterations, like the ones proposed by H. Ciugudean. In his research of the Coțofeni in Transylvania and the Romanian Banat Region, the author proposes two main types (A and B) and corresponding sub-types. Type A which represents lowland settlements is further divided into subtypes 1) settlements in lowland meadows of rivers, often appearing as artificial mounds, and 2) settlements on river terraces of major watercourses. Type B represents high altitude settlements and it is further divided into subtypes a) hilltop settlements, b) settlements on rocky peaks, c) cave settlements and d) cavelet settlements.[311] At its core, both of the presented typologies are the same and provide almost identical divisions for the types of Coțofeni group settlements.

The most comprehensive analyses of settlement types for the researched territory (primarily eastern Serbia) was recently provided by A. Kapuran. Although the author does not provide a formal typology, he recognizes four different types of settlements, which are following the typology of P. Roman, yet provides certain characteristics for settlements, typical for the territory of eastern Serbia. Therefore, the author concludes that the hilltop settlements are located either on hardly accessible elevations in the proximity of water and caves or on top of canyons and confluences of two rivers and assumed communication routes and that such settlements have a visible and dominant position within the surrounding relief. The other types of settlements that the author lists within this territory are caves and cavelets, high altitude settlements located on small hills and slopes, and settlements on river terraces (primarily Danube).[312]

Regarding the architecture, the situation is quite similar. Namely, the architecture of the bearers of the Kostolac group has been minutely discussed by D. Nikolić, based on numerous finds from sites such as Vučedol and Gomolava. There are several architectural solutions to the overall ground plan of Kostolac group dwellings which are usually above ground and sometimes semi-sunken features. The overall differences are noticed in the shape of the house (rectangular, apsidal) and the existence of hearths (oval or horseshoe-shaped) within the houses. The floors of the Kostolac group houses are made of stamped clay that is periodically renewed and the wattle and daub technique is the dominant architectural solution.[313] As is the case with the types of settlements, the architecture of the Coțofeni-Kostolac group follows the patterns of the Coțofeni group. The first classification of Coțofeni group dwellings was likewise provided by P. Roman, who recognizes four different types: a) sunken dwellings, b) above-ground dwellings, c) solid built above-ground dwellings, and d) cave dwellings.[314] Such typology was accepted and further developed by H. Ciugudean who separated two main types – above ground (I) and sunken

[310] Roman 1976, 14-15; Tasić 1979, 118-119.
[311] Ciugudean 2000, 17.
[312] Kapuran 2014, 41-45.
[313] Nikolić 2000, 41-43, with cited literature.
[314] Roman 1976, 15-16.

dwellings (II) with elaborated subtypes depending on constructive elements, dimensions, and the existence and lack of different elements such as ovens and hearths.[315]

Unfortunately due to several factors such as the multilayered nature of sites, the high level of erosion caused by geomorphological characteristics, and general lack of systematic archaeological excavations within the researched territory, the finds of architecture and its elements are few. Namely, the remains of burnt daub and hearths are recorded on several sites (Arija Babi 2, Lepenska Potkapina, Mokranjske Stene, Selište-Borsko Jezero, Zbradila-Fund, Dački Rid, etc.) and provide solely secondary data on the building technique, which is without exception based on wattle and daub. However, several sites have provided additional data on the architecture of the Coțofeni-Kostolac group within the researched region.

At the site of Kulmja Škjopuluj the backside of the above-ground dwellings was cut into the sides of vertical rocks, while the front sides of dwellings were laid on leveling layers which created several successive plateaus. The ground plans of the dwellings are unknown, as solely portions of stamped clay floors were recorded.[316] Similar terraces, that could serve as foundations and back sides of dwellings were recorded at the sites of Jezero-Kameni Rog, Veliki Most-Vratna, and Bogovina.[317] Such building tradition, clearly caused by the geomorphology of the settled areas, has direct analogies within the Coțofeni group, as it is attested at several sites and falls within type Ib according to H. Ciugudean.[318] N. Tasić mentioned a foundation of an above-ground dwelling with Coțofeni-Kostolac group pottery *in situ* at the site of Pjatra Kosti, yet provides no further data on the recorded architectural elements.[319] The site of Borđej yielded remains of an above-ground dwelling with potsherds and stone tools *in situ*. The remains of the dwelling which was not completely excavated are represented by a stamped clay floor which has a seemingly rectangular shape (**Fig. 9**).[320] Similar floor, with three phases of renewal was recorded within the earlier, Kostolac layer at the site of Jelenac near Aleksinac.[321]

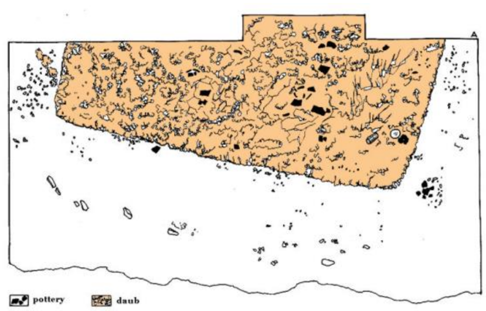

Figure 9. Remains of stamped clay floor at the site of Borđej (Сладић 1984).

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315 Ciugudean 2000, 17-19.
316 Tasić 1982, 24.
317 Капуран 2014, 111, 139-140.
318 Ciugudean 2000, 18-19.
319 Tasić 1982, 24.
320 Сладић 1984, 214-216.
321 Галовић 1959, 329-330.

The site of Bubanj near Niš has so far provided the most complete data regarding the architecture of the Coțofeni-Kostolac group within the researched area. The Coțofeni-Kostolac cultural layer (IV) at the site, separated into three different horizons (1-3) has provided numerous remains of dwellings and other architectural remains. The recorded above-ground dwellings were made in wattle and daub technique, with stamped clay floors and the remains of postholes were registered both surrounding and within the dwellings, assumably supporting the roof construction. The dwellings were rectangular (possibly with one apsidal side similar to the Kostolac group dwellings), oriented most likely north-south, with the approximate dimensions of 3.5 x 6.5 m. The dwellings were built upon the leveling layer that covered not only the spaces in which the dwellings were erected but also the empty spaces in-between. Safe for the dwellings, the excavations at the site of Bubanj yielded remains of kiln floors and numerous hearths that were located both in and outside of the dwellings (**Fig. 10**).

Figure 10. Remains of a dwelling (structure 18) at the site of Bubanj (Bulatović, Milanović 2020).

The remains of the so-called defensive architecture have been confirmed solely for two sites within the researched territory – Čoka lu Balaš and Banjska Stena. At the site of Čoka lu Balaš, the archaeological excavations have determined a defensive rampart made of crushed stone on the eastern and only accessible side of the site.[322] Similarly, the site of Banjska Stena was protected with a rampart and ditch on the western, accessible side.[323]

[322] Tasić 1982, 23.
[323] Kapuran 2014, 127.

5.1.6. Funerary Rites

Compared to the overall knowledge of the material culture of both the Kostolac and Coțofeni groups, the burial rites of both groups are well underresearched. Namely, there are solely several burials attributed to the Kostolac group that have been previously discussed. Both B. Jovanović and D. Nikolić consider that solely burials from the sites of Gomolava, Vučedol, Silajet, and Padina can be observed as belonging to the Kostolac group.[324] At the site of Gomolava the deceased was inhumed and placed into a crouched position with one shallow biconical bowl decorated with metopes and white incrustation, typical for the Kostolac group (**Fig. 11**).[325]

On the other hand, the graves from the site of Silajet and Padina hosted incinerated burials. At the site of Silajet in Dvorovi, Grave No. 2 was recorded within the Late Bronze Age necropolis. The grave consisted of incinerated remains of the deceased covered with a conical bowl decorated with incised notches, triangles, and zigzag lines. Several potsherds decorated with incised lines, pricks, and modeled bands have been recorded within the grave as well.[326] Similarly, a necropolis with incinerated deceased was recorded at the site of Padina. A total of five bowls presumably covered the remains of the deceased, as incinerated human bones were recorded solely in Grave No. 3. The bowls are conical and undecorated or shallow decorated with *Furchesnstich* ornament.[327] According to the available scarce data, the bearers of the Kostolac group practiced bi-ritual burials, inhumations, and incinerations.[328]

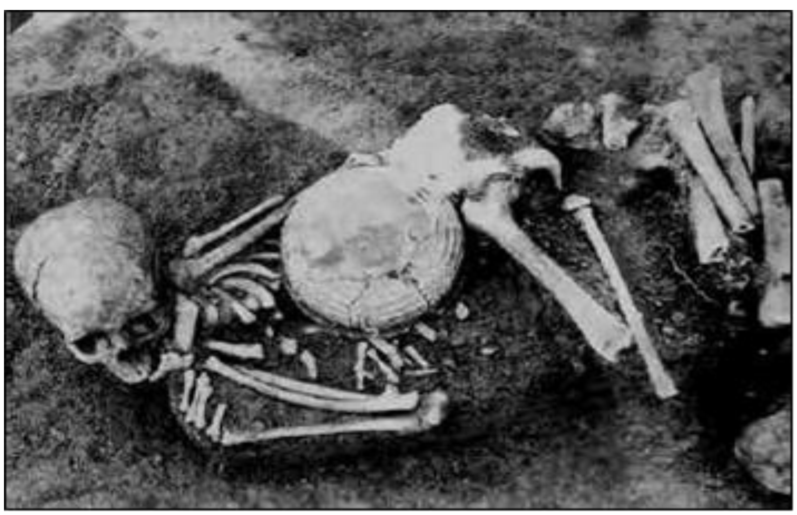

Figure 11. Kostolac group grave from the site of Gomolava (Petrović, Jovanović 2002).

[324] Jovanović 1976; Nikoić 2000, 45.
[325] Nikoić 2000, 45.
[326] Kosorić 1965, 83-84.
[327] Јовановић 1974, 11-13; Jovanović 1976, 134-135.
[328] In 2019, a triple grave that could possibly be attributed to the Kostolac group was recorded at the site of Kovači in Lovas (Croatia). Due to the context of the ceramic finds from the grave, additional dating is required to confirm such assumption. If the grave can indeed be connected with the Kostolac group, it will represent the first burial of such kind (https://lovasproject.wixsite.com/website/triple-copper-age-burial).

Bi-ritual burial practice has also been recorded for the Coțofeni group in Romania and northwestern Bulgaria. Graves are either flat or in caves, and the inhumed deceased are buried with ceramic vessels, stone pendants, shells, chipped stone tools, and ochre. Incinerated deceased are buried with a bowl or urn, similar to the aforementioned practice registered within the Kostolac (burials from Medieşul Aurit are almost identical to the ones at the sites of Dvorovi and Padina).[329] Additionally, there is another type of burial registered within the Coțofeni group, inhumed burials under a tumulus. Such burials are still debatable, as certain scholars consider those as the remnants of the Coțofeni ceramic traditions within the Early Bronze Age societies of the Carpathian Basin and not a practice connected with the bearers of the Coțofeni group. Interestingly, all of the Coțofeni burials recorded in Romania are attributed exclusively to phase III, meaning the phase of the Coțofeni-Kostolac group.[330] Gerling and colleagues associate such graves with the newcomers of the Yamnaya group from the east (refer to **Chapters 2** and **3**), who were buried in vessels typical for the Coțofeni and Makó groups, thus forming the so-called Livezile group.[331] Strontium and oxygen isotope analyses indicate a local population, corresponding to the population of the Great Hungarian Plain.[332]

5.1.7. Economy

The bearers of the Coţofeni group, as well as populations connected with the Coţofeni-Kostolac group have since the beginning of the research been observed as mobile stockbreeders. Several authors have based on the single-layered and short-lasting settlements, their topography and according to data drawn from ethnographic studies considered that the bearers of the Coţofeni group were engaged in the practice of transhumant pastoralism.[333] Such practice implies mobile populations and seasonal movements of livestock between summer and winter pastures. More recent studies, which considered the archaeozoological analyses of faunal remains on the Coţofeni group sites have suggested the same. Namely, the representation of domestic animals is dominant, with ovicaprines being the most represented category, which supported the thesis on mobile stockbreeding.[334] Almost identical faunal data has been recently acquired for the Coţofeni-Kostolac horizons at the sites of Mokranjske Stene-Potkapina and Bubanj.[335]

On the other hand, M. Spasić has recently raised certain questions regarding the economy of the Coţofeni-Kostolac group within the researched area. In general, M. Spasić agrees that the topography and the nature of Coţofeni-Kostolac sites point towards the

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[329] Dumitraşcu 1972.
[330] Roman 1976, 31-33; Ciugudean 2000, 42-44; Alexandrov 2019; Frînculeasa 2020. Gerling and colleagues associate such graves with the newcomers of the Yamnaya group from the east (refer to **Chapters 2 and 3**), who were buried in vessels typical for the Coţofeni and Makó groups, thus forming the so-called Livezile group (Gerling *et al*. 2012, 1099). Strontium and oxygen isotope analyses indicate a local population, corresponding to the population of the Great Hungarian Plain (Gerling, Ciugudean 2013).
[331] Gerling *et al*. 2012, 1099.
[332] Gerling, Ciugudean 2013.
[333] Roman 1976, 15; Tasić 1979, 122-124; Tasić 1995, 66; Капуран, Булатовић 2012, 6; Kapuran 2014, 46-47.
[334] Ciugudean 2000, 19-21.
[335] Булатовић, Милошевић 2015, 43-44; Bulatović 2020a, 329-335.

dominant practice of transhumant stockbreeding but discusses lowland settlements, finds from the Zlotska Cave and copper objects attibuted to the Coţofeni-Kostolac group within that context.[336] Namely, the author points to the evident existence of lowland sites, the great number of so-called farming tools recorded in Zlotska Cave, and finally the possibly reduced exploitation and/or production of copper objects. The reduction of the copper industry within the Coţofeni and Coţofeni-Kostolac groups was also previously highlighted,[337] yet recently published data could indicate that depletion of easily accessible copper ores within the Central Balkans coincides with the Late Eneolithic period.[338] The mentioned questions that M. Spasić raised possibly represent an opportunity to further investigate the existing paradigm of subsistence strategies and economy of the bearers of the Coţofeni-Kostolac, which will be further discussed within the following chapters.

[336] Spasić 2012, 158-160.
[337] Spasić 2012, 160, with cited literature; Ciugudean 2002.
[338] Powell *et al*. 2017.

5.2. Bubanj-Hum II group / Bubanj-Hum II-Bagacina-Pelince I horizon

5.2.1. The History of Research

The first finds that are later to be attributed to the Bubanj-Hum II group were recorded at the beginning of the 20th century at the site of Jelenac near Aleksinac. Based on the specific decoration of potsherds, filled with white incrustation, M. Vasić attributed those finds to the Bronze Age or more precisely the Dubovac-Žuto Brdo group.[339] Yet, it wasn't until the research of the eponymous sites of Bubanj and Velika Humska Čuka near Niš that the group was discussed in a broader scope of the prehistory of the Central Balkans. Following the first excavations at the site of Bubanj, conducted by A. Oršić-Slavetić in 1934 and his publication in 1940,[340] and the works of M. Grbić at the site of Velika Humska Čuka,[341] M. Garašanin defined the Bubanj-Hum group and initially its two phases (Bubanj-Hum I and II) in 1951 and 1953.[342] The excavations at the site were renewed by M. and D. Garašanin between 1954 and 1958, and it was those excavations that provided the basic stratigraphical and chronological data for the discussion on the Bubanj-Hum II group.[343]

M. Garašanin defined the Bubanj-Hum II group based on the appearance of new ceramic forms and manners of decoration (e.g. dense incisions filled with white incrustation) and considered it as a direct continuation of the Early Eneolithic Bubanj-Hum I group. In the spirit of the chronological schemes of his time, he attributed the Bubanj-Hum II group to the Middle Bronze Age, and tightly connected it with the concurrent periods in western Bulgaria and northern Macedonia. Likewise, analyzing the ceramic forms and especially the characteristic decoration, M. Garašanin connected the Bubanj-Hum II group with the Coţofeni group in Oltenia and even considered it as a local manifestation of the Coţofeni group influenced by the Vučedol group from the west.[344]

Unfortunately, the Bubanj-Hum II group was not the focus of researchers until the renewed excavations at the eponymous sites of Bubanj (2008-2014) and Velika Humska Čuka (ongoing since 2014), which provided an abundance of various fresh data on the group and its position within the prehistory of the Central Balkans.[345] Regarding the regional investigation of the group or at least some of its characteristics, sites from western Bulgaria, which will be discussed within the following chapters on the territory, periodization, and chronology, provided solid data, although regarded within the slightly different chronological and cultural scheme.

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339 Васић 1910.
340 Orssich de Slavetich 1940; Милановић, Трајковић-Филиповић 2015, 15-26.
341 The documentation from those excavations was lost during the Second World War (Garašanin 1957, footnote 2).
342 Гарашанин, Гарашанин 1951, 17-18; Garašanin 1953.
343 Гарашанин 1958; Garašanin 1958; Милановић, Трајковић-Филиповић 2015, 27-52.
344 Garašanin 1957, 198-207; Garašanin 1959a, 60-64; Гарашанин 1973, 164-202; Garašanin 1982, 159-164.
345 *Cf*. Трајковић-Филиповић *et al*. 2008; Bulatović 2011; Milanović 2013; Bulatović, Milanović 2020.

5.2.2. Territory

The core territory of the Bubanj-Hum II group was highlighted by M. Garašanin, and although with certain alterations, his stance remains relevant. According to the appearance of the ceramic elements that are characteristic of the Bubanj-Hum II group, M. Garašanin considered that the group was represented in the territories of southeastern and eastern Serbia, western Bulgaria, and northern Macedonia.[346] However, the archaeological research and publications in the last several decades have provided new data on sites on which the aforementioned elements are present and slightly updated the territory in which those occur. For sure, the number of sites on which the Bubanj-Hum II horizon is recorded is highest in the Nišava Valley, western Bulgaria, and northern Macedonia as M. Garašanin suggested, yet characteristic elements of the Bubanj-Hum II group have also been recorded within the lower reaches of West Morava River (Makrešane), the Great Morava Valley (Đula-Ostrikovac),[347] South Morava Valley (Jelenac, Gradište-Praskovče),[348] and Leskovac Basin (Sastanci-Bobište, Hisar, Gradac-Zlokućane, Pusto Semče).[349] To summarize, the core territory of the Bubanj-Hum II group lies between the Sofia Plain to the east and the confluence of Nišava and South Morava rivers to the west. Further, sites with material attributed to the Bubanj-Hum II group are recorded in the Great, West, and South Morava valleys, Pčinja Valley, and the Leskovac Basin.

However, there are certain problems in the perception not only of the Bubanj-Hum II group itself, but the territory on which the group is recorded as well, which are correlated. Namely, as the group is defined based on the characteristic ceramic forms, the territory in which the group existed is directly linked to the distribution of those ceramic forms. As presented in the comprehensive studies by S. Alexandrov and A. Bulatović, certain ceramic forms typical for the Bubanj-Hum II group within the aforementioned territory, such as bowls with T-shaped rims or bowls with rectangular extensions on the rim, or at least quite analogous examples, are recorded within the territories of Greece, Albania, Oltenia, Pannonia, and Central Europe.[350] Therefore, the term Bubanj-Hum II group and the attributes that accompany it (territory, material culture, economy, etc.) will be used as a technical term to mark the communities that inhabited what is considered to be the core territory of the group (listed above), as recently suggested by A. Bulatović.[351]

5.2.3. Periodization: Relative and Absolute Chronology

Unfortunately, the sites which provide a fine vertical stratigraphy and hence the relative chronological position of the Bubanj-Hum II group are few. An additional problem lies in the fact that the territory in which the group spreads falls within two different chronological schemes, Serbian and Bulgarian, and that the group itself displays some regional differences, which will be discussed in this chapter.

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[346] Гарашанин 1973, 188-190.
[347] Стојић 1989.
[348] Стојић, Чађеновић 2006, 186-187.
[349] Булатовић, Јовић 2010.
[350] *Cf.* Alexandrov 1998, 225-226; Bulatović 2011, 61-62; Булатовић, Станковски 2012, 317-322; Bulatović, Milanović 2020, 224-229.
[351] Bulatović, Milanović 2020, 228.

The first, and until recently the only relative chronology of the group was proposed by M. Garašanin, based on the stratigraphic observations at the eponymous site of Bubanj and the analyses of characteristic ceramic forms and ornamentation. As aforementioned, he considered that the Bubanj-Hum II group is tightly connected with the Coţofeni group in Oltenia, and provided the concurrent relations of those groups. Likewise, he considered that the Bubanj-Hum II group is younger than the Kostolac group in the Serbian Danube Region, which indicates that the Bubanj-Hum II group had to be concurrent with what is nowadays phase III of the Coţofeni group.[352] In that manner, and the accordance with the existing data on stratigraphy M. Garašanin proposed a Bubanj-Hum II-Salcuta IV-Coţofeni (III) chronological horizon.[353]

The current relative and absolute chronology of the Bubanj-Hum II group is well observed on several sites located within its core region, the eponymous site of Bubanj near Niš and the sites of Bagačina and Radomir-Vahovo in northwestern/western Bulgaria. In the first place, we should highlight certain problems regarding the chronological schemes that heavily influenced the perception of the chronological position of the Bubanj-Hum II group and the following Bubanj-Hum III group, which have recently been resolved due to the publication of excavations at the site of Bubanj.[354] Namely, according to the chronology proposed by S. Alexandrov,[355] the Bulgarian Early Bronze Age is divided into three phases, of which the III phase would correspond to the Early Bronze Age in Serbia. Prior to the final excavations at the site of Bubanj, S. Alexandrov had analyzed the so-called bowls with T-shaped rims, which are considered characteristic of the Bubanj-Hum II group. According to the available data at the time, and the lack of enclosed contexts with such bowls in the territory of Serbia, S. Alexandrov considered that those bowls should be attributed to the Bubanj-Hum III group or phase IIIa of the Early Bronze Age according to the Bulgarian chronology.[356] In that manner, the Early Bronze Age III horizon at the site of Bagacina attributed to the Glina IV group contains such bowls as well several other ceramic forms (e.g. two-handled beakers) which are considered characteristic of the Early Bronze Age in Serbia, i.e. the Bubanj-Hum III group.[357] By analyzing the distribution and stratigraphic position of several ceramic forms characteristic of the Early Bronze Age in the southern parts of the Central Balkans (bowls with T-shaped rims, bowls with rectangular extensions on the rim, Yunatsite-type beakers, and two-handled beakers), complemented with new data from the site of Bubanj, A. Bulatović separated two phases (Ia and Ib) of the Early Bronze Age within the Southeastern Serbia, Western Bulgaria and Northeastern Macedonia, both corresponding to the Early Bronze Age IIIa according to Bulgarian chronology. Namely, the enclosed contexts recorded at the site of Bubanj have pointed out that bowls with T-shaped rims or rectangular extensions are exclusively connected with

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352 Such chronological schemes were created prior to the publication of monograph on the Coţofeni group by P. Roman in 1976.
353 Гарашанин 1973, 191-199.
354 Bulatović, Milanović 2020.
355 Alexandrov 1995.
356 Alexandrov 1998, 225-226.
357 Two-handled beakers typical for the Bubanj-Hum III group and the hatched motif typical for the Bubanj-Hum II group have been recorded together within the structure 10 at the site of Velika Humska Čuka (Булатовић, Станковски 2012, 321, footnote 483).

the Bubanj-Hum II horizon at the site, while other mentioned shapes are recorded solely within the Bubanj-Hum III horizon, and similar has been noted for the site of Pelince, where bowls with T-shaped rims occur separately in Zone I and the two-handled beakers typical for the Bubanj-Hum III group appear independently in zones II and III. Therefore, A. Bulatović separated two phases and cultural horizons of the Early Bronze Age, the earlier Bubanj-Hum II-Bagacina-Pelince I horizon (EBA Ia), and the later Bubanj-Hum III-Pelince II-III-(Pernik) horizon (EBA Ib) (**Fig. 12**).[358]

Chronology		Cultural horizons		Indicative Sites	
Bulgaria	South Morava	Western Bulgaria	SE Serbia and NE Macedonia	Western Bulgaria	SE Serbia and NE Macedonia
EBA II	EBA Ia	Bubanj-Hum II – Glina IV – Vahovo V	Bubanj-Hum II – Pelince I	Bagachina, Pernik Kondofrei (?), Okol Glava, Chukovets	Bubanj, Hum, Miratovac, Glogovac, Pelince
IIIa	Ib	Bubanj-Hum III – Pernik	Bubanj-Hum III – Pelince II-III	Bagachina (?), Yakimovo, Pekljuk, Pernik, Kondofrei, Sapareva Banya	Bubanj, Hum, Mala Plana, Crvena Reka, Pelince, Kokino
IIIb MBA	MBA II	Verbicioara – Vatin (?)	Ljuljaci – Armenochori	?	Bubanj, Hum, Lopate

Figure 12. Cultural horizons of the Early Bronze Age in SE Serbia, NE Macedonia, and Western Bulgaria as defined by A. Bulatović (Bulatović 2011).

The vertical stratigraphy and enclosed archaeological contexts at the site of Bubanj provided the relative and absolute chronological position of the Bubanj-Hum II group in this area and enabled the possibility for an internal periodization of the group. The Early Bronze Age cultural layer V at the site is divided into the lower and upper portions of which the lower is attributed to the Bubanj-Hum II group and the upper to the Bubanj-Hum III group. Therefore, the lower portion of the cultural layer V, attributed to the Bubanj-Hum II group is interpolated between the final horizon (III) of the preceding Coțofeni-Kostolac cultural layer (IV) and the upper portion of the cultural layer V attributed to the Bubanj-Hum III group. The Bayesian modeling of absolute dates for the Coțofeni-Kostolac group cultural layer at the site put its end in 3301-2943 (95.4% probability) or 3091-2821 calBC (68.4% probability), and the beginning of the Bubanj-Hum III group at the site in 2463-2028 calBC (95.4% probability) or 2192-2050 calBC (68.2% probability).[359] The only absolute date for the Bubanj-Hum II group comes from the neighboring site of Velika Humska Čuka, and positions the structure, an enclosed archaeological feature, attributed to the group between the end of the 29th century and the beginning of the 26th century BC.[360] Based on such dates and the analyses of the ceramic inventory of the lower portion of cultural layer V at the site of Bubanj, A. Bulatović separated two phases of the group.

[358] Bulatović 2011, 67-69. Bulatović, Milanović 2020, 229. The author cautiously indicates the possibility that the two-handled beakers typical for the Bubanj-Hum III group appear earlier in western Bulgaria, or the the bowls with T-shaped rims continue to exist within the later phases of the Early Bronze Age, which is not the case in the regions of SE Serbia and NE Macedonia.
[359] Bulatović, Vander Linden 2017, 1055-1057, Table A4; Bulatović, Vander Linden 2020, 243.
[360] Bulatović, Milanović 2020, 224.

The earlier phase of the Bubanj-Hum II group is defined based on the appearance of pottery ornamentation typical for the preceding Coțofeni-Kostolac group, the lack of *Furchenstich* ornament typical for the later phases of the Coțofeni group (phases II and III) and the Kostolac group, as well as the lack of certain elements considered typical for the Bubanj-Hum II group. A. Bulatović defines this earlier phase of the Bubanj-Hum group as the so-called transitional period between it and the preceding Coțofeni-Kostolac group (between the Late Eneolithic and the earlier phase of the Early Bronze Age).[361] The possible absolute date for this earlier phase comes from a grave at the site of Polje in the village of Glogovac,[362] and falls between the end of the 29th and the beginning of the 27th century BC.[363]

The later phase of the Bubanj-Hum II group is represented by those elements that enabled M. Garašanin to separate the group in the beginning. Bowls with T-shaped rims and dense incisions filled with white incrustation are characteristic of this phase, while certain elements of the Coțofeni-Kostolac and Vučedol groups are still present. The analyses of the absolute dating from the number of sites that possess similar ceramic elements broadly position the second phase of the Bubanj-Hum II group into the first half of the 3rd millennium BC.[364]

The vertical stratigraphy from the sites in western Bulgaria confirms the relative position of the Bubanj-Hum II group as recorded at the site of Bubanj. At the site of Bagacina, the ceramic forms and ornamentation typical for the Bubanj-Hum II group (bowls with T-shaped rims, rectangular extensions on rims of the bowls) are recorded within the EBA 3 layer attributed to the Glina IV group according to S. Alexandrov. This layer lies on top of the EBA 2 layer which is attributed to phase III of the Coțofeni group.[365] Similarly, at the site of Radomir-Vahovo, layer II which S. Alexandrov defines as Early Vučedol-Coțofeni III[366] bears certain ceramic similarities with the Bubanj-Hum II group.[367] This layer lies on top of layer III, which is according to S. Alexandrov attributed to the Bubanj-Hum Ib-Kostolac-Coțofeni II-III horizon,[368] yet judging by the pottery that the author presents, it corresponds to the Coțofeni-Kostolac group in the territory of Serbia (**Table 6**).[369]

361 Bulatović, Milanović 2020, 224-226.
362 Лазић, Љуштина 2017. This date should be taken with caution, since the grave itself did not contain any material attributed to the Bubanj-Hum II group.
363 Bulatović, Milanović 2020, 225 and further. With a detailed analyses of absolute chronology of characteristic ceramic ornamentation in a broader region.
364 Bulatović, Milanović 2020, 226-228.
365 Alexandrov 2007, 227-231.
366 This ceramic elements from this layer display similarities with Coțofeni-Kostolac group in Serbia (Капуран, Булатовић 2012, 12).
367 Alexandrov 1994, 119, Pl. V-VI.
368 Alexandrov 1994, 118.
369 Alexandrov 1994, Pl. IV.

Table 6. Vertical stratigraphy and the position of the Bubanj-Hum II group on several indicative sites (according to Alexandrov 1994; Alexandrov 2007; Bulatović, Milanović 2020, modified).

Serbia	Bubanj	Bagacina	Radomir-Vahovo	Bulgaria
Late Eneolithic	Coțofeni-Kostolac	Coțofeni III	Bubanj-Hum Ib-Kostolac-Coțofeni II-III	EBA II
EBA Ia	Bubanj-Hum II	Glina IV	Early Vučedol-Coțofeni III	EBA IIIa
EBA Ib	Bubanj-Hum III		Classic Vučedol – Coțofeni III	
	-			

5.2.4. Material Culture

The material culture of the Bubanj-Hum II group, and pottery in the first place, served as a basis for M. Garašanin to distinguish the group. He highlighted several forms and ornamentations characteristic of the group such as bowls with T-shaped rims and the decoration comprised of incised hatched rectangles and triangles filled with white incrustation.[370]

The comprehensive typology of **ceramic forms and ornamentation techniques** for the Bronze Age within the researched territory was proposed by A. Bulatović and J. Stankovski. According to such typology, the authors separate the following form of vessels for the Bubanj-Hum II group (Bubanj-Hum II-Bagacina-Pelince I horizon of the Early Bronze Age). Bowls are semi-globular (type I) (Pl. 5/1-3) or semi-globular with inverted rim (variant Ia) (Pl. 5/8, 9). Semi globular bowls often possess a T-shaped rim characteristic for the Bubanj-Hum II group. Slightly biconical bowls (type IV) (Pl. 5/4) and S-profiled bowls (type III) (Pl. 5/5, 10) have also been recorded, along with conical bowls (type V) (Pl. 5/6, 7). Cups are recorded in two types, semi-globular and biconical cups (types I and II) (Pl. 5/11, 12). Two types of beakers are characteristic of the horizon, pear-shaped beakers with handles that are in line with the rim or slightly surpass it (type I) (Pl. 5/13, 14) and semi-globular beakers on a hollow foot (type II) (Pl. 5/15). The most common type of deep ware for the period is a vessel with various types of profilations and handles positioned on the vessel belly (type II) (Pl. 5/16, 17).[371]

Regarding ornamentation, incising represents the dominant technique during the Early Bronze Age. The ornamentation characteristic for the Bubanj-Hum II group is comprised of various incised motifs such as rectangles, circles, triangles, and rhombuses, which are often hatched and filled with white incrustation and positioned on the upper side

[370] Гарашанин 1973, 182-184.
[371] Булатовић, Станковски 2012, 231-265.

of the rim of the bowl or the vessel belly, or zig-zag and cross-cutting incised motifs likewise filled with white incrustation. Besides, vertical or horizontal fields comprised of dotted pricks are also characteristic of the group (**Fig. 14**).

Other ceramic finds that originate from the lower portion of the cultural layer V at the site of Bubanj, which is correlated with the Bubanj-Hum II group comprise spindle-whorls (discoid and biconical) and a pyramidal loom weight.[372]

Unfortunately, the **bone and antler industry** of the Bubanj-Hum II group is well underresearched. M. Garašanin highlights that the antler hoes are more common in this period,[373] yet there are no new data to support such a claim.

The **chipped stone industry** of the Bubanj-Hum II group was addressed within the subchapter on the Coțofeni-Kostolac group (**5.1.**). Since the lithic assemblage analyzed from the site of Bubanj is referred to as the Late Eneolithic (Coțofeni-Kostolac-Bubanj-Hum II), there is no clear chronological or cultural separation of the artifacts within the assemblage.[374] The ground stone tools recorded within the Bubanj-Hum II horizon at the site of Bubanj could be attributed to type 4 according to D. Antonović, a type which is common for the Eneolithic and Bronze Age.[375]

A fragment of a **copper awl**, square in cross-section originates from the lower portion of the cultural layer V (Bubanj-Hum II group) at the site of Bubanj, which authors connect with similar awls recorded within the Kostolac horizon at the site of Gomolava and the Early Bronze Age site of Ezero in southern Bulgaria.[376] D. Antonović positions the examples from the site of Gomolava into a long period from the Early Eneolithic (c. 4500 BC) to the beginning of the Middle Bronze Age (c. 1750 BC).[377]

[372] Bulatović, Milanović 2020, 228. The finds originate from the lower portion of the cultural layer V, but not from an enclosed archaeological context.
[373] Гарашанин 1973, 182.
[374] Šarić 2020, 401-405.
[375] Антоновић, Ђорђевић 2011, 60; Bulatović, Milanović 2020, Pl. 52/22.
[376] Bulatović, Milanović 2020, 222.
[377] Antonović 2014, 103-104, Tafel 42, 59.

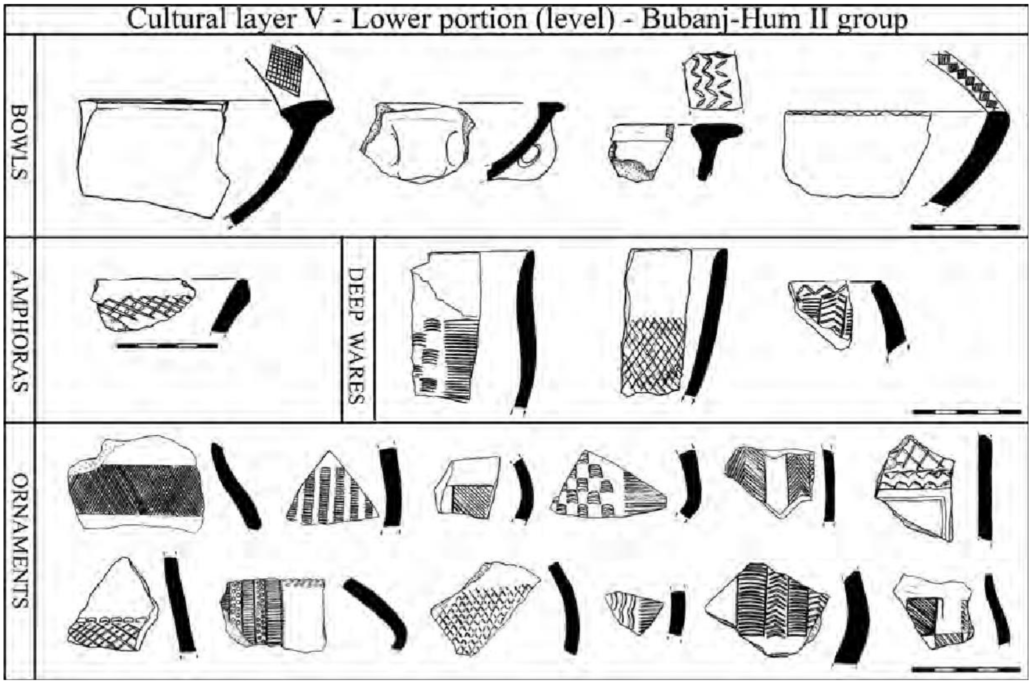

Figure 13. The typology of the Bubanj-Hum II group from the site of Bubanj (Bulatović, Milanović 2020).

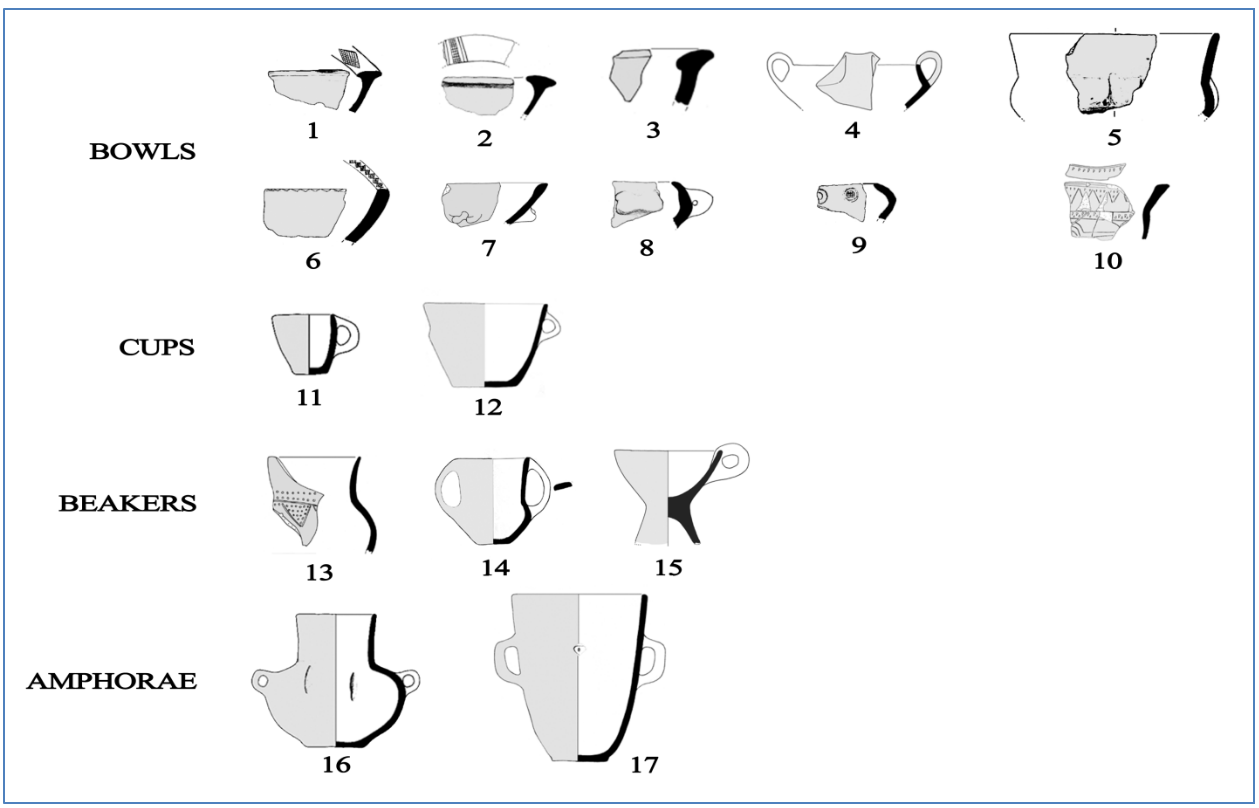

Plate 5. Typology of the Bubanj-Hum II-Bagacina-Pelince I horizon of the Early Bronze Age (Булатовић, Станковски 2012, modified).

Figure 14. Characteristic ornamentation of the Bubanj-Hum II group (Гарашанин 1973; Булатовић, Станковски 2012, modified).

5.2.5. Settlements and Architecture

The topography of the Early Bronze Age settlements was recently addressed by A. Bulatović and J. Stankovski who separated several types of settlements. First, lowland settlements located on the terraces of large rivers and their major tributaries (e. g. Nišava, South Morava) and lowland settlements positioned on mild slopes of mountains, on the fringe of basins (e.g. Niš Basin). The hilltop settlements were located on dominant elevations on the fringe of a basin or above a confluence and presumably controlled a wider area. Only in one case was settling in caves registered during the Early Bronze Age.[378]

The sites on which the material attributed to the Bubanj-Hum II group was recorded all fall within the aforementioned categories, as such sites are positioned on terraces of large rivers (Čardak-Donja Vrežina, Izvorište-Bobište, Jelenac, Trševine) as well as dominant plateaus either on the fringe of basins, on milds slopes of mountains or above a confluence (Bubanj, Velika Humska Čuka, Gradac-Zlokućane, Gradište-Praskovče, Pusto Semče, Hisar, etc.).

The data on the architecture itself is quite scarce. Within the researched territory, remains of dwellings associated with the portable archaeological material attributed to the Bubanj-Hum II group have solely been recorded on the eponymous sites of Bubanj and Velika Humska Čuka. At the site of Bubanj, the dwelling (structure 83) was represented by an approximately rectangular zone with a rounded northwest corner,[379] comprised of dark

[378] Булатовић, Станковски 2012, 197-201.
[379] The structure was damaged by Modern Era graves, and therefore was not completely preserved or excacvated.

soil. The dwelling was dug approximately 0.15 to 0.25 m into the surrounding layer, and the post-holes were registered within the eastern portion of the structure (**Fig. 15**). The inventory of the structure was comprised of potsherds, a ceramic spindle whorl, lithics, and a bone tool, while no remains of architectural elements such as clay floors or lumps of daub were recorded. The structure was dated between the beginning of the 31st century and the beginning of the 29th century BC.[380]

A similar dwelling was recorded during the 2016 campaign at the neighboring site of Velika Humska Čuka. The dwelling (structure 6A) was represented by an approximately rectangular zone comprised of compacted dark soil above the rock with scattered portions of burnt soil within (floor?). The presumed post-holes were cut into the rock itself, and as is the case with the aforementioned dwelling at the site of Bubanj, no remains of daub were recorded. Again, the dwelling was not completely excavated as it extended into the trench cross-sections, and the excavated dimensions measure approximately 4 x 2 m. The structure is dated between 2851 and 2579 calBC (with 95.4% probability).[381]

Figure 15. The remains of a dwelling (structure 83) from the site of Bubanj (Bulatović, Milanović 2020, modified).

[380] Bulatović, Milanović 2020, 116-117.
[381] Bulatović et al. 2020, 1176.

5.2.6. Funerary Rites

So far, there have been no burials that could be directly connected with the Bubanj-Hum II group. A peculiar grave was recorded at the site of Polje in the village of Glogovac, which could be based on the absolute date connected with the period corresponding to the earlier phase of the Bubanj-Hum II group, the phase which displays certain ceramic characteristics of the preceding Coţofeni-Kostolac group. This peculiar grave was a triple-burial comprised of three individuals buried in a crouched position, with hands bent in elbows and palms in the line with the head. All of the deceased were facing west (**Fig. 16**). No grave goods were recorded, and therefore there were no direct analogies that could connect the grave with the Bubanj-Hum II group.[382] However, two absolute dates from the grave yielded values of 2811-2745 calBC (with 54% probability) and 2816-2668 calBC (with 75.9% probability), which falls within the overall dating of the Bubanj-Hum II group.[383]

Figure 16. Triple-burial from the site of Polje in Glogovac (Лазић, Љуштина 2017, modified).

5.2.7. Economy

The current data for the earlier phase of the Early Bronze Age, meaning the Bubanj-Hum II group provide us with only a glimpse of the economy of the bearers of the group. The recently conducted analyses of faunal remains from the site of Bubanj indicate that the domestic animals are dominant in all of the cultural layers and that the caprines are the most represented category within the cultural layer V (both phases of the Early Bronze Age – Bubanj Hum II and III), followed by domestic cattle, domestic pig and red deer.[384] Interestingly, horse remains have been reported in both the phases of the Early Bronze Age at the site.[385] The botanical remains that stand in connection with the Bubanj-Hum II group originate from a pit within the lower portion of the cultural layer V (structure

[382] Лазић, Љуштина 2017, 130-131.
[383] Bulatović *et al*. 2020, 1171-1173, Table 1.
[384] Bulatović 2020, 332-334.
[385] Bököny 1991; Булатовић, Станковски 2012, 333; Bulatović 2020a, 334.

84/99/109).[386] Those remains are comprised of grains of einkorn, single grains of barley and rye, and several seeds of probable weeds, which is in general a less diverse range of crops compared to the existing data for the Early Bronze Age.[387]

[386] Bulatović, Milanović 2020, 117.
[387] Filipović 2020, 343.

5.3. Bubanj-Hum III group / Bubanj-Hum III-Pelince II-III Pernik horizon

5.3.1. The History of Research

Following the excavations at the eponymous sites of Velika Humska Čuka in 1934 and Bubanj near Niš between 1954 and 1958,[388] M. Garašanin has based on the observations on vertical stratigraphy and the appearance of characteristic forms of material culture, primarily types of pottery (e.g. beakers with two handles), defined the third phase of the Bubanj-Hum group, i.e. the Bubanj-Hum III group. He considered that this phase of the group represents a direct continuation of the preceding Bubanj-Hum II group, and primarily connected it with the Glina III–Schneckenberg group in Oltenia, Perjámos group, and the Early Bronze Age mounds of western Serbia (Belotić-Bela Crkva group).[389] Further, M. Garašaninn considered that the group was formed on the basis of the Bubanj-Hum II group with the inflow of certain steppe elements from the east, and connected finds from several sites within the Niš Basin with the group (e.g. Vrtište, Vitkovac, Gornja Toponica). Likewise, based on the stylistic and typological characteristics of pottery, he connected the Bubanj-Hum III group with Pitvaros and Armenochori groups and considered it as one of the groups of the so-called Danubian-Balkan complex of the Early Bronze Age.[390] The Danubian-Balkan complex of the Early Bronze Age was defined by M. Garašanin in 1983, and the complex includes a number of groups which according to the author display certain common elements in their formation such as Glina III – Schneckenberg in Romania, Nagyrev and Mureş the Tisza Region, Bubanj-Hum III in the Morava Region, Armenochori in Pelagonia, Maliq III in Albania, Vinkovci in South Pannonia, Belotić-Bela Crkva in Western Serbia, etc.[391]

Up until relatively recently, the research of the Bubanj-Hum III group had more of a regional than a synthetic character. The research was based on surveys and excavations of sites or certain regions, with the result being published as papers or short reports which did not address the group itself. A great contribution to the research of the Bubanj-Hum III group, its material culture, periodization, and territorial distribution was provided by publications of monographs from the "*Археолошка грађа Србије*" series, that presented prehistoric material from a large number of sites within the researched territory.[392] Likewise, the relatively recently published monograph by A. Bulatović and J. Stankovski on the Bronze Age in South Morava and Pčinja Valleys proved to be quite important for the research of the Bubanj-Hum III group, as it deals with it within a broader territorial and cultural context.[393] The aforementioned publications resulted in a different view of the Bubanj-Hum III group. Namely, M. Stojić considers that the most recognizable form of the material culture of the Bubanj-Hum III group, a beaker with two handles that are in line with the rim or slightly surpass it, is not characteristic solely for the group itself, but for the broader area that encompasses the Morava Region, Serbian Danube Region downstream of

[388] Гарашанин 1958; Garašanin 1958; Милановић, Трајковић-Филиповић 2015, 27-52.
[389] Garašanin 1959, 64-66.
[390] Гарашанин 1973, 190-202; Garašanin 1983a, 719-722; Garašanin 1983d, 463-464.
[391] Garašanin 1983d, with cited literature.
[392] Стојић, Чађеновић 2006; Стојић, Јоцић 2006; Булатовић 2007; Стојић, Јацановић 2008; Булатовић, Јовић 2010; Стојић, Илијић 2010; Булатовић et al. 2013; Капуран et al. 2014; Булатовић et al. 2017.
[393] Булатовић, Станковски 2012.

the Sava confluence, including the Banat Region, and therefore proposes the term **two-handled beaker culture**.[394] However, M. Ljuština and K. Dmitrović consider such attribution outdated,[395] and A. Bulatović and J. Stankovski have offered a different opinion on the subject. The problem with the definition of the two-handled beaker culture is that such culture does not have a specific territory, yet possesses characteristics of different groups in which the two-handled beakers are represented as well. During the Early Bronze Age, such beakers are common in quite a vast territory from the Dniester to the northern Aegean and a number of groups (e.g. Mureş group, Armenochori group).[396] For that reason, A. Bulatović suggests that the term culture should be replaced with the term cultural complex, which would encompass different but related cultural groups within the Danube Region, Morava Region, eastern and southeastern Serbia, Macedonia, and western Thrace.[397]

Finally, the recently published excavations at the eponymous site of Bubanj and the ongoing excavations at the eponymous site of Velika Humska Čuka yielded fresh data on the group, which will be discussed within this chapter.[398]

5.3.2. Territory

M. Garašanin highlighted the territory in which the material culture characteristic of the Bubanj-Hum III group occurs. He pointed out that the highest density of sites is recorded within the Niš and Sofia Basins, and that similar material culture is recorded within the Great Morava Valley and the Morava-Vardar Corridor.[399] The territory in which certain elements of the material culture attributed to the Bubanj-Hum III group appear is quite vast, and therefore it is not always possible to precisely separate it from the related and neighboring groups. The highest concentration of sites on which the material culture characteristic for the Bubanj-Hum III group, as defined in current literature, is recorded in the Nišava Valley, South Morava, Pčinja, and Struma valleys. However, sites on which the material culture similar to the one of the Bubanj-Hum III group have, within the researched area, been recorded in the Great Morava Valley, Leskovac Basin, and eastern Serbia, and therefore those sites were included in the domain of the Bubanj-Hum III group in the recent research. It is important to highlight that the Early Bronze Age sites in the Great Morava Valley display not only characteristics of the Bubanj-Hum III group, but also other groups such as the Vinkovci-Somogyvár group and that those influences are even more represented in the territory of western Serbia (Belotić-Bela Crkva group) and the West Morava Valley, where the westernmost finds attributed to the Bubanj-Hum III group have been recorded at the site of Ade in Prijevor.[400]

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[394] Стојић, Чађеновић 2006, 29.
[395] Dmitrović, Ljuština 2013, 155.
[396] For a detailed discussion on the origin of such beakers and their distribution refer to Булатовић, Станковски 2012, 321-326, with cited literature.
[397] Булатовић 2007, 35-36; Булатовић, Станковски 2012, 329.
[398] Bulatović, Milanović 2020.
[399] Garašanin 1983a, 719-720.
[400] Булатовић, Јовић 2010, 41; Булатовић, Станковски 2012, 331-327; Dmitrović, Ljuština 2013, 155-156, 159.

5.3.3. Periodization: Relative and Absolute Chronology

M. Garašanin established the relative chronology of the Bubanj-Hum III group based on the stratigraphic evidence from the eponymous site of Bubanj and the analyses of the appearance of those ceramic forms which he considered characteristic of the group. He positioned the Bubanj-Hum III group into the Early Bronze Age and considered it concurrent with the Glina III-Schneckenberg group and that it is directly connected with the Armenochori group. In order to provide a possible absolute chronology of the group he primarily connected it with the early phase of the Middle Helladic I period,[401] and later altered his opinion according to new finds and connected it to the late phase of the Early Helladic III period (c. 2200-2000 BC).[402]

When dealing with the relative and absolute chronological position of the Bubanj-Hum III group, we are once again dealing with the problems highlighted in the subchapter on the Bubanj-Hum II group (**5.2.**), meaning the perception of the group within the different chronological schemes and cultural environments, primarily Serbian and Bulgarian. One of the main problems for the establishment of the relative and absolute chronology of the group, besides the lack of absolute dates from the researched territory, was the problem of the asynchronous appearance of certain types of ceramic vessels characteristic of the Early Bronze Age (e.g. bowls with T-shaped rims, two-handled beakers, Junatzite beakers, etc.). As described in the subchapter on the Bubanj-Hum II group (**5.2.**), A. Bulatović has separated two phases of the Early Bronze Age within the researched territory (**Fig.12**). The earlier phase, or the Bubanj-Hum II-Bagacine-Pelince I horizon (EBA Ia), is characterized by bowls with T-shaped rims and hatched incised motifs filled with white incrustation, which are recorded within the lower portion of the cultural layer V at Bubanj,[403] in zone I at the site of Pelince and the Glina V layer at the site of Bagačina.[404] The later phase, the Bubanj-Hum III-Pelince II-III Pernik horizon (EBA Ib) is characterized by the appearance of two-handled beakers, the most prominent type of vessel of the Bubanj-Hum III group, bowls with extensions on the rim, Junatsite beakers, and cups on a hollow foot (**Fig. 18**).[405]

Before the absolute dates from the eponymous sites of Bubanj and Velika Humska Čuka, which were acquired relatively recently, A. Bulatović and J. Stankovski discussed the absolute chronology of the Bubanj-Hum III group based on the dating of two-handled beakers characteristic for the group which originated from well stratified and absolutely dated sites in the region. Authors considered dates from the sites of Novačka Ćuprija and Ljuljaci in Serbia, Raskopanitza (horizon 5) and Junatzite (horizon 3) in Bulgaria, and Kastanas in Greece and concluded that based on the appearance of two-handled beakers the Bubanj-Hum III group in the Central Balkans could be dated to the beginning of the final quarter of the 3rd millennium BC.[406]

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[401] Гарашанин 1973, 198-199, 202-203.
[402] Garašanin 1983a, 719-720.
[403] Bulatović, Milanović 2020, 229-234.
[404] Alexandrov 2007, 228-230.
[405] Bulatović 2011.
[406] Булатовић, Станковски 2012, 293-297.

The vertical position of the Bubanj-Hum III group at the site of Bubanj is fixed within the upper portion of cultural layer V. The layer lies above its lower portion attributed to the Bubanj-Hum II group and the surface layer. The layer itself is quite disturbed with modern era graves.[407] The Bayesian modeling of the absolute dates for the Buban-Hum III group at the site positions its beginning in 2463-2028 calBC (95.4% probability) or 2192-2050 calBC (68.2% probability).[408] The earliest date for the Bubanj-Hum III group originates from the site of Velika Humska Čuka (layer with exclusively Bubanj-Hum III pottery) and falls between the mid-25th century and the end of the 24th century BC (95.4% probability) or between the mid-25th century and the mid-24th century BC (68.2 probability).[409] Two more absolute dates have been acquired for the Bubanj-Hum III group within the researched territory. The first date originates from the site of Pelince in Macedonia, from zone III which is associated with pottery belonging to the Bubanj-Hum III-Pelince II-III-Pernik horizon (EBA Ib). The date is positioned between the mid-25th to the end of the 23rd century BC (95.4 probability), or from the mid-24th to the end of the 24th century BC (68.2 probability).[410] Another date, although without the clearest archeological context, comes from the site of Svinjarička Čuka near Lebane. The sample (emmer grain) comes from between the Neolithic and Eneolithic layers at the site, and most likely represents an intrusion from the disturbed upper layer which contains pottery typical for the Bubanj-Hum III group. The date yielded a value of 2458-2212 calBC (42.2% probability).[411] The recently published Bayesian modeling of dates for the Bubanj-Hum III group comprised of three dates from the site of Bubanj, date from the site of Velika Humska Čuka, date from the site of Pelince, and date from the Ade necropolis near Prijevor in western Serbia yielded the following results (**Table 7**): the start of the Bubanj-Hum III group falls between 2723 and 2296 cal BC (95.4% probability) or between 2491 and 2296 calBC (68.2% probability) and the end of the group falls between 2085 and 1938 calBC (95.4% probability) or between 2006 and 1859 calBC (68.2 % probability).[412]

Table 7. Early Bronze Age absolute dates from the researched territory discussed in this chapter.

Site	Attribution	Sample	calBC/BP	Cited from
Novačka Ćuprija	BH III	-	2160-1850	Крстић *et al*. 1986.
Ljuljaci	Two-handled beaker?	-	1950	Bogdanović 1986
Bubanj	BH III	SUERC-69298	2131-1900	Bulatović, Vander Linden 2017
Bubanj	BH III	SUERC-61530	2140-1920	Bulatović, Vander Linden 2017
Bubanj	BH III	MAMS 31461	3718±22	Bulatović *et al*. 2020
VHČ	BH III	MAMS 31477	3885±16	Bulatović *et al*. 2020
Pelince	BH III-P II-III-P	MAMS 31472	3843±22	Bulatović *et al*. 2020
Svinjarička Čuka	BH III?	MAMS 40139	2458-2212	Horejs *et al*. 2019
Prijevor	EBA	RICH 24502	3638±30	Bulatović *et al*. 2020

407 Bulatović, Milanović 2020, 116-121, 229-234.
408 Bulatović, Vander Linden 2017, 1055-1057, Table A4; Vander Linden, Bulatović 2020, 243.
409 Bulatović *et al*. 2020, 1178.
410 Bulatović *et al*. 2020, 1169-1171.
411 Hoerjs *et al*. 2019, 186, Tab. 1.
412 Bulatović *et al*. 2020, 1178, Fig. 3.

5.3.4. Material Culture

According to the comprehensive typology of the Bronze Age **ceramics forms and ornamentation** by A. Bulatović and J. Stankovski, the following forms are characteristic of the Bubanj-Hum III-Pelince II-III-Pernik horizon of the Early Bronze Age. Bowls are semi-globular (type I) (**Fig. 18/1, 2**), semi-globular with inverted rim (variant Ia) (**Fig. 18/3, 4**), or S-profiled (type III) (**Fig. 18/5**). Two types of cups are common for this horizon: conical cups which are quite rare for this period (type III) (**Fig. 18/6**) and globular cups which can possess a cylindrical neck and resemble a beaker with one handle (type IV) (**Fig. 18/7, 8**). Beakers are by far the most common form of vessels in this horizon and especially in the Bubanj-Hum III group. The most recognizable type of beaker for this period is a pear-shaped beaker with two handles that are in line with the rim or slightly surpass it (type I) (**Fig. 17/9-13**). Other types of beakers are globular beakers with funneled neck and two handles that connect the belly and the neck (**Fig. 18/14**), a semi-globular beaker on a hollow foot (type II) (**Fig. 18/15, 16**), beakers of the Junatsite type (type III) (**Fig. 18/17**), and beakers (jugs) with one handle (type V) (**Fig. 18/18**). Finally, amphorae are recorded in both types, with ribbon-like handles below the rim (type I) (**Fig. 18/19**) and with various types of handles positioned on the vessel belly (type II) (**Fig. 18/20-22**). The ornamental techniques of the period are represented mainly by incisions and white encrustation which is more common at the sites north of the Grdelica Gorge.[413]

Out of other ceramic finds, such as spindle whorls and loom-weights, fragments of figurines stand out. The fragments of anthropomorphic figurines are recorded within zone III at the site of Pelince and represent stylized figurines with truncated arms and modeled chests. A realistic figure representing a foot and lower leg comes from the site of Kokino (**Fig. 17**).[414]

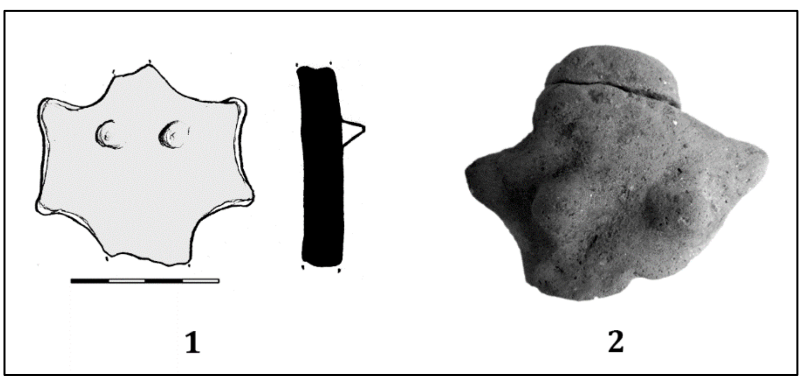

Figure 17. Anthropomorphic figurines from Pelince (1) and Kokino (2) (according to Булатовић, Станковски 2012, modified).

[413] Булатовић, Станковски 2012, 231-265. Compare with the territorial distribution of the Bubanj-Hum III and Armenochroi groups and their mutual relaions wtihin Chapter 12.
[414] Булатовић, Станковски 2012, 265.

The **bone industry** of the period within the researched territory is underresearched. When discussing the economy of the Bubanj-Hum III group, M. Garašanin mentions a higher representation of antler hoes at the site,[415] which will be discussed in the chapter on the economy of the group.

The **chipped stone industry** is likewise an under-researched aspect of material culture in this period. The recent analyses of such industry from the upper portion of cultural layer V at the site of Bubanj (Bubanj-Hum III group) indicate that the lithic assemblage is modest, comprised of solely opal and chert as raw materials, and that only one blade is made of Balkan Flint. Blades are the most represented lithic category at the site of which some might have been parts of composite tools. In general, a decline in the chipped stone industry is recorded in this period, possibly caused by the appearance and utilization of metals.[416] The **ground stone industry** is represented by perforated stone axes from the sites of Bacijevce,[417] Gornja Otulja,[418] Pelince, and Kokino.[419] The axe from Bacijevce is according to analogies dated to the Late Eneolithic and Early Bronze Age.[420] Axes from other sites are typologically less sensitive and could fall within types IV and V according to D. Antonović and A. Đorđević which are dated from the Late Eneolithic to the Late Bronze Age.[421]

Within the South Morava Region, **metal finds** connected with the Early Bronze Age or the Bubanj-Hum III-Pelince II-III-Pernik horizon originate from the sites of Hisar, Lozane, and Velika Humska Čuka. The copper axe from the site of Hisar in Leskovac is according to the typology by A. Vulpe,[422] attributed to a variant between the *Izvoarele* and *Dumbrăvioara* types which are characteristic of the Glina III – Schneckenberg group.[423] Two copper axes originate from the site of Biljurski Rid (Barčice) in the village of Lozane.[424] According to the typology by A. Vulpe, the axes are attributed to the *Corbasca* type, characteristic of the Glina III group, or type Lozane according to D. Antonović.[425] Two bronze daggers originate from the site of Velika Humska Čuka,[426] which M. Parović-Pešikan dates to the end of the Early Helladic or the beginning of the Middle Helladic period (c. 2200-1900 BC).[427] Similarly, N. Tasić attributes daggers from Popović and Gložaje near Požarevac to the Bubanj-Hum III group, as well as flat axes from the problematic Brodarac

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415 Garašanin 1983a, 721-722.
416 Šarić 2020, 405.
417 Булатовић 2007, 84.
418 Булатовић 2007, 195.
419 Булатовић, Станковски 2012, 117-119.
420 Булатовић, Станковски 2012, 119.
421 Антоновић, Ђорђевић 2011, 59-60.
422 Vulpe 1970.
423 Ерцеговић-Павловић, Костић 1988, 18; Булатовић, Станковски 2012, 117.
424 Ерцеговић-Павловић, Костић 1988, 18; Јовић *et al*. 2020, 171-173.
425 Булатовић, Станковски 2012, 117; Antonović 2014.
426 Garašanin 1958, 71, Abb. 11.
427 Паровић-Пешикан 1995, 13, Сл. 5/2-3.

hoard.[428] A copper axe from the village of Bovan near Aleksincac could likewise be attributed to the Early Bronze Age.[429]

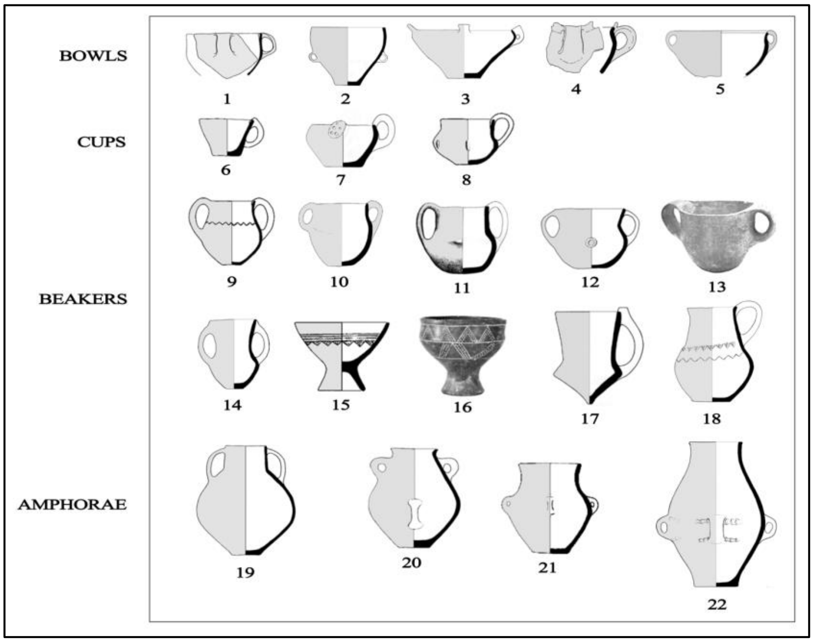

Figure 18. Typology of the Bubanj-Hum III-Pelince II-III-Pernik horizon of the Early Bronze Age (Булатовић, Станковски 2012, modified)

5.3.5. Settlement and Architecture

As discussed in the previous subchapter on the Bubanj-Hum II group (**5.2.**), A. Bulatović and J. Stankovski have separated several types of settlements in this period, based on the topography. Those are lowland settlements on terraces of large rivers and their major tributaries, lowland settlements positioned on the mild slopes of mountains on the fringe of basins. Hilltop settlements were located on dominant elevations either on the fringe of a basin or above a confluence, presumably to control a wider area. Settling of caves is recorded solely in one case during the Early Bronze Age.[430] Settlements of both horizons of the Early Bronze Age within the researched territory are dominant of the lowland type, positioned on river terraces or mild slopes on the fringe of basins.[431] The sites of the Bubanj-Hum III group, or the Bubanj-Hum III-Pelince I-II-Pernik horizon discussed in this study fall within all of the proposed categories.

Despite the new systematic excavations at the sites of Bubanj and Velika Humska Čuka, no remains of dwellings have been recorded,[432] save for the remains of shaped daub from the Early Bronze Age sites which indicates that the dwellings were built above ground in wattle and daub technique.

[428] Tasić1992, 20.
[429] Филиповић, Милојевић 2015.
[430] Булатовић, Станковски 2012, 197-201.
[431] Булатовић, Станковски 2012, 331.
[432] Bulatović, Milanović 2020, 229.

5.3.6. Funerary Rites

Unfortunately, there are no funerals that could be directly connected with the Bubanj-Hum III group, and within the researched territory in general Early Bronze Age burials are scarce. The skeletal burial from the site of Vajuga-Pesak within the Iron Gates region represents one of the rare examples. The deceased is buried in a crouched position, and the grave goods are comprised of two ceramic vessels, a bowl, and a one-handled beaker. Such ceramic forms are not common for the Bubanj-Hum III group and usually stand in connection with the Early Bronze Age Vinkovci group.[433] The cremation burial from the site of Glamija (grave 33) is likewise attributed to the Early Bronze Age.[434] A skeletal burial from the site of Utrina in Rutevac, known solely from oral information, is based on the vessel from the grave attributed to the Early Brone Age.[435] There is a possibility that an urn with the cremated bones recorded at the site of the Amphitheatre in Viminacium represent a grave, although there is no data on the humane origin of those bones. The form of the urn itself is analogous to a number of Early Bronze Age groups in the Central Balkans, including the Bubanj-Hum III group.[436]

5.3.7. Economy

Based on the finds of antler hoes and the number of animal bones recorded at the site of Bubanj, M. Garašanin considered that the inhabitants of the Early Bronze Age settlement at the site were engaged in agriculture and that the husbandry and hunting likewise represented an important part of the subsistence. Plant remains from the site of Bubanj (structure 1 from the upper portion of cultural layer V) indicate a less diverse range of crops compared to the existing data on the Early Bronze Age.[437] The analyses of faunal assemblages are presented in the previous chapter on the Bubanj-Hum II group (**5.2.**), and those indicate that the husbandry and hunting were indeed important elements of subsistence strategies.[438]

[433] Popović *et al*. 1986, 173.
[434] Крстић 2003, 8-9.
[435] Булатовић 2009б, 127-128.
[436] Bulatović et al. 2019b, 67. Compare with the EBA in NE Serbia, discussed in **Chapters 5.5.**, **8** and **12.**
[437] Filipović 2020, 343. The samples are presented together with samples from structure 84/99/109 attributed to the Bubanj-Hum II group.
[438] Bulatović 2020, 332-334; Bökӧny 1991; Булатовић, Станковски 2012, 333; Bulatović 2020, 334.

5.4. Armenochori group

5.4.1. History of Research

The starting point for the research of the Armenochori group were the excavations of the eponymous site in southern Pelagonia by W. A. Heurtley.[439] The discussion of the group was until recently mostly embedded within the research of the Early Bronze Age in Serbia (former Yugoslavia), as M. Garašanin has on several occasions highlighted its connections and similarities with the Bubanj-Hum III group.[440] He considered the Armenochori group in Pelagonia as a reflection of a final migrational wave from the Danube Region during the Early Bronze Age, which can be traced back through the Bubanj-Hum III group and what is nowadays the Bubanj-Hum III-Pelince II-III-Pernik horizon of the Early Bronze Age.[441]

The excavations of several sites and surveys in Northern Macedonia during the 60s and 70s,[442] served as a base for M. Garašanin to define the group.[443] He once again highlighted the cultural and chronological connections between the Bubanj-Hum III and Armenochori groups, and the Armenochori group and Maliq IIIa horizon in Albania.[444] However, M. Garašanin considered that the group is represented solely in the region of Pelagonia and proposed the term Pelagonian group.[445]

The renewed excavations at the sites of Bubanj and Velika Humska Čuka,[446] as well as the excavations in connection with the construction of E 75 Highway in the past decade, have increased our knowledge of the Armenochori group within the researched territory. Save for the discovery of several sites, such as Pavlovac-Kovačke Njive (6-8) and Gradište-Davidovac (6-5),[447] on which the ceramic forms similar to the Armenochori group have been recorded, the excavations of a necropolis at the site of Meanište in Ranutovac near Vranje, have provided an abundance of new data on the material culture, distribution and the chronology of the group, and especially its relations to the Bubanj-Hum III-Pelince - Pernik phenomenon of the Early Bronze Age in the Central Balkans.[448]

5.4.2. Territory

When delineating the territory in which the Armenochori group spreads, one is dealing with several different problems regarding both the material culture and the relations between the group and the concurrent groups in its surroundings. The problem of material culture refers to the previously discussed characterization of the so-called two-

[439] Heurtley 1939.
[440] Garašanin 1959a, 121-124; Гарашанин 1973, 190-202.
[441] Гарашанин 1975, 13-14; Garašanin 1983d.
[442] Симоска *et al*. 1976; Симоска, Санев 1976
[443] Garašanin 1983b.
[444] Garašanin 1983b, 724-725.
[445] Garašanin 1983b, 724.
[446] Bulatović, Milanović 2020.
[447] Булатовић *et al*. 2016c; Bulatović 2014, 61-62.
[448] Bulatović 2020. The relations with the Bubanj-Hum III-Pelince II-III-Pernik horizon will be discussed within the chapter on the relative and absolute chronology.

handled beaker group/complex.[449] One of the characteristic ceramic forms of the Armenochori group is the two-handled beaker, common for the Early Bronze Age in the area, and especially for the neighboring Bubanj-Hum III group. When comparing the two-handled beakers of the Bubanj-Hum III and Armenochori groups, A. Bulatović remarks that the latter are slimmer and that the handles considerably surpass the rim.[450] Such beakers, with handles that surpass the rim, typical for the Armenochori group are recorded in a wider area in eastern Albania, Thrace, northern Greece, North Macedonia, and South Morava Region during the Early Bronze Age, and connected with different groups and cultural horisons.[451] Such a wide area of the group and associated groups exceeds the research territory of this study and therefore, solely sites within the researched territory will be discussed. Based on the distribution of the ceramic forms attributed to the Armenochori group within the researched area, the group is represented in the South Morava Basin (sites of Ranutovac, Pavlovac-Kovačke Njive, Davidovac Gradište, etc.) and northeastern Northern Macedonia (Kokino Pelince, Lopate, etc.).[452] It is important to highlight that the material culture of the Armenochori group is occasionally mixed with the material culture of the Bubanj-Hum III group at the aforementioned sites, as the territory represents a so-called contact zone between the Armenochori group and the Bubanj-Hum III-Pelince II-III-Pernik complex of the Early Bronze Age.[453]

5.4.3. Periodization: Relative and Absolute Chronology

The relative chronological position of the Armenchori group can be observed on several sites in Northern Macedonia. At the site of Crnobuki near Bitol, the pottery typical for the Armenochori group is recorded in layer IV which lies on top of three layers (I, II, and III) attributed to the Late Eneolithic (Šuplevec-Bakarno Gumno group),[454] and such a stratigraphy is observed on other sites in the area as well (Karamani, Bakarno Gumno).[455] Despite the well-determined stratigraphic position at the aforementioned sites, the lack of research and especially absolute dates which could provide an internal periodization for the Armenochori group in the territory of present-day Northern Macedonia resulted in a supposedly prolonged duration of the group in this area. Namely, the Middle Bronze Age horizon in Northern Macedonia remains undefined or defined as the Armenochori group with the presumed duration up to the 14/13th century BC, or the formation of the Late Bronze Age Ulanci group.[456]

At the site of Sovjan in southeastern Albania, layers 8 and 9, attributed to the Early Bronze Age Maliq IIIa-b horizon with certain ceramic elements of the Armenochori group, lie between the Late Neolithic layer 10 and a mixed Early/Middle Bronze Age layer 7.[457]

[449] Стојић, Чађеновић 2006, 29; Булатовић 2007, 35-36; Булатовић, Станковски 2012, 329.
[450] Bulatović 2014, 63. The term considerably should be regarded in respect to the beakers of the Bubanj-Hum III group, where handles on those beakers are in line with the rim or slightly surpass it.
[451] Bulatović 2014, 64.
[452] Bulatović 2014; Булатовић *et al*. 2016c; Bulatović 2020.
[453] Bulatović 2014, 68.
[454] Симоска 1975; Симоска *et al*. 1976, 59-61.
[455] Симоска et al. 1977; Garašanin 1983b, 723, with cited literature.
[456] Mitrevski 2003, 45-47.
[457] Gori, Krapf 2015, 101-107.

The absolute dates for layer 9 fall between the 26th and the 21st century BC and the absolute date for layer 8 is 2341-2032 calBC (layer 8).[458] Recent Bayesian modeling of dendrochronology and absolute dates position a dwelling from layer 8 between 2158 and 2142 calBC (95.4% probability).[459] At the site of Sitagroi in Northeastern Greece, beakers with two handles that surpass the rim, similar to the ones of the Armenochori group, are recorded in phase Vb, which is embedded between the phase Va which contains pottery with Late Eneolithic characteristics and the surface layer with finds of the Late Bronze Age.[460] Six absolute dates from the phase Vb position it between 2700 and 2200 BC.[461] The Koilada necropolis in Northwestern Greece, which at the moment represents one of the closest analogies for the Ranutovac necropolis in the South Morava Valley, both in material culture and the burial ritual, is dated between 2417 ± 63 BC and 1732 ± 87 BC.[462]

Back within the researched region, the relative simultaneity and the contact zone of Bubanj-Hum III and Armenochori groups can be observed within the South Morava Valley, where ceramic elements of both groups have been recorded at the sites of Pavlovac-Kovačke Njive and Gradište in Davidovac.[463] A similar combination of ceramic elements has also been recorded in the Kumanovo Basin (Pelince), yet there are certain sites with material culture attributed exclusively to the Armenochori group (Pribovce).[464] A series of absolute dates recently acquired from the necropolis of Meanište in Ranutovac near Vranje in South Morava Valley has proved valuable for the chronology of the group and its relationship with the "local" Bubanj-Hum III group and the Bubanj-Hum III-Pelince II-III-Pernik horizon of the Early Bronze Age in the Central Balkans. A total of six samples from graves 1, 3, 1/6, 7, 17, and 21 have been dated (**Table 8**). The Bayesian modeling of those dates indicates that the necropolis was formed between 2237 and 1947 calBC (95.4% probability) or between 2119 and 1984 calBC (68.2% probability) and used up until between 1971 and 1695 calBC (95.4% probability), or between 1933 and 1829 calBC (with the probability of 68.2%).[465]

458 Lera *et al*. 1997, 874.
459 Maczkowski *et al*. 2021.
460 Sherratt 1986, 429-473.
461 Renfrew 1986, 173, figs. 7.2 and 7.3.
462 Maniatis, Ziota 2011, 467-470.
463 Bulatović 2014; Булатовић *et al*. 2016c; Bulatović 2020, 88.
464 Bulatović 2020, 88.
465 Bulatović 2020, 81.

Table 8. Absolute dates from the Ranutovac necropolis (Bulatović 2020, modified).

Nr.	Site	Grave	Lab. Code	BP	calBC 68.2%	calBC 95.4%
1	Ranutovac, Meanište	Northern segment, grave 3	RICH-24516	3701±31	2140-2030	2200-2010 (93.1%) 2000-1980 (2.3%)
2	Ranutovac, Meanište	Southern segment, grave 21	RICH-24542	3644±31	2120-2100 (5.5%) 2040-1950 (62.7%)	2140-2070 (19.3%) 2060-1920 (76.1%)
3	Ranutovac, Meanište	Southern segment, grave 17	RICH-24543	3594±31	2020-1990 (7.8%) 1980-1900 (60.4%)	2030-1880
4	Ranutovac, Meanište	Eastern segment, grave 1	RICH-24513	3584±32	1980-1890	2030-1870 (94.1%) 1840-1820 (1.3%)
5	Ranutovac, Meanište	Northern segment, grave 1	RICH-24544	3548±33	1950-1870 (51.3%) 1850-1820 (10.2%) 1800-1780 (6.7%)	1980-1760
6	Ranutovac, Meanište	Northern segment, grave 1	RICH-24514	3543±33	1964-1870 (46.9%) 1850-1810 (12.5%) 1800-1780 (8.9%)	1980-1760

The Bayesian modeling of the existing absolute dates for the Armenochori group from Greece (Archontiko-phase B, Mandalo-3,[466] Koilada) and Albania (Sovjan layers 8-9) indicates that the group existed between the 2473–2318 cal BC (95.4% probability), or 2422–2354 cal BC (68.2% probability) and 1932–1813 cal BC (95.4% probability) or 1911–1859 calBC (68.2% probability).[467] Such chronological spam of the group coincides with the chronology of the Bubanj-Hum III group in the South Morava Valley and indicates that the groups formed and developed concurrently, and interacted at some point. The lack of absolute dates unable us to perceive the chronology of those interactions, yet the dates from the Ranutovac necropolis indicate that the Armenochroi group was already formed in the area in the 22nd century BC. According to A. Bulatović, this could either suggest that the interactions occurred prior to the 22nd century BC, and that the bearers of the Bubanj-Hum III group have adopted the material culture of the Armenochori group, or that the bearers of the Armenochori group at the Ranutovac necropolis came from the south and brought their material and spiritual culture, uncommon for this area.[468]

[466] Merousis 2004, 1289-1295.
[467] Bulatović *et al*. 2020, 1180, Fig. 9.
[468] Bulatović 2020, 88-90.

5.4.4. Material Culture

M. Garašanin highlighted pear-shaped or biconical beakers with two handles that surpass the rim as one of the main forms of the **ceramic production** of the Armenochori group (**Fig. 19/11-18**), as well as cups with one handle that surpass the rim (**Fig. 19/1-4**).[469] The recent excavations at the Ranutovac necropolis in South Morava Valley, with ceramic inventory attributed exclusively to the Armenochori group, represents possibly the most complete typological scheme of the group within the researched territory.

Based on the ceramic finds from the necropolis, A. Bulatović separated several main forms of vessels and their types. Cups are semi-globular with one handle that surpasses the rim (**Fig. 19/1, 2**), biconical (**Fig. 19/3, 4**), or globular with a cylindrical neck (**Fig. 19/5**), usually decorated with extensions on the rim. Bowls are the most diverse type, and the most common type is a semi-globular bowl (**Fig. 19/6**), followed by biconical bowls (**Fig. 19/7**), globular bowls with a cylindrical neck (**Fig. 19/8**), S-profiled bowls with one handle that surpasses the rim (**Fig. 19/9**) and bowls with funneled neck and two handles (**Fig. 19/10**). Bowls are usually decorated with triangular extensions on the rim and button-shaped applications on the belly. Beakers are represented in solely one type, characteristic of the Armenochori group (**Fig. 19/11-14**), a pear-shaped beaker with two handles that surpass the rim (**Fig. 19/11-18**). Amphorae are with globular recipients, long cylindrical or conical necks, and vertically positioned handles (**Fig. 19/19**). One of the vessels characteristic of the Armenochrori group is the so-called "ember containers".[470] These are vessels with an unusual form that possesses a long slanted neck and a globular recipient with a small handle on the backside and a rectangular opening with a protruded lower part (shovel-shaped) in the front (**Fig. 19/20, 21**).[471] Other ceramic forms recorded for the Armenochri group are double vessels (**Fig. 19/22**) and vessels on a tall foot (*tarabouki*) (**Fig. 19/23, 24**).[472]

Other **ceramic objects** are few in number and fall within the usual repertoire of prehistoric finds (spindle-whorls, loom-weights), while W. Heurtley reports clay amulets and idols from the site of Armenochrori.[473]

The **bone industry** of the group is not researched. M. Garašanin reports antler hoes as one of the characteristics of the group.[474]

The **chipped stone industry** of the group is completely neglected in research, while the **ground stone industry** is represented by perforated stone axes.[475] Such an axe, attributed to type 5 according to the typology by D. Antonović and A. Đorđević,[476] is

[469] Garašanin 1983b, 725.
[470] For the function and interpretations of those vessels refer to Bulatović 2020, 70-71.
[471] All of those vessels vary in their form.
[472] Bulatović 2020, 65-73.
[473] Garašanin 1983b, 725.
[474] Garašanin 1983b, 725.
[475] Garašanin 1983b, 725.
[476] Антоновић, Ђорђевић 2011.

recorded in Grave 3 at the Ranutovac necropolis. The type is characteristic of the Bronze Age. A grindstone was also recorded in grave 16 at the necropolis.[477]

Within the researched territory, no **metal finds** attributed to the Armenochori group have been recorded so far. However, numerous copper and bronze finds, as well as finds made of the *electrum*-like alloy have been reported at the Koilada necropolis.[478]

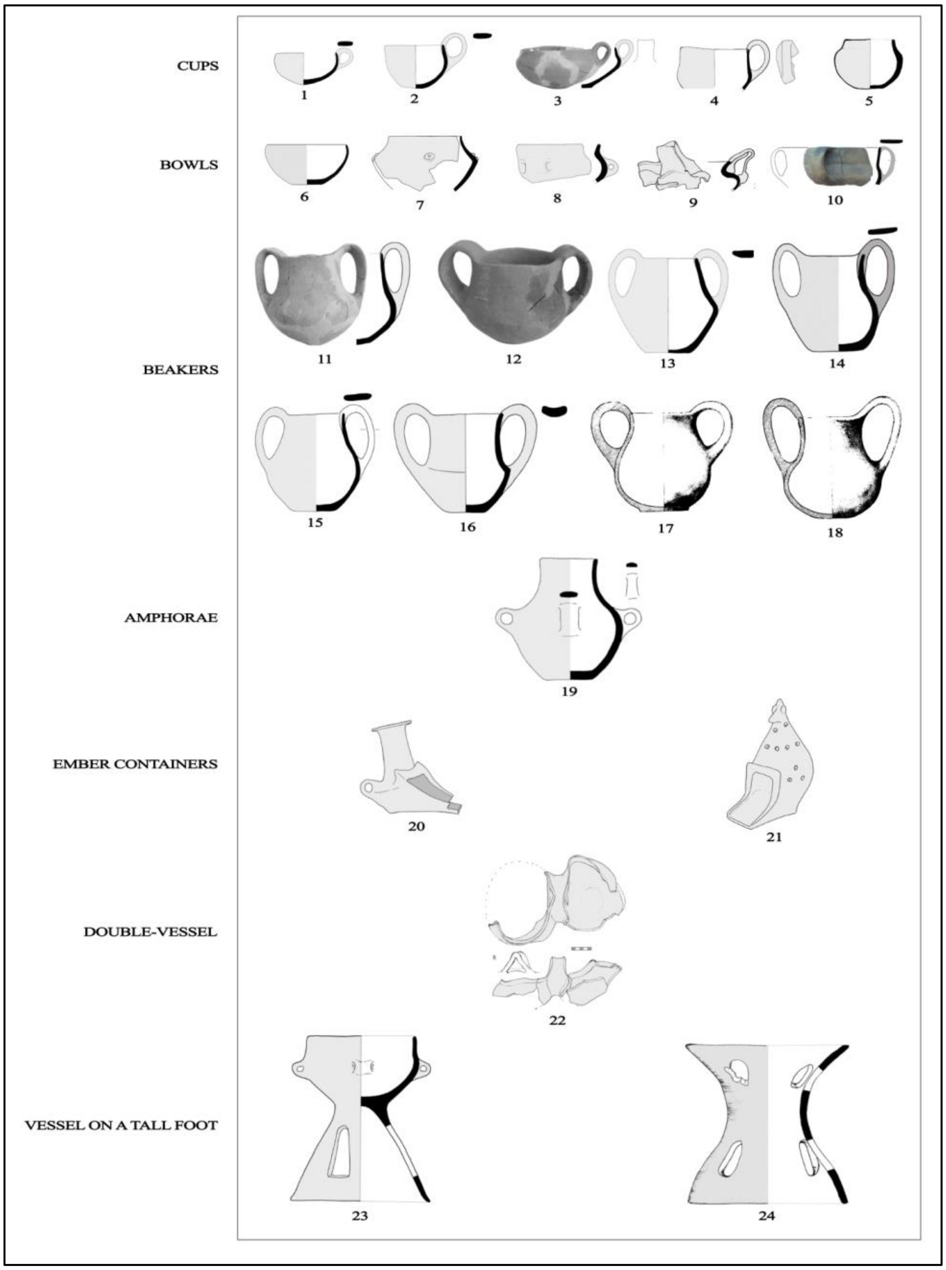

Figure 19. Typology of the Armenochori group (Garašanin 1983b; Bulatović 2020, modified).

[477] Bulatović 2020, 73.
[478] Maniatis, Ziota 2011, 462, with cited literature.

5.4.5. Settlements and Architecture

The typology of settlements of the Armenochori group within the researched region is the same as the ones for the Bubanj-Hum II and Bubanj-Hum III groups.[479] However, judging by those sites within the South Morava Valley, on which the ceramic elements of the Armenochori group have been recorded (Kovačke Njive-Pavlovac, Gradište-Davidovac), it seems as if those settlements were formed on the terraces of large rivers (exclusively on the left bank of South Morava River in this case), on the edge of alluvial plain and the point in which the terrain mildly slopes.[480]

No remains of dwellings have been recorded connected exclusively with the Armenochori group within the researched region.

5.4.6. Funerary Rites

The recently published results of excavations of an Armenochori group necropolis in Ranutovac near Vranje provided us with high-quality data on the funerary rites of the group within the researched territory. The necropolis excavated in 2012 was comprised of three segments, southern, eastern, and northern and a total of 21 graves have been recorded. The remains of incinerated deceased were lied directly on the ground together with grave goods and covered with an approximately circular construction made of crushed stone (**Fig. 20**). The grave goods were almost exclusively comprised of ceramic vessels, save for the find of a perforated stone axe.[481]

Figure 20. Grave 17 from the Ranutovac necropolis (Bulatović 2020).

Additional anthropological, archaeobotanical, and petrological analyses have enabled further insights into the burial ritual itself. The deceased, sometimes with ceramic vessels, were cremated on a pyre made and/or fueled most likely by oak, ash, and elm tree. The burning temperature of the wood was above 800°C and the analyses of human bones indicate that the deceased was also exposed to temperatures between 645°C and 1200°C,

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479 Булатовић, Станковски 2012, 197-201, 331. Refer to subchapters on Bubanj-Hum II (**5.2.**) and Bubanj-Hum III groups (**5.3.**).
480 Bulatović 2014, 63.
481 Bulatović 2020, 5-47.

probably in a supine position. Animal bones, which could either represent offerings for the deceased or fuel for the pyre, were laid on the pyre together with the deceased, along with certain ceramic vessels that display traces of secondary burning. A rather small amount of uncrushed bones were collected from the pyre following the incineration. The remains of the deceased were carried in the so-called ember containers and laid either next to the grave for a period of time or directly into the grave. The remains were sometimes covered with a vessel, usually a cup, and other vessels and meat (animal bones) were laid around.[482]

A relatively similar burial practice was recorded at the Koilada necropolis in northwestern Greece, where two-handled beakers typical for the Armenochrori group were recorded as grave goods. Out of 214 graves, 12 burials contained the remains of incinerated deceased placed in vessels, pits, stone cist, and stone-lined graves, while other graves contained inhumed deceased surrounded by stones, placed in pits and large vessels such as *pithoi*. All of the graves were covered with piles of stone.[483]

Further, the architecture of the Early Bronze Age burial mound of Kriaritsi in Sykia in Chalkidikis shows remarkable similarities with the Ranutovac necropolis regarding the grave architecture (**Fig. 21**). The graves at the Sykia necropolis were comprised of stone cist with urns and the remains of incinerated deceased. The cists were then enclosed by circular stone structures which often overlapped. However, the ceramic inventory of the necropolis cannot be attributed to the Armenochori group.[484]

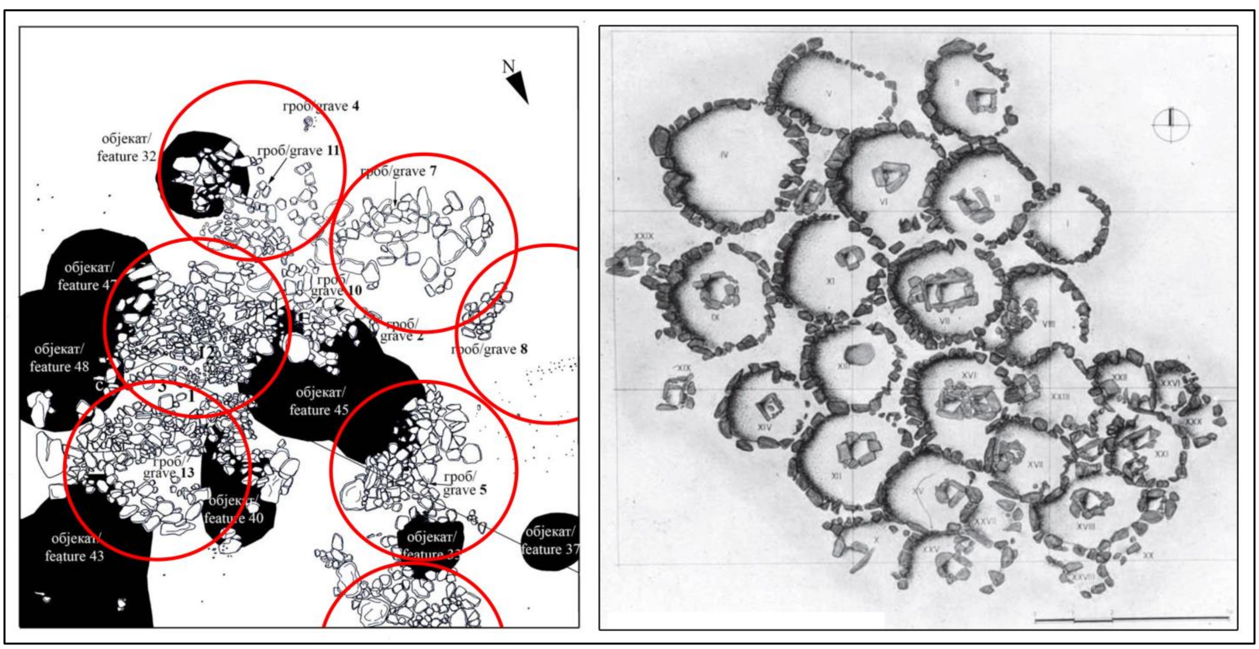

Figure 21. The architecture of necropolises of Ranutovac (left) and Sykia (right) (Bulatović 2020; Asouhidou 2012).

In his analyses of the Early Bronze Age burial practices, which encompassed vast territory (southeastern Albania, Pelagonia, Western Serbia, Southern Pannonia, Oltenia,

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[482] Bulatović *et al*. 2016a; Bulatović 2020, 75; Filipović, Filatova 2020; Gajić-Kvaščev *et al*. 2020.
[483] Maniatis, Ziota 2011, 461.
[484] Asouhidou 2012; Bulatović 2020, 77.

Muntenia, Thrace, etc.) and a number of cultural groups (Maliq III, Belotić-Bela Crkva, Glina-Schnackenberg, Makó-Kosihy-Čaka, Vinkovci-Somogyvár), A. Bulatović concludes that there is no uniform burial pattern in this area during the Early Bronze Age, which might be the result of intensive cultural transmission and dynamics in the Central Balkans. Likewise, there are no chronological, cultural, or other patterns regarding the relationship between incineration and inhumation in the given period, nor can the incineration be connected with a certain territory, period, or cultural group.[485]

Figure 22. Two-handled beakers of the Armenochori group from the Koilada necropolis (Maniatis, Ziota 2011).

5.4.7. Economy

Within the researched region, there are no data or specialized analyses that could provide a more detailed insight into the economy of the bearers of the Armenochori group, and the topography of settlements indicates that agriculture represented most likely the main subsistence strategy.[486] Archaeobotanical study of prehistoric Greece suggests that remains of boiled cereals were recorded at the site of Armenochori and several other Early Bronze Age sites.[487]

[485] Bulatović 2020, 77-79, with cited litterature.
[486] Булатовић, Станковски 2012.
[487] Valamoti 2009; Valamoti 2011.

5.5. Early Bronze Age in Northeastern Serbia

Despite the high degree of archaeological research and minutely published corpus of prehistoric finds from the territory of Northeastern Serbia (primarily regions 2 and 3),[488] the area still represents an „empty space“ regarding the material culture of the Early Bronze Age. Within the Negotinska Krajina and Braničevo regions of Northeastern Serbia, solely several sites attributed to the Early Bronze Age have been detected so far. M. Stojić mentions sites of Batovac, Kličevac, and Tranjane within the Braničevo Region and attributes them partially to the Early Bronze Age. Solely one potsherd has been presented from the site of Batovac, and according to the typological characteristic of pottery from the sites of Kličevac and Trnjane, those could rather be attributed to the Middle Bronze Age, although recent studies indicate that the finds from Kličevac and Trnjane could belong to a later phase of the Early Bronze Age, connected with the territory of Banat.[489] A similar can be observed for the region of Negotinska Krajina, where solely finds from the sites of Boljetin and Velesnica are formally attributed to the Early Bronze Age. As previously mentioned, the copper-arsenic axe of the *Kozarac* type from the site of Boljetin, typical for the Coțofeni and Glina III-Schneckenberg groups in Romania and Bulgaria, should rather be observed in the context of the Late Eneolithic Coțofeni-Kostolac communities in this area,[490] while fragments of beakers with two handles in line with the rim from the site of Velesnica could be attributed to one of the manifestations (groups) of the two-handled beakers complex of the Early Bronze Age.[491] A. Kapuran suggests that the lack of Early Bronze Age material culture in this area is connected with the uninterrupted development of the Coțofeni-Kostolac group in this region and the continuation of the practice of transhumant pastoralism for the next millennium, until the Middle Bronze Age.[492]

A somewhat different situation has recently been recorded within the Stig Region of Northeastern Serbia, at the sites of Rit and Nad Klepečkom. Remains of dwellings and material culture attributed to the Early Bronze Age have been recorded on both of the sites. The dwellings are semi-sunken features with the upper portion built in wattle and daub technique. The site of Rit is dated between 1977 and 1908 calBC (91.6% probability) and the site of Nad Klepečkom is dated between 2040 and 1965 calBC (79.3% probability). The ceramic inventory of both sites can not be attributed to a specific group of the Early Bronze Age, but rather a specific horizon of finds, the so-called Pančevo-Vatrogasni Dom horizon, which is characteristic for the territory of Banat and the narrow strip along the right bank of the Danube,[493] which is further confirmed by the aforementioned absolute dates. Other portable finds, such as perforated ground stone axes can be attributed to the Early Bronze Age.[494] The economy of those two sites can be observed through archaeozoological analyses which indicate the dominant role of cattle during the period, followed by

[488] Стојић, Јацановић 2008; Булатовић *et al*. 2013, Капуран *et al*. 2014a; Kapuran 2014.
[489] *Cf*. Стојић, Јацановић 2008, 71, 152-153: Љуштина 2022, 46.
[490] Булатовић *et al*. 2013, 31; Kapuran 2014, 53.
[491] Булатовић *et al*. 2013, 31. For the two-handled beaker complex refer to subchapters on Bubanj-Hum III (**5.3.**) and Armenochori groups (**5.4.**).
[492] Kapuran 2014, 52-53.
[493] Љуштина 2022, 44-46.
[494] Bulatović *et al*. 2019b; Kapuran *et al*. 2019a

sheep/goat, pig, and wild animals, and interestingly freshwater shells have been recorded in two Early Bronze Age features.[495]

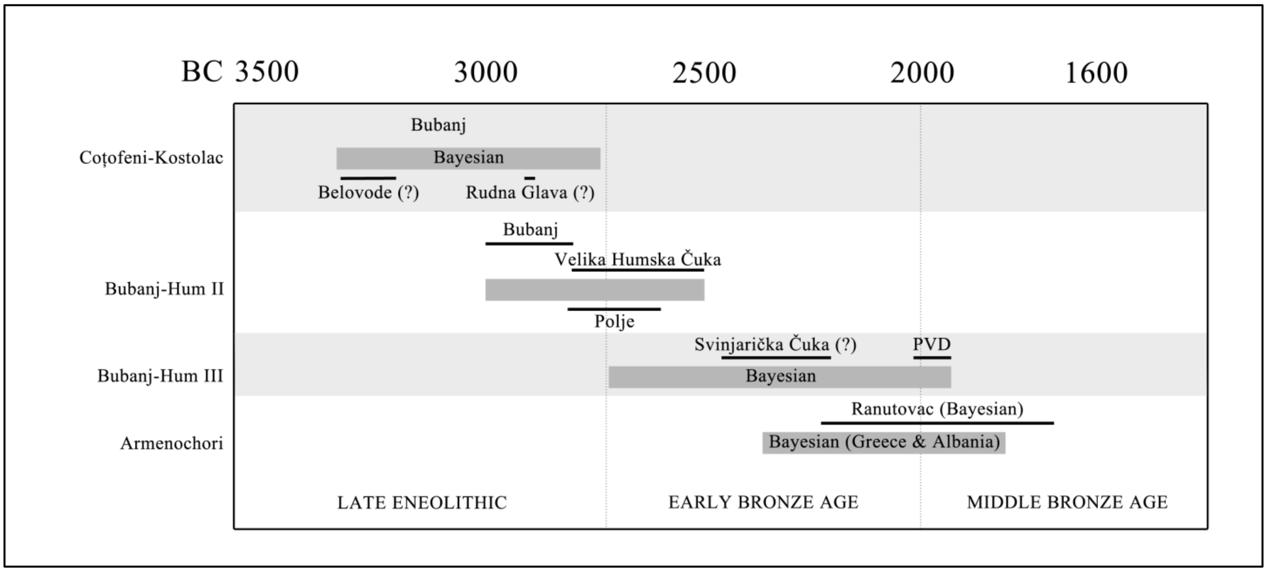

Figure 23. Relative and absolute chronology of the Late Copper and Early Bronze Age within the researched territory (PVD refers to the Pančevo-Vatrogasni Dom Horison).

495 Vuković, Marković 2019.

6. Catalogue of Sites

The catalogue of sites contains the list of all of the sites sorted by the defined regions (regions 1-8). In each of the researched regions, the sites will be sorted alphabetically and will be marked by two numbers (e.g. 5-2), the first number representing the number of the region, and the second the number of the site. The marking of the site will contain data on the name of the site, location of the site (e.g. village, town), the municipality in which the site is located (bracketed), and geographic coordinates [bracketed]. The catalogue will contain all of the available data such as latitude, longitude, altitude, size, a short history of research, data on chronology, stratigraphy, characteristic finds, and related literature.

6.1. Region 1

A total of 10 sites attributed to the researched periods have been recorded and published in this region.

1-1. Čičkovica/Rekovac, Lomnica (Rekovac)

A multilayered prehistoric site located in the village of Lomnica. The finds from unpublished surveys indicate that the site was inhabited during the Early Bronze Age (Bubanj-Hum III).[496]

1-2. Čukarak, Orašje (Varvarin) [43° 44' 38.2834" N, 21° 15' 27.1718" E]

A hillfort site located in the village of Orašje. The potsherds from the site are attributed to the Late Eneolithic (Coțofeni-Kostolac),[497] and a chance finds of a two-handled beaker can be attributed to the Middle Bronze Age.[498]

1-3. Gloždak, Paraćin (Paraćin) [43° 51' 34.1436" N, 21° 24' 52.2725" E]

The site of Gloždak lies on the left bank of the Crnica River, in the urban core of the present-day city of Paraćin. First rescue archaeological excavations of the site were conducted back in the 50s and 60s by D. and M. Garašanin. The excavations resulted in the discovery of a Late Bronze Age necropolis and the remains of Late La Téne features. Based on those excavations, M. Garašanin defined the Paraćin group of the Late Bronze Age.[499] The rescue archaeological excavations at the site were renewed in 2018 when a portion of a Late La Téne settlement was recorded,[500] and finally in 2020. The rescue archaeological excavations conducted in 2020 have confirmed the vertical stratigraphy of the site, consisting of Late Bronze Age and Late La Téne horizons, and additionally, a feature comprised of potsherds, animal bones, and chipped stones were recorded. According to the stylistic and typological characteristics of ceramics, the feature is attributed to the Early

[496] Svilar 2007, 36.
[497] Стојић, Чађеновић 2006, 182.
[498] Тасић 2001, 9-10.
[499] Гарашанин 1958; Garašanin 1962; Garašanin 1964; Гарашанин 1970; Garašanin 1983g; Поповић 2003.
[500] Filipović *et al*. 2019.

Bronze Age (Bubanj-Hum II).[501] A beaker with the trapezoidal mouth, typical for the Middle Bronze Age Bubanj-Hum IV-Ljuljaci group originates from the site as well, although the context of the find remains unclear.[502]

1-4. Đula, Ostrikovac (Jagodina) [43° 55' 44.8321" N, 21° 19' 14.5519" E]

Hillfort site is located on a lower slope of the Juhor Mountain, in the northern fringe of the Paraćin Basin. The site covers an area of approximately 1 ha. The excavations at the site resulted in a complex stratigraphy that covers several stages of the Late Eneolithic/Early Bronze Age (Ostrikovac Ia-Id/Bubanj-Hum II), Middle Bronze Age (Ostikovac II/Bubanj-Hum IV-Ljuljaci), and Early Iron Age.[503]

1-5. Majdan, Saraorci (Smederevo) [44° 29' 50.3623" N, 21° 06' 40.0885" E][504]

The multilayered prehistoric site, located on a terrace of the former bank of the Jezava River. The excavations were conducted in 1957 and yielded finds from the Early Neolithic, Late Eneolithic, and Early and Late Iron Age.[505] Unfortunately, the archaeological material attributed by M. Garašanin to the Baden/Kostolac horizon remains unpublished.[506]

1-6. Okućnica D. Markovića, Bresje (Jagodina)

The site is located in the Lugomir Valley, on one of the lower slopes of the Juhor Mountain. A smaller pit was excavated at the site, filled with potsherds, animal bones, ash, and soot. The potsherds are attributed to the Early Bronze Age (Bubanj-Hum III).[507]

1-7. Orašje, Dubravica (Požarevac) [44° 42' 28.2294" N, 21° 03' 28.0567" E]

The site is located on the alluvial plain on the left bank of the Great Morava River, near the confluence with the Danube River. It covers an area of approximately 6 ha. It was periodically excavated in 1910, between 1947 and 1954,[508] in 1989 and 1990, and 2004.[509] A renewed archaeological project was started in 2011 and has so far resulted in LiDAR scans of the area.[510] The site is well-known as a Roman (*Margum*) and medieval fort, but the excavations have also yielded prehistoric finds attributed to the Middle and Late

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[501] Вучковић *et al*. 2020.
[502] Стојић 1992, 215.
[503] Гарашанин, Стојић 1986; Стојић 1989; Стојић 1991.
[504] The coordinate is approximate and based on the previously published descriptions of the sites' location
[505] Гарашанин, Гарашанин 1961, 238. For the Late Iron Age finds refer to Popović 2001.
[506] Garašanin 1959a, 39.
[507] Svilar 2007; Булатовић 2011, 22; M. Stojić lists this site as a single-layered hillfort attributed to the Early Iron Age (Stojić 1986, 13).
[508] Мано Зиси *et al*. 1950; Марић 1951; Цуњак 1992; Јовановић, Цуњак 1994; Цуњак 1995-1996.
[509] Most of the publications are excavation reports, while some of the excavations remain unpublished, or represent publications of certain cathegory of archaeological material (Црнобрња 2007).
[510] Иванишевић, Бугарски 2012.

Neolithic, Late Eneolithic (Kostolac), Middle and Late Bronze Age, Early and Late Iron Age.[511]

1-8. Raskrsnice, Crnče (Jagodina) [43° 59' 28.9439" N, 21° 08' 51.3810" E]

A multilayered site located on a terrace of southeastern slopes of Crni Vrh, covering an area of approximately 2 ha. The published potsherds from the site are mostly attributed to the Early Iron Age,[512] although Early Bronze Age (Bubanj-Hum III) potsherds have been registered as well.[513]

1-9. Sarina Međa, Jagodina (Jagodina) [43° 57' 4.9021" N, 21° 17' 1.6655" E]

The site is located on the southern periphery of the present-day city of Jagodina, between the Đurđevo Hill, the former bank of the Great Morava River, and the Lugomir River. The archaeological excavations at the site were conducted in 1967 and 1968.[514] The cultural layer was up to 0.4 m thick, while the excavated pits were up to 1.8 m deep. A total of 5 pits have been excavated at the site of which one is attributed to the Middle Bronze Age (Bubanj-Hum IV-Ljuljaci), and the other pits are attributed to the Late Bronze Age. The ceramic material recorded within the cultural layer is attributed to the Early Bronze Age (Bubanj-Hum II), Early, and Late Iron Age.[515]

1-10. Vecina Mala, Jagodina (Jagodina) [43° 56' 44.6077" N, 21° 17' 8.5499" E]

The site is located on a loess terrace on the right bank of Lugomir River, in the foothill of Beli Kamen, and covers an area of approximately 3 ha. The site was excavated in 1967, 1974, 1978, and 1986. The excavations have determined a 2 m thick cultural layer that was mostly disturbed. A total of five pits have been recorded at the site of which three pits are based on the characteristics of pottery attributed to the Early and Middle Bronze Age (Bubanj-Hum III and Bubanj-Hum IV-Ljuljaci) (Pl. 6/1-15) and the remaining two pits are attributed to the Early Iron Age.[516]

[511] Јацановић, Ђорђевић 1990; Стојић, Јацановић 2008, 105-117.
[512] Стојић 1979, 104; Stojić 1986, 24.
[513] Svilar 2007; Булатовић 2011, 22.
[514] Vetnić 1967.
[515] Стојић 1982, 33; Стојић 1992, 214.
[516] Стојић 1986а; Стојић 1992, 214.

6.2. Region 2

A total of 18 sites attributed to the researched periods have been recorded and published in this region.

2-1. Dolovi, Zatonje (Veliko Gradište) [44° 46' 8.7080" N, 21° 23' 46.3620" E][517]

The site is located on the Danubes' right bank, in a low terrace, at the approximate altitude of 70 m. A single potsherd attributed to the Late Eneolithic (Coţofeni-Kostolac) originates from this site.[518]

2-2. Đule, Čovdin (Petrovac na Mlavi) [44° 15' 25.9988" N, 21° 19' 15.3168" E]

M. Stojić and D. Jacanović note that Late Eneolithic pottery originates from the site of Đule, located on the horseshoe-shaped plateau of a dominant hill, at the altitude of 240 m.[519] Jugging by the decoration of those potsherds, they can be attributed to the Coţofeni-Kostolac group.

2-3. Grad, Usije (Golubac) [44° 41' 05.9182" N, 21° 36' 28.4452" E]

The site is located on the Danubes' right bank, on a sandy terrace. The rescue archaeological excavations at the site were conducted in 1958 when a rich cultural layer provided potsherds attributed to the Late Bronze Age and Early and Late Iron Age.[520] M. Stojić and D. Jacanović have published Early (Pl. 7/1) and Middle Bronze Age materials that originates from the site.[521]

2-4. Kod Groblja, Trnjane (Požarevac) [44° 36' 55.6983" N, 21° 16' 22.4261" E][522]

Several incinerated deceased from the Early Iron Age, as well as beakers from the Early Bronze Age (Pl. 8/1-2), have been recorded at the site.[523]

2-5. Kod Koraba, Stari Kostolac (Kostolac) [44° 43' 55.9098" N, 21° 14' 52.4742" E]

The site is located within the eastern necropolis of Viminacium, approximately 650 m south of the legionary fort. The site is first mentioned in the literature in the late 19th and the early 20th century,[524] but due to the expansion of the Drmno coal seam, rescue archaeological excavations were conducted between 2005 and 2008.[525] The excavations in 2005 yielded finds attributed to the Late Eneolithic (Coţofeni-Kostolac) (Pl. 9/1-3).[526]

[517] The provided coordinate is approximate, based on toponymy.
[518] Стојић, Јацановић 2008, 321.
[519] Стојић, Јацановић 2008, 83.
[520] Косорић, Тодоровић 1961, 239-240.
[521] Стојић, Јацановић 2008, 295-297.
[522] The provided coordinate is approximate, based on toponymy.
[523] Стојић, Јацановић 2008, 290-291.
[524] Валтровић 1884; Васић 1907.
[525] Голубовић 2008; Račković; Vuković 2009; Bogdanović 2010.
[526] Bulatović *et al*. 2019a, 45.

2-6. Lugovi, Drmno (Požarevac) [44° 43' 18.9765" N, 21° 13' 2.1766" E]

The site is located on a mild slope on the right bank of the Mlava River, with a width of approximately 400 m. Due to the endangerment by the construction of the Kostolac Powerplant, the site was surveyed in 1975 and excavated between 1983 and 1985. The horizontal stratigraphy of the site is quite emphasized, meaning that the site is comprised of continuous single-layered occupations.[527] The ceramics from the site are attributed to the Early/Middle and Late Neolithic, Middle and Late Eneolithic (Coţofeni-Kostolac) (Pl. 10/1-6), Middle and Late Bronze Age, and Early Iron Age.[528]

2-7. Majur, Rečica (Požarevac)

Late Eneolithic pottery was recorded at the site according to M. Stojić and D. Jacanović. No additional data is provided on the site.[529]

2-8. Nad Klepečkom, Stari Kostolac (Kostolac) [44° 44' 8.9945" N, 21° 15' 6.2923" E]

The multilayered site is located on a loess terrace on the right bank of the Danube River, east of the antique town of Viminacium, at an altitude between 75 and 90 m. The site was surveyed in 2004 and the rescue archaeological excavations were conducted in 2008, 2010, 2011, and 2013.[530] Since the site was endangered by the Drmno coal seam, the excavations were conducted partially, in test trenches and small trenches, and its full extension remains unknown. The excavations have confirmed the multilayered nature of the site and yielded finds from the Early/Middle Eneolithic and Late Eneolithic (Kostolac/Baden-Kostolac),[531] later phase of the Early (Pl. 11/1-15) (Pančevo-Vatrogasni Dom horison), and Middle/Late Bronze Age,[532] Early Iron Age,[533] Late Iron Age (La Tène),[534] Antique and Medieval Period.[535]

2-9. Nad Lugom, Stari Kostolac (Kostolac) [44° 42' 27.6659" N, 21° 14' 10.1801" E]

The site is located on a dominant plateau on the right bank of the Mlava River. It was excavated in 1977, 1990, and 1991,[536] and it is well known in the literature for Late Iron Age (La Tène) finds.[537] Besides those, the site also yielded finds from Late Eneolithic (Coţofeni-Kostolac) (Pl. 12/1-4), Early, Middle, and Late Bronze Age, Early Iron Age, and Medieval Period.[538]

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527 Јевтић, Шљивар 1986, 183-186.
528 Nikolić 2000, 26-27; Стојић, Јацановић 2008, 86-92.
529 Jovanović 1965; Стојић, Јацановић 2008, 245.
530 Mrđić, Jovičić 2012; Redžić, Danković 2012; Redžić *et al.* 2014a; Redžić *et al.* 2014b; Jovičić, Redžić 2014.
531 Bulatović *et al*. 2019a, 39-43.
532 Kapuran *et al*. 2019a, 79-100.
533 Kapuran *et al*. 2019b.
534 Mladenović *et al*. 2019.
535 Mrđić, Jovičić 2012, 50–54; Redžić, Danković 2012, 55–57.
536 Šljivar 1977; The results of excavations have never been completely published.
537 Спасић 1997, 35-36.
538 Стојић, Јацановић 2008, 93-98.

2-10. Unknown Site, Kličevac (Požarevac)

Potsherds from the Late Eneolithic (Coţofeni-Kostolac), Middle-Late Bronze Age, and Early Iron Age originate from an unknown site in the village of Kličevac.[539]

2-11. Obala Morave, Batovac (Požarevac)

Early (Pl. 13/1) and Middle Bronze Age, and Early Iron Age pottery originate from this site.[540]

2-12. Pčelinji Krš, Laznica (Žagubica) [44° 14' 23.2602" N, 21° 50' 15.3039" E]

A hillfort site located on the eponymous hill, at the altitude of 580 m. The site lies on an almost circular, sloping plateau that stretches to the vertical cliffs in the south, above the Valja kum barju creek. Natural access to the site is possible from the north and northwest, as the western and eastern sides of the site are bordered with severe slopes.[541] The small-scale excavations were conducted in 2006 and 2007, which were primarily focused on the mapping of Early Byzantine walls.[542] Save for those, the excavations have determined that the site was settled during the Late Eneolithic (Coţofeni-Kostolac) and Late Bronze Age.[543]

2-13. Pirivoj, Stari Kostolac (Kostolac) [44° 44' 2.2774" N, 21° 13' 51.7530" E]

The site is located east of the Viminacium *castrum* and represents a part of the eastern necropolis with more than 450 graves excavated so far. It lies on a wast plain between the *castrum* and the site of Nad Klepečkom. As the entire region and numerous sites surrounding Viminacium, it is endangered by the Drmno coal seam, and the excavations, both systematic and rescue, have been conducted periodically since 1997 (2003-2007, 2011, 2013, and 2016).[544] The excavations in 2005 yielded prehistoric finds, which are attributed to the Late Eneolithic (Coţofeni-Kostolac) (Pl. 14/1-9).[545]

2-14. Rit, Stari Kostolac (Kostolac) [44° 44' 15.2773" N, 21° 14' 17.7195" E]

The site is located northwestern from the site of Nad Klepečkom, on the right bank of the Danube River, on marshy alluvium, which was periodically flooded up to the second half of the 20th century, at the altitude of 70 m.[546] The site was test trenched in 2004/2005 and the excavations were conducted between 2011 and 2014, and again in 2016.[547] The multilayered nature of the site was confirmed with each excavation, as the site hosts material attributed to the Early/Middle Eneolithic,[548] Early Bronze Age (Pl. 15/1-11)

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539 Стојић, Јацановић 2008, 152-154.
540 Стојић, Јацановић 2008, 71.
541 Миловановић 2018a, 34-35.
542 Миловановић 2018b, 7-8.
543 Стојић, Јацановић 2008, 176-179.
544 Рецић 2008; Голубовић 2008b; Raičković, Milovanović 2010; Danković *et al*. 2018.
545 Bulatović *et al*. 2019a, 43-44.
546 Filipović, Mladenović 2019, 12; Bulatović *et al*. 2019b, 58.
547 Mikić *et al*. 2006; Redžić *et al*. 2014b; Danković, Petaković 2014; Redžić *et al*. 2017; Milovanović *et al*. 2018.
548 Bulatović *et al*. 2019a, 26-39.

(Pančevo-Vatrogasni Dom horizon),[549] Late Iron Age, and Antique Period.[550] The Early Bronze Age horizon yielded several semi-sunken dwellings with the remains of daub, faunal remains, and potsherds, but most importantly several absolute dates.[551]

2-15. Šetaće, Osanica (Žagubica) [44° 17' 30.4901" N, 21° 39' 54.0799" E]

The hillfort site is located on the left bank of Osanička River, above its canyon at the altitude of 550 m. It is an ellipsoid flat plateau, oriented east-west, and accessible only from the south, from the village of Osanica. The site has never been excavated, but it was surveyed and visited on multiple occasions, starting from the beginning of the 20th century. The last surveys were conducted in 2015.[552] The site is well-known as an Early Byzantine fortification, although it was inhabited during the Late Eneolithic (Coţofeni-Kostolac) as well.[553]

2-16. Sestroljin, Poljana (Požarevac)

Surveys at the site, located in the village of Poljana, yielded potsherds attributed to the Late Eneolithic (Coţofeni-Kostolac) and Middle Bronze Age.[554]

2-17. Tomin Grob, Zabrega (Malo Crniće) [44° 35' 15.3471" N, 21° 24' 18.2273" E]

The pottery which originates from the site is attributed to the Eneolithic, Middle, and Late Bronze Age and Early Iron Age.[555]

2-18. U Selu, Kasidol (Požarevac)

The site itself is located in the village of Kasidol, near the city of Požarevac. It lies in a low hilly area between Mlava and Pek rivers. The surveys yielded potsherds characteristic for the Middle Neolithic (Starčevo), Middle/Late Eneolithic (Baden and Coţofeni-Kostolac), and Late Bronze Age.[556]

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[549] Bulatović *et al*. 2019b.
[550] Mladenović *et al*. 2019.
[551] Bulatović *et al*. 2019b.
[552] Миловановић 2018a, 28-30.
[553] Стојић, Јацановић 2008, 210.
[554] Nikolić 2000, 34; Стојић, Јацановић 2008, 217-219.
[555] Стојић, Јацановић 2008, 316-320.
[556] Nikolić 2000, 23; Стојић, Јацановић 2008, 144-149.

6.3. Region 3

A total of 74 sites attributed to the researched periods have been recorded and published in this region.

3-1. Arija Babi 2, Boljetin (Majdanpek) [44° 33' 16.6856" N, 22° 00' 48.5750" E]

The multilayered site of Aria Babi 2 lies on the southeastern slopes of Kišobrod, in the hinterland of the Danube George, at an altitude between 310 and 318 m. The site covers an area between 0.8 and 1 ha. First archaeological surveys and excavations were conducted in 2004 and continued in 2005 and 2006.[557] The stratigraphy of the site, largely disturbed by erosion, was comprised of solely one undisturbed layer, 0.2-0.25 m thick, which yielded lumps of daub, bones, stone tools,[558] and potsherds. The potsherds which originate from the site indicated the settling of the site during the Neolithic, Late Eneolithic (Coţofeni-Kostolac), Middle/Late Bronze Age, and Early Iron Age.[559]

3-2. Banjska Stena, Gamzigradska Banja (Zaječar) [43° 55' 32.2098" N, 22° 10' 19.9509" E]

The multilayered hillfort settlement is located on a dominant elevation, above a meander, on the right bank of Crni Timok River, at the altitude of 180 m. The excavations of the hillfort were conducted in 1994,[560] and a cavelet in its foothill was test-trenched in 1996 and surveyed in 2001 and 2009/2010.[561] The excavations on the hillfort have yielded the remains of a rampart, dwellings, and potsherds attributed to the Early/Middle and Late Eneolithic (Coţofeni-Kostolac), Middle/Late Bronze Age, and Late Iron Age (La Tène). The cavelet yielded solely Late Eneolithic (Coţofeni-Kostolac) and Middle/Late Bronze age potsherds.[562]

3-3. Biljevina, Velesnica (Kladovo) [44° 30' 13.4399" N, 22° 33' 6.0022" E]

The site is located on the right bank of the Danube River, downstream of the village of Milutinovac. The site was registered at the beginning of the 20th century,[563] surveyed in 1971 and the excavations were conducted between 1980 and 1982.[564] The excavations yielded remains of dwellings, graves, and other portable archaeological material attributed to the Early Neolithic, as well as potsherds attributed to the Late Eneolithic (Coţofeni-Kostolac), potsherds, and figurines attributed to the Late Bronze Age, potsherds attributed to the Early and Late Iron age, and the remains of a Roman building.[565] The survey in 2016 yielded atypical prehistoric and Roman potsherds.[566]

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[557] Борић, Старовић 2006.
[558] Refer to Antonović *et al*. 2017.
[559] Борић, Старовић 2006; Капуран *et al*. 2007, 105; Kapuran 2014, 115; Капуран *et al*. 2014, 77.
[560] Лазић 1997, 59-61.
[561] Капуран, Шкундрић 2009.
[562] Kapuran 2014, 127.
[563] Васић *et al*. 1984, footnote 1.
[564] Vasić, Janković 1971; Васић *et al*. 1984; Васић 1986.
[565] Васић *et al*. 1984; Васић 1986; Jevtić 1987, 24; Kapuran 2014, 152.
[566] Mladenović, Janjić 2021, 20.

3-4. Bogovinska Pećina, Bogovina (Boljevac) [43° 53' 49.7518" N, 21° 55' 31.8203" E]

The cave is located in the eastern foothill of Kučaj Mountain, at an altitude of 268 m. It was surveyed between 1981 and 1983. The surveys resulted in potsherds attributed to the Late Eneolithic (Coţofeni-Kostolac) and Middle/Late Bronze Age (Verbicioara, Paraćin). The finds were mostly concentrated in the entrance of the cave, which indicates that the settlement was most likely positioned on terraces above the cave.[567]

3-5. Borđelj, Kusjak (Negotin) [44° 19' 9.1199" N, 22° 32' 38.4022" E]

The site is located on the right bank of the Danube River, on the main road from Kladovo to Negotin. The site was surveyed in 1971 and excavated in 1980.[568] The exact surface which the site covers remains unknown, although M. Sladić indicates a length of approximately 200 m. The excavations pointed out the existence of three horizons at the site. The youngest horizon, 0.4 m thick is attributed to the Antique and Medieval Period. The second (0.6 m thick) and third horizon (0.2 m thick) are attributed to the Late Eneolithic (Coţofeni). The earliest horizon is connected with the remains of a house floor, which was solely partially excavated.[569] Early Iron Age pottery has also been recorded at the site.[570]

3-6. Brzi Prun, Grabovica (Donji Milanovac) [44° 29' 2.0783" N, 22° 29' 6.8704" E]

The site is located on a slight slope, an almost flat plateau, on the right bank of the Danube River, near the village of Grabovica. The site was surveyed during the 70s and excavated on two occasions in 1980 and 1981.[571] The potsherds recorded during the excavations are attributed to the Early/Middle Neolithic, Late Eneolithic (Coţofeni-Kostolac), Early Iron Age, Antique, and Medieval Period.[572]

3-7. Brodoimpeks, Kladovo (Kladovo) [44° 37' 13.19'' N, 22° 35' 41.78'' E]

A multilayered site positioned on a hill above the Fetislam fortress in present-day Kladovo.[573] The site was discovered and destroyed in 1963 during the construction of the Brodoremont Factory when the remains of an Antique necropolis were excavated.[574] In the course of excavations, prehistoric material attributed to the Middle Neolithic, Early and Late Eneolithic (Coţofeni), Late Bronze Age, and Early Iron Age was recorded as well.[575]

[567] Капуран *et al*. 2014, 199-200; Kapuran 2014, 108.
[568] Vasić, Janković 1971, Сладић 1984. The site was surveyed in 2016 and yielded atypical prehistoric and Antique Period potsherds (Mladenović, Janjić 2021, 24)
[569] Сладић 1984, 214-216; Jevtić 1987, 24.
[570] Kapuran 2014, 155.
[571] Vasić, Janković 1971; Paprenica 1986.
[572] Paprenica 1986; Булатовић *et al*. 2013, 77.
[573] During the 2016 survey, the author has visited the site, meaning the area of Brodoremont factory, which is in fact located approximately 400 m upstream of Fetislam fortress.
[574] Lekić 1963.
[575] Булатовић *et al*. 2013, 87-89.

3-8. Čoka Kormaroš, Bor (Bor) [44° 05' 53.9542" N, 22° 03' 25.7422" E]

The site is located on a 0.48 ha large plateau, surrounded by two local streams (Valja Ružana and Valja Dosula) and a small cliff, at an altitude of 644 m. The site was surveyed in 2003 and 2010,[576] and the potsherds collected in the process indicate the settling during the Late Eneolithic (Coţofeni-Kostolac) and the Bronze Age.[577]

3-9. Čoka Lu Balaš, Krivelj (Bor) [44° 07' 17.9882" N, 22° 03' 51.1797" E]

The site is located on a flattened plateau that slopes towards the Krivelj creek, at the altitude of 450 m, and covers an area of approximately 0.1 ha.[578] The topography of the site indicates a well-fortified settlement with only one accessible side. The excavations conducted during 1971 and 1972 determined a 0.4-1 m thick cultural layer separated into two horizons. The earlier horizon (a) and features such as house floors, hearths, and pits belong to the Bubanj-Salkuca-Krivodol complex, and the later horizon (b) is based on the stylistic and typological characteristics of pottery attributed to the Late Eneolithic, meaning the Coţofeni-Kostolac group (Pl. 16/1-18).[579] A small number of finds were attributed to the Late Iron Age (La Tène).[580]

3-10. Čoka Morminc, Krivelj (Bor) [44° 07' 51.0493" N, 22° 05' 43.3317" E]

The site is located on a slight elevation above the left coast of Krivelj creek at an altitude of 340 m. The site is located in the center of the present-day village of Krivelj, and the pottery collected during surveys in modern backyards indicates that the site belongs to the Early and Late Eneolithic (Coţofeni-Kostolac).[581]

3-11. Čoka Njica, Bor (Bor) [44° 03' 3.7879" N, 22° 04' 51.2974" E]

The hillfort site is located on the southern fringe of the present-day city of Bor, in a saddle surrounded by three elevations, at the altitude of 400 m. The site covers an area of around 0.5 ha. Surroundings of the site are exposed to heavy winds, yet the site itself is naturally protected. The site was surveyed during the late 80s and in 2003. The site was predominantly settled during the Middle and Late Bronze Age, and only sporadic finds can be connected with the Late Eneolithic (Coţofeni-Kostolac).[582] The current excavations, conducted starting from 2017 have indicated the metallurgical nature of the site with numerous copper metallurgy-related finds such as kilns and lumps of slag. Likewise, the absolute dating of the site has placed it between the 19th and the 17th century BC.[583]

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[576] The surveys were conducted by I. Jovanović from the Museum of Mining and Metallurgy in Bor.
[577] Kapuran 2014, 98; Капуран *et al*. 2014, 91-92.
[578] Капуран *et al*. 2014, 156.
[579] Tasić 1995, 139; Nikolić 2000, 13.
[580] Капуран *et al*. 2014, 159.
[581] Kapuran 2014, 100; Капуран *et al*. 2014, 167-168.
[582] Срејовић, Лазић 1997, 226; Капуран *et al*. 2014, 92-93.
[583] Gavranović *et al*. 2020, 67; Mehofer *et al*. 2021.

3-12. Diana/Karataš, Davidovac (Kladovo) [44° 39' 11.1246" N, 22° 32' 40.6311" E]

A Roman and Late Antique site, located on a flat plateau above the right bank of the Danube River. The site was recorded during the late 19th century, surveyed in 1964 and 1965, and excavated in 1964, 1971, 1978/1979, 1980, and 1982. The site yielded remnants of Roman and Late Antique fortifications with accompanying infrastructure.[584] M. Jevtić mentions prehistoric potsherds which were recorded during the excavations and attributed to the Late Eneolithic (Coțofeni-Kostolac).[585]

3-13. Donje Butorke, Kladovo (Kladovo) [44° 37' 10.2314" N, 22° 35' 39.6150" E]

The site is located on the right bank of the Danube, approximately 400 m upstream from the western walls of Fetislam fortress in present-day Kladovo. The site covered an area of approximately 1.5 ha, although it was damaged by various Antique and Medieval structures. The rescue archaeological excavations were conducted in 1964. Two cultural horizons were determined on that occasion. Earlier, attributed to the Early Neolithic and younger attributed to the Late Eneolithic (Coţofeni-Kostolac). The cultural layer was between 0.8 and 1.2 m thick, or between 0.4 and 0.6 m thick in places where there was no younger Eneollithic horizon.[586] Besides those, the excavations of a pit determined that the site was inhabited during the Middle Bronze Age, Early and Late Iron Age.[587]

3-14. Glavica, Brusnik (Negotin) [44° 05' 41.9416" N, 22° 27' 46.3863" E]

The site is located on a cone-shaped elevation on the right bank of the Timok River. Pottery recorded at the site is attributed to the Late Eneolithic (Coţofeni-Kostolac).[588]

3-15. Grabar-Svračar, Smedovac (Negotin) [44° 06.136' N, 22° 31.949' E]

A prehistoric settlement located on a plateau on top of a cone-shaped elevation covering an area of approximately 1.5 ha. The excavations conducted in 1960 have determined the existence of above-ground dwellings distributed on the fringe of the plateau. According to the authors of excavations, one of the houses contained a hearth and pieces of copper slag, which indicated the metallurgical activities at the site.[589] According to the archaeological material, the site was settled during the Early and Late Eneolithic (Coţofeni-Kostolac) (Pl. 17/1-8), and Early Iron Age.[590]

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584 Ранков 1980, with cited literature; Ранков 1984; Ранков 1987.
585 Jevtić 1987, 23; Kapuran 2014, 149.
586 Srejović 1964, 51-52; Jevtić 1987, 23.
587 Булатовић *et al*. 2013, 91-93.
588 Галовић 1961; Булатовић *et al*. 2013, 66; Kapuran 2014, 136.
589 Трбуховић, Вуковић 1967, 97-98; Tasić 1982, 21. Unfortunately, the documentation on such objects was not recovered during the latest revision of archaeological material (Булатовић *et al*. 2013).
590 Булатовић *et al*. 2013, 176-179.

3-16. Gradište, Sikole (Negotin) [44° 10' 24.9141" N, 22° 19' 23.6807" E]

The site is located ona a cone-shaped elevated terrain with a flat plateau on the top, on the left bank of the Metriž creek. The site was surveyed in 1965, and the potsherds indicate that it was settled during the Late Eneolithic (Coţofeni-Kostolac).[591]

3-17. Grle, Kusjak (Negotin) [44° 17' 56.8478" N, 22° 33' 49.5101" E]

The site is located approximately 0.5 km downstream of Kusjak. It was surveyed in 1971 and the riverbank cross-sections indicated a multilayered prehistoric site.[592] The pottery from the site is attributed to the Late Eneolithic (Coţofeni-Kostolac) (Pl. 18/1-4), Middle Bronze Age, Early, and Late Iron Age.[593]

3-18. Hajdučka Vodenica, Tekija (Kladovo) [44° 38' 18.0969" N, 22° 18' 12.2749" E]

The site was located on stepped terraces above the Danube, in the amphitheater of Veliki Kazan chine. It was surveyed in 1965 and excavated in 1966 and 1977 and yielded finds from numerous prehistoric periods.[594] The site is well-known for the existence of a Mesolithic necropolis, yet it also yielded finds from Late Eneolithic (Coţofeni-Kostolac), Late Bronze Age, and Early Iron Age.[595]

3-19. Ideče, Prahovo (Negotin) [44° 16' 29.2458" N, 22° 34' 11.4244" E]

The site is located on a loess terrace on the right bank of the Danube River. The excavations were conducted in the 1960s and the archaeological material from the site is attributed to the Early/Middle Neolithic, Early and Late Eneolithic (Coţofeni-Kostolac) (Pl. 19/1-8), Early and Late Iron Age.[596]

3-20. Imanje I. Dudića, Džanov Potok (Bor)

Based on the documentation from the Museum of Mining and Metallurgy in Bor, the site is located somewhere in the area of Džanov Potok, although its precise location was never determined.[597] The pottery which originates from the site indicates that it was inhabited during the Early Neolithic, Late Eneolithic (Coţofeni-Kostolac), Middle/Late Bronze Age, and Late Iron Age.[598]

3-21. Jezero/Kameni Rog (Majdanpek) [44° 26' 23.7492" N, 21° 56' 59.4931" E]

The site is located above the right bank of Mali Pek River, at the altitude of 462 m, surrounded by numerous streams and springs. The site lies on a rocky hilltop divided into three terraces covering the surface of approximately 1800 m^2. Systematic archaeological

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[591] Булатовић *et al*. 2013, 173; Kapuran 2014, 145.
[592] Vasić, Janković 1971, 112.
[593] Булатовић *et al*. 2013, 128-129.
[594] Jovanović 1965, 69; Васић 1984, 315-318.
[595] Јовановић 1967; Јовановић 1984b, Kapuran 2014, 123.
[596] Vuković 1962a; Булатовић *et al*. 2013, 159-163.
[597] Information by A. Kapuran who surveyed the area in 2010.
[598] Капуран *et al*. 2014, 97-98.

excavations were conducted in 1995. The terraces served as a base for cutting the dwellings into the limestone. The site was settled during the Late Eneliothic (Coţofeni-Kostolac) and Medieval periods.[599]

3-22. Kapu Đaluluj, Veljkovo (Negotin) [44° 07' 58.1542" N, 22° 36' 7.4710" E]

The hillfort site is located on a cone-shaped elevation above the left bank of the Timok River, at an altitude of 97 m. It lies on a tongue-shaped plateau, inaccessible from three sides, that covers an area of approximately 0.2 ha. The site was excavated in 1962 and yielded potsherds attributed to the Early/Middle and Late Eneolithic (Coţofeni-Kostolac) (Pl. 20/1-8) and Early Iron Age.[600]

3-23. Katarinine Livade, Boljetin (Majdanpek) [44° 33' 9.9975" N, 22° 01' 42.8469" E]

The site was located 500 m downstream from the site of Lepenski Vir. The site was excavated in 1986 and yielded two distinct layers. First, a 5 cm thick layer was recorded at the depth of 1.8 m, comprised of ash, stone, slag, and burnt animal bones. Directly beneath it was the second layer, represented by a "floor" made of small stones with potsherds on it. The pottery from the site bears characteristics of the Late Vučedol group (Pl. .21/1-7).[601]

3-24. Kapetanova Pećina, Majdanpek (Majdanpek) [44° 27' 13.3941'' N, 21° 59' 26.3022'' E]

A cave site located at the very entrance to the cave, on top of an amphitheater-shaped rock, at the altitude of 570 m. Small-scale excavations at the site were conducted in 1996 and yielded potsherds attribute to the Late Eneolithic (Coţofeni-Kostolac) and Middle/Late Bronze Age.[602]

3-25. Kljanc, Majdanpek (Majdanpek) [44° 25' 49.3017" N, 21° 56' 16.4824" E]

The site is located above the left bank of Mali Pek River, at the altitude of 530 m. The excavations at the site were conducted in 1992 and the material collected during the previous survey and excavations, potsherds and numismatics, is attributed to the Late Eneolithic (Coţofeni-Kostolac) and Late Antique period.[603]

3-26. Kmpije, Bor (Bor) [44° 03' 40.9270" N, 22° 06' 51.0416" E]

The site is located on the Kampu Boruluj slope on the southeastern periphery of the present-day city of Bor, at an altitude of 390 m. The site, with a surface of around 0.5 ha was surveyed in 1990 and 2010.[604] On that occasion, it was determined that the site represented a large (Early) Eneolithic settlement with above-ground dwellings and two

[599] Kapuran 2014, 111.
[600] Vuković 1962b; Tasić 1982, 22; Булатовић *et al*. 2013, 75-76; Kapuran 2014, 142.
[601] Срејовић 1984, 209-210.
[602] Kapuran 2014, 112.
[603] Ружић 1995; Kapuran 2014, 111.
[604] The survey in 1990 was conducted by Tonko Rajkovača (Department of Archaeology, University of Cambridge), and the 2010 survey was conducted by A. Kapuran (Institute of Archaeology, Belgrade) and I. Jovanović (Museum of Mining and Metallurgy in Bor).

cultural horizons. The younger, Late Eneolithic (Cotofeni-Kostolac) horizon is mostly devastated by surface mining and the construction of a railway.[605]

3-27. Knjepište, Mihajlovac (Negotin) [44° 22.303' N, 22° 30.084' E][606]

The site was located on an elevated plateau,[607] measuring approximately 8 ha, on the estuary of Zamna River into the Danube River. It was excavated in 1983 and yielded a 0.6-1.7 m thick cultural layer with the remains of semi-sunken dwellings, potsherds, bone tools, and ceramic figurines, and three distinct chronological phases, all dated to the Early/Middle Neolithic.[608] M. Jevtić provides data on Late Eneolithic (Coţofeni-Kostolac) pottery from the site, which unfortunately remains unpublished.[609]

3-28. Kriveljski Kamen/Bunar, Krivelj (Bor) [44° 07' 8.7097" N, 22° 04' 7.5488" E]

The site is located on a slight elevation, some 500 m southeastern from the site of Čoka lu Balaš.[610] The site was excavated during the 70s,[611] and the excavations were renewed in 2012. It is a multilayered site that hosted the Middle/Late Bronze Age (Verbicioara, Paraćin) and Medieval necropolises, while the finds from the cultural layer indicate that the site was settled during the Late Eneolithic (Coţofeni-Kostolac) and the Early Iron Age.[612]

3-29. Kriveljski Krš, Krivelj (Bor) [44° 07' 29.0622" N, 22° 04' 31.3258" E]

The prehistoric settlement, located on a rocky peak of a small hill at the altitude of 640 m. The site hosted an antique fortification which was, as well as the site itself, devastated by a local quarry. Potsherds recorded on the site indicate that the prehistoric settlement originates from the Late Eneolithic (Coţofeni-Kostolac), and possibly Middle Bronze Age.[613]

3-30. Kučajna, Bor (Bor) [44° 02' 59.8278" N, 22° 05' 44.6254" E]

A multilayered prehistoric site located above the Kučaj and Martin creek, at the altitude of 380 m. The site covers an area of approximately 3.8 ha. The excavations were conducted between 1985 and 1987, and between 2004 and 2007. The finds recorded during the excavations, including remains of stamped clay floors, hearths potsherds, and clay amulets are mostly attributed to the Early Eneolithic.[614] Besides those, potsherds

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605 Kapuran 2014, 97-98; Капуран *et al*. 2014, 78-81.
606 The coordinate is taken on the northern side of the Zemna and Danube confluence (Mladenović, Janjić 2021, 23)
607 The site is submerged by the hydro-accumulation Iron Gate II (Mladenović, Janjić 2021, 23)
608 Stanković 1986, 447-452.
609 Jevtić 1987, 24.
610 Капуран *et al*. 2014, 152.
611 Tasić 1982.
612 Капуран, Миладиновић-Радмиловић 2011; Капуран, Миладиновић-Радмиловић 2013, 145-156.
613 Капуран *et al*. 2014, 154-155.
614 Stanojević 1988a; Stanojević 1988b, 77-78.

attributed to the Early/Middle Eneolithic, Early, and Middle/Late Bronze Age have also been recorded at the site.[615]

3-31. Kulmja Škopjuluji, Klokočevac (Majdanpek) [44° 20' 45.9854" N, 22° 10' 57.6038" E]

A hillfort site located above the confluence of Klokočevac and Poreč rivers, at the altitude of 380 m. The site lies on a steep rocky hillside (angle of 45 °) of the eponymous hill. The excavations were conducted in 1970. The residential objects recorded during the excavations are positioned on 4 to 6 horizontal terraces positioned one above the other, below the Strmac rock which served as a natural protection for the settlement. The terraces cover an area of approximately 0.1 ha. The backsides of the objects were cut into the rock, while the front sides were open towards the terraces. The cultural layer at the site was quite thin and destroyed by the intensive erosion, and yielded potsherds characteristic for the Late Eneolithic (Coţofeni-Kostolac).[616]

3-32. Lalunj, Mokranje (Negotin) [44° 09' 10.3967" N, 22° 33' 45.5907" E]

An artificial elevation (a mound?) was recorded during the survey in 2010, located some 500 m southeastern of the village of Mokranje on the fringe of the Sikol River Valley. Based on the unpublished pottery collected during the survey, this circular elevation which measures between 25 and 30 m in diameter most likely originates from the Late Eneolithic (Coţofeni-Kostolac).[617]

3-33. Lepenska Potkapina [44° 33' 31.7794" N, 22° 01' 24.1966" E]

A cavelet facing Danube River, located some 50 m above the site of Lepenski Vir, at the altitude of 90 m. The site was excavated in 1968, and the excavations yielded numerous archaeological materials (potsherds, hearths, bone tools, loom weights, chipped stone tools) distributed within four cultural layers (I-IV). The earliest layer (I) is attributed to the Early Neolithic, followed by layer II which belongs to the Late Eneolithic (Coţofeni-Kostolac), and layers III and IV that originate from the Late Bronze Age and the Roman Period.[618] The site is sunken during the construction of the hydroelectric power station.

3-34. Livade/Konopište, Mala Vrbica (Kladovo) [44° 36' 0.5999" N, 22° 41' 47.8222" E]

The site is located on the right bank of the Danube River, some 500 m downstream of the village of Mala Vrbica.[619] The site, covering an area of approximately 2 ha was visited at the beginning of the 20th century and excavated on two occasions in 1980 and 1981, due to the construction of the hydroelectric power plant.[620] The excavations determined a cultural layer between 1.4 and 1.8 m thick, with finds of potsherds and lumps of daub (possible remains of dwelling structures or other architectural elements), which was

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[615] Kapuran 2014, 97.
[616] Tasić 1982, 24; Тасић 1990a; Nikolić 2000, 25; Kapuran 2014, 113.
[617] Булатовић *et al*. 2013, 152; Kapuran 2014, 146.
[618] Јевтић 1984a, 201-207; Nikolić 2000, 25; Kapuran 2014, 121.
[619] Mladenović, Janjić 2021, 16.
[620] Васић 1912, 5-6; Вукмановић, Поповић 1984; Vukmanović, Popović 1986; Jevtić 1987, 21. M. Vasić lists the site as Kurvin Grad, which is in fact located some 800 m downstream from the site of Livade.

separated into three horizons – Middle Bronze Age, Late Bronze Age, and Early Iron Age horizon.[621] A. Kapuran notes that the site also hosted Early Neolithic finds.[622] The report by M. Vasić from 1910 illustrates a potsherd that could be attributed to the Late Eneolithic (Coţofeni-Kostolac) and lists it under the site of Kurvin Grad.[623]

3-35. Mala Vrbica – 500 metara od sela, Mala Vrbica (Kladovo)

The site was located some 500 m from the village of Mala Vrbica, in an unknown direction. The pottery that originates from the site is attributed to Late Eneolithic (Cocofeni-Kostolac), Early and Late Iron Age.[624]

3-36. Manastir, Dobra (Golubac) [44° 36' 52.9448" N, 21° 59' 56.9818" E]

The multilayered site was located in a narrow cove surrounded by the Dojka mountain range from three sides and opened towards the Danube River on one side.[625] The site was surveyed and excavated before the construction of the hydroelectric power station[626] and contained prehistoric finds and architectural remains from Late Eneolithic (Coţofeni-Kostolac), Middle Bronze Age, Transitional Period, and Early Iron Age, as well as finds from the Antique and Medieval periods.[627]

3-37. Mokranjske Stene, Mokranje (Negotin) [44° 09' 56.3889" N, 22° 31' 35.7179" E]

The location of Mokranjske Stene in the village of Mokranje near Negotin, in fact, represents a sort of archaeological complex comprised of at least two sites – Kamenolom and Potkapina.[628]

The site of Kamenolom is located on two highly positioned flat plateaus accessible only from one side, at the altitude of 170 m, and covers an area of approximately 1 ha. The excavations of the site of Kamenolom were initiated during 1976 and continued in 1980, due to the rapid destruction of the site that lies on a quarry that was exploited for the construction of Đerdap II powerplant.[629] The combined stratigraphy of both the mentioned excavations, which measures between 0.8 and 3 m of cultural layers is represented by the remains from the Middle Neolithic, Early, and Late Eneolithic (Coţofeni-Kostolac), Bronze Age, Early and Late Iron Age, Byzantine Period, and Medieval Period.[630]

The site of Potkapina was registered during a survey in 2011 and subsequently excavated between 2011 and 2013.[631] It is located 150 m west of the site of Kamenolom, on

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[621] Vukmanović, Popović 1986, 13.
[622] Kapuran 2014, 150.
[623] Vasić lists the site as Kurvin Grad (Васић 1912, сл. 38), which is in fact located some 800 m downstream from the site of Livade (Вукмановић, Поповић 1984, 85). The site is known for Antique and Medieval Period.
[624] Булатовић *et al*. 2013, 99.
[625] Jovanović 1965, 68; Минић 1984, 153.
[626] Kondić 1965, 68; Brukner 1968; Minić, Kovačević 1968a; Minić, Kovačević 1968b.
[627] Поповић 1984a, 152; Nikolić 2000, 28.
[628] Translates as Quarry and Cavelet.
[629] Janković, Janković 1976; Сретеновић 1984.
[630] Капуран, Јањић 2015, 9-11.
[631] Kapuran 2012; Капуран *et al*. 2013; Kapuran, Milošević 2013; Kapuran *et al*. 2014b.

an elongated elevation oriented north-south. The site is divided into two areas. The upper area, at the altitude of 150 m, and the lower area which is a small cavelet in a creek canyon that separates the sites of Kamenolom and Potkapina, at the altitude of 130 m. Sokolska River surrounds both areas from the south, east, and west. The multidisciplinary excavations including the archaeozoological, paleobotanical, and anthropological analyses have provided a vast number of important data on the settling at the site.[632] The stratigraphy of the site is almost identical to the stratigraphy recorded at the site of Kamenolom, as it provided finds from the Early and Late Eneolithic (Coţofeni-Kostolac), Middle Bronze Age (Verbicioara), Early and Late Iron Age (a single grave),[633] Antique Period and Medieval Period.[634] Compared to the site of Kamenolom, where the Coţofeni-Kostolac layer was quite disturbed by later pits and construction interventions, it was better preserved at the site of Potkapina. A total of four cultural layers are defined at the site of Potkapina: (1) 0.3-0.7 m thick Byzantine layer; (2) 0.5-0.7 m thick mixed layer with Byzantine, Iron Age, Bronze Age, and Late Eneolithic finds; (3) 0.7 m thick Late Eneolithic layer attributed to the Coţofeni-Kostolac group; (4) 0.2 m thick Early Eneolithic layer attributed to Bubanj-Salkuca-Krivodol complex. The third layer (3), attributed to the Coţofeni-Kostolac group yielded numerous finds of characteristic potsherds, as well as faunal remains, and remains of architecture such as lumps of daub and a hearth floor.[635]

3-38. Unknown Site, Boljetin (Majdanpek)

The potsherds originate from an unknown site that was surveyed during the 1960s. The material is attributed to the Middle Neolithic, Early Bronze Age, and Late Iron Age.[636] A Late Eneolithic/Early Bronze Age (arsenic) bronze axe also originates from Boljetin. The axe represents one of the earliest bronze objects in the Central Balkans.[637]

3-39. Obala-Donja Strana, Velesnica (Kladovo) [44° 30' 53.8800" N, 22° 33' 10.5000" E]

A multilayered archaeological site, well-known for its Mesolithic and Early Neolithic settlement, located on a terrace on the left bank of the Danube River, downstream from present-day Milutinovac, on the exact spot in which the Danube turns to the south. The first finds from were collected at the beginning of the 20th century.[638] First systematic surveys of the site were conducted in 1971,[639] and the excavations took place between 1980 and 1982 and in 1984.[640] Save for the rich Mesolithic and Early Neolithic horizons, the site yielded finds from the Late Eneolithic (Coţofeni-Kostolac), Early Bronze Age, Early and Late Iron Age (La Tène), Roman and Medieval Period.[641]

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632 For the analyses of prehistoric material refer to Булатовић, Милошевић 2015; Филиповић 2015a.
633 Popović, Kapuran 2011.
634 Капуран, Јањић 2015, 9-11.
635 Булатовић *et al*. 2013, 148-151; Булатовић 2015, 23-30.
636 Булатовић *et al*. 2013, 60.
637 Jovanović 1971, 29, T. VII/7; Pernicka *et al*. 1993.
638 Васић 1912, 13-14.
639 Vasić, Janković 1971, 110.
640 Vasić 1986; Ercegović-Pavlović, Minić 1986; Vasić 2008, 227.
641 Булатовић *et al*. 2013, 68-74.

3-40. Obala, Ljubičevac (Kladovo) [44° 28' 58.6200" N, 22° 30' 56.4000" E]

Located on the right bank of the Danube River, in the village of Ljubičevac, the site was excavated in 1981/1982.[642] The excavations yielded numerous potsherds attributed to the Late Eneolithic (Coţofeni-Kostolac), Late Bronze Age, Early, and Late Iron Age (La Tène), and Medieval Period.[643]

3-41. Ostrvo, Ljubičevac (Kladovo) [44° 29' 9.4969" N, 22° 32' 47.3212" E]

The island, located across the village of Ljubičevac on the left bank of the Danube River.[644] The surveys and small-scale excavations conducted during the 70s and 80s have pointed out a Late Iron Age (La Tène) settlement at the site.[645] On the other hand, a portion of the ceramic material is attributed to the Late Eneolithic (Coţofeni) and Late Bronze Age.[646]

3-42. Padina [44° 35' 43.4814" N, 22° 01' 6.7166" E]

A renowned Mesolithic and Early Neolithic site located within three coves on the right bank of the Danube River, discovered in 1968 and excavated between 1968 and 1970. Save for the Mesolithic and Early Eneolithic finds, the site hosted Late Eneolithic (Coţofeni-Kostolac), Early Iron Age, Antique, and Medieval horizons.[647] Late Eneolithic finds were recorded in a context of a necropolis with incinerated deceased.[648]

3-43. Pećina ispod Velikog Mosta [44° 22' 56.0541" N, 22° 20' 12.1444" E]

A cave settlement located below the site of Veliki Most, on the left bank of Vratna River, at the altitude of 156 m. The survey in 2010 yielded potsherds from the Late Eneolithic (Coţofeni-Kostolac) and Early Iron Age.[649]

3-44. Pećina kod Trajanove Table [44° 39' 22.8720" N, 22° 18' 39.7050" E]

Cave site located some 25 m above the Trajan's Bridge and the present-day level of the Danube River, at an altitude of around 90 m. The small-scale excavations conducted during 2004 and 2005 have determined quite a disturbed stratigraphy with finds belonging to the Late Eneolithic (Coţofeni-Kostolac), Early Iron Age (two phases), and Early Medieval Period.[650]

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[642] Popović, Mrkobrad 1986.
[643] Jevtić 1987, 24; Булатовић *et al*. 2013, 134-135; Kapuran 2014, 153.
[644] The island in sunken due to the construction of hydroelectric power station. Reports and old maps indicate that the island was around 1.2 km long and 250 m wide in its widest point.
[645] Поповић 1984b, 133-134.
[646] Булатовић *et al*. 2013, 136.
[647] Jovanović 1968; Jovanović 1969; Jovanović 1971b; Јовановић 1984a; Nikolić 2000, 30.
[648] Јовановић 1976, 133-136.
[649] Kapuran 2014, 140.
[650] Капуран *et al*. 2007, 113-118; Капуран *et al*. 2014, 181.

3-45. Pešćera Mare [44° 35' 31.2354" N, 22° 00' 56.2716" E]

The cave site is located between the village of Dobra and the site of Lepenski Vir, on a rocky top of Velika Rudina hill,[651] at the altitude of 245 m. The site was excavated in 2004, and two chronological horizons were determined within the 0.2-0.8 m thick cultural layer. The layer contained faunal remains,[652] remnants of dwelling features and hearths, and potsherds. Based on the stylistic and typological characteristics of the pottery, the cave was inhabited during the Late Eneolithic (Cotofeni-Costolac) and the Early Iron Age.[653]

3-46. Pjatra Kosti, Crnajka (Majdanpek) [44° 17' 22.9527" N, 22° 08' 34.1649" E]

A hillfort site located on a rocky hill above the confluence of Leva and Crnajka rivers, at the altitude of 230 m. The site is naturally quite inaccessible as it is surrounded by steep slopes and rivers from the northern, eastern, and southern sides and cliffs from the western. It covers an area of approximately 0.25 ha. Small-scale excavations of the site were conducted in 1971 when a foundation of an above-ground dwelling with pottery *in situ* was recorded. The pottery is attributed to the Late Eneolithic (Coţofeni-Kostolac).[654]

3-47. Rajkova Pećina, Majdanpek (Majdanpek) [44° 26' 26.4122" N, 21° 57' 37.4689" E]

A cave site located above the spring of Mali Pek River, at the altitude of 520 m. The site was excavated in 1995/1996 and yielded potsherds from the Late Eneolithic (Coţofeni-Kostolac).[655]

3-48. Rečica, Golubinje (Donji Milanovac)

The site was located on a river terrace above the Danube River near the city of Donji Milanovac. Small-scale excavations that were conducted on the site were never published in total. Reports suggest that the recorded potsherds belong to Late Eneolithic (Coţofeni-Kostolac) and Late Iron Age.[656]

3-49. Romuliana, Gamzigradska Banja (Zaječar) [43° 53' 58.3896" N, 22° 11' 10.6384" E]

A multilayered prehistoric settlement or a series of horizontally distributed settlements that are located within and in the surroundings of the Felix Romuliana Imperial palace, at the altitude of 180 m. The site covers an area of approximately 5 ha on a terrace which slightly falls towards the Seliški creek. The multi-decade research conducted in several different locations (Basilica III, Thermae, Romula's Triclinium) has yielded numerous finds from different prehistoric periods.[657] Prehistoric finds recorded during the

[651] For the internal layout of the cave and its speleological characteristics refer to Борић 2015.
[652] Refer to Dimitrijević, Cvetković 2015.
[653] Капуран *et al*. 2007, 106-113; Капуран *et al*. 2014, 77-78.
[654] Tasić 1982, 24; Nikolić 2000, 32; Kapuran 2014, 114.
[655] Kapuran 2014, 112.
[656] Popović 1970, 59; Jevtić 1987, 22; Nikolić 2000, 33; Kapuran 2014, 123.
[657] For the history of research of prehistoric features refer to Капуран 2008a, 245-251.

excavations originate from the Early Neolithic, Late Eneolithic (Coţofeni-Kostolac), Early Bronze Age (Pl. 22/1), Middle/Late Bronze Age, Early, and Late Iron Age (La Tène).[658]

3-50. Ruženka, Mala Kamenica (Negotin) [44° 20' 9.3153" N, 22° 31' 27.9579" E]

The site is located on the right bank of the Danube River, in a small cove 5 km south of Mihajlovac. It was surveyed during the 70s[659] and excavated in 1980. The excavations have determined a 0.6-0.7 m thick cultural layer disturbed by the alluvial erosion. The layer contained potsherds and a "kiln" attributed to the Early Iron Age,[660] and sporadic potsherds attributed to the Late Eneolithic (Coţofeni-Kostolac), which are unfortunately unpublished.[661]

3-51. Selište, Borsko Jezero (Bor) [44° 05' 53.5470" N, 22° 00' 40.9649" E]

The site is located above the estuary of a local stream into the Marcelova River in Brestovačka Banja near Bor, at the altitude of 450 m. The site was permanently flooded due to the creation of an artificial lake, and the finds comprised of potsherds, daub, and metallic slags were collected periodically in periods of low tide. Based on the stylistic and typological characteristics of potsherds, the site was inhabited during the Early Neolithic, Late Eneolithic (Coţofeni-Kostolac), Middle Bronze Age (Verbicioara, Paraćin), and Early Iron Age.[662]

3-52. Selište, Šarbanovac (Bor) [43° 55' 27.0007" N, 22° 05' 11.9024" E]

The site is located on the river terrace, on the right bank of the Timok River, at the altitude of 180 m. The surveys conducted in 1981, 1983, and 2010 provided a collection of potsherds from an area of 0.75 ha, which does not represent the full extent of the site, as it supposedly runs in line with the Timok River. The collected material belongs to the Early and Late Eneolithic (Coţofeni-Kostolac) and Bronze and Iron Ages.[663]

3-53. Selište, Štubik (Negotin) [44° 17' 14.5727" N, 22° 19' 30.3409" E]

The site is located on a flat river terrace below the site of Smiljkova Glavica, at the altitude of 248 m, and most likely stands in connection with the hillfort. Potsherds collected during the survey in 2010 are attributed to the Late Eneolithic (Coţofeni-Kostolac).[664]

3-54. Smiljkova Glavica, Štubik (Negotin) [44° 17' 3.4544" N, 22° 19' 16.3507" E]

The site (hillfort) is located on a triangular plateau that rises above the confluence of a local creek and Štubik River and covers an area of approximately 0,5 ha. The site was surveyed on several occasions,[665] but the results have never been completely published,

658 Срејовић, Лазић 1997, 229; Капуран 2008a; Kapuran 2014, 125.
659 Vasić, Janković 1971, 111-112.
660 Јевтић 1984c, 207-209.
661 Jevtić 1987, 24.
662 Kapuran 2014, 102; Капуран *et al*. 2014, 105-106.
663 Капуран *et al*. 2014, 197-198.
664 Булатовић *et al*. 2013, 186; Kapuran 2014, 139.
665 Last surveys were conducted in 2010.

and nowadays the site is endangered by a quarry. Potsherds collected during the survey are attributed to the Late Eneolithic (Coţofeni-Kostolac).[666]

3-55. Stenje, Turija (Kučevo) [44° 31' 18.0753" N, 21° 38' 49.3289" E]

The site is located on a hardly accessible elevation above the Dajša creek, near the estuary of Pek River. The surveys yielded potsherds attributed to the Late Eneolithic (Coţofeni-Kostolac).[667]

3-56. Straža, Žagubica (Žagubica)

During the survey in 2000, a potsherd attributed to the Late Eneolithi was recorded at the site.[668]

3-57. Trajanov Most, Kostol (Kladovo) [44° 36.833' N, 22° 40.083' E]

The site was located on a loess elevation below the Roman castrum of Pontes. The excavations at the site were conducted between 1979 and 1982, when the remains of Roman castrum and Medieval settlements and necropolises were excavated, as well as Medieval hoards of metal objects.[669] M. Jevtić brings information provided by M. Garašanin, that the prehistoric potsherds were recorded within an intact layer underneath the castrum.[670] According to the stylistic and typological characteristics of pottery, the site was inhabited during the Late Eneolithic (Coţofeni-Kostolac) and Late Iron Age.[671] During the 2016 survey campaign, no prehistoric finds were recorded.

3-58. Ušče Slatinske Reke, Slatina (Kladovo) [44° 25' 45.8999" N, 22° 28' 18.9022" E]

The site is located on a river terrace, on the right bank of the Slatina River, around 100 m upstream from the confluence with the Danube River. The exact size of the site is unknown, but the excavations in 1980 have indicated that prehistoric finds are spread in a length of around 70 m. The excavations have confirmed the existence of two cultural layers (both between 0.25 and 0.3 m thick): the earlier from the Late Eneolithic (Coţofeni-Kostolac) and the younger from the Early Iron Age.[672] Late Iron Age potsherds have also been recorded at the site.[673]

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[666] Tasić 1982, 22; Nikolić 2000, 34; Булатовић *et al*. 2013, 187; Kapuran 2014, 139.
[667] Nikolić 2000, 36; Стојић, Јацановић 2008, 292-294.
[668] Стојић, Јацановић 2008, 353.
[669] Гарашанин, Васић 1980; Garašanin *et al*. 1984; Гарашанин, Васић 1987; Marjanović-Vujović 1986; Марјановић-Вујовић 1987a; Марјановић-Вујовић 1987b; Špehar 2010, 31-32.
[670] Jevtić 1987, 23.
[671] Булатовић *et al*. 2013, 123-124. According to B. Jovanović, a copper axe originates form the site as well, which could be attributed to the Early Eneolithic (Jovanović 1971).
[672] Јевтић 1984b, 181-190; Jevtić 1987, 24; Булатовић *et al*. 2013, 174-175.
[673] Kapuran 2014, 154.

3-59. Vajuga-Pesak, Korbovo (Kladovo) [44° 32' 56.2799" N, 22° 38' 49.5622" E]

Renowned Early Iron Age and Medieval necropolis located on an elongated terrace on the right bank of the Danube River.[674] The site was registered at the beginning of the 20th century, surveyed in 1971, and excavated in several campaigns between 1980 and 1984, due to the construction of The Iron Gate Hydroelectric Power Station.[675] Besides the necropolis, the site also represents a prehistoric settlement inhabited during the Early and Late Eneolithic (Coţofeni-Kostolac) (Pl. 23/1-3), Late Bronze Age, Early, and Late Iron Age.[676]

3-60. Valja Mare-Kod Vodenice, Mali Krivelj (Bor) [44° 08' 6.1589" N, 22° 04' 24.9043" E]

The site is located on the left bank of the Krivelj creek, on two small river terraces, at the altitude of 370 m. The site covers approximately 0.8 ha. Pottery collected during the surveys belongs to the Late Eneolithic (Coţofeni-Kostolac) and the Middle/Late Bronze Age.[677]

3-61. Varzari/Kupusište, Gamzigrad (Zaječar) [43° 53' 58.6672" N, 22° 09' 20.2594" E]

The site is located around 1.8 km northwestern of Felix Romuliana Palace, on a south-north oriented slope, at the altitude of 270 m. The site lies on a long tongue-shaped plateau surrounded by local creeks on two sides, and accessible only from one side. The site was recorded during the systematic surveys in 2008/2009 and yielded numerous potsherds, lumps of daub which indicated above-ground dwellings, chipped stone tools, and copper and iron slag. Save for the survey, geodetic drillings and test-excavations were conducted on the site and pointed out that the thickness of the cultural layer varies between 0.45 and 1 m. The potsherds from the site are attributed to the Early Neolithic, Late Eneolithic (Coţofeni-Kostolac), Middle Bronze Age, and Early Iron Age.[678]

3-62. Velika Čuka, Neresnica (Kučevo) [44° 26' 53.9822" N, 21° 43' 22.8793" E]

A Late Eneolithic (Coţofeni-Kostolac) (Pl. 24/1-4) hillfort site located some 10 above the right bank of Pek River, at the altitude of 240 m. The site is positioned on two small elevations which stretch to a tongue-shaped plateau that holds the third elevation. Access to the site is possible from the western side, where the entrance itself is flanked by two natural cone-shaped elevations. It was not excavated, and the material originates from the construction of military trenches.[679]

3-63. Velike Livadice II

A prehistoric site that lied some 1 km from the site of Velike Livadice I, which are both submerged due to the construction of Iron Gate I Hydroelectric Power Station. Both

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[674] Marjanović-Vujović 1986; Popović, Vukmanović 1998.
[675] Vasić, Janković 1971, 110; Премк *et al*. 1984; Popović *et al*. 1986; Popović, Vukmanović 1986.
[676] Kapuran 2014, 151.
[677] Kapuran 2014, 100; Капуран *et al*. 2014, 175.
[678] Капуран, Шкундрић 2009, 248-249; Kapuran 2014, 129-130.
[679] Kapuran 2014, 117.

sites were surveyed in 1969 and excavated on a small-scale in 1970. The site of Velike Livadice I provided atypical prehistoric potsherds as well as Roman and Medieval pottery in a quite thin (?) cultural layer. At the site of Velike Livadice II, a portion of a pit filled with crushed stone, ash, soot, and potsherds was excavated. Based on the stylistic and typological characteristics, the pottery was attributed to the Late Eneolithic Cernavoda III and Coţofeni-Kostolac groups (Pl. 25/1-7).[680]

3-64. Veliki Gradac/Taliata [44° 27' 46.0178" N, 22° 08' 53.0481" E]

The Antique and Early Byzantine fortification Taliata is located 2 km upstream of Porečka River, on the bank of Paprenica creek, some 200-250 m from the right bank of the Danube River. The excavations at the site were conducted in 1958, 1960-1962, 1965, and 1966.[681] The excavations yielded three graves with incinerated deceased and ceramic grave goods from the so-called Transitional Period. The excavation reports also mention the remains of a prehistoric settlement below the remains of an Antique civil settlement. Finds which originate from those excavations are attributed to the Early Eneolithic, Late Eneolithic (Coţofeni-Kostolac) (Pl. 26/1-4), and Early Iron Age.[682]

3-65. Veliki Most, Vratna (Kladovo) [44° 22' 56.0542" N, 22° 20' 12.1422" E]

A hillfort and hardly accessible site located on the top of a landbridge above the Vratna River, at the altitude of 250 m. The site itself is damaged by constant erosion and the presence of a game. The surveys conducted in an area of 1000 square meters in 2010 recorded large lumps of daub, potsherds, and artificially flattened terraces on the rocky ground, which could serve as substructions for above-ground dwellings. The pottery is attributed to the Late Eneolithic (Coţofeni-Kostolac) (Pl. 27/1-4).[683]

3-66. Veliko Brdo, Popovica (Negotin) [44° 13' 53.0558" N, 22° 16' 57.7355" E]

The site is located in the village of Popovica in the eastern foothill of the Deli Jovan Mountain. The surveys in 1967 yielded Late Eneolithic (Coţofeni-Kostolac) and Early/Middle Bronze Age finds.[684]

3-67. Vernjikica, Zlot (Bor) [44° 01' 36.0831" N, 21° 56' 57.5932" E]

The site is located in a cave at an altitude of 421 m. The archaeological investigations have confirmed the existence of a cultural layer with Late Eneolithic potsherds (Coţofeni-Kostolac).[685]

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680 Летица 1984, 179-181; Kapuran 2014, 120.
681 Поповић 1984, 265-266.
682 Булатовић *et al*. 2013, 82-84.
683 Kapuran 2014, 139-140.
684 Булатовић *et al*. 2013, 156-157.
685 Kapuran 2014, 106; Капуран *et al*. 2014, 122.

3-68. Vitarevac, Milatovac (Žagubica)

The survey conducted in 2000 resulted in numerous potsherds attributed to the Late Eneolithic (Coţofeni-Kostolac) (Pl. 28/1-8).[686]

3-69. Vlasac [44° 32' 4.8526" N, 22° 02' 37.1955" E]

The site was located on the right bank of the Danube River, at an altitude between 62 and 78 m. The site was excavated in 1970 and 1971, between 2006 and 2008, and the excavations have been renewed in 2019. The excavations yielded numerous remains of Mesolithic dwelling structures and graves, but also archaeological material from the Early Neolithic and Late Eneolithic (Coţofeni-Kostolac).[687]

3-70. Vrkalj-Ćetaće, Kovilovo (Negotin) [44° 05' 45.6758" N, 22° 36' 44.1336" E]

The site is located on an elevation that rises above the local creek that flows into the Timok River. It lies on a flattened plateau surrounded by steep slopes that cover approximately 1.5 ha. The excavations conducted in 1961 determined a 2 m thick cultural layer with the remains of foundations for residential objects cut into terraces on the fringe of the plateau.[688] The pottery recorded during the excavations is attributed to the Early and Late Eneolithic (Coţofeni-Kostolac) (Pl. 29/1-7), Early and Late Iron Age, and Medieval period.[689]

3-71. Vrkalj, Kusjak (Negotin) [44° 18' 45.9000" N, 22° 32' 49.2600" E]

The site is located 8 km downstream of Mihailovac and 2 km upstream of Kusjak (?).[690] The site was surveyed in 1971 and the collected ceramics are attributed to the Late Eneolithic (Coţofeni-Kostolac) (Pl. 30/1-4), Late Bronze Age, Early, and Late Iron Age.[691]

3-72. Zbradila, Korbovo (Kladovo) [44° 31' 58.7136" N, 22° 44' 3.1557" E]

A multilayered prehistoric site, comprised of several micro-location (Zbradila, Zbradila-Fund, and Obala), located on the right bank of the Danube River, some 1 km upstream of present-day Korbovo. The initial reports estimated that the size of the site is approximately 500 x 100 m at most (5 ha). The site was excavated after WWII,[692] surveyed in 1971, and finally excavated in 1980 and 1981. The excavations have pointed out a distinct horizontal stratigraphy at the site, while the vertical stratigraphy is damaged by the Danube, and the cultural layers are 1-2.5 m thick. All of the micro-locations are multilayered with the following periods represented. The locations of Zbradila and Zbradila-Fund are characterized by finds from Early and Late Eneolithic (Coţofeni-Kostolac), Middle/Late Bronze Age, Early Iron Age, Late Iron Age, Roman, and Medieval

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686 Стојић, Јацановић 2008, 203-204.
687 Срејовић, Летица 1978; Borić *et al*. 2008; Kapuran 2014, 122.
688 Трбуховић, Вуковић 1967; Tasić 1982, 21.
689 Булатовић *et al*. 2013, 106-108.
690 Vasić, Janković 1971. The authors provide this description for the site of Borđej. M Sladić does not discuss the precise position of the site of Borđej, and solely positions it on the Kladovo-Negotin road (Сладић 1984).
691 Vasić, Janković 1971, 112; Булатовић *et al*. 2013, 126-127.
692 Бабовић 1984, 93, footnote 1.

Period.[693] The location of Obala was surveyed in 1971 and the surface finds indicate that the location was settled during the Late Eneolithic (Coţofeni-Kostolac) (Pl. 31/1-8), Early Bronze Age, Middle/Late Bronze Age, and Early Iron Age.[694]

3-73. Zidjita, Žagubica (Žagubica)

Pottery attributed to the Late Eneolithic, and a stone axe-hammer[695] originate from this site.[696]

3-74. Zlotska Pećina, Zlot (Bor) [44° 01' 46.4154" N, 21° 57' 44.9266" E]

A cave settlement located on the eastern fringe of Kučaj Mountains, 20 km south-west of Bor, in the canyon of Zlot River, at the altitude of 219 m. The site was excavated in 1963, 1964, 1968, and 1969. The cultural layer measured between 0.2 and 1 m and its preservation was unequal, considering that the mouth of the cave is disturbed by the construction of various tourist-related utilities. Even so, the Zlot cave represents one of the best explored prehistoric cave sites in Serbia. The excavations yielded numerous finds of potsherds, bone, copper, and iron objects, as well as the remains of architecture represented by finds of a stamped floor made of burnt soil and several hearths made of stone slabs. N. Tasić separated three distinct horizons at the site: the earliest attributed to the Middle Eneolithic, the middle horizon belonging to the Late Eneolithic (Coţofeni-Kostolac), and the youngest horizon belonging to the Early Iron Age,[697] which was later supplemented by finds from the Late Bronze Age,[698] and Late Iron Age (La Tène).[699]

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693 Бабовић 1984, 93-96; Babović 1986a, 95-115; Babović 1986b, 116-132.
694 Булатовић *et al*. 2013, 113-115.
695 For the typology of axe-hammer, chronology and analogies refer to Антоновић, Ђорђевић 2011.
696 Стојић, Јацановић 2008, 354
697 Tasić 1963; Tasić 1964; Tasić 1968; Tasić 1969; Tasić 1971, 71-75; Tasić 1982, 23; Tasić 1995, 192-173.
698 Капуран 2014, 106.
699 Булатовић et al. 2011, 122.

6.4. Region 4

A total of 24 sites attributed to the researched periods have been recorded and published in this region.

4-1. Adžijsko-Vinsko, Donje Zuniće (Knjaževac) [43° 37' 01.6200" N, 22° 16' 26.5200" E]

The site is located on a river terrace on the right bank of Beli Timok River and covers an area of around 4 ha. According to the existing finds, the site was inhabited during the Late Eneolithic (Coţofeni-Kostolac) and Middle Bronze Age.[700]

4-2. Bojište, Ravna (Knjaževac) [43° 37' 57.6044" N, 22° 16' 45.9590" E][701]

A prehistoric settlement located on a terrace on the right bank of Beli Timok River, across the Antique site of Timacum Minus in the village of Ravna. The typological and stylistic characteristics indicate that the site was settled during the Late Eneolithic (Coţofeni-Kostolac) and the Early Iron Age.[702]

4-3. Bolvan, Rgošte (Knjaževac) [43° 32' 37.0260" N, 22° 11' 56.1223" E]

A multilayered hillfort site located on the top of a tongue-shaped elevation oriented south-west, above the right bank of Svrljiški Timok River, at an altitude of approximately 300 m. The site is naturally protected with steep rocks on three sides and accessible only through a saddle from the south. The site itself was surveyed in 2010 and the excavations of a cavelet below the site were conducted in 1994.[703] The pottery collected during the digging of military trenches indicated that the hillfort was settled during the Middle and Late Eneolithic (Coţofeni-Kostolac) and Middle Bronze Age.[704]

4-4. Bubanj, Novo Selo (Niš) [43° 19' 15.7474" N, 21° 49' 44.9731" E]

A dominant plateau (tell), located on the right terrace of the South Morava River. It represented an ellipsoid plateau with a surface of approximately 5 ha.[705] The northern side of the plateau was rising above the left bank of Nišava River until the melioration in the 60s of the 20th century.[706] It is the eponymous site of the Bubanj II/III cultural groups.[707] The site was excavated in three campaigns, between 1933 and 1935, between 1954 and 1958, and finally between 2008 and 2014.[708] The complex vertical stratigraphy of the site consists of cultural layers attributed to the Early and Late Neolithic, Early-Late Eneolithic (Coţofeni-Kostolac), Early (Bubanj-Hum II/Bubanj-Hum III)-Late Bronze Age, Early and

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[700] Капуран, Булатовић 2012, 109.
[701] The coordinate is baded on the toponym.
[702] Капуран, Булатовић 2012, 110.
[703] Михаиловић *et al*. 1997.
[704] Kapuran 2014, 158.
[705] Nowadays, solely around 1% of the surface is preserved due to the consturction of railway and highway.
[706] Милановић, Трајковић-Филиповић 2015, 11-12.
[707] Garašanin 1957.
[708] Оршић-Славетић 1936; Orssich de Slaveitch 1940; Garašanin 1957; Garašanin 1958; Гарашанин 1958; Garašanin 1959; Garašanin 1982, Гарашанин, Ђурић 1983; Трајковић-Филиповић *et al*. 2008; Bulatović, Milanović 2012; Bulatović, Milanović 2014; Милановић, Трајковић-Филиповић 2017.

Late Iron Age.[709] The significance of the site lies in the fact that it yielded not only numerous finds and architectural remains from various periods of prehistory but has also enabled the definition of the relative and absolute chronological relations between various cultural groups in the region.[710] Of particular importance is the chronological sequence provided for cultural layers III (Cernavodă III- Boleráz-Baden manifestation), IV (Coţofeni-Kostolac) (Pl. 32/1-12), and V (Bubanj-Hum II and Bubanj-Hum III) (Pl. 32/13-37).[711]

4-5. Ciganski Ključ/Selište, Trupale (Niš) [43°20'31.30" N, 21°48'53.93" E]

The site is located on a terrace of the former right bank of Nišava River in the village of Trupale, 10 km northwest of the present-day city of Niš. The site is comprised of two connected locations, Ciganski Ključ and Selište. A mound called Tumba is located on the site, some 150 m from the terrace itself.[712] The pottery collected during the surveys in 1936 indicates that the site was inhabited during the Early and Late Eneolithic (Coţofeni-Kostolac), Early Bronze Age (Bubanj-Hum II) (Pl. 33/1-7), and Early Iron Age.[713]

4-6. Crnokalačka Bara, Rujište (Ražanj) [43° 38' 48.0971" N, 21° 36' 18.5052" E]

The site is located on a horseshoe-shaped elevation above a spring that forms Drenovac creek in the village of Rujište. It lies on a mild slope that runs towards the Drenovac creek on one side and the Great Morava Valley on the other side. The first data on the site was recorded in 1936, the first surveys were conducted in 1959 and three campaigns of excavations were conducted in 1959, 1960, and 1967. The excavations have determined horizontal and vertical stratigraphy and a 1.4-1.8 thick cultural layer, separated into one Early/Middle Neolithic and two Late Neolithic phases. Besides those, the site yielded finds attributed to the Early Bronze Age (Bubanj-Hum III) (Pl. 34/1), Middle Bronze Age, Early Iron Age, and a hoard of Roman silver coins.[714]

4-7. Čardak, Donja Vrežina (Niš) [43° 19' 27.8854" N, 21° 56' 51.9624" E]

The site is located in the village of Vrežina near the city of Niš, on the right bank of the Nišava River. The site was surveyed in 1936, and it covers an area of approximately 4 ha.[715] The potsherds collected during the survey, indicate that the site was settled during the Early Neolithic, Early and Late Eneolithic (Coţofeni-Kostolac), and Early Bronze Age (Bubanj-Hum II).[716]

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709 Middle Bronze Age material originates from the previous excavations from which the documentation is missing (Булатовић, Станковски 2012, 63).
710 Detailed in the chapter on relative and absolute chronology.
711 Bulatović, Milanović 2020, 97-107, 193-204.
712 Оршић-Славетић 1936, 178-179.
713 Стојић, Јоцић 2006, 225-227.
714 Гарашанин, Гарашанин 1951, 56; Galović 1960; Tasić, Tomić 1960; Tasić, Tomić 1969, 10-14; Јевтић 1992; Рашковић 1996; Стојић, Чађеновић 2006, 188-202; Милојевић, Милановић 2016, 11-14; Милојевић, Трајковић Филиповић 2017, 163-165; Svilar, Bogosavljević Petrović 2019.
715 Оршић-Славетић 1936, 177-178.
716 Nikolić 2000, 13; Стојић, Јоцић 2006, 91-92.

4-8. Čivlak (Đuzin Breg), Gornja Toponica (Niš) [43° 23' 51.2502" N, 21° 48' 01.4548" E]

The site encompasses several locations which yielded prehistoric material (Čivlak, Trasa novog puta, Goli Breg). First reports on the site are provided by A. Oršić-Slavetić in 1935, while there were no systematic excavations on the site. Numerous potsherds collected from the site are attributed to the Middle Neolithic, Early, and Late Eneolithic (Coţofeni-Kostolac), Middle Bronze Age (Bubanj-Hum IV-Ljuljaci), and Early Iron Age.[717]

4-9. Dubrava/Panađur, Velepolje (Niš) [43° 26' 2.5601" N, 21° 50' 25.1554" E]

The site lies on the left bank of the Velepolje River. It was recorded in 1973 and surveyed on multiple occasions between 2012 and 2016. According to the ceramic material collected at the site, it was occupied during the Early/Middle Neolithic, Late Neolithic[718], and Late Eneolithic (Coţofeni-Kostolac).[719]

4-10. Dubrava I, Knjaževac (Knjaževac) [43° 34' 15.2012" N, 22° 16' 42.8034" E]

The site is located in the present-day city of Knjaževac, on a mild slope that runs towards the Trgoviški Timok River. The potsherds collected from the site are attributed to the Early/Middle and Late Neolithic, Early Eneolithic, and Late Eneolithic (Coţofeni-Kostolac) (Pl. 35/1-6).[720]

4-11. Jasenovik, Bela Palanka (Bela Palanka)

The site is located on a dominant elevation in the Nišava Valley, on its left bank. Small-scale excavations conducted in 1991 yielded potsherds attributed to the Early Neolithic, Late Eneolithic (Coţofeni-Kostolac) (Pl. 36/1-5), Bronze Age, and Iron Age.[721]

4-12. Kadijski Krst, Knjaževac (Knjaževac) [43° 33' 27.9223" N, 22° 14' 42.2495" E]

The site is located on the right bank of Svrljiški Timok River, on the northern mild slopes of Lipovica hill. The site lies on a wide tongue-shaped plateau which is surrounded by Svriljiški Timok Valley to the west and east and a former riverbed of a local creek from the east.[722] The site was registered in 1987 due to the extensive groundwork, and the first archaeological material originates from late 1987 and 1988. The systematic excavations were conducted in 2003. Save for the Antique and Medieval period potsherds, which were sporadically collected on the surface, the excavations have determined a very developed horizontal stratigraphy of the site. The cultural layer, which varied between 1.4 and 2.2 m of depth, included several prehistoric horizons starting from the Early Neolithic, which was

[717] Оршић-Славетић 1936, 180-181; Стојић, Јоцић 2006, 81-85.
[718] M. Stojić attributes this pottery to the Early Eneolithic (Bubanj-Hum I) (cf. Стојић, Јоцић 2006, 63; Милојевић, Трајковић-Филиповић 2017, 66-67).
[719] Стојић, Јоцић 2006, 60-61; Милојевић, Трајковић-Филиповић 2017, 66-67,
[720] Сладић, Јовановић 1997, 169-170; Стојић, Илијић 2010, 67-72.
[721] Nikolic 2000, 20.
[722] Јевтић, Пековић 2003, 22.

followed by the Early (Bubanj-Hum III) and Middle Bronze Age, and Early Iron Age horizons.[723]

4-13. Kamenica, Niš (Niš) [43° 23' 02.5001" N, 21° 56' 51.8562" E]

Numerous potsherds originate from a cave in the village of Kamenica near the city of Niš. The pottery was gifted to the National Museum in Niš by a local S. Gocić. It is attributed to the Early (Bubanj-Hum III) (Pl. 37/1-2) and Late Bronze Age and the Early Iron Age.[724]

4-14. Kod Česme, Jasenovik (Niš) [43° 21' 49.6524" N, 22° 01' 37.3705" E]

The pottery from the site indicates that it hosted a small Neolithic and larger Late Eneolithic (Coţofeni-Kostolac) site (Pl. 38/1-6).[725]

4-15. Kožuvarska Glama, Novo Korito (Knjaževac) [43° 38' 44.3406" N, 22° 26' 56.6366" E]

Cave site located several meters above a local creek, at the altitude of 474 m. The site was excavated in 1997, but the results were never completely published. The ceramic material from the site originates from the Early/Middle and Late Eneolithic (Coţofeni-Kostolac) and several phases of the Early Iron Age.[726]

4-16. Markove Bare, Mađere (Ražanj) [43° 42' 20.5172" N, 21° 30' 23.8945" E]

Potsherds and stone axes indicate that the site was settled in Eneolithic (Coţofeni-Kostolac),[727] Middle Bronze Age, and Early Iron Age.[728]

4-17. Unknown Site, Vrćenovica (Aleksinac)

The existence of the site is recorded in the literature from the beginning of the 20th century, which states that it lies on the bank of the Turija River,[729] yet a series of later surveys (1955, 1982, 1995-1999, 2000, 2014-2016) failed to locate the site. The question is whether the site survived until today, due to the regular shifts in the Turija riverbed. The archaeological material from the National Museum in Niš, which survived the bombing in 1945, indicates that the site was settled during the Early and Late Neolithic and Late Eneolithic (Coţofeni-Kostolac).[730]

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723 Пековић, Јевтић 2006; Стојић, Илијић 2010, 74-76.
724 Стојић, Јоцић 2006, 112.
725 Стојић, Јоцић 2006, 106-107.
726 Kapuran 2014, 137.
727 Eneolithic material is not illustrated
728 Стојић, Чађеновић 2006, 129-131; Чађеновић 2009, 164.
729 Васић 1910, 274.
730 Милојевић, Трајковић-Филиповић 2017, 73-74.

4-18. Petrlaška Pećina, Dimitrovgrad (Dimitrovgrad) [43° 04' 29.2142" N, 22° 47' 47.5168" E]

A cave site located on the southwestern fringe of Odorovsko field, at the altitude of 686 m.[731] According to M. Stojić, the potsherds recorded in the cave could be attributed to the Neolithic (Starčevo), Late Eneolithic (Coţofeni-Kostolac),[732] and Early Iron Age.[733]

4-19. Polje, Glogovac (Bela Palanka) [43° 15' 18.9979" N, 22° 12' 7.9526" E]

A multilayered prehistoric site located on the right bank of Crvena Reka, in the village of Glogovac. The site covers an area of approximately 1 ha. Due to the construction of the E 80 highway, the site was excavated in 2011 and 2012, and the excavations were continued in 2017.[734] The complex vertical stratigraphy of the site, with a cultural layer up to 2.5 m thick, provided numerous remains of settlements, potsherds and metal finds, as well as one grave with three individuals buried.[735] The potsherds recorded at the site are attributed to the Early/Middle and Late Eneolithic (Coţofeni-Kostolac), Early (Bubanj-Hum II and III) (Pl. 39/1-13), Middle and Late Bronze Age, Early and Late Iron Age, and Late Medieval Period.[736]

4-20. Šuplji Kamen, Crvena Reka (Bela Palanka) [43° 15' 20.8443" N, 22° 15' 56.1808" E]

A devastated hillfort site that was recorded during the systematic survey connected with the construction of the E 80 highway in 2002. The site lies on the right bank of the Nišava River, at an altitude of 344 m.[737] The potsherds collected during the survey are attributed to the Early Bronze Age (Bubanj-Hum III).[738]

4-21. Trševine, Konopnica (Vlasotince)

The site is located on a terrace on the right bank of the Vlasina River, above a spring. The site extends for approximately 100 m. The surveys of the site were conducted in the 1950s and the site was never excavated.[739] The National Museum in Leskovac possesses an Early Bronze Age (Bubanj-Hum II) vessel which most likely originates from this site.[740]

4-22. Velika Česma, Vrtište (Niš) [43° 22' 35.9619" N, 21° 48' 25.3419" E]

The site is located in the village of Vrtište, 12 km northwest of the city of Niš. It lies on an elevated peninsular river terrace of a still-water called Bare (former riverbed of Nišava), at an altitude between 178 and 179 m. The approximate surface of the site is 35

[731] Petrović, 1976.
[732] Стојић, Јоцић 2006, 89.
[733] Стојић 1994, 94.
[734] Лазић, Љуштина 2017, 126-128; Благојевић 2017.
[735] The grave is discussed in the chapter on absolute dating.
[736] Булатовић, Станковски 2012, 45; Лазић, Љуштина 2017; Бунарџић 2017.
[737] Лазић 2017a, 30.
[738] Булатовић, Станковски 2012, 41.
[739] Гарашанин, Ивановић 1958, 41. The authors provide different numbers regarding the size of the site, with the approximate length of 200 m.
[740] Булатовић, Јовић 2010, 195.

ha. The site was surveyed in 1936 and excavated in 1959 and 1961.[741] The latest surveys were conducted in 2017.[742] The excavations have defined two cultural horizons with a total thickness of around 2 m. The earlier horizon yielded solely potsherds attributed to the Neolithic (Starčevo), and the younger horizon yielded pits filled with pottery, faunal remains, lumps of daub, and ash, which are based on the stylistic and typological characteristics attributed to the Late Bronze Age. This layer also contained ceramic material attributed to the Neolithic (Starčevo), Early and Late Eneolithic (Coţofeni-Kostolac) (Pl. 40/1-4), Early Bronze Age (Bubanj-Hum II and III) (Pl. 40/5-11), Late Iron Age, and Antique Period.[743]

4-23. Velika Humska Čuka, Hum (Niš) [43° 22' 46.1531" N, 21° 53' 59.0205" E][744]

The site lies on a dominant and hardly accessible elevation (čuka) with the dimensions of 200 x 160 m, approximately 10 km east of the South Morava River, at an altitude of 449 m. The location holds a dominant position within the Niš Basin and it is surrounded by Hum River from the north and west. The excavations on the site were conducted in 1934 by M. Grbić and renewed in 1956 by M. and D. Garašanin. The excavations which are still ongoing were started in 2009 by the Institute of Archaeology in Belgrade and the National Museum in Niš.[745] The excavations resulted in cultural layers from different periods of prehistory, accompanied by remains of dwellings and numerous portable finds, which have so far been only partially published. It represents one of the most important sites for the prehistory of the Central Balkans, as it served for the definition of the Eneolithic and Bronze Age groups in the region.[746] The site was settled during all phases of the Eneolithic (Pl. 45/1-4), all phases of the Bronze Age (Pl. 41/5-11), Early and Late Iron Age, and the Antique period.[747]

4-24. Višnjar, Rgošte (Knjaževac) [43º 32.833' N, 22º 13.283' E]

The site lies on a slightly sloping plateau, at the terrace on the left bank of Svrljiški Timok River, at the altitude of 218 m. It is located on the southeastern side of the hillfort site of Čuka (Early Eneolithic and Middle Bronze Age),[748] and most likely represents the suburbs of the site. The survey was conducted in 2010. The size of the site is not defined due to the vegetation, and the surface finds indicate that the site was settled during the Early and Late Eneolithic (Coțofeni-Kostolac) and Middle/Late Bronze Age.[749]

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[741] Оршић-Славетић 1936: 179;
[742] Milanović, Milojević 2019: 175
[743] Стојић, Јоцић 2006, 67-77.
[744] I would like to thank my colleague and the director of excavations A. Bulatović for providing me with the relevant archaeological material.
[745] Гарашанин, Гарашанин 1951; Garašanin 1953; Garašanin 1957.
[746] Гарашанин 1958; Garašanin 1958. Refer to the chapters on Buban-Hum II and Bubanj-Hum III groups.
[747] Стојић, Јоцић 2006, 228-242; Булатовић, Станковски 2012, 65-73; Булатовић, Милановић 2014.
[748] Капуран, Булатовић 2012, 111.
[749] Kapuran 2014, 159.

6.5. Region 5

A total of 4 sites attributed to the researched periods have been recorded and published in this region.

5-1. Pribovce, Lopate (Kumanovo) [42° 08' 55.9306" N, 21° 40' 42.9855" E]

The site lies on the right bank of the Lipovska River, near its confluence with the Kumanovska River. Rescue archaeological excavations at the site were conducted in 1978. The excavations determined a single-layered site with a 0.2-0.25 m thick cultural layer with potsherds attributed to the Early/Middle Bronze Age (Armenochori) (Pl. 42/1-21).[750]

5-2. Tatićev Kamen, Kokino (Kumanovo) [42° 15' 48.4347" N, 21° 57' 13.5469" E]

The site is located on a rocky top of a mountain, at an altitude of more than 1000 m. It is separated into two platforms, higher and lower. The higher platform possesses markers in stone and the lower platform possesses thrones carved into the rock and markers and places that were presumably used for the observation of celestial bodies (Sun and Moon). On the northern side, the site is enclosed by a series of low walls which formed several consecutive platforms. Such formed platforms are filled with circular stone constructions and pits filled with pottery, while the pottery itself is sometimes laid directly into the natural gaps between the rocks. According to the stylistic and typological characteristics of pottery, the site was used during the Early (Bubanj-Hum III-Pelince I-II-Pernik horizon) (Pl. 43/1-23), Middle (Armenochori?) (Pl. 43/24-27), and Late Bronze Age. The site represents one of the specifics of the Bronze Age in the Central Balkans, as it is at the moment the only Bronze Age site interpreted as an observatory within the region.[751]

5-3. Dve Mogili, Pelince (Kumanovo) [42° 17' 26.7699" N, 21° 51' 39.9087" E]

The site is located on the slope of the Kozjak Mountain, near the confluence of Bistrica and Pčinja Rivers. It lies on a flat plateau measuring the dimensions of 170 x 115 m, which is inaccessible from all sides but eastern, where a trench was constructed. The excavations at the site started in 1989 and continued occasionally up until 2009.[752] The site itself is comprised of two sectors, Gradište and Dve Mogili (Two Mounds). At the Gradište sector, remains of a settlement from the Late Bronze Age and Early Iron Age were recorded, while the Dve Mogili is far more important for our study. The Dve Mogili sector is located on an elevation some 300 m southeastern from the Gradište sector, on its ridge.[753] Mound 1 itself is comprised of a "pyre" laid on a natural rock. The northern, eastern, and southern sides of the pyre are surrounded by concentrations of potsherds, complete vessels, animal bones, and stone tools, sometimes laid into shallow pits. The function of the pyre remains unknown, as most of the finds are were not secondarily exposed to the fire, and the entire complex is currently interpreted as a prehistoric sanctuary. The disposition of concentrations of finds, primarily vessels, has enabled the separation of four zones

[750] Булатовић, Станковски 2012, 31, footnote 49, 97-99.
[751] Булатовић, Станковски 2012, 85-95, with cited literature.
[752] Трајковска 1998, 6; Булатовић, Станковски 2012, 29-31.
[753] Трајковска 1999, 49.

surrounding the pyre. According to the stylistic and typological characteristics of pottery, Zone 1 is attributed to the earlier horizon of the Early Bronze Age (Bubanj-Hum II-Bagacina-Pelince I) (Pl. 44/1, 4, 11, 12, 13, 22, 23), Zones 2 and 3 to the later horizon of the Early Bronze Age (Bubanj-Hum III-Pelince II-III-Pernik) (Pl. 44/2, 3, 5-10, 14-21, 24-27), and Zone 4 is attributed to the Late Bronze Age (Brnjica group). Mound II, located northeastern of Mound I is according to the stylistic and typological characteristics of pottery concurrent to Zone III of Mound I (Pl. 44/1-27).[754]

5-4. Kostoperska Karpa, Mlado Nagoričane (Staro Nagoričane) [42° 10' 33.5885" N, 21° 48' 38.0723" E]

The hilltop site lies on a steep-sided hill approximately 4 km west of the Pčinja River. The site was detected at the beginning of the 20th century and the excavations were conducted in 1983, 1987, 1988, 2000, and 2005. Recently, in 2015, the site is embedded within a new international project based on archaeological surveys and excavations in the Kumanovo Region. Based on the results of excavations, the site was inhabited during the Eneolithic, Early (Armenochori) and Late Bronze Age, Early Iron Age, and Late Antique Period.[755]

[754] Булатовић, Станковски 2012, 73-85.
[755] Георгиевски 1992, 55; Булатовић, Станковски 2012, 31, footnote 49, 192; Donev *et al*. 2017, 74-75, with complete cited literature on the history of research at the site.

6.6. Region 6

A total of 13 sites attributed to the researched periods have been recorded and published in this region.

6-1. Banjka-Kaldrma, Miratovac (Preševo) [42° 14' 40.8978" N, 21° 42' 14.9636" E]

The site is located on the western fringe of Preševo Pass, 6 km south of the city of Preševo. The rescue archaeological excavations were conducted in 2006 and yielded a total of six features with potsherds attributed to the Early Bronze Age (Bubanj-Hum III).[756]

6-2. Bara, Rutevac (Aleksinac) [43° 36' 11.6732" N, 21° 37' 43.0727" E]

The site is located between the villages of Rutevac, Bradarac, and Vukašinovac, at an area of approximately 0.3 ha. The potsherds collected by a local S. Ristić are attributed to the Early (Bubanj-Hum III) and Late Bronze Age and Early Iron Age.[757]

6-3. Gradište, Praskovče (Ražanj) [43° 37' 20.9256" N, 21° 31' 54.7639" E]

A hillfort site located on a dominant hill surrounded with slopes on the eastern, western, and southern sides. It lies some 700 m from the bank of South Morava. The plateau on which the site lies measures around 0.36 ha and possesses a massive artificial bulkwark (30 x 15 m) on the easily accessible northern side.[758] The material collected during the survey in 1999 points out that the hillfort was mostly inhabited during the Late Bronze Age and Early Iron Age, although some potsherds bear characteristics of the Early Bronze Age (Bubanj-Hum II),[759] Antique, and Medieval Period.[760]

6-4. Gradište, Davidovac (Vranje) [42° 28' 22.8719" N, 21° 49' 32.8447" E]

The site is located in the central part of the Vranje-Bujanovac Basin, on the left bank of Davidovac River, on a slope which runs towards the South Morava River, at the altitude of approximately 400 m. The site was recorded during the surveys in the 60s and several finds were collected during the perennial systematic surveys in the 90s.[761] Rescue archaeological excavations of the site were conducted in 2011 due to the construction of the E 75 highway. The excavations yielded a portion of Roman road, a *mansio* and its necropolis, and a single grave from the Late Antique Period.[762] Prehistoric finds are represented by the remains of a stamped clay floor with the remains of post-holes and potsherds which are attributed to the Early (Bubanj-Hum III/Armenochori) (Pl. 45/1-8), Middle Bronze Age, and Early Iron Age.[763]

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[756] Булатовић, Станковски 2012, 95-97.
[757] Булатовић 2009b, 127.
[758] Чађеновић, Трифуновић 2002, 263-268; Милојевић, Трајковић-Филиповић 2017, 147-148.
[759] Стојић, Чађеновић 2006, 186-187.
[760] Рашковић 2014, 191-912.
[761] Јовановић 1996; Булатовић 2007, 167-169.
[762] Петковић 2016.
[763] Булатовић 2007, 167-169; Булатовић 2014, 61-62; Булатовић 2015b, 13; Младеновић 2017a.

6-5. Jelenac, Aleksinac (Aleksinac) [43° 32' 23.2023" N, 21° 41' 39.1917" E]

The site is located above the former bank of Moravica River, near its estuary to South Morava River. It covers a flat plateau with an area of approximately 2 ha. The site was excavated in 1910, surveyed in 1951, and finally excavated in 1955. The excavations determined a 0.7 thick cultural layer with two settling horizons and three successive phases of house floors attributed to the earlier horizon. The pottery recorded at the site is attributed to the Late Eneolithic (Coţofeni-Kostolac) (Pl. 46/1-7) and the earlier horizon of the Early Bronze Age (Bubanj-Hum II) (Pl. 46/8-19).[764]

6-6. Kovačke Njive, Pavlovac (Vranje) [42° 29' 55.3330" N, 21° 51' 51.4283" E]

The site is located on an alluvial plain, on a slope which runs southeastern towards the South Morava River, and lies some 250 m from its bank.[765] The site was excavated in 2011 during the construction of the E 75 highway. The cultural layer, between 1.1 and 1.1 m thick, yielded an abundance of finds from the Early and Late Neolithic,[766] and several pits and potsherds attributed to the Early and Late Bronze Age, Early Iron Age, and Medieval Period.[767] Most of the Early Bronze Age material (Bubanj-Hum III/Armenochori) originates a pit filled with ash, soot, a large number of lumps of daub and potsherds (Pl. 47/1-7). The pit most likely belongs to the Early Iron Age, and it was dug into the Early Bronze Age horizon.[768]

6-7. Piljakovac, Kržince (Vladičin Han) [42° 43' 24.8000" N, 22° 04' 17.7000" E]

The site is located in the village of Kržince, on the right bank of Južna Morava River, near the estuary of German creek, at the altitude of 340 m. The site covers an area of approximately 4 ha. It was registered in 1968 and excavated during the construction of the E 75 highway in 2003.[769] The excavations confirmed a total of four cultural horizons. The earliest horizon provided pottery with Late Eneolithic characteristics (Coţofeni-Kostolac), followed by two Late Bronze Age horizons and the youngest Early Iron Age horizon.[770]

6-8. Ranutovac, Meanište (Vranje) [42° 33' 40.4995" N, 21° 57' 10.8166" E]

The site is located on a terrace on the left bank of South Morava River, at the point where the terrain slightly elevates towards the southern slopes of Kukavica Mountain. The site was registered back in 2000 and systematic surveys took place in 2002.[771] Due to the construction of the E 75 highway, rescue archaeological excavations at the site were

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[764] Васић 1910; Галовић 1957; Галовић 1959; Nikolić 2000, 21; Милојевић, Трајковић-Филиповић 2017, 46-48.
[765] The approximate size of the site is 7 ha, although this relates to the Late Neolithic settlement at the site (Вуковић *et al*. 2016, 167).
[766] Вуковић *et al*. 2016c.
[767] Булатовић *et al*. 2016c.
[768] Булатовић *et al*. 2016c, 206-209; Bulatović 2014, 61.
[769] Јовановић 1968; Лазић 2005; Лазић, Пековић 2006.
[770] Булатовић 2007, 74.
[771] Булатовић 2007, 112-114.

conducted in 2012.[772] The excavations yielded the remains of an Early Bronze Age (Armenochori) necropolis comprised of 21 graves of incinerated deceased covered with circular stone structures and the remains of an Early Iron Age settlement (Pl. 48/1-14).[773]

6-9. Selo, Bobovište (Aleksinac) [43° 34' 36.9477" N, 21° 39' 49.0851" E]

A find of an Early Bronze Age beaker (Bubanj-Hum III) was recorded during the groundworks by a local S.Miletić in the village of Bobovište (Pl. 49/1). The property in which the beaker was found lies next to the regional Aleksinac-Deligrad road, in the southern fringe of the South Morava River terrace which lies at an altitude between 154 and 158 m.[774]

6-10. Selište/Jazbine, Trnjane (Aleksinac) [43° 31' 50.9573" N, 21° 38' 57.5977" E]

The site lies in a wast area on a peninsular terrace on the left bank of the Južna Morava River. The site was never excavated,[775] but numerous potsherds and metal finds collected over the years indicate that the site was settled during the Late Eneolithic (Coţofeni-Kostolac) (Pl. 50/1-8), Bronze Age (Bubanj-Hum II), Early and Late Iron Age (Late La Tène), Roman and Medieval Period.[776]

6-11. Školska Gradina, Rutevac (Aleksinac) [43° 35' 49.5864" N, 21° 37' 37.5488" E]

The site is located behind the Elementary School in the village of Rutevac near Aleksinac. It lies on a slightly sloping plateau approximately 100 m north of the fringe of the South Morava River terrace, and approximately 250 m northwestern from the right bank of Mozgovačka River. The site covers an area of approximately 2 ha and represents a necropolis. The site was accidentally discovered and partially destroyed in 1955 and 1956 when the mechanical plowing disturbed between 30 and 40 graves. The excavations were conducted in 1957 when a total of three graves were excavated. The finds from the graves are attributed to the Late Bronze Age/Early Iron Age, although there are finds from the necropolis which are attributed to the Early Bronze Age (Bubanj-Hum III).[777] M. Stojić and G. Čađenović provide data on several Middle Bronze Age potsherds from the private collection of S. Ristić from Aleksinac, which originate from the site of Školska Gradina.[778]

6-12. Tri Kruške, Klinovac (Bujanovac) [42° 25' 28.7855" N, 21° 52' 8.5286" E]

The site is located on a flat plateau between the Klinovac River and the local Vranje-Trgovište road. It covers an area of approximately 2 ha, at an altitude of around 430 m. The site was registered in 1966, though chance finds were recorded by locals,[779] and the first

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[772] Булатовић *et al*. 2016a; Булатовић *et al*. 2016b.
[773] Bulatović 2020.
[774] Милојевић, Трајковић-Филиповић 2017, 52.
[775] The site was surveyed by the National museum in Niš in 1984.
[776] Рашковић 2014, 61-62; Милојевић, Трајковић-Филиповић 2017, 162-163.
[777] Тодоровић, Симовић 1959.
[778] Стојић, Чађеновић 2006, 206; Булатовић 2009; Чађеновић 2009, 167-168; Милојевић, Трајковић-Филиповић 2017, 149-154.
[779] Булатовић 2003.

excavations took place in 1996. The excavations have determined layers from the Early Bronze Age (Bubanj-Hum III), Late Bronze Age, Early, and Late Iron Age.[780]

6-13. Utrina, Rutevac (Aleksinac) [43° 35' 46.0067" N, 21° 38' 9.1938" E][781]

An Early Bronze Age and Roman necropolis located approximately 300 m southeastern from the Late Bronze Age/Early Iron Age necropolis at the site of Školska gradina.[782] The site has not been excavated and the finds were recorded during the earthwork by the locals. Only one grave was recorded, which contained the remains of the deceased in supine position with a vessel attributed to the Early Bronze Age (Bubanj-Hum III) above the head.[783]

[780] Булатовић 2007, 231 with cited literature.
[781] The coordinate is approximate, based on the descriptions of the sites' position.
[782] Тодоровић, Симовић 1959.
[783] Булатовић 2009b, 128.

6.7. Region 7

A total of 15 sites attributed to the researched periods have been recorded and published in this region.

7-1. Bace, Pločnik (Kuršumlija) [43° 12' 32.0625" N, 21° 21' 41.1390" E]

During the construction of the magistral road in 1968, between the villages of Blace and Pločnik, on the left bank of Toplica River, a well-known complex of Roman thermae was recorded,[784] as well as sporadic finds of pottery attributed to the Late Neolithic, Eneolithic, and Early Bronze Age (Bubanj-Hum III).[785] A stone tool, attributed to the Eneolithic or the Early Bronze Age was also recorded somewhat upstream.[786]

7-2. Pločnik, Pločnik (Prokuplje) [43° 12' 30.1803" N, 21° 22' 5.4002" E]

The renowned Early Neolithic site encompasses an area of around 100 ha.[787] The site is located on a flat terrace on the left bank of the Toplica River. First excavations at the site were conducted in 1927 and systematic excavations were conducted between 1960 and 1978 and renewed during the 90s.[788] Save for the Late Neolithic finds, numerous finds attributed to the Early and Late Eneolithic were recorded as well.[789] An Early Bronze Age (Bubanj-Hum III) beaker which allegedly originates from the site was gifted to the National Museum in Niš by D. Milić (Pl. 51/1).[790]

7-3. Dački Rid, Donja Slatina (Leskovac) [43° 01' 8.2960" N, 22° 01' 38.6695" E]

The site is located on the right bank of South Morava River, above the estuary of Rainovac creek. It lies on a plateau on top of a hardly accessible hill, at the altitude of 260 m, and covers an area of around 0.14 ha. The site was recorded during the survey in 1951 and excavated in 1952. The excavations have determined a 0.3-0.5 m thick cultural layer, partially disturbed by erosion. The layer contained potsherds, stone tools, faunal remains, and lumps of daub which indicated the existence of dwelling objects. Unfortunately, the excavations did not record the remains of a rampart.[791] The potsherds are attributed to the Late Neolithic, Early and Late Eneolithic (Coțofeni-Kostolac) (Pl. 52/1-3), and Late Bronze Age.[792]

7-4. Gradac, Zlokućane (Leskovac) [43° 03' 19.3669" N, 22° 00' 8.4926" E]

The eponymous site for the late phase of the Vinča culture, located on a dominant elevation above the confluence of Janjuš and South Morava rivers. The site is naturally divided into several portions – a large elongated plateau, a small plateau, and two terraces

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[784] Јордовић 1999.
[785] Стојић, Јоцић 2006, 203-206; Милојевић, Кузмановић-Цветковић 2019, 31-32.
[786] Милојевић, Кузмановић-Цветковић 2019, 31-32.
[787] This refers solely to the Late Neolithic horizon.
[788] Grbić 1929; Stalio 1960b; Stalio 1962; Stalio 1967; Шљивар, Кузмановић-Цветковић 1998.
[789] Стојић, Јоцић 2006, 203-206; Шљивар *et al*. 2015.
[790] Стојић, Јоцић 2006, 203-206; Булатовић, Станковски 2012, 43.
[791] Гарашанин 1959, 257-261.
[792] Булатовић 2009, 190; Булатовић, Јовић 2010, 143-146, with cited literature.

above the aforementioned rivers. The site was excavated for the first time in 1909 and three campaigns between 1956 and 1959.[793] Besides the Neolithic, the site hosts layers and finds attributed to the Early Eneolithic, Early Bronze Age (Bubanj-Hum II), Late Bronze Age, and Late Iron Age (La Tène).[794]

7-5. Hisar, Leskovac (Leskovac) [42° 59' 9.7455" N, 21° 55' 56.2805" E]

The site is located on the southwestern periphery of the present-day city of Leskovac. It lies at the altitude of 344 m, on a plateau on top of the eponymous hill.[795] The first excavations at the site were conducted in 1995 and within a series of campaigns from 1999 to 2005.[796] The excavation campaigns yielded an abundance of finds and remains of architecture attributed to various prehistoric and historic periods, from the Neolithic to the Medieval Period. The focus of the researchers was primarily based on the Late Bronze and Early Iron Age finds,[797] while the Early Bronze Age (Bubanj-Hum II) finds were only sporadically recorded and published (Pl. 53/1-2).[798]

7-6. Hisar, Prokuplje (Prokuplje) [43° 13' 36.5832" N, 21° 34' 43.8409" E]

The site is located in the city of Prokuplje, on a dominant hill above the left bank of the Toplica River, at the altitude of 358 m. The land access to the site is possible only from the eastern side because the configuration of the hill follows the meander of the river. The site is a well-known Antique and Medieval complex comprised of suburbs, necropolis, fortifications, and sacral objects. It was excavated between 1970 and 2008, but the results have never been completely published.[799] Save for the Late Antique and Medieval period, the pottery recorded during the excavations indicates that the site was settled during the Early (Bubanj-Hum III)(Pl. 54/1-3) and Middle Bronze Age and Late Iron Age.[800]

7-7. Izvorište, Bobište (Leskovac) [43° 01' 6.2762" N, 21° 59' 17.2752" E]

The site is located in the village of Bobište, 3 km northeastern of the city of Leskovac. It lies on the terrace of the South Morava River, running north-south, and encompasses an area of 20 ha. The site was not excavated, and the ceramic finds were collected during the surveys and as a gift from the locals. Those finds are attributed to Middle and Late Neolithic, Late Eneolithic (Coţofeni-Kostolac) (Pl. 55/5-6), Early (Bubanj-Hum II) (Pl. 55/1-4) and Late Bronze Age, Early and Late Iron Age (La Tène).[801]

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793 Vasić 1911; Stalio 1960a; Сталио 1972.
794 Булатовић, Јовић 2010, 321-334.
795 Димитријевић 1933-1934, 311.
796 Богдановић *et al*. 1995; Kapuran 2017, 9.
797 Јоцић *et al*. 1999; Капуран 2008b; Капуран, Стојић 2001; Стојић 2004; Stojić 2009; Капуран 2009;
798 Булатовић 2009a, 190.
799 Петровић 1984; Милошевић, Ђурић 1988; Милошевић 1999; Кузмановић-Цветковић 1999.
800 Милојевић, Кузмановић-Цветковић 2019, 19-20.
801 Булатовић 2009, 189; Булатовић, Јовић 2010, 73-81.

7-8. Kamik, Dubovo (Žitorađa) [43° 06' 46.7823" N, 21° 42' 33.4700" E]

The site is located in the southern foothill of Kamik, in the village of Dubovo, on the bank of a local creek near its estuary to Dubovska River. The ceramic material which originates from the site was attributed to the Late Eneolithic (Coţofeni-Kostolac), Bronze, and/or Iron Age.[802]

7-9. Kod Ćupriju, Štulac (Leskovac)

The Neolithic and Bronze/Iron Age potsherds were gifted to the National Museum in Leskovac by N. Lazarević.[803]

7-10. Pluževina, Jarsenovo (Leskovac) [43° 05' 8.4361" N, 22° 05' 37.2549" E]

The site is located on a mild slope that falls towards the south and the Kamenica creek. According to M. Garašanin and V. Ivanović, F. Feldhamer recorded a Neolithic ground stone axe at the site.[804] A one-handled beakers, attributed to the Early Bronze Age (Bubanj-Hum III) also originates from the site.[805]

7-11. Pusto Semče, Semče (Leskovac)

A hillfort site located on a long and narrow terrace, on the fringe of Suva Mountain. The survey at the site yielded potsherds characteristic for the Early Bronze Age (Bubanj-Hum II) (Pl. 56/1-3), Middle (Bubanj-Hum IV-Ljuljaci) and Late Bronze Age, and Early Iron Age.[806]

7-12. Reka/Planište, Mala Plana (Prokuplje) [43° 15' 24.0077" N, 21° 28' 50.4039" E]

The site is registered on a flat terrace on the left bank of the Planska River, near the river bend. The archaeological material recorded during the 2006 survey campaign, indicates that the site covers a linear area of around 2.5 ha and several different phases of settling during the Late Eneolithic (Coţofeni-Kostolac), Early Bronze Age (Bubanj-Hum III), Middle Bronze Age, Late Bronze Age, Antique Period, and Medieval Period.[807]

7-13. Sastanci, Bobište (Leskovac) [43° 01' 23.7445" N, 21° 59' 26.4575" E]

The multilayered site of Sastanci is spanning over several terraces, in the northwest-southeast direction, above the dried riverbed of Južna Morava, in the village of Bobište. The site encompasses a surface of several hectares.[808] Finds collected during the surveys at the site originate from the Middle and Late Neolithic, Early and Late Eneolithic, Early-Late Bronze Age, Early Iron Age, and Roman Period.[809] The Late Eneolithic and Early Bronze Age

[802] Милојевић, Кузмановић-Цветковић 2019, 40.
[803] Булатовић, Јовић 2010, 286-287.
[804] Гарашанин, Ивановић 1958, 40.
[805] Булатовић, Јовић 2010, 183.
[806] Стојић 2004, 195; Булатовић, Јовић 2010, 282-283.
[807] Милојевић, Кузмановић-Цветковић 2019, 43-44.
[808] Стојић 2004, 195-196.
[809] Possible Early Iron Age and Roman necropolises according to Стојић 2004.

pottery from the site is attributed to Baden, Kostolac, Bubanj-Hum II (Pl. 61/1-15) and Bubanj-Hum III groups (Pl. 57/16-19).[810]

7-14. Selište, Bratmilovce (Leskovac) [42° 59' 51.86" N, 21° 58' 11.08" E]

The site is located on an elongated elevation, oriented southeast-northwest. The potsherds from the site are attributed to the Late Neolithic, Late Eneolithic (Coţofeni-Kostolac), Bronze and Iron Age.[811]

7-15. Svinjarička Čuka, Lebane (Lebane) [42° 57' 28.0894" N, 21° 40' 24.8463" E][812]

The site is located on the right bank of Svinjarička River, on a terrace that slightly slopes towards the river itself, at an average altitude of 335 m. The site covers a surface of approximately 5.3 hectares. The site was detected during the 2017 surveys and the ongoing systematic archaeological excavations started in 2018. Although only a small portion of the planned area is excavated, it provided solid data on the vertical stratigraphy, the relative and absolute chronology of the site.[813] The site was most intensively inhabited during the Early Neolithic (Starčevo), and the settling at the location continued during the Late Eneolithic (Coţofeni-Kostolac) (Pl. 58/1-12),[814] Early (Bubanj-Hum III?),[815] Middle and Late Bronze Age, Early Iron Age, and Late Antique period.[816]

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[810] Булатовић 2009, 189; Булатовић, Јовић 2010, 84-112.
[811] Булатовић, Јовић 2010, 116-120.
[812] I would like to thank directors of excavations, A. Bulatović and B. Horejs for providing me with all the relevant unpublished data.
[813] Horejs *et al*. 2018; Horejs *et al*. 2019a; Horejs *et al*. 2019б; Хорејш, Булатовић 2019; Mladenović *et al*. 2020.
[814] Late Eneolithic pottery was recorded in a number of stratigraphic units, yet no closed archaeological contexts can be connected with the period.
[815] The Early Bronze Age horizon at the site is indicated by several absolute dates, and scarce potsherds that could be connected with this period.
[816] The material is mostly unpublished, save for several Early Neolithic and Late Bronze Age features.

6.8. Region 8

A total of 9 sites attributed to the researched periods have been recorded and published in this region.

8-1. Bedem, Maskare (Kruševac) [43° 40' 18.2066" N, 21° 23' 32.4177" E]

The site of Bedem is located in the village of Maskare, approximately 20 km northeastern from the city of Kruševac, opposite the site of Stalać. It lies on the terrace of the left bank of West Morava River, near its confluence with the Great Morava River, and covers an area of approximately 2ha. The first mentions of the site date back to the end of the 19th century, although the first archaeological excavations were conducted back in 2001, following the surveys in the 90s and geophysical exploration in 1997.[817] Since 2010, the archaeological campaigns at the site are continued.[818] The site is predominantly known as a Byzantine period fortification,[819] and the prehistoric stratigraphy is represented by the Late Eneolithic (Coţofeni-Kostolac/Baden) (Pl. 59/1-8), Middle Bronze Age (Bubanj-Hum IV-Ljuljaci), Early and Late Iron Age.[820]

8-2. Blagotin, Poljna (Trstenik) [43° 43' 11.1884" N, 21° 06' 15.1565" E]

A renowned Early Neolithic site located on flat terrain in a foothill of an eponymous mountain, at the altitude of approximately 300 m, with a surface of around 0.3 ha. The site was registered at the beginning of the 20th century, and the first excavations at the site were conducted in 1989.[821] Systematic archaeological surveys and excavations, including the geological drillings and magnetometric measures at the site, were conducted from 1991 to 2011. The excavations determined a rich vertical stratigraphy at the site which yielded numerous and various finds and the remains of architecture from the Early Neolithic, Early Eneolithic, and Early Iron Age.[822] During the excavations in 1992 and 1995, a presumably Eneolithic pit filled with potsherds,[823] ash, and lumps of daub was recorded, yet the potsherds were eventually attributed to the Early Bronze Age (Bubanj-Hum III) (Pl. 60/1-9).[824]

8-3. Jazbine, Makrešane (Kruševac) [43° 36' 51.9127" N, 21° 21' 55.8062" E]

The site is located on the right bank of Rasina River, about 1 km downstream from its confluence with the West Morava River. It lies on a tongue-shaped flat plateau that slopes towards the Rasina riverbank. The plateau is connected with its hinterland with a saddle on the southeastern side. The excavations conducted in 1975,[825] between 1977 and

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817 Komatina, Timotijević 1999, 207-209; Бугар 2012; Vasiljević, Rutić 2013, 82-83.
818 Vasiljević, Rutić 2013, 82-83,with cited literature.
819 Бугар 2014; Бугар, Булатовић 2017, with cited papers presented at annual conferences.
820 Стојић, Чађеновић 2006, 163-173; Чађеновић 2009, 165.
821 Станковић, Рунић 1990.
822 Станковић, Greenfield 1992; Гринфилд 1995; Радоман 1995; Рецић, Зечевић 1995; Станковић, Рецић 1996a; Станковић, Рецић 1996b.
823 Рецић, Зечевић 1995, 170-171-
824 Николић, Капуран 2001, 162-164.
825 The excavations were iniciated due to the discovery of Medieval graves at the site (Крушевац 2001, 18).

1978, and between 1983 and 1985 indicated the multilayered nature of the site as the cultural layer yielded finds of structures and potsherds from the Early Eneolithic, and potsherds from the Late Eneolithic (Coţofeni-Kostolac) (Pl. 61/1-12), Early Bronze Age (Bubanj-Hum II) (Pl. 61/13-20), Middle Bronze Age, and Early Iron Age.[826]

8-4. Kućište, Šanac (Kruševac) [43° 39' 11.1377" N, 21° 23' 2.9220" E]

The potsherds which originate from the site could be attributed to the Late Eneolithic (Coţofeni-Kostolac) and Early Iron Age according to M. Stojić and G. Čađenović.[827]

8-5. Skela Kolarac, Bošnjane (Varvarin) [43° 37' 16.5923" N, 21° 20' 43.1048" E]

Pottery attributed to the Early (Bubanj-Hum III) (Pl. 62/1-2) and Middle Bronze Age was recorded at the site.[828]

8-6. Lazarev Grad, Kruševac (Kruševac) [43° 35' 11.2343" N, 21° 20' 8.8708" E]

The site is located within the Medieval city in present-day Kruševac. It lies on an elevation above the Gradski creek, near the estuary of West Morava River. The site is continuously excavated since the mid-20th century.[829] Save for numerous finds related to the Medieval life at the site,[830] the excavations have yielded numerous finds attributed to the Early and Late Neolithic,[831] Early and Late Eneolithic (Coţofeni-Kostolac),[832] Early (Bubanj-Hum III) (Pl. 63/1-10)-Late Bronze Age, and Early Iron Age.[833]

8-7. Nemrak, Osaonica (Trstenik) [43° 38' 9.9576" N, 20° 57' 6.2655" E]

The site is located on the left bank of the West Morava River. A potsherd that originates from the site could according to M. Stojić and G. Čađenović be attributed to the Late Eneolithic (Coţofeni-Kostolac).[834] Rescue archaeological excavations at the site were conducted in 2021 and yielded solely several potsherds attributed to the Late Bronze Age, without the existence of a cultural layer at the site.[835]

8-8. Ornice, Makrešane (Kruševac) [43° 37' 31.3409" N, 21° 22' 48.0042" E]

The site is located in the village of Makrešane near Kruševac, on a U-shaped terrace with the dimensions of approximately 400 x 200 m, oriented northeast-southwest, above the confluence of Rasina and West Morava rivers. The archaeological excavations at the site

[826] Томић 1989; Тасић 2001, 9; Стојић, Чађеновић 2006, 133-154; Чађеновић 2009, 165.
[827] Стојић, Чађеновић 2006, 232-233.
[828] Стојић, Чађеновић 2006, 234; Чађеновић 2009, 169.
[829] Jurišić, Jordović 1962; Томић 1980; Бугар 2003; Vasiljević, Rutić 2013, 75-79; Васиљевић 2015; Vasiljević 2016.
[830] Prehistoric lazyers are quite disturbed due to Medieval settling at the site.
[831] Бугар 2003.
[832] Nikolić 2000, 25.
[833] Стојић, Чађеновић 2006, 101-121.
[834] Стојић, Чађеновић 2006, 183. The potsherd is not ilustrated in the publication.
[835] The excavations were conducted by the Institute of Archaeology in Belgrade.

were conducted in 1984 and 1985 and determined a 1.1 m thick cultural layer separated into three horizons, all attributed to the Early and Late Neolithic, while the layer is disturbed by Bronze Age pits.[836] M. Stojić and G. Čađenović report Late Eneolithic and Early Iron Age find from the site, without the aforementioned Bronze Age finds.[837] According to the stylistic and typological characteristics of the published potsherds, the pottery from the Metal Ages, decorated wtih hatched motif below the rim and vertically perforated handles, could belong either to the Late Eneolithic (Coţofeni-Kostolac) or the earlier phase of the Early Bronze Age (Bubanj-Hum II) (Pl. 64/1-2).

8-9. Stari Trstenik, Stari Trstenik (Trstenik) [43° 34' 36.1143" N, 21° 08' 5.7434" E]

Several potsherds from the site indicate that it was settled during the Early Bronze Age (Bubanj-Hum III) and Early Iron Age.[838]

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[836] Stanković 1988, 85-86; Тасић 2001, 8.
[837] Стојић, Чађеновић 2006, 155-157. The authors indicate that the site of Ornice in fact represents a unique site together with the site of Jazbine in the village of Makrešane.
[838] Стојић, Чађеновић 2006, 216.

6.1. Catalogue of Sites – Plates

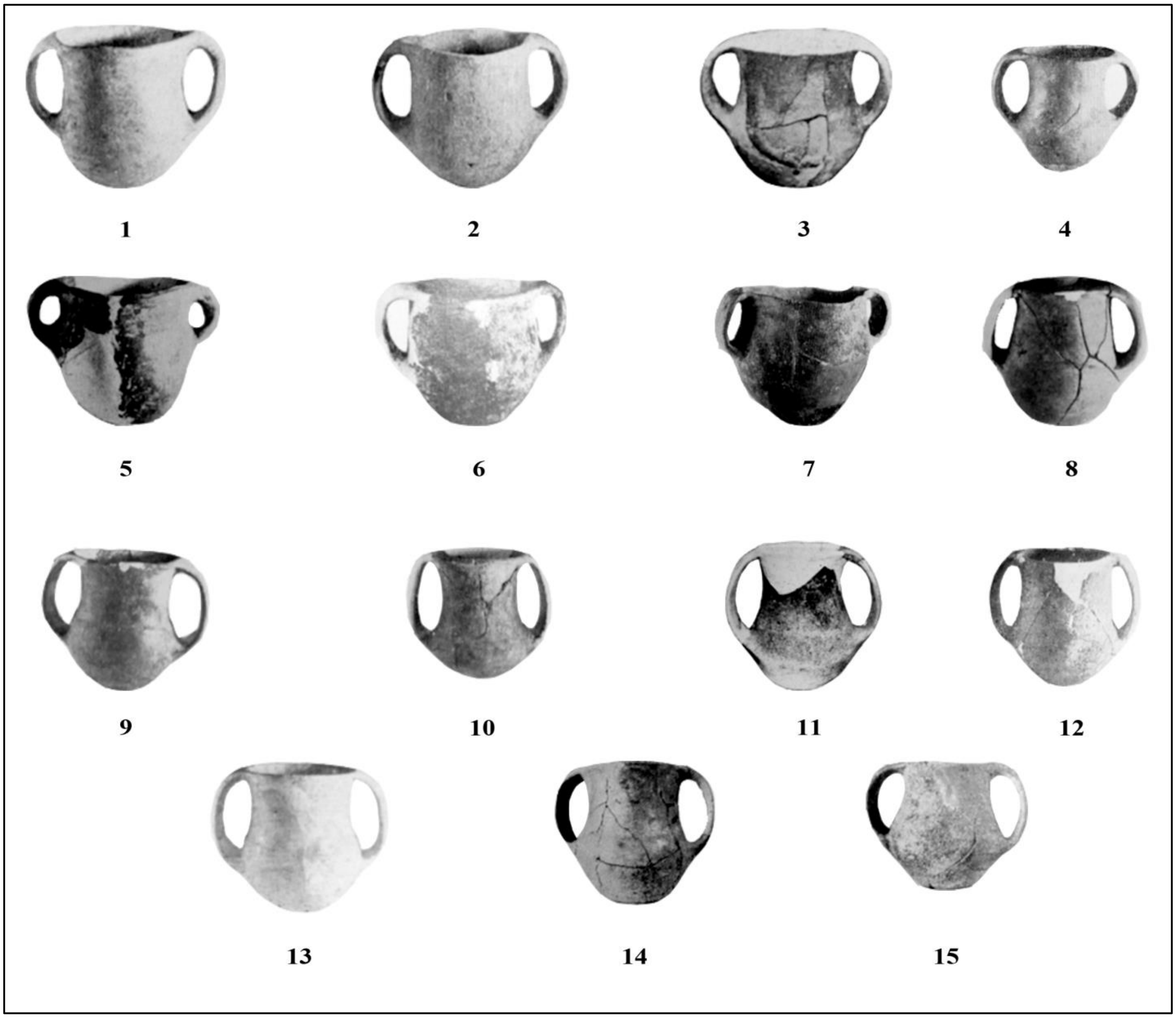

Plate 6. Bubanj-Hum III beakers from Vecina Mala (Стојић 1986, Сл. 4-20, modified).

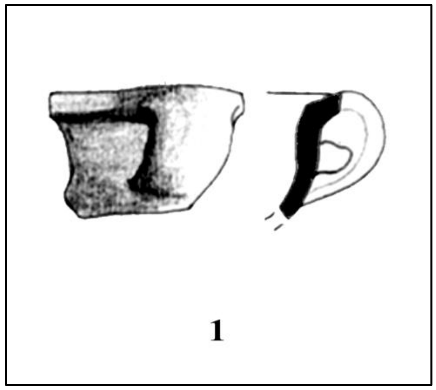

Plate 7. Early Bronze Age pottery from Grad-Usije (Стојић, Јацановић 2008, T. CXXVIII/1).

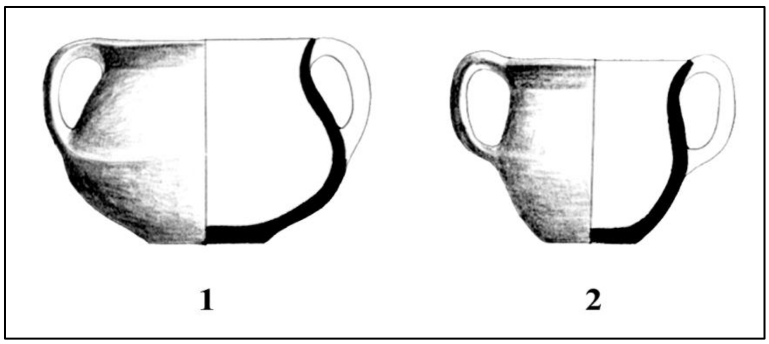

Plate 8. Early Bronze Age beakers from Trnjane (Стојић, Јацановић 2008, T. CXXV/1, 2).

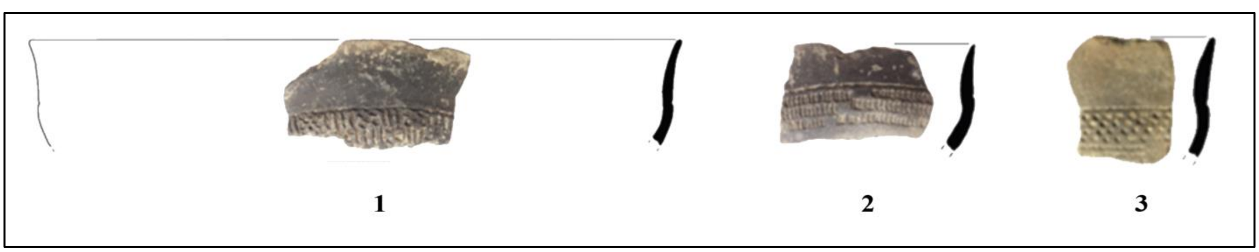

Plate 9. Coţofeni-Kostolac pottery from Stari Kostolac (Bulatović *et al*. 2019a, Pl. 5/6-9).

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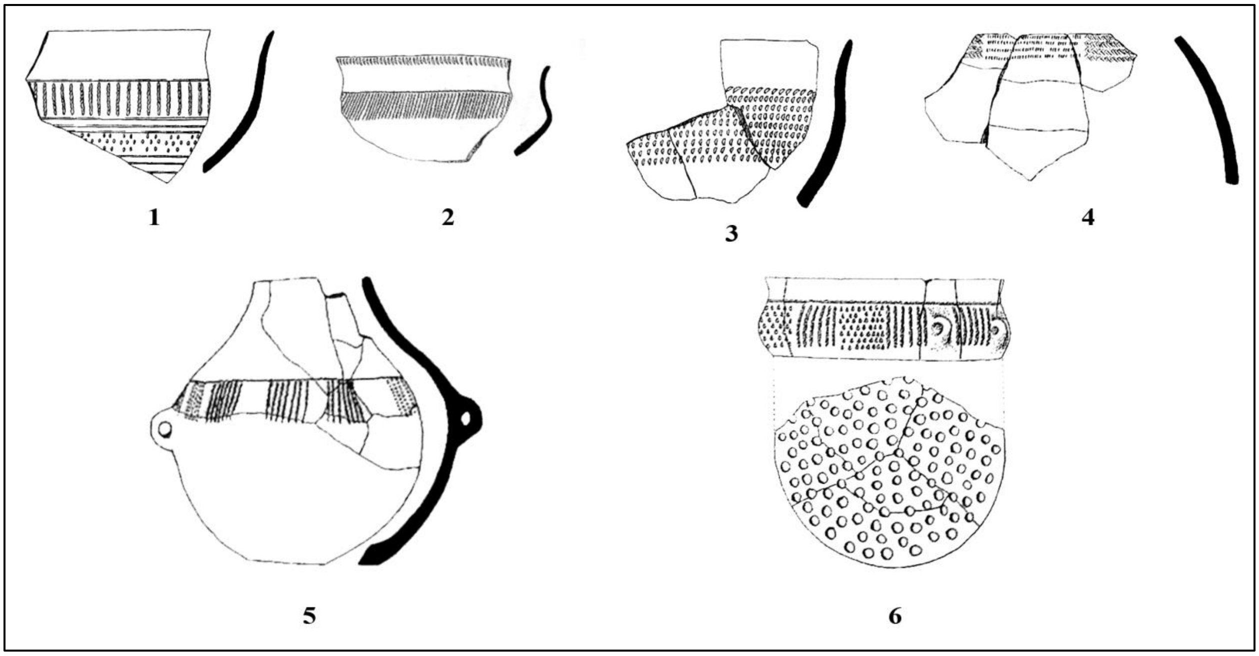

Plate 10. Coţofeni-Kostolac pottery from Lugovi (Nikolić 2000, T. XXIII).

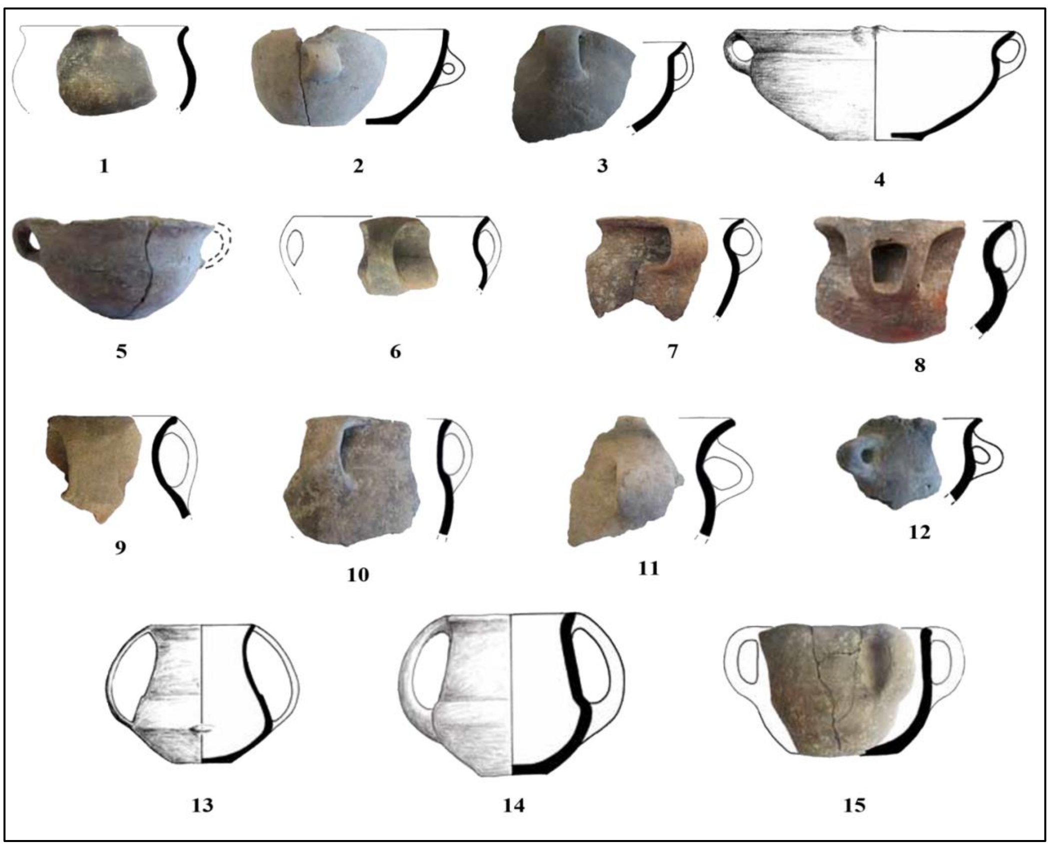

Plate 11. Early Bronze Age pottery from Nad Klepečkom (Kapuran *et al*. 2019a, Pl. 1-Pl. 7, modified).

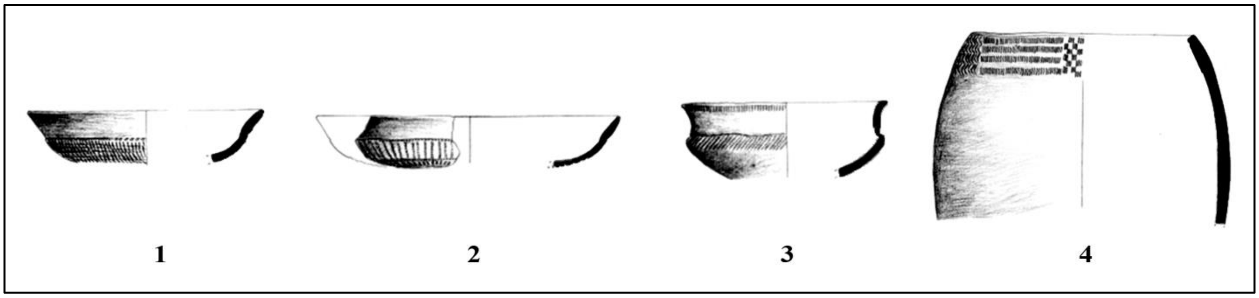

Plate 12. Coţofeni-Kostolac pottery from Stari Kostolac (Стојић, Јацановић 2008, T. XVI/1, 2, 4, 5).

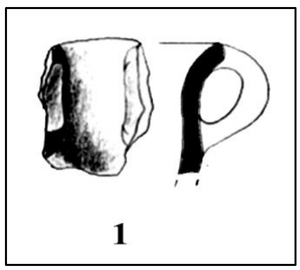

Plate 13. Early Bronze Age vessel from Batovac (Стојић, Јацановић 2008, T. II/1).

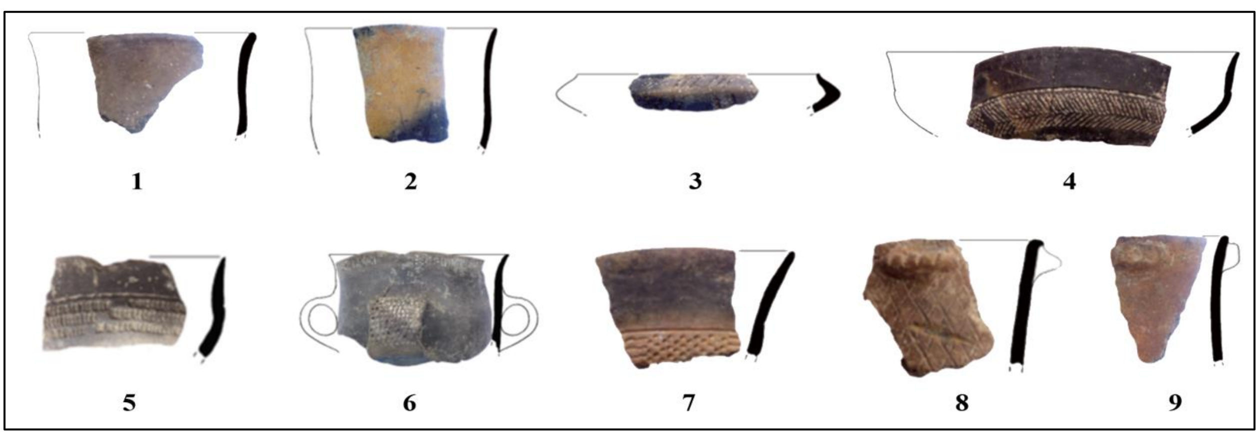

Plate 14. Coţofeni-Kostolac pottery from Pirivoj (Bulatović *et al*. 2019a, Pl. 4/1, 2, 5, 6, 14,15, 19; Pl. 5/1, 6).

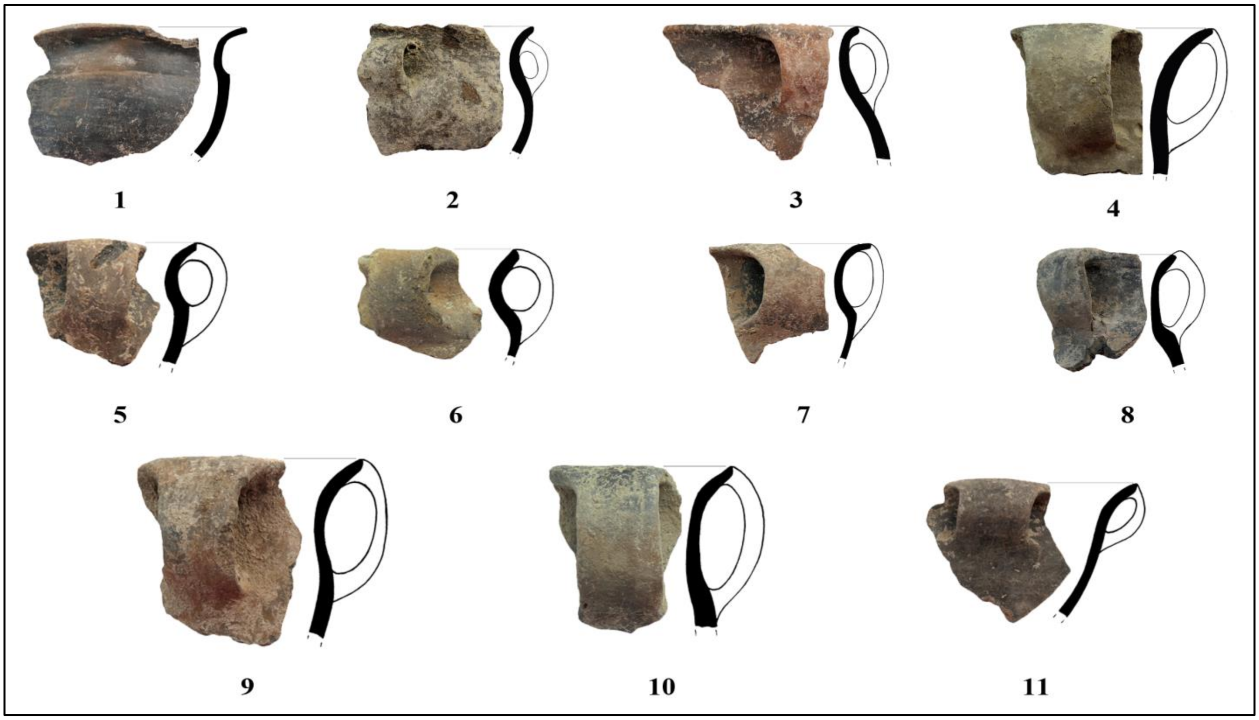

Plate 15. Early Bronze Age pottery from Rit (Bulatović *et al*. 2019b, Pl. 1/1, 2, 3, 5, 7, 8, 13, 14; Pl. 2/1, 7; Pl. 3/15, modified).

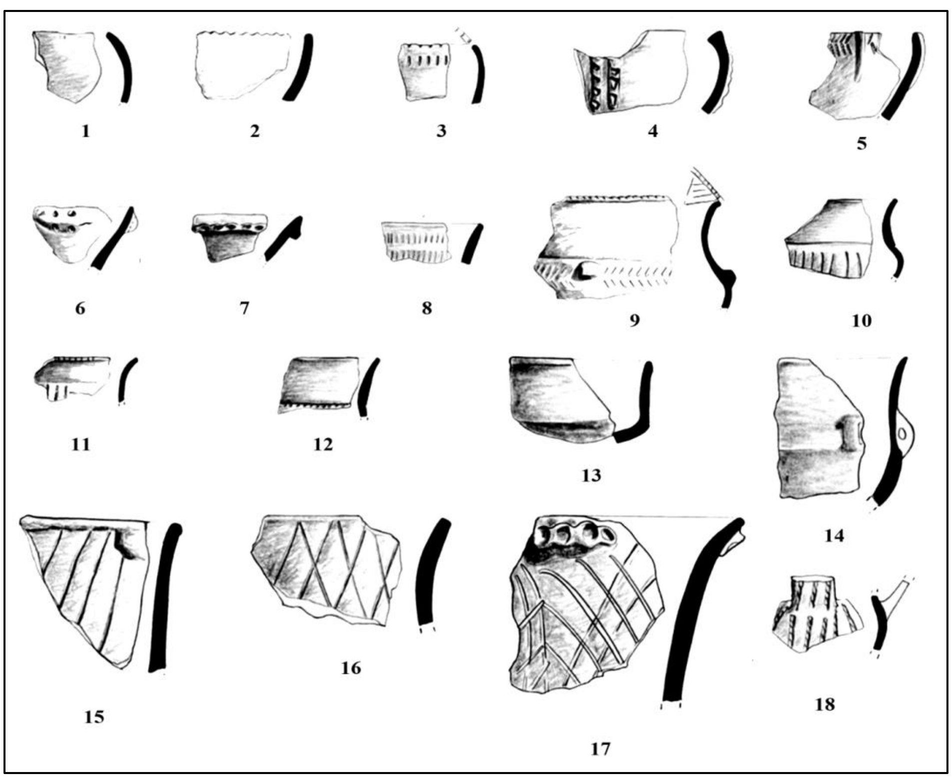

Plate 16. Coţofeni-Kostolac pottery from Čoka Lu Balaš (Капуран *et al*. 2014a, T. LXXXII-LXXXIV).

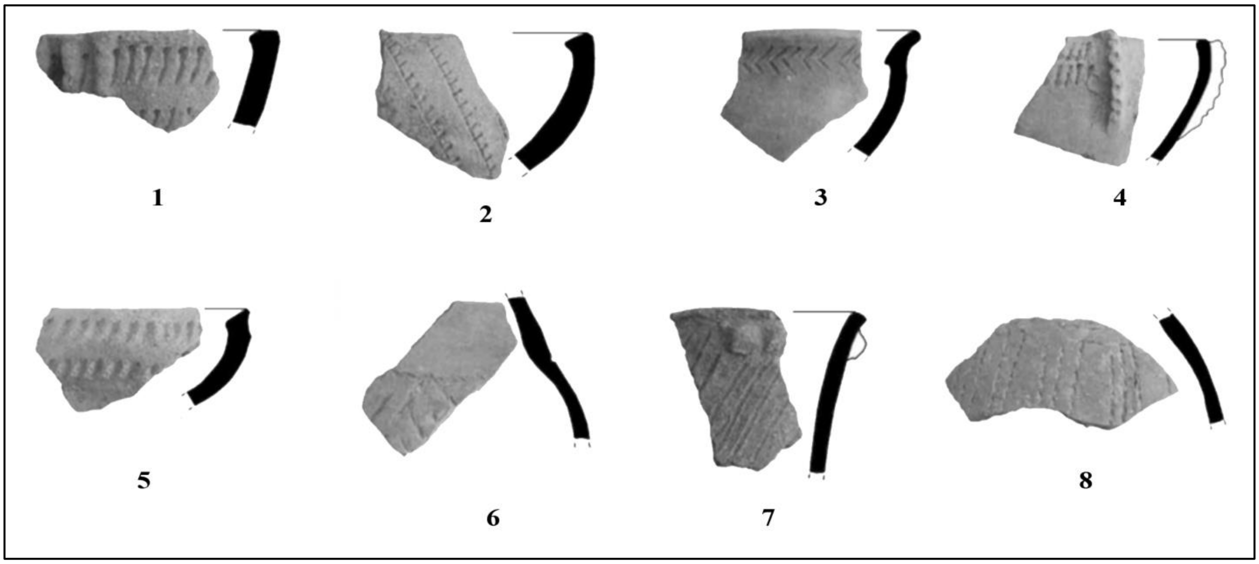

Plate 17. Coţofeni-Kostolac pottery from Grabar-Svračar (Булатовић *et al*. 2013, T. XC/16, 17, 18, 19, 20,21, 23, 25).

Plate 18. Coţofeni-Kostolac pottery from Grle (Булатовић *et al*. 2013, T. LI/1-4).

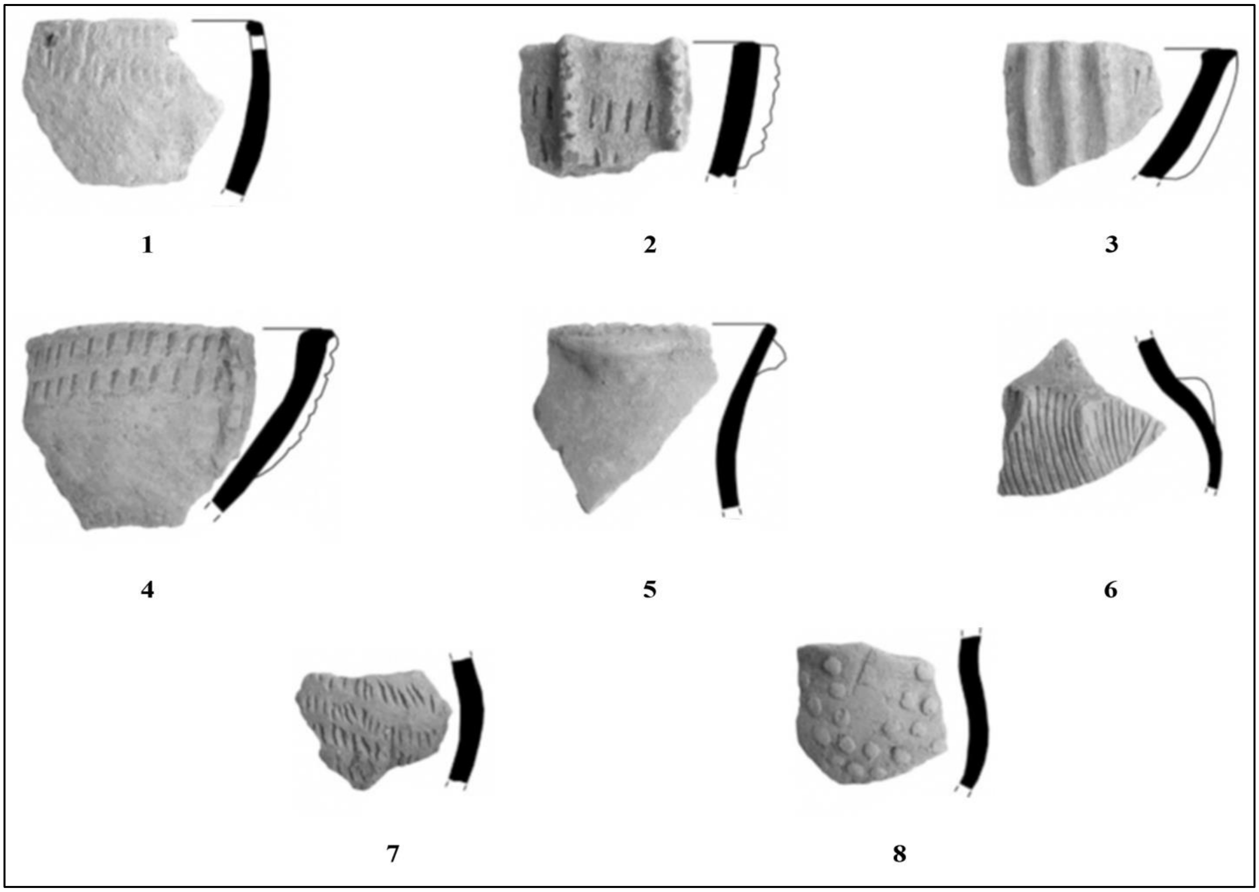

Plate 19. Coţofeni-Kostolac pottery from Ideče (Булатовић *et al*. 2013, T. LXXVI).

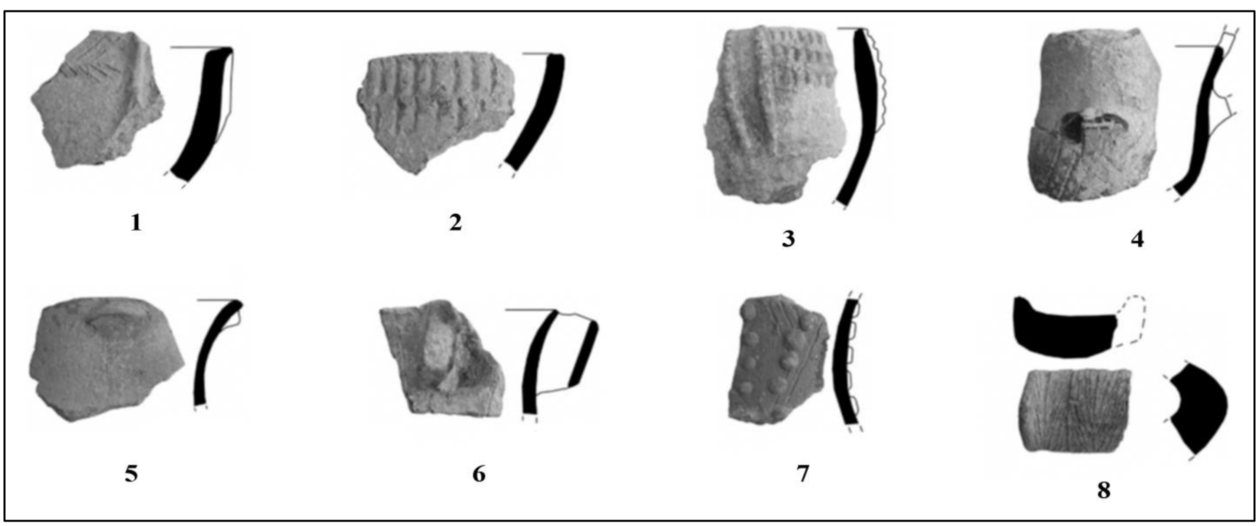

Plate 20. Coţofeni-Kostolac pottery from Kapu Đaluluj (Булатовић *et al*. 2013, T. XIV).

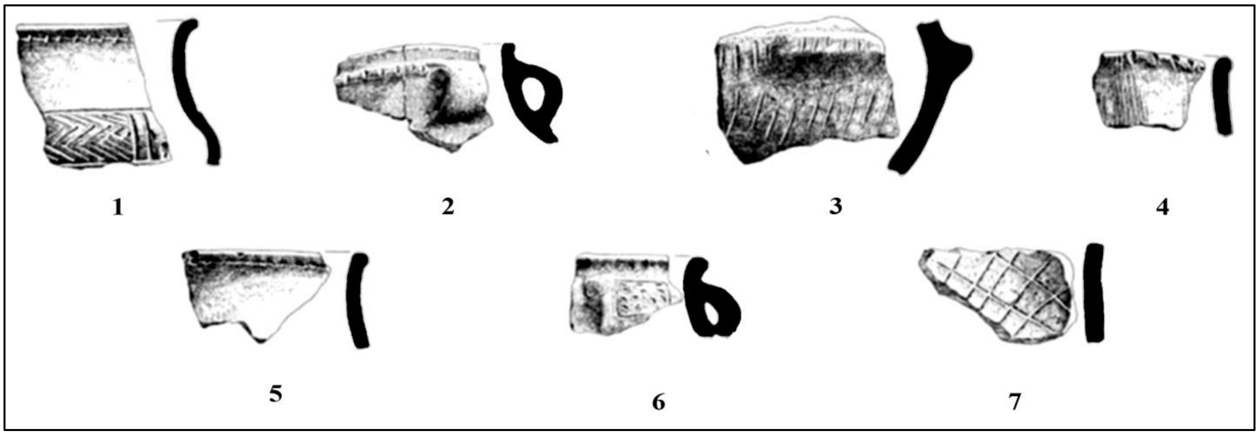

Plate 21. Late Eneolithic pottery from Katarinine Livade (Срејовић 1984, T. I).

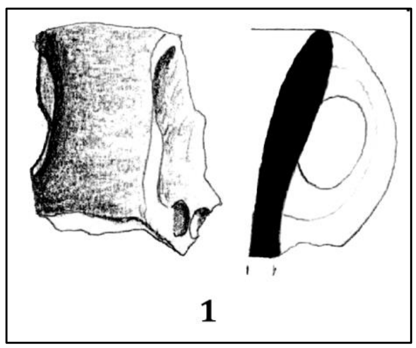

Plate 22. Early Bronze Aga pottery from Gamzigrad (Kapuran 2014, T. 14/7).

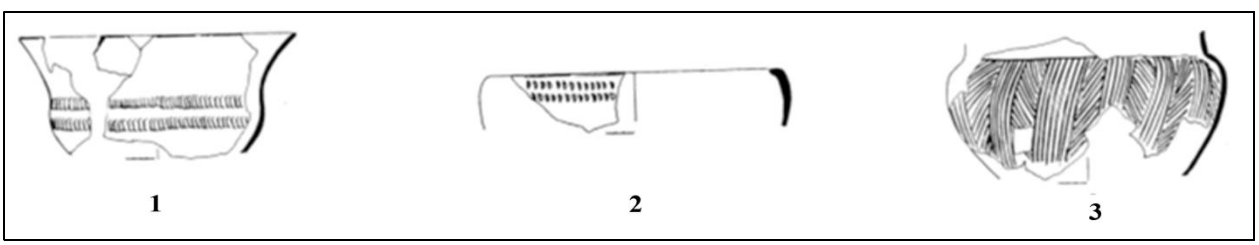

Plate 23. Coţofeni-Kostolac pottery from Vajuga-Pesak (Popović *et al*. 1986, Fig. 66/6-8).

Plate 24. Coţofeni-Kostolac pottery from Velika Čuka (Kapuran 2014, T. 9/28-31).

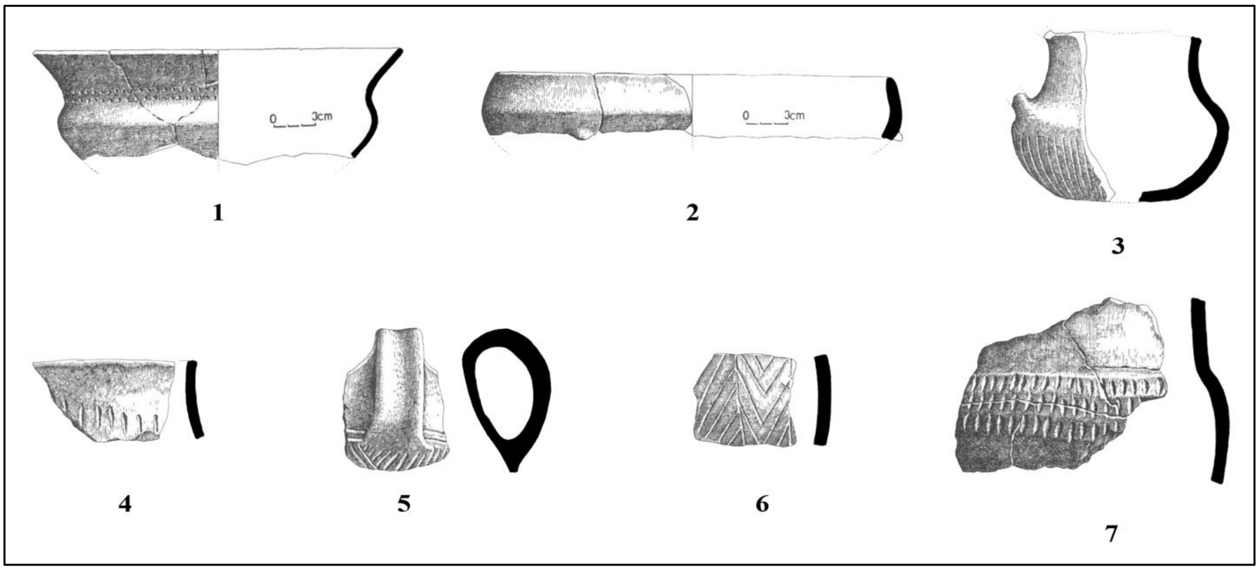

Plate 25. Coţofeni-Kostolac pottery from Velike Livadice II (Летица 1984, T. II/2, 4, 5, 6, 7, 8, 9).

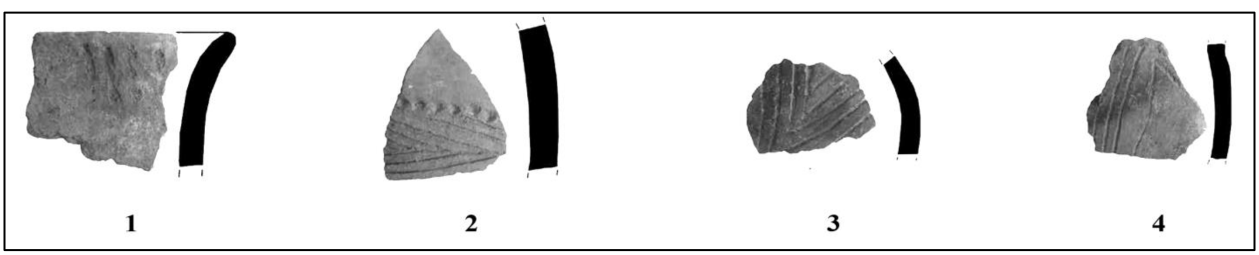

Plate 26. Coţofeni-Kostolac pottery from Veliki Gradac (Булатовић *et al.* 2013, T. XVIII/6-9).

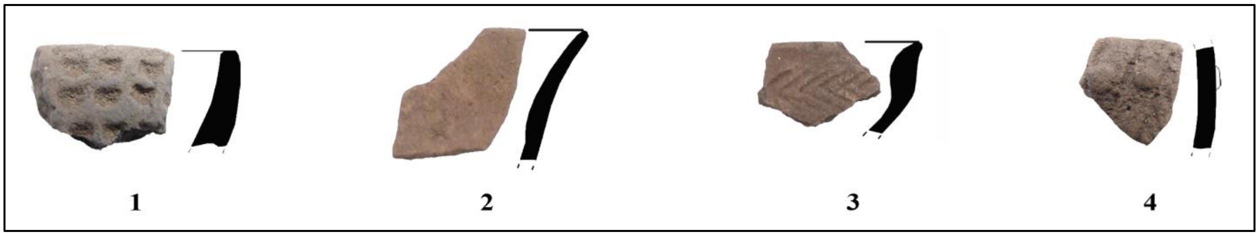

Plate 27. Coţofeni-Kostolac pottery from Vratna (Kapuran 2014, T. 11/8-12).

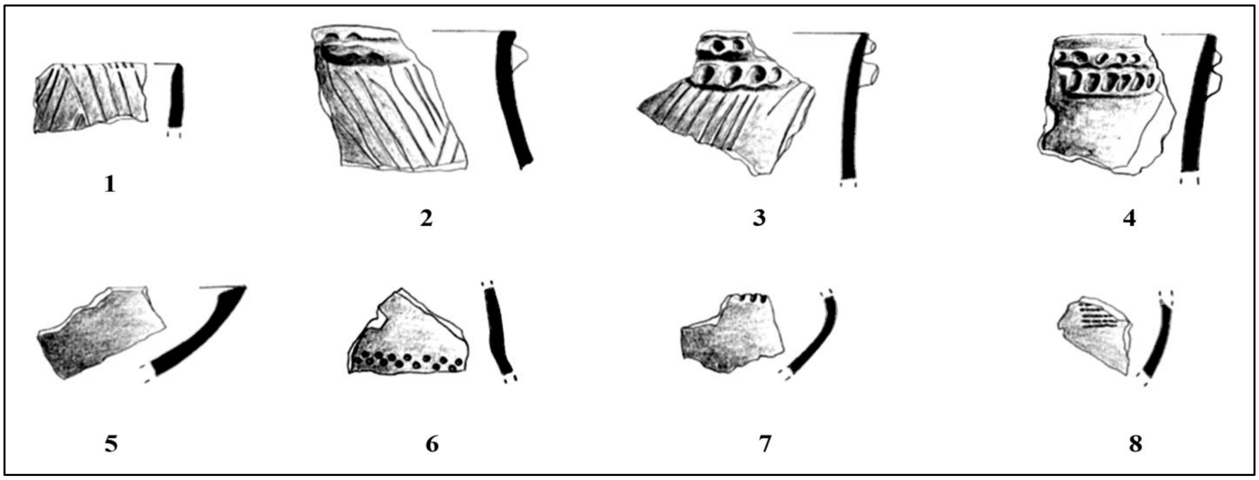

Plate 28. Coţofeni-Kostolac pottery from Vitarevac (Стојић, Јацановић 2008, T. LXX/1-5, 7-9).

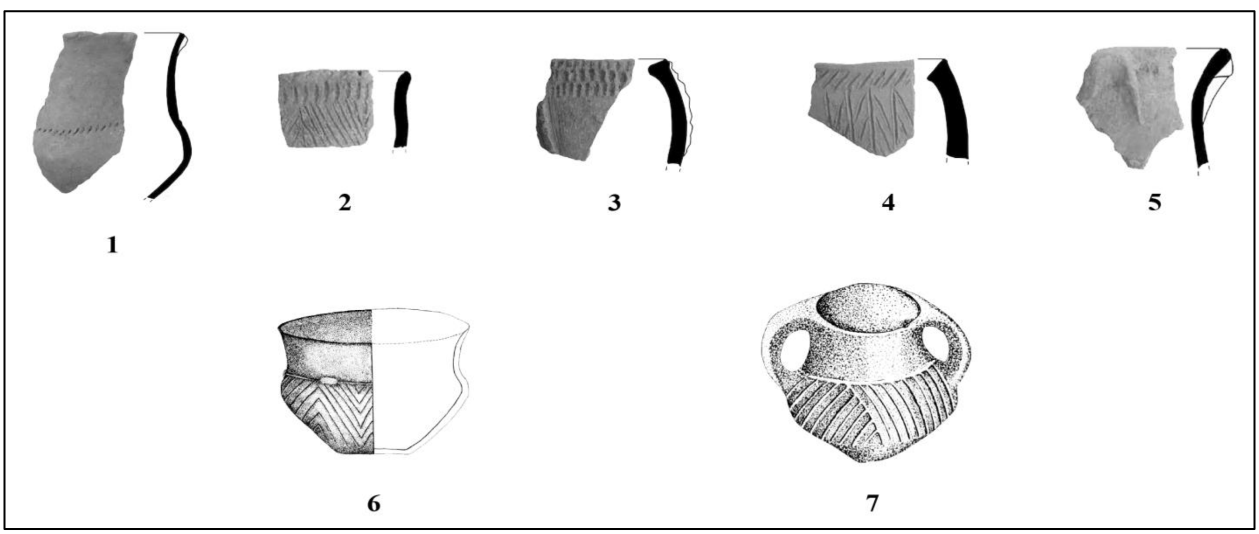

Plate 29. Coţofeni-Kostolac pottery from Kovilovo (Булатовић *et al*. 2013, T. XXXVII/10, 12, 13, 15, 16).

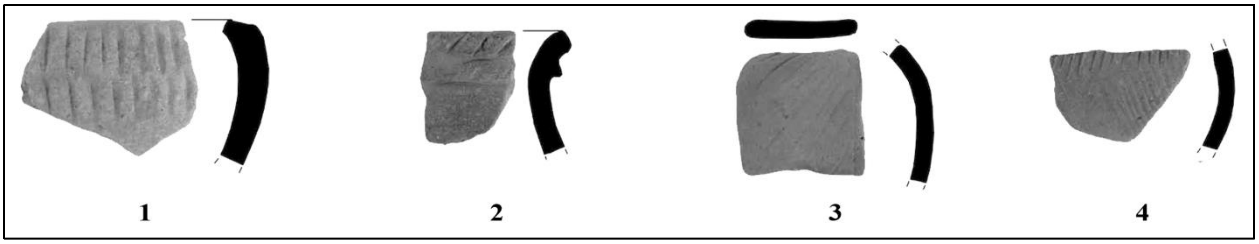

Plate 30. Coţofeni-Kostolac pottery from Vrkalj (Булатовић *et al*. 2013, T. L/1-4).

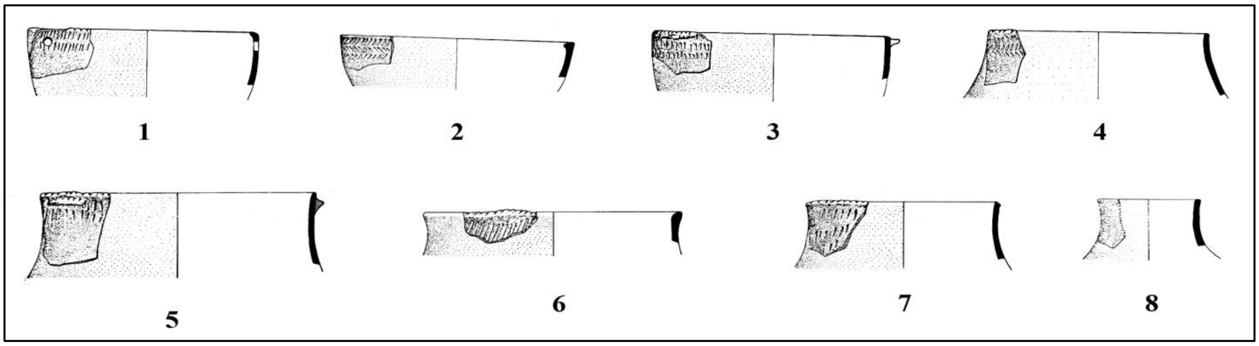

Plate 31. Coţofeni-Kostolac pottery from Zbradila (Babović 1986b, Fig. 121-136).

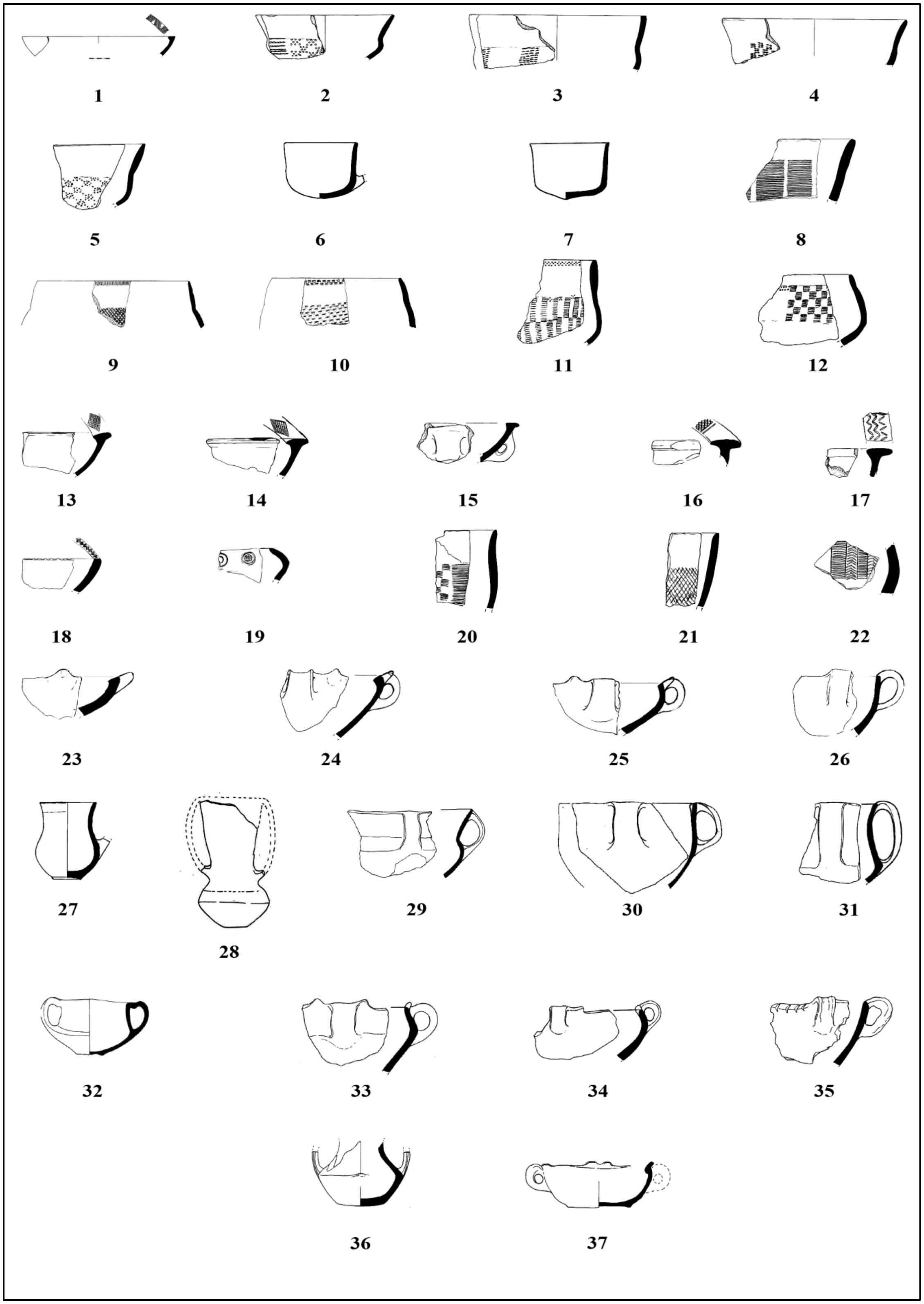

Plate 32. Coțofeni-Kostolac (1-12), Bubanj-Hum II (13-22), and Bubanj-Hum III (23-37) materials from Bubanj (Bulatović, Milanović 2020, Figs. 204, 212).

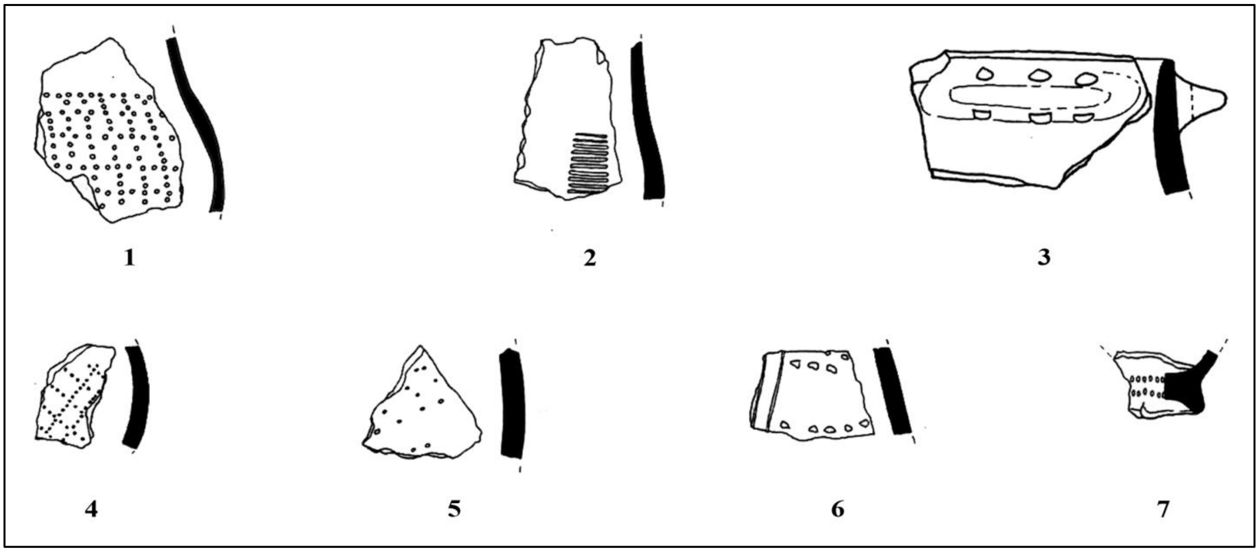

Plate 33. Late Eneolithic pottery from Ciganski Ključ (Стојић, Јоцић 2006, T. XCVII/6, 7, 8, 10, 11, 14).

Plate 34. Early Bronze Age beaker from Crnokalačka Bara (Tasić, Tomić 1969).

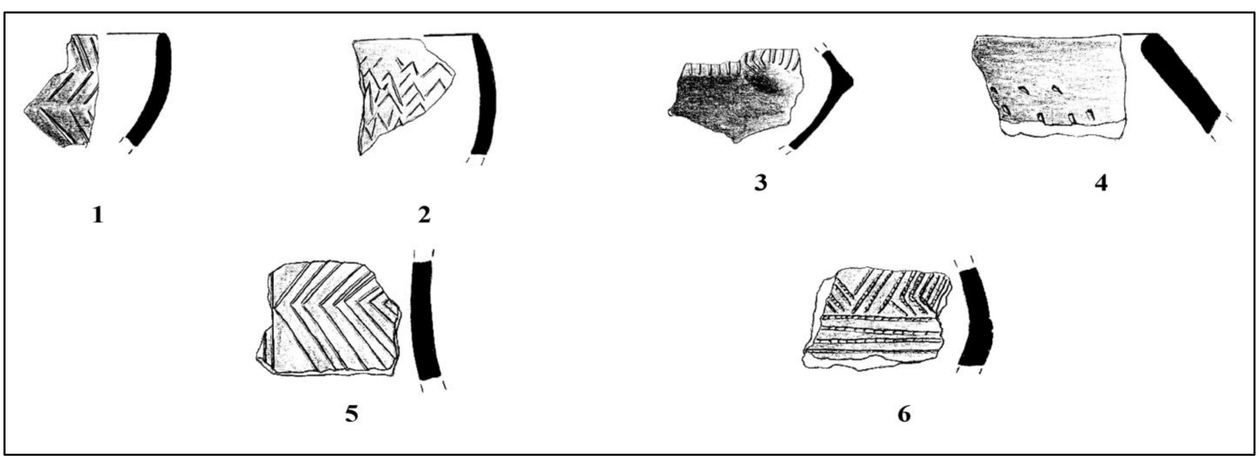

Plate 35. Coţofeni-Kostolac pottery from Dubrava (Стојић, Илијић 2010, T. XIV/32-37).

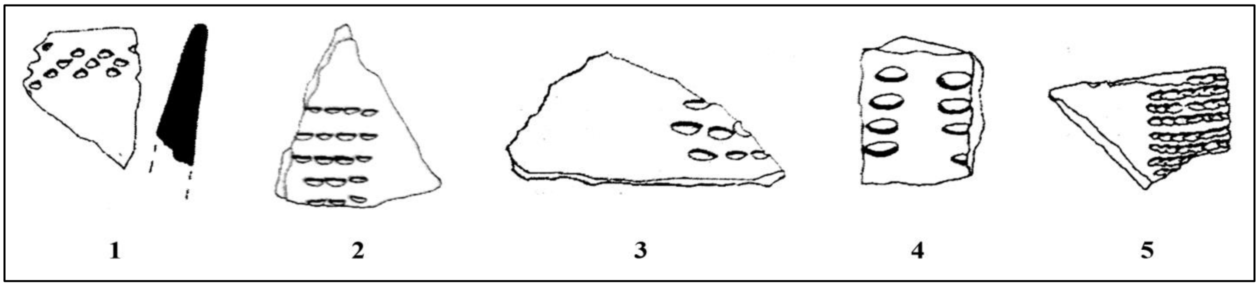

Plate 36. Coţofeni-Kostolac pottery from Jasenovik (Стојић, Јоцић 2006, T. XXXVII/1-6).

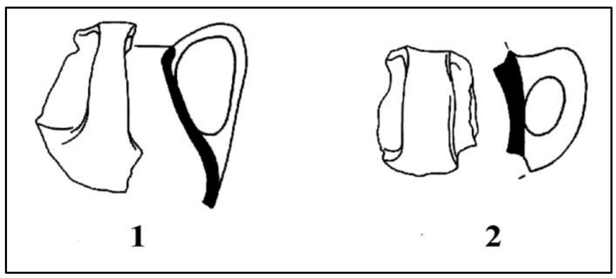

Plate 37. Bubanj-Hum III beakers from Kamenica (Стојић, Јоцић 2006, T. XL/1, 2).

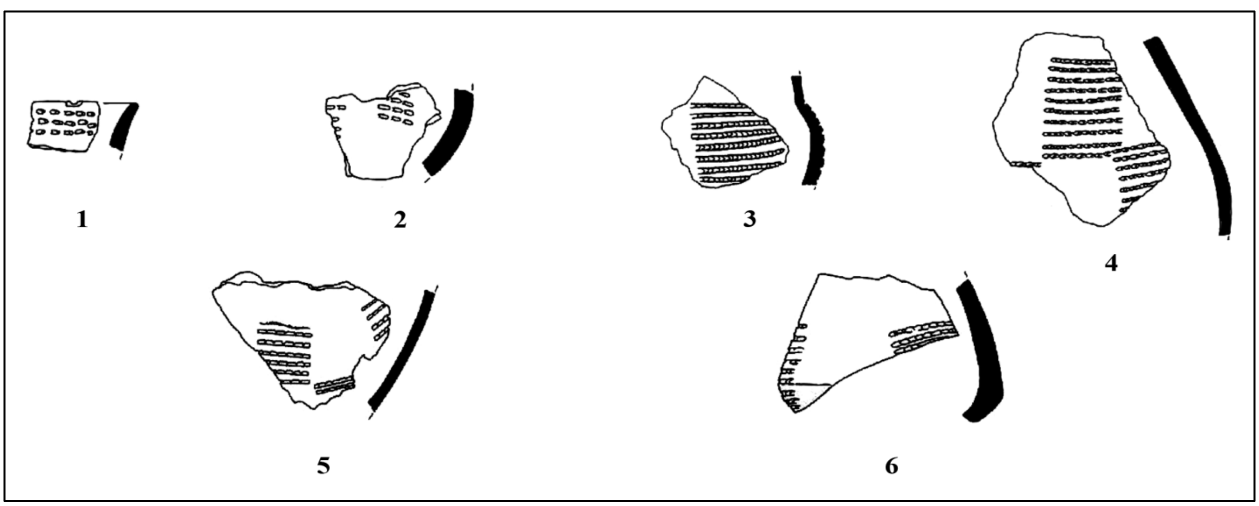

Plate 38. Coţofeni-Kostolac pottery from Jasenovik (Стојић, Јоцић 2006, T. XXXVII/1-6).

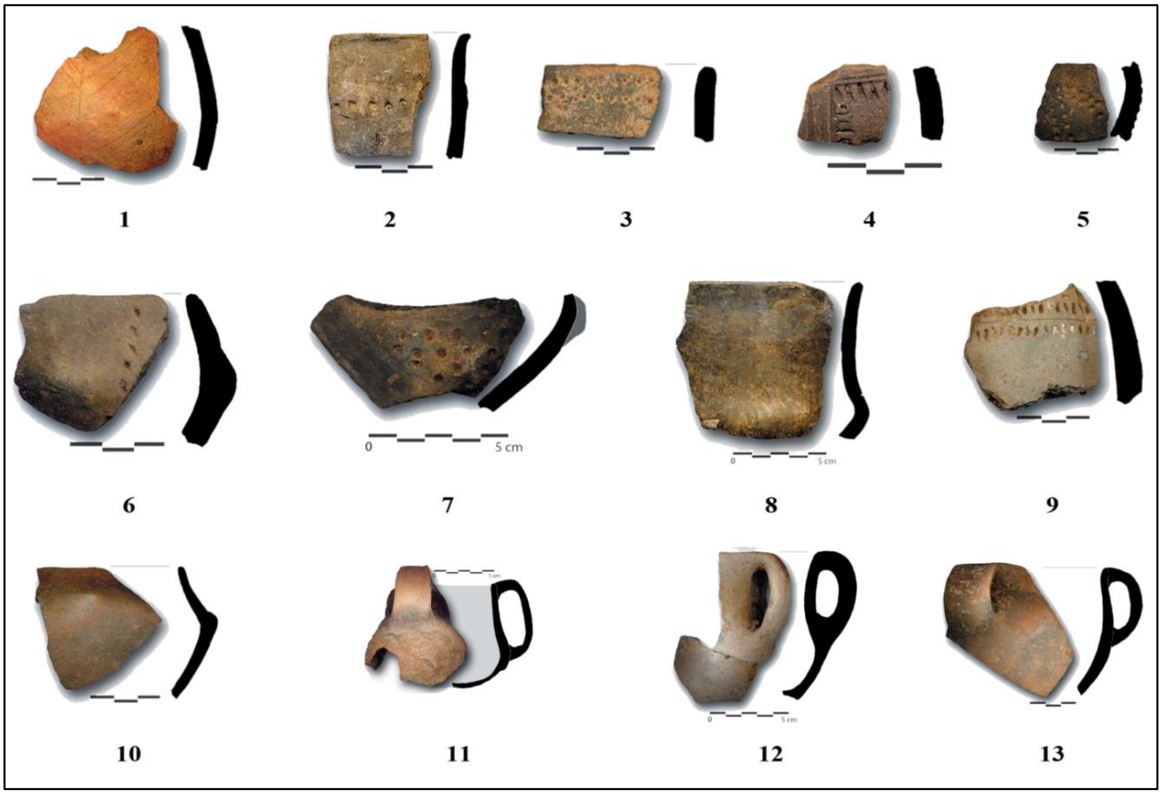

Plate 39. Bubanj-Hum II (1-9) and Bubanj-Hum III (10-13) pottery from Glogovac (Лазић, Љуштина 2017, T. 1/2; T. 2-4; T.4/5; T. 6/1, 5; T.7/8, 10; T. 9/1, 13; T.10/8; T. 11/3, 12; T.12/1).

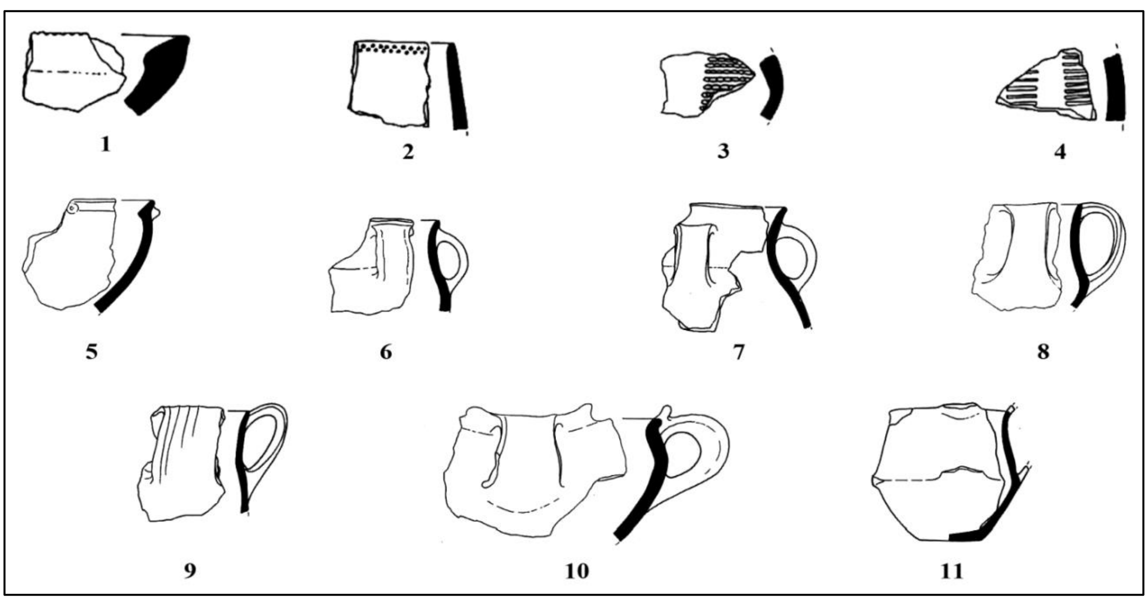

Plate 40. Coţofeni-Kotolac (1-4) and Bubanj-Hum III (5-11) pottery from Vrtište (Стојић, Јоцић 2006, T. XIV/32-35; T. XV/37-43).

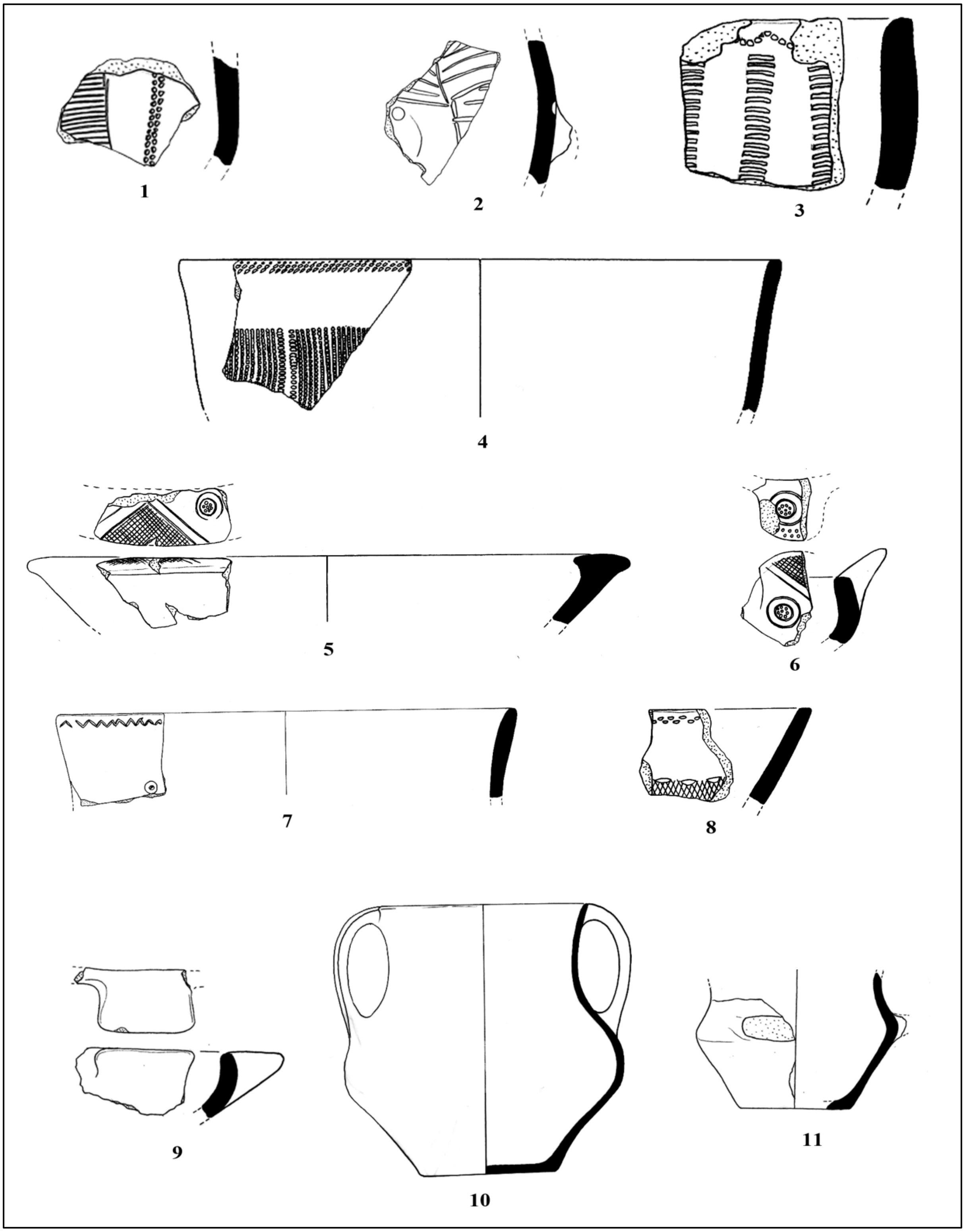

Plate 41. A selection of Coțofeni-Kotolac (1-4), Bubanj-Hum II (5-8), and Bubanj-Hum III (9-11) pottery from Velika Humska Čuka (unpublished)

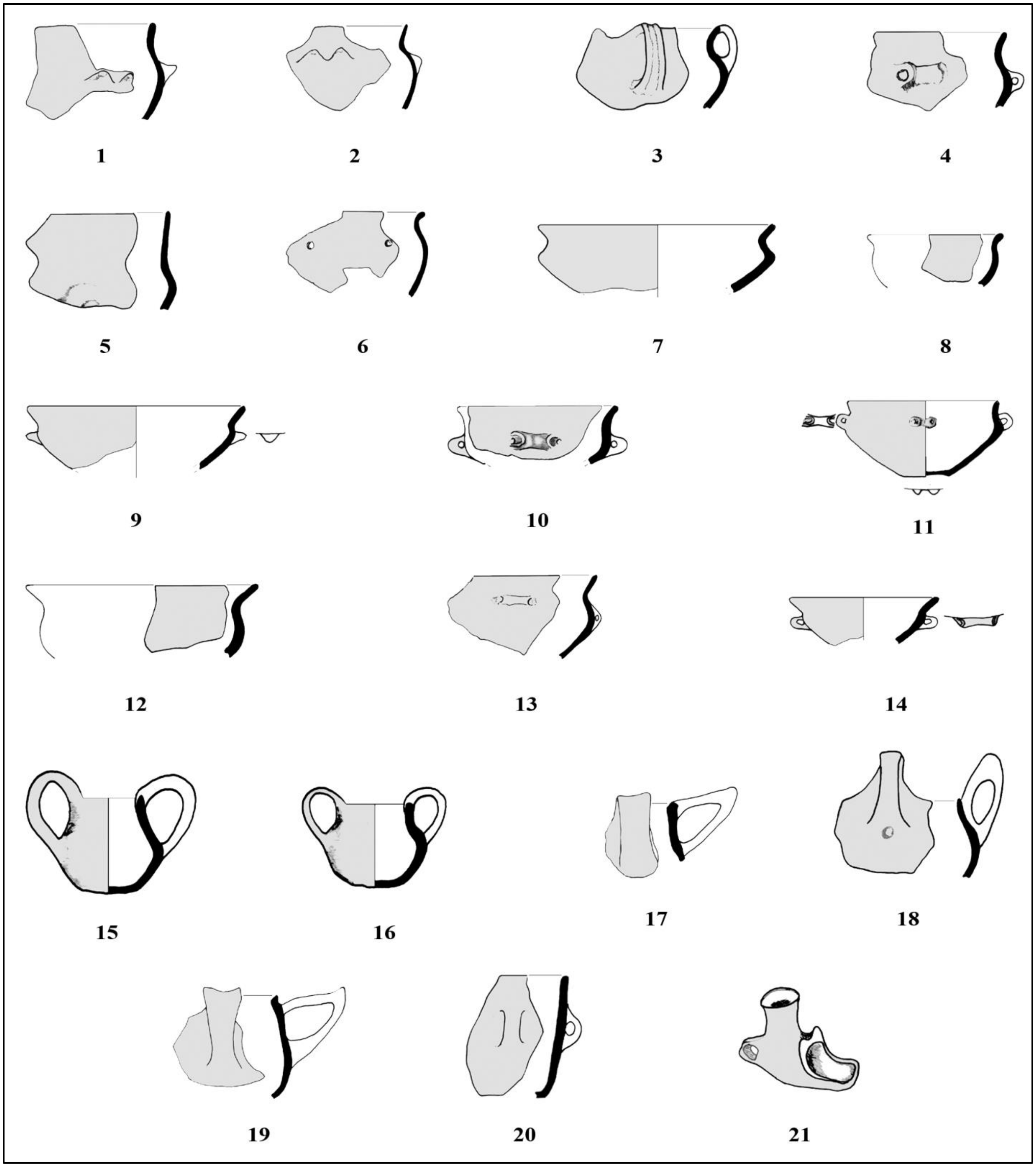

Plate 42. Early/Middle Bronze Age pottery form Lopate (Булатовић, Станковски 2012, T. LXIX).

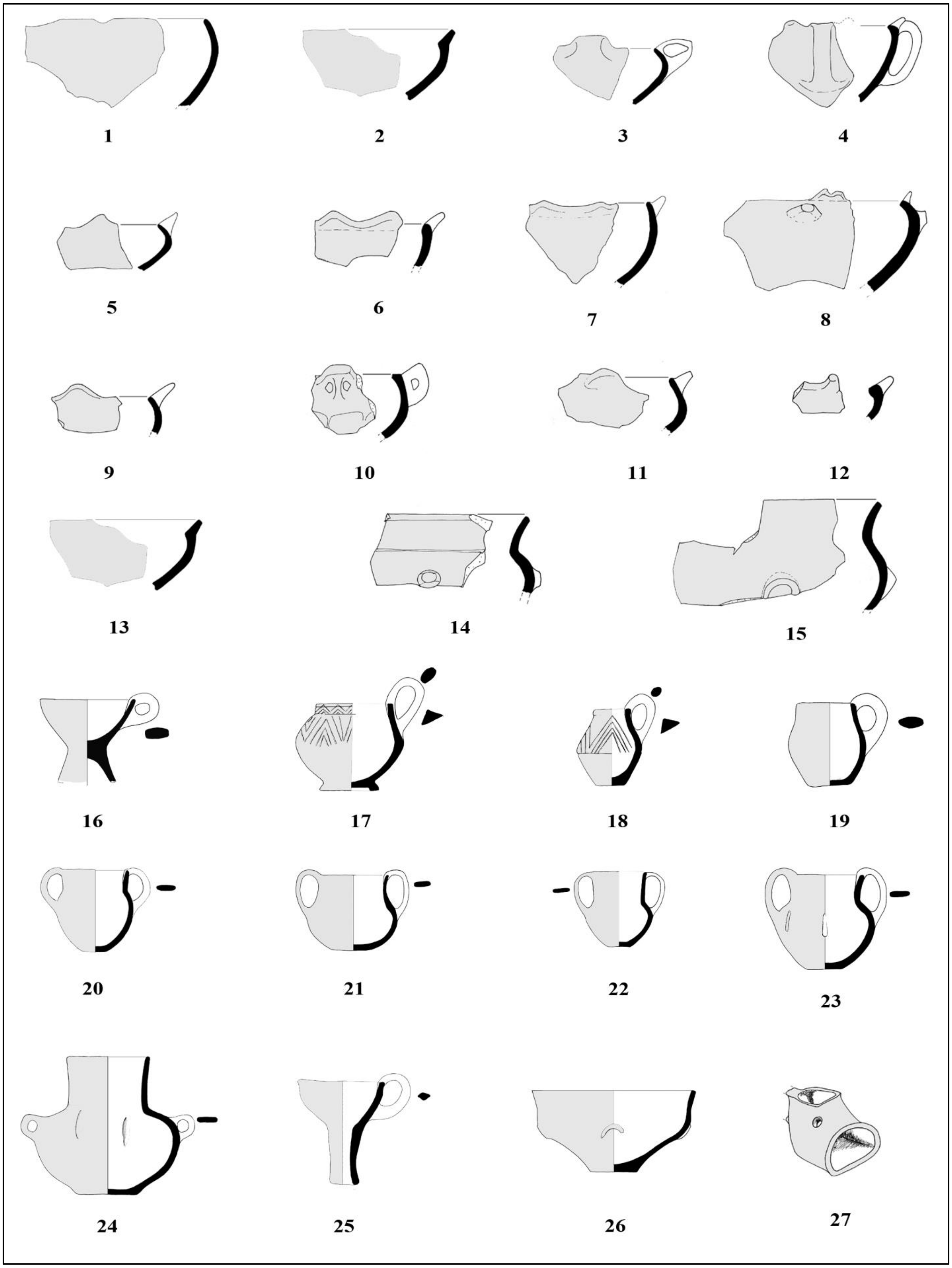

Plate 43. Early/Middle Bronze Age materials from Kokino (Булатовић, Станковски 2012, T. LIX-LXIII, selection).

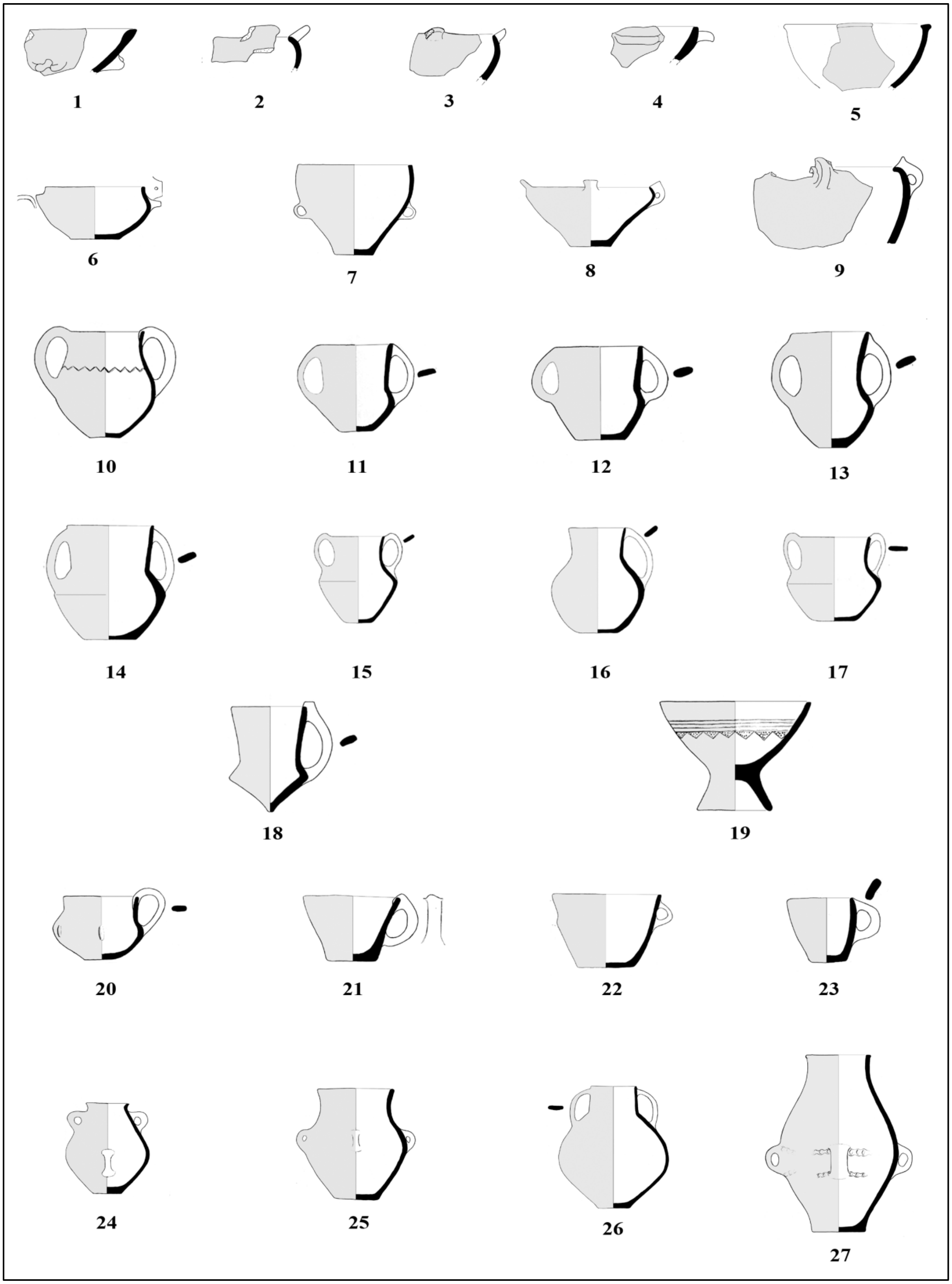

Plate 44. Early Bronze Age pottery from Pelince; 1, 4, 11, 12, 13, 22, 23 – Zone I; 2, 3, 5-10, 14-21, 24-27 – Zone II (Булатовић, Станковски 2012, T. LI-LVIII, selection).

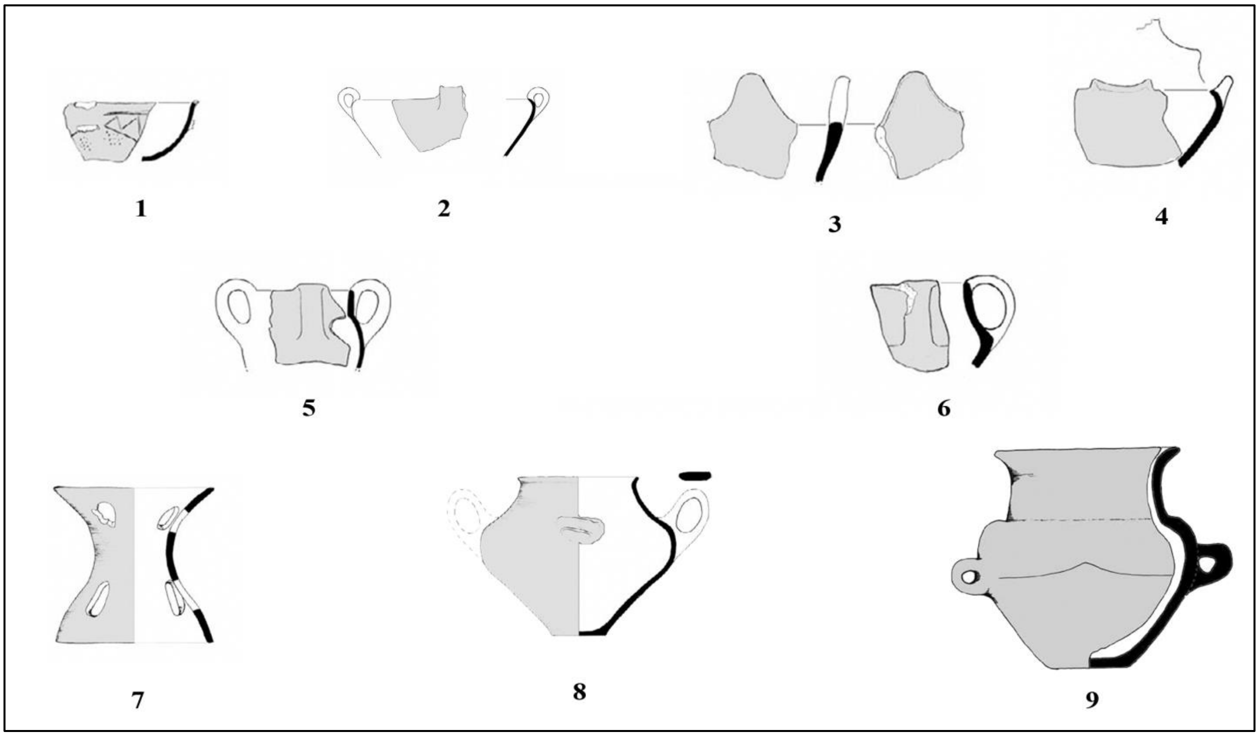

Plate 45. Early Bronze Age (1-8) materials from Gradište (Bulatović 2014, Pl. 3).

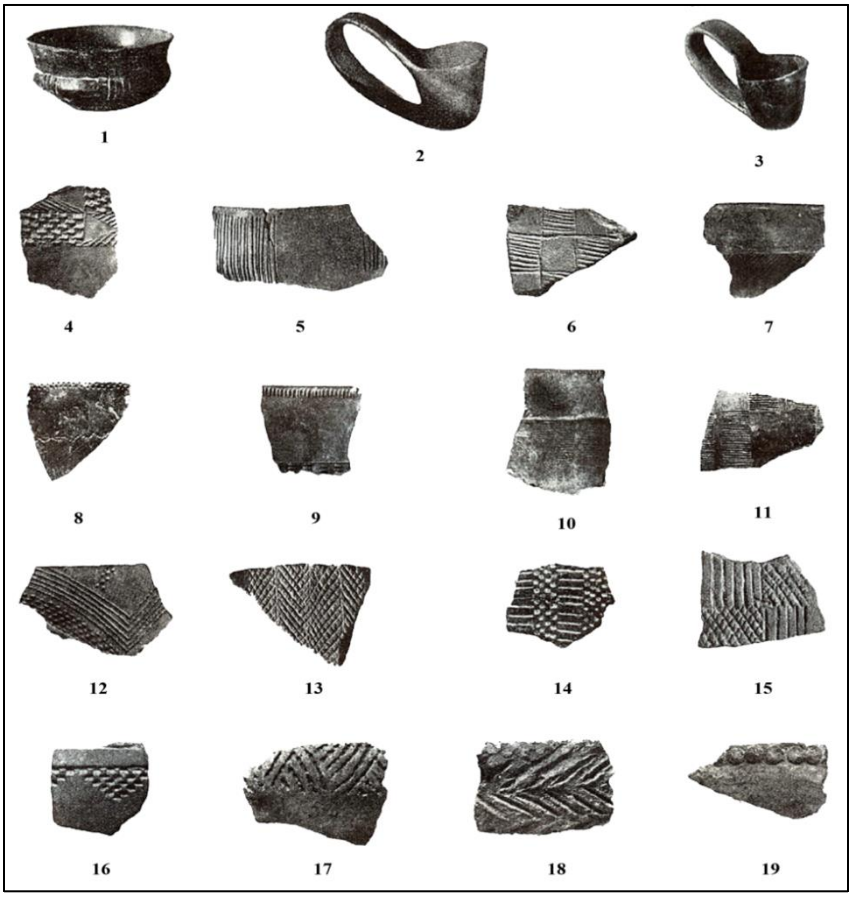

Plate 46 Kostolac (1-7) and Bubanj-Hum II (8-19) pottery from Jelenac (Милојевић, Трајковић-Филиповић 2017, Сл. 16).

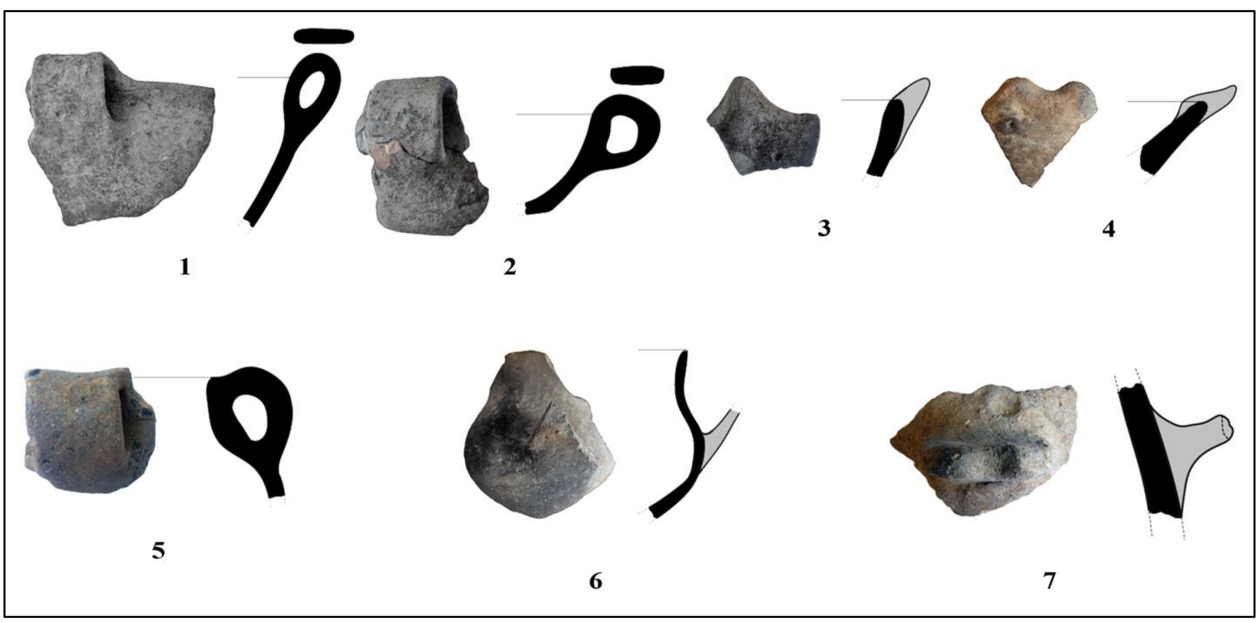

Plate 47. Early Bronze Age pottery from Kovačke Njive (Булатовић *et al*. 2016c, Pl. 1/1-4, 6, 7, 9).

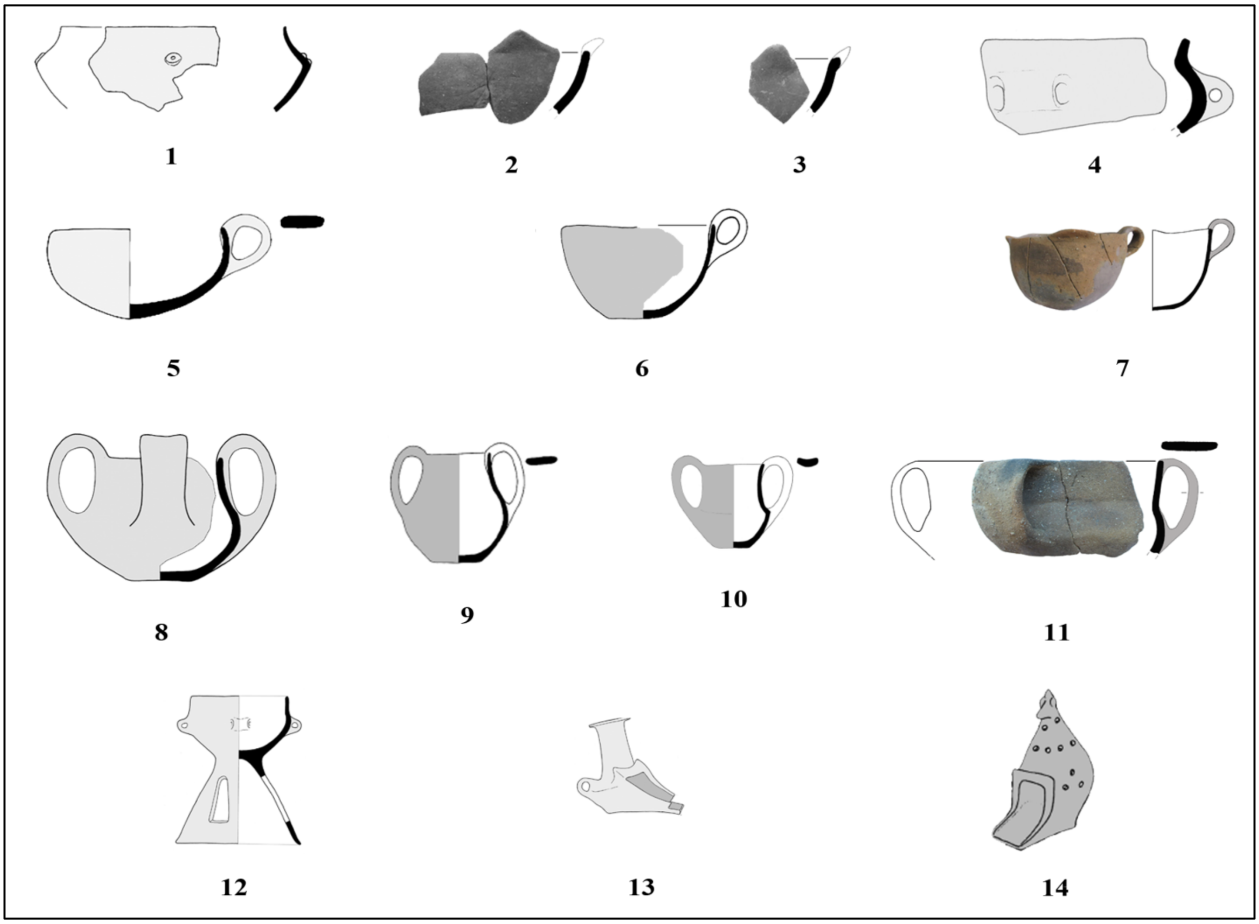

Plate 48. Armenochori pottery from the Ranutovac necropolis (Bulatović 2020, Fig. 4.1., selecion).

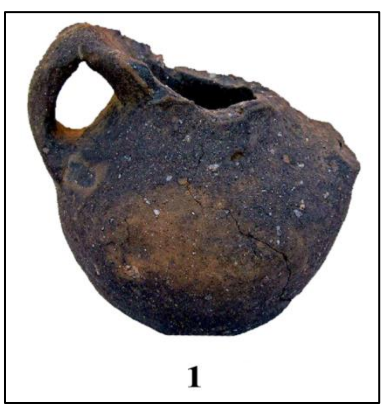

Plate 49. Early Bronze Age beaker from Bobovište (Милојевић, Трајковић-Филиповић 2017, Сл. 19).

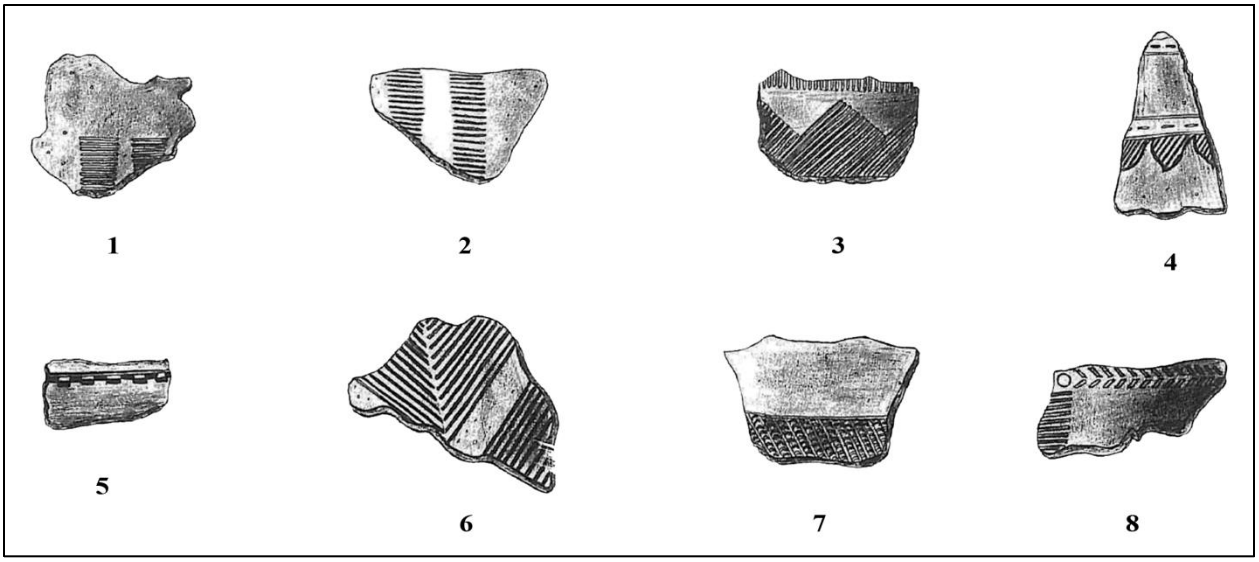

Plate 50. Coţofeni-Kostolac pottery from Selište (Милојевић, Трајковић-Филиповић 2017, Сл. 84).

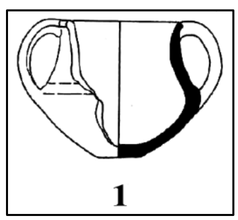

Plate 51. Early Bronze Age beaker from Pločnik.

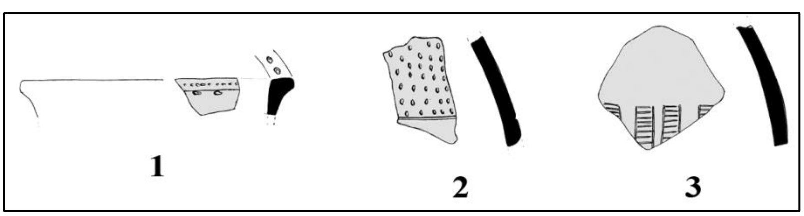

Plate 52. Late Eneolithic pottery from Dački Rid (Булатовић, Јовић 2010, T. XLVI/9-11).

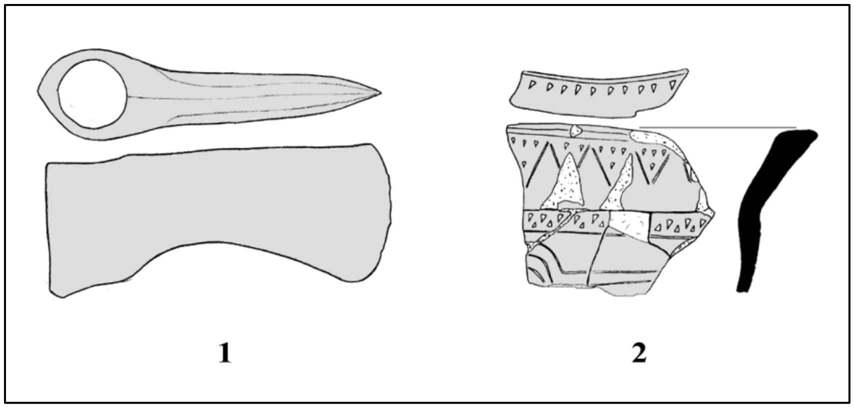

Plate 53. Early Bronze Age finds from Hisar in Leskovac (Булатовић, Јовић 2010, T. LXXX/2, 3).

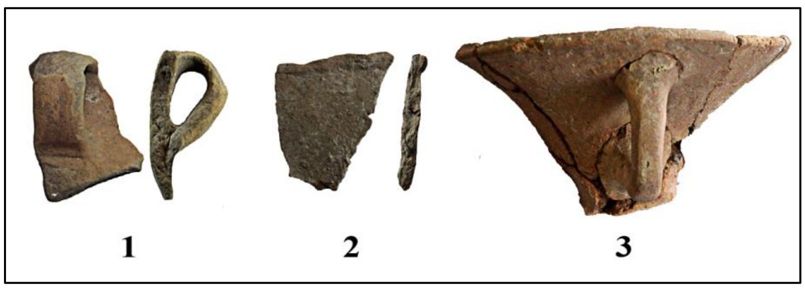

Plate 54. Early Bronze Age pottery from Hisar in Prokuplje (Милојевић, Кузмановић-Цветковић 2019, Pl. V/31-33).

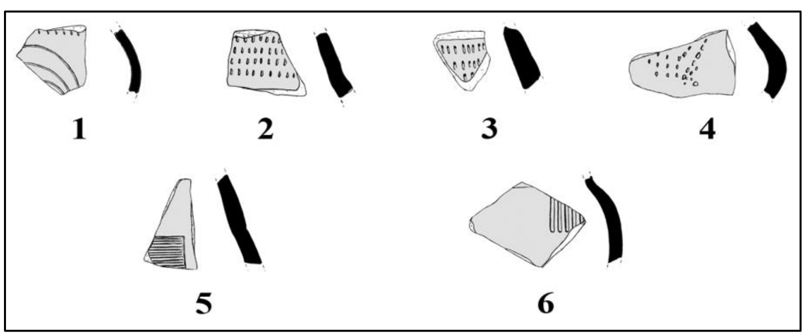

Plate 55. Coţofeni-Kostolac (5-6) and Bubanj-Hum II (1-4) pottery from Izvorište (Булатовић, Јовић 2010, T. VIII/13; T. IX/19, 20, 22; T. X/23).

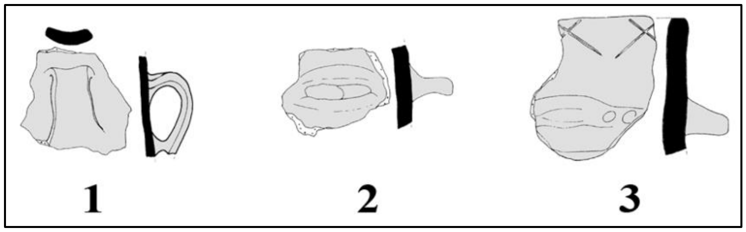

Plate 56. Bubanj-Hum II pottery from Pusto Semče (Булатовић, Јовић 2010, T. CXXVI/1-3).

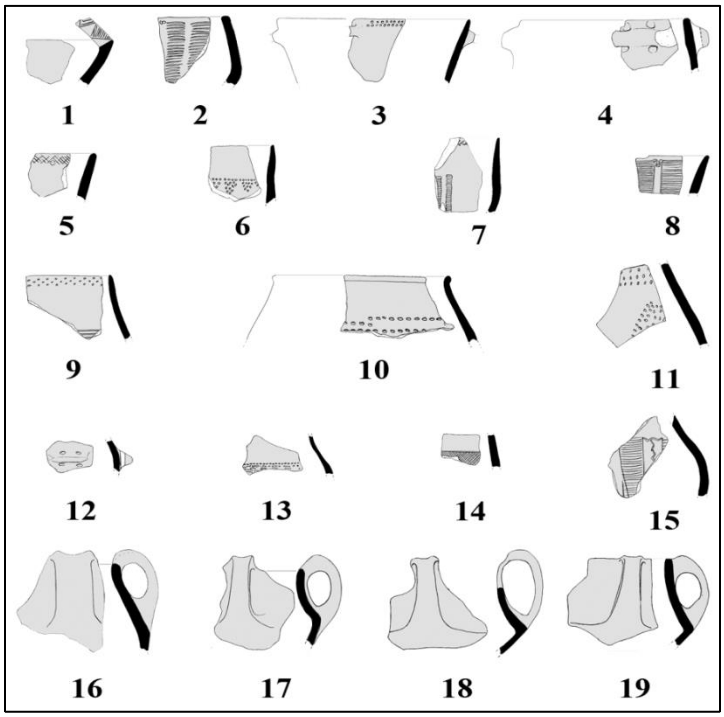

Plate 57. Bubanj-Hum II (1-15) and Bubanj-Hum III (16-19) pottery from Sastanci (Булатовић, Јовић 2010, T. XIX/41-49; T. XXII/57; T. XXIII/65, 67, 70, 71; T. XIV/81, 82; T. XXV/83, 84).

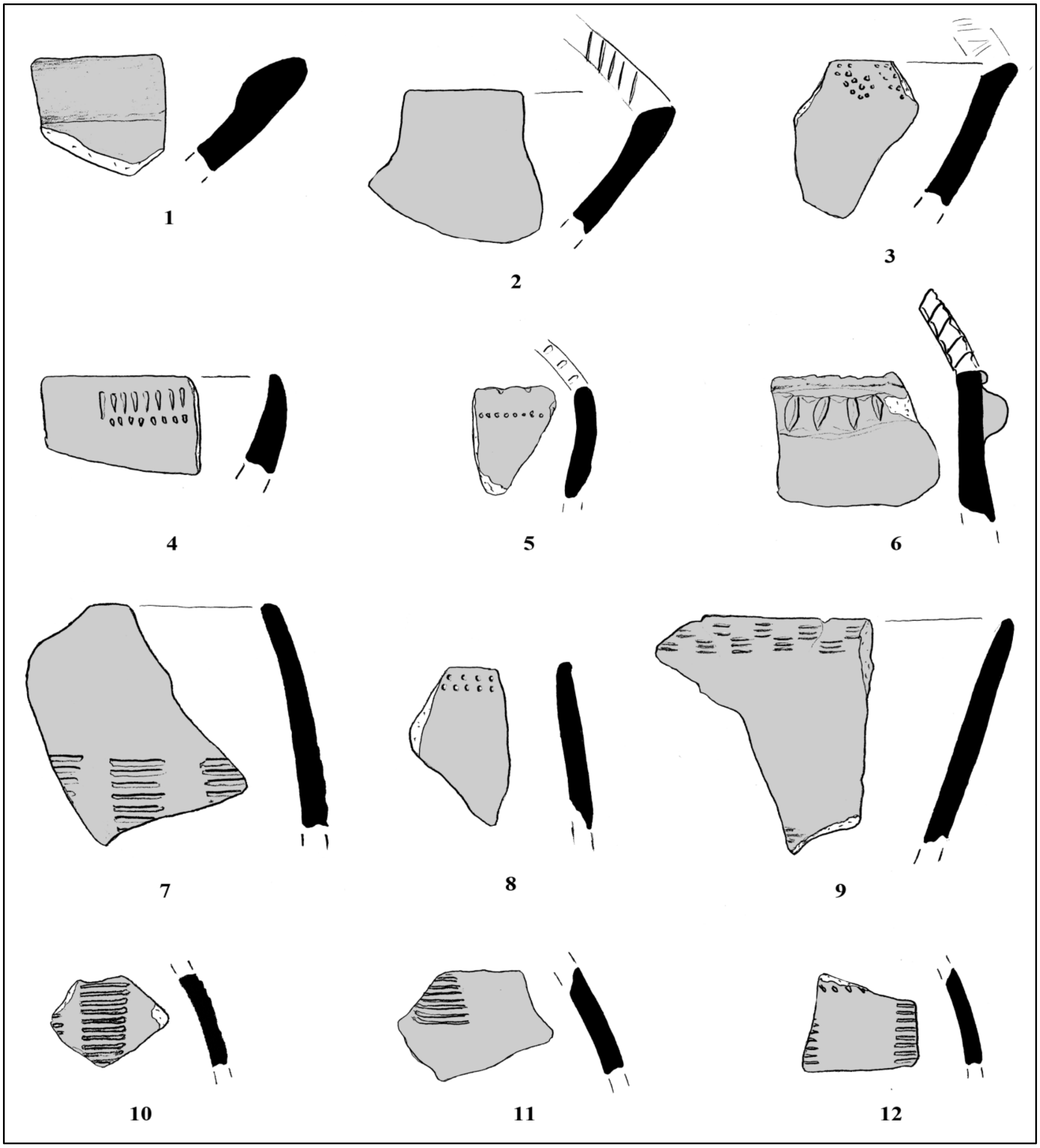

Plate 58. Late Eneolithic pottery from Svinjarička Čuka (unpublished).

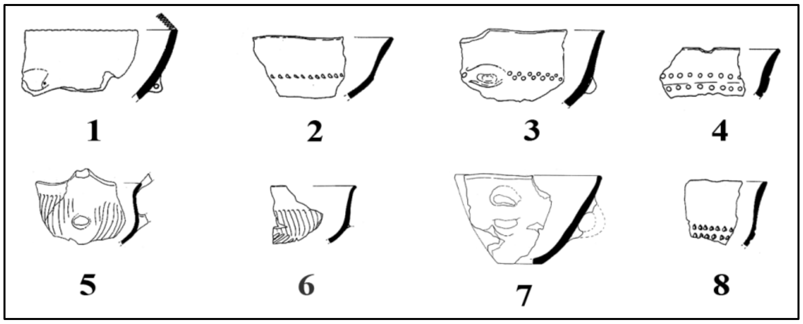

Plate 59. Late Eneolithic pottery from Bedem (Стојић, Чађеновић 2006, T. LXXXIII/4-7; T. LXXXV/22, 23, 35).

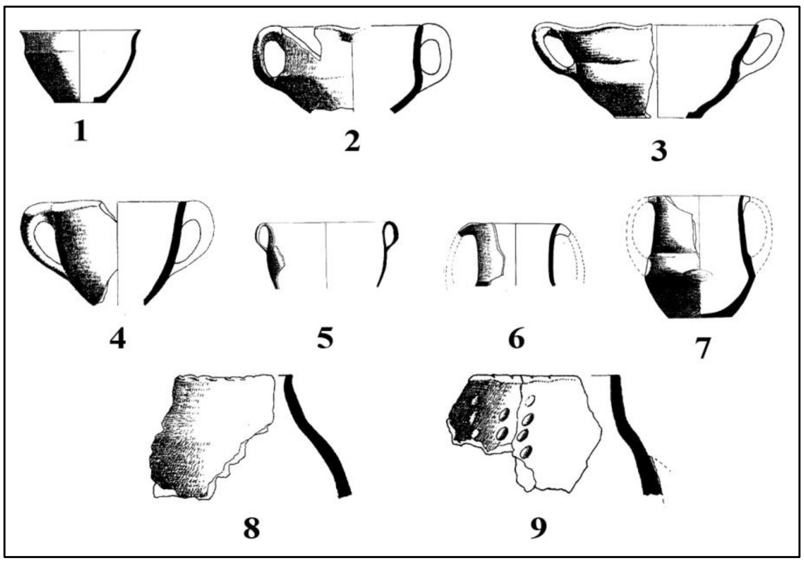

Plate 60. Early Bronze Age pottery from Blagotin (Николић, Капуран 2001, Табла 3а; Табла 3б/4, 5, 8; Табла 4/1, 6).

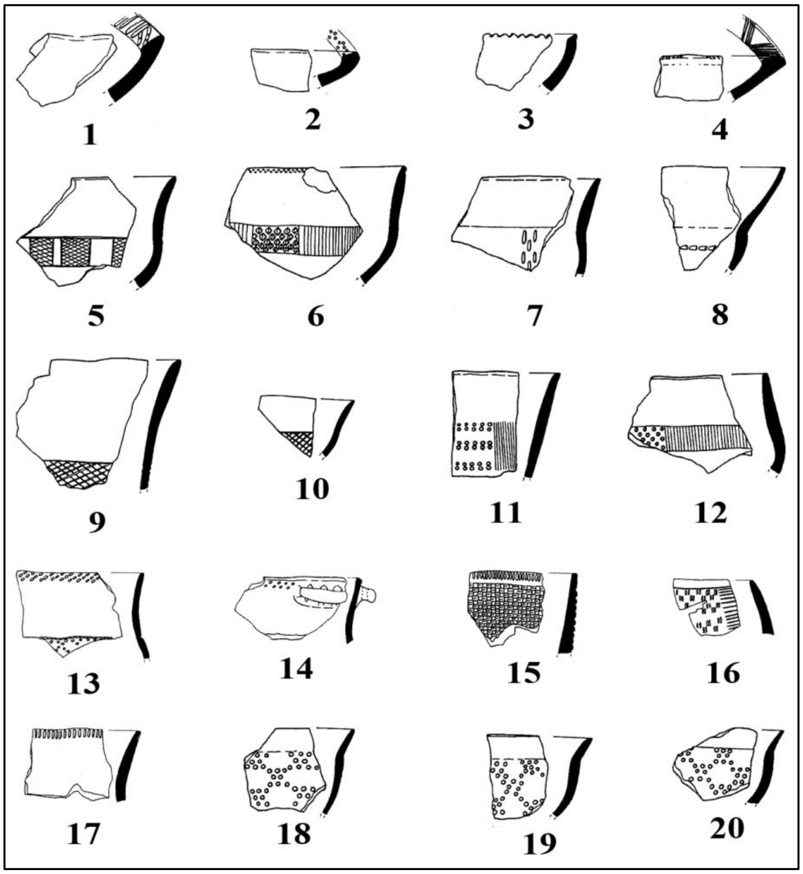

Plate 61. Late Eneolithic (1-12) and Early Bronze Age pottery (13-20) from Jazbine (Стојић, Чађеновић 2006, T. LIX/12-15; T. LX/16, 17; T. LXII/31, 33, 34, 35, 36; T. LXIII/37; T. LXVII/64, 65, 69, 70, 71; T. LXVIII/72-74).

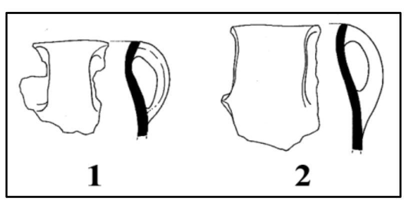

Plate 62. Early Bronze Age pottery from Bošnjane (Стојић, Чађеновић 2006, T. CXXIX/1, 2).

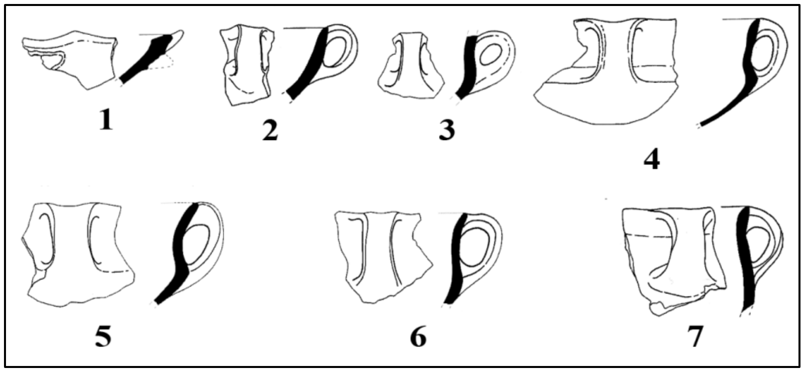

Plate 63. Early Bronze Age pottery from Kruševac (Стојић, Чађеновић 2006, T. XLII/57, 58, 61; T. XLIII/62, 64, 66; T. XLIV/67;).

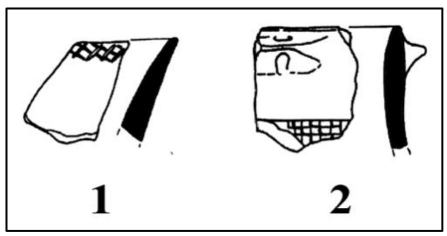

Plate 64. Bubanj-Hum II pottery from Ornice (Стојић, Чађеновић 2006, T. LXXVIII/9, 10).

7. Topography and Spatial Distribution of Sites

7.1. Region 1

Table 9. Chronological and typological attribution of sites in Region 1.

Site No.	Site	C-K	BH II	BH III	Type [839]
1	Čičkovica/Rekovac*			•	/
2	Čukarak	•			3
3	Gloždak		•		1
4	Đula	•	•		3
5	Majdan	•	•		1
6	Okućnica D. Markovića*				/
7	Orašje	•			1
8	Raskrsnice			•	3
9	Sarina Međa		•		2
10	Vecina Mala			•	2

Within Region 1, the study included a total of 10 sites from the researched periods, of which 8 sites have been precisely located.[840] Based on the stylistic and typological characteristics of ceramic finds, 4 sites have been attributed to the Late Eneolithic, and 7 sites have been attributed to the Early Bronze Age. The Late Eneolithic sites are attributed to the Coțofeni-Kostolac group (sites 2, 3, 4, and 8). The Early Bronze Age sites are attributed to the Bubanj-Hum II (sites 3, 5, and 11), and Bubanj-Hum III groups (sites 1, 7, 10, and 15). In terms of the vertical stratigraphy regarding the researched periods, nine sites possess solely one horizon, three sites (2, 5, and 7) attributed to the Late Eneolithic, and six sites (sites 1, 3, 6, 8, 9, and 10) attributed to the Early Bronze Age. Two of the researched horizons have been recorded at solely one site (site 4).

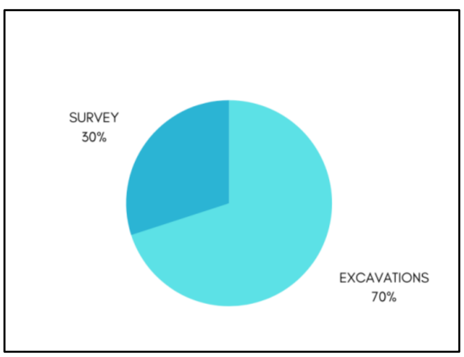

Figure 24. Origin of data for sites in Region 1.

[839] The designated types are based on topographic position of sites in relation to the natural environment, and therefore partially varying from region to region. The parameters that were taken into account are: position compared to the surrounding relief, the altitude of the site, the relief of the site compared to the surroundings and the proximity of major and minor watercourses. Certain locations such as caves and cavelets are all grouped into one type, regardless of their position, since those represent specifics.

[840] The sites which are not located are marked with * in the tables, and do not possess longitude and longitude within the catalogue of sites.

Regarding the topography of the sites attributed to the Late Eneolithic within Region 1, a total of two different groups can be recognized. The first group is characterized by sites positioned on river terraces, primarily of the Great Morava River and its tributaries (sites 6 and 8), at altitudes between 75 and 80 m. Observed within the topography of the region, these sites can be considered lowland sites, formed on the first low terrace of the Great Morava River. The other type of sites distinguished by topographic characteristics are those sites located on dominant high grounds that lie on the slopes of mountains at an altitude of approximately 320 m (sites 2 and 4). Within Region 1, those locations are distributed on the fringe of the Paraćin-Jagodina Basin.

Research of the topography of the Early Bronze indicates that two sites (sites 4 and 8) are positioned on dominant high grounds on the slopes of hilly-mountainous relief, at an altitude between 200 and 420 m, overseeing the Paraćin-Jagodina Basin. Similar to the Late Eneolithic, one site is located on the terrace of the Lugomir River, with a strong mountainous hinterland (site 15), at an altitude between 120 and 130 m.

Therefore, based on the topographic position of the sites within Region 1, a total of three types have been separated:

Table 10. Topography-based types of sites in Region 1.

Type	Description	Altitude (m)
1	Sites positioned on lowland river terraces	70-120
2	Sites positioned on lowland river terraces with a strong mountainous hinterland	110-130
3	Sites positioned on dominant elevations	160-300 m

7.2. Region 2

Table 11. Chronological and typological attribution of sites in Region 2.

Site No.	Site	C-K	EBA	PVD [841]	Type
1	Dolovi	•			1
2	Đule	•			3
3	Grad		•		1
4	Kod Groblja		•		1
5	Kod Koraba	•			2
6	Lugovi	•			1
7	Majur*	•			/
8	Nad Klepečkom	•		•	2
9	Nad Lugom	•	•		1
10	Unknown site	•			/
11	Obala Morave*		•		/
12	Pčelinji Krš	•			4
13	Pirivoj	•			2
14	Rit			•	2
15	Šetaće	•			4
16	Sestroljin*	•			/
17	Tomin Grob	•			3
18	U Selu*	•			/

Within Region 2, the study included a total of 18 sites from the researched periods, of which 14 sites have been precisely located.[842] Based on the stylistic and typological characteristics of ceramic finds, 14 sites have been attributed to the Late Eneolithic, and 6 sites have been attributed to the Early Bronze Age. The Late Eneolithic sites are attributed to the Kostolac group (sites 5, 6, 9, and 16), the Coțofeni group (sites 2, 7, and 15), and the Coțofeni-Kostolac group (sites 1, 8, 10, 12, 13, 17 and 18). The Early Bronze Age sites are attributed to the Bubanj-Hum III group (sites 3, 4, 8, 9, 11, and 14), except for the sites of Nad Klepečkom and Rit (sites 8 and 14), which save for the pottery characteristic for the Bubanj-Hum III group, displays certain characteristics of the the so-called Pančevo-Vatrogasni Dom Horizon. Vertical stratigraphy of sites within Region 2, and regarding the researched periods, indicate the following: twelve sites possess solely one horizon attributed to the Late Eneolithic (sites 1, 2, 5, 6, 7, 10, 12, 13, 15, 16, 17, and 8), and four attributed to the Early Bronze Age (sites 3, 4, 11, and 4). Both horizons have been recorded at two sites (sites 8 and 9).

841 Pančevo-Vatrogasni Dom horizon.

842 The sites which are not located are marked with * in the tables, and do not possess longitude and longitude within the catalogue of sites.

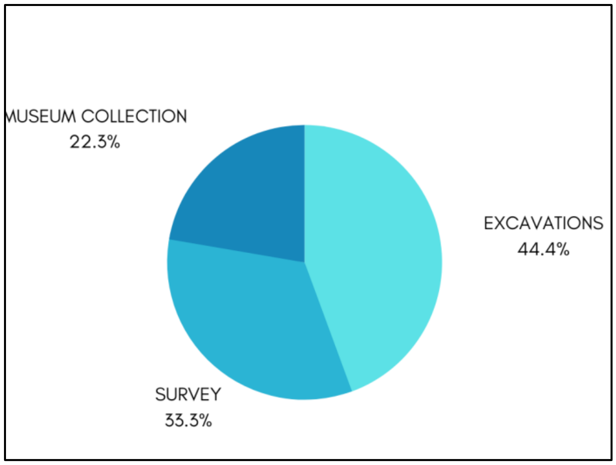

Figure 25. Origin of data for sites in Region 2.

Based on the topographic setting of sites within Region 2 during the Late Eneolithic, four groups of sites can be differentiated. The first group is characterized by lowland sites on river terraces, especially the Danube and Mlava rivers at altitudes between 70 and 80 m (sites 1, 6, and 9). The second group of sites is characterized by positions on dominant elevated ridges of the Danube's right bank, at an altitude between 80 and 90 m (sites 5, 8, and 13). The third group of sites is positioned on the dominant high ground within the lowland setting characteristic of the region, at altitudes between 240 and 250 m (sites 2 and 17). The final, fourth group of sites separated during the Late Eneolithic within the region are sites located on dominant hilltop locations, with an emphasized hilly-mountainous hinterland, at altitudes between 550 and 600 m (sites 12 and 15).[843]

Solely two groups of sites have been separated concerning the Early Bronze Age within the region. The first group of sites is located on lowland terraces of the Danube and Mlava at altitudes between 65 and 100 m (sites 3, 4, and 9). The second group of sites is positioned on the dominant elevated ridges of the Danube's right bank, at an altitude between 70 and 90 m (sites 8 and 14).

Therefore, based on the topographic position of the sites within Region 2, a total of four types have been separated:

Table 12. Topography-based types of sites in Region 2.

Type	Description	Altitude (m)
1	Sites positioned on lowland river terraces	65-100
2	Sites positioned on dominant elevated ridges	80-120
3	Sites positioned on dominant elevation within a lowland setting	c. 240
4	Sites positioned on dominant hilltop locations with an emphasized hilly-mountainous hinterland	140-600

[843] These sites in fact represent the continuation of hilltop sites of Region 3, which will be further discussed.

7.3. Region 3

Table 13. Chronological and typological attribution of sites in Region 3.

Site No.	Site	C-K	EBA	Type [844]
1	Arija Babi 2	•		3b
2	Banjska Stena	•		3b
3	Biljevina	•		2
4	Bogovinska Pećina	•		6
5	Borđelj	•		2
6	Brzi Prun	•		2
7	Brodoimpex-necropolis	•		2
8	Čoka Kormaroš	•		3b
9	Čoka Lu Balaš	•		3b
10	Čoka Morminc	•		4
11	Čoka Njica	•		3b
12	Diana/Karataš	•		1
13	Donje Butorke	•		2
14	Glavica	•		3a
15	Grabar-Svračar	•		3a
16	Gradište	•		3b
17	Grle	•		2
18	Hajdučka Vodenica	•		1
19	Ideče	•		2
20	Imanje I. Dudića*	•		-
21	Jezero/Kameni Rog	•		3b
22	Kapu Đaluluj	•		3a
23	Katarinine Livade	•		1
24	Kapetanova Pećina	•		6
25	Kljanc	•		3b
26	Kmpije	•		4
27	Knjepište*	•		-
28	Kriveljski Kamen	•		3b
29	Kriveljski Krš	•		3b
30	Kučajna		•	3b
31	Kulmja Škopjuluji	•		3b
32	Lalunj	•		3a
33	Lepenska Potkapina	•		6
34	Livade/Konopište	•		2
35	Mala Vrbica – 500*	•		-
36	Manastir	•		1
37	Mokranjske Stene	•		6
38	Unknown site		•	-
39	Obala-Donja Strana	•	•	2
40	Obala	•		2
41	Ostrvo	•		2
42	Padina	•		NCR
43	Pećina (Veliki Most)	•		6
44	Pećina (Trajanova Tabla)	•		6
45	PešćeraMare	•		6

[844] The types of sites within this region are observed compared to the current bank of the Danube.

46	Pjatra Kosti	•		3b
47	Rajkova Pećina	•		6
48	Rečica*	•		-
49	Romuliana	•	•	5a
50	Ruženka	•		2
51	Selište (B.Jezero)	•		3b
52	Selište (Šarbanovac)	•		5a
53	Selište (Štubik)	•		4
54	Smiljkova Glavica	•		3b
55	Stenje	•		3b
56	Straža*	•		-
57	Trajanov Most	•		2
58	Ušće Slatinske Reke	•		2
59	Vajuga-Pesak	•		2
60	Valja Mare-Vodenica	•		4
61	Varzari	•		5b
62	Velika Čuka	•		3b
63	Velike Livadice II*	•		-
64	Veliki Gradac/Taliata	•		3b
65	Veliki Most	•		3b
66	Veliko Brdo	•	•?	3b
67	Vernjikica	•		6
68	Vitarevac*	•		-
69	Vlasac	•		1
70	Vrkalj-Ćetaće	•		3a
71	Vrkalj	•		2
72	Zbradila	•	•	2
73	Zidjita*	•		-
74	Zlotska Pećina	•		6

Within Region 3, the study included a total of 74 sites, of which 9 sites have not been precisely located. According to the stylistic and typological characteristics of ceramic finds, 72 sites are attributed to the Late Eneolithic, and 6 (?) sites are attributed to the Early Bronze Age. All of the Late Eneolithic sites are attributed to the Coţofeni-Kostolac group.[845] Sites from the Early Bronze Age, which are few, and sometimes defined based on scarce material are either unattributed or attributed according to forms possibly indicating to the Early Bronze Age in the Central Balkans (e.g. two-handled beakers, conical cups, extensions on the rims, T-profiled rims, etc.). The vertical stratigraphy of the studied sites indicates that most of the sites, a total of 70, possess solely one of the researched horizons: 68 sites attributed to the Late Eneolithic (sites 3, 5, 6, 7, 8-10, 12, 14-16, 18, 19, 21-27, 31-33, 35, 40, 41, 42, 43-48, 50, 52-60, 63-65, 67-71, 73, and 74), and two sites attributed to the Early Bronze Age (sites 30 and 38). Both of the researched horizons have been recorded at a total of 4 sites (sites 39, 49, 66, and 72).

[845] Materials presented from certain sites display solely characteristics of the Coţofeni group, which might indicate their earlier relative date. On the subject refer to **Subchapter 5.1.** and *Cf.* Spasić 2010, Капуран, Булатовић 2012a.

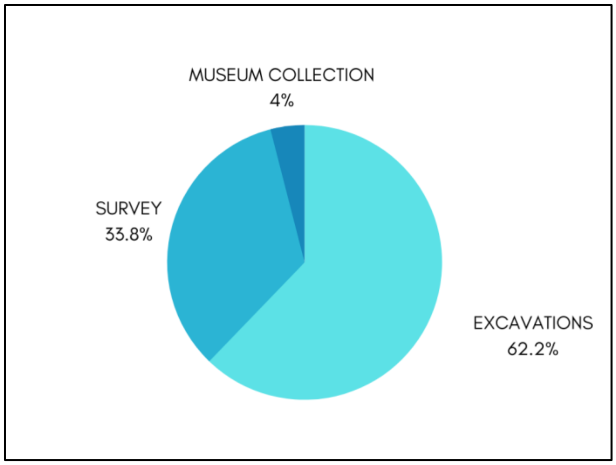

Figure 26. Origin of data for sites in Region 3.

The settling topography of Region 3 is dictated by several factors such as the karst and hilly-mountainous relief on one side and the Danubes' right bank with lowland valleys on the other. In general, by observing all of the researched periods, four micro-regions with higher representation of sites can be separated: the Danubes' right bank, the surroundings of present-day Bor, the Crni Timok Valley, and the fringe of the Negotin Basin. Such a division of micro-regions is possibly directly reflected in the degree of archaeological research, especially regarding the Danubes' right bank, which has been continuously systematically investigated for more than a half a century.

Regarding the Late Eneolithic, two types of settlement locations are recognizable in terms of the Danubes' right bank[846]. First, the sites are located at an altitude between 60 and 70 m, in lower positions (often chives) and with a strong hilly mountainous hinterland (sites 12, 18, 23, 36, and 69). The second group of sites is likewise positioned on the lowland terrain of the Danubes' right bank (including islands), with a lower sloping hinterland at the altitudes between 30 and 50 m (sites 3, 5, 6, 7, 13, 17, 19, 34, 39, 40, 41, 50, 57, 58, 59, 71, and 72). Such sites are usually positioned in an elevated position compared to the surrounding relief. The third type of Late Eneolithic sites can be divided into two variants. Primarily, those are sites that are located on the dominant elevations on the fringe of the basin (Negotin), usually in the proximity to water source/sources, often an estuary, at the altitude between 100 and 260 m (sites 14, 15, 22, 32, and 70). The second variant is represented by sites similarly positioned on the elevated and dominant positions, in the proximity of water source/sources, often located near estuaries of local creeks, with a high variety of altitudes (from 180 to 640 m) (sites 1, 2, 8, 9, 11, 16, 21, 25, 28, 29, 31, 46, 51, 54, 55, 62, 64, 65, and 66). This group of sites is massively dictated by the characteristic karst relief within this region. The fourth group is represented by sites located on dominant slopes of local rivers and creeks, at an altitude between 180 and 370 m (sites 10, 26, 49, 53, and 60). The fifth group of the Late Enelolithic sites is likewise separated into two variants. These are sites located within the river valley (Crni Timok), on its sloping terraces, at an altitude of c. 180 m (sites 49 and 52), or a dominant elevated position above

[846] Due to the changes in the Danube's level following the construction of hydroelectric power plants Iron Gates I and II, the positions of sites are given in the absolute altitude above sea level.

the river valley (site 61). The final, sixth group of sites separated for the Late Eneolithic are sites located in caves and cavelets, with significant variations in attitude (from 90 m on the Danubes' bank, up to 570 m) (sites 4, 24, 33, 37, 43, 44, 45, 47, 67, and 74).

The sites attributed to the Early Bronze Age can be separated into three groups. First, sites located on the lowland of the Danubes' right bank, at the altitude of 40-50 m (sites 39 and 72), followed by sites located on river terraces (Crni Timok) at altitudes between 170 and 180 m (site 49), and a single site located on a dominant elevation above an estuary, at the altitude of 380 m (site 66).[847]

Based on the topographic position of the sites within Region 3, a total of six types with variants have been separated:

Table 14. Topography-based types of sites in Region 3.

Type	Description	Altitude (m)
1	Sites positioned on lowland Danubes' right bank with a strong hilly mountainous-hinterland (chives included)	60-70
2	Sites positioned on lowland Danube's right bank with sloping hinterland	30-50
3a	Sites positioned on dominant elevations on the fringe of a basin	100-260
3b	Sites positioned on a dominant elevations above estuaries	180-640
4	Sites positioned on sloping terraces of dominant elevations	180-370
5a	Sites positioned in river teraces wtihin valleys	170-180
5b	Sites positioned on dominant elevations above river valleys	c. 270
6	Caves/cavelets	90-570

[847] Such a topography of sites will be further discussed, especially regarding the stylistic and typological characteristics of pottery originating from the site of Veliko Brdo, as it represent the only EBA site that differs from the observable settling pattern within the region.

7.4. Region 4

Table 15. Chronological and typological attribution of sites in Region 4.

Site No.	Site	C-K	BH II	BH III	Type
1	Adžijsko-Vinsko	•			1
2	Bojište	•			1
3	Bolvan	•			3
4	Bubanj	•	•	•	3
5	Ciganski Ključ	•	•		1
6	Crnokalačka Bara			•	4
7	Čardak	•	•		1
8	Čivlak	•			1
9	Dubrava/Panađur	•			1
10	Dubrava I	•			2
11	Jasenovik*	•			-
12	Kadijski Krst			•	1
13	Kamenica			•	6
14	Kod Česme	•			5
15	Kožuvarska Glama	•			4
16	Markove Bare	•			4
17	Unknown*	•			-
18	Petrlaška Pećina	•			6
19	Polje	•	•	•	1
20	Šuplji Kamen			•	3
21	Trševine*		•		-
22	Velika Česma	•		•	3
23	Velika Humska Čuka	•	•	•	5
24	Višnjar	•			3

The topographic study within Region 4 included a total of 24 sites, of which 21 sites have been precisely located. Based on the stylistic and typological characteristics of potsherds from the sites, as well as the existing absolute dates, 19 sites have been attributed to the Late Eneolithic, and 11 sites to the Early Bronze Age. All of the Late Eneolithic sites are attributed to the Coţofeni-Kostolac group, while Early Bronze Age sites are attributed to the Bubanj-Hum II (sites 4, 5, 7, 19, 21, and 23) and Bubanj-Hum III groups (sites 4, 6, 12, 19, 20, 22, 23). The vertical stratigraphy regarding the researched periods points out that 18 sites possess solely one of the researched periods – thirteen sites are attributed to the Late Eneolithic (sites 1, 2, 3, 8, 9, 10, 11, 14, 15, 16, 17, 18 and 24), and four sites to the Early Bronze Age (sites 6, 12, 13, and 21). Both researched horizons have been recorded at a total of six sites (4, 5, 7, 19, 22, and 23).[848]

Within Region 4, two geomorphologically different micro-regions with higher representation of sites can be separated – the Niš Basin, and the Timok Valley (Svrljiški and Beli Timok). Within the Late Eneolithic in the Timok Valley, sites tend to gravitate towards the valley and can be roughly separated into four groups. The first group is represented by sites on the lowest river terrace, at an altitude of approximately 200 m (sites 1 and 2), and

[848] Solely the site of Bubanj (site 4) yielded a stratigraphic sequence with several horizons attributed to the Coţofeni-Kostolac group, followed by horizons attributed to the Bubanj-Hum II and Bubanj-Hum III groups.

the second group is sites positioned on the second sloping terrace at an altitude of 240 m (site 10). The third and fourth groups are represented by sites located on the dominant elevated positions within the river valley at the altitude between 220 and 300 m (sites 3 and 24), or within the hinterland of the river valley, above a smaller watercourse, at the altitude of 480 m (site 15). The topography of the settlement within the Niš Basin follows a similar pattern. Sites are positioned on the terrace of the South Morava River, at an altitude between 180 and 200 m (sites 5, 8, and 9), at dominant prominent elevations within the basin itself, at an altitude between 190 and 200 m (sites 4 and 22), and dominant elevations on the fringe of the basin, with altitudes up to 450 m (sites 15 and 23). Studied sites which are not within the aforementioned regions are located on river terraces (site 19, altitude 320 m), at dominant elevations within the relief, and in the proximity of watercourses (site 19, altitude 290 m), or within caves (site 19).

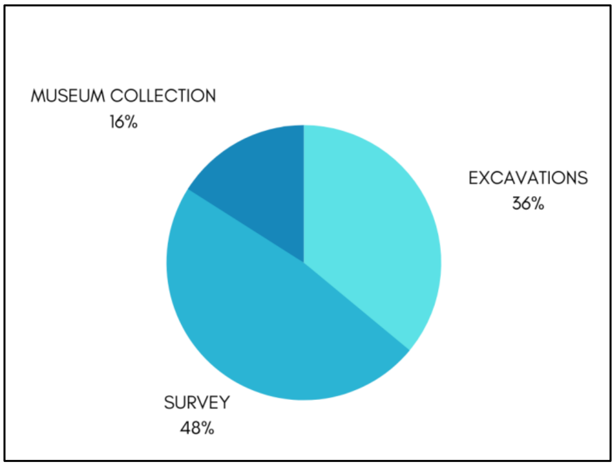

Figure 27. Origin of data for sites in Region 4.

The Early Bronze Age sites, largely concentrated within the Niš Basin, are located on lower river terraces at altitudes between 175 and 200 m, 240 m, or 340 m (sites 7, 8, 12, and 19), on dominant elevations within the basin itself, at an approximate altitude of 200 m, or 340 m (sites 4, 20, and 22), dominant elevations in the hinterland near a watercourse (site 6) or a dominant elevation on the fringe of the basin (site 23). Finally, Early Bronze Age sites are also positioned within caves (site 13).

Therefore, based on the topographic position of the sites within Region 4, a total of six types have been separated:

Table 16. Topography-based types of sites in Region 4.

Type	Description	Altitude (m)
1	Sites positioned on lower river terraces	175-240
2	Sites positioned on the elevated river terraces	240
3	Sites positioned on dominant elevations within river valleys	190-350
4	Sites positioned on dominant elevations in the hinterland	230/290/480
5	Sites positioned on dominant elevations on the fringe of a basin	c.450
6	Caves	-

7.5. Region 5

Table 17. Chronological and typological attribution of sites in Region 5.

Site No.	Site	C-K	BH II	BH III	ARM	Type
1	Pribovce				•	1
2	Tatićev Kamen			•	•	4
3	Dve Mogili		•	•		3
4	Kostoperska Karpa				•	2

The research of the topography of sites within Region 5 included a total of four sites, all precisely located. The stylistic and typological characteristics of potsherds from the sites attribute all four sites to the Early Bronze Age. The Early Bronze Age sites are attributed to the Bubanj-Hum II group (site 3), the Bubanj-Hum III group (sites 2 and 3), and the Armenochori group (sites 1 and 2). The vertical stratigraphy regarding the researched periods within region 5 points that all four sites possess solely the Early Bronze Age horizon.

The topographic characteristics of the Early Bronze Age sites indicate the separation of four groups of sites, although such a separation is difficult regarding the presumed specific function of certain sites (sites 2 and 3), and the fact that solely four sites are included in the study, each representing a group for itself. Therefore, site 1 is located on the river terrace at the altitude of c. 350 m and would represent the first group. The second group is represented by site 2, which lies on an extremely dominant hilltop within the surrounding relief, at the altitude of approximately 1000 m. The third group, represented by site 3, lies on a dominant slope above a confluence, with a strong mountainous hinterland, at an altitude between 460 and 480 m. The final, fourth group is represented by site 4, which is located on an elevated position within the lowland relief, at the altitude of 500 m.

Based on scarce data, a total of four topographic types of sites have been separated:[849]

Table 18. Topography-based types of sites in Region 5.

Type	Description	Altitude (m)
1	Sites positioned on river terraces	c. 350
2	Sites positioned in an elevated position within lowland relief.	500
3*	Sites positioned on dominant slopes with a strong mountainous hinterland	460-480
4*	Sites positioned on extremely dominant hilltops	1000

[849] Types marked with * represent specifics regarding their function. Refer to catalogue of sites (**Chapter 6**).

7.6. Region 6

Table 19. Chronological and typological attribution of sites in Region 6.

Site No.	Site	C-K	BH II	BH III	ARM	Type
1	Banjka-Kaldrma			•		2
2	Bara			•		3
3	Gradište (Ražanj)		•			4
4	Gradište (Vranje)			•	•	5
5	Jelenac	•	•			3
6	Kovačke Njive			•	•	4
7	Piljakovac	•				1
8	Ranutovac				•	NCR
9	Selo			•		3
10	Selište	•	•			3
11	Školska Gradina			•		3
12	Tri Kruške			•		6
13	Utrine			•		NCR

The study of site topography within Region 6 included a total of 13 sites, of which all of the sites have been precisely located. The stylistic and typological characteristics of ceramic finds indicate that 3 sites are attributed to the Late Eneolithic, and 11 sites to the Early Bronze Age. Sites from the Late Eneolithic are attributed to the Coţofeni-Kostolac group (sites 5 and 10), or unattributed (site 7). The Early Bronze Age sites are attributed to the Bubanj-Hum II group (sites 3 and 5), Bubanj-Hum III group (sites 1, 9, 11, and 12) and the Armenochori group (sites 4, 6, and 8).[850] Likewise, two Early Bronze Age sites remain unattributed (sites 2 and 13). The vertical stratigraphy of the researched periods at the aforementioned sites indicates that 11 sites are characterized by only one of the researched horizons, two attributed to the Late Eneolithic (sites 7 and 10), and 10 attributed to the Early Bronze Age (sites 1, 2, 3, 4, 6, 8, 9, 11, 12 and 13). Solely one site has both of the researched horizons (site 5).

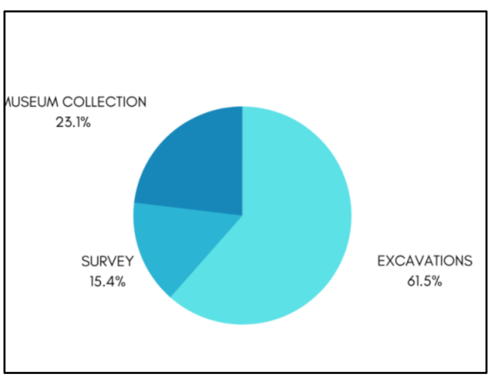

Figure 28. Origin of data for sites in Region 6.

[850] Regarding the sites attributed to the Armenochori group, solely the Ranutovac necropolis can be attributed completely to the group, while other listed sites display certain ceramic characteristic of the Bubanj-Hum III group.

Regarding the topography, two groups of sites can be differentiated during the Late Eneolithic. The first group is represented by sites positioned on the first (lower) terrace of the South Morava River, at an altitude between 160 and 180 m (sites 5 and 10). The second group is represented by one site, positioned on a dominant slope above the South Morava bank and its estuary with a local creek (site 7), at an altitude of c. 340 m.

A total of five groups of sites can be separated regarding the Early Bronze Age. The first group of sites is represented by a single site which is located within a flat terrain of a dominant plateau (Preševo Pass) (site 1) at an altitude between 400 and 410 m. The second and the most numerous group is represented by sites positioned on the first (lower) terrace of the South Morava River, at an altitude between 150 and 200 m (sites 2, 5, 9, 11, and 13). The third group is characterized by sites located on the second (higher) terrace of the South Morava River, or the contact zone between the lowland terrace and the hilly hinterland, at an altitude between 390 and 400 m (sites 3, 6, and 8). The fourth group is represented by solely one site (site 4) positioned on a dominant high ground on the fringe of the basin, at an altitude of 260 m. Finally, the fifth group is likewise represented by solely one site located on the sloping bank of a river, with a strong hilly hinterland, at an altitude of 430 m (site 12).

Based on the topographic position of the sites within Region 6, a total of six types have been separated:

Table 20. Topography-based types of sites in Region 6.

Type	Description	Altitude (m)
1	Sites positioned on dominant slopes above estuaries	340
2	Sites positioned on dominant flat plateaus	410
3	Sites positioned on the lower terrace of the South Morava River	150-200
4	Sites positioned on the second terrace of the South Morava River	390-400
5	Sites positioned on the dominant elevation on the fringe of the basin	180-260
6	Sites positioned on banks of tributaries with a strong hilly hinterland	430

7.7. Region 7

Table 21. Chronological and typological attribution of sites in Region 7.

Site No.	Site	C-K	BH II	BH III	Type
1	Bace			•	4
2	Pločnik	•		•	4
3	Dački Rid	•			2
4	Gradac		•		2
5	Hisar (Leskovac)		•		2
6	Hisar (Prokuplje)			•	2
7	Izvorište	•			1
8	Kamik	•			2
9	Kod Ćupriju*			•	-
10	Pluževina			•	5
11	Pusto Semče*		•		5
12	Reka/Planište	•		•	1
13	Sastanci	•	•	•	1
14	Selište	•			1
15	Svinjarička Čuka	•			3

Within Region 7, the topographic study included a total of 15 sites, of which 13 sites have been precisely located.[851] The stylistic and typological characteristics of ceramic finds indicate that 8 sites are attributed to the Late Eneolithic, and 10 sites to the Early Bronze Age. The Late Eneolithic sites ate attributed to the Baden-Kostolac horizon (site 16) and the Coţofeni-Kostolac group (sites 2, 3, 7, 8, 12, and 15). The Early Bronze Age sites within Region 7 are attributed to the Bubanj-Hum II group (sites 4, 7, 11, and 13), and the Bubanj-Hum III group (sites 1, 2, 5, 6, 10, 12, and 13). The vertical stratigraphy, regarding the researched periods, points out that twelve sites possess solely one of the researched horizons, of which five sites are attributed to the Late Eneolithic (sites 3, 7, 8, 14, and 15), and seven sites attributed to the Early Bronze Age (sites 1, 4, 5, 6, 9, 10 and 11). Both of the researched horizons have been recorded at three sites (sites 2, 12 and 13).

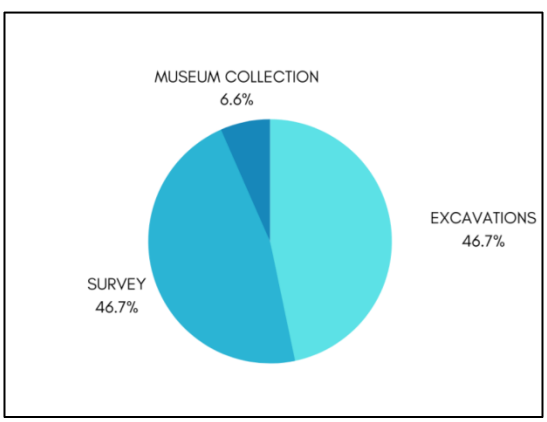

Figure 29. Origin of data for sites in Region 7.

[851] The site of Pusto Semče (14) is positioned on the map, although its position is based on the topographic descriptions from publications, which were in this case sufficient for the topographic typology.

Researched sites within Region 7 display the following characteristics. During the Late Eneolithic, three groups of sites are recognized based on their topographic characteristics. The first group is represented by sites positioned on flat lower terraces of major rivers and their tributaries, within the basins, at an altitude between 220 and 300 m (sites 7, 12, 13, and 14). The second group of sites is represented by sites located on dominant high ground on the fringe of the basin, at an altitude between 260 and 350 m (sites 3 and 8). Finally, the third group is represented by sites positioned within the hinterland of the basin, on sloping terraces of minor rivers, at an altitude of c. 380 m (site 15).

Similarly to the Late Eneolithic, the Early Bronze age sites within Region 7 are firstly represented by sites on lower terraces of major rivers (sites 12 and 13), at an altitude between 220 and 300 m, although certain sites are positioned towards the fringe of the river basin, and possess a strong hilly-mountainous hinterland (sites 1 and 2). The second group of sites is positioned on the dominant high ground on the fringe of the basin, at an altitude between 300 and 340 m, usually rising above a major river (sites 4, 5, and 6). Quite a specific group of sites for this period in the region is highland sites positioned on the eastern slopes of the Suva Mountain (overseeing the South Morava Basin), at an altitude between 560 and 600 m (sites 10 and 11).

Based on the topographic position of the sites within Region 7, a total of five types have been separated:

Table 22. Topography-based types of sites in Region 7.

Type	Description	Altitude (m)
1	Sites positioned on the first terrace of major rivers	220-300
2	Sites positioned on dominant elevations on the fringe of the basin	260-360
3	Sites positioned on sloping terraces of minor rivers within basin hinterland	260-380
4	Sites positioned on the first (lower) terrace of major rivers, with hilly hinterland	c. 300
5	Highland sites	560-600

7.8. Region 8

Table 23. Chronological and typological attribution of sites in Region 8.

Site No.	Site	C-K	BH III	Type
1	Bedem	•		1
2	Blagotin		•	3
3	Jazbine	•		2
4	Kućište	•		1
5	Skela Kolarac		•	1
6	Lazarev Grad	•	•	1
7	Osaonica	•		1
8	Ornice	•		2
9	Stari Trstenik		•	1

The study within Region 8 included a total of 9 sites, of which all sites have been precisely located. The stylistic and typological characteristics of ceramic finds indicate that 6 sites are attributed to the Late Eneolithic, and 4 sites to the Early Bronze Age. The Late Eneolithic sites ate attributed to the Baden-Kostolac horizon (site 1), the Coţofeni-Kostolac group (sites 3, 6, and 8), while two sites (sites 4 and 7) remain unattributed. The Early Bronze Age sites are attributed to the Bubanj-Hum III group (sites 2, 5, 6, and 9). The vertical stratigraphy, limited to the researched periods, points out that eight sites possess solely one of the researched horizons: five sites attributed to the Late Eneolithic (sites 1, 3, 4, 7, and 8), and three sites attributed to the Early Bronze Age (sites 2, 5, and 9). Both of the researched horizons have been recorded at solely one site (site 6).

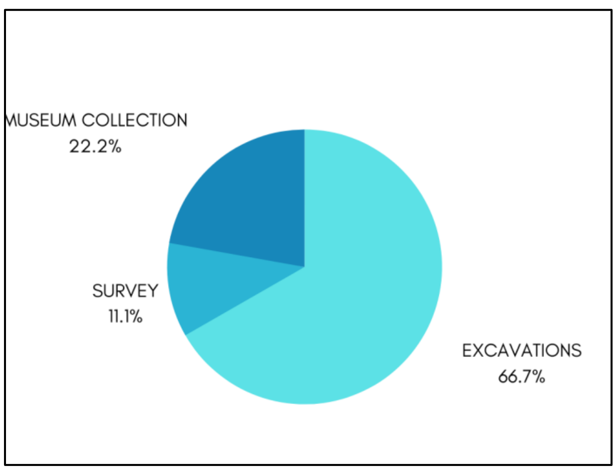

Figure 30. Origin of data for sites in Region 8.

The topographic characteristics of the Region 8 are dominantly influenced by the West Morava Basin and its tributaries, in all of the researched periods. During the Late Eneolithic, two groups of sites can be differentiated. The first group is characterized by sites positioned on the first (lower) terrace of the West Morava River, at an altitude between 120 and 170 m (sites 1, 4. 6, and 7). The second group separated during the Late

Eneolithic is characterized by sites located on dominant high ground immediately above the river terrace, at the altitudes between 180 and 300 m (sites 3 and 8).

Likewise, two groups of sites have been separated based on the topographic characteristics during the Early Bronze Age. The first group of sites, represented by sites 5, 6 and 9, is characterized by sites positioned on the first (lower) terrace of the West Morava River, at an altitude between 120 and 170 m. The second group, represented solely by site 2, is characterized by a lowland location on a river terrace, with a strong mountainous hinterland, at the altitude of c. 300 m.

Therefore, based on the topographic position of the sites within Region 8, a total of three types have been separated:

Table 24. Topography-based types of sites in Region 8.

Type	Description	Altitude (m)
1	Sites positioned on the first terrace of the West Morava River	120-170
2	Sites positioned on dominant elevations above the river terrace	180-300
3	Sites positioned on river terraces with a strong mountainous hinterland	c. 300

7.9. Regional Analysis of the Topography and Spatial Distribution of Sites

The topographic characteristics of sites within Region 1 have yielded a total of three types of settling locations (**Table 10**). During the Late Eneolithic (Coţofeni-Kostolac group), the preferred settling locations, equally distributed, are attributed to types 1 and 3 (50 % each), meaning that the sites are located either within the lowland river terraces, in this case, the lower course of the Great Morava River, or on dominant elevations on the fringe of the Paraćin-Jagodina Basin (**Fig. 31**). During the Early Bronze Age Bubanj-Hum II group within Region 1, sites are distributed between types 1, 2, and 3, and the representation of sites within type 1 is equal to the representation of the remaining two types (50%) (**Fig. 32**). In the following phase, meaning the Bubanj-Hum III group, the preferred settling locations are equally distributed between types 2 and 3, and no site is attributed to type 1. For instance, during the Early Bronze Age (Bubanj-Hum II and III), no sites have been registered to the north of the Bagrdan George, meaning within the lower course of the Great Morava River. Besides sites on lowland river terraces and dominant elevations on the fringe of the Paraćin-Jagodina Basin, type 2 is also represented for Bubanj-Hum II and III sites. The type is represented by sites positioned on lowland terraces of the Great Morava River and its tributaries, which also possess a strong hinterland, either hilly or mountainous, which differs from sites attributed to type 1.

Table 25. Representation of types in relation to periods within Region 1.

Group	Type 1 (%)	Type 2 (%)	Type 3 (%)
Coţofeni-Kostolac	50	-	50
Bubanj-Hum II	50	25	25
Bubanj-Hum III	-	50	50

Similar to Region 1, topographic positions of sites within Region 2 yielded a total of four types (**Table 12**). All of the defined types are represented solely during the Late Eneolithic (Coţofeni-Kostolac group), however sites in lowland river terraces of Danube and Mlava, as well as on elevated ridges above river terraces are more represented, and sites on dominant elevations within lowland relief are represented solely during this period. Also, the majority of sites are located near the confluence of the Mlava and Danube rivers (sites 5, 6, 8, 9, and 13) (**Fig. 34**). This could represent the direct result of the degree of research, since the area is well archaeologically investigated due to the endangerment by the Drmno coal seam. On the other hand, the number of sites and their wide chronological attribution could also indicate the importance of the area in terms of communications.

Regarding the sites simply attributed to the Early Bronze Age solely one type is represented (type 1), indicating a preference for lowland settling during this period, especially the lowland river terraces. However, sites attributed to the Pančevo-Vatrogasni Dom horizon are both attributed to type 2, meaning positioned on elevated ridges within the lowland relief (**Fig. 36**). The majority of sites are positioned on river terraces of the Mlava and Danube rivers.

Table 26. Representation of types in relation to periods within Region 2.

Group	Type 1 (%)	Type 2 (%)	Type 3 (%)	Type 4 (%)
Coţofeni-Kostolac	30	30	20	20
Early Bronze Age	100	-	-	-
PDV horizon	-	100	-	-

The topographic characteristics of sites within Region 3 yielded a total of six types with several variants (**Table 14**). All of the defined types are represented solely during the Late Eneolithic. Preferred settling locations during the Late Eneolithic are attributed to types 2 and 3b (**Fig. 37**). Therefore the majority of sites are located within the lowland relief of the Danubes' right bank (26.6 %) and on dominant high grounds and elevations above estuaries of rivers and creeks (29.7 %). Further, a higher settling of caves and cavelets is registered during this period (15.5%). In terms of the distribution of sites, three zones can be separated. The first represents the Danubes' right bank, the second is represented by sites in the vicinity of Bor and the third is represented by sites in the vicinity of Zaječar (Timok Valley). Due to the lack of Early Bronze Age sites within this region, the sample is too small to consider the topographic distribution of sites during this period (**Fig. 38**).

Table 27. Representation of types in relation to periods within Region 3.

Group	Type 1 (%)	Type 2 (%)	Type 3a (%)	Type 3b (%)	Type 4 (%)	Type 5a (%)	Type 5b (%)	Type 6 (%)
C-K	7.8	26.6	7.8	29.7	6.3	4.7	1.6	15.5
EBA	-	33.3	-	33.3	-	33.3	-	-

Regarding Region 4, a total of six types of settling locations have been separated based on the topography (**Table 16**). During the late Eneolithic (Coţofeni-Kostolac group), the most represented are types 1 and 3, meaning locations that are positioned on lower river terraces or dominant elevations within river valleys (**Fig. 39**). Such a representation counts for 64.4% of sites, which are mainly distributed within two distinct micro-regions. The first micro-region is located in the upper course of the Beli Timok Valley, and the second is represented by the wide Niš Basin. Sites of the Bubanj-Hum II group are attributed to a total of three types (types 1, 3, and 6), of which type 1 is dominant with the representation of 60 %. Such attribution indicates a preference for settling within the lower river terraces (**Fig. 40**). However, sites of the Bubanj-Hum III group are attributed to a total of four types, with type 3 as a dominant with a representation of 37.5%, thus indicating a small preference for settling on dominant elevated ground within river valleys (**Fig. 41**).

Table 28. Representation of types in relation to periods within Region 4.

Group	Type 1 (%)	Type 2 (%)	Type 3 (%)	Type 4 (%)	Type 5 (%)	Type 6 (%)
C-K	41.2	5.9	23.4	11.8	11.8	5.9
BH II	60	-	20	-	-	20
BH III	12.5		37.5	12.5	12.5	12.5

Region 6 yielded a total of six types of settling locations (**Table 20**). The sample for the sites attributed to the Coţofeni-Kostolac group is not representable and the majority of sites are positioned on the lower terrace of the South Morava River. Regarding the Early Bronze Age, settling locations are the most versatile, especially regarding the Bubanj-Hum II group encompassing a total of 5 out of 6 defined types. Preferred settling locations for Bubanj-Hum II group are within types 3 and 4, meaning both the lower/first and the second terrace of the South Morava River, within a lowland relief (**Fig. 45**) (**Table 29**). Further, sites attributed to the Bubanj-Hum III group are more versatile and cover a total of five out of six designated types. However, the settling preference of the Bubanj-Hum III group falls within type 3 (42.8%), meaning the lower terrace of the South Morava River (**Fig. 46**) (**Table 29**). Finally, a small sample of sites with material attributed to the Armenochori group is equally distributed between types 4 and 5, or the second terrace of the South Morava River and the dominant elevation on the fringe of a basin (**Fig. 47**) (**Table 29**). Similar to regions 1 and 4, no sites have been recorded within the Grdelica Gorge.

Table 29. Representation of types in relation to periods within Region 6.

Group	Type 1 (%)	Type 2 (%)	Type 3 (%)	Type 4 (%)	Type 5 (%)	Type 6 (%)
C-K	33.3	-	66.6	-	-	-
BH II			66.6	33.3		
BH III		14.3	42.8	14.3	14.3	14.3
ARM				50	50	

Within Region 7, a total of five settling types have been separated based on the topography of settling locations (**Table 22**). During the Late Eneolithic (Coţofeni-Kostolac group), a total of four types are represented (types 1-4), although the majority of sites are attributed to type 1 (50%), meaning that the sites are located on the first terrace of major rivers (South Morava and Toplica), followed by sites on dominant elevations on the fringe of the Leskovac Basin (Type 2 – 25%) (**Fig. 49**) (**Table 30**). Sites attributed to the Bubanj-Hum II group are represented with three types, of which the dominant is type 2 (50%), meaning that the sites are positioned on dominant elevations on the fringe of basin, but likewise on the first terrace of a major river (**Fig. 50**) (**Table 30**). Bubanj-Hum III sites are again most versatile and represented within 4 of 5 designated types. The majority of those sites are attributed to types 1 and 4, indicating the preference for settling the lower terraces of major rivers (**Fig. 51**) (**Table 30**).

Table 30. Representation of types in relation to periods within Region 7.

Period	Type 1 (%)	Type 2 (%)	Type 3 (%)	Type 4 (%)	Type 5 (%)
Coţofeni-Kostolac	50	25	12.5	12.5	-
Bubanj-Hum II	25	50	-		25
Bubanj-Hum III	33.3	16.6		33.3	16.6

The topographic setting of sites within Region 8 yielded a total of 4 types (**Table 24**). During the Late Eneolithic (Coţofeni-Kostolac group), solely two types are represented, with the majority of sites attributed to Type 1 (66.6%), meaning that the sites are positioned on the first and the lowest terrace of the West Morava River, while the rest of the period-related sites are positioned on dominant elevations above those terraces (33.3%) (**Fig. 52**) (**Table 31**). A similar distribution of sites has been recorded for the sites attributed to the Bubanj-Hum III group, as 66.6 % of sites are attributed to Type 1 and positioned on the first terrace of the West Morava River, while the remaining sites are positioned similarly, on the river terrace, although with a mountainous hinterland (**Fig. 53**) (**Table 31**).

Table 31. Representation of types in relation to periods within Region 8.

Period	Type 1 (%)	Type 2 (%)	Type 3 (%)
Coţofeni-Kostolac	66.6	33.3	-
Bubanj-Hum III	66.6	-	33.3

7.10. Results of the Viewshed Analyses

In terms of mutual visual relations, based on the *Viewshed Analysis*,[852] no significant regularities have been observed. Within Region 1, sites attributed to the Coţofeni-Kostolac group have no visual connection, and the sample of sites attributed to the Bubanj-Hum III group yielded identical results. However two sites attributed to the Bubanj-Hum II group (sites 3 and 4) possess mutual visual relations.

The analyses of mutual visual relations of sites within Region 2 indicated the following. During the Late Eneolithic (Coţofeni-Kostolac group), solely sites within the aforementioned confluence zone of the Mlava and Danube Rivers are mutually visible, and a similar trend can be observed during the Early Bronze Age, and for the sites attributed to the so-called Pančevo-Vatrogasni Dom Horizon.

Visual relations of sites within Region 3 are dictated by the distribution of sites in the aforementioned micro-regions. Sites attributed to the Coţofeni-Kostolac group, located on the Danubes' right bank do not display a trend of mutual visual communications, but rather a trend towards the wider visual coverage of the river valley and the opposite bank. However, a higher mutual visual connection can be observed regarding those sites which are positioned in the vicinity of Bor. In general, the visual coverage of sites attributed to the Coţofeni-Kostolac group within Region 3, highlights river valleys and confluences of minor rivers and creeks with the Danube.

The mutual visual relations of sites within Region 4 are, as it seems, dominated by the aforementioned distribution of sites within two micro-regions. Therefore, sites attributed to the Coţofeni-Kostolac group well connected visually and similarly visually cover the Beli Timok Valley and the Niš Basin. During the Early Bronze Age, especially for

[852] Parameters described in **Chapter 3**.

sites attributed to the Bubanj-Hum II group, visual coverage and mutual relations of sites are well represented within the Niš Basin.

Visual relations between the sites during the Late Eneolithic in Region 6, solely suggest that the sites within the lower course of the South Morava River were mutually visible. During the Early Bronze Age, sites within the lower course of the South Morava River, particularly those sites attributed to the Bubanj-Hum II group, were both mutually visible, and likewise visually covered the river valley. However, sites within the upper course of the South Morava River were not mutually visible, although visually covered the majority of the river valley.

Within both of the researched periods, within Region 7, the emphasis is on the visual coverage of the Toplica Valley and the Leskovac Basin. Sites attributed to the Coţofeni-Kostolac group, within the Leskovac Basin have an extraordinary coverage of the basin, and mutual visual communication. A similar trend can be observed during the Early Bronze Age within the Leskovac Basin, for sites attributed to the Bubanj-Hum II group, while sites within the Toplica Valley are not visually connected, yet oriented toward the visual coverage of the valley.

Within Region 8, visual coverage of the West Morava Valley, and the mutual visual coverage can be observed for the sites attributed to the Coţofeni-Kostolac group, yet no regularities can be observed in terms of those sites attributed to the Bubanj-Hum III group.

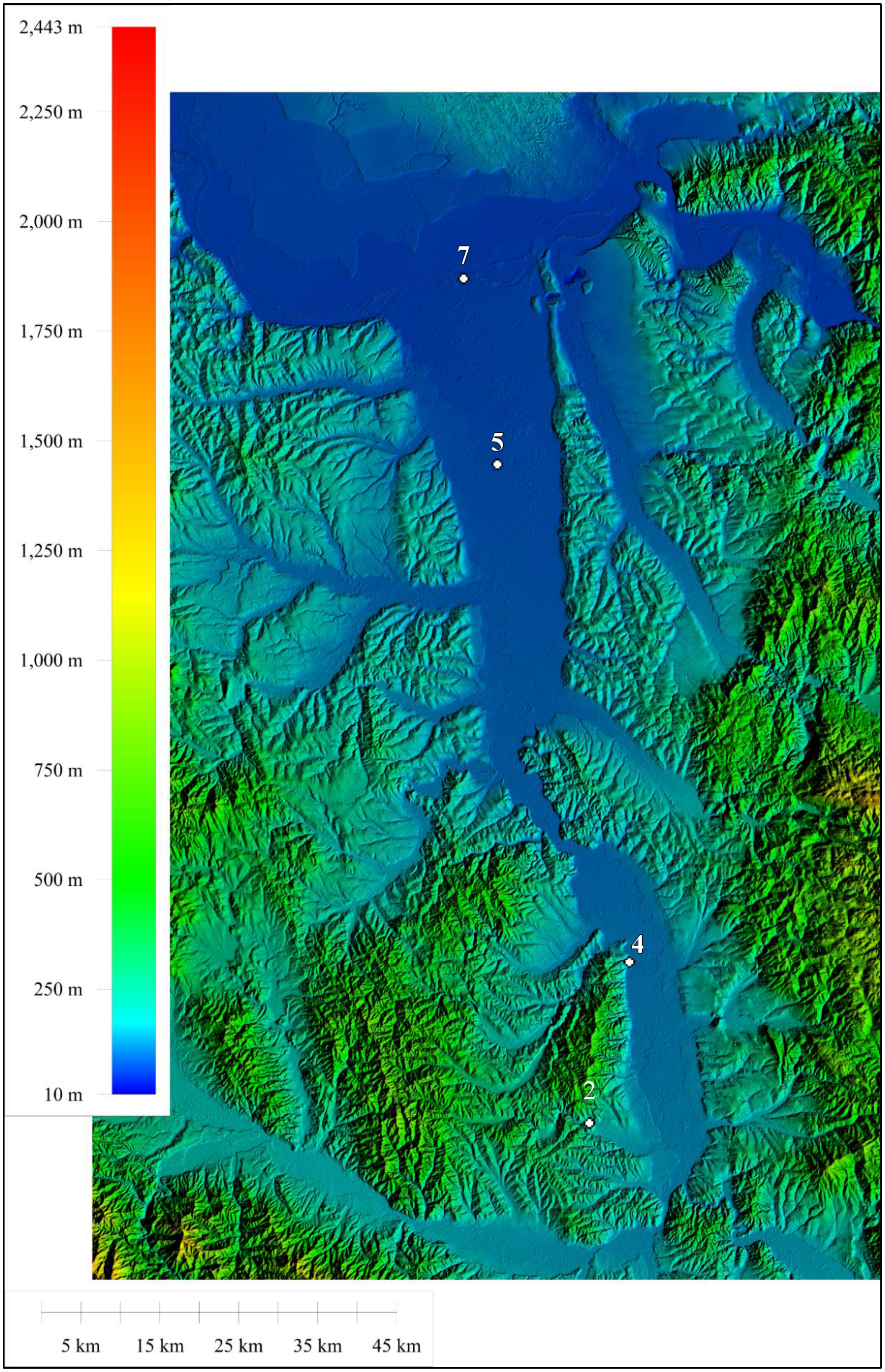

Figure 31. Coţofeni-Kostolac sites within Region 1.

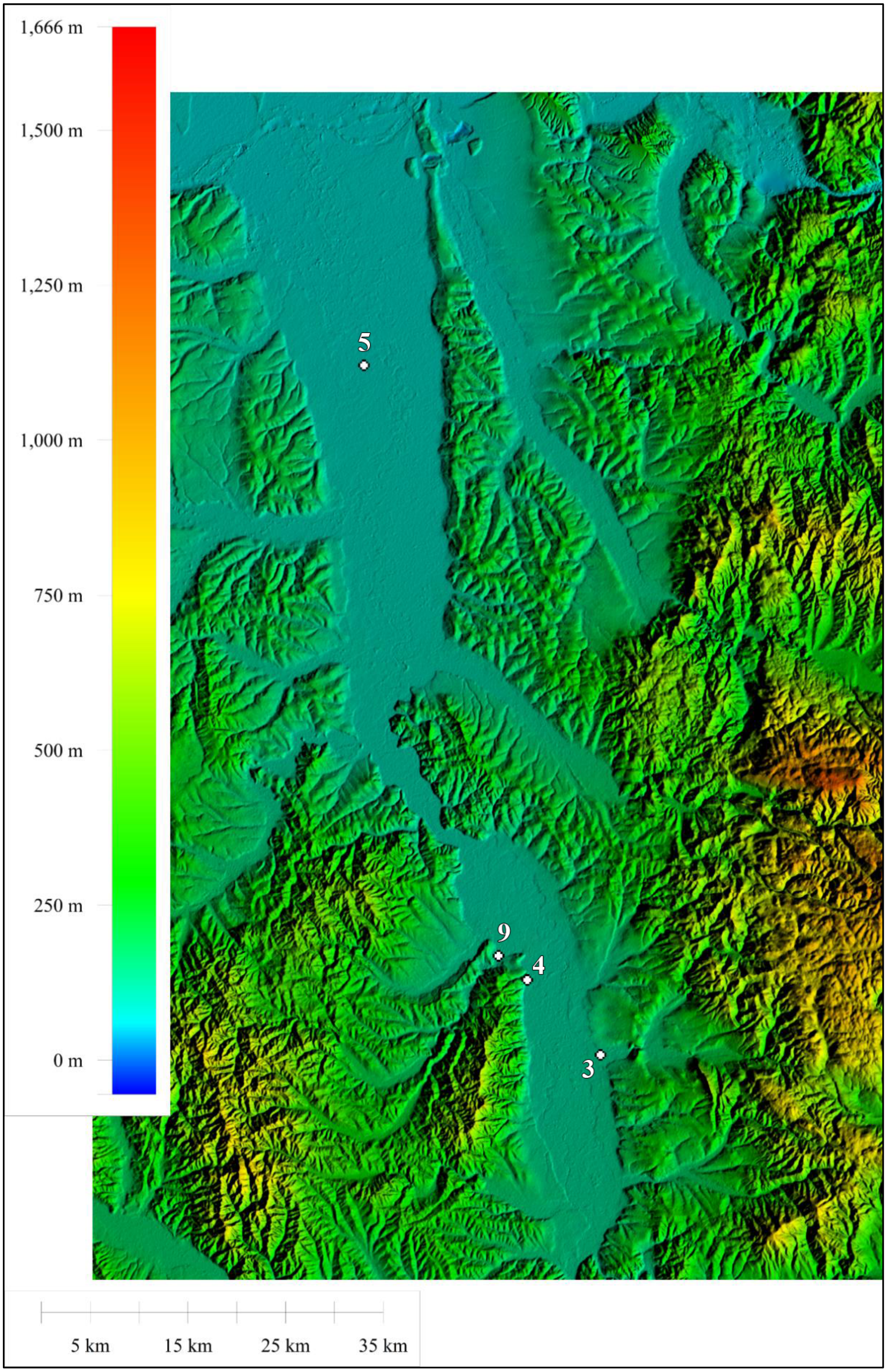

Figure 32. Bubanj-Hum II sites within Region 1.

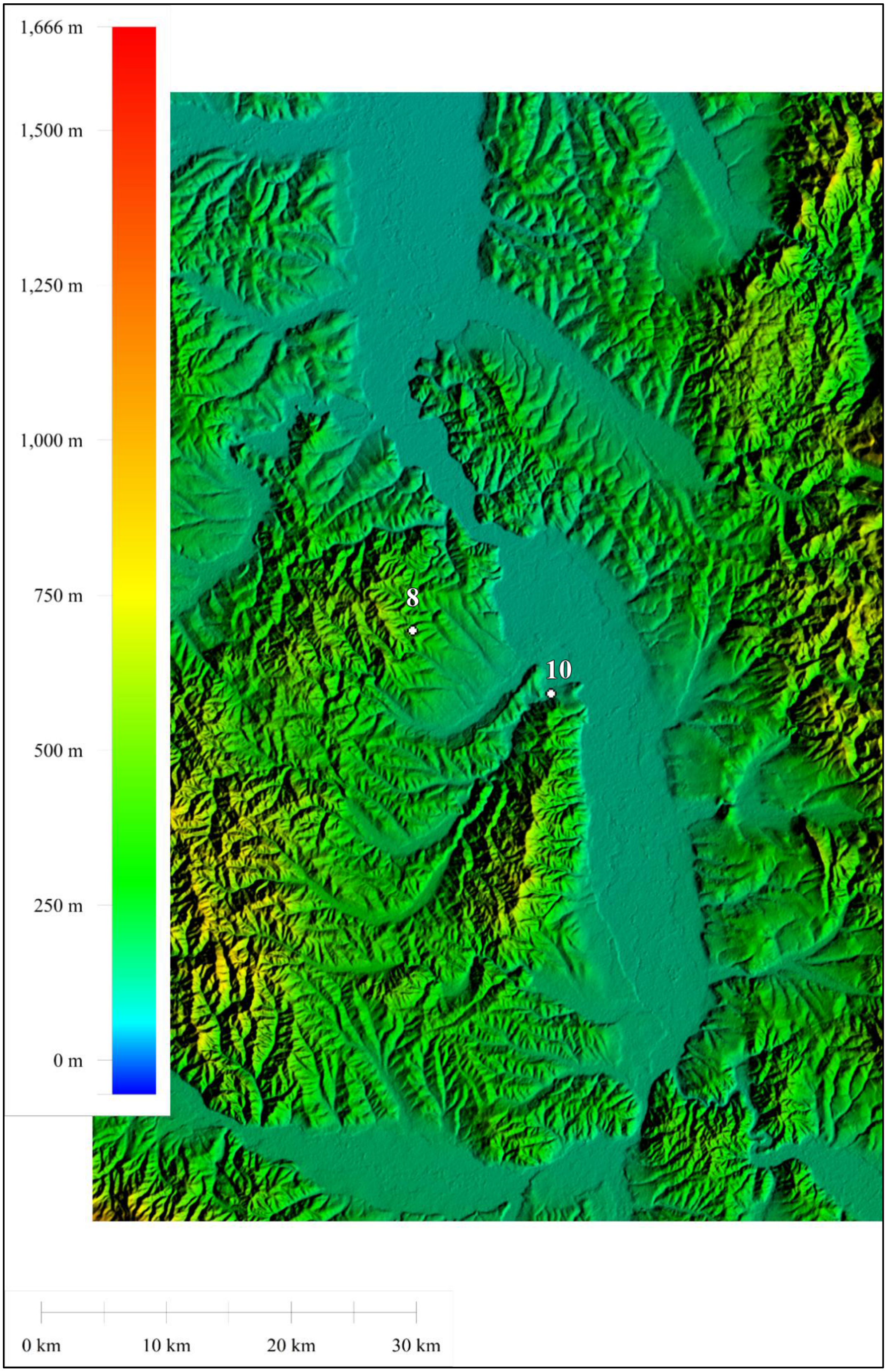

Figure 33. Bubanj-Hum III sites within Region 1.

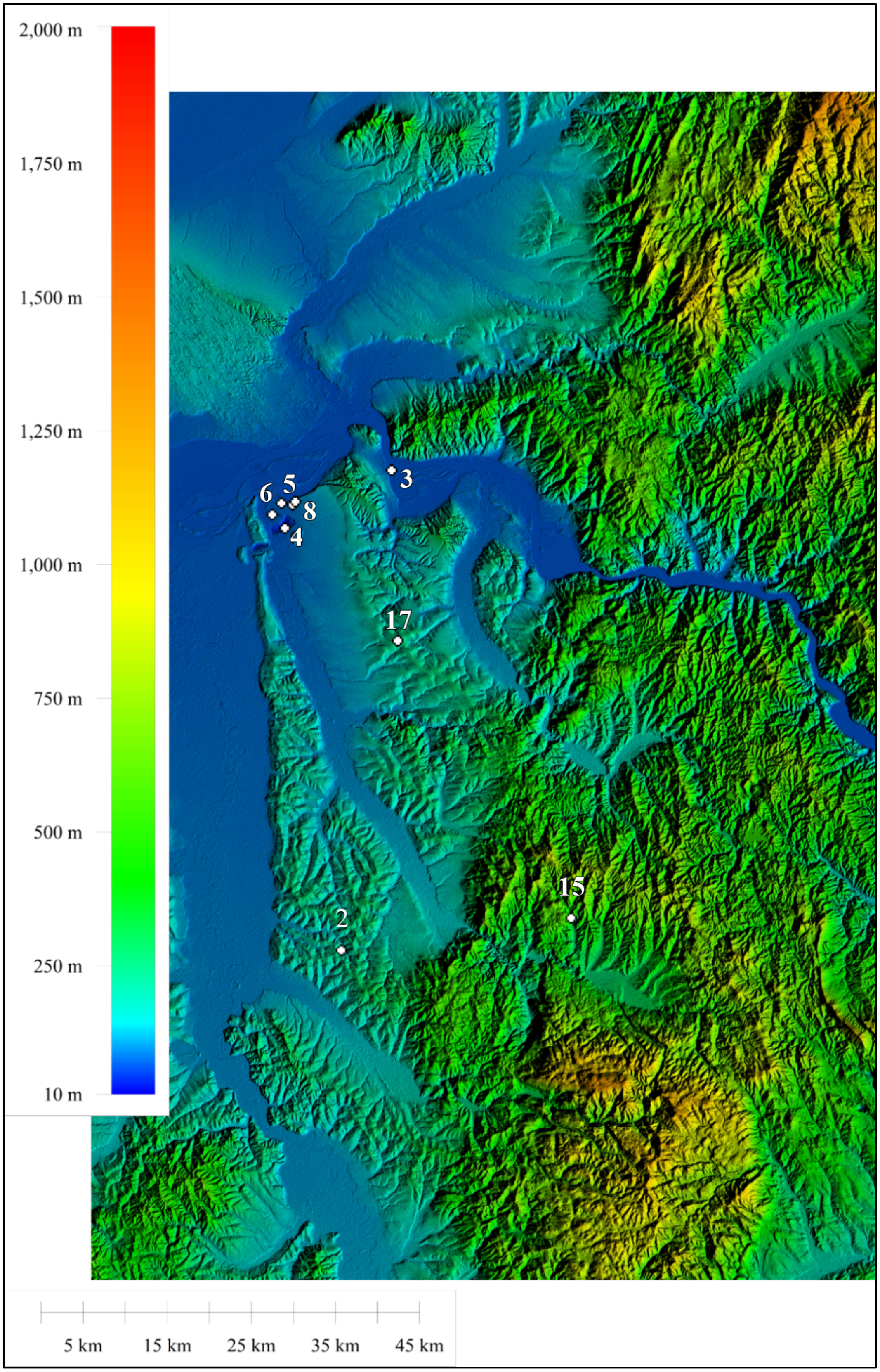

Figure 34. Coţofeni-Kostolac sites within Region 2.

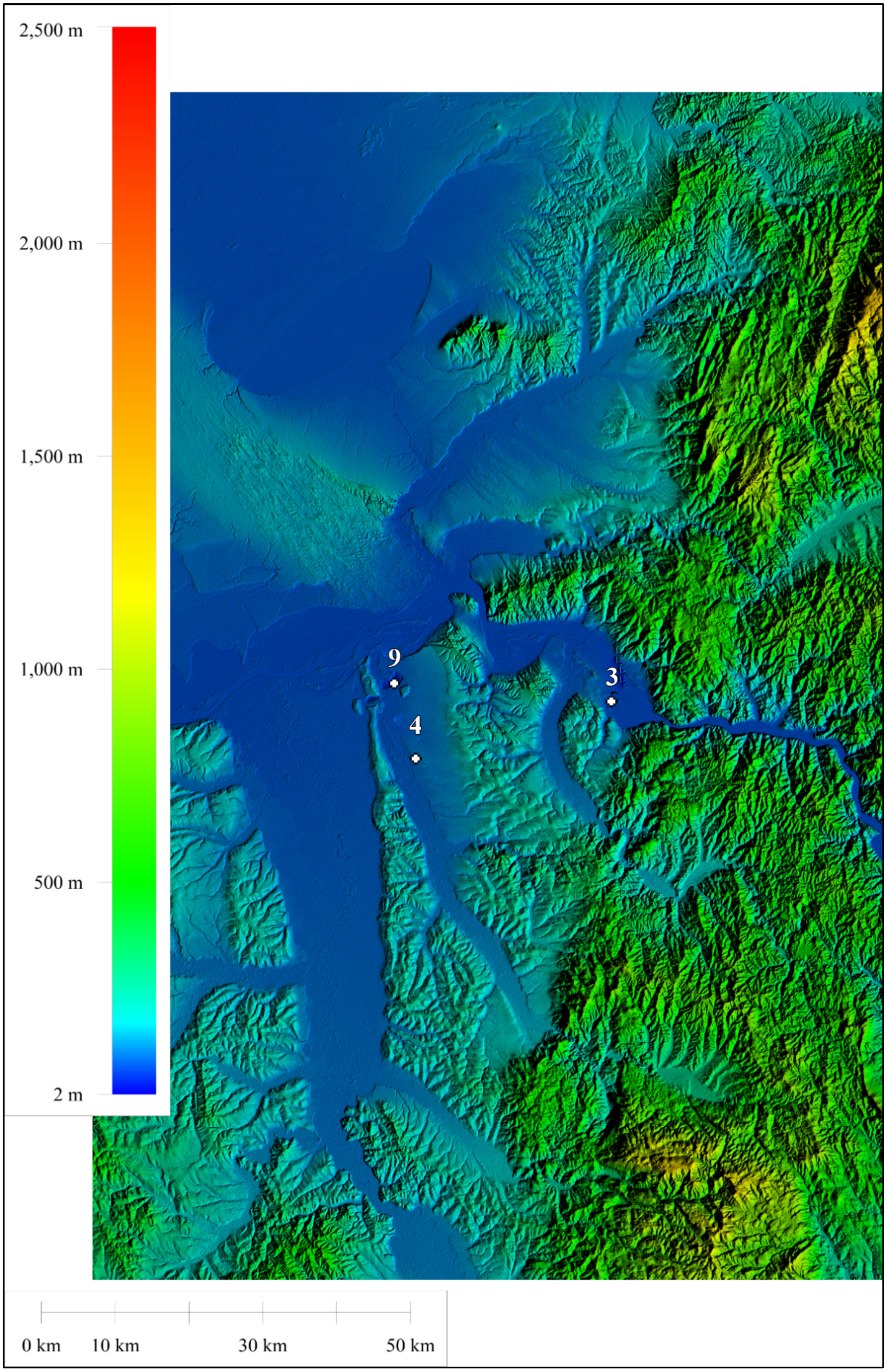

Figure 35. Early Bronze Age sites within Region 2.

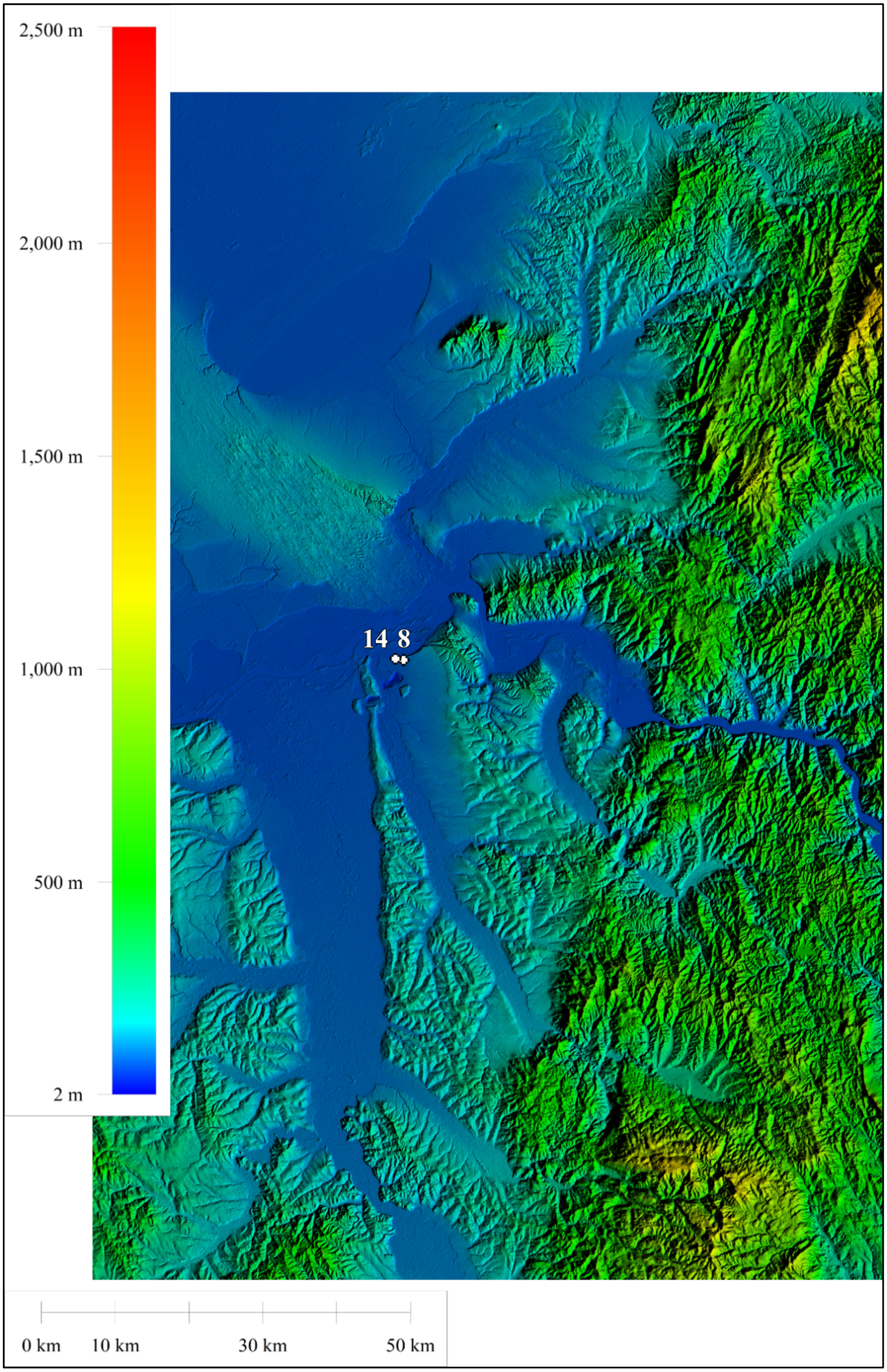

Figure 36. Pančevo-Vatrogasni Dom Horizon sites within Region 2.

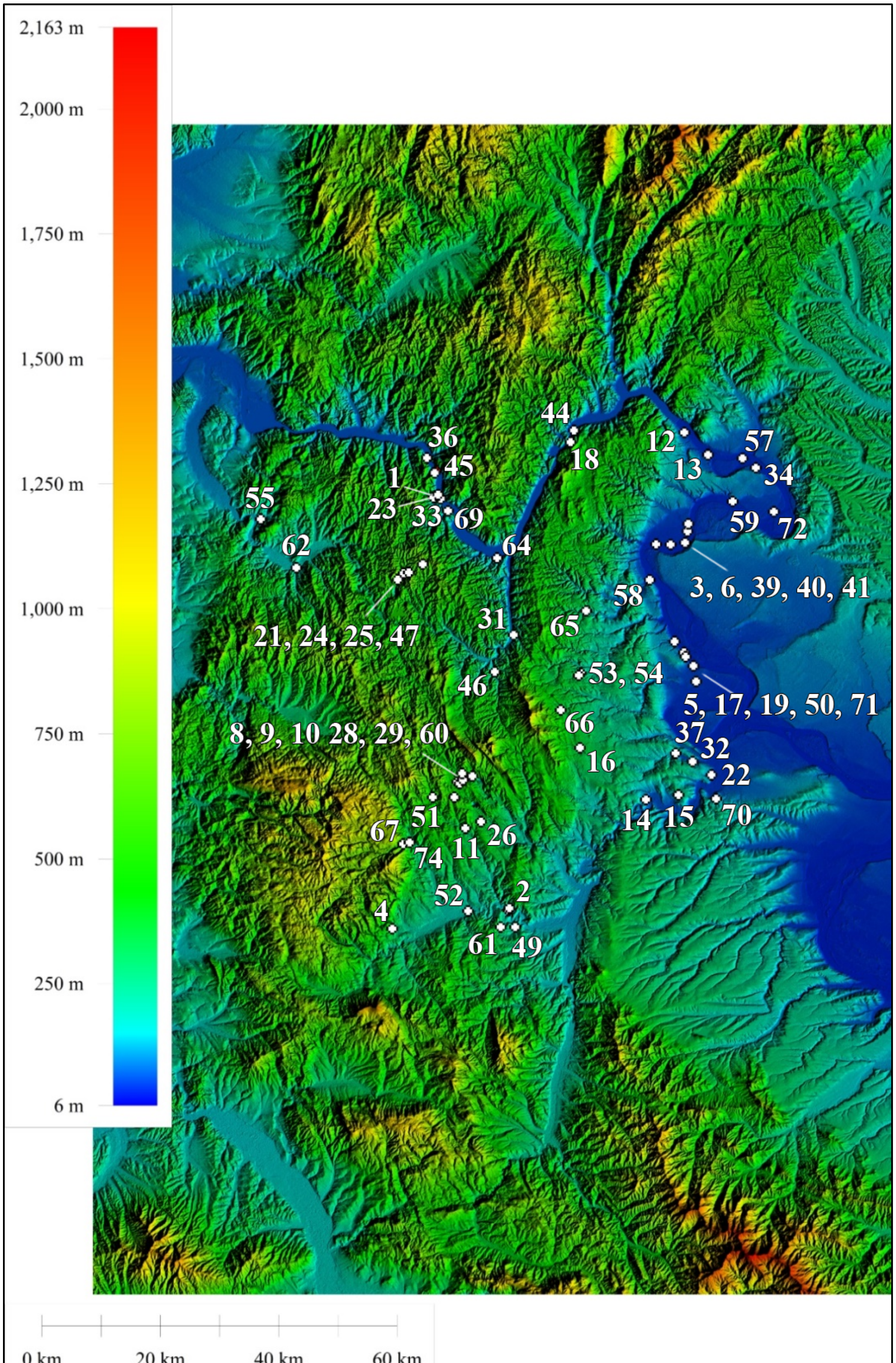

Figure 37. Coţofeni-Kostolac sites within Region 3. Groups of sites (21, 24, 25, 47; 8, 9, 10, 28, 29, 60; 3, 6, 39, 40, 41; 5, 17, 50, 71) are labeled from north to south.

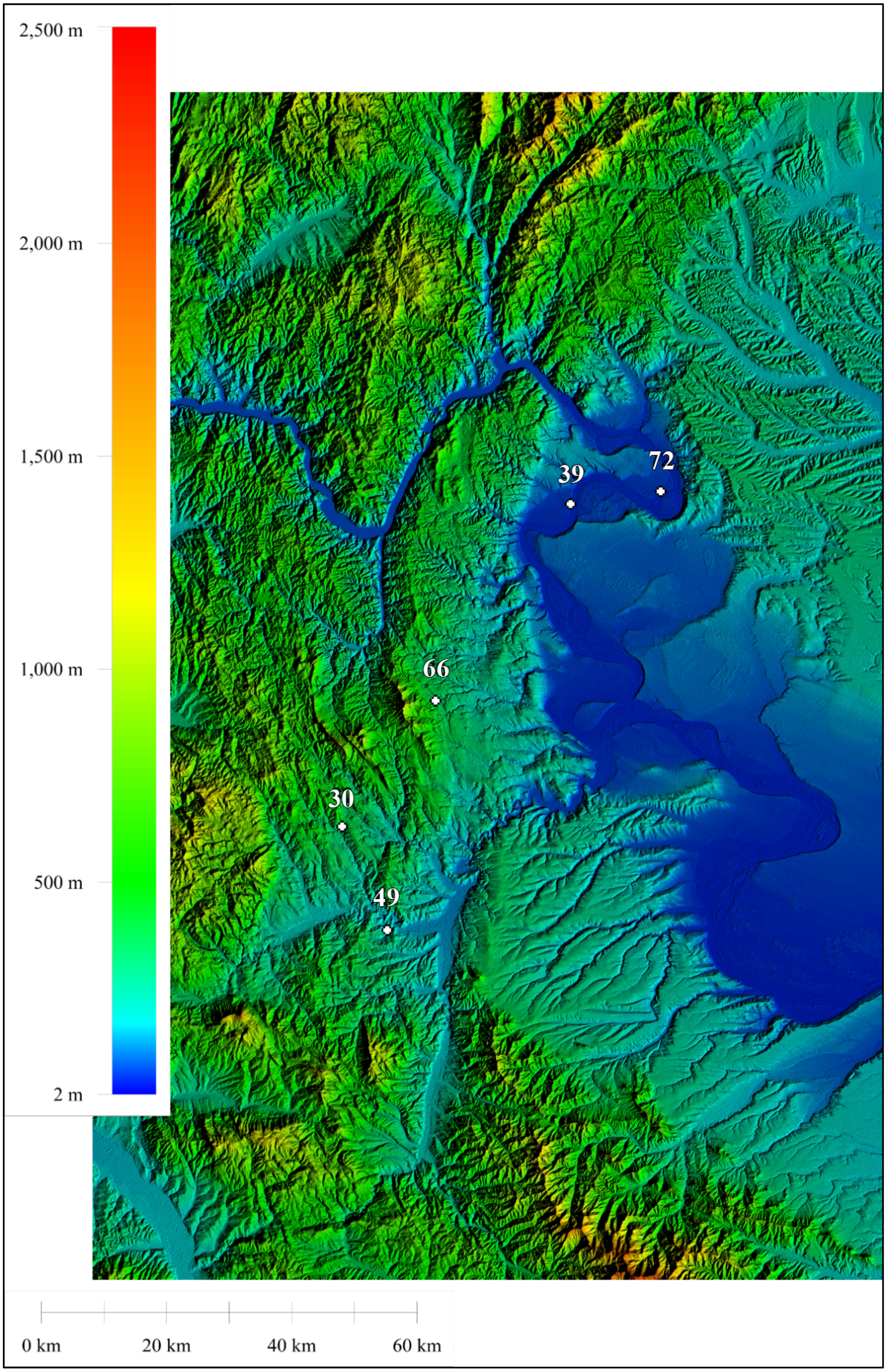

Figure 38. Early Bronze Age sites within Region 3.

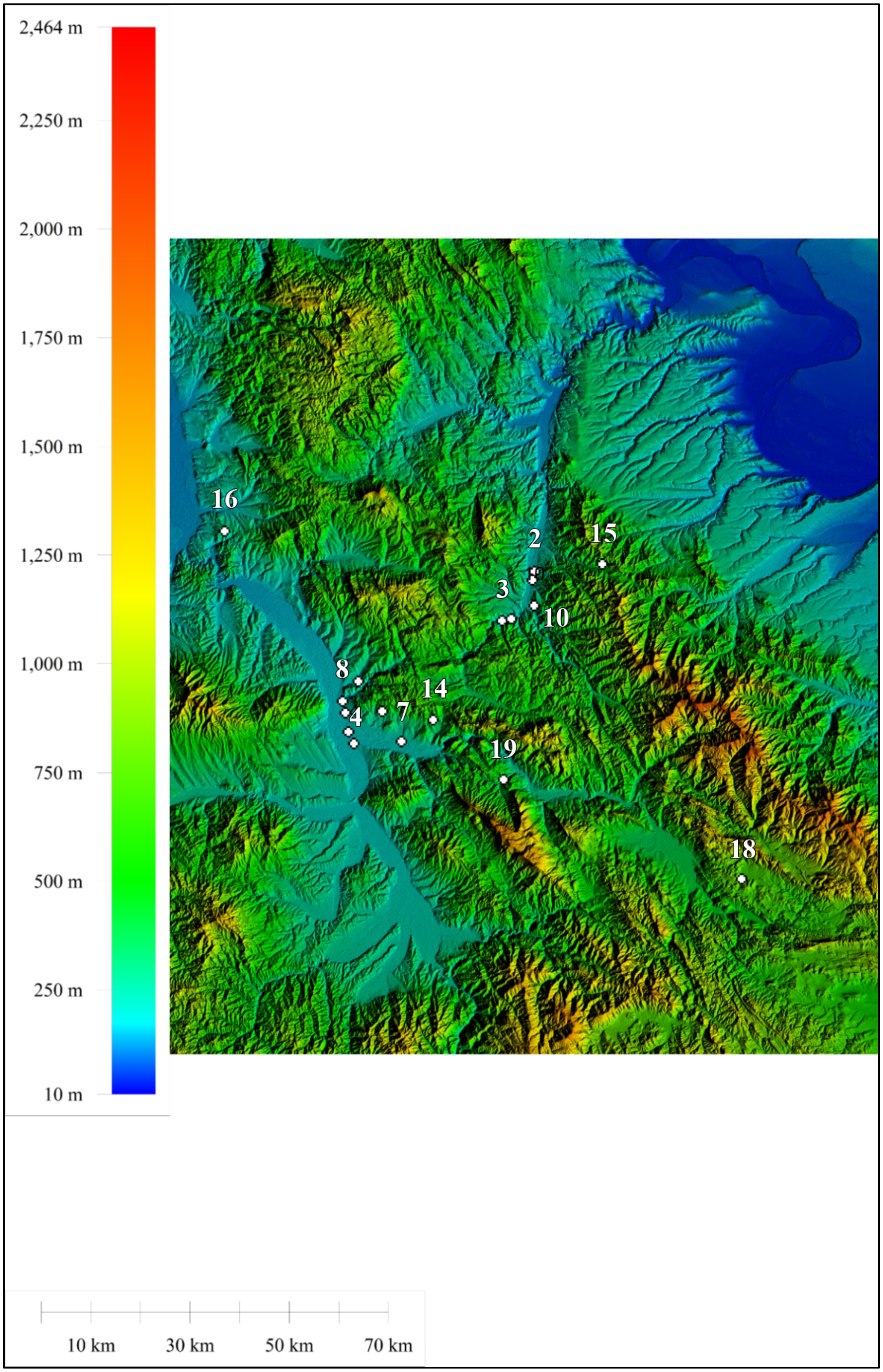

Figure 39. Coţofeni-Kostolac sites within Region 4.

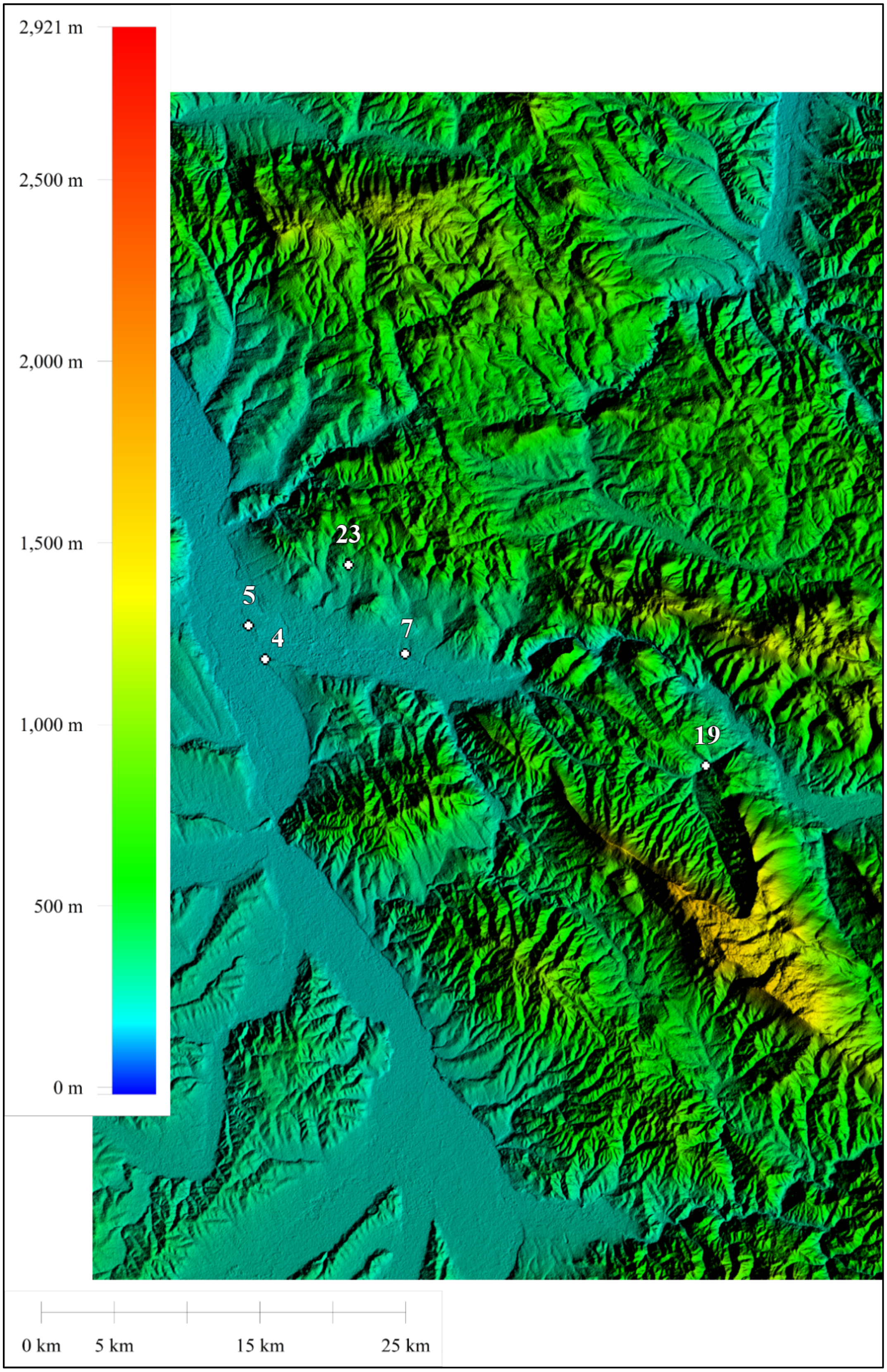

Figure 40. Bubanj-Hum II sites within Region 4.

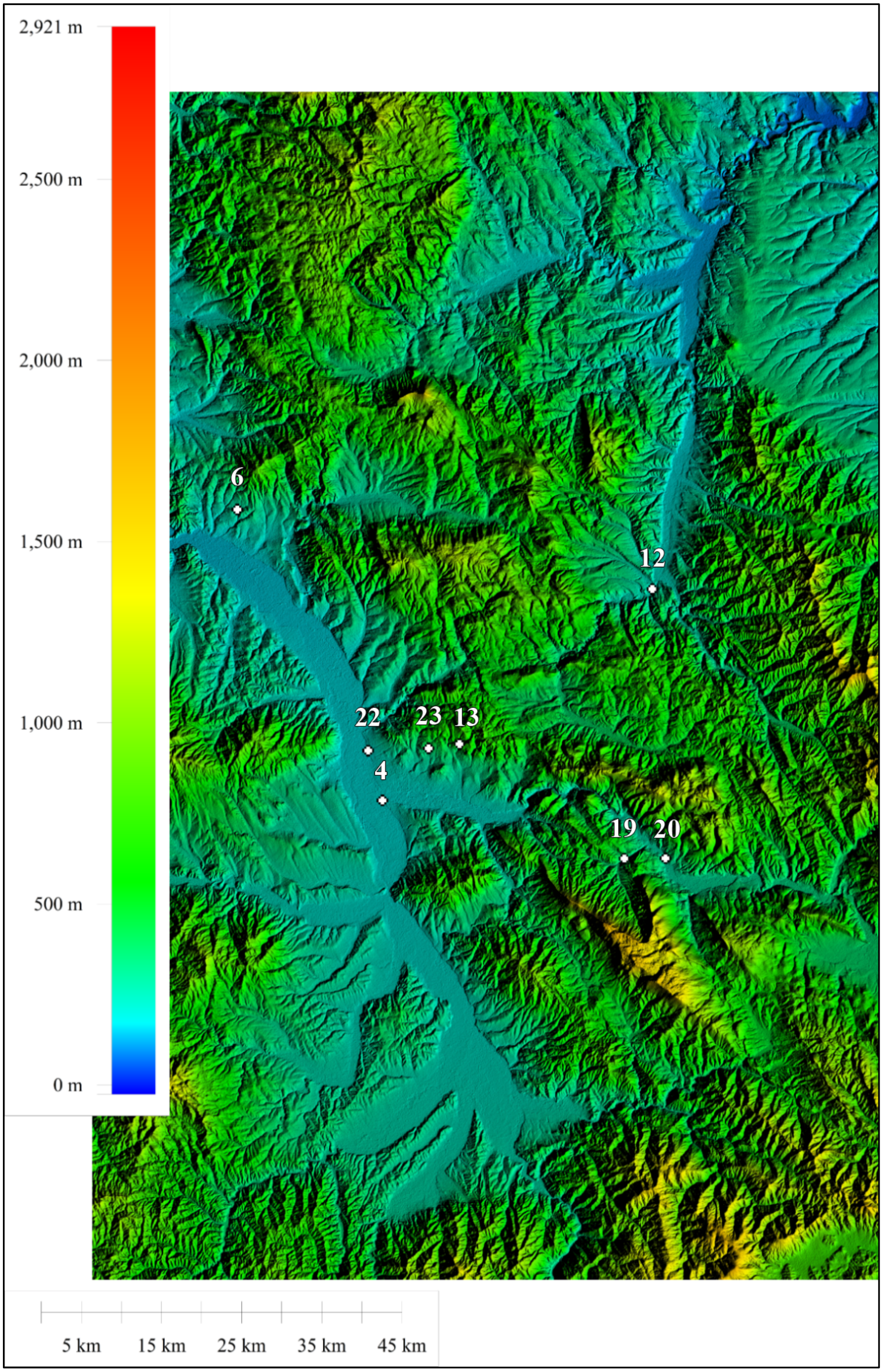

Figure 41. Bubanj-Hum III sites within Region 4.

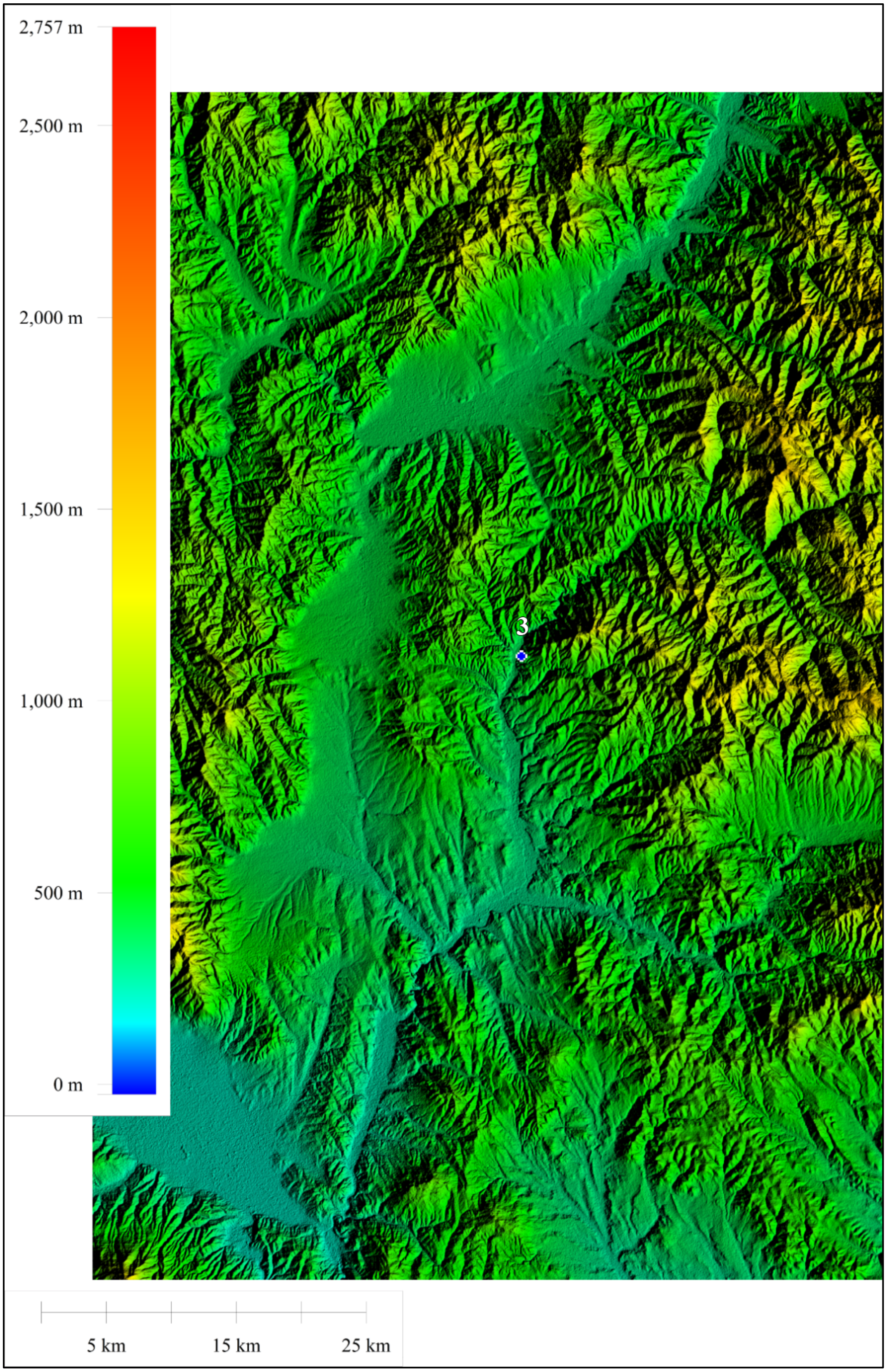

Figure 42. Bubanj-Hum II sites within Region 5 (blue dot-a specific site, non-settling context).

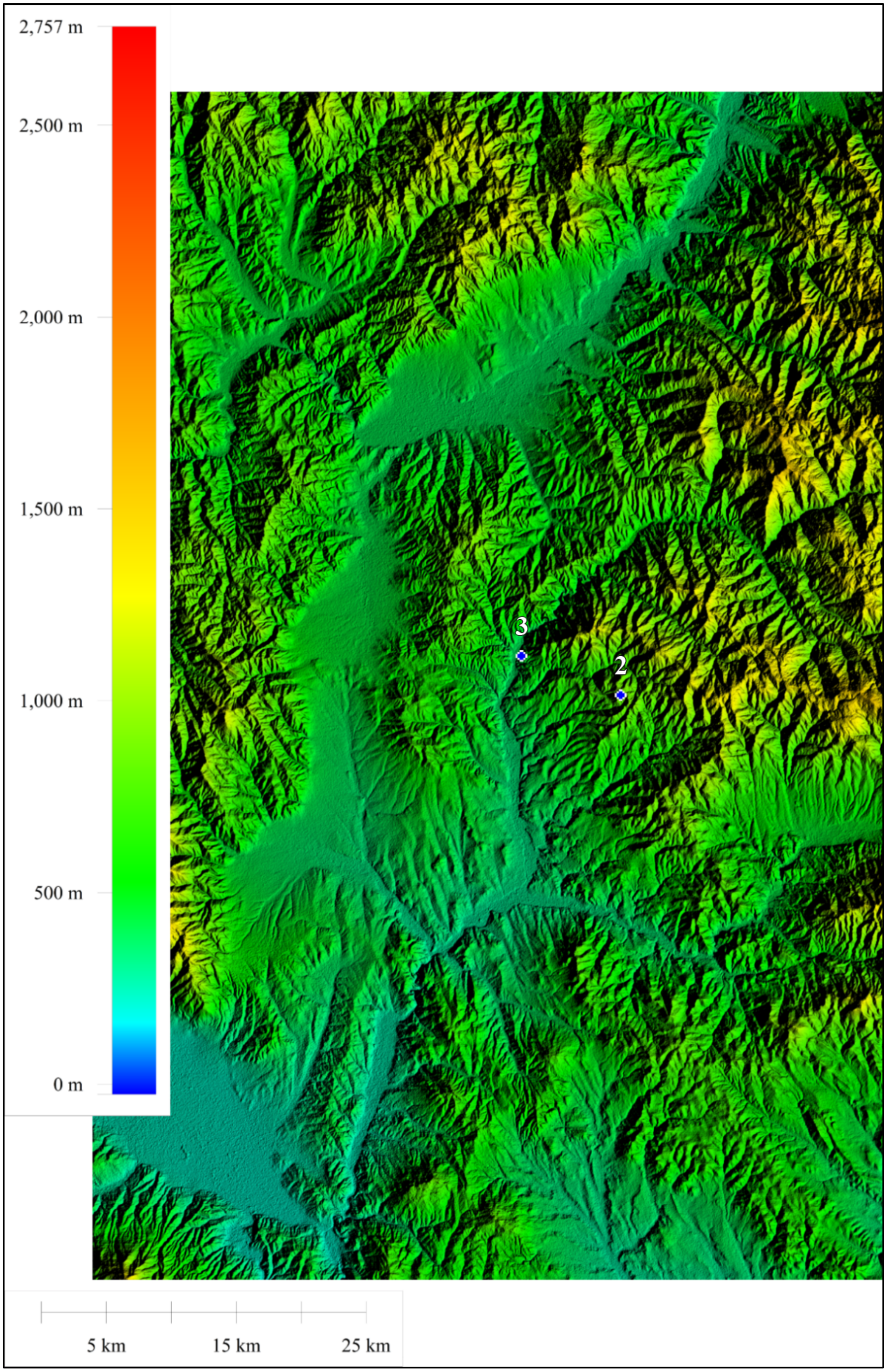

Figure 43. Bubanj-Hum III sites within Region 5 (blue dot-a specific site, non-settling context).

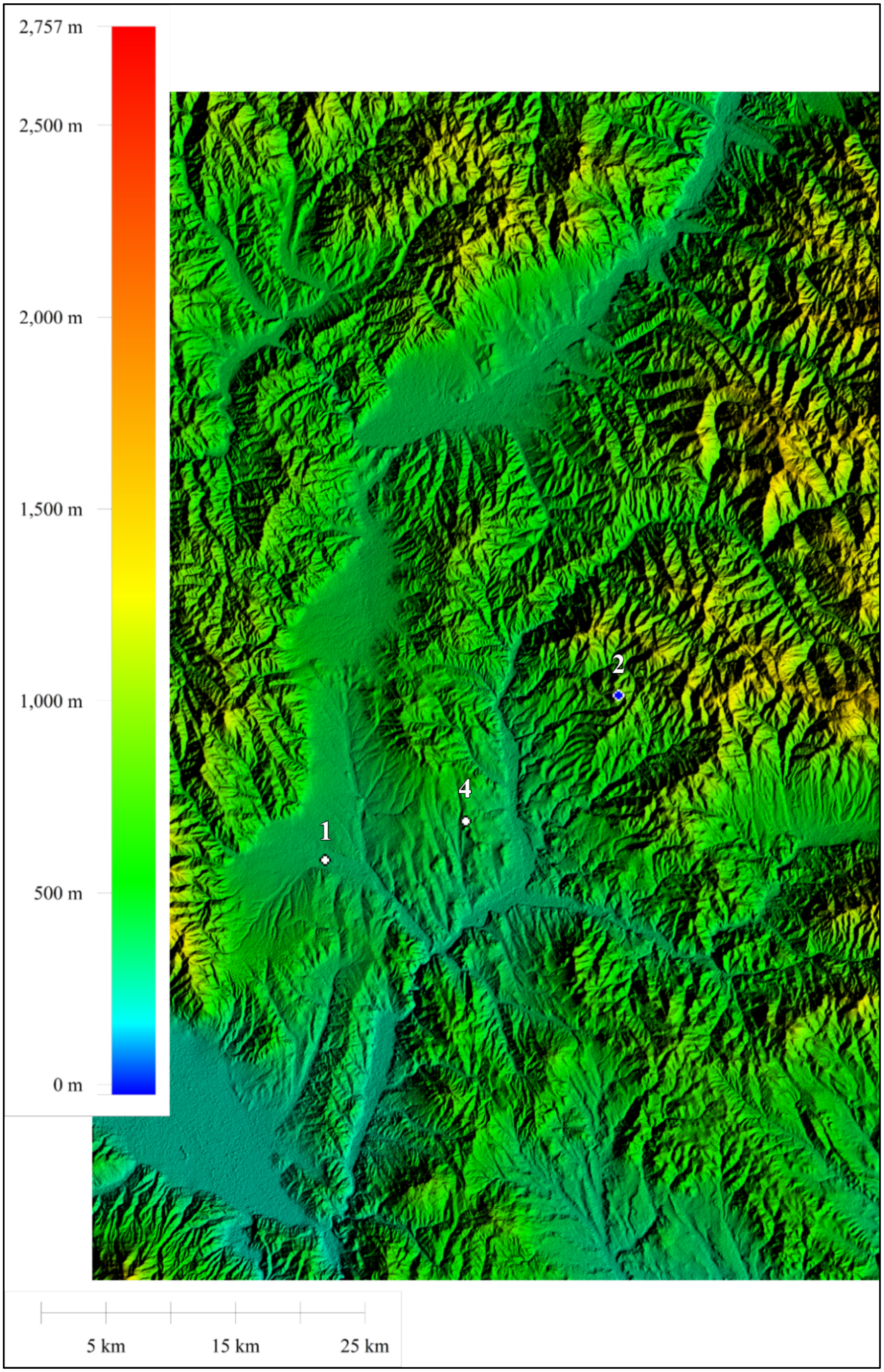

Figure 44. Armenochori sites within Region 5 (blue dot-a specific site, non-settling context).

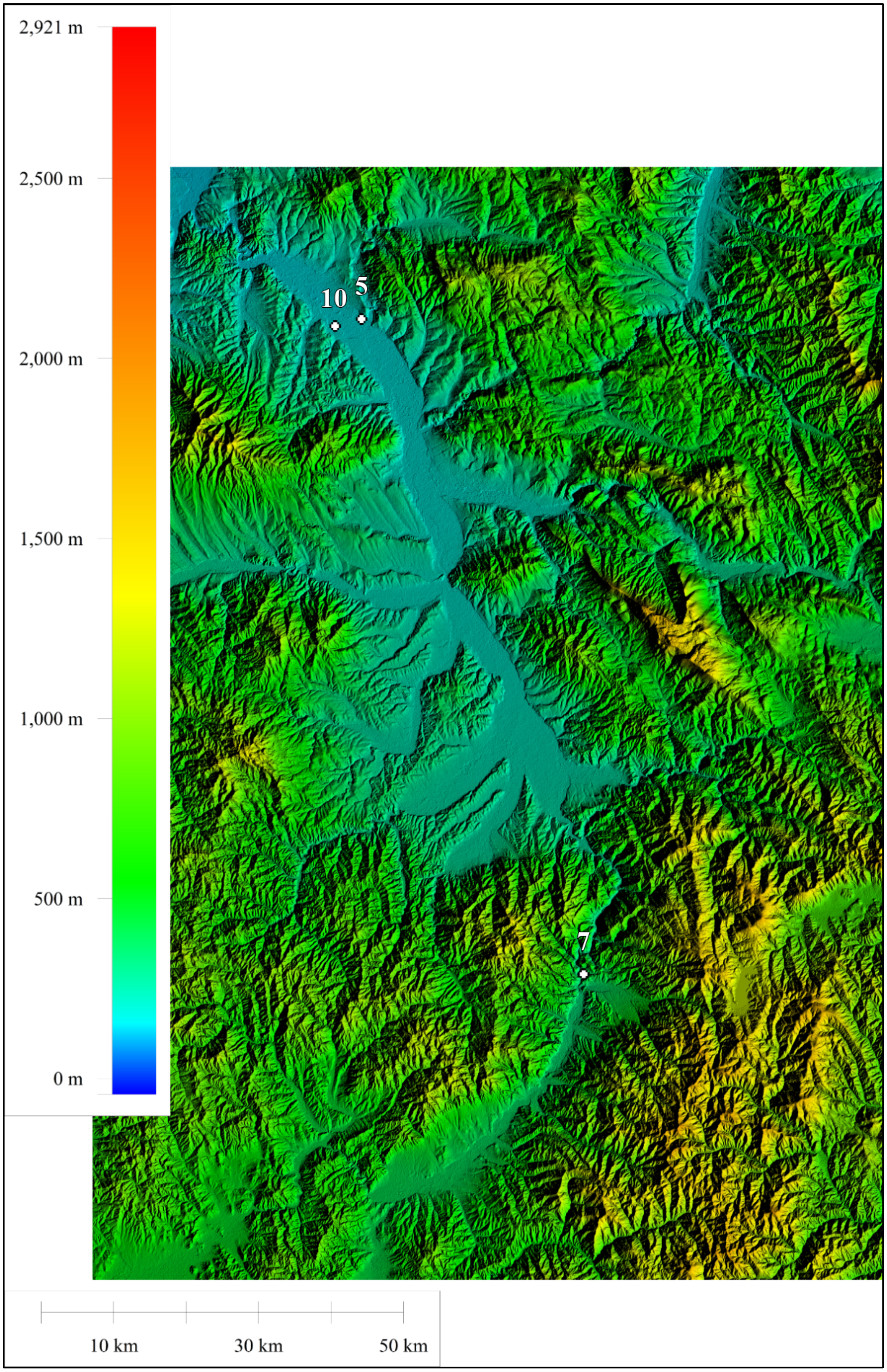

Figure 45. Coțofeni-Kostolac sites within Region 6.

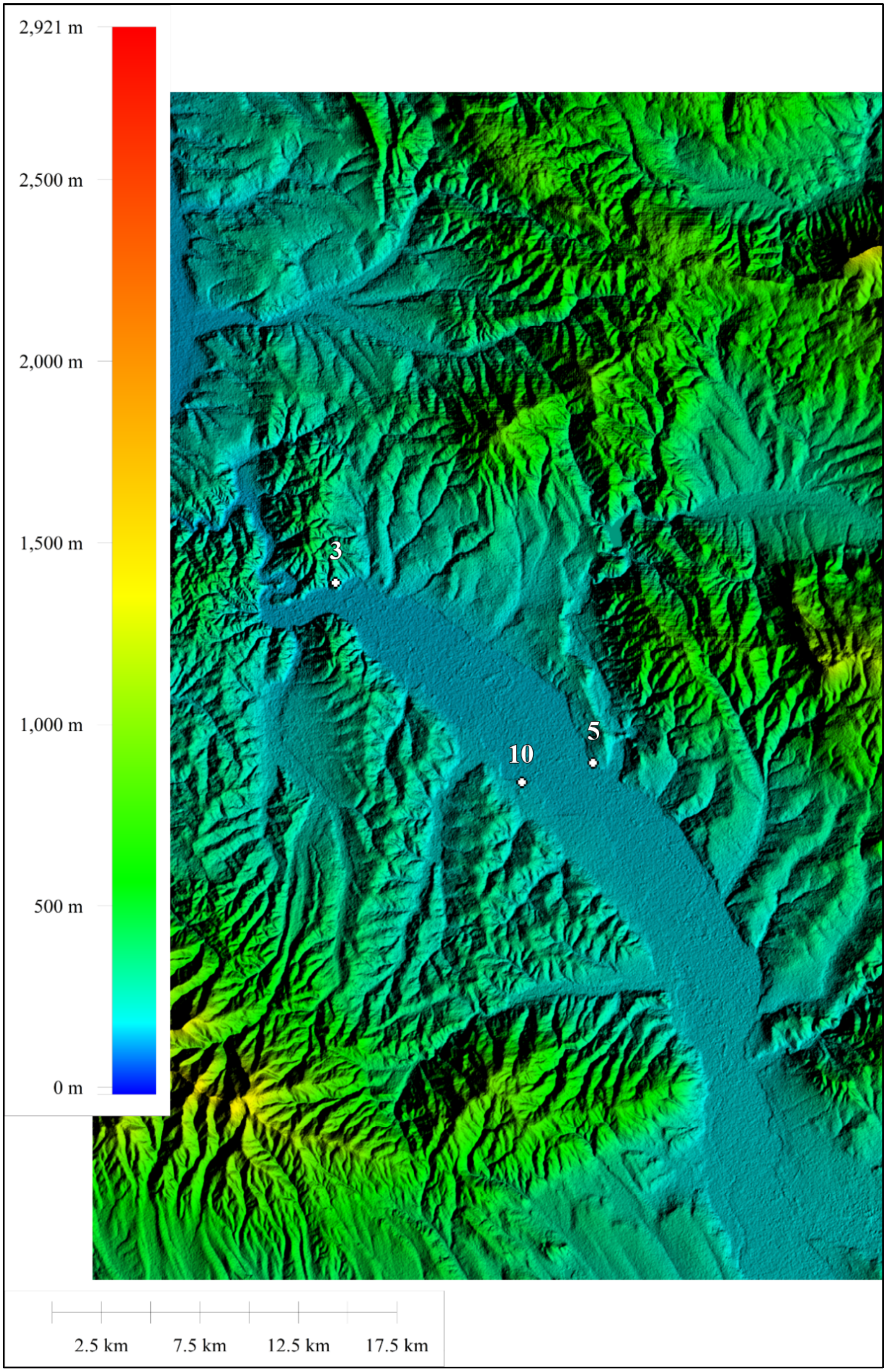

Figure 46. Bubanj-Hum II sites within Region 6.

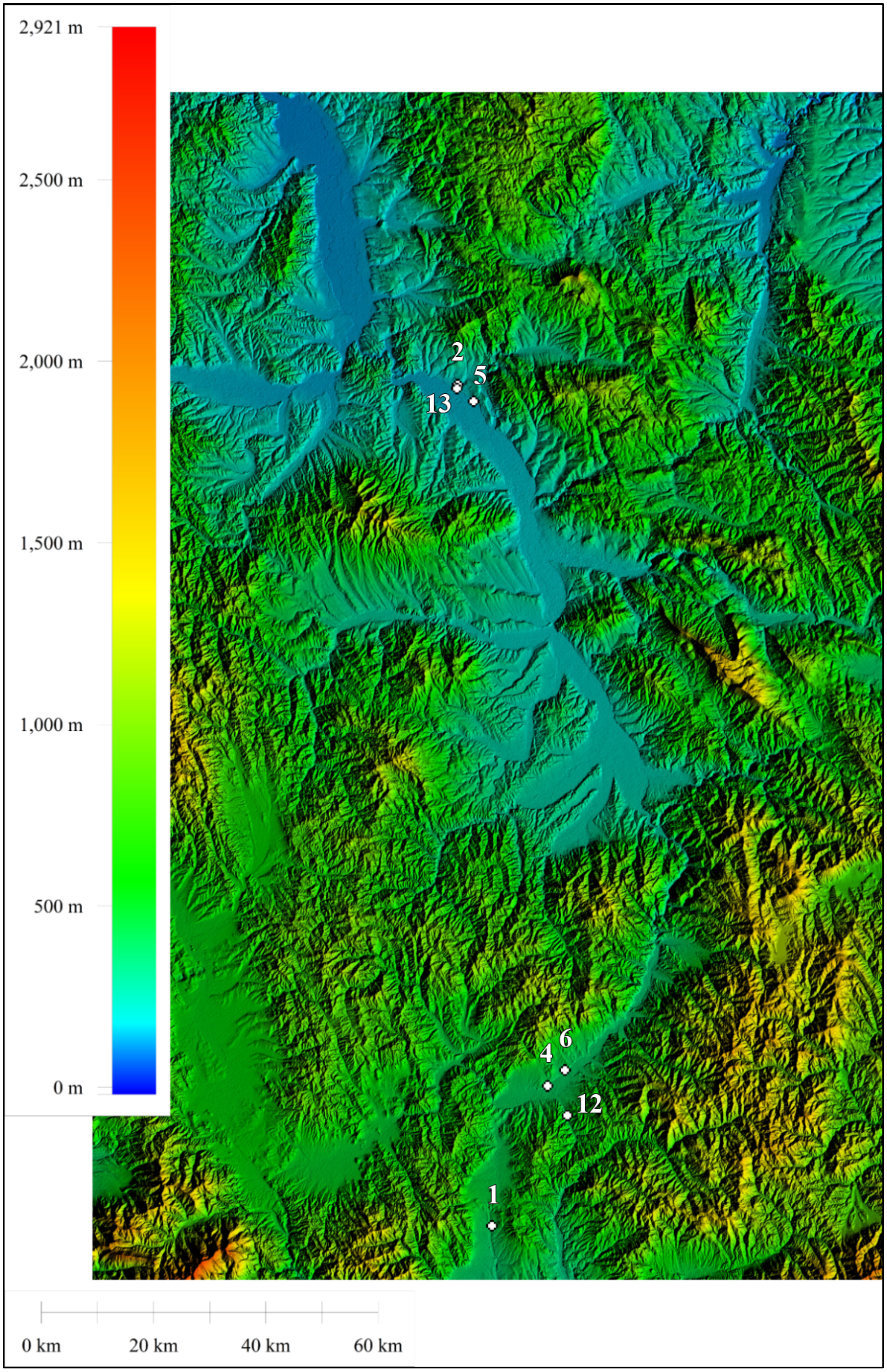

Figure 47. Bubanj-Hum III sites within Region 6.

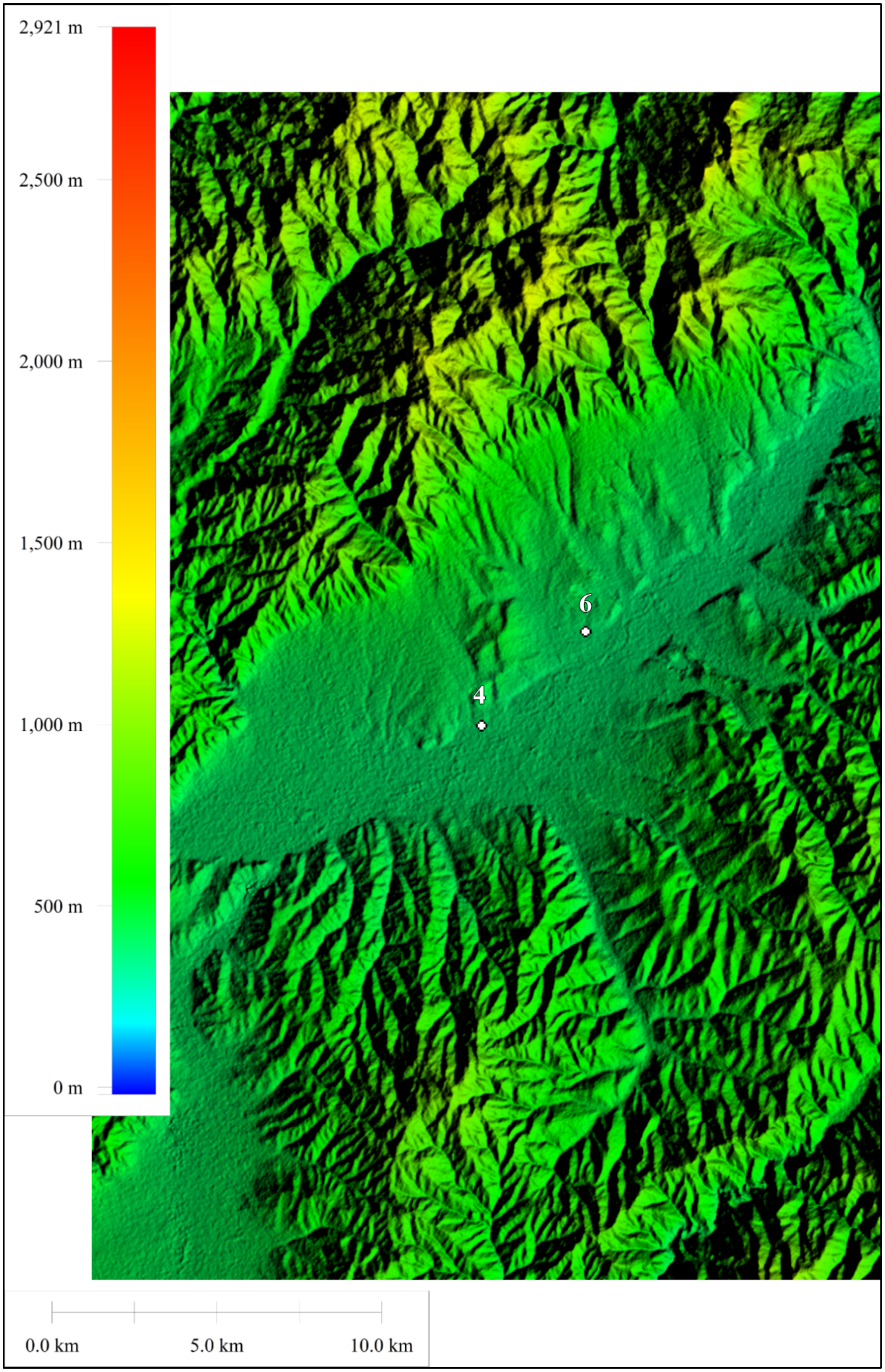

Figure 48. Armenochori sites within Region 6.

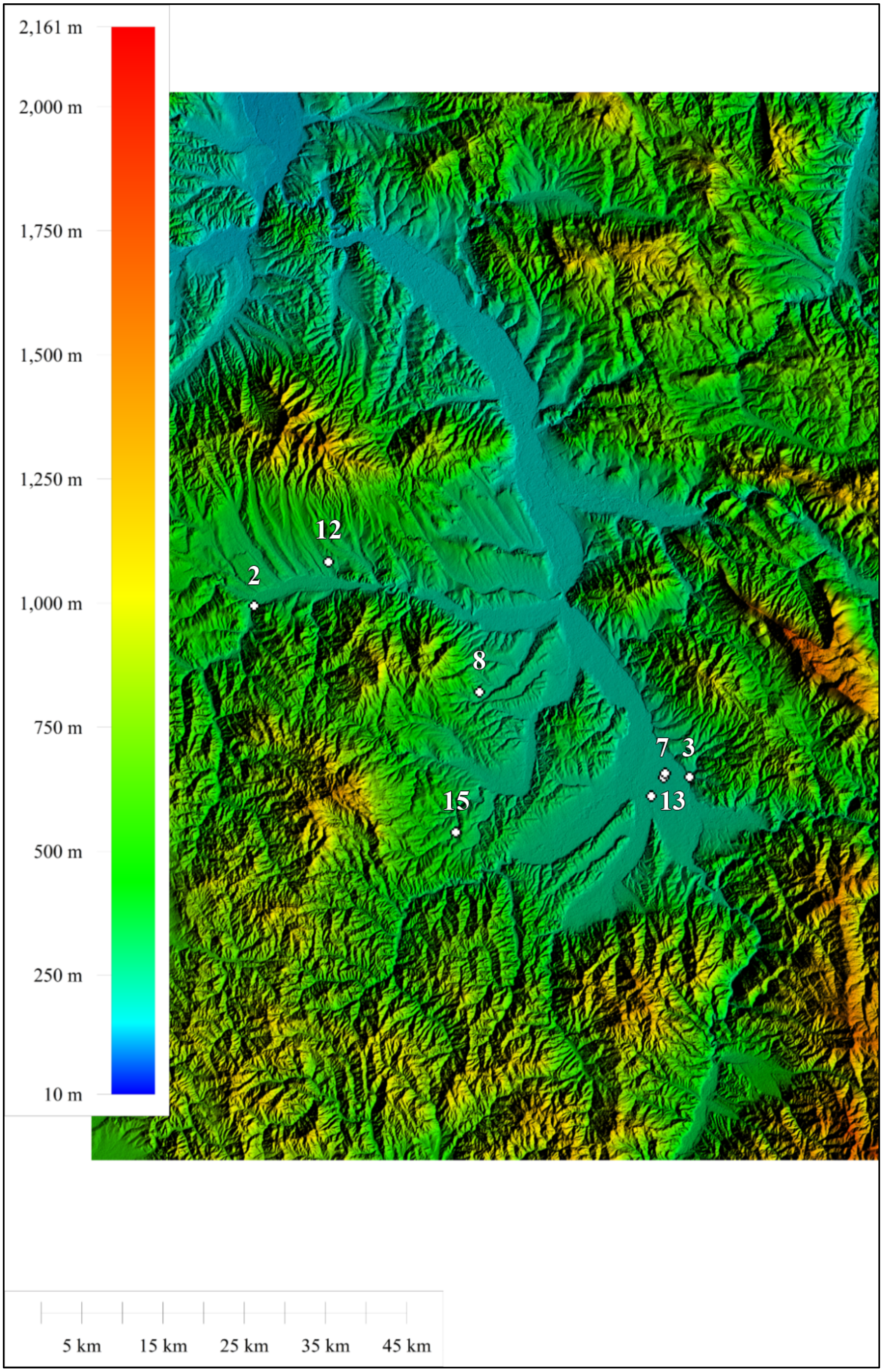

Figure 49. Coțofeni-Kostolac sites within Region 7.

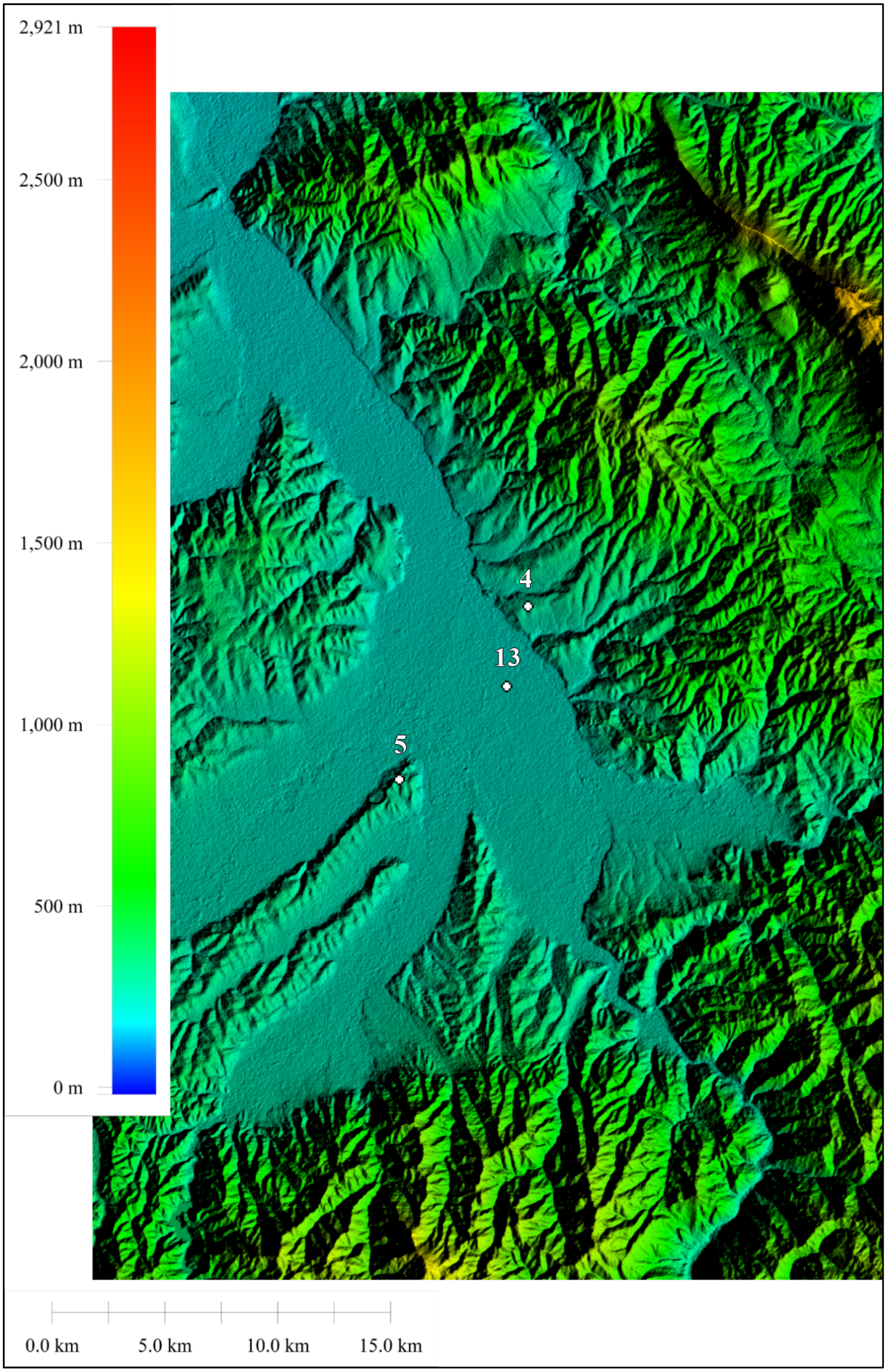

Figure 50. Bubanj-Hum II sites within Region 7.

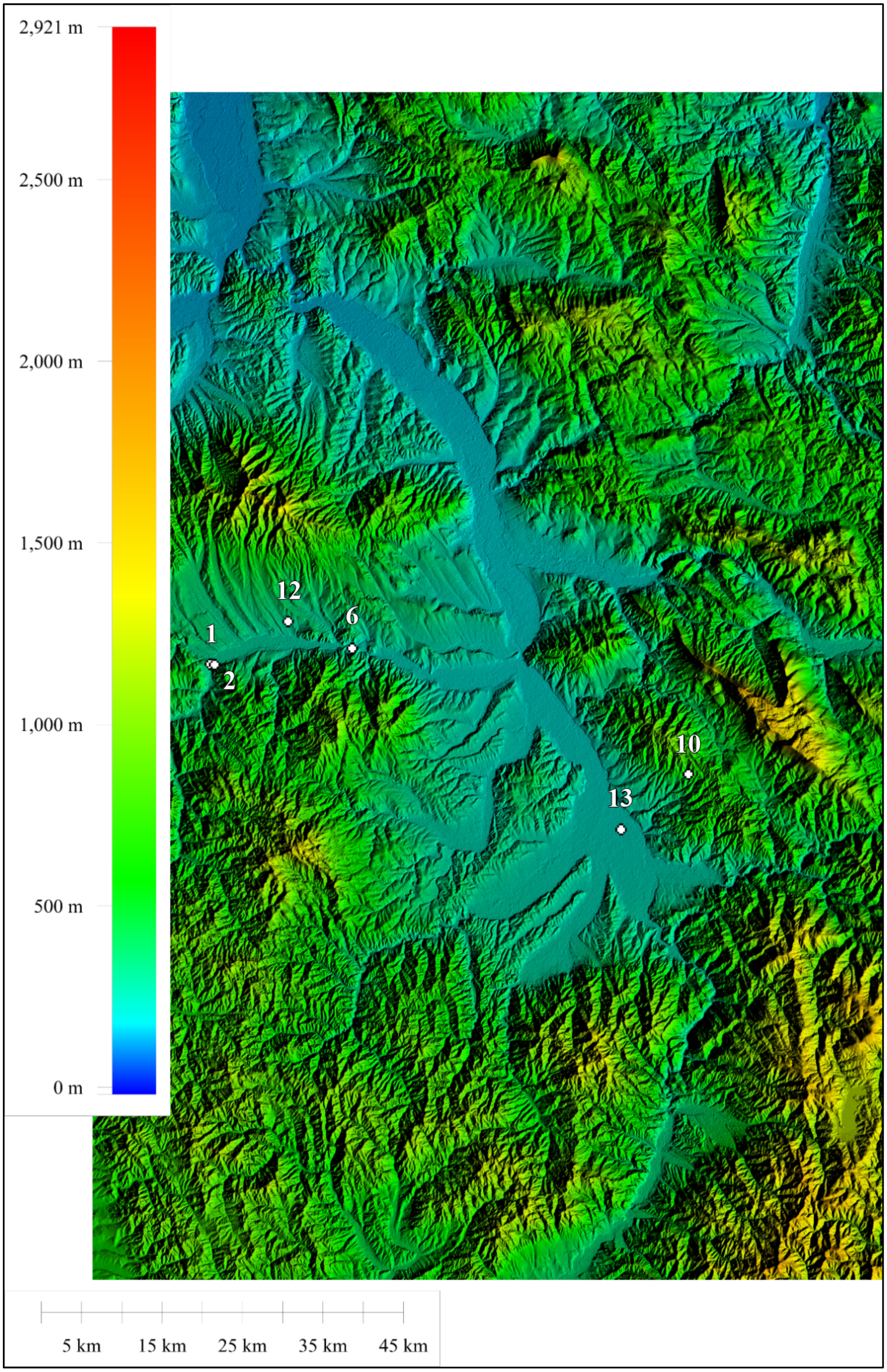

Figure 51. Bubanj-Hum III sites within Region 7.

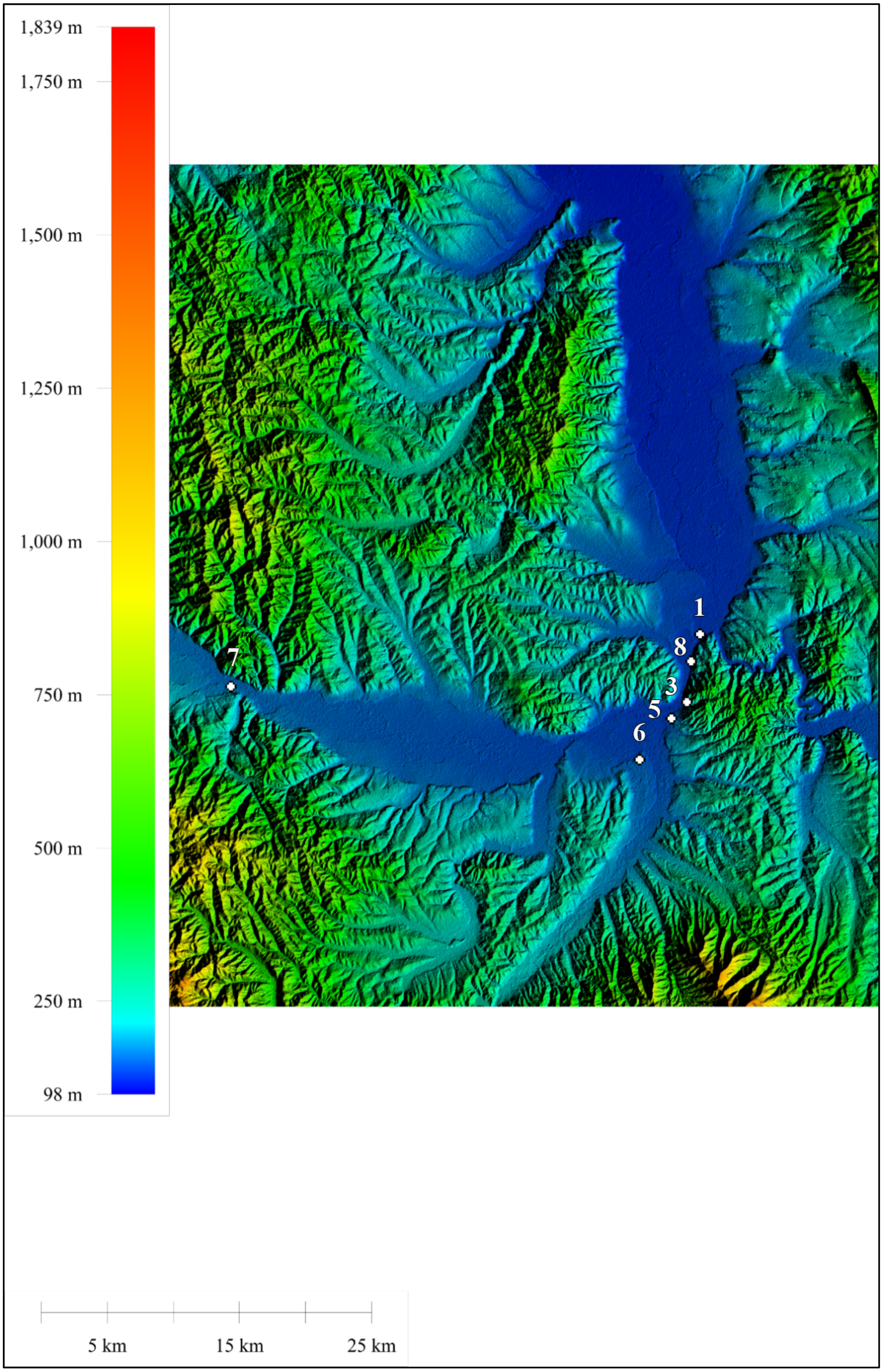

Figure 52. Coţofeni-Kostolac sites within Region 8.

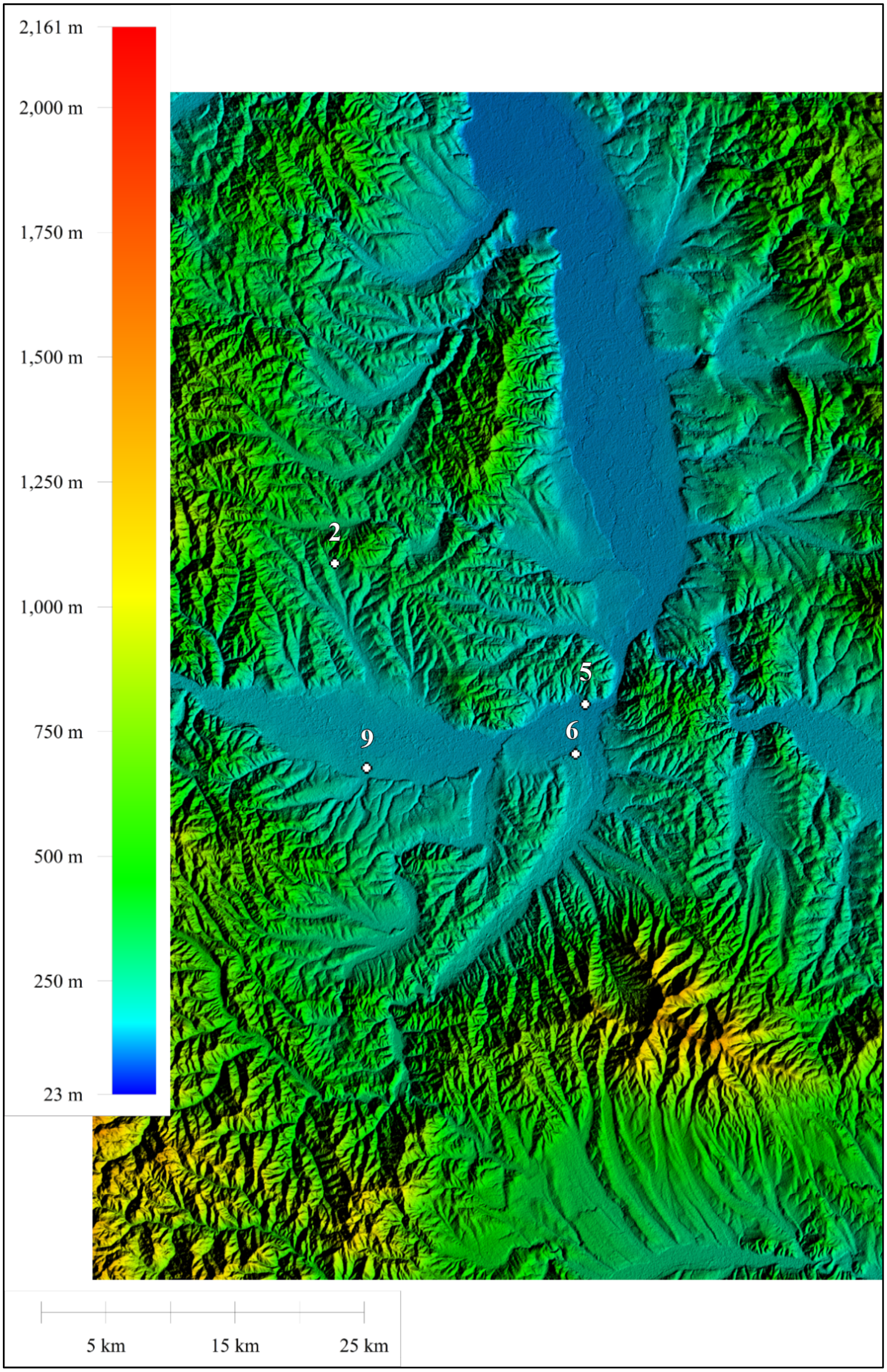

Figure 53. Bubanj-Hum III sites within Region 8.

7.11. The Comparative Analyses of the Topography and Spatial Distribution of Sites

Table 32. Quantitative representation of sites according to chronology and regional division.

Region/Nr. of sites	C-K	EBA	PVD	BH II	BHIII	ARM
1	4	-	-	4	3	-
2	14	4	2	-	-	-
3	72	6	-	-	-	-
4	19	-	-	6	8	-
5	-	-	-	1	2	3
6	3	-	-	3	8	3
7	8	-	-	4	7	-
8	6	-	-	-	4	-

The quantitative representation of sites points out that sites attributed to the Coţofeni-Kostolac group are dominantly distributed within regions 2, 3, and 4, adding to a total of 83.5 % of period-related sites, while the emphasized settling in this period is highlighted within Region 3 (**Table 32**). Therefore, the majority of Coţofeni-Kostolac sites are distributed through eastern parts of Serbia seemingly bordered by the South and Great Morava valleys to the west, with a clear lack of sites within the South Morava Valley. Based on the topography of the Coţofeni-Kostolac group sites within all of the researched regions, two types, or rather variants of types are the most represented. Firstly, sites are positioned on lowland terraces of major rivers such as the Danube, Great, and West Morava, and secondly, sites are positioned on dominant elevations which are located on the fringe of basins, river valleys, and on ridges within lowland relief. The second group of sites is often positioned above an estuary of two smaller watercourses, or within the confluence with a major river. Interestingly, higher representations of lowland sites, which are positioned on the lower terraces of major rivers, are, as it seems, characteristic for those regions which do not represent the "core territory" in terms of site distribution. Another characteristic of the Late Eneolithic is the higher representation of sites within caves and cavelets, compared to the other researched periods. Within regions 3 and 4, Coţofeni-Kostolac group sites are grouped within five micro-regions, which are the Danubes' right bank, vicinity of Bor, and vicinity of Zaječar in Region 3, and the Beli Timok Valley and Niš Basin in Region 4.

During the Early Bronze Age, the differences in the quantitative representation of sites are less emphasized compared to the Late Eneolithic Coţofeni-Kostolac group, yet a slightly higher representation is visible within regions 1, 4, 6, and 7, which account for a total of 66.7 % of Early Bronze Age sites (**Table 32**). The majority of Early Bronze Age sites are located within the South and Great Morava Valley, especially within the micro-regions of the Aleksinac and Niš basins and the Timok Valley to the east, particularly when discussing the Bubanj-Hum II and Bubanj-Hum III groups. On the other hand, the eastern portion of the researched territory, meaning Region 3, displays an almost complete lack of Early Bronze Age sites,[853] while Region 2 displays certain cultural differences during this period. Similar to the Late Eneolithic, the topography of the Early Bronze Age sites (all cultural groups represented) yielded two preferred settling locations, however, certain

[853] Refer to Капуран, Булатовић 2012a; Kapuran 2014; Kapuran, Gavranović 2022.

differences can be observed. The most settled locations during the Early Bronze Age are terraces of major rivers, or more precisely lower terraces of those rivers often positioned within a local lowland relief. In some cases, sites are located on river terraces with a strong hilly hinterland. The second preferred locations are dominant elevations which are positioned within valleys of major rivers or basins. Compared to the Late Eneolithic, the representation of sites located in caves and cavelets is significantly lower.

8. Economic Preferences and Potentials of Sites

8.1. Catchment Zones – Regional Analysis

8.1.1. Region 1

The distribution of Late Eneolithic sites within the given catchment zones indicated that most of the sites are positioned within the agricultural zone (50%), while the remaining sites are distributed equally within the remaining two zones (pastoral and mixed) (**Tables 33 and 41**). The specific of the Late Eneolithic in this region is the fact that 50 % of the sites are located within the presumed main communication routes, which is a small representation compared to the following periods. Therefore, during the Early Bronze Age, all of the discussed sites are located within the presumed communication routes, and a higher representation of sites attributed to the agricultural zone is recorded (60 %) (**Tables 33 and 42**). No period-related sites have been recorded within the pastoral zone.

Table 33. Distribution of sites within catchment zones – Region 1.

	Agricultural	Pastoral	Mixed	Communication	Mineral Dep.
Late Eneolithic	50 %	25 %	25 %	50 %	-
Early Bronze Age	60 %	-	40 %	100 %	-

8.1.2. Region 2

The lowland Region 2 yielded the following data regarding the distribution of sites within catchment zones (**Tables 34 and 43**). During the Late Eneolithic, the majority of sites (60 %) are located within the agricultural zone, and a total of 30 % of sites are located within the pastoral zone. Similar to Region 1, the Late Eneolithic sites are, as it seems, partially omitted from the main communication routes. During the Early Bronze Age, all of the researched sites are located both within the agricultural zone and on the main communication routes (**Tables 34 and 44**).

Table 34. Distribution of sites within catchment zones – Region 2.

	Agricultural	Pastoral	Mixed	Communication	Mineral Dep.
Late Eneolithic	60 %	30 %	10 %	70 %	-
Early Bronze Age	100 %	-	-	100 %	-

8.1.3. Region 3

Region 3, the most numerous region regarding the number of researched sites, yielded the following data. In this region, during the Late Eneolithic, the highest number of sites is positioned within the pastoral catchment zone (41.3 %), with an equal distribution of sites positioned within the remaining two catchment zones (28.6 % each). Therefore, solely 46 % of Late Eneolithic sites are positioned on the presumed main communications, while 30.2 % of sites can be correlated with mineral deposits. Interestingly, besides the copper deposits, characteristic of this region, Late Eneolithic sites can be correlated with gold deposits as well (**Tables 35 and 45**). In the following period, during the Early Bronze Age, the majority of sites, despite the small sample, are positioned within the agricultural catchment zone (66.7 %). Compared to the preceding period, the representation of sites on the main communication is raised to 66.7 %, as well as the representation of sites oriented towards copper deposits (33.3 %) (**Tables 35 and 46**).

Table 35. Distribution of sites within catchment zones – Region 3.

	Agricultural	Pastoral	Mixed	Communication	Mineral Dep.
Late Eneolithic	28.6 %	41.3 %	28.6 %	46 %	30.2 %
Early Bronze Age	66.7 %	-	33.3 %	66.7 %	33.3 %

8.1.4. Region 4

During the Late Eneolithic, sites within Region 4 are dominantly oriented toward the mixed catchment zone (79.5 %) and the main natural communications (94.1 %). A total of 11.8 % of sites are possibly oriented toward the copper deposits (**Tables 36 and 47**). The Early Bronze Age sites are almost equally distributed between the agricultural and mixed catchment zone (40% and 50%), yet contrary to the preceding period, less oriented towards the main communications (70 % compared to 94.1 % in Late Eneolithic). Compared to the preceding Late Eneolithic, the percentage of sites with possible accessibility to copper ores falls to 10 % (**Tables 36 and 48**).

Table 36. Distribution of sites within catchment zones – Region 4.

	Agricultural	Pastoral	Mixed	Communication	Mineral Dep.
Late Eneolithic	17.6 %	5.9 %	79.5 %	94.1 %	11.8 %
Early Bronze Age	40 %	10 %	50 %	70 %	10 %

8.1.5. Region 5

The small sample from Region 5, excluding the sites of Tatićev Kamen (Kokino) and Dve Mogili (Pelince),[854] Indicates that during the Early Bronze Age sites are located within the agricultural and mixed catchment zone. All of the sites are on main communications and without access to mineral deposits (**Tables 37 and 49**).

Table 37. Distribution of sites within catchment zones – Region 5.

	Agricultural	Pastoral	Mixed	Communication	Mineral Dep.
Early Bronze Age	50 %	-	50 %	100 %	-

8.1.6. Region 6

Within Region 6, the small sample of sites attributed to the Late Eneolithic yielded that those are positioned within the agricultural catchment zone and the main communication. Late Eneolithic sites in the region have no access to possible mineral

[854] These sites are excluded from the analyses due to their possible nature, whcih will be further discussed.

resources (**Tables 38 and 50**). During the Early Bronze Age, all of the researched sites are positioned within the agricultural catchment zone and the mixed catchment zone (66.7 % and 33.3 %), while 88.9 % of Early Bronze Age sites are located on the main communication (**Tables 38 and 51**). One site has possible access to tin sources.[855]

Table 38. Distribution of sites within catchment zones – Region 6.

	Agricultural	Pastoral	Mixed	Communication	Mineral Dep.
Late Eneolithic	100 %	-	-	100 %	-
Early Bronze Age	66.7 %	-	33.3 %	88.9 %	11.1 %

8.1.7. Region 7

The Late Eneolithic sites of Region 7 are distributed majorly in the agricultural catchment zone (75 %), while the rest of the sites are within the mixed catchment zone (25 %) (**Tables 39 and 52**). The representation of sites which are located on the main communication is 75 %, which is less than compared to the following period. During the Early Bronze Age, a total of 87.5 % of sites are on the main communication, while the representation of sites in the agricultural catchment zone is lower (50 %) compared to the Late Eneolithic, yet both remaining catchment zones are settled during this period (12.5 % and 37.5 %) (**Tables 39 and 53**). No sites can be correlated with mineral deposits in any of the researched periods in this region.

Table 39. Distribution of sites within catchment zones – Region 7.

	Agricultural	Pastoral	Mixed	Communication	Mineral Dep.
Late Eneolithic	75 %	-	25 %	75 %	-
Early Bronze Age	50 %	12.5 %	37.5 %	87.5 %	-

8.1.8. Region 8

In Region 8, the majority of Late Eneolithic sites (83.3 %) are located within the agricultural catchment zone, and no sites are located in the pastoral catchment zone. All of the period-related sites are positioned on the main communication (**Tables 40 and 54**). During the Early Bronze Age, all of the sites are located within the agricultural catchment zone, as well as on the main communications (**Tables 40 and 55**). No sites can be correlated with mineral deposits in any of the researched periods in this region.

Table 40. Distribution of sites within catchment zones – Region 8.

	Agricultural	Pastoral	Mixed	Communication	Mineral Dep.
Late Eneolithic	83.3 %	-	16.7 %	100 %	-
Early Bronze Age	100 %	-	-	100 %	-

[855] Powell *et al*. 2020, 86-87.

8.2. Specialist Studies – An Overview

8.2.1. Faunal Assemblages

Unfortunately, within the scopes of the researched territory, archaeozoological data for the Late Eneolithic,[856] or more precisely the Coţofeni-Kostolac group are available solely from three sites – Nad Klepečkom in Region 2 (site 2-14), Mokranjske Stene in Region 3 (site 3-49) and Bubanj in Region 4 (site 4-5). The data from Mokranjske Stene and Bubanj are complementary and display similar trends in animal use during this period. In both of the faunal assemblages, the representation of domestic animals compared to the wild is significantly higher. Likewise, the data from both sites indicate that the dominant domestic species were ovicaprines, cattle, and domestic pigs. At the site of Bubanj, which yielded data for the entire Eneolithic sequence, it can be observed that the representation of domestic pig gradually grows towards the Coţofeni-Kostolac cultural layer (layer IV), compared to the preceding phases of the Eneolithic. The age profiles of domestic species at the site of Mokranjske Stene indicate the different utilization of those species. Namely, ovicaprines were most likely exploited for both the primary (meat) and the secondary products (wool, milk), while cattle and domestic pigs were exploited for the primary products (meat).[857] Similar data is acquired from the concurrent site of Treštena Stena in North Macedonia,[858] and the use of domestic pigs primarily for meat has been confirmed for the Kostolac layers at the site of Vučedol (Croatia).[859] The data from the site of Nad Klepečkom indicated a certain change in trends between different phases of the Late Eneolithic. Namely, features attributed to the Kostolac group display the highest representation of cattle, while a feature attributed to the Baden group displays the highest representation of ovicaprines, while cattle are the least represented. Judging by the taxonomic composition of the Late Eneolithic sample, the remains of domestic animals were utilized primarily for meat.[860]

Such a trend is similar to the animal use of the Coţofeni group in Transylvania and Oltenia. Namely, archaeozoological data from those territories, and a significantly larger sample, indicate that within the Coţofeni settlements domestic animals display a significantly higher representation compared to wild animals, although similar to the aforementioned sites, wild animals play a role in the food consumption of populations at those sites. The second similarity is the representation of ovicaprines within the faunal assemblages, which are regularly followed by cattle and domestic pigs, although not strictly in that order. However, the Coţofeni sites in the territories of Transylvania and Oltenia are divided into two distinct categories, the ones oriented primarily towards ovicaprines, and the ones oriented towards cattle breeding. Another similarity is the utilization of

[856] The Late Eneolithic represents the least researched period regarding the faunal remains in the territory of Serbia (Стојановић, Булатовић 2013, табела 1).
[857] Булатовић, Милошевић 2015; Bulatović 2010a.
[858] Булатовић, Миткоски 2019.
[859] Trbojević, Vukičević *et al*. 2003.
[860] Vuković, Marković 2019, 230-233.

ovicaprines for primary and secondary products, as well as cattle (meat, hides), while the domestic pig was utilized exclusively for primary products (meat and fat).[861]

The Early Bronze Age[862] faunal assemblage from the site of Bubanj (site 4-5) again indicates the prevalence of domestic animals. Cattle are the most dominant,[863] followed by ovicaprines and domestic pigs.[864] What is characteristic of the period is the appearance of domestic horses within the Bubanj-Hum III cultural layer.[865] The Early Bronze Age features from the sites of Nad Klepečkom and Rit in Region 2 (sites 2-14 and 2-21) yielded similar data, with cattle as the dominant category, followed by ovicaprines and domestic pig. A horse bone was recorded at the site of Rit.[866]

Similar to Bubanj and Rit, remains of domestic horses have been recorded at the site of Novačka Ćuprija, which could be attributed to the Early Bronze Age Bubanj-Hum III group.[867] The faunal assemblage from this site, positioned on the western fringe of the researched territory, displays similarities with the site of Bubanj, both in terms of the domestic/wild animals ratio and the fact that cattle utilized for primary products is the most represented species, followed by ovicaprines and domestic pig.[868] Again, remains of domestic horses were recorded within the Early/Middle Bronze Age[869] context at the site of Ljuljaci in Central Serbia. The representation of domestic species at the site differs from the aforementioned, as domestic pigs are the most dominant, followed by cattle and ovicaprines. Interestingly, the site of Ljuljaci displays a high representation of wild boars.[870]

8.2.2. Plant Remains

Regarding the plant remains, the site of Bubanj in Region 4 (site 4-5) yielded the latest data for the Late Eneolithic. Overall, the Late Eneolithic botanical collections, attributed to the Coţofeni-Kostolac group are poor in terms of quantity of samples, with solely Structure 5 providing a more solid one. The sample is comprised of mostly cereal grains, of which the einkorn is predominant, but emmer is also recorded. The other structures attributed to the Coţofeni-Kostolac group at the site display a similar trend, with

[861] Bindea, Pop 2013, with complete cited literature; Popa, Gogâltan 2014, 125-131.
[862] Animal bones have been recorded in a number of graves at the Ranutovac necropolis in Region 6, yet no analyses have been conducted. It is assumed that the animals were burnt on the pyre together with the deceased either as food offerings for the deceased or as additional fuel for the pyre (Bulatović 2020, 75).
[863] A similar representation of ovicaprines and cattle during the Late Eneolithic/Early Bronze Age (Baden-Vinkovci-Somogyvár) transition is recorded at the site of Paks-Gyapa in Hungary (Gál 2016, 121). Further, the cattle represent the dominant species within the Early Bronze Age (Vinkovci-Somogyvár) faunal assemblages in Hungary (Gál 2017)
[864] Bökönyi 1991, 90-92.
[865] Bökönyi 1991; Bulatović 2020a, 334.
[866] Vuković, Marković 2019, 233.
[867] Крстић *et al*. 1986, 27-28.
[868] Greenfield 1986a, 167-187.
[869] Unfortunately, the sample was not separated by distinct periods in the publication. Therefore, it is unclear whether the assemblage could be attributed to the Early or the Middle Bronze Age.
[870] Greenfield 1986a, 128-135.

the appearance of barley and legumes, as well as wild cereals.[871] There are no additional data on the Late Eneolithic plant remains within the researched territory.

The site of Gomolava in the Srem region, however, yielded plant remains from the Kostolac group deposits, dated approximately between 3100 and 2900 BC.[872] Similar to the site of Bubanj, einkorn and emmer are the most represented cereals within those deposits. Interestingly, one of the Kostolac features (a storage unit) at the site of Gomolava yielded a large amount of pure barley.[873]

A similar trend has been recorded within continental Croatia during the Late Eneolithic. Sites attributed to Kostolac and Vučedol groups are dominated by einkorn and emmer, yet interestingly none of the analyzed sites yielded finds of barley.[874]

Three sites (Peştera Ungurească, Șeușa-Gorgan Hill, and Cetea-Picuiata) attributed to the final phase (III) of the Coţofeni group in Transylvania, which would chronologically correspond to the Coţofeni-Kostolac group in Serbia (at least in its eastern parts, respectively regions 2, 3 and 4), yielded similar plant remains. The dominant cereals on all these sites are once more einkorn and emmer. The context of those finds is particularly interesting, since all of the sites represent different types in terms of the topography of natural settling, and the site of Peștera Ungurească represents a cave settlement.[875]

At the site of Dubene-Sarovka in Upper Thrace (Bulgaria), the analyses of plant remains yielded similar data. The analyzed sample originates from layer IIB which would correspond to the Early Bronze Age II according to Bulgarian chronology. The layer is dated to a period between the 29th and the 25th century BC,[876] which would correspond to the Bubanj-Hum II group in the territory of Serbia or the earlier phase of the Early Bronze Age (transition from the Late Eneolithic).[877] Besides the absolute dates, the connection between Dubene-Sarovka IIB and the cultural layer V at the site of Bubanj, or more precisely its lower portion attributed to the earlier phase of the Bubanj-Hum II group, can be observed within the ceramic inventory.[878] The botanic sample from the site is similar to the previously discussed with emmer and barley being the dominant cereals.[879] The tell site of Yunatsite within the Thracian Plain yielded a total of 17 building levels (XVII-I) attributed to the Early Bronze Age I-III according to Bulgarian chronology and dated between the 30th (level XVII) and the 25th (level V) century BC.[880] Therefore, the chronological span of Early Bronze Age levels would correspond to both phases of the Bubanj-Hum II group (possibly the final stages of the Coţofeni-Kostolac group and the higher dates for the Bubanj-Hum III group as well).[881] The paleobotanical study covered all of the Early Bronze Age levels and

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871 Filipović 2020, 347-348, Table 4.
872 Refer to Table 4, **Subchapter 5.1**.
873 Van Zeist 2001/2002, Fig. 5.
874 Reed 2018, 242-244.
875 Ciuta 2012, 108, 113-119.
876 Nikolova, Görsdorf 2002.
877 Bulatović 2011, 67-69; Bulatović, Milanović 2020, 229.
878 Bulatović, Milanović 2020, 224-226.
879 Marinova 2003.
880 Boyadzhiev 1995, Boyadzhiev, Aslanis 2016.
881 Table 7, **Subchapter 5.3**.

concluded that einkorn (recorded in 10 layers), emmer (recorded in 13 layers) and barley (recorded in 8 layers) are the most represented cereals at the site.[882] In general, such a trend, dominated by einkorn, emmer, and barley can be observed in entire Southeastern Europe within the chronological scopes of the Late Eneolithic and the Early Bronze Age (Early Bronze Age I-III according to Bulgarian chronology).[883]

Botanical remains from the later phase of the Early Bronze Age, or the Bubanj-Hum III group originate from the site of Novačka Ćuprija near Smederevska Palanka. Several pits attributed to the period and dated between the 22nd and the 19th century BC have yielded remains of cereals, majorly einkorn and emmer, although barley has been recorded as well.[884] H. Greenfield reports on a similar trend, dominated by einkorn, emmer, and barley for the territory of Eastern and Central Europe during the Early Bronze Age.[885]

8.2.3. Tools – bone and stone

One of the most specific Late Eneolithic finds is numerous bone tools, which originate from the Coţofeni-Kostolac layers of the cave site of Zlotska Pećina in Region 3 (site 3-101). The inventory of bone tools from the cave was comprised of more than 80 axes and other tools made of antler, including awls, and tools used for digging/agriculture (?). N. Tasić defined the site as an important Late Eneolithic production center.[886] Similar tools, made of antlers have been recorded within the Coţofeni contexts throughout Transylvania. Those have been interpreted as tools for digging or planting, often connected with the cultivation of crops, yet could have also been used for digging various pits. Interestingly, those tools represent the only category of Coţofeni bone tools which can be connected with these sorts of activities.[887] Denticulated chipped stone blades, parts of composite sickles (harvesting?), have been recorded within the Late Eneolithic layers at the site of Bubanj in Region 4 (site 4-5).[888] Agricultural tools (?) made of antler have also been recorded within the Kostolac features at the site of Gomolava in the Srem region.[889]

Regarding the Early Bronze Age, M. Garašanin highlights a higher representation of antler hoes recorded at the site of Bubanj and attributed to the Bubanj-Hum III group.[890] The same layers yielded chipped stone blades with characteristic use wear gloss, interpreted as parts of composite tools (sickle?).[891]

8.3. The Comparative Analyses of the Economic Preferences and Potentials of the Sites

The sites attributed to the Late Eneolithic, the Coţofeni-Kostolac group display a tendency to be positioned within the agricultural catchment zone, as observed in five out of

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[882] Popova 1991.
[883] *Cf*. Popova, Božilova 1998; Valamoti *et al*. 2019; Popova, Hristova 2020.
[884] Bankoff, Winter 1990, 180-181.
[885] Greenfield 2001, 126 and further.
[886] *Cf*.Tasić 1979a, 122; Spasić 2010, 160.
[887] Popa, Gogâltan 2014, 56-58, with cited literature.
[888] Šarić 2021.
[889] Petrović, Jovanović 2002, 278.
[890] Garašanin 1983a, 721-722.
[891] Šarić 2020, 405.

seven regions. Within the remaining two regions, preferred catchment zones are pastoral and mixed. This is especially emphasized in regions 3 (pastoral) and 4 (mixed), possibly due to the geomorphological characteristics of those regions. In terms of the secondary selection of preferred catchment zones, no regularities have been observed. The orientation of Late Eneolithic sites towards the presumed communication routes is, in general, less emphasized compared to the Early Bronze Age. The proximity of mineral deposits, namely copper, is less represented compared to the following periods in Region 3 and displays a higher representation in Region 4. According to the available faunal assemblages, the Late Eneolithic animal husbandry relies primarily on ovicaprines, followed by cattle and domestic pigs, while domestic animals are in a higher representation compared to wild animals. In terms of plant remains, einkorn, emmer, and barley stand out as staple cereals during this period, supported by finds of bone and stone tools connected with plant cultivations, hoes, and sickles.

The Early Bronze Age sites display a high tendency of being positioned within the agricultural catchment zone. Namely, such a trend has been observed in a total of six out of eight regions. The secondary choice for settling falls within the mixed catchment zone, in a total of four regions. Generally, the Early Bronze Age sites tend to be oriented towards the presumed communication routes to a higher degree compared to the Late Eneolithic. The representation of Early Bronze Age sites oriented towards copper grows compared to the Late Eneolithic within Region 3 and decreases within Region 4. Solely in this period, one site is oriented towards a potential tin source. The faunal assemblages from the Early Bronze Age site indicate that the importance of domestic animals prevails compared to the wild species, yet cattle represent the dominant species, followed by either ovicaprines or domestic pigs. One of the novelties within the faunal assemblages in this period is the appearance of domestic horses, which has been observed on several period-related sites within the researched territory. Similar to the Late Eneolithic, botanical remains point to einkorn, emmer, and barley as dominant cereals. Bone and stone tools presumably connected with plant cultivation are known from this period as well.

8.4. Supplement – Catchment Zones Tables

Table 41. Catchment zones in Region 1: Late Eneolithic.

Site No.	Land Use	Communication	Mineral Deposits
2	Pastoral	Yes	No
4	Mixed	Yes	No
5	Agricultural	No	No
7	Agricultural	No	No

Table 42. Catchment zones in Region 1: Early Bronze Age.

Site No.	Land Use	Communication	Mineral Deposits
3	Agricultural	Yes	No
4	Mixed	Yes	No
8	Mixed	Yes	No
9	Agricultural	Yes	No
10	Agricultural	Yes	No

Table 43. Catchment zones in Region 2: Late Eneolithic.

Site No.	Land Use	Communication	Mineral Deposits
1	Agricultural	No	No
2	Pastoral	Yes	No
5	Agricultural	Yes	No
6	Agricultural	Yes	No
8	Agricultural	Yes	No
9	Agricultural	Yes	No
12	Pastoral	No	No
13	Agricultural	Yes	No
15	Pastoral	No	No
17	Mixed	Yes	No

Table 44. Catchment zones in Region 2: Early Bronze Age.

Site No.	Land Use	Communication	Mineral Deposits
3	Agricultural	Yes	No
4	Agricultural	Yes	No
8	Agricultural	Yes	No
9	Agricultural	Yes	No
11	Agricultural	Yes	No
14	Agricultural	Yes	No

Table 45. Catchment zones in Region 3: Late Eneolithic.

Site No.	Land Use	Communication	Mineral Deposits
1	Pastoral	No	No
2	Pastoral	Yes	Copper
3	Agricultural	Yes	No
4	Pastoral	No	No
5	Agricultural	Yes	No
6	Agricultural	Yes	No
7	Agricultural	Yes	No
8	Pastoral	No	Copper
9	Pastoral	No	Copper
10	Pastoral	No	Copper
11	Pastoral	No	Copper
12	Agricultural	Yes	No
13	Agricultural	Yes	No
14	Mixed	Yes	No
15	Mixed	Yes	No
16	Agricultural	Yes	Copper, Gold
17	Agricultural	Yes	No
18	Mixed	Yes	No
19	Agricultural	Yes	No
21	Mixed	No	Copper, Gold
22	Mixed	Yes	No
23	Mixed	Yes	No
24	Pastoral	No	Copper
25	Pastoral	No	Copper, Gold
26	Mixed	No	Copper
28	Pastoral	No	Copper
29	Pastoral	No	Copper
31	Mixed	No	Copper
32	Mixed	Yes	No
33	Pastoral	No	No
34	Agricultural	Yes	No
36	Mixed	No	No
37	Mixed	No	No
39	Agricultural	Yes	No
40	Agricultural	Yes	No
41	?	Yes	No
43	Pastoral	No	No
44	Pastoral	No	No
45	Pastoral	No	No
46	Pastoral	No	Copper
47	Pastoral	No	Copper
49	Agricultural	Yes	Copper
51	Pastoral	No	No
52	Mixed	Yes	No
53	Pastoral	No	No
54	Pasotral	No	No
55	Mixed	Yes	No
57	Agricultural	Yes	No
58	Agricultural	Yes	No
59	Agricultural	Yes	No

60	Pastoral	No	Copper
61	Mixed	No	Copper
62	Mixed	Yes	No
64	Pastoral	No	No
65	Pastoral	No	No
66	Mixed	No	No
67	Pastoral	No	No
69	Pastoral?	No	No
70	Mixed	No	No
72	Agricultural	Yes	No
74	Pastoral	No	No

Table 46. Catchment zones in Region 3: Early Bronze Age.

Site No.	Land Use	Communication	Mineral Deposits
30	Mixed	No	No
39	Agricultural	Yes	No
49	Agricultural	Yes	No
66	Mixed	No	Copper
72	Agricultural	Yes	No

Table 47. Catchment zones in Region 4: Late Eneolithic.

Site No.	Land Use	Communication	Mineral Deposits
1	Mixed	Yes	No
2	Mixed	Yes	No
3	Mixed	Yes	No
4	Mixed	Yes	No
5	Agricultural	Yes	No
7	Agricultural	Yes	No
8	Agricultural	Yes	No
9	Mixed	Yes	No
10	Mixed	Yes	No
14	Mixed	Yes	Copper
15	Mixed	Yes	No
16	Mixed	Yes	No
18	Pastoral	Yes	No
19	Mixed	No	Copper
22	Mixed	Yes	No
23	Mixed	Yes	No
24	Mixed	Yes	No

Table 48. Catchment zones in Region 4: Early Bronze Age.

Site No.	Land Use	Communication	Mineral Deposits
4	Mixed	Yes	No
5	Agricultural	Yes	No
6	Agricultural	No	No
7	Agricultural	Yes	No
12	Mixed	Yes	No
13	Pastoral	No	No

19	Mixed	No	Copper
20	Agricultural	Yes	No
22	Mixed	Yes	No
23	Mixed	Yes	No

Table 49. Catchment zones in Region 5: Early Bronze Age.

Site No.	Land Use	Communication	Mineral Deposits
1	Agriculture	Yes	No
4	Mixed	Yes	No

Table 50. Catchment zones in Region 6: Late Eneolithic.

Site No.	Land Use	Communication	Mineral Deposits
5	Agriculture	Yes	No
7	Agriculture	Yes	No
10	Agriculture	Yes	No

Table 51. Catchment zones in Region 6: Early Bronze Age.

Site No.	Land Use	Communication	Mineral Deposits
1	Agriculture	Yes	No
2	Agriculture	Yes	No
3	Mixed	Yes	No
4	Agriculture	Yes	No
5	Agriculture	Yes	No
6	Agriculture	Yes	No
9	Mixed	Yes	No
11	Agriculture	Yes	No
12	Mixed	No	Tin?

Table 52. Catchment zones in Region 7: Late Eneolithic.

Site No.	Land Use	Communication	Mineral Deposits
2	Agricultural	Yes	No
3	Mixed	Yes	No
8	Agricultural	Yes	No
9	Mixed	No	No
15	Agricultural	Yes	No
16	Agricultural	Yes	No
17	Agricultural	Yes	No
18	Agricultural	No	No

Table 53. Catchment zones in Region 7: Early Bronze Age.

Site No.	Land Use	Communication	Mineral Deposits
1	Agricultural	Yes	No
2	Agricultural	Yes	No
4	Mixed	Yes	No
5	Mixed	Yes	No

6	Mixed	Yes	No
10	Pastoral	No	No
12	Agricultural	Yes	No
13	Agricultural	Yes	No

Table 54. Catchment zones in Region 8: Late Eneolithic.

Site No.	Land Use	Communication	Mineral Deposits
1	Agricultural	Yes	No
3	Agricultural	Yes	No
4	Agricultural	Yes	No
6	Agricultural	Yes	No
7	Agricultural	Yes	No
8	Mixed	Yes	No

Table 55. Catchment zones in Region 8: Early Bronze Age.

Site No.	Land Use	Communication	Mineral Deposits
2	Agriculture	?	No
6	Agriculture	Yes	No
9	Agriculture	Yes	No

9. Late Eneolithic Settlement Patterns: Phases 1-2

As presented in **Subchapters 5.1** and **5.2**, the Late Eneolithic of the researched region is marked by a specific cultural manifestation, the so-called Coţofeni-Kostolac group. However, the complex nature of mutual relations between the Kostolac and the Coţofeni groups, followed by the emergence of the "transitional" Bubanj-Hum II group, remains an incompletely defined period, especially regarding a more refined absolute chronology and the mutual relations of the aforementioned groups. Therefore the Late Eneolithic settlement patterns, together with the so-called "transitional period" towards the Early Bronze Age (Bubanj-Hum II) will be analyzed within two distinct phases, based on both the stylistic and typological characteristics of archaeological material and the existing absolute dates.

Table 56. Overview of studied phases, groups, and their chronology.

Phase 1	Coţofeni-Kostolac	Late Eneolithic	34th-28th century BC
Phase 2	Bubanj-Hum II	Late Eneolithic/Early Bronze Age I	28th-26th century BC
Phase 3	Bubanj-Hum III Armenochori NE EBA+PVD[892]	Early Bronze Age II	25th-20th century BC 25th-18th century BC 21st/20th century BC

Phase 1 represents the emergence of the Coţofeni-Kostolac group within the researched territory, its development, and the presumed gradual movements towards the west/southwest (**Table 56**).[893] According to the absolute dates presented in **Subchapter 5.1.**, this phase is positioned between the 34th and the 28th century BC, or more precisely into the final three centuries of the 4th millennium BC and the first two centuries of the 3rd millennium BC, according to the absolute dates from the site of Bubanj in Region 4 (site 4-5).[894]

The highest quantitative representation of sites attributed to the Coţofeni-Kostolac group has been observed within regions 2, 3, and 4, indicating the preference for settling the neighboring areas of both the constitutive groups, Coţofeni and Kostolac (**Table 32**). Within the geomorphological setting of regions 2 and 3, two distinct groups of sites can be separated, both based on the topography and the economic affinities. The first group is represented by sites positioned dominantly within the lowland relief. These are sites located within Mlava Valley and its confluence with the Danube in Stig Region (Region 2) (**Fig. 34**), and the Danubes' right bank and Negotin Valley in Eastern Serbia (Region 3) (**Fig. 37**). In Region 2, those are sites attributed to type 1 (**Table 12**), which account for a total of 30 % of sites (**Table 26**), and in Region 3 those are sites attributed to types 1 and 2, comprising a total of 34.4 % of the sample. Within Region 4, Late Eneolithic sites positioned within the lowland relief are attributed to types 1 and 2 (**Table 28**) and account for a total of 47.1 % of the sample. Sites attributed to the Coţofeni-Kostolac group within western regions 7 and 8 display similar topographic characteristics (50 % and 66.6 % of sites

892 Early Bronze Age in Northeastern Serbia (**Subchapter 5.5**).
893 For problems with the internal development and chronology of the Coţofeni-Kostolac group in the territory of Serbia, refer to: Tasić 1979; Spasić 2010, Капуран, Булатовић 2012
894 Bulatović, Vander Linden 2017, 1055-1057, Table A4; Bulatović, Vander Linden 2020, 243.

attributed to the lowland types). Within those core regions of the Coţofeni-Kostolac group, meaning regions 2, 3, and 4, the representation of sites in agricultural catchment zones corresponds to their topographic positions. Therefore, the highest representation of the Coţofeni-Kostolac sites in this catchment zone is observable in dominant lowland Region 2 (60 %) (**Table 34**), followed by regions 3 and 4 (28.6 % and 17.6 %) (**Tables 35 and 36**). Similarly, Coţofeni-Kostolac sites within western regions 7 and 8 display the highest representation within the agricultural catchment zone (**Tables 39 and 40**). The second group of sites is dominantly distributed within Region 3. These are sites positioned on dominant elevations, either on the fringe of a basin, above estuaries and water sources, or on sloping terraces of prominent high ground, usually within a karst relief. Such settlements are within Region 3 attributed to types 3a, 3b, and 4, and account for a total of 43.75 % of the sample (**Table 27**). Sites with similar topography within Region 4, are positioned on dominant elevations within river valleys or the fringe of basins, attributed to types 3, 4, and 5, and account for a total of 47 % of the sample (**Table 28**). Within Region 3, those sites fall majorly within the pastoral catchment zone (41.3 %) and the mixed catchment zone (28.6 %) (**Table 45**). However, within the adjacent Region 4, the majority of sites attributed to the aforementioned high-ground types fall within the mixed catchment zone (79.9 %) (**Table 47**), as those sites are usually positioned in the immediate vicinity of agricultural catchment zones. Regarding the orientation of Late Eneolithic settlements towards mineral deposits, primarily copper, a total of 30.2 % of sites within Region 3 are accounted (**Table 45**), which is lower than in the following periods. On the other hand, sites from Region 3 display the highest percentage of orientation towards copper deposits compared to the following periods, with a total of 11.8 % (**Table 45**).

Table 57. Distribution of Coţofeni-Kostolac sites within catchment zones.

	Agricultural	Pastoral	Mixed	Communication	Mineral Dep.
Coţofeni-Kostolac	39.3 %	27.7 %	33 %	62.5 %	17.9 %

When observed within all of the researched regions, the agricultural catchment zone is dominant during the Late Eneolithic, with the highest representation in a total of 5 out of 7 regions (**Tables 33-40**). Such disposition of sites within agricultural catchment zones, especially within regions 7 and 8, is most likely dictated by the geomorphology of those regions, and possibly the degree of research, which is significantly lower compared to regions 3 and 4, where pastoral and mixed catchment zones are dominant. Likewise, the orientation towards presumed communication routes can be observed in a similar manner, since river valleys are traditionally observed as corridors for the transition of populations.

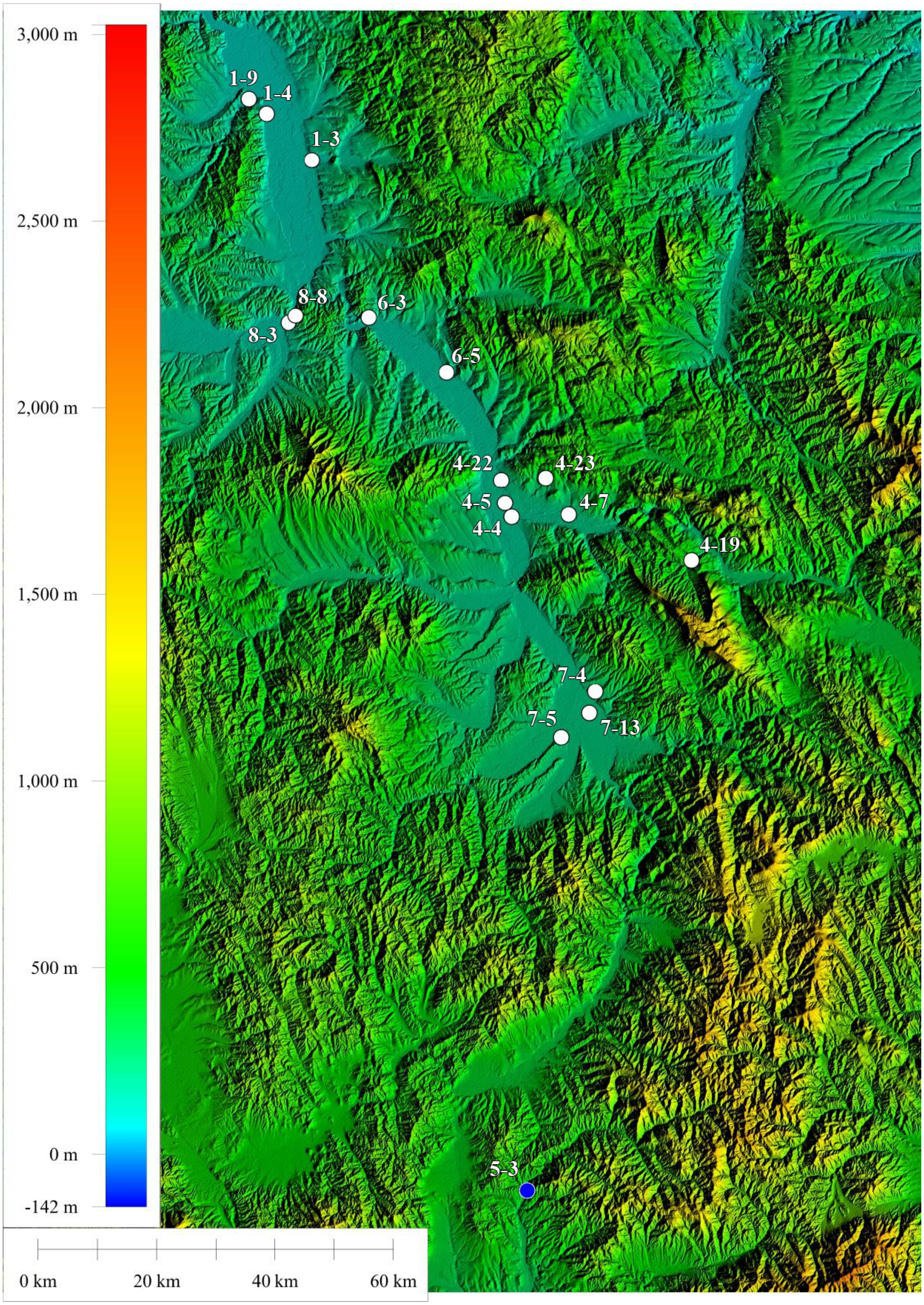

Figure 54. Distribution of sites attributed to the Bubanj-Hum II group (blue dot – specific site, non-settling character).

Phase 2 is marked as the so-called "transitional" phase between the Late Eneolithic and the Early Bronze Age, or the Bubanj-Hum II-Bagacina-Pelince I horizon (**Subchapter 5.2**) (**Table 56**). Within the researched territory, the horizon is characterized by the appearance of the Bubanj-Hum II group, or more precisely its two phases, of which the earlier would according to the stylistic and typological characteristics of pottery represent the proper transitional phase between the preceding Coţofeni-Kostolac group and the following Bubanj-Hum II group.[895] The existing absolute dates position the Bubanj-Hum II group between the 28th and the 26th century BC.[896]

Table 58. Distribution of Bubanj-Hum II sites within researched regions.

Region	Number of Bubanj-Hum II Sites
1	4
4	7
5	1
6	6
7	7
8	2

The quantitative representation and spatial distribution of sites attributed to the Bubanj-Hum II group indicate that the preference for settling was oriented towards the Morava Valley, especially within the wide basins such as Niš Basin in Region 4 and Leskovac Basin in Region 7, where the highest concentration of sites has been recorded, along with Region 6, which represents the course of the South Morava River (Table 58) **(Fig. 54)**. The settling topography of the Bubanj-Hum II group is clearly separated into two groups of sites, which possess a common thread, which is that all of the sites are oriented towards the major river valleys such as South, West,[897] and Great Morava, Nišava, and Jablanica. The first group of sites, differentiated both based on the topography and the catchment zone, is represented by sites positioned within river valleys, in the lowland relief, on the first or the second alluvial terrace, within the agricultural catchment zone, which account for a total of 47.06 % of Bubanj-Hum II sites (**Table 59**). The second group is represented by sites located on dominant elevations within river valleys and on the fringe of basins. Due to the fact that the second group of sites is likewise in the proximity of major river valleys and basins, those are attributed to the mixed catchment zone and account for a total of 52.94 % of sites (**Table 59**). The connection with major river valleys puts all of the sites attributed to the Bubanj-Hum II group into the presumed communication routes, yet further from the known copper deposits.

Table 59. Distribution of Bubanj-Hum II sites within catchment zones.

	Agricultural	Pastoral	Mixed	Communication	Mineral Dep.
Bubanj-Hum II	47.06 %		52.94 %	100 %	-

[895] Bulatović, Milanović 2020, 224-226.
[896] Bulatović, Vander Linden 2017; Bulatović, Vander Linden 2020; Bulatović, Milanović 2020, 225 and further.
[897] Limited to the confluence area of South and West Morava.

Although the agricultural catchment zone is not the most represented for sites attributed to the Bubanj-Hum II group, the proximity of all of the sites to major river valleys and the lowland alluvial relief (mixed catchment zone), and the lack of sites located within the pastoral catchment zone, might indicate an economic preference for agriculture and the control of presumed communications, compared to the preceding Coţofeni-Kostolac group.

10. Early Bronze Age Settlement Patterns: Phase 3

The Early Bronze Age (Bubanj-Hum III-Pelince II-III Pernik horizon/Early Bronze Age II according to Bulgarian chronology/Phase 3) of the researched territory is characterized by two partially contemporary groups, Bubanj-Hum III and Armenochori (**Subchapters 5.3**., and **5.4**). Additionally, sites attributed to the Early Bronze Age in Northeastern Serbia, meaning regions 2 and 3 (**Subchapter 5.5**), could not formally be attributed to the Bubanj-Hum III group, as the ceramic inventory from those sites is either insufficient for a more precise attribution, possesses general attributes of the Early Bronze Age, such as two-handled beakers, or attributed to the so-called Pančevo-Vatrogasni Dom horzon (**Table 56**).[898] The absolute chronology of **Phase 3**, observed within the aforementioned division, indicates that the Early Bronze Age sites in Northeastern Serbia can be positioned into the 21st/20th century BC (**Subchapter 5.5.**),[899] the Bubanj-Hum III group between the 25th and the 20th century BC (**Subchapter 5.3.**),[900] and the Armenochori group between the 25th and the 18th century BC (**Subchapter 5.4.**).[901]

The Early Bronze Age sites in Northeastern Serbia are distributed solely within regions 2 and 3, with a similar quantitative representation (**Table 60**) (**Figs. 35 and 38**). Regarding the topography of sites within those two regions, lowland relief seems like a dominant choice for settling, especially within the region of Stig (Region 2), and the Danube's right bank (Region 3). Within the region of Stig (Region 2), Early Bronze Age sites are located exclusively on the right bank of the Mlava River and are attributed to types 1 and 2 (**Table 26**). However, in Region 3 sites are located on the Danubes' right bank and within the Timok Valley (types 2 and 5a), with certain exceptions, such as sites that are positioned in the hinterland of the Negotin Basin. Those sites are located on dominant elevations above estuaries and attributed to type 3b, which is the most common type during the Late Eneolilthic in this region (**Table 27**).

Such topographic disposition of sites dictates the dominant catchment zone for those sites, which is agricultural, with a representation of 81.8 % (**Table 63**). The remaining sites, meaning sites within Region 3, are attributed to the mixed catchment zone (18.2 %), which is interesting, considering that during the Late Eneolithic, the highest number of sites attributed to the pastoral catchment zone originate from this region. If a distinction is to be made, the Early Bronze Age sites in Region 2 are all located within the presumed communication route, while the Early Bronze Age sites in Region 3 are partially omitted from those, yet oriented towards the available copper ores (18.2 %).

Within regions 2 and 3, the agricultural catchment zone is dominant for the Early Bronze Age period, which is further complemented by the fact that the remaining sites are

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[898] Popović *et al*. 1986, 173; Bulatović *et al*. 2019b; Kapuran *et al*. 2019a; Љуштина 2022.
[899] The sample is small and comprised of dates from the sites of Rit and Nad Klepečkom in Region 2, both attributed to the Pančevo-Vatrogasni Dom Horison (Bulatović *et al*. 2019b; Kapuran *et al*. 2019a).
[900] Bulatović, Vander Linden 2017; Hoerjs *et al*. 2019; Bulatović, Vander Linden 2020; Bulatović *et al*. 2020
[901] Renfrew 1986; Lera *et al*. 1997; Maniatis, Ziota 2011; Gori, Krapf 2015; Bulatović 2020; Maczkowski *et al*. 2021;

positioned within the mixed catchment zone, adjacent to lowland river valleys and the agricultural catchment zone.

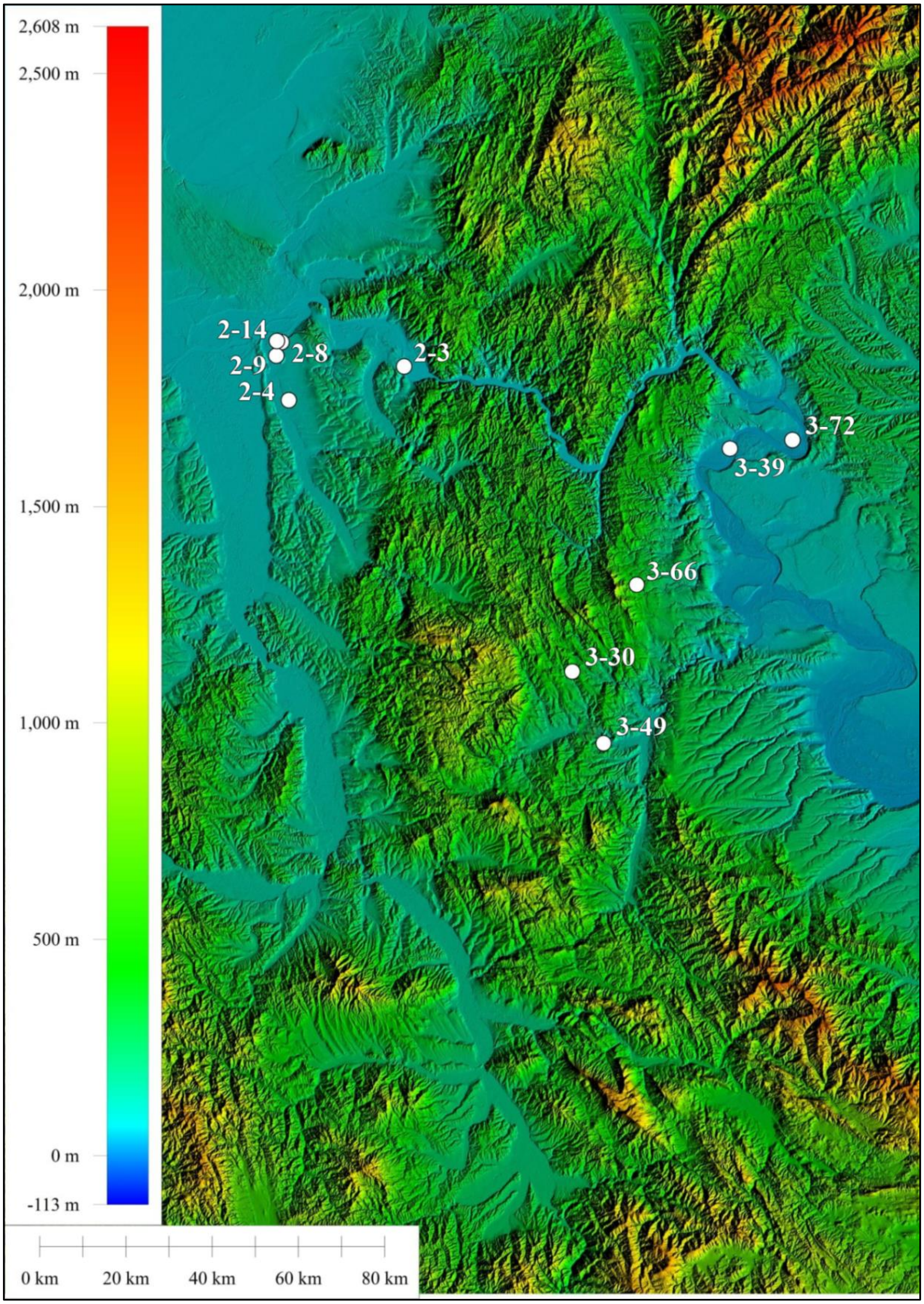

Figure 55. Distribution of Early Bronze Age sites in Northeastern Serbia (regions 2 and 3).

Table 60. Distribution of Early Bronze Age sites in Northeastern Serbia.

Region	Number of Early Bronze Age Sites in NE Serbia
2	5
3	6

According to the quantitative representation and spatial distribution of sites attributed to the Bubanj-Hum III group (**Table 61**) (**Figure 56**), the preferred settling area was the Morava Valley, specifically the South Morava Valley, where the highest number of sites has been recorded, in regions 4, 6 and 7 (**Table 61**) (**Figure 56**). Likewise, the settling preference is connected with wide Niš and Leskovac basins in regions 4 and 7. Further, a number of sites attributed to the Bubanj-Hum III group have been recorded within the West Morava Valley in Region 8.

Similar to the sites attributed to the Bubanj-Hum II group, the topography, and catchment zones of Bubanj-Hum III sites indicate the existence of two preferred settling locations during this period. The first group of sites is characterized by locations in the lowland relief, on the alluvial terraces of South and West Morava, sometimes with a hilly or mountainous hinterland. Those sites are located within the agricultural catchment zone, primarily within regions 6, 7, and 8, and count for a total of 54.2 % of the Bubanj-Hum III sites (**Table 63**). The second group of sites is characterized by locations on dominant elevations which are usually positioned within the valleys of major rivers or on the fringe of wide basins of the South Morava River, especially in region 4. Those sites are positioned within the mixed catchment zone due to their proximity to alluvial terraces of major rivers and lowland relief and account for a total of 37.5 % of Bubanj-Hum III sites (**Table 63**). Solely one site is attributed to the highland type (site 7-13), which represents an exception in terms of the settling topography of the Bubanj-Hum III group. Cave settling has also been recorded solely in one case in Region 4 (site 4-17).

The orientation towards the presumed communications is higher compared to the Coţofeni-Kostolac group (**Phase 1**), yet lower compared to the Bubanj-Hum II group (Phase 2), with a total of 75 %. Solely one site attributed to the Bubanj-Hum III group is oriented toward the possible tin sources (site 6-14) (4.2 %).

Table 61. Distribution of Bubanj-Hum III sites within researched regions.

Region	Number of Bubanj-Hum III sites
1	3
4	7
5	3
6	5
7	6
8	4

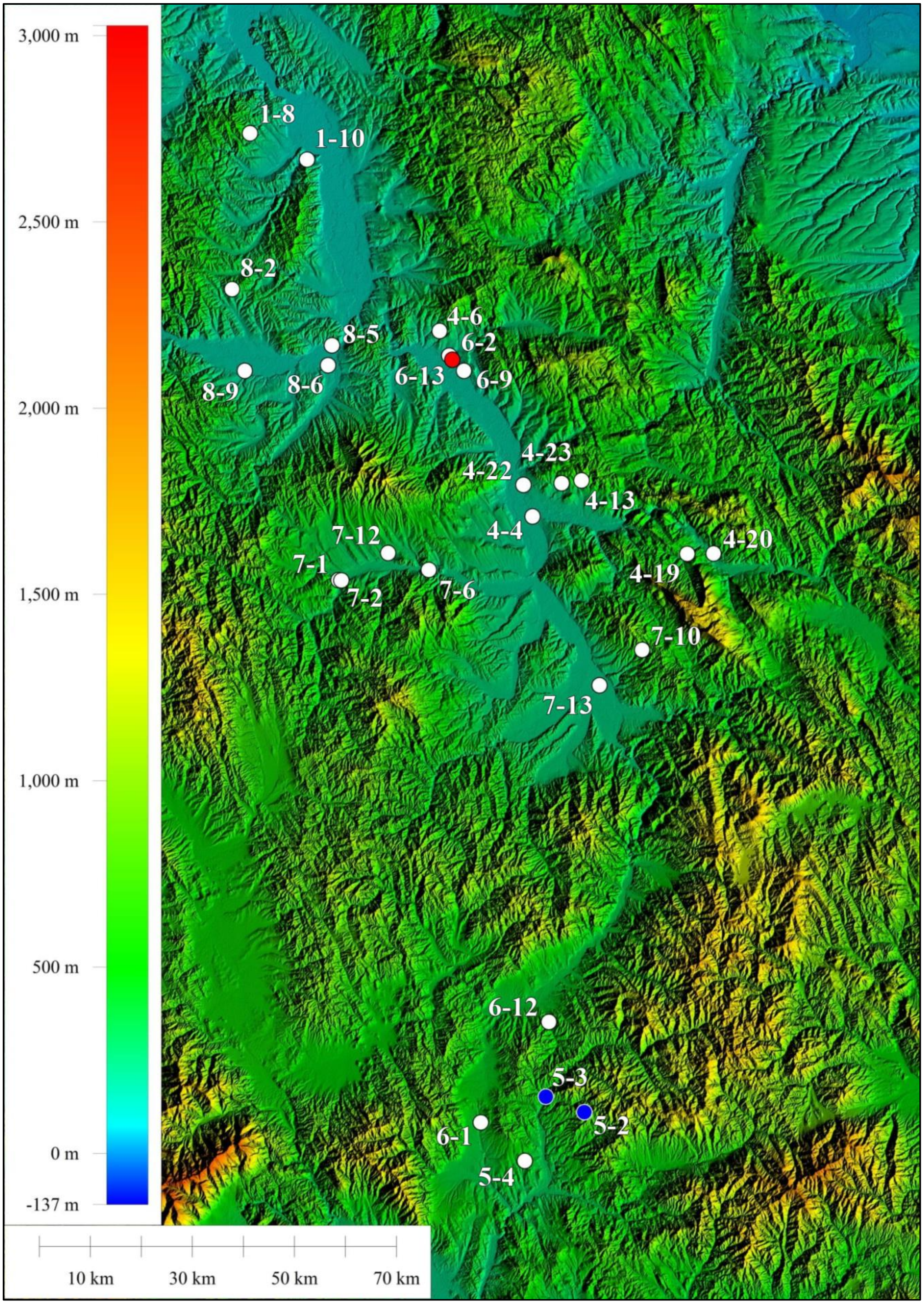

Figure 56. Distribution of sites attributed to the Bubanj-Hum III group.

A small sample of Early Bronze Age sites attributed to the Armenochori group indicate that those sites have solely been recorded within regions 5 and 6, meaning in the upper course of the South Morava Valley and the Vardar Valley (**Table 62**) (**Figure 57**). The topography of those sites does not indicate a clear existence of dominant types. In general, sites attributed to the Armenochori group are connected with valleys of major rivers, where they are located either on river terraces or at dominant elevations within river valleys. All of the sites attributed to the Armenochori group fall within the agricultural catchment zone (**Table 63**). Orientation of sites towards the presumed communications is the same as for the Bubanj-Hum III group (75 %).

Table 62. Distribution of Armenochori sites within researched regions.

Region	Number of Armenochori sites
5	2
6	3

Table 63. Distribution of Early Bronze Age II sites within catchment zones.

	Agricultural	Pastoral	Mixed	Communication	Mineral Dep.
NE EBA	81.8 %	-	18.2 %	81.8 %	18.2 %
Bubanj-Hum III	54.2 %	8.3 %	37.5 %	75 %	4.2 %
Armenochori	100 %	-	-	75 %	-

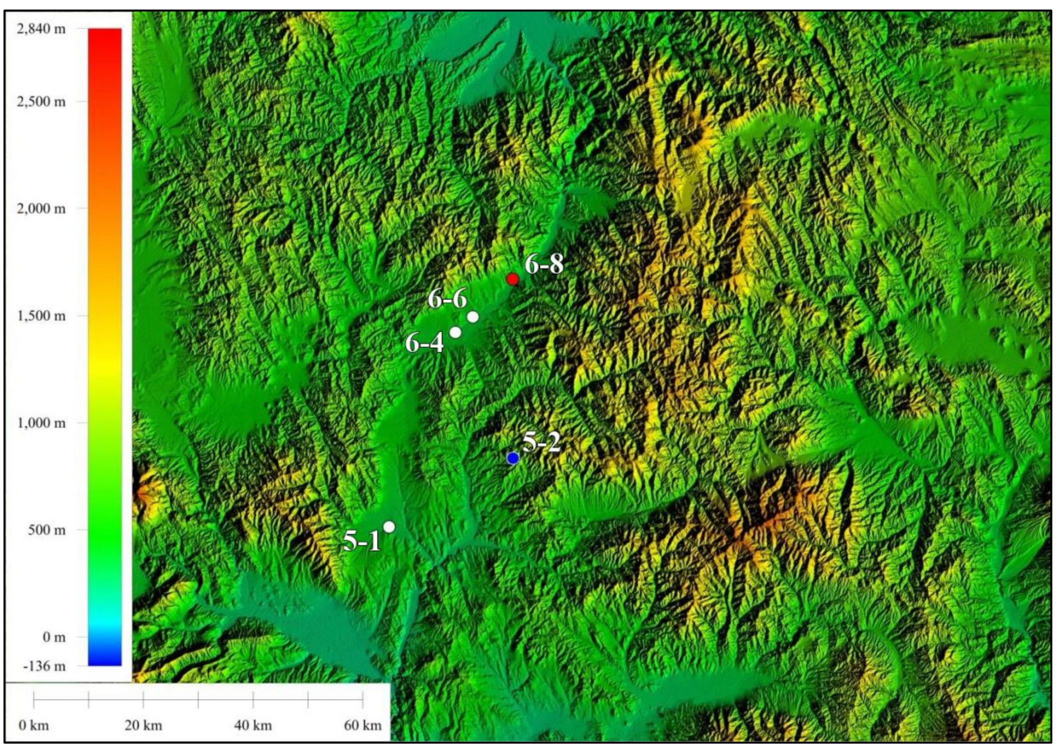

Figure 57. Distribution of sites attributed to the Armenochori group.

11. Discussion

The chapter will discuss the interpretation of data acquired through the conducted analyses, and their interpolation within the existing data and current narrative of the settlement patterns and economic preferences of populations during the Late Eneolithic and the Early Bronze Age. The discussion will be focused on those cultural groups which were anaysed in the study and the territory of the Central Balkans and adjacent regions.

The second half of the 4th millennium BC in the Central Balkans is marked by the appearance of the Coțofeni cultural group in its eastern parts,[902] especially in Region 3 according to the division proposed in this study. This sudden occurrence of new forms of material culture, typical for the final phase (phase III) of the Coţofeni group in its mother regions of Transylvania, Oltenia, Muntenia, and Banat, is dated to a period between the 34th and the 28th century BC (**Phase 1**).[903] It is considered that the presumed migrations which led to this were caused by the ever-increasing pressure of steppe populations that gradually penetrated towards the west. This migration chronologically corresponds to the 5.2 ka BP climatic event, represented by the breach of cold air masses from Siberia, and characterized by socio-economic changes in the Central Balkans, such as the onset of pastoral economy and shifts in settling topography.[904] This can be observed by the appearance of the bearers of the Cernavodă group (Cernavodă III-Boleraz-Baden horizon) in a number of sites, such as the site of Bubanj in Region 4, where the Coţofeni-Kostolac cultural layer is above the younger phase of the Cernavodă III-Boleraz-Baden cultural layer.[905] Further, it can be observed in certain changes and adoption of foreign, steppe burial customs by populations that are considered bearers of the Coțofeni group, represented by the appearance of ceramic forms and decoration typical for the Coțofeni group within mound burials.[906] At one point of their stabilization within northeastern parts of Serbia (Region 3), Romanian and Serbian parts of Banat, the bearers of the Coțofeni group were in contact with the neighboring populations connected with the Kostolac group,[907] which resulted in the formation of the specific Coţofeni-Kostolac group.[908] The exact moment of interactions that produced this specific cultural phenomenon is not defined, although several authors agree that the connections were tightly established during phase III of the Coţofeni group.[909] This new, Coţofeni-Kostolac group is characterized by a mixture of ceramic forms and decorations typical for both cultural groups, as Kostolac motifs of decoration appear on typical Coţofeni vessels. As presented in previous chapters, the Coţofeni-Kostolac group was not territorially limited to the eastern parts of the Central Balkans, although it can be considered its core territory within the researched region (regions 2, 3, and 4). Pottery attributed to the Coţofeni-Kostolac group has been recorded in almost all of the researched regions, yet due to the lack of absolute

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902 Капуран, Булатовић 2012.
903 Bulatović *et al*. 2020, 1173, Figure 4.
904 Todorova 2003; Marinova *et al*. 2012.
905 Bulatović. Milanović 2020
906 Alexandrov 2019; Frînculeasa 2020.
907 Nikolić 2000.
908 Капуран, Булатовић 2012.
909 Roman 1976; Ciugudean 2000;

dates, it remains undetermined whether these occurrences, especially further to the west, in the Jablanica, Toplica, and West Morava valleys represent the movement of populations or transmission of ceramic style through contacts, exchange and/or trade. Therefore, the settling of the Coţofeni-Kostolac group in the Central Balkans can be observed within two distinct geographical areas – first, the hilly and mountainous parts of eastern Serbia, characterized by karst relief (southern portion of Region 2, Region 3, and the northern portion of Region 4) and the Danube's bank, and secondly, major river valleys to the west and south, such as West, Great and South Morava, Mlava, Toplica, and Jablanica (southern portion of Region 4, Region 5, regions 7 and 8).

The highest quantitative representation of Coţofeni-Kostolac settlements has been recorded in Region 3 and the adjacent regions 2 and 4. When observed in comparison to the aforementioned regions native to the Coţofeni group in Romania, it seems as if the bearers of the group have settled within the similar geomorphological surroundings in the Central Balkans. Within their core territory in the Central Balkans, the Coţofeni-Kostolac settlements can be separated into two groups, lowland settlements characteristic for the Stig Region and the Danubes' right bank (regions 2 and 3) and settlements positioned on dominant elevations, in the proximity of sources of water, usually within a karst relief, with a number of variations, characteristic for the hinterland of regions 3 and 4. The topographic types of settlements attributed to the Coţofeni-Kostolac group, highlighted in this study, significantly match the previously determined types for both the origin territory and the Central Balkans.[910] Regarding the housing customs of the bearers of the Coţofeni-Kostolac group, the data is scarce for the Central Balkans, yet the existing data indicate certain differences. Two types of dwellings have been recorded so far. The first type is represented by the sites of Kulmja Škjopuluji in Klokočevac and Pjatra Kosti in Crnajka (sites 3-42 and 3-64). The position of these sites, within a karst relief and on a significant slope dictated a specific type of above-ground dwellings. These dwellings were cut into the rock, meaning that the backsides of houses were leaning on the rock itself. The front portions of the house were positioned on artificially leveled terrain, forming approximately 4-6 terraces one above the other.[911] Such settlements, accompanied by these specific houses, are known from a number of sites in Transylvania, interestingly attributed exclusively to phase III of the Coţofeni group (e.g. Poiana Ampoiului).[912] The second type of dwelling has been recorded at the sites of Borđej and Bubanj (4-5). These are above-ground dwellings, with a rectangular ground plan and floors made of stamped clay, made in wattle and daub technique, sometimes with a kiln or oven within them.[913] Interestingly, the first type of dwelling is recorded within the hilly-mountainous karst relief. No Coţofeni-Kostolac dwellings have been recorded within the remaining researched regions, save for secondary deposits of burnt lumps of daub. Another specific settlement type is connected with this so-called core territory of the Coţofeni-Kostolac group in the Central Balkans. Those are cave or cavelet settlements, primarily recorded within Region 3, and likewise known from the mountainous Transylvania.[914] Remains of defensive structures have been

[910] Roman 1976, 14-15; Tasić 1979, 118-119; Kapuran 2014, 41-45.
[911] Tasić 1982, 24.
[912] Ciugudean 2000, 17, Pl. 139.
[913] Сладић 1984, 214-216; Bulatović, Milanović 2020.
[914] Ciugudean 2000, 17.

recorded on several sites attributed to the Coţofeni-Kostolac group, although their chronology remains undetermined.[915] Further, it should be highlighted that the majority of sites in this territory possess solely one layer attributed to the Coţofeni-Kostolac group.

The economic preferences of the bearers of the Coţofeni-Kostolac group were minutely discussed by several authors.[916] The presumed seasonal settling of higher altitudes represented by single-layered sites indicated the practice of transhumant pastoralism for the communities of the Coţofeni group in its mother regions. This idea is further supported by (insufficient) archaeozoological studies that indicate the dominant role of domestic animals, and especially ovicaprines, which are traditionally almost exclusively represented in communities with such subsistence strategies.[917] The analyses of the Coţofeni-Kostolac catchment zones within the researched regions indicated the following. Within Region 3, the majority of sites are positioned within the pastoral catchment zone, thus providing additional confirmation to the presumed subsistence strategies of the bearers of the Coţofeni-Kostolac group. In addition, the cave/cavelet settling and/or use of caves as stables for stock (**Figure 58**),[918] as well as the single-layered nature of the majority of sites indicate the possibility of seasonal mobility, especially considering the number of sites positioned in the lowland Danube's right bank and the Stig Region. The seasonal movements could therefore be based on the vertical migrations between lowland banks of regions 2 and 4 (permanent settlements) and the hilly-mountainous hinterland of Region 3 (seasonal settlements),[919] and the exploitation of complementary pastures.[920] The idea of transhumant pastoralism is further supported by the existing archaeozoological data from the sites of Mokranjske Stene (3-49) and Bubanj (4-5) that point towards secondary exploitation of domestic animals, primarily ovicaprines.[921] Unfortunately, currently existing data is insufficient for such conclusions to be taken for granted.

[915] Tasić 1982, 23; Kapuran 2014, 127.
[916] Roman 1976; Tasić 1979; Kapuran 2014; Ciugudean 2000.
[917] Ciugudean 2000; Arnold, Greenfield 2006, 10; Bindea, Pop 2013; Popa, Gogâltan 2014.
[918] *Cf*. Forenbaher, Kaiser 2008, 138-139; Boschian 2009.
[919] Or vice-versa, as both subsistence strategies are possible (Greenfield, Arnold 2006, 8-9).
[920] Khazanov 1983, 19-20.
[921] Bulatović 2010a; Булатовић, Милошевић 2015.

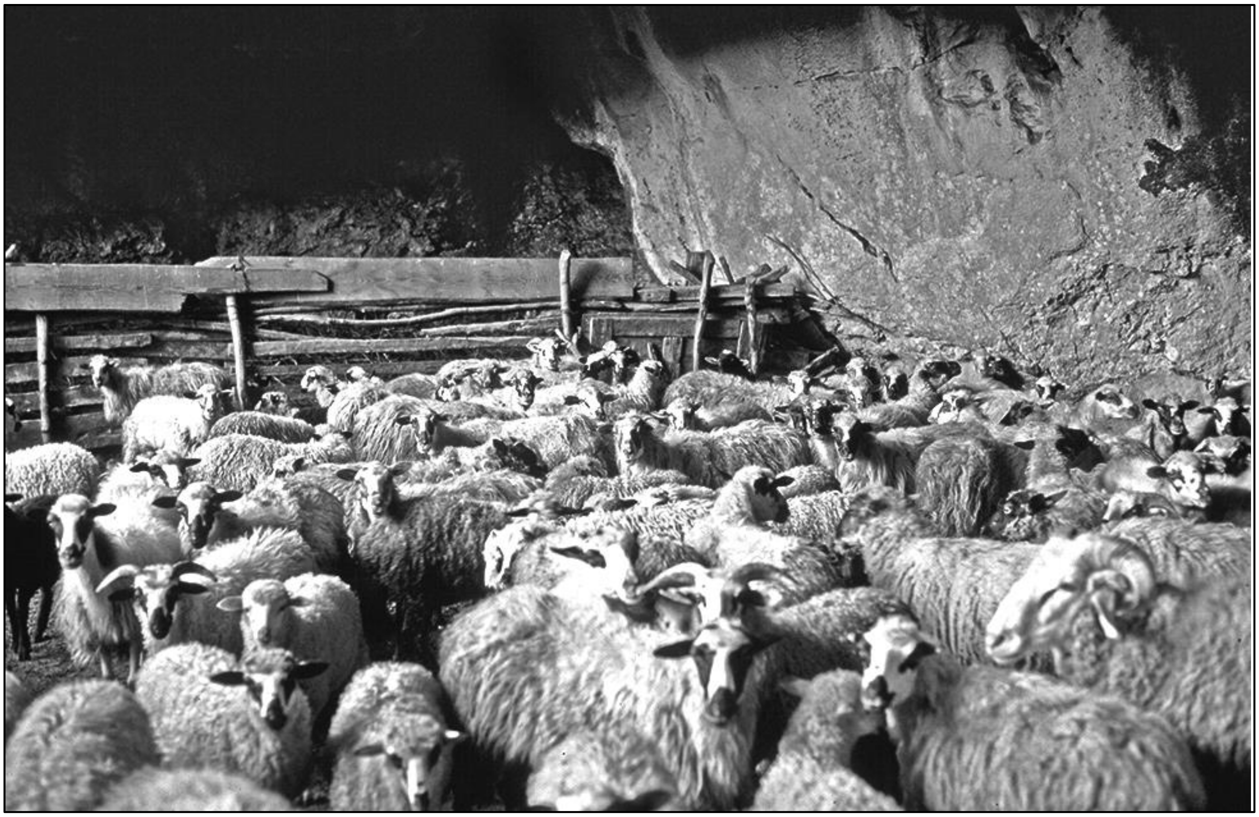

Figure 58: A cave used as a sheepfold, photographed in 1989 (Forenbaher 2011).

A question was recently raised by M. Spasić regarding the subsistence strategies of the Coţofeni-Kostolac group within the researched area. Although principally agreeing that the topography of the Coţofeni-Kostolac sites indicates transhumant pastoralism, the existence of lowland settlements within the defined agricultural catchment zone and finds of farming tools in Zlotska Cave point to the agriculture.[922] In addition, the palaeobotanical data from Coţofeni sites in Romania (caves and high altitude sites represented), point towards the existence of domesticated cereals, primarily emmer, einkorn, and barley, as staple cereals of the period, and a similar trend has been recorded within the Coţofeni-Kostolac layer at the site of Bubanj, and contemporary sites in Bulgaria and northern Greece.[923] Although seemingly contrasting, the data on domesticated cereals from sites within the defined pastoral catchment zone does not necessarily negate the idea of transhumant pastoralism. According to A. Khazanov, agriculture is a common secondary/supplementary activity in societies that practice transhumant or semi-nomadic pastoralism.[924] Besides, the ethnographic data confirm that seasonal shepherds were engaged in small-scale agriculture, as an additional form of subsistence.[925] Likewise, seasonal shepherds often acquired additional hay from communities oriented primarily

[922] Spasić 2012, 158-160, with cited literature.
[923] Popova, Božilova 1998; Ciuta 2012, 108, 113-119; Valamoti *et al*. 2019; Filipović 2020, 347-348, Table 4; Hristova 2020.
[924] Khazanov 1983, 19-20.
[925] Marcu 1976.

towards agriculture.[926] Further, two specific types of settling locations within Region 3 speak in favor of seasonal settling. Primarily, type 3b, which is defined as sites positioned on dominant elevations above estuaries and other sources of water, is also the most dominant type during the Late Eneolithic in Region 3. This type indicates the importance of permanent sources of water, which are necessary for herds, and which are often scarce within the karst relief. Also, it is indicative that this type encompasses sites with the highest altitude within this region, up to 640 m. The second is type 6, which are caves and cavelets with an altitude up to 570 m. Besides the presumed and ethnographically confirmed utilization of caves and cavelets for sheep herding, caves are known to retain water in form of ice, therefore acting as a stable supply during the dry summer months, similar to karst sinkholes.[927] Additionally, according to typology of settling, it could be discussed that such vertical migration had several successive stages, with at least three dominant types of settling locations,[928] which would allow the seasonal utilization of numerous climatic niches of the region.[929] Arnold and Greenfield highlight five basic types of traditional pastoralism in Southeastern Europe, of which type 3 would correspond to the given topographic and catchment analyses of the Late Eneolithic within the researched regions. This type implies that the permanent villages are set within lowland relief and that the herds are moved to summer pastures in higher altitudes.[930] On the other hand, one of the theories on the origin of transhumant pastoralism is the so-called *Regional symbiosis* which implies the development of symbiotic relationships between groups and regions. It stands in tight connections with specialization in the production of certain communities (e.g. agriculture vs. pastoralism). Such conditions create a specific setting for the emergence of transhumant pastoralism which serves as means for transportation of goods, ideas, and people between highland and lowland regions.[931] In such a setting, the symbiosis between the Coţofeni and Kostolac communities makes sense, especially regarding the settling topography of the Kostolac group, which is represented by settlements in lowland regions and river valleys, primarily suitable for agriculture,[932] while botanical remains and other finds from Kostolac contexts, such as grinding stones and lithics indicate the important role of agriculture as well.[933] Further, the cattle oriented sites of the Kostolac group, compared to the ovicaprines oriented sites of the Coţofeni-Kostolac group, might represent a replacement for the aforementioned division of Coţofeni sites in the territories of Transylvania and Oltenia, further indicating a cooperation and symbiosis.[934]

Another important question for the economy of the Coţofeni-Kostolac group is the exploitation of copper ores and the production of copper objects. As highlighted, various copper objects attributed to the bearers of the Coţofeni group are known from the territories of Romania and Bulgaria,[935] yet only several copper finds have been recorded

[926] Лутовац 1976, 29, 32, 34.
[927] Лутовац 1976, 27-29.
[928] Антонијевић 1982.
[929] Вујадиновић 1954, 14.
[930] Arnold, Greenfield 2006, 9.
[931] Arnold, Greenfield 2006, 13, with cited literature.
[932] Nikolić 2000, 40-41.
[933] Van Zeist 2001/2002; Balen 2005a, with cited literature; Vuković, Marković 2019, 230-233.
[934] Bindea, Pop 2013.
[935] Roman 1976, 16-17; Ciugudean 2000, 33-38; Ciugudean 2002; Sava 2015, 283.

within the researched territory, all within regions 3 and 4 (Bubanj, Grabar-Svračar, Lepenska Potkapina, Manastir, Klokočevac, Boljetin).[936] It is indicative that all of the copper finds have been recorded exclusively within Eastern Serbia, a region rich in copper and gold deposits (Carpathian-Balkan metallogenic zone) (**Subchapter 4.3**). Copper objects can be considered underrepresented finds in this territory, particularly compared to the neighboring regions attributed to the same cultural group, such as western parts of Romania and northwestern Bulgaria, but also compared to the Early Eneolithic period. W. Powell has with colleagues recently proposed a possible solution for such underrepresentation of copper objects. Based on isotopic studies the authors have proposed the so-called *Copper Hiatus* between approximately 3500 and 2500 BC, a period that covers both phases 1 and 2 (Coţofeni-Kostolac and Bubanj-Hum II) and ends approximately at the formal beginning of the Early Bronze Age (Bubanj-Hum III) in the Central Balkans (according to Serbian chronology). This hiatus would have been caused by the depletion of malachite due to extensive exploitation from the Late Neolithic and the Early Eneolithic. The depletion of malachite as a surface oxide copper ore would force the Late Copper Age communities to either invent or adopt the means for processing the available sulfide copper ores (chalcopyrite-bornite), which are used for the Early Bronze Age production.[937] In such a scenario, the Coţofeni-Kostolac communities would have to turn to the neighboring regions as the main sources of copper objects and acquire them through trade and/or exchange. However, the distribution of the Coţofeni-Kostolac settlements and the catchment analyses provide an additional solution for the lack of copper objects. Spatial distribution of the Coţofeni-Kostolac sites within metallogenic regions 3 and 4 does not indicate a particular trend of settling in the proximity of main copper deposits, as solely 17.9 % of sites are located in the proximity of copper sources (**Tables 35 and 36**). Therefore, it is highly plausible that copper ores and objects did not represent an important element of Coţofeni-Kostolac economic strategies or society, at least within the Central Balkans.

Outside of its core territory in the Central Balkans (parts of regions 2 and 4, and region 3), settlements of the Coţofeni-Kostolac group display a different trend in terms of settlement topography and economic preferences. Namely, within all of the regions except regions 3 and 4, sites are majorly positioned within the agricultural catchment zone, with the representation from 50 % in Region 2 to 83.3 % in Region 8 (**Tables 33-40**).[938] The lowest representation of sites in the agricultural catchment zone in Region 2 can be explained by the fact that the southern/southeastern portion of this region represents a geomorphological unity with Region 3, characterized by a pastoral catchment zone, while its northern part belongs to the Stig Region, a fertile lowland plain on the Danube's right bank cut by Mlava River. Another exception is Region 4, where the majority of sites attributed to the Coţofeni-Kostolac group fall within the mixed catchment zone, which can again be observed in the context of its immediate vicinity and geomorphological similarities with Region 3, represented by hilly and mountainous karst relief. However, within the remaining regions (Region 1, northern parts of Region 2, parts of Region 4, and

[936] Bulatović, Milanović 2020, 207; Tasić 1982, 21; Јевтић 1984a, 202; Spasić 2010, 160, 171; Булатовић *et al*. 2013, 31.
[937] Powell *et al*. 2017, with cited literature.
[938] Due to the small sample, Region 6 was not taken into consideration.

regions 7 and 8) Coţofeni-Kostolac sites are located in major river valleys (Great and South Morava, Danube, Mlava, Jablanica, Toplica, and West Morava), on river terraces which are suitable primarily for agriculture, in lowland or partially lowland relief, covering the major natural communications in the Central Balkans. As presented, bone tools and paleobotanical analyses both in the Central Balkans and the neighboring regions indicate that the bearers of the Coţofeni-Kostolac group certainly practiced agriculture to a certain degree, either as a main or supplementary subsistence strategy, which does not exclude a certain level of stockbreeding. This "spread" of the Coţofeni-Kostolac group towards the west seems to follow natural communications of the Central Balkans, although its nature remains undefined. Namely, at the current state of research and with the existing datasets (emphasized lack of absolute dates), it would be ungrateful to define whether these migrations of the Coţofeni-Kostolac group elements of material culture represent in fact movement of people, or rather a cultural transmission. Interestingly, Coţofeni–Kostolac absolute dates from the site of Bubanj, point to the concurrent development of the Coţofeni–Kostolac group with the Coţofeni and Kostolac groups and more importantly set the lower chronological boundary of the group to the 28th century BC. Therefore, the Coţofeni–Kostolac sites outside the core territory could possibly be younger, thus indicating its gradual spread towards the central parts of the Central Balkans, and further to the west. Further, such dates indicate the possibility that there was no chronological/cultural hiatus between **Phase 1** and **Phase 2,** meaning between the Coţofeni–Kostolac and Bubanj-Hum II groups,[939] possibly reflected in certain decoration motifs of Bubanj-Hum II pottery, which display Coţofeni–Kostolac traditions. In the following period, during **Phase 2** and **Phase 3**, namely the Early Bronze Age, the core territory (hilly-mountainous karst relief of Region 3) of the Coţofeni–Kostolac group seems uninhabited. Due to the lack of absolute dates, A. Kapuran suggested that the Coţofeni-Kostolac communities within northeastern Serbia continued their life undisturbed, based on mobile stockbreeding up till the appearance of the Middle Bronze Age communities at the beginning of the 2nd millennium BC.[940] The spatial distribution and catchment analyses of the Early Bronze Age Bubanj-Hum II and Bubanj-Hum III sites (Figs. 57 and 59), and sites attributed to the Pančevo-Vatrogasni Dom Horison in northeastern Serbia (Region 2), dated to the 21st/20th century BC, support such an idea. Namely, scarce Early Bronze Age sites in northeastern Serbia are distributed within lowland reliefs of the Stig Region, the Timok Valley, and the Danube's right bank, primarily within the agricultural catchment zone (**Table 63**) (**Figure 55**), therefore allowing the possibility of undisturbed life of pastoral communities of the Coţofeni–Kostolac group up until the Middle Bronze Age (c. 2000 BC), when this particular area becomes densely populated according to the quantity of sites. Further, such typo-topographical setting of Early Bronze Age sites within lowland regions and agricultural catchment zone could possibly once again indicate a certain cooperation (*Regional symbiosis*) between bearers of the Coţofeni–Kostolac and Bubanj-Hum II groups.

In the following period (**Phase 2**), the territory of the Central Balkans is marked by the appearance of the Bubanj-Hum II group. Although formally separated as an Early

[939] Bulatović *et al*. 2020a, 1175.
[940] Kapuran 2014, 52; Kapuran *et al*. 2018, 86.

Bronze Age group more than half a century ago,[941] its more precise cultural and chronological determination was only recently summarized (**Subchapter 5.2**).[942] The main characteristics of the group are specific ceramic forms, which subsequently provided the means for further separation of two phases of the Bubanj-Hum II group. According to A. Bulatović and D. Milanović, the earlier phase is characterized by ornamentation typical of the Coțofeni-Kostolac group, while the second phase is characterized by the occurrence of ceramic forms which will become typical for the following Early Bronze Age Bubanj-Hum III-Pelince II-III-(Pernik) horizon.[943] Due to the existence of certain elements (decoration of pottery) of the Coțofeni-Kostolac group, and subsequent elements of the Bubanj-Hum III group, it can be observed as a sort of a "transitional phase" between the Late Eneolithic and the Early Bronze Age in the Central Balkans. This phase is according to the absolute dates, dated to a period between the 28th and the 26th century BC.[944]

The regional quantitative representation of sites attributed to the Bubanj-Hum II group point toward a particular preference for settling (**Table 58**), connected with the Great and South Morava valleys. Observed from the north to the south, sites are concentrated within three major basins: Paraćin-Jagodina Basin, Niš Basin, and Leskovac Basin, while another concentration of sites is observed in the confluence zone of the West and South Morava rivers (**Fig. 54**). Although topographically two types of sites are dominant, the ones positioned on river terraces, and the ones on dominant elevations, both types are oriented towards the alluvial plains of major river valleys. As aforementioned, the settling of northeastern Serbia, especially Region 3, is completely unrepresented during this period. Such a topographic distribution of sites can likewise be observed within the neighboring regions, as the site of Radomir-Vahovo is located within the lowland relief of the Strumica Valley,[945] and the site of Bagačina is located on a dominant elevation above the first terrace of the Lom River, also oriented towards the river valley.[946] The architectural remains connected with the Bubanj-Hum II group are quite scarce, and within the researched territory originate only from sites of Bubanj (site 4-5) and Velika Humska Čuka (site 4-31), both within the Niš Basin. The available data indicate that the foundations of houses were dug into the soil, with a rectangular ground plan, and possibly floors made of stamped clay. Interestingly none to very few remains of solid architecture, such as lumps of burnt daub were recorded within those structures, possibly indicating a lighter construction, relying on wood and other organic materials.[947]

The economic preferences of bearers of the Bubanj-Hum II group can be observed within the context of the presumed Early Bronze Age reemergence of agriculture and mixed economy in the Central Balkans following the Late Eneolithic.[948] The site catchment analyses indicate that 47.06 % of sites attributed to the Bubanj-Hum II group are located within the agricultural catchment zone, on alluvial terraces of major rivers (**Table 59**). As

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[941] Garašanin 1957; Garašanin 1959a; Гарашанин 1973; Garašanin 1982.
[942] Bulatović, Milanović 2020.
[943] Bulatović 2011; Bulatović, Milanović 2020.
[944] Bulatović, Milanović 2020, 224-225.
[945] Alexandrov 1994.
[946] Alexandrov 2007.
[947] Bulatović, Milanović 2020, 116-117, 120.
[948] Гарашанин 1973; Greenfield 1986; Булатовић, Станковски 2012.

previously highlighted, agriculture was utilized by the bearers of the Coţofeni-Kostolac group, yet an increase of sites in the agricultural catchment zone, and especially a significant decrease of sites within the pastoral catchment zone is displayed. Namely, such a distribution goes in line with the presumed reemergence of agriculture, but the reasons behind it remain unclear. It is possible that the focus on agriculture could be explained by the final stage of migrations from the east, proposed by several authors.[949] In that manner, these new populations would settle within the major communication routes in the Central Balkans, suitable for control and agriculture, and thus avoiding northeastern Serbia, possibly still settled by the bearers of the Coțofeni–Kostolac group. The other explanations could be connected with a specific set of hydrological conditions in the Central Balkans during that period. Namely, the observed shift of sites towards the wide alluvial plains of major rivers could be enabled by suitable hydrological conditions, meaning a lower degree and/or lesser scope of seasonal flooding. Additionally, one of the reasons for the lack of settlements within the pastoral catchment zone could be the aforementioned retention of the Coţofeni-Kostolac communities within those regions suitable for pastoralism. This might indicate certain contacts between the communities of the Coţofeni–Kostolac group and the Bubanj-Hum II group, reflected in ceramic elements of the first group within the ceramic inventory of the earlier phase of the Bubanj-Hum II group. The agricultural economic strategies of the bearers of the Bubanj-Hum II group are further confirmed by botanical samples, which indicate the representation of emmer, einkorn, and barley during the Early Bronze Age in the region, yet there are no data on the Bubanj-Hum II group specifically within the researched territory. Observed through the spatial disposition of sites, it is indicative that the bearers of the Bubanj-Hum II group were not oriented towards copper sources, at least within the researched region (**Table 59**). This is further supported by the lack of copper or bronze objects attributed to the group, which similarly to the preceding phase falls within the presumed *Copper Hiatus* of the Central Balkans.[950]

This phase is likewise marked by the first remains of the spiritual life of the Early Bronze Age communities within the researched territory. Namely, ceramic inventory of the Bubanj-Hum II group has been recorded at the site of Dve Mogili in Pelince (site 5-3) in Region 5, within Zone 1 at the site.[951] Due to its construction, comprised of several zones with deposited vessels that surround a “pyre”, the site is currently interpreted as a prehistoric sanctuary.

Within the researched territory, the following period (**Phase 3**) is characterized by two partially contemporary cultural groups, Bubanj-Hum III and Armenochori, and a slightly younger Pančevo-Vatrogasni Dom Horison. Both groups are well defined in terms of territorial distribution, material culture, and chronology (**Subchapters 5.3** and **5.4**). Their mutual relations have recently been discussed, especially following the excavations of the Ranutovac necropolis in Meanište near Vranje (6-10), attributed to the Armenochori group.[952] Traditionally, the core territory of the Bubanj-Hum III group (Bubanj-Hum III-

[949] Gimbutas 1965, 21-22; Гарашанин 1975; Garašanin 1983d; Gumă 1997, 95-102; Todorova 2003, 292-293; Koledin 2008; Булатовић, Станковски 2012, 323-327; Gerling *et al*. 2012; Horváth *et el*. 2013.
[950] Powell *et al*. 2017.
[951] Булатовић, Станковски 2012, 73-85.
[952] Bulatović 2020.

Pelince II-III-Pernik horizon) is considered to cover the areas of Niš and Sofia basins, primarily Nišava Valley, South Morava, Pčinja, and Struma valleys.[953] On the other hand, the territory connected with the Armenochori group lies in eastern Albania, Thrace, northern Greece, North Macedonia, and South Morava Valley.[954] The line of separation between these two cultural groups is not clear, as ceramic elements of both groups appear on certain sites formally attributed to the other group, yet according to the distribution of sites, it can be highlighted that Grdelica Gorge might represent the border. Such a mixture of ceramic elements of both discussed groups might indicate the existence of interregional contacts during that period. According to the absolute dates from the researched territory, the Bubanj-Hum III group is dated between the 28th and the 20th century BC,[955] while the Armenochori group is dated between the 25th and the 18th century BC.[956] Bearers of these two groups have interacted at one point, either through migration and/or cultural transmission, and the interaction falls prior to the 22nd century BC, according to the absolute dates from the Ranutovac necropolis.[957]

The quantitative representations of sites attributed to the Bubanj-Hum III group show that the highest concentration of sites is represented within the South Morava Valley, especially Niš Basin. Further, Bubanj-Hum III sites have been recorded within the Jablanica, Toplica, and West Morava valleys and Great Morava Valley (**Table 61**) (**Figure 56**). The topographic positions of sites attributed to the Bubanj-Hum III group are similar to those of the Bubanj-Hum II group, with two preferred settling positions highlighted. The first type is represented by lowland sites positioned on alluvial terraces of major rivers, although often with a hilly and mountainous hinterland, and the second group of sites is represented by elevated settlements, positioned within river valleys and fringes of basins, having a visual control of a wider area and presumed major communications, with a 75% of sites positioned within those presumed communications (**Table 63**). However, compared to the preceding Bubanj-Hum II group, sites attributed to the Bubanj-Hum III group display a higher variability in settling locations, with highland and cave settling being represented for this group. Further, sites attributed to the Bubanj-Hum III group, display tendency of settling elevated locations within the basins, which is particularly visible in Region 4. This might indicate another shift in hydrological conditions, possibly represented by higher degree of flooding compared to the preceding phase (Bubanj-Hum II). When simplified, such settling topography within the researched territory corresponds to the previously proposed settling topography by A. Bulatović and J. Stankovski for the Bubanj-Hum III group.[958] In terms of dwellings, there is almost no data regarding the Bubanj-Hum III group, except for the recorded deposits of burnt daub,[959] that indicate a solid construction, unlike for the preceding Bubanj-Hum II group.

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[953] Garašanin 1983a.
[954] Bulatović 2020.
[955] Bulatović *et al*. 2020, 1178, Fig. 3.
[956] Bulatović *et al*. 2020, 1180, Fig. 9. As previously noted, the Armenochori group possibly continues to exist throughout the Middle Bronze Age, up to the 14th/13th century BC within its southern territory of North Macedonia and northern Greece (Mitrevski 2003, 45-47).
[957] Bulatović 2020, 88-90.
[958] Булатовић, Станковски 2012, 197-201.
[959] Bulatović, Milanović 2020, 229.

The economy of the bearers of the Bubanj-Hum III group was regarded within the same context as the preceding Bubanj-Hum II group, the so-called reemergence of agriculture and mixed economy during the Early Bronze Age. The site catchment analyses for the Bubanj-Hum III group indicate the dominance of the agricultural catchment zone, with 54.2% of the sample within that catchment zone (**Table 63**). However, compared to the preceding Bubanj-Hum II group, there is higher variability in terms of catchment zones, especially with the appearance of sites within the pastoral catchment zone (8.3%) (**Table 63**), which were not represented within the Bubanj-Hum II sample (**Table 63**). Plant remains indicate the continuation in the dominance of einkorn, emmer, and barley, and no significant changes can be observed. Finds from the Early Bronze Age layers at the site of Bubanj, such as antler hoes and chipped stone tools with characteristic gloss point towards agriculture as well.[960] Interestingly, such objects originate from a site that falls within the mixed catchment zone, indicating not only agriculture, yet stockbreeding as well. The faunal data from the site indicate the dominant role of cattle, followed by ovicaprines and pigs.[961] This represents a significant shift compared to the Late Eneolithic and the dominance of ovicaprines. Such a trend might point towards a less mobile stockbreeding, connected with permanent settlements positioned within mixed catchment zones. It is indicative that such a representation of domestic animals, dominated by cattle is common for the Early Bronze Age sites in the neighboring regions.[962] One of the specifics of this period in the Central Balkans is the appearance of domestic horses, which have been recorded on several sites (Bubanj, Rit, Novačka Ćuprija, Ljuljaci).[963] The appearance of domestic horses can be linked with the presumed final wave of migrations from the east, which led to the formation of the Early Bronze Age in the Carpathian Basin and the Central Balkans.[964]

According to W. Powell and colleagues, the proposed *Copper Hiatus* in the Central Balkans ended by the mid-3rd millennium BC.[965] This chronologically coincides with the appearance of copper and bronze objects attributed to the Bubanj-Hum III group,[966] yet the lack of artifacts or installations related to metallurgical activities could point out procurement through exchange and/or trade. This is further supported by the spatial distribution of Bubanj-Hum III sites within the researched territory (**Figure 56**), which shows that the copper-rich regions of northeastern Serbia, namely Region 3, is completely uninhabited by the bearers of the Bubanj-Hum III group (and other Early Bronze Age groups). Additionally, the spatial distribution of sites attributed to the Bubanj-Hum III does not indicate a preference for settling in the proximity of mineral deposits, as solely 4.2% (one site) is located in such area (**Table 63**). Additionally, the site in question, Tri Kruške in Klinovac near Bujanovac (6-14), lies in the proximity of possible tin sources within the Bujanovac granite massif, whose availability for prehistoric exploitation still remains

[960] Garašanin 1983a, 721-722; Šarić 2020, 405.
[961] Bökönyi 1991, 90-92.
[962] Greenfield 1986a, 167-187; Gál 2016; Gál 2017.
[963] Крстић *et al*. 1986, 27-28; Bökönyi 1991; Bulatović 2020a, 334.
[964] Greenfield 1986; Greenfield 1988, 581-585; Bökönyi 1991, 90-91; Bulatović 2014b; Bulatović 2020a.
[965] Powell *et al*. 2017.
[966] Refer to **Subchapter 5.3.4.**

questionable.[967] Similar to the aforementioned situation with the Bubanj-Hum II group (**Phase 2**), there are several possible reasons for the sifnificantly low representation of sites next to mineral resources, primarily copper. One of the reasons could be the previously desribed hypothesis of the final wave of migrations from the east, which resulted in settling of new populations, with a new set of traditions and subsistance strategies, within the researched territory. Therefore, the vertical cultural transmission[968] within this population resulted in the „lack" of knowledge and/or necessity for the exploitation of mineral resources and the production of copper or bronze objects.[969] Another possibility would in fact support the so-called *Copper Hiatus*. Namely, pottery attributed to the Bubanj-Hum III group (two-handled beakers) was recently recorded within the shafts of the prehistoric mine of Prljuša at Rudnik Moundain in Central Serbia.[970] This might indicate a shift to another copper ore and/or deposit due to the lack of exploitable copper ores within Eastern Serbia (Region 3), during that period. Finally, by comparing the distribution of Bubanj-Hum III sites in relation to mineral resources and the preeceding periods, one could recognize a similar pattern. Namely, during the Late Neolithic Vinča group and the Early Eneolithic Bubanj-Hum I group, the territory of Eastern Serbia (Region 3) is likewise almost completely uninhabited, despite the fact that the bearers of both these groups utilised copper ores from this region. This could be explained by the idea that the territories that provided such an important and staple resource were often uninhabited during prehistory, for what the reasons remain unknown, and could be connected with spiritual beliefs of contemporary populations.[971]

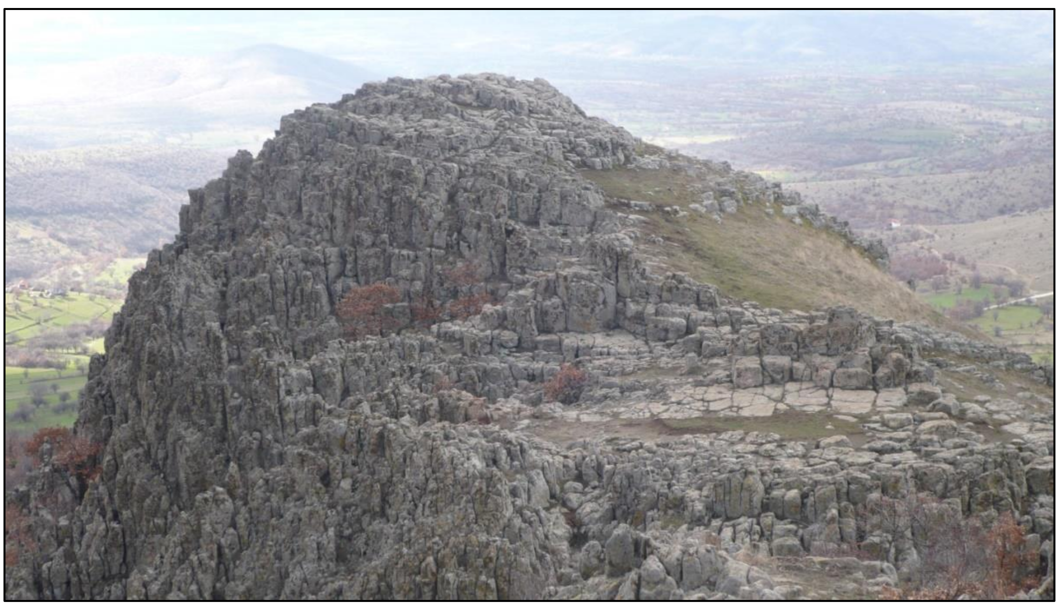

Figure 59. A wide view of the prehistoric observatory in Kokino (https://wallpaperstock.net/kokino%2C-ancient-observatory%2C-m-wallpapers_w12809.html, accessed 21.4.2022.).

[967] *Cf*. Durman 1997; Powell *et al*. 2020.
[968] For vertical cultural transmission refer to Eerkerns, Lipo 2007, with cited literature.
[969] Similar to the idea of traditional settling of the bearers of the Coțofeni-Kostolac group within geomorphological seting suitable for pastoralism.
[970] Antonović *et al*. 2019, 72-3-73, Slika 3.
[971] Bulatović *et al*. 2020b, 30.

Further to the south, beyond the Grdelica Gorge, within the upper course of the South Morava River and the Vardar Valley, we record sites attributed to the Armenochori group. Although those sites are few, the necropolis of Ranutovac in Meanište indicates that either populations or cultural elements of this group have penetrated towards the north from their original territory, somewhere around the 22nd century BC. Due to the mixture of ceramic elements attributed both to the Bubanj-Hum III and Armenochori groups, and the overall similarity of ceramic inventory (two-handled beakers), it is yet unclear whether these sites represent the results of the adoption of certain ceramic elements, or migrations of bearers of the Armenochori group towards the north. The distribution of sites within the researched territory is limited to regions 5 and 6 (**Figure 57**) (**Table 62**). The topographic distribution of sites confirms that those are exclusively positioned within the terraces of major rivers, sometimes on an elevated position within river valleys, as previously suggested.[972] Unfortunately, the dwellings connected with the Armenochori group remain unknown within the researched territory.

According to their topographic positions, the economic preferences of the bearers of the Armenochori group were connected primarily with agriculture, which is confirmed by the site catchment analyses in this study. Namely, all of the sites that comprise the sample are located within the agricultural catchment zone (**Table 63**), and the same percentage of sites (75%) are located within the presumed natural communications, similar to the Bubanj-Hum III group. No botanical data are available from the researched region, yet concurrent data from Greece (the site of Armenochori included) and Bulgaria indicate the cereals were processed and represented an important portion of dietary habits of Early Bronze Age populations.[973] Within the researched territory, no metal objects are connected with the Armenochori group and none of the sites are located in the vicinity of mineral sources (**Table 63**).

The spiritual life of bearers of the Armenochori group can be observed through a well-described and specific burial ritual recorded at the Ranutovac necropolis within Region 5, and analogous necropolises in Greece (Koilada, Kriaritsi).[974] Unfortunately, due to the lack of burials and necropolises attributed to the Bubanj-Hum III group, it remains unclear whether these populations shared similar funerary customs and spiritual life. However, a glimpse into the spiritual life of the bearers of the Bubanj-Hum III group is hinted at by the existence of ceramic inventory attributed to the group within Zone 1 at the site of Pelince,[975] therefore indicating a continuation of the spiritual sphere of life with the preceding Bubanj-Hum II group. Further, spiritual links between the bearers of the Armenochori and Bubanj-Hum III groups can be observed through the utilization of the prehistoric observatory of Kokino by both groups, as attested by the recorded ceramic inventory (**Figure 59**).

Finally, the topographic positions and economic preferences of sites attributed to the Pančevo-Vatrogasni Dom Horizon (sites 2-8 and 2-14) point to the settling of dominant

[972] Bulatović 2014, 63; Булатовић, Станковски 2012.
[973] *Cf*. Valamoti 2009; Valamoti 2011; Valamoti *et al*. 2019.
[974] Asouhidou 2012; Maniatis, Ziota 2011; Bulatović 2020.
[975] Булатовић, Станковски 2012, 73-85.

and elevated ridges on the Danubes' lowland right bank, within the agricultural catchment zones. Such settling preferences could represent the reflection of similar setttling topography of the adjacent region of South Banat, where the majority of Pančevo-Vatrogasni Dom Horizon sites are in fact located.[976] Region 2, where sites attributed to this horizon have been recorded, in fact represents the Peripannonian part of Serbia, with climatic and pedological conditions similar to the ones within Pannonian Serbia.

[976] Љуштина 2022, 44-46.

12. Conclusion

The simplified method applied in this study, previously published by C. Quinn and H. Ciugudean,[977] served as a valuable **descriptive tool** for the interpretation/reinterpretation of settlement trends, subsistence strategies, and possible migratory shifts of prehistoric populations that inhabited the territory of the Central Balkans between the end of the 4th and the beginning of the 2nd millennium BC.[978] This study has shown that the advantages of such a regionally and diachronically oriented model, in contrast to traditional site catchment analyses (**Chapter 2**), which are more suitable for smaller samples or case studies based on single or several correlated sites, are primarily formed on the easier manipulation with relevant data such as locations, mutual relations and orientation of sites towards specific catchment zones. On the other hand, the model does not include some data on the immediate surroundings of the site, such as the representation of clay pits, saltmarshes, or specific types of soil, which as highlighted in **Chapter 3**, possibly do not reflect the original surroundings of those sites, and can easily lead to misconclusions.[979] As previously highlighted, without further examinations, such as absolute dating and petrological analyses, the exploitation of saltmarshes and clay pits in certain periods cannot be precisely determined. The simplicity of this model is further complemented by the fact that it can be improved by the quality of data manipulation in one of the related softwares.[980]

Further, related to the quality of data, it is necessary to bring forth several problems, and their possible solutions. The first problem is related to the size of sites, which are often arbitrary, and based on the topography of the location in which those sites are positioned. Although seemingly logical method, especially for sites that are positioned in prominent and naturally separated locations such as Velika Humska Čuka, Bubanj, Kostoperska Karpa for example, which represent a specific geomorphological formations within contrasting relief, such method is insufficiently precise, especially for the regional or period-related comparisons of site size. The problem can be bested by intensive surveying of the site by one of the ground-penetrating radars (geomagnetism, geophysics, LiDAR, etc.). In line with that, as previously highlighted, pedological and hydrological surroundings of the site, which often do not reflect its original surroundings (**Chapter 3**), can be tested by various paleogeographical drillings and absolute dating, which can determine the successive soil types and potential changes for each of the cultural horizons at the site and provide data on the displacement of watercourses. Such drillings could also provide data on the paleo-

[977] Quinn, Ciugudean 2018.
[978] As highlighted by Kantner 2012.
[979] A good example for this can be found in the extensive floods that hit Obrenovac in 2014. According to the locals, such rapid flooding stripped a significant amount of fertile soil from their fields and left behind heavier sediments, such as gravel and pebbles, therefore instantly lowering the fertility of their land. This illustrates how swift and unexpected changes in hydrography can easily transform the agricultural potential of one location. Surely, this has to be separated from cyclical flooding which mostly contribute fertility of soil by depositing fine river sediments.
[980] Unfortunately, the practice in Serbian archaeology is that the individuals engaged in software which serve for spatial analyses are usually self-taught. Therefore, currently there are only several people in Serbia who can utilize that software in their full capacity.

vegetation for the surroundings of specific sites, which could then further serve as a basis for the reconstruction of the paleoclimate.

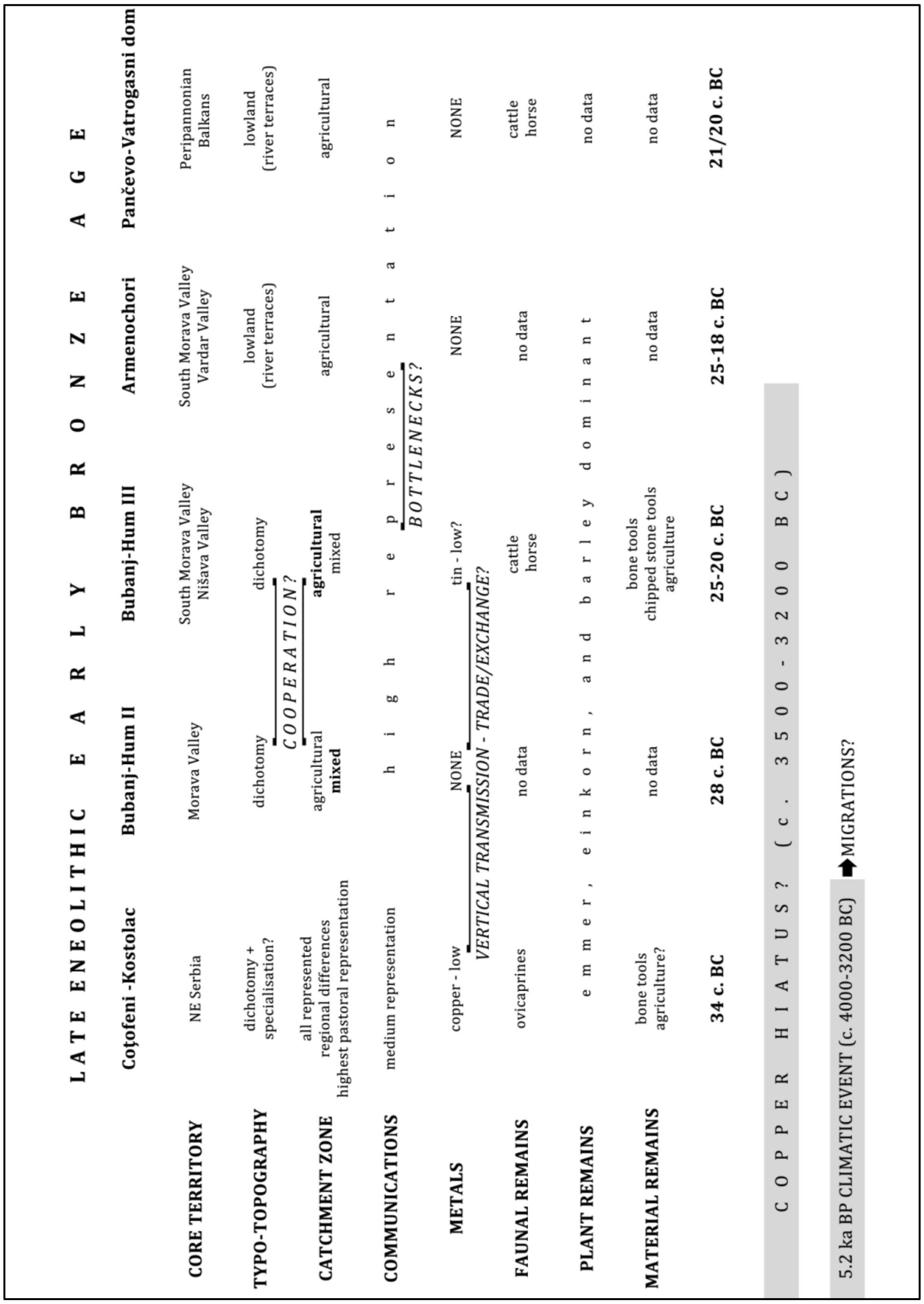

Figure 60. Framework of the Late Eneolithic and the Early Bronze Age based on this study.

With all of the problems poreviously highlighted, the study did manage to answer all of the research questions and subsequently provide a new narrative for the research of the settlement patterns during the Late Eneolithic and the Ealry Bronze Age in the Central Balkans. The first hypothesis formed in this study revolves around the settlement types, locations, and their disposition between the Late Eneolithic and the Early Bronze Age. The given research questions concern the **quantitative and typological representation of settlements** within the given periods and regions, and their **mutual relations** in each of the researched periods.

By observing the spatial distribution and quantitative representation of sites, the following conclusions are driven (**Chapter 7**). During the Late Eneolithic Coţofeni-Kostolac group (**Phase 1**) all of the researched regions except Region 5 are settled. The highest concentration of sites has been observed within Region 3, which is possibly connected to the specific subsistence strategies of the Coţofeni-Kostolac group. The typological representation of settlements was observed within two distinct territories. Firstly, the territory of Region 3 and parts of the neighboring regions 2 and 4, where types of settlements display a higher variability compared to the remaining researched regions. The main types of settlements within Region 3 are lowland settlements on the banks of major rivers (particularly Danube) and settlements on dominant elevations near sources of water, usually within the hinterland and karst relief of Region 3. The specific type of possible settling connected with the Coţofeni-Kostolac group within regions 2, 3, and 4, are caves and cavelets, which have certainly been utilized. Within the remaining regions sites attributed to the Coţofeni-Kostolac group are usually positioned within lowland relief, or on dominant elevations within the lowland relief, which differs from sites in Region 3. Regularities in mutual relations of sites attributed to the Coţofeni-Kostolac group could not be observed, save for potential economic relations of lowland and highland sites within regions 2, 3, and 4, as described in the discussion.

In **Phase 2** (Late Eneolithic-Early Bronze Age transition/Early Bronze Age 1), sites attributed to the Bubanj-Hum II group have been recorded in a total of six out of eight researched regions (regions 1, 4, 5, 6, 7, and 8) (**Chapter 7**). The highest quantitative representation has been observed in the Morava Valley and its basins (Niš, Leskovac), meaning regions 4, 6, and 7. The topography of sites attributed to the Bubanj-Hum II group indicated the dominance of two types – settlements on lowland terraces of major rivers and settlements on dominant elevations oriented towards river valleys and basins. Regarding the mutual relations of sites attributed to the Bubanj-Hum II group, no regularities could be observed, except the tendency for a visual coverage of basins and river valleys.

During **Phase 3** (Early Bronze Age/Early Bronze Age 2), sites attributed to the Bubanj-Hum III group have been observed within six out of eight researched regions (regions 1, 4, 5, 6, 7, and 8) (**Chapter 7**). The quantitative distribution of sites attributed to the Bubanj-Hum III group indicates that the highest settling was within regions 4, 6, and 8, meaning the South Morava Valley and its basins. The topography of Bubanj-Hum III sites, similar to **Phase 2**, indicated two preferred locations for settlements. First, represented by settlement in lowland relief on alluvial terraces of major rivers, often with a hilly and mountainous hinterland, and secondly, sites positioned on elevated ground, usually within major river valleys and basins. No regularities could be observed regarding the mutual relations of Bubanj-Hum III sites, except the tendency for a visual coverage of basins and river valleys.

Within the same phase (**Phase 3**), sites attributed to the Armenochori group have been recorded solely within regions 5 and 6, meaning South Morava and Vardar valleys

(**Chapter 7**). The topography of settlements attributed to the Armenochori group points out sites positioned exclusively within the terraces of major rivers, sometimes on slightly elevated terrain. In terms of mutual relations of sites, no regularities have been observed, except the tendency for a visual coverage of basins and river valleys.

The second hypothesis and its researched questions aimed to determine the economic affinities through characteristic **catchment zones** for settlements in each of the researched periods, **indicative material remains** from settlements, and the relations of settlements towards the presumed **natural communication** routes of the Central Balkans.

During the Late Eneolithic (**Phase 1**), sites attributed to the Coţofeni-Kostolac group are positioned within all of the proposed catchment zones, with the agricultural catchment zone being dominant (39.3%), followed by mixed and pastoral catchment zones (33% and 29.7%) (**Chapters 8** and **9**). Although such data indicate the dominance of agriculture, the regional observations of catchment zones indicate that the dominant catchment zones within regions 2, 3, and 4 are pastoral and mixed, while the agricultural catchment zone is dominant within the remaining regions. Botanical and faunal data from sites attributed to the Coţofeni-Kostolac group complement such a higher representation of pastoral sites and the dominant number of sites within the agricultural catchment zone. The representation of sites oriented towards copper deposits is 17.9%, which again reflects the nature of the presumed subsistence strategies of the Coţofeni-Kostolac group, similar to the representation of sites within the presumed natural communications of the Central Balkans (62.5%).

Sites attributed to the Bubanj-Hum II group (**Phase 2**) are positioned within two out of three proposed catchment zones, agricultural and mixed (**Chapters 8** and **10**). The mixed catchment zone is dominant with 52.94% of the sample, followed by the agricultural catchment zone with 47.06% of the sample. Such an economy, oriented primarily towards agriculture and the mixed economy is supported by faunal and botanical data. No sites attributed to the Bubanj-Hum II group are oriented towards copper deposits, which might reflect the nature of their economy, specific mineralogical conditions, or specifics in terms of inhabitance of the Central Balkans, as described in the discussion. All of the sites are oriented toward the presumed natural communications of the Central Balkans.

Bubanj-Hum III sites (**Phase 3**) are positioned within all three catchment zones, of which the agricultural is the most represented (54.2%), followed by mixed and pastoral (37.5% and 8.3%). Similar to the preceding phase, such representation of sites within the agricultural catchment zone is confirmed by botanical data, as well as the mixed economy, which is supported by the existing faunal data. Solely 4.2% are positioned towards mineral deposits in this phase, namely tin deposits; while 75% of sites are oriented towards the presumed natural communications of the Central Balkans.

The third hypothesis aims to determine whether the characteristic settlement patterns are manifested in terms of cultural groups/areas within each of the researched periods. The research questions are related to characteristic **settlement patterns** of each of the researched groups.

The diachronic analyses of the quantitative and spatial distribution of sites, their topography, mutual visual relations, catchment zones, and relations towards staple mineral resources, have indicated certain trends and differences between the preferred settling trends and subsistence strategies of prehistoric communities that inhabited the researched territory during the Late Copper and the Early Bronze Age. In the discussion, the results of the aforementioned analyses have been contrasted and observed within the existing (traditional) narrative of the Late Eneolithic and the Early Bronze Age in the Central Balkans, according to the main hypotheses and research questions of the study (**Chapter 3**). The results have highlighted that certain natural external factors, although significantly under-researched, such as climate and hydrology, could have played a role in shifts in settlement patterns, yet according to the specific development of cultural groups in the region (**Chapter 5**), designated catchment zones, and material remains from settlements, it seems as those shifts were rather connected with internal social factors. Those factors could have relied on traditional subsistence strategies of each of those societies that we recognize as cultural groups.

Generally, a dichotomy in topographic positions of sites, and the prevalence of lowland and elevated sites, can be observed in all of the researched periods and regions, which might indicate significantly lower differences in settlement trends and subsistence strategies, than traditionally interpreted.[981] Although existing, the differences in topographic positions and catchment zones are, as it seems, caused by regional geomorphology and possible traditional subsistence strategies of certain populations, as observed in the representation of pastoral oriented settlements during the Late Eneolithic in Region 3. Such regional decision-making fits well into Harding's remarks on the micro-regional contextualization of the results prior to their incorporation into the presumed global systems and narratives.[982] The representation of designated agricultural and mixed catchment zones, meaning the orientation of settlements towards agricultural and agro-pastoral economy during all of the researched periods, fits into the supposed agro-pastoral subsistence of the Bronze Age in Europe, with the existing regional differences. Further, the archaeozoological analyses from researched sites indicate the possibility of the intensified exploitation of secondary products, which particularly refers to the Late Eneolithic. The archaeozoological research of the Early Bronze Age within the researched region indicates the dominance of cattle in faunal assemblages. Within wider European scopes, the dominance of cattle is characteristic of temperate Europe,[983] which puts the Bronze Age of the researched region into such a narrative, possibly indicating the period-related climate conditions, connected with different effects of climate changes above the 40° latitude.[984] Additionally, the switch from the dominant role of ovicaprids during the Late Eneolithic, and the appearance of the horse within Early Bronze Age faunal assemblages (**Subchapter 8.2.1.**), might indicate the arrival of new populations, oriented towards cattle-breeding. The eastern origin of populations and animals and a higher level of mobility have been attested for the territories of Central and parts of Southeastern Europe in a period between

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[981] *Cf*. Bankoff, Palavestra 1986; Garašanin 1994; Булатовић 2009a; Капуран, Булатовић 2012a; Kapuran 2014; Kapuran *et al*. 2018;
[982] Harding 2013, 391-394
[983] Harding 2000.
[984] Magny *et al*. 2013.

the 29th and the 20th century BC.[985] Such chronological span would correspond to our **Phases 2** and **3**, which are represented by Bubanj-Hum II and Bubanj-Hum III groups, although similar analyses of mobility are currently completely lacking for the aforementioned groups and the researched territory. In such a scenario, the presumed semi-mobile and pastoral nature of Late Eneolithic populations within certain regions of the researched territory (regions 2, 3, and 4), would rather represent the results of certain movements of the bearers of the Coţofeni communities towards the west, under the presumed pressure of migrations from the east (**Subchapter 5.1.**). The quantitative and spatial distribution of Late Eneolithic Coţofeni-Kostolac sites within the researched territory possibly indicates a gradual movement or cultural transmission by the bearers/elements of the Coţofeni-Kostolac group towards the west (**Chapter 11**). This might indicate that the presumed migrations were both gradual and long-lasting, or occurred in waves since approximately four centuries separate the emergence of the Coţofeni-Kostolac group in the researched territory and the appearance of the bearers of the Bubanj-Hum II group. This would support the aforementioned idea that the semi-nomadic pastoralism should be observed separately from the presumed migrations, rather as a traditional subsistence strategy of the Coţofeni communities that transferred that practice into the newly settled territories of the Central Balkans. As suggested by several authors, the formation of the Early Bronze Age groups within Southeastern Europe represents the results of the final wave of those presumed migrations from the east.[986] All of the presented data, including the shift towards a more mixed economy based on the representation of catchment zones, spatial disposition of sites towards major river valleys, the creation of a “new” core territory connected with the Morava Valley, higher representation of cattle within faunal assemblages, and the appearance of the horse, all point to certain changes, which might be interpreted as the arrival of new populations, although such stance should not be taken for granted, at least until further exact data is collected, based on physical and chemical analyses. Interestingly, this territory also represented a cultural unity during the Early Eneolithic (Bubanj-Sălcuta-Krivodol complex), which was later disturbed by the bearers of the Middle and Late Eneolithic groups. This could also serve as an argument for successive migrations that have disturbed this particular territorial and cultural development. Further, the dichotomy in topographic positions of sites, emphasized during phases 2 and 3 (Early Bronze Age), might indicate a certain specialization between settlements, if those are to be observed as contemporary. Such a specialization could be based on different subsistence strategies between lowland and elevated sites (agricultural and mixed), which would further imply a certain degree of cooperation between those settlements. As highlighted, sites attributed to Bubanj-Hum II and Bubanj-Hum III groups display a tendency to be located on major communication routes, thus indicating a certain degree of interconnectedness and presumed control of those routes, which become more easily accessible and manageable with the appearance of horses during this period. Another trend observed during this period is reflected in settling of certain micro-regions/basins (Paraćin-Jagodina, Niš, Leskovac, Timok Valley, etc.) and tendency for a visual coverage of main communications (basins and river valleys), which

[985] Price *et al*. 2004; Pelisiak 2016; Belka *et al*. 2018, with cited literature.
[986] Gimbutas 1965, 21-22; Гарашанин 1975; Garašanin 1983d; Gumă 1997, 95-102; Todorova 2003, 292-293; Koledin 2008; Булатовић, Станковски 2012, 323-327; Gerling *et al*. 2012; Horváth *et el*. 2013.

could within the context of European Bronze Age represent the possibility for formation of first locally oriented *bottlenecks* that possibly controlled the safe passage along these important communications that connected the Mediterranean with Central Europe.

With its results, this study could represent a solid base for future settlement studies of the prehistoric societies in the Central Balkans. The database for this study now includes basic spatial, archaeological, archaeozoological, and bothanical data, as well as data on previous publications for 174 sites from the Late Eneolithic and the Early Bronze Age. Planned future research will be focused on expanding the comparative context of settlement patterns in the Central Balkans to the preceding and following periods, and comprehensive case studies which would include all of the aforementioned necessary analyses for a proper study of the surroundings of a single prehistoric settlement. In such a manner, we could build a solid comparative framework for the traditional settlement catchment model and the model applied in this study, which could prove valuable for their mutual testing and the direction of future development of settlement studies in the region.

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Биографија

Огњен Младеновић рођен је 1989. године у Београду, где је завршио основну школу и гимназију. Основне студије археологије на Одељењу за археологију Филозофског факултета у Београду завршио је 2016. године, а мастер студије 2017. године. Докторске академске студије уписао је школске 2017/2018. године. Од 2019. године запослен је у Археолошком институту како истраживач сарадник. Области његовог интересовања јесу обрасци насељавања током металних доба на територији централног Балкана, материјална култура заједница из металних доба, и порекло и циркулација калаја на територји Балкана током праисторије. Активан је члан више националих и међународних пројеката.

До сада је учествовао на преко 50 ситематских и заштитних археолошких истраживања на следећим локалитетима: Велика хумска чука (Ниш), Свињаричка чука (Лебане), Винча-Бело брдо (Београд), Могила-Циганско брдо (Пожаревац) Глоговац и Гладно поље (Бела Паланка), Црноклиште (Пирот), Дубрава (Љиг), Калчине шуме (Владичин Хан), Кованчина (Обреновац), Главчине (Барајево), Бањица (Сврљиг), Глождак и Болница (Параћин), Читлук, Јазбине, Састанци (Крушевац), Жуто брдо, Жути брег, Ђурина хумка, Туманска река, Ораовац (Голубац), Остењак (Ликодра), Спасовине (Милина), Ковачевића пећина (Церова), Трајанов град (Текериш), Градац-Цикоте (Кривајица), Тумул код моста (Кривајица). Поред тога, учествовао је у више кампања систематског рекосноцирања области Јадра, Рађевине и Азбуковице у западној Србији, и обале Дунава од Кладова до Прахова.

Објавио је 22 научна рада у националним и међународним часописима и зборницима радова, и учествовао на 12 националних и међународних научних скупова. Активан је члан Српског археолошког друштва од 2017. године, и његов секретар од 2019. године.

Изјава о ауторству

Име и презиме аутора __Огњен Младеновић__

Број индекса __7А17-2__

Изјављујем

да је докторска дисертација под насловом

Обрасци насељавања у позном енеолиту и раном бронзаном добу на територији централног Балкана (Settlement Patterns During the Late Eneolithic and the Early Bronze Age in the Central Balkans)

- резултат сопственог истраживачког рада;
- да дисертација у целини ни у деловима није била предложена за стицање друге дипломе према студијским програмима других високошколских установа;
- да су резултати коректно наведени и
- да нисам кршио/ла ауторска права и користио/ла интелектуалну својину других лица.

Потпис аутора

У Београду, ________________

____

Изјава о истоветности штампане и електронске верзије докторског рада

Име и презиме аутора **Огњен Младеновић**

Број индекса **7А17-2**

Студијски програм **Археологија**

Наслов рада **Обрасци насељавања у позном енеолиту и раном бронзаном добу на територији централног Балкана (Settlement Patterns During the Late Eneolithic and the Early Bronze Age in the Central Balkans)**

Ментор **проф. др Марија Љуштина**

Изјављујем да је штампана верзија мог докторског рада истоветна електронској верзији коју сам предао/ла ради похрањена у **Дигиталном репозиторијуму Универзитета у Београду.**

Дозвољавам да се објаве моји лични подаци везани за добијање академског назива доктора наука, као што су име и презиме, година и место рођења и датум одбране рада.

Ови лични подаци могу се објавити на мрежним страницама дигиталне библиотеке, у електронском каталогу и у публикацијама Универзитета у Београду.

Потпис аутора

У Београду, ________________________

____

Образац 7.

Изјава о коришћењу

Овлашћујем Универзитетску библиотеку „Светозар Марковић“ да у Дигитални репозиторијум Универзитета у Београду унесе моју докторску дисертацију под насловом:

Обрасци насељавања у позном енеолиту и раном бронзаном добу на територији централног Балкана (Settlement Patterns During the Late Eneolithic and the Early Bronze Age in the Central Balkans)

која је моје ауторско дело.

Дисертацију са свим прилозима предао/ла сам у електронском формату погодном за трајно архивирање.

Моју докторску дисертацију похрањену у Дигиталном репозиторијуму Универзитета у Београду и доступну у отвореном приступу могу да користе сви који поштују одредбе садржане у одабраном типу лиценце Креативне заједнице (Creative Commons) за коју сам се одлучио/ла.

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Кратак опис лиценци је саставни део ове изјаве).

Потпис аутора

У Београду, ________________________

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6. **Ауторство – делити под истим условима**. Дозвољавате умножавање, дистрибуцију и јавно саопштавање дела, и прераде, ако се наведе име аутора на начин одређен од стране аутора или даваоца лиценце и ако се прерада дистрибуира под истом или сличном лиценцом. Ова лиценца дозвољава комерцијалну употребу дела и прерада. Слична је софтверским лиценцама, односно лиценцама отвореног кода.