

IRINA KHRUSTALEVA

Architecture
of the 5th and 4th Millennia BC
in the Northwestern Part
of the East European Plain



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Institute of History and Archaeology, Faculty of Arts and Humanities, University of Tartu, Estonia

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- IV** Khrustaleva, I. & Kriiska, A. 2022. Jägala Jõesuu V Stone Age settlement site in northern Estonia: Spatial and contextual analysis of finds. – *Estonian Journal of Archaeology*, 26: 2, 79–122. <https://doi.org/10.3176/arch.2022.2.01>.
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Author contribution: conceptualization, data collecting, methodology, analysis, investigation, visualisation, writing the first full manuscript with subsequent review and editing.

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1. INTRODUCTION

Architecture is usually defined as the art and science of constructing and designing buildings and objects that create a spatial environment for life, it solves the social and aesthetic tasks of people's life (e.g., Gowans et al. 2022). The earliest structural use of wood by hominins is now dated to at least ca 474,000 calBC (Barham et al. 2023). Leaving aside the question of when house building started – although it can already be seen in animal shelters and nests (e.g., Rukovski 1991) – it is clear that the human dwellings of the 5th and 4th millennia calBC fulfil all the architectural requirements outlined in architecture studies from the classical work of the Roman architect Vitruvius (1960) to the modern theorists (e.g., Krufft 1994; Mallgrave 2006). This means that the builders of these dwellings were actively choosing the most suitable locations, considering the internal organisation of space as well as the external appearance, selecting and manipulating the necessary materials, and resolving questions related to functionality, symmetry, proportionality, etc. It is also clear that the initial planning preceded the building process, and the type of house was dependent on a number of natural and cultural factors including traditions.

When dealing with Stone Age architecture, what is usually meant is the structures of the early farmers from the southern part of Europe to the Middle East. These primarily had stone or mud brick foundations and walls, as well as earthen or clay floors and clearly identifiable religious structures including temples occurred among them (Passek 1949; Le Brun 1997; Todd 1998; Özdoğan & Özdoğan 1998; Schmidt 2011). In contrast, the buildings of the hunter-fisher-gatherers in the European forest zone are usually left out of this classification. This thesis seeks to change this situation. The main characteristic of these buildings is that they are mainly wooden or earthen/wooden structures. This means, also, that they are not as well preserved as buildings made of inorganic materials, and therefore, much less information about them and their original structural properties is gatherable. At the same time, the spatial and temporal distributions of such buildings are expansive, especially in the northern boreal zone. They are present also in the eastern Baltic and Belarus, i.e., the area covered in this thesis.

The buildings of these northern Stone Age hunter-fisher-gatherers vary in shape, size, construction details, contents, and the composition of the associated artefact assemblages, as well as in their position relative to the ground surface (i.e., there are pit-houses and above-ground constructions). Due to the poor preservation of organic materials, structures with sunken floors – i.e., pit-houses – provide more reliable and clearly identifiable information than above-ground constructions. Information about the wooden details of these structures can usually only be found in anaerobic conditions such as in peat-bog deposits or in underwater environments (e.g., Vankina 1970; Pranckėnaitė et al. 2021) or as charred pieces (Leskinen 2002; Katiskoski 2002; Zhulnikov 2003, 59–61). However, both are rare.

The first Stone Age above-ground structures in the northwest part of the East European Plain were discovered in 1939–1940 by Eduards Šturms at the Sārņate settlement site in western Latvia (Šturms 1940; 1948). They were published soon after the excavation, even though Šturms did not yet have a precise understanding of these structural remains (for discussion of the research by Šturms, see Vankina 1970; Bērziņš 2008). Only a decade later, in the early 1950s, Nina Gurina discovered the first pit-houses at the Riigiküla I settlement site in northeastern Estonia. For a long time, they remained the only known examples of Stone Age architecture to exist in Estonia (Gurina 1955; 1967). Before these discoveries, it was only hypothetically suggested that the unearthed at different Stone Age sites of the studied area remains of hearths, concentrations of finds, or remains of wooden poles could mark the traces of dwellings (Indreko 1930; Yanits 1959a; Kukharensko 1962, 18). Furthermore, at that time, relatively few Stone Age dwellings had also been discovered in western Russia (Bryusov 1940, 73–74; Gurina 1951). During the following decades, however, the remains of numerous Stone Age buildings were found at settlements not only in the eastern Baltic region (Rimantienė 1979; Loze 1988) and Belarus (Artemenko 1964; Isaenko 1976), but also in surrounding territories like Scandinavia (Liedgren 1998; Olsen 1998), Finland (Meinander 1976; Pesonen 2002) and western Russia (Zhulnikov 2003). Nevertheless, little is known about their structure, and only a few houses are reliably dated. This is partly because of the wide variety of preservation, excavation methods, and modes of documentation used. Consequently, no complete understanding exists if type of dwelling depended on cultural attribution, natural conditions or geographical areas.

Most of the data on the Stone Age dwellings found in the European forest zone have only been published in local languages and unevenly. The data is interpreted following regional cultural frameworks that makes it difficult to compare them. A few regional overviews of the Stone Age dwellings do exist in Fennoscandia – in Sweden (Lundberg 1997; Norberg 2008), Norway (Fretheim 2017; 2023), Finland (Pesonen 2002; Mökkönen 2011; Skantsi 2023), – Karelia (Zhulnikov 2003), Estonia (Kriiska 2002a), Latvia (Loze 1978), and Lithuania (Grinkevičiūtė 2005), however, almost no pan-regional summaries have been produced. Moreover, data about architecture of some regions the northwest part of the East European Plain was not summarized at all, and available information requires a modern revision.

In the mid-20th century, John Grahame D. Clark (1953) wrote in his review of the scholarship on Stone Age architecture in Europe that ‘with the amount of information we now possess, any attempt to systematize material which is obviously no more than random, fragmentary data would lead to serious misconceptions’. Today, over 70 years later, much new data has been accumulated that can guarantee the validity of the conclusions drawn from it. The need to systematize the available data on the Stone Age architecture in the northwestern part of the East European Plain is overdue.

1.1. Research questions

In this thesis, all the remains of Stone Age buildings from the northwestern part of the East European Plain – including Estonia, Latvia, Lithuania and Belarus (Fig. 1) – are collected in Appendix 1. Most of this area has similar environmental conditions. It is part of the European forest zone, which is a predominantly flat relief that has an abundance of rivers and lakes, sandy soils, and four seasons. During the 5th and 4th millennia calBC, most of this territory was part of the Narva culture and Comb Ware cultural complex (for the cultural background and explanation of related terms see Chapter 2).

Although all types of Stone Age dwellings from this area are part of this research, pit-houses are its main object. This is because, first, in most cases they are the most intact¹ remains of the Stone Age dwellings of hunter-fisher-gatherers in the northwestern part of the East European Plain and, second, they can be more reliably dated and attributed by finds from their fill than above-ground constructions. To avoid a never-ending discussion on the terms (see e.g., Mökkönen 2011, 19–20; Fretheim 2019), it must be clarified that in this thesis I use *dwelling* and *house* synonymously to mean any structure ‘that has given protection to the central living areas on the sites’ (after Grøn 1995, 12). Relatedly, a *pit-house* means the archaeological remains of a house with an artificially sunken floor of any depth, while other qualities can vary². *Above-ground dwellings* mean all the houses built on the ground surface.

To understand the wider chronological and territorial scope of the houses, material and analogies from neighbouring areas were used as aids in interpretations and reconstructions. This primarily includes the Stone Age architecture of Finland, the western part of European Russia, and northern Ukraine (Telegin 1961; Berezanskaya 1975; Zimina 1981; Pesonen 2002; Zhulnikov 2003; Mökkönen 2011), and to a lesser extent, the architecture of more distant areas, such as Sweden, Norway, and Denmark, which has been thoroughly studied over the past few decades (e.g., Lundberg 1997; Grøn 2003; Norberg 2008; Fretheim 2017; 2023).

¹ The only exceptions are the remains of above-ground dwellings found in waterlogged conditions, where posts, wooden and bark structures of hearths, and collapsed wall elements have been preserved (e.g., Särnate and Šventoji). However, such finds are rare.

² In some cases, slightly sunken dwellings – up to 0.4 m below ground level – have been described as *above-ground*, while other dwellings at a depth of 0.2 m have been defined as *semi-subterranean* (Isaenko 1976, 67, 77, 86; Buzin 1990, 34; Yazepenko 2014, 24).

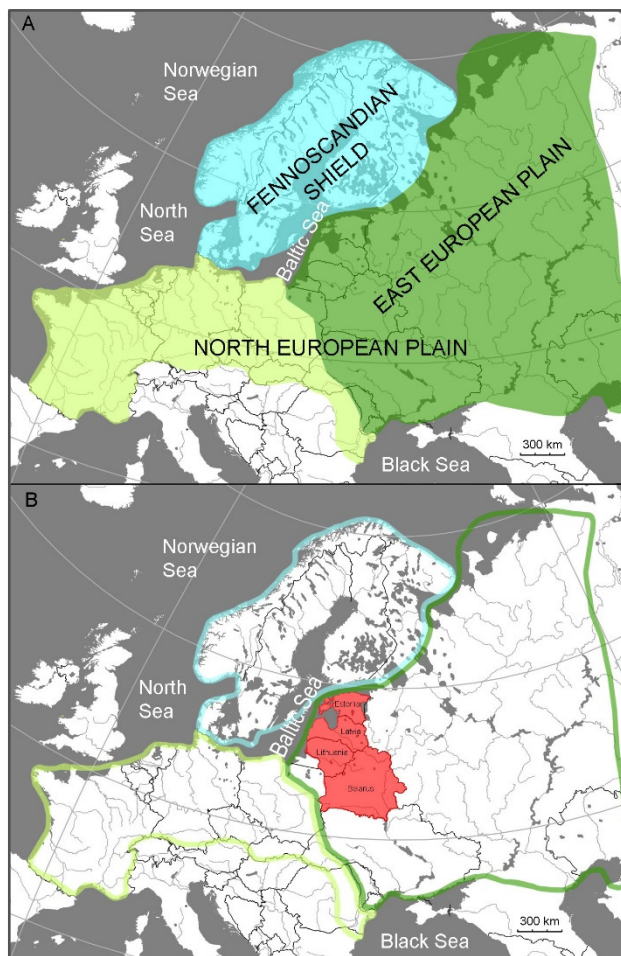


Fig. 1. The location of the research area. A – Some geographical features of Europe are shown in different colours. B – The northwestern part of the East European Plain is marked in red (Illustration: I. Khrustaleva).

The main focus of this thesis is the hunter-fisher-gatherers' sites of the Pottery Stone Age³ dated to the 5th and 4th millennia calBC (see Chapters 2 and 9.2). By using comparative and typological analysis, radiocarbon AMS dating, and three-dimensional spatial analysis of the finds and refitting (described in more detail in Chapter 5), the research aims to determine the main building types, to analyse the preserved construction features, to determine the relative chronology and radiocarbon age, and to reconstruct the external appearance of the buildings and activities conducted by the inhabitants. In particular, this thesis demonstrates the

³ To avoid misunderstanding in the definitions, the Stone Age is described in this thesis using two main terms: *Pre-Pottery Stone Age* and *Pottery Stone Age*, drawing the boundary on the time of appearance of pottery.

possibility of extracting new information from excavations carried out more than 50 or even 80 years ago (Papers I, III and V).

The main goal of the thesis is to determine the general trends in the development of hunter-fisher-gatherers' Stone Age dwellings throughout the 5th and 4th millennia calBC in Estonia, Latvia, Lithuania and Belarus, as well as to identify dwellings' territorial, cultural and chronological features. The thesis also includes data on all buildings of the preceding Pre-Pottery Stone Age, from roughly the 12th millennium calBC, as well as from the subsequent period up to the end of the 3rd millennium calBC, to provide an overall picture of architectural traditions and continuity.

1.2. The structure of the thesis

The thesis consists of a synthesis part and five papers that have been published between 2020 and 2023. The first four papers focus on Estonian sites, using comparative material and analogies from Finland and Russia (Karelia and the Karelian Isthmus). The fifth paper is devoted to the Stone Age architecture of Belarus, and the sites in Lithuania and Ukraine are used for comparative data.

Paper I is devoted to a general overview of Estonian Stone Age architecture up to 2019 based on past scholarly publications and field reports. The remains of pit-houses at three settlement sites – i.e., Kõnnu, Jägala Jõesuu V and Riigiküla I (Fig. 6: A and B) – are discussed, although the focus is on revising data from Riigiküla I and the dating of its materials. The paper also offers a distinct chronological parsing of the lifespan of the settlement at the site. Along with the clarification of the cultural context of the dwellings discovered during excavation, the paper further provides insights into the potential existence of more structures at the site. Finally, the paper outlines the southern boundary of the distribution of 'northern tradition' Stone Age pit-houses, which prevailed in northern Scandinavia, Finland and northwestern Russia, but also extended to the northern coast of Estonia.

Paper II was initially planned as a full analysis of the Jägala Jõesuu V settlement site data (postponed to Paper IV). However, as the collection of finds was being processed, several fragmented clay figurines attracted our attention. Further analysis of their preservation spatial distribution within the settlement area revealed that, first, they were associated with dwellings and, second, most of them had been deliberately broken in prehistoric times. This data led us to conclude the existence of some kind of sacral activity in the dwellings, which became the central claim of the paper. A general overview of the Stone Age clay figurines in the Baltic region and catalogue of those found in Estonia were also included in the paper.

Paper III owes its existence to chance. While writing Paper II, data from the Lommi III settlement site (Ingria, Russia) were also integrated, as fragments of clay figurines were found there. Our attention was drawn to the distinctive concentration of finds marked on the field plan from the site. A detailed analysis of

the items and the field records indicated that a rectangular pit-house – which was not recognized during the excavations – had existed at the site. Due to the high level of the field documentation, it was possible to discover traces of this dwelling more than 80 years later, which became the focus of Paper III. Particular attention in this paper is paid to the theoretical aspects and methods of the studies of Stone Age buildings in the European forest zone. The paper included the earliest radiocarbon dates ever obtained for a Comb Ware cultural complex site south of the Gulf of Finland.

Paper IV includes the first full scale analysis of the Comb Ware cultural complex settlement site in Estonia (Jägala Jõesuu V), which now is the reference site for this period in the region. Moreover, it is the only single-layer Comb Ware cultural complex site in Estonia with the remains of dwellings that have been excavated using three-dimensional documentation of all the objects and features. The analysis made it possible to establish the chronology of the features, determine the specific areas of activity at the site, verify the data on the pit-house and provide evidence of the existence of another above-ground building that was not previously known to exist.

Paper V focuses on Stone Age dwellings in Belarus. It took the most time because the collections of finds are old and the material is poorly preserved. Furthermore, the lack of dating and mixing of the settlement materials give no guarantee that it is possible to determine correctly the chronology and cultural affiliation of the structures. Nevertheless, the results exceeded expectations. This paper collects all the data on the architecture of Stone Age Belarus and analyses in more detail the structures attributed to the 4th millennium calBC. Local trends in the dwelling types, which probably belonged to the Pre-Pottery Stone Age, and their development were also outlined. Of more general interest, a ‘southern tradition’ of pit-houses distribution – distinct from the ‘northern tradition’ described in Paper I – was revealed.

The **synthesis paper** – which you are reading now – deals with a wide range of the theoretical and methodological aspects related to the study of Stone Age architecture in the European forest zone. It includes a general overview of the architecture of the 12th through 3rd millennia calBC in the research area. In many cases, the theoretical and methodological literature is Russian, as this largely reflects the development of the academic archaeological study of the north-western part of the East European Plain in general⁴.

The synthesis paper is broken into ten chapters. Following this introductory chapter, Chapter 2 contains information on the cultural background, periodization and chronology in the northwestern part of the East European Plain and surrounding territories in the 5th to 3rd millennia calBC. The research history of Stone

⁴ Thus, the first dwellings in Estonia were excavated by the Russian archaeologist Nina Gurina; the Latvian archaeologist Ilze Loze graduated from the Leningrad University (now the St. Petersburg State University). Moreover, attempts to bring uniformity to (methodological) teaching materials in the USSR also influenced Russian dominance in the field.

Age dwellings (mainly pit-houses) and current distribution of dwellings are briefly reviewed in Chapter 3. The data examined in this thesis are described in Chapter 4, while the methods applied to studying Stone Age dwellings are discussed in Chapter 5. Chapter 6 examines how cultural layers are formed, how the dwellings were constructed and eventually destroyed, and questions of interpretation of Stone Age architecture. Chapter 7 contains a discussion of the main functions of Stone Age buildings. A range of questions related to the reconstruction of Stone Age dwellings – from general methods and sources to particular case studies in the northwestern part of the East European Plain and their challenges – are discussed in Chapter 8. Throughout these latter three chapters, various sources of information and analogies are used, including ethnoarchaeological studies and ethnographic parallels from different parts of the world. While their use may seem controversial at first, they greatly broaden our understanding of the possible construction types, the materials used and functions of Stone Age dwellings in the northwestern part of the East European Plain. A summary and short discussion of the Stone Age architecture of the northwestern part of the East European Plain are provided in Chapter 9. The conclusion in Chapter 10 contains all the main results of the research.

The thesis includes three appendices: Appendix 1 contains a short description of Stone Age building remains in the research area, Appendix 2 presents data on the radiocarbon dates of the dwellings, while Appendix 3 provides a concise catalogue of the sites included in this thesis.

2. CULTURAL BACKGROUND AND CHRONOLOGY

The Stone Age ‘world’ is traditionally categorised into distinct archaeological cultures, defined by shared material traits such as tool types and manufacturing techniques. It is unlikely that these cultures should be treated as ethnic entities, a view occasionally proposed in scholarship (from Kossina 1911 to Eastern Baltic archaeologists like Jaanits 1956; Girininkas 1994a) and still sometimes asserted today. However, the shared characteristics of these cultures – seen in object shapes and the technologies used – suggest a commonality among the people who made these tools and implements. Differences in material culture sometimes correspond with genetic distinctions (see, for example, the contrast between the Comb Ware and Corded Ware cultural complexes based on ancient DNA studies by Saag et al. 2017; Mittnik et al. 2018).

This thesis does not contain a detailed discussion of the history, criteria and problems in distinguishing archaeological cultures and periodisations. Over the years, many different opinions have been expressed, often based on insufficient data. For the dating and territorial distribution of Stone Age archaeological cultures in the northwestern part of the East European Plain and surrounding areas, I prefer more recently published information, as it allows for a clearer and more comprehensive view. To give a general background though, this chapter covers the *broad* processes that may have influenced architecture in the area of my research from the end 6th through the 3rd millennia calBC.

Pottery first spread in the northwestern part of the East European Plain between the late 6th millennium and early 5th millennium calBC, but changed relatively little the Pre-Pottery Stone Age lifestyle of hunter-fisher-gatherers (Jaanits 1970, 86; Zagorskis 1973, 65; Rimantienė 1984, 126; Pesonen & Leskinen 2010; Charnyauski 2011; Kriiska et al. 2017). This has led to the emergence of variable terms like ‘pottery-Mesolithic’, ‘para- (proto-) Neolithic’, ‘Sub-Neolithic’ or ‘forest-Neolithic’ to describe this period (Werbart 1998; Loze 2001a, 165; Pesonen 2006; Nowak 2017; for discussion on the same topic see in: Gurina 1973, 7–10; Bērziņš 2008, 37; Nordqvist & Kriiska 2015, 539; Piezonka 2015, 2–3; Nordqvist 2018, 74–80). These terms highlight the differences in the process of Neolithization in this area compared to the farmer-pastoralist approach. In this chapter, only the archaeological cultures of the Pottery Stone Age for which buildings have been discovered are presented. This is because it is the focus of the study, and secondly, because Pre-Pottery Stone Age cultures are difficult to define, date and compare with one other (see, e.g., Girininkas 2009, tab. 2).

Pottery Stone Age cultures are distinguished primarily by their diverse pottery types. However, researchers’ opinions differ regarding the inclusion of certain types or variants of pottery in certain cultures and over questions about their chronology. In this thesis, a simplified division of the Pottery Stone Age is provided (Figs. 2–4). Archaeological cultures are described using their broad territorial and chronological boundaries. The individual pottery types included in them are named, but not discussed in depth, not only because it is a complex issue

and a separate study would be needed in each case, but also because such a myopic approach would not provide an overall picture of the architecture of the area. I use the term *cultural complex* to describe cultural units, which include multiple cultures (or variants) with unclear or undefined borders.

The Narva culture is the earliest archaeological culture of the Pottery Stone Age that occupied the main part of the research area and part of western Russia (Fig. 3: 4). It includes different types of pottery – like Osa-type in Latvia and Rudnya-type in western Russia (Loze 1988; Timofeev 1989; Mazurkevich et al. 2022) – that have different chronological frames in different regions (e.g., Loze 1988, 101; Girininkas 2009; Kriiska et al. 2017). Its early phase dates ca. 5500/5400–3900 calBC (Fig. 2).

In the western and southwestern part of Belarus, as well as in north-eastern Poland, north-western Ukraine and southern Lithuania, Neman culture appeared⁵ and spread (Fig. 3: 9). It dates ca. 5500–2000 calBC (Fig. 2). In Belarus, the earliest dates are ca. 4500 calBC, but this is due to the small amount of materials currently collected and dated. The earliest pottery included in the Neman culture is called the Dubičiai-type⁶ (e.g., Girininkas 2009; Tkachov 2017; Štavičė 2020, 114).

The eastern and southeastern part of Belarus was home to the Dnieper-Donec cultural complex, which also covers a small part of Russia and most of eastern Ukraine (Fig. 3: 10). It replaced earlier sites with the earliest pottery and dates ca. 5000–1800 calBC (Fig. 2), including the Eastern Polesse, Upper-Dnieper, Kyiv-Cherkasy and Lisogubovskaya cultures (for details, see: Telegin 1961; Ezeenko 2019).

In southern Scandinavia, the first pottery is associated with the Ertebølle culture dated to ca. 4700–3800 calBC (Figs. 2 and 3: 3; e.g., Hartz et al. 2007; Jennbert 2011). In Finland, Karelia and the Karelian Isthmus in Russia, it is the Sperrings culture, which is dated to ca. 5200–4200 calBC (Figs. 2 and 3: 1; Pesonen et al. 2012; German 2018; Pesonen & Oinonen 2019, fig. 3). To the east, in Karelia, a small territory was occupied by the Kargopol culture (ca. 5200–3700 calBC; Figs. 2; 3: 2; e.g., Oshibkina 1978, 31–110). In the European part of Russia, the Valday (ca. 5900–2100 calBC; Figs. 2; 3: 5; Gurina 1958) and Upper-Volga (ca. 5700–5000 calBC; Figs. 2; 3: 6; e.g., Krainov 1996) cultures have been described. The Lyalovo culture (ca. 5200–3700 calBC; Figs. 2; 3: 7) spread to east of the Valday and Upper-Volga cultures, but partially overlapped (e.g., Gurina & Krainov 1996; Zaretskaya & Kostyleva 2011).

⁵ In Belarus, it is divided into the earlier Pripyat-Neman and later Neman cultures.

⁶ Dubičiai is also sometimes defined as a separate culture (e.g., Girininkas 2009, 134–141).

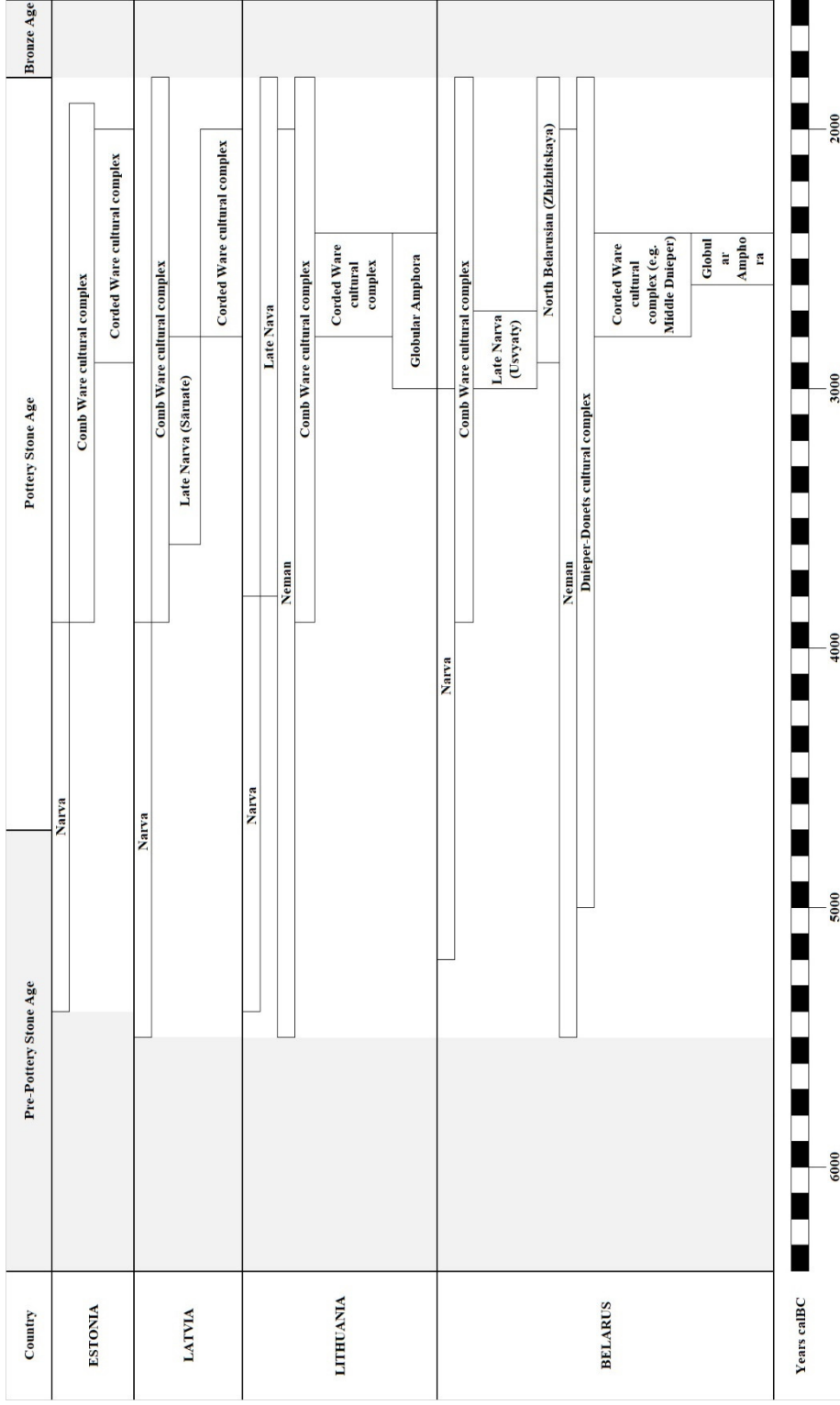


Fig. 2. Simplified division of the Stone Age in the research area. The archaeological cultures and periods discussed in the text draw on: Fisher & Kristiansen 2002; Chernyavskiy 2004; Pappmehl-Dufay 2006, 13; 2012; Mökkönen 2011, 15–18; Zaretskaya & Kostyleva 2011; Yazepenko 2014, 56–58; Charniauski 2014; 2016; Gaskevich 2014; Kurzyk 2014; Piezonka 2015, 242; Lozovskaya & Lozovsky 2016; Manko 2016; Mazurkevich et al. 2016; 2017; Zhilin 2016; Nordqvist 2018, 54–61; Piličiauskas 2018; Berg-Hansen et al. 2019, fig. 1; Macāne et al. 2019, 9; Pesonen & Oimonen 2019, fig. 3; Courel et al. 2020; 5; Immel et al. 2020; Kriiska et al. 2020, fig. 1; Harper 2021 (compiled by I. Khrustaleva).

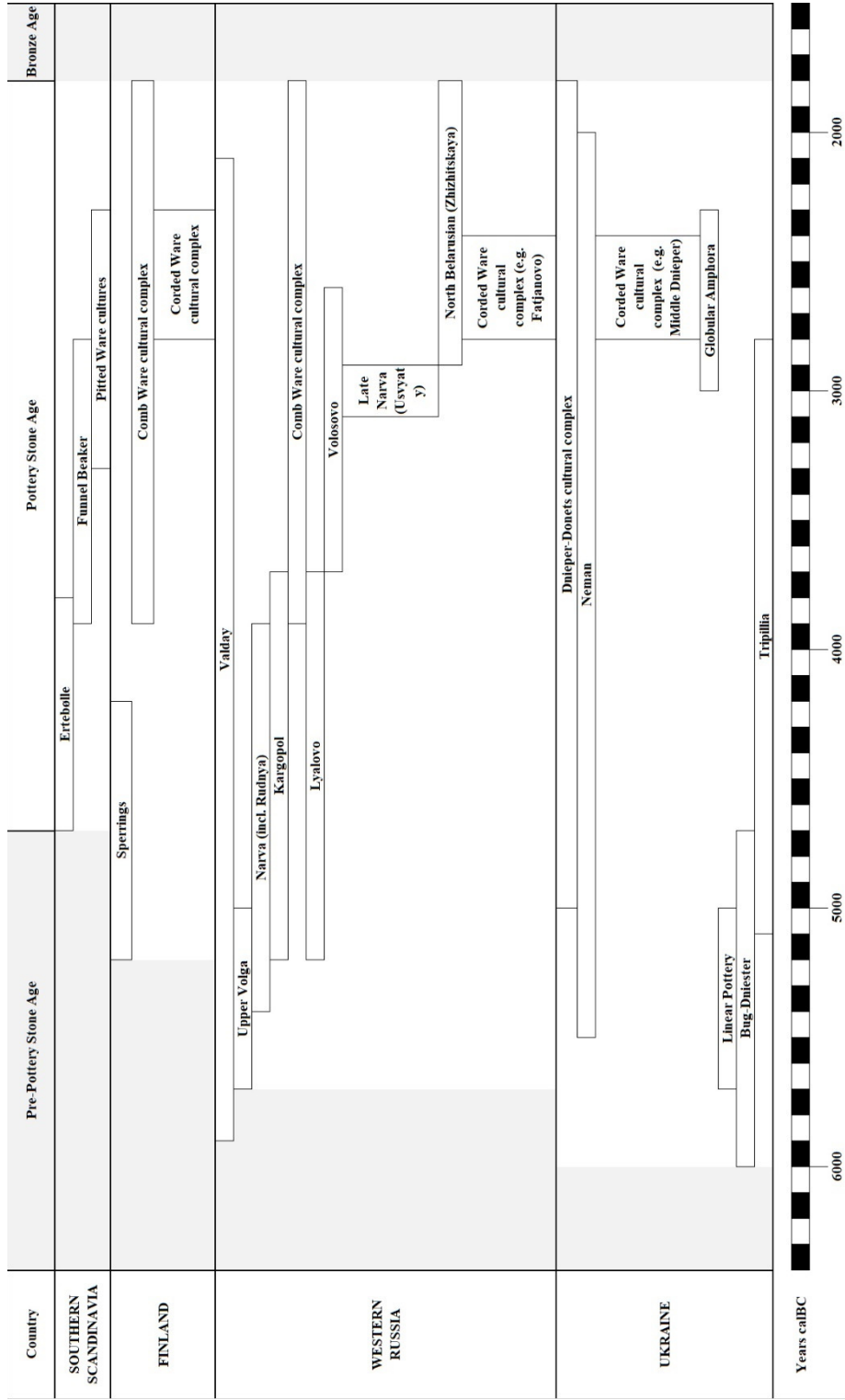


Fig. 2. Continued.

To the south and west of my research area, the Dnieper-Donec cultural complex and the Neman culture bordered the cultures of early farmers. The Linear Pottery culture (ca. 5700–5000 calBC; Fig. 2) spread over wide territories, including Germany, the Czech Republic, parts of Austria, Slovenia, Croatia, Hungary, Slovakia, Poland, western Ukraine, Moldova and western Romania (Fig. 3: 8; Pavlů 2016; Beljak Pažinová & Daráková 2019; Oberc et al. 2022). The Bug-Dniester culture (ca. 6000–4700 calBC; Fig. 2) was located in southwestern Ukraine (Fig. 3: 11; e.g., Gaskevych 2014). From 5400 calBC it existed alongside the Trypillia culture (5400–2700 calBC; Figs. 2; 3: 12) and was eventually replaced by it (e.g., Gaskevich 2014; Nogin 2016).

During the 4th millennium calBC, new modes of mobility and contact networks were developed in the research area. This facilitated the formation of big cultural units including a number of cultural groups as well as the broad distribution of imported and exotic items and materials (e.g., Loze 1985; Taffinder 1998; Zhulnikov 2008; Tarasov et al. 2010; Núñez & Franzén 2011; Kriiska 2015; Tarasov & Nordqvist 2022). In the research area, these changes were related to the formation of the Comb Ware cultural complex, which is dated with broad regional variations ca. 3900–1750 calBC (Figs. 2; 4: 13; e.g., Nordqvist 2018, 54–61; Kriiska et al. 2020, fig. 1).

The Comb Ware cultural complex spread in Finland, western Russia, Estonia, Latvia, northern Lithuania and Belarus. In Finland and western Russia, it included Typical Comb Ware, Late Comb Ware, Rhomb-Pit Ware, the late period of the Kargopol culture and some other subdivisions (Oshibkina 1996a, 220; 1996b; Nordqvist 2018, fig. 15; Pesonen 2021, fig. 1.2). In Estonia, Typical Comb Ware and Late Comb Ware cultures were distinguished, however now such division is abandoned in absence of strong criteria their separation (Kriiska et al. 2020, 106–107; Paper III, 91). During the later stage of the Comb Ware cultural complex various local variants also existed (Kriiska et al. 2020, 131). In Latvia, Piestiņa Ware (Piestiņa-Zvidze; Zagorskis 1973, 65; Apals et al. 1974, p. 38) and the so-called post-Narva culture (East Baltic Comb Ware; Loze 1978, 10; 1988, 28, 106) are included in the Comb Ware cultural complex. Within this entire area of the complex distribution, its radiocarbon chronology is fairly well developed in Finland, part of Karelia and Estonia (Nordqvist 2018, fig. 15; Kriiska et al. 2020, 106–107; Pesonen 2021, fig. 1.2), while detailed typology of different cultural subdivisions is available only for Finland and Karelia. Starting from the mid-20th century, different names have been used in Baltic countries and western Russia for this cultural complex (for discussion see, e.g., Bērziņš 2008, 40–41; Kriiska 2009, 167): Pit-Comb Ware (Yanits 1959a; Tretjakov 1968; Vankina 1970), Comb-Pit Ware or Baltic culture (Gurina 1967; 1996; Loze 1984; Zhulnikov 2003).

According to the scholarship, the Late Narva culture formed under the influence of Typical Comb Ware and as a result adopted some features of this culture (e.g., Girininkas 1994a, 94–95; Bērziņš 2008, 40). It is dated ca. 3900–1800 calBC and covers the main territory of Lithuania, northern Belarus and a small part of Russia. It is also found in Latvia in a few separate locations (Fig. 2;

4: 4). I include in the Late Narva culture the Usvyaty-type in Belarus and western Russia (e.g., Charnyauski 1997) and Sārinate-type (West-Latvian variant of Narva-Neman culture; Vankina et al. 1973, 210) in Latvia.

Although some archaeological cultures (e.g., Valday and Neman) and cultural complexes (e.g., Dnieper-Donec) continued to develop at least partially in their former locations, they nevertheless became a part of the new world and networks of exchange. Obviously, these ‘cultures’ spanning more than 3,000 years are generalizations. They include multicultural materials that cannot be easily understood because of lack of radiocarbon dates and other internal chronological markers. Available radiocarbon dates for the Dnieper-Donec cultural complex dwellings from Belarus, meanwhile, mostly fall in the 4th millennium calBC (see Appendix 2). Furthermore, Volosovo culture (ca. 3700–2600 calBC; Figs. 2; Fig. 4: 14; Macāne et al. 2019) spread over a big area of western Russia and partially replaced existing cultures.

In the 3rd millennium calBC, early farming cultures spread into the northwestern part of the East European Plain. These were the Corded Ware cultural complex, including Fatjanovo culture in Russia; the Estonian Corded Ware culture in Estonia, northern Latvia, part of western Russia and Finland; the Middle Dnieper culture in Belarus and Ukraine (ca. 2800–2000 calBC); and the Globular Amphora culture in Central and Eastern Europe including Lithuania, Poland, Belarus and Ukraine (ca. 3000–2400 calBC; Figs. 2; Kurzyk 2014; Piličiauskas 2018; Kriiska & Nordqvist 2021). The introduction of farming caused significant changes in many aspects of people's life, including the settlement system (e.g., Sikk et al. 2020). On the border of Russia and Belarus, the North Belarusian culture (Zhizhitskaya; 2900–1800 calBC; Charniauski 2016; Mazurkevich et al. 2017) is defined.

Modern knowledge on the archaeological material combined with ancient DNA and isotope studies indicates that two different types of processes, namely migratory and non-migratory, may have influenced these material culture changes during the Stone Age in the European forest zone. Migrations are identified for the Comb Ware and Corded Ware cultural complexes, while a long development without population change is documented for the Narva and Neman (Dubičiai-type) cultures (Haak et al. 2008; 2010; 2015; Palo et al. 2009; Malmström et al. 2009; 2015; Der Sarkissian 2011; Der Sarkissian et al. 2013; Allentoft et al. 2015; Jones et al. 2017; Lamnidis et al. 2018; Mittnik et al. 2018; Jensen et al. 2019; Kashuba et al. 2019; Översti et al. 2019). For the latter, cultural changes primarily can be explained by the spread of ideas through cultural transmission and the exchange of information, however, small-scale migration cannot be absolutely excluded (Jaenits 1970, 86; Zagorskis 1973, 65; Rimantienė 1984, 126; Zagorska 1993, 114; Girininkas 1994a, 259; Halén 1996, 296; Kriiska 1997a, 16; Dolbunova et al. 2022; Allentoft et al. 2024, 330–331). This is something we should expect to see in the cultures’ architecture too, because architecture depends a lot on people’s traditions.

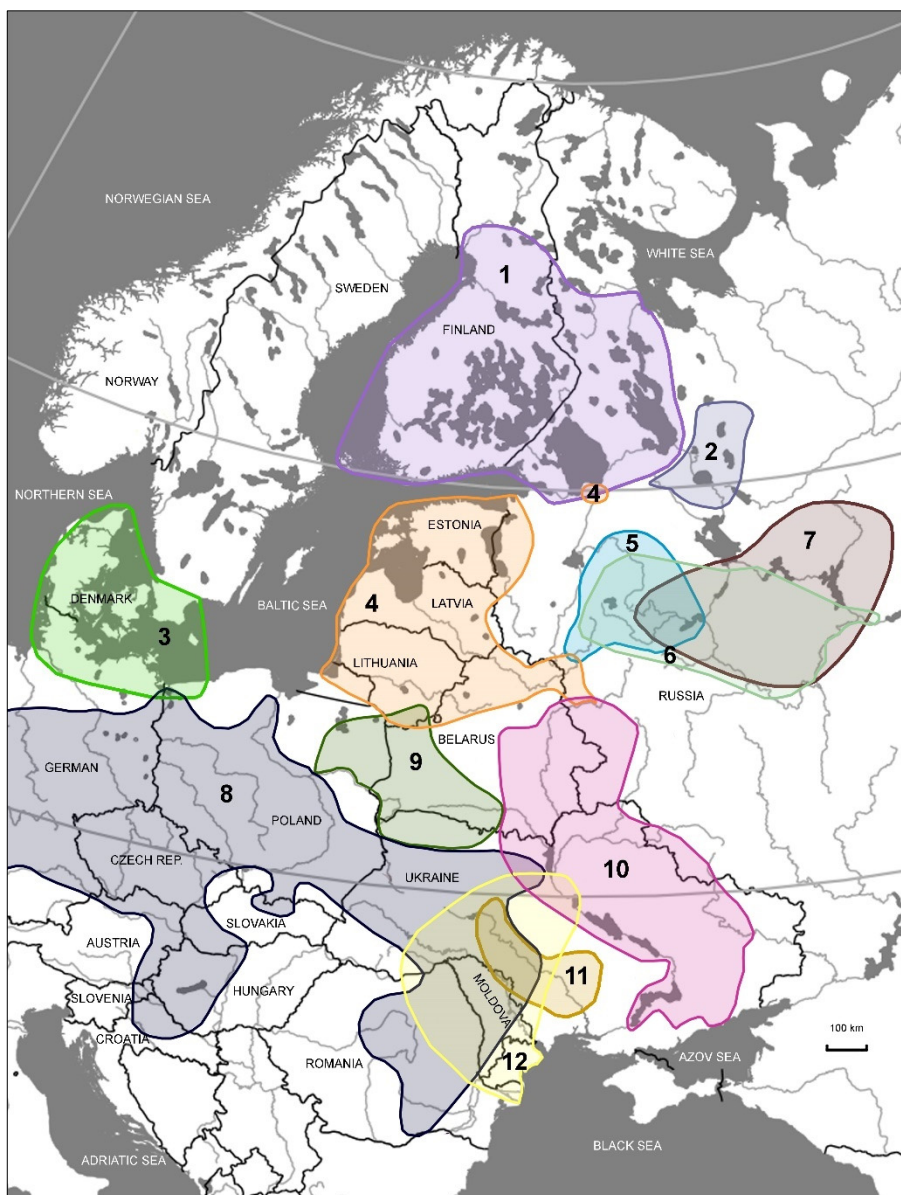


Fig. 3. Archaeological cultures of the Pottery Stone Age mentioned in the thesis: The end of the 6th–5th millennia calBC. 1 – Sperrings; 2 – Kargopol; 3 – Ertebølle; 4 – Narva; 5 – Valday; 6 – Upper-Volga; 7 – Lyalovo; 8 – Linear Pottery; 9 – Neman; 10 – Dnieper-Donec cultural complex; 11 – Bug-Dniester; 12 – Trypillia (See: Gurina 1958, fig. 6; Timofeev 1993, fig. 3; Gurina & Krainov 1996; Krainov 1996, fig. 9; Chernyavskiy 2004, 151; German et al. 2004, 30; Hartz et al. 2007, fig. 2; Girininkas 2009, figs. 87, 119 and 122; Kryvaltsevich 2009, 26; Marcinkevičiūtė 2010; Charnyauski 2011, fig. 51; Hartz 2011, fig. 2; Jennbert 2011, fig. 1; Kriiska et al. 2017, fig. 1; Tkachov 2017, fig. 1; Kriiska et al. 2020, fig. 17; Mazurkevich et al. 2022, fig. 2; Oberc et al. 2022, fig. 1; Illustration: I. Khrustaleva).

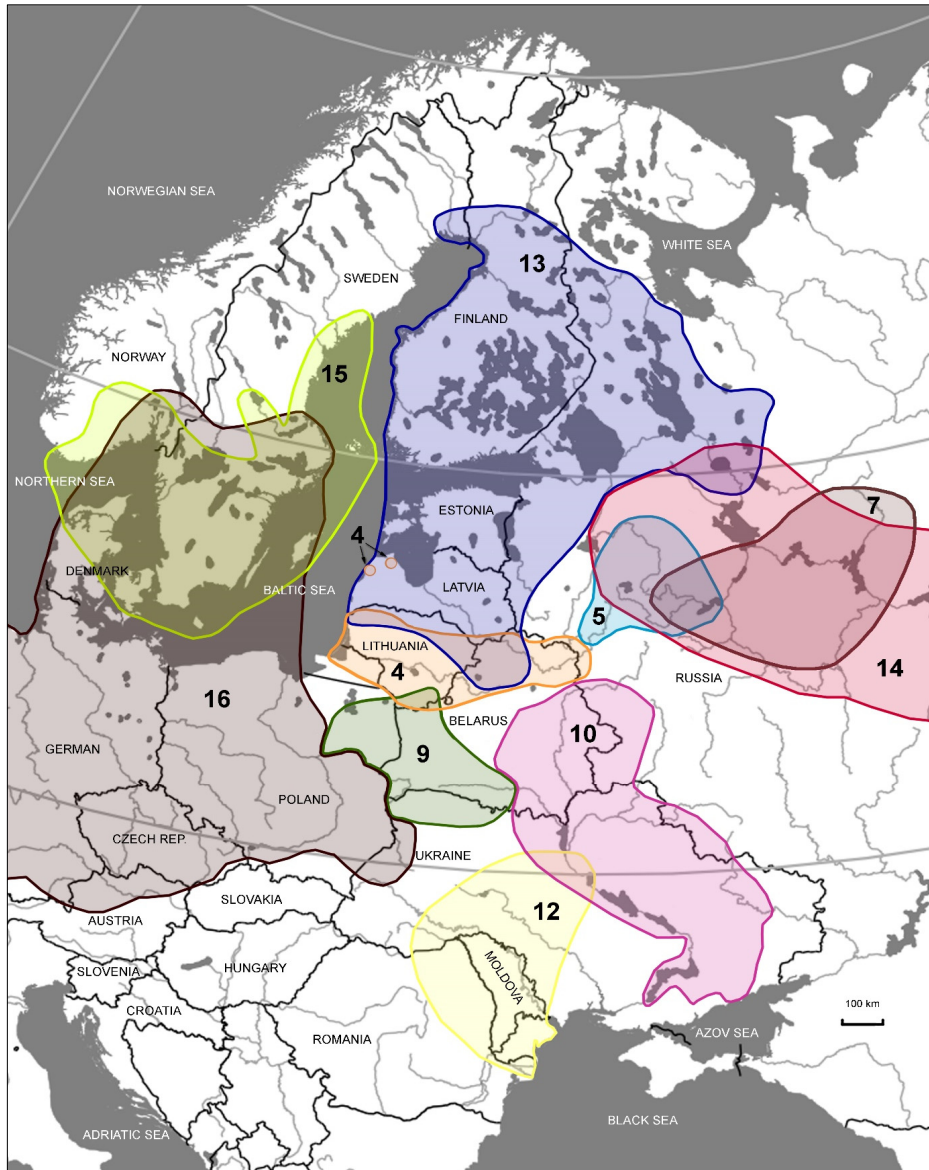


Fig. 4. Archaeological cultures of the Pottery Stone Age mentioned in the thesis: The 4th millennium calBC. 4 – Late Narva (Sārņate-type in Latvia is shown by dots, because only a few sites with this type of pottery are known there); 5 – Valday; 7 – Lyalovo; 9 – Pripjat-Neman; 10 – Dnieper-Donec cultural complex; 12 – Trypillia; 13 – Comb Ware cultural complex; 14 – Volosovo; 15 – Pitted Ware; 16 – Funnel Beaker (See: Gurina 1958, fig. 6; Vankina 1970; Burenholt 1999a, fig. 100; Chernyavskiy 2004, 151; Loze 2006, 182; Girininkas 2009, figs. 87, 119 and 122; Kryvaltsevich 2009, 26; Marcinkevičiūtė 2010; Charnauski 2011, fig. 51; Nogin 2016, figs. 266, 267; Kriiska et al. 2017, fig. 1; Tkachov 2017, fig. 1; Macāne et al. 2019, fig. 1; Kriiska et al. 2020, fig. 25; Illustration: I. Khrustaleva).

3. STONE AGE ARCHITECTURE OF THE NORTHWESTERN PART OF THE EAST EUROPEAN PLAIN AND NEIGHBOURING TERRITORIES

3.1. The research history

Research on Stone Age architecture in eastern and northern Europe started mainly in the early 20th century. The first discoveries were Palaeolithic sites. The first Late Palaeolithic dwelling (ca. 18,000 calBC) – a large structure made of mammoth bones – was excavated as early as 1893 at the Kievo-Kirillovskaya settlement site in Ukraine (Khvoyko 1903). However, even after the discovery of several similar structures in the 1920s, they were not identified as dwellings but interpreted as accumulations of hunting waste or cult structures (Boriskovsky 1958; Pidoplichko 1969, 10–11; Rogachev & Anikovich 1984, 190).

The first Pottery Stone Age pit-house discovered on the East European Plain was found in 1910 during excavations at the Volosovo settlement site in the Nizhny Novgorod region of Russia (Gorodtsov 1914).⁷ The site can be typochronologically dated between the first half of the 4th and the first half of the 3rd millennium calBC (Macāne et al. 2019, 9). Nevertheless, this did not initiate a systematic study of Stone Age houses.

Instead, the study of the Stone Age architecture proceeded slowly (Fig. 5). The finds by Sakari Pälsi in Finland in the 1910s (Pälsi 1913, 67–68; 1920, 103–105) had a long influence on the image of a Stone Age dwelling, especially in Finland, Estonia and Karelia (Indreko 1932; Gurina 1951, 117; Jaanits et al. 1982; see Chapter 8.2). Pälsi argued that on this territory, round-shaped huts based on a wooden post construction with a central hearth were used as summer dwellings (Pälsi 1918). This view became so dominant that sometimes find concentrations were interpreted as these summer huts without any critical discussion.

In Finland, as well as in Karelia in Russia, the first dwellings with sunken floors were excavated in the early 1930s (Itkonen 1913, 3–4; Pälsi 1920, 45, 105; Europaeus 1922, 67–68; Tanner 1929, 13–15; Bryusov 1940, 73–74; Gurina 1951). In Sweden, such structures were first discovered in the 1920s, but first full-scale excavations did not take place until the end of the 1940s. However, even then they were interpreted incorrectly (e.g., Lundberg 1997, 3; Liedgren 1998, 156; Norberg 2008, 16–18). In Norway, the first pit-house was excavated in 1927–1928 and correctly interpreted in the 1930s (Simonsen 1976; Mökkönen 2011, 32; Fretheim 2017, 29). In Estonia, Latvia, Lithuania and Belarus, no pit-houses were studied during this period, although some were excavated (see Paper III).

⁷ Actually, pit-houses had also been excavated earlier, but without understanding that they were the remains of dwellings (e.g., Julius Ailio and Sakari Pälsi excavations in the Karelian Isthmus; see Seitsonen 2006, 143).

In addition to pit-houses, numerous remains of above-ground constructions were discovered in Estonia and Latvia starting at the end of the 1930s (Appendix 1). However, details of the finds were published much later, and provide little information, so the dwellings' structure, shape and size are unclear in many cases (Yanits 1959a; Vankina 1970; Loze 2010).

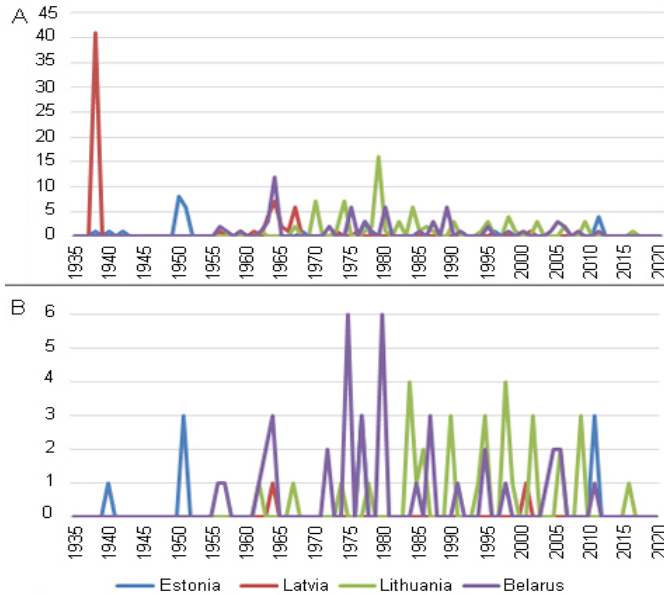


Fig. 5. The number of Stone Age houses examined in Estonia, Latvia, Lithuania and Belarus between 1935 and 2020. The sites are shown according to the year of first excavation campaign conducted at them: A – all houses; B – pit-houses. For data, see Appendices 1 and 3.

The systematic research of Stone Age architecture in the northwestern part of the East European Plain and neighbouring territories did not start until the 1950s (Meinander 1964, 35; Zhulnikov 2003). In Finland, it was related to the discovery of the so-called ‘Madeneva-type hut floors’ (characterised by depressions visible on the modern surface) after the excavation and study of several pit-houses at the Pihtipudas Madeneva settlement site (Edgren 1966, 88; Meinander 1976). Further research revealed that the Madeneva-type hut floors were mostly oval in shape, had hearths without stone structures and contained a lot of pottery inside (Matis-kainen & Jussila 1984, 39). However, the structure of such buildings was still a matter of question (Miettinen 2002).

In the Baltic countries, most of the European part of Russia (excepting Karelia, the Karelian Isthmus and Middle-Volga region) and Belarus, no pits or depressions left after the destruction of Stone Age pit-houses are visible or recognizable on the modern surface. They were mainly found because of annual,

large-scale field works that started after the 1940s (Fig. 5). The first pit-houses in the Baltic countries were excavated at the Riigiküla I site in northeastern Estonia in the early 1950s (Gurina 1967, 22–30; Paper I). Several similar structures with corridor-like entrances were also found in Karelia and the Middle-Volga region in Russia (Tsvetkova 1958; Gurina 1951; 1967; Oshibkina 1978). These pit-houses, as well as those from Riigiküla I, were primarily interpreted as ‘winter houses’ based on ethnographic parallels with dwellings of Siberian and Native American peoples (Tsvetkova 1958; Gurina 1967, 164–165; Rimantienė 1995, 27; Juodagalvis 2010, 169). For a long time, it was assumed that western Russia (except for Karelia) must have had above-ground timber dwellings and their remains simply were not preserved (Bryusov 1959, 133). More recently, however, pit-houses have been excavated in the area both in the 1960–1980s (Vereshchagina et al. 1995; 1997; Zimina 2014) and during 1990–2000s (Mazurkevich et al. 2012; Khrustaleva 2016).

In Belarus, the first pit-house was found in 1956 at the Sasonka settlement site (Artemenko 1962, 65–66). Most subsequent discoveries were made in the 1960s and 1970s, when a few regional expeditions worked annually (Isaenko 1976; Kalechits 1990, 93; Paper V; Fig. 5).

At the end of the 1970s, the standards for documenting building remains and recording finds changed in Finland and Karelia, e.g., more accurate documentation of finds *in situ* started to be used, allowing for their later plotting on find maps, more attention started to be paid to the stained soil areas and the concentrations of finds (e.g., Oshibkina 1978; Pesonen 1994; 1995; Zhulnikov 2003, 5). At the same time, identification of Stone Age pit-houses still visible in the modern landscape was improved (e.g., Jussila et al. 1992, 25–26). This has led to an increase in research on Stone Age dwellings in Finland since the 1980s (Matis-kainen & Jussila 1984). Research in Sweden followed (e.g., Lundberg 1997, 3; Norberg 2008, 16–18).

The high mark of research on Stone Age dwellings from various chronological periods in Karelia, Finland and northern Norway occurred in the 1990s (Pesonen 2002, table 2). Results of these researches were systematized in the summarising publications, which form the present understanding of pit-houses structure, their territorial and chronological (Olsen 1998; Ranta 2002; Zhulnikov 2003; Skantsi 2023; see also Mökkönen 2011, 24–34, and references therein).

About 15 houses were discovered in southern and southeastern Lithuania during the 1990–2000s (Štavičius & Marcinkevičiūtė 2012; Marcinkevičiūtė 2016; Štavičius 2016), while about 10 were found in southeastern Belarus (Kolosov 2009a; Yazepenko & Yuretski 2013; Ezepenko & Voronenko 2017) and one in western Latvia (Grasis 2010). In the 2010s, a few houses were excavated at two sites in Estonia (Paper IV; Kriiska & Nordqvist 2021), one site in Latvia (Larsson et al. 2017) and two sites in Lithuania (Piličiauskas 2018). There are publications summarising data about the known remains of the houses in Estonia (Kriiska 2002a) and Lithuania (Grinkevičiūtė 2005), as well as re-viewing old materials from Sārņate in Latvia (Bērziņš 2008) and Riigiküla in Estonia (Khrustaleva et al. 2019).

3.2. Distribution of dwellings in the research area and neighbouring territories

More than 200 Stone Age dwellings from 92 settlement sites are currently known in the northwestern part of the East European Plain (Appendices 1 and 3; for more details see Chapter 9). Their distribution is uneven in the studied territory, and they are mostly found in areas where extensive excavation campaigns have been conducted (Fig. 6).



Fig. 6. The location of the settlement sites discussed in the thesis. A – Settlement sites discussed in the thesis: 1 – Jägala Jõesuu V; 2 – Vihasoo III; 3 – Lommi III; 4–5 –

Riigiküla I and III; 6 – Narva-Jõesuu IIB; 7 – Kõnnu; 8 – Pulli; 9 – Valma; 10 – Kullamägi; 11 – Akali; 12 – Tamula I; 13 – Užavas Celmi; 14 – Särnate; 15 – Pürciems; 16 – Salaspils Laukskola; 17 – Zvejnieki I; 18 – Iča; 19 – Kvāpāni II; 20 – Abora I; 21 – Zvidze; 22 – Lagaža; 23 – Asne I; 24 – Eiņi; 25 – Nainiekste; 26 – Piestiņa; 27 – Zvejsala; 28 – Leimaniški; 29 – Jurizdika I; 30 – Kreiči; 31–34 – Šventoji 4, 6, 23 and 40; 35 – Nida; 36 – Alksnynė 3; 37 – Šarnelė; 38 – Biržulis; 39 – Kulnikas; 40 – Daktariškė 1; 41 – Širmės kalnas 1; 42 – Gluobių I; 43 – Kubilėliai; 44 – Varėnė 2; 45–46 – Katra 1 and 2; 47 – Paramėlis 2; 48 – Dubičiai 2; 49 – Neravai; 50 – Skaruliai 2; 51 – Sudota 2C; 52–53 – Rėkučiai 1, 2; 54 – Kretuonas 1; 55–57 – Žemaitiškė 1–3; 58 – Pakretuonės 1; 59 – Šaltaliūnė; 60 – Pakretuonės 3; 61 – Žeimenis I; 62 – Asaviec 7; 63 – Bierascienava; 64 – Niamnova 1; 65 – Navasiolki 1; 66 – Babrovičy I; 67 – Pierasudavičy; 68 – Opal II; 69 – Vostraū III; 70 – Saryja Jurkovičy I; 71 – Slabodka I; 72–73 – Juravičy III and IV; 74 – Bierahavaja Slabada; 75 – Nižniaja Alba 1; 76 – Sasonka; 77 – Borok Seminauski; 78 – Prorva 2; 79 – Kamaryn 5; 80 – Kamaryn 5 A; 81 – Ksendzova gora; 82 – Zavalje; 83 – Stasieūka; 84 – Ludčycy 1; 85 – Dziednia; 86 – Vuscie 2; 87 – Kryničnaja; 88 – Rudnia I; 89 – Kamienka 5; 90 – Sary Dziedzin 4; 91 – Strumien VI; 92 – Hlybaūka III; 93 – Novyja Hramyki X; 94 – Dubovy Loh IV; 95 – Mnevo-Les; 96 – Hryshivka; 97 – Vita Litovskaya; 98 – Serteya XIV; 99 – Zalesje I; 100 – Ust'-Valdayka I; 101 – Sakhtysh I; 102 – Sakhtysh II; 103 – Ileksa V; 104 – Pyhtää Susikopinharju; 105 – Lappeenranta Etu- ja Taka-Muntero; 106 – Puumala Kärnelahti; 107 – Pihtipudas Madeneva; 108 – Kuorikkikangas; 109 – Kauvonkangas; 110 – Korvala; B – Estonian Stone Age settlement sites: blue dots – all settlement sites, red dots – settlement sites with remains of pit-houses (Illustrations: A – I. Khrustaleva; B – Data after: Sikk et al. 2020; Sander & Kriiska 2021; 2022).

Ten pit-houses and the remains of 16 to 18 above-ground constructions are known in Estonia (Yanits 1959a; 1959b; Gurina 1967; Kriiska 2002a; Paper I). They were found at settlement sites connected to the coastal formations of the Baltic Sea, coasts of Võrtsjärv and Peipsi Lakes, and the rivers flowing into them. The earliest above-ground construction is dated to the Pre-Pottery Stone Age, while the pit-houses are attributed to the Narva culture and the Comb Ware and Corded Ware cultural complexes (Appendix 1).

Two pit-houses were discovered in Latvia (Grasis 2010; Larsson et al. 2017), as well as 65 to 70 above-ground constructions (Vankina 1970; 1980, 57; Bērziņš 2008). They are found in two regions: close to the Baltic Sea coast and around Lubāns Lake. One pit-house is dated to the Pre-Pottery Stone Age, while the above-ground constructions and the other (supposed) pit-house are attributed to the Late Narva culture (Särnate-type) and the Comb Ware cultural complex (Appendix 1).

In Lithuania, 32 pit-houses and 36 above-ground constructions have been discovered (Girininkas 1994a, 212; Ostrauskas 2001, 180–181; Juodagalvis 2016, 71, figs. 8, 9; Marcinkevičiūtė 2016, 61–63; Štavičius 2016, 27, 32, 37–38; Piličiauskas 2018, 28–35, 183; Butrimas 2019, 227; Paper V). Sites with dwellings are connected to the coastal formations of the Baltic Sea and internal lakes (Biržulis, Kretuonas, etc.) or found in the Neman River basin in the southern part of the country. These dwellings are dated to the Pre-Pottery period (the oldest

finds are attributed to the Palaeolithic), the Narva culture, the Comb Ware and Corded Ware cultural complexes or the Globular Amphora culture (Appendix 1).

In Belarus, 38 pit-houses and 22 above-ground constructions have been discovered. Archaeological works have been mainly confined to the eastern and southeastern parts of the country, in the Pripyat, Sozh and Dnieper River basins, and to a lesser extent, in the Neman River basin in the west (e.g., Isaenko 1976; Kalechits 1990). Thus, all currently known dwelling remains are in these regions (see Paper V). The dwellings are attributed to the Pre-Pottery Stone Age, the Neman culture, the Dnieper-Donc and Corded Ware cultural complexes, and the North Belarusian culture (Appendix 1).

The distribution of the known pit-houses in the surrounding territories is also uneven. In Fennoscandia, because they are still visible on the modern surface, their documented number does not correlate with the number of excavated sites. Thousands of dwelling depressions have been documented in the northern regions of Scandinavia and dozens in the south (e.g., Grøn 2003; Larsson & Sjöström 2011). Most of the dwelling depressions in Sweden are concentrated in the northern part of the country, in Norrland, and less than a hundred of them have been excavated (e.g., Lundberg 1997, fig. 3.1). Thousands of dwelling depressions are known to exist on the northern coast of Norway in Finnmark, and a few hundred of them have been excavated (Simonsen 1976; Mökkönen 2011, 32; Fretheim 2017, 29; 2023). The pit-houses in these northern areas are mostly dated from the 5th to 2nd millennium calBC.

The current number of pit-houses in Finland is not available from published sources. However, in 2000, ca. 3,500 dwelling depressions had been discovered and about 120 had been excavated across more than 50 sites (see, e.g., Karjalainen 2002; Pesonen 2002, 14, 30–31). These sites are mostly concentrated on the Baltic Sea coast in the west (Ostrobothnia) and inland in the southeast around Saimaa Lake (Pesonen 2002, fig. 1; Skantsi 2023). Almost all these pit-houses are dated to the Stone Age and most of them from 4000 to 2300 calBC (Mökkönen 2011, 25).

In western Russia, there are two main areas of study: Karelia and the Middle-Volga region.⁸ Here, dwelling depressions are also still visible on the modern surface. In total, more than 1,000 dwelling depressions have been discovered and nearly 400 have been excavated (Pankrushev 1964; Zhulnikov 2003, 6–7; Filatova 2004, 23–50; Nikitin 1996; 2017). Most of these pit-houses are associated with the Comb Ware cultural complex and the Volosovo culture of the 4th millennium calBC (Sidorov 2002; Zhulnikov 2003). In other areas of European Russia, several dozen dwellings have been discovered, but only at individual locations subject to long-term and extensive excavation campaigns (Koltsov 1985; Vereshchagina et al. 1995; Leonova 2004; Mazurkevich et al. 2012; Zimina 2014).

⁸ The first Mesolithic dwelling in the European part of Russia – a pit-house – was excavated by Alfred Kh. Khalikov at a site next to the village of Russkaya Lugovaya in the mid-1950s.

In the discussion of architecture, the orientation of dwellings relative to compass points, water bodies, and relief features can play an important role in determining certain cultural characteristics. However, there are several limitations when it comes to the dwellings discussed in the text. The first limitation is that many dwellings have only been partially excavated, leaving their final shape, size, and the positioning of entrances untraceable (see Papers I and V). The second limitation is the insufficient study of the palaeolandscapes of Stone Age settlements, which makes it impossible to determine whether these dwellings were associated with lakes, palaeolagoons, or rivers flowing into them (like at Jägala Jõesuu V or sites around the Lubāns or Peipsi Lakes). Changes in water levels in the Baltic Sea and their impact on inland water bodies were significant along the coastal area during the Stone Age. Even for the relatively well-studied Lommi III and Riigiküla I settlement sites (Rosentau et al., 2013), located in the Narva-Lauga area on the Estonian-Russian border along the southern coast of the Gulf of Finland, it is not possible to definitively determine the position of all structures in relation to water bodies (lagoon shore, estuary, river) at the time of their construction. This is why the questions of dwelling orientation are not addressed in the text.

4. MATERIALS

Information on the remains of more than 200 Stone Age dwellings from the north-western part of the East European Plain dating from ca. 12,000 to 2000 calBC is examined in this research (Appendices 1 and 3). The available sources, including published and archival data, were analysed for the territories of Estonia, Latvia, Lithuania and Belarus. However, a total number of dwellings in this area cannot be given because at multiple sites, above-ground constructions do not definitive boundaries. In total, data were collected on 26/28 dwelling remains from 11 settlement sites in Estonia; 67/72 dwelling remains from 17 settlement sites in Latvia; 68 dwelling remains from 31 settlement sites in Lithuania; and 58 dwelling remains from 31 settlement sites in Belarus (Fig. 6: A). Although more building remains at Stone Age sites are mentioned in the literature (see e.g., Rimantene 1973; Loze 1978; 2000, 116; Isaenko 1976; Butrimas 2019, 210), they are not discussed in this thesis due to the meagre amount of available data or their unclear chronology. Information about some dwellings – such as those published in small local journals or mentioned only in field reports – may have been inadvertently omitted from this study, but probably their number cannot be large.

The starting point for my research was Estonia. For this reason, Estonian dwellings are described in more detail than the others in Appendix 1. All case studies published in Papers I–IV are of Stone Age settlement sites with remains of hunter-fisher-gatherer pit-houses associated with the Narva culture and the Comb Ware cultural complex from Estonia (Fig. 6: B).⁹ For the original analysis of the Jägala Jõesuu V site (Paper II and IV), almost 11,500 artefacts and ecofacts stored in the archaeological collection of the University of Tartu (Estonia) were described and a typological and spatial analysis was done on them. Archival data, such as an excavation report, maps, plans and photos – stored in the Archaeological Research Collection of the University of Tallinn – were also included in the research.

The Lommi III site (Paper III) was analysed using all the maps, drawings and an excavation report stored in the Archaeological Research Collection of the University of Tallinn and the archives of Archaeology at the University of Tartu in Estonia. All published data were also examined. For this analysis, more than 1,500 artefacts were studied and described, and a typological and spatial analysis was done on them.

Materials from the Riigiküla I settlement site were also analysed in detail for this thesis (Paper I). Three excavation reports, maps, plans, drawings, photos and field diaries stored in the archives of the Institute of Archaeology of the Russian Academy of Sciences in Moscow and the Institute for the History of Material Culture of the Russian Academy of Sciences in St. Petersburg in Russia were used. More than 1,200 potsherds stored in the Department of Archaeology at the Peter the Great Museum of Anthropology and Ethnography (Kunstkamera) of the

⁹ Lommi III is discussed here in the context of Estonian sites as it was on the territory of Estonia when excavations took place there (see Paper III).

Russian Academy of Sciences in St. Petersburg were studied.¹⁰ All published data were also used in the research.

The Kõnnu settlement site was not analysed in as much detail as less information was preserved about the excavation there (Paper I). Artefacts from this site were not studied because their cultural attribution was already clear, while the exact composition and spatial distribution of finds from dwellings disturbed by gravel extraction are unclear. However, all the published information about the dwellings was used, as well as data from the field diary and excavation report, which is stored in the Archaeological Research Collection of the University of Tallinn. Other Stone Age dwellings in Estonia were used as the background for the general overview which was mostly based on published data (Paper I).

Since the most reliable remains of hunter-fisher-gatherer dwellings (i.e., pit-houses) in Estonia are dated to the 5th and 4th millennia calBC, dwellings of this period were primarily examined for the other part of the research area as well as for the neighbouring territories. Although more attention is paid to pit-houses in this thesis, the above-ground dwellings of hunter-fisher-gatherers are also discussed in the research as a background.

Pit-houses of the Narva culture from Lithuania and above-ground dwellings of the Comb Ware cultural complex from Latvia are primarily discussed as comparative material for the data from Estonia and Belarus (Papers I and V). Information on dwellings from Lithuania was mostly based on published sources, and researchers who conducted excavations at the dwelling sites were interviewed as well (Dr. Egidijus Šatavičius, Dr. Vygandas Juodagalvis, Dr. Gytis Piličiauskas and Džiugas Brazaitis, December 2022). Data on the dwellings in Latvia was thoroughly collected from archival and published sources. The researcher Mr. Normunds Grasis, who conducted the excavations of the pit-house at the Užavas Celmi site, was interviewed (December 2022), as well as Prof. Lars Larsson and Dr. Ilga Zagorska and who excavated Zvejnieki I (June 2024). In addition, ten excavation reports and multiple drawings and photos stored in the archive of the National History Museum of Latvia in Riga were used.

Information about Belarusian Stone Age dwellings was collected from archival and published sources. A total of eighteen excavation reports, maps, drawings and photos stored in the Central Scientific Archive of the National Academy of Sciences of Belarus were used. Several researchers who conducted excavations at the dwelling sites were interviewed (Dr. Ihar Yazepenko, Dr. Mikola Kryvaltsevich, Dr. Maxim Charniauski, Dr. Elena Kalechits and Dr. Alexander Kolosov, February and October 2018, February 2019, January 2020, May 2021). Moreover, the collection of flint artefacts from the dwellings of the Pre-Pottery Stone Age site of Hlybaŭka III – as well as finds (mostly pottery) from dwellings of the Dnieper-Donec cultural complex sites Staryja Jurkovičy I, Juravičy III and IV, Nižniaja Alba 1, Sasonka, Borok Seminauski, Kamaryn 5 and 5 A, Prorva 2,

¹⁰ The typological analysis of these finds was performed by Dr. Margarita Kholkina, St. Petersburg State University, Russia (see Paper I). The remaining analysis was made by the author.

Strumien VI – were examined. In total, about 200 artefacts from these sites stored in the Institute of History of the National Academy of Sciences of Belarus were analysed to determine the appropriate cultural attribution of the dwellings. The focus of my study of Belarusian dwellings (Paper V) is on the pit-houses of the 4th millennium calBC. In the absence of radiocarbon dates, they were the only ones which could be clearly attributed due to the typo-chronology of the find.

The main comparative data consists of published sources on Stone Age dwellings from western Russia and Finland. Sites from Finland have been actively researched for decades and generalised information about them are used in this thesis (e.g., Miettinen 2002; Pesonen 2002; Mökkönen 2011). Dwellings in the territory of western Russia have been researched more unevenly. The data on the buildings in Karelia, the Karelian Isthmus and the Middle-Volga region have been analysed previously, and some results of these studies are discussed in this thesis (Pankrushev 1964; Oshibkina 1978; Zhulnikov 2003; Halinen 2008; Nikitin 1996; 2017). The data for the remaining areas of western Russia have not yet been studied sufficiently and are used only in the broader discussion of the thesis (Koltsov 1985; Vereshchagina et al. 1995; Leonova 2004; Mazurkevich et al. 2012; Khrustaleva 2016). Furthermore, Scandinavian and northern Ukrainian Stone Age architecture is considered only in general form based on publications (Telegin 1961; Neprina 1976; Lundberg 1997; Berglund 2004; Fretheim 2017; 2023).

In addition to the hunter-fisher-gatherer cultures that are the focus of this thesis, dwellings attributed to the cultures of early farmers are also briefly discussed (Appendix 1; see Chapter 9.2.3). The research incorporates published data on the architecture of Linear Pottery, Bug-Dniester, Trypillia and Funnel Beakers cultures, as well as the Corded Ware cultural complex, generally dated to the 6000–2000 calBC (Kordysh 1953; Startin 1978; Hallgren 2008, 92–106; Pavlů 2016; Nielsen 2020; Kriiska & Nordqvist 2021; Figs. 1–3).

5. METHODS OF STUDYING STONE AGE ARCHITECTURE

The main reasons for the difficulties in uncovering, identifying and interpreting Stone Age dwellings are poor preservation conditions, imperfect excavation methods and poor documentation (e.g., Larsson & Sjöström 2011, 233–234). While archaeologists cannot change the preservation conditions, research methods are constantly developing. The criteria used to identify dwellings and the methodological approaches to studying Stone Age settlement sites have been discussed repeatedly in different countries (e.g., Harris 1989, 14–21; Barker 1993; Pesonen 1994, 1995; Mazurkevich 1994; Manninen 2006, 107; Leonova & Gavrillov 2012; Lõugas 2018).

Archaeological methods are divided into fieldwork and post-fieldwork tasks. Primary focus is regulating the excavation and field documentation process. This is because archaeological sites can only be excavated once. This also means only the researchers working directly on the sites are able to draw the most complete conclusions possible. However, different archaeologists in different countries and different time periods, all had their own guidelines for regulating the excavation process and compiling field documentation. The results are thus diverse. Some instructions were brief: ‘work with ancient remains requires good pictures, plans and descriptions made with the brain and understanding’ (Tallgren 1922, 121; authors’ translation from Estonian). In other cases, detailed guidance was provided for the excavation of various types of archaeological sites (e.g., settlements, ground burials, barrows etc.) and their features (e.g., pits, hearths), as well as especially for the remains of prehistoric buildings and dwellings (e.g., Hole & Heizer 1973, 183–195; Koltsov 1983; Krizhevskaya 1990; Rankama 2008).

The main problem with following these guidelines lays not in their details, however. Because archaeologists must realise they are excavating a dwelling or other structure before the guidelines can be put in place, it is not always possible to understand the initial context. This is especially true if the construction elements of the structure have not been preserved or there is no clear outline. Much thus depends on the archaeologist’s personal experience, on what they have encountered in previous excavations and what they are ‘ready to see’.¹¹ Thus, Stone Age pit-houses in Finland, which are visible on the modern surface as depressions, received almost no attention until the 1980s because this phenomenon was not yet widely recognised (Pesonen 2002, 13).

Since all the house features studied in this thesis were already excavated, it was necessary to work with information obtained from the documentation and collections of finds, and always to adapt the methodology to the available data, which was sometimes quite scarce. All the main post-fieldwork methods used in

¹¹ ‘As Arne B. Johansen has pointed out (Johansen 1970, 7–37), our preconceptions of what are considered archaeological remains, and how they may appear in the landscape, determine what we are able to find. New methods are important, but new expectations, generated by new discoveries (or re-reading of old discoveries), are also a vital force behind growing archaeological records.’ – Fretheim 2017, 17.

the published papers are shown in Fig. 7. A more detailed description of the methods used is provided below.

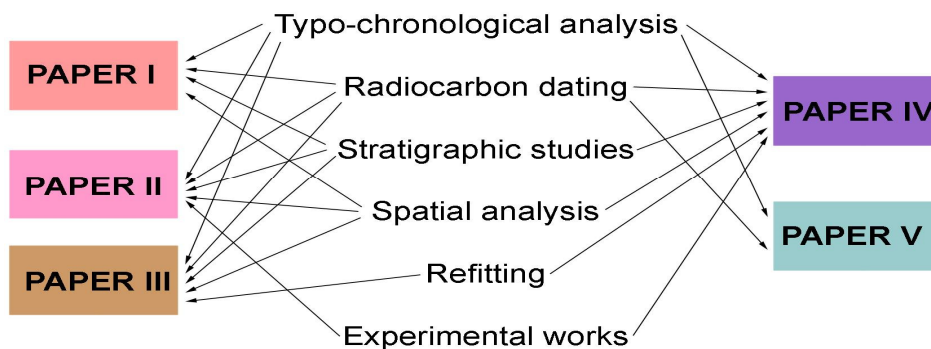


Fig. 7. The main post-fieldwork methodological approaches used to analyse data in published papers.

5.1. Fieldwork methods

Today, numerous non-invasive methods – like magnetometry, ground penetrating radar, LiDAR, etc. – are used for archaeological surveys of known and potential sites (Corsi et al. 2013; Saile et al., 2016; Dębiec & Pasterkiewicz 2017). They require different levels of equipment, knowledge, technicians and monetary investments. The results of applying these methods to Stone Age dwellings also depend on natural conditions and technical limitations. However, none of these non-invasive methods was directly used to study the dwellings discussed in this thesis.

The quality of excavations is a very important aspect when studying Stone Age dwellings built from organic materials that have not survived to the present day (Clark 1953, 140; Halinen et al. 2002; Paper III and its references). The methods used in fieldwork prove crucial in identifying the remains of a structure, its shape and size. Thus, when Vasiliy Gorodtsov excavated the first dwellings at the Volosovo culture settlement sites in Russia in the early 20th century, he applied a new digging method in which the contents of the pit were gradually dug out moving in a circle along the contour of the filling. Knowledge of this enabled the actual shape of the pit to be identified correctly. While Gorodtsov argued the pit-house was round, subsequent archaeologists discovered it was rectangular (Bader 1970, 26–28; Buzin 1990, 32). Nevertheless, this method of digging continued to be used widely not only in Russia, but also in the surrounding territories for the archaeological excavation of various pits, especially pit-houses, including most of those discussed in this thesis (Gurina 1952; 1967; Tsvetkova 1958, 112; Kryvaltsevich 1986; Kalechits 1977; 1990).

The main method used to excavate Stone Age sites in the northwestern part of the East European Plain, as well as in the surrounding territories, was to examine

technical horizons at a thickness of 0.05–0.2 m and to collect the finds in 0.5×0.5 - or 1×1 - metre quadrants. The differences were related to the tools used for excavation and the methods of documentation (Fig. 8; Krizhevskaya 1990; Takala 1999; Fretheim 2019). At most of the sites excavated in the 20th century in Belarus, Latvia and Lithuania, as well as at Riigiküla I in Estonia, excavations were carried out using shovels without sieving (Fig. 8: A; Gurina 1952; Kalechits 1990; Marcinkevičiūtė 2016, 51). Only relatively large finds can be identified using this method. Pits and prominent features were excavated separately, and these finds were collected separately (Fig. 8: A; Kalechits 1990; Zhuravlev 1990). The total station was not used in any case. Finds were marked on horizontal plans and, less frequently, on vertical plans.

At least in Estonia and Latvia, strict requirements for excavations and field documentation were established in the 1920s and a standardised system was developed in the 1930s (Jaanis 1991, 36). This included an approach in which the location of all major finds was measured horizontally and vertically and drawn on coloured plans during fieldwork (e.g., Indreko 1930; Šturms 1936). This practice was followed for decades, but small finds, including tiny potsherds, fragments of flint and quartz and animal bones continued to be collected without accurate documentation (e.g., Yanits 1959a, 28–29).

Of the settlements with dwellings in Estonia analysed in this work, only finds at Jägala Jõesuu V and Lommi III were documented using a three-dimensional coordinate system (Papers II–IV). Soil from Jägala Jõesuu V was also sieved in small sectors (from 0.05×0.05 m to 0.15×0.15 m), which allowed even the smallest finds to be identified very close to their original location (Fig. 15: B). In Latvia, Lithuania and Belarus, only recently excavated sites with dwellings were documented in a three-dimensional coordinate system (Kolosov 2009a; Grasis 2010; Piličiauskas 2018, 107–110).



Fig. 8. Examples of the various tools and techniques used to excavate dwellings at Stone Age settlement sites: A – Strumen VI, 1977, Belarus, the dwelling pit (pit-house 1) was excavated using shovels and finds (are visible in the picture laying in front of the dwelling pit) from the entire pit filling were collected together (After: Kalechits 1977, fig. 45); B – Jägala Jõesuu V, 2011, Estonia, the entire excavation area was dug using small trowels and all the extracted soil was sieved. All finds were marked on plans according to their coordinates (Photo: A. Kriiska).

The excavation techniques used are a decisive factor in the selection and feasibility of subsequent analyses (Barker 1993; Tassie et al. 2010). The quality of fieldwork documentation influences the amount of information that can be obtained during further post-excavation studies (Torcal et al. 2014). Different approaches to the excavation and documentation processes at the sites discussed in this thesis resulted in the different amount of available information on the dwellings.

5.2. Post-fieldwork methods

5.2.1. Methods of dating

Typo-chronology is a method that utilises the similarity of artefact types to estimate their age. It assumes that similar artefacts can be associated with the same time period, thus allowing the established age of one artefact to be used in determining the age of others. This method is useful in situations where direct absolute dating is not possible. Typo-chronology developed from the evolutionary typology of Christian Thomsen and Oscar Montelius (Trigger 1990, 73–79; Oddo 2020, 258–285). Today it is often based on the radiocarbon dates of object types. For the Stone Age sites of the northwestern part of the East European Plain, these are mainly pottery types. However, the main problem besetting this research area is that the various types of pottery do not have a clearly established radiocarbon chronology. Therefore, often only the relative concepts of ‘earlier’ and ‘later’ can be applied. This makes it difficult to compare the materials across different regions.

The typo-chronological method was used for all sites discussed in the thesis and was often the only method possible for dating building remains (Isaenko 1976; Kalechits 1987). This method was the basis for spatial studies of the Estonian hunter-fisher-gatherers settlement sites with dwellings (Papers I–IV).

Radiocarbon dating has been used to determine the age of archaeological materials for more than 80 years (Hajdas et al. 2021; Becerra-Valdivia & Higham 2023). Dating Stone Age dwellings is often impossible due to the lack of organic materials found or due to their unclear context. Organic materials are often not preserved and may not have been recovered in old excavations or are now missing from collections. For the Stone Age sites of the northwestern part of the East European Plain, the most common materials suitable for radiocarbon dating are charcoal pieces, burnt and unburnt bones, organic crusts on pottery vessels and burnt hazelnut shells (Papers I–V).

In general, 14 new radiocarbon dates, including nine dates for Estonia and five for Belarus, were obtained for this thesis (see Appendices 1 and 2). This represents 30% of all established dates for dwellings in the northwest of the East European Plain. Three dates existed for Estonian pit-houses before this work, but only one was published (Tõrv 2016, 196; Kriiska & Nordqvist 2021; Papers I and

IV) and just a few Belarusian dwellings were previously dated (see Paper V). For dwellings from Latvia and Lithuania, only previously published data were used.

All materials for this thesis were dated using the AMS (accelerator mass spectrometry) method at the Poznań Radiocarbon Laboratory (Poz). The dates presented here were calibrated using the OxCal 4.4.4 programme (Bronk Ramsey 2021) with the IntCal 20 atmospheric curve (Reimer et al. 2020) and are presented with a 95.4% probability (for dates see Appendix 1). In Chapter 9, median calibrated age is used.

Today, burned bones and hazelnut shells are considered a more reliable material for dating than charcoal or organic crust on pottery for multiple reasons. Charcoal and wooden samples can give the so-called ‘old wood effect’. While wood and unburnt animal bones can contain contaminants such as admixtures of natural materials or chemical substances used for their preservation. Examples of errors caused by modern contaminants – which make the dates much younger – can be seen in dates obtained for the Juravičy IV and Borok Seminauski sites in Belarus (Appendix 1: 90, 96; see Chapter 6.5). The date from Rudnia I, on the contrary, indicates the presence of earlier objects at the site where later a pit-house was built (Appendix 1: 87).

Furthermore, dates obtained from the bones of aquatic (marine, riverine or lacustrine) animals or fish, as well as human bones and organic crusts on pottery (food remains) when related to an aquatic diet, may be affected by ‘reservoir effect’ (Philippsen 2013; Philippsen & Meadows 2014; Teetaert et al. 2017). The problem is that the magnitude of the offset is often unknown (for Estonia see Kriiska et al. 2017; Oras et al. 2017). For the objects dated in this work, the presence of a reservoir effect was checked in every sample (materials which do not have a reservoir effect were used when possible and in cases with organic crusts on pottery stable isotope analysis were done) but not proven in any case.

5.2.2. Stratigraphic studies

Stratigraphic analysis came to archaeology from geology (Koutsoukos 2005; D’Amore 2014). In the 19th century, it became the main method for determining chronology in archaeology, developing in geoarchaeological studies (O’Brien & Lyman 2002, 82; Beuzen-Waller 2018), especially following the concept of the Harris Matrix formulation (Harris 1989; Traxler & Neubauer 2008; D’Amore 2014, 7086). Today, three-dimensional computer profiles can be used to display and analyse the relative positions and stratigraphic contacts of observable stratigraphic units. This latter method is used in this thesis (Fig. 9).

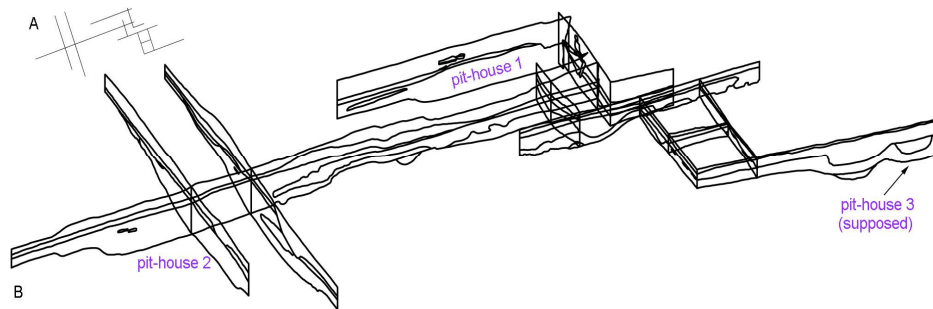


Fig. 9. The Riigiküla I settlement site (for a detailed analysis, see Khrustaleva et al. 2019; Paper I): A – Combined scheme of the profile sections; B – Three-dimensional model of the combined profile sections, allowing for a better understanding of the relative positions of the layers and objects at the site (Illustration: I. Khrustaleva).

Archaeostratigraphic analysis and the superposition principle – which focuses on the internal structure of the cultural layer – are methods for studying the preservation and composition of the cultural layer (Harris 1979; Chernokian 1988; Canals 1996; Leonova & Vinogradova 2004; Vinogradova 2005; Mallol et al. 2014; Bargalló et al. 2016). To interpret archaeological data, it is necessary to identify and correctly understand the processes and conditions that affected the distribution of the objects and formation of the find concentrations.

Stratigraphic studies as well as spatial and intrasite analyses (see Chapter 5.2.3) have a number of requirements for their implementation:

1. A sufficiently large excavation site;
2. Three-dimensional documentation of all the finds;
3. The classification and comprehensive analysis of all finds;
4. The verification of the preservation and homogeneity of the cultural layer;
5. The absence of palimpsests of multi-cultural deposits, or the possibility of identifying and separating them.

Stratigraphic analyses were applied in this thesis for the study of the Riigiküla I, Jägala Jõesuu V and Lommi III settlement sites (Papers I–IV; Khrustaleva et al. 2019).

5.2.3. Spatial and intrasite analysis

Spatial analysis (see e.g., Binford 1978; Hodder & Orton 1979; Blankholm 1991; Lancelotti et al. 2017) is extremely important for the study of Stone Age settlement sites and their structures (Kroll & Price 1991; Juodagalvis & Marcinkevičiūtė 2004; Larsson 2009a; Larsson & Sjöström 2011). After first being used to study Palaeolithic sites, later it started actively integrated into methodological study practices at other Stone Age sites. When objects at the site were documented in square units, while their vertical positions – in the absence of a clear stratigraphy – were recorded based on technical layers 0.05 to 0.2 m thick, chronologically mixed archaeological material could be collected from the same technical layer. That is why it is necessary to be careful interpreting results of spatial analysis conducted at such sites. The absence of palimpsests and disturbance (both occupational and post-occupational) of the cultural layer at the sites could be proved (Hughes & Lampert 1977; Vaquero & Pasto 2001; Bargalló et al. 2016). Furthermore, the concentration borders outlined with this level of documentation are inaccurate and less correspond to the actual form of the feature (see e.g., Grøn 1995; Khrustaleva et al. 2019) in comparison with more accurate documentation (see e.g., Fretheim 2017, 97, fig. 18; Larionova 2019).

To get correct results, typo-chronological analysis (see Chapter 5.2.1) is needed to determine the degree of homogeneity of the finds assemblage. A full-scale spatial analysis is thus required to separate the different settlement phases at the site (e.g., Pesonen 2013). Various techniques of spatial analysis can be applied, and the results can be presented in different ways, causing them to have different effects on the viewer (Fig. 10; e.g., Kamenetsky 1970; Lancelotti et al. 2017). The main techniques include:

1. Two-dimensional visual method: This is the simplest way and shows the distribution of the finds in a horizontal or vertical projection as a two-dimensional plan with drawn points;
2. Three-dimensional visual method: These include various methods of three-dimensional computer-aided visualisation and modelling (e.g., Surfer, AutoCAD, ArcGIS);
3. Mathematical and statistical methods of spatial analysis can identify the correlations between the locations of finds in the cultural layer (Kolchin & Sher 1970; Whallon 1973, 1974, 1984; Blankholm 1991).

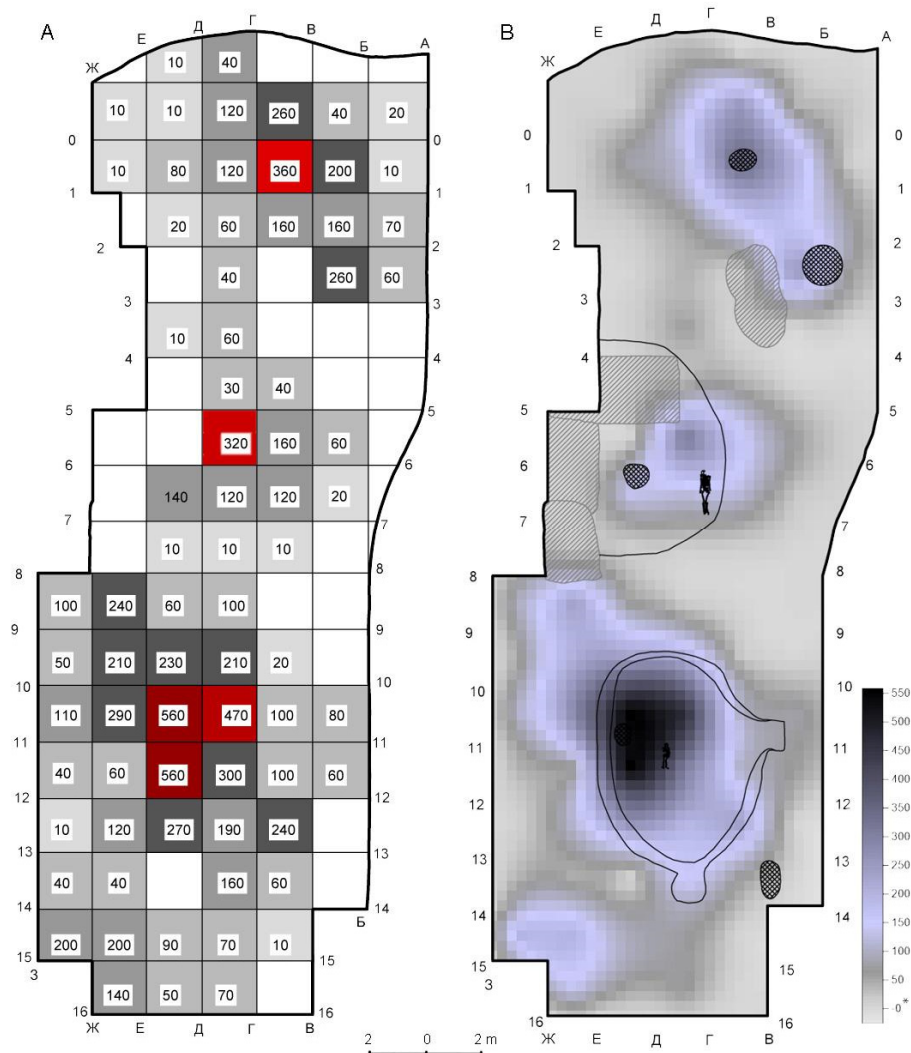


Fig. 10. Riigiküla I, the distribution of potsherds in the excavation area (for details, see Paper I). The different ways of visualising the same data illustrate the different impacts: A – The numbers and colours indicate the quantity of finds per square; B – The gradient colours indicate the difference in quantity of the finds (*number of fragments of pottery; Illustration: I. Khrustaleva).

In some cases, the weight of the finds can be a more informative parameter than their quantity (Karjalainen 1996a, figs. 6–10; 2002; Katiskoski 2002, 188–192). This is especially true with fragile materials, like pottery or bones. A large piece of a pot or a whole vessel provides more information about the archaeological context than ten tiny, amorphous potsherds. However, on the plan, the whole pot

is represented by only one dot, while ten potsherds by ten dots. Thus, the distribution of sherds according to their quantity or weight will provide different pictures. The weight distribution image is often the most useful for spatial analysis because it forms concentration.

At the sites discussed in this thesis, the weight and quantity of the finds was only measured for Jägala Jõesuu V, while only the quantity of the finds was counted for the other sites. A comparison of the quantity and weight distribution of finds at the Jägala Jõesuu V site did not indicate a big difference for two main reasons: (1) the layer was sieved so even tiny pieces were counted and (2) most of the finds were concentrated inside the dwellings (Paper IV).

For this thesis, two- and three-dimensional visual spatial analyses were used not only for studying the Jägala Jõesuu V settlement site, but also for the Riigi-küla I and Lommi III sites (Papers I–IV; Khrustaleva et al., 2019) – almost all the sites with remains of Stone Age pit-houses in Estonia. Given that conducting spatial analyses is a long and painstaking work, it was not possible to analyse all the discussed sites within the limited frames of the PhD studies. However, this can be addressed in the future.

5.2.4. Refitting (applications)

Refitting, or piecing together broken remains, has been applied on a case-by-case basis since the late 19th century. However, it came into intensive use in the 1980s when it began to be regarded as one of the most important sources for the reconstruction of living environments, especially prehistoric sites (e.g., Leroi-Gourhan & Brézillon 1966, 1972; Serikov 1983; Sergin 1984; Fiedorczuk 2006). Flint items were the main objects for refitting. This made it possible to understand the spatial aspects of flint knapping as well as the distance and direction of movement of the finds. It also allowed researchers to detect changes that had occurred after the deposition of the debris. Although rarely used at the Pottery Stone Age sites (Cuenca-Solana et al. 2018, 904), the refitting of clay vessels is very effective too (e.g., Juodagalvis & Marcinkevičiūtė 2004, fig. 4).

Among other things, refitting provides researchers the possibilities of establishing boundaries of archaeological complexes, identifying differences between household and living areas and determining the relationships between them (e.g., Petersen & Johansen 1996, 81–83; Boaz 1999, 135). This is important for studying the remains of Stone Age houses. Moreover, the directions and concentrations of refitting connections between artefacts can reveal the so-called ‘wall effect’ and the location of entrances in some cases (Grøn 1998; Gelhausen et al. 2009; Larsson & Sjöström 2011, 239), if sufficient documentation is available (Leonova 2004, 63).

Refitting was rarely used in the research area before this study. Refitting was used for the finds from Jägala Jõesuu V (Paper IV), while only the raw material links were traced for the Lommi III site (Paper III). Other sites in the northwestern part of the East European Plain were not studied in such detail. Unfortunately, this method is not applicable to the main raw stone material in the Baltic region

during the Stone Age, i.e., quartz. Quartz is a crystalline mineral, and the use of a bipolar knapping technique results in huge amounts of amorphous micro-debris, which cannot be refitted.

5.3. Experimental works and ethnoarchaeological studies

Although experimental and ethnoarchaeological studies use different methods, their goal is the same: to reconstruct (or at least suggest) details of past life and to better understand archaeological evidence (Stiles 1977; Schiffer 2008). Both types of studies have been part of archaeology in various ways from its early beginnings. In the 1960s–1970s, they were established as subdisciplines of archaeology: experimental archaeology (Ascher 1961; O’Sullivan & Souyouzoglou-Haywood 2019; Dvořáková 2024) and ethnoarchaeology (Binford 1978; Longacre 2001; Beck 2008).

Experimental archaeology studies the interactions of people and artefacts at all times and all places through experiments that replicate past phenomena to test and generate hypotheses or to enhance archaeological interpretation (Schiffer 2008; Dvořáková 2024). Experiments are carried out to investigate past buildings, technologies, tools and environmental factors (O’Sullivan & Souyouzoglou-Haywood 2019, 1). In contrast, ethnoarchaeology uses the study of material traces of ongoing, contemporary human behaviour to infer past human behaviour from material patterns (Beck 2008).

The tasks and methods of experimental and ethnoarchaeological studies differ depending on the archaeological question. As this topic is very broad, only some data are considered in this thesis to illustrate the main ideas. These include published research data on the formation and functioning of hearths (Canti & Linford 2000; Alpers-Afil et al. 2007; see Chapter 6.5) and on the natural distribution of artefacts created during the experimental processing of lithic materials or the production of tools (Toth 1987; Prentiss 2001). These works make it possible to better understand the spatial distribution of finds and features at archaeological sites and to analyse the location and spatial organisation of the dwellings.

For the present thesis, two experimental works were carried out that are important for understanding the functions of the pit-houses and the accumulation of cultural deposits inside them. The first explored the deliberate destruction of clay figurines associated with the Comb Ware cultural complex dwellings (Paper II). The second illustrated the distribution and quantity of quartz micro-debitage around the knapping area (Paper IV).

I also use experimental data on past processes of building and living in settlement sites, as well as the transformation of archaeological cultural remains (Gheorghiu 2013; Morgan et al. 2018; de Raaff 2020). Of particular importance were experiments related to the building of life-size dwellings of different types, as well as observing the processes of their destruction and burning (Konstantinov 2001; Muurimäki 2007a; Larsson & Sjöström 2011; Apals 2012; Nieminen & Viljanmaa 2014; O’Sullivan & O’Neill 2019). In many cases, experiments are

the only way to study many details of the dwellings that are not preserved in the archaeological record. Through experimental work, researchers can hypothesise what construction materials might be used and in which ways, how many people might be needed to build different types of dwellings and how much time the construction might take (e.g., Semenov & Korobkova 1983; see Chapter 6.3).

In my thesis, ethnographic and ethnoarchaeological data from different geographical regions of the world are used sparingly as examples, primarily to illustrate certain aspects of human life in the studied area. Although all ethnographically studied hunter-gatherer groups of the last few hundred years live in a modern world and are influenced by it in various ways – posing challenges to using them as models for understanding past populations – they still provide valuable and detailed information (Cummings 2013, 28). These data contribute to the understanding of the formation processes of various types of archaeological sites (Binford 1978; Grøn & Kuznetsov 2003; Frøtheim et al. 2016), as well as possible ways of building dwellings (Kelly et al. 2005; Kenig 2010; see Chapter 6). Information on the settlements, dwellings, traditions, and beliefs of modern northern hunter-fisher-gatherers are particularly important (Ränk 1951; Popov 1961; Lyapunova 1975; Donner 1979; Kodolányi 1980; Lukyanenko 1997; Sokolova 1997). Additionally, data on traditional country houses in the research area are also used (Lebedeva 1929; Rybakov 1948; Ränk 1949; Viires 1960). Moreover, as part of this thesis, I systematically collected information about the processes of building dwellings, as well as their destruction in various environments. A number of analogies and observations drawing on modern structures in various areas of the world have been included in this work (Fig. 11; see Chapters 6–8), providing the basis for some interpretations.



Fig. 11. The process of building a large canopy, Zanzibar (Photo: I. Khrustaleva).

6. PROCESSES OF SETTLEMENT SITE FORMATION AND IDENTIFYING A STONE AGE DWELLING

To understand how to work with the data from different archaeological sites, it is important to understand how the sites were formed and changed over time. It is thus necessary to find visible traces of previous processes and interpret them correctly. Although a large number of Stone Age dwellings have been investigated in Eastern and Northern Europe, many questions remain.

6.1. Landscape and dwelling site selection

A number of criteria form the basis for choosing a place to settle and live (Lypunova 1975, 130; Zagorska 2012, 121; Brauckmann 2003). These criteria have been discussed by archaeologists for more than 100 years and include not only natural factors, such as physico-geographic, geological and climatic (Ailio 1909, 1–3; Pälsi 1920, 7–8; Ränk 1951, 25–27; Jochim 1976; Binford 1990; Sikk et al. 2021, 97–98; Sikk et al. 2022), but cultural factors as well (Grøn 2022 and references therein). For hunter-fisher-gatherers these primarily are:

1. A convenient topographical location (close to water, prevailing wind directions, prominent forms of relief, etc.);
2. The availability of the resources necessary for habitation (water, hunted fish and animal species, construction materials, raw materials for making utensils and tools, etc.);
3. Security (protection from various natural threats such as attacks by large predators, floods, landslides, etc.);
4. Traditions and cultural features.

Understanding these criteria is impossible without detailed knowledge of the properties of past societies and requires information about the ways of life and beliefs of the Stone Age people. Ethnographic research on this topic is very extensive and cannot be fully covered here. Therefore, only individual examples are given below to illustrate some aspects that may have been important when selecting a place to live.

Ethnographic studies of the Tsaatan Reindeer People in Mongolia, have found that nomads and farmers view the landscape and territories differently (Pedersen 2003, 247–248). For nomads, there are no boundaries, while for farmers there are clear territorial boundaries. For the nomads, the most important adaptive factors were the visual perception of the landscape, the ability to orient and read the footprints of people, animals and birds, knowledge of the anatomy, character and habits of animals, understanding of the omens associated with weather changes, etc. (Sokolova 1991, 6). Although hunter-fisher-gatherers are not strictly nomads, they largely overlap in their relation to the natural world and their kinds of perceptions. Moreover, the everyday socio-cultural realities of hunter-fisher-gatherers,

could influence inter-group relations, establish territoriality and regulate of traditions, rituals and beliefs (Morgan 1934, 52–64; Kelly 2003; Girininkas 2009, 232; Piezonka et al. 2020b, 192).

For hunter-fisher-gatherers, the surrounding ecosystems and landscapes not only provide everything they need, but they are also ‘not passive recipients of human activities, but dynamic and interactive elements in the evolution of past societies’ (Zvelebil 2003, 66; Cummings 2013, 95). Various topographic features, water, trees and plants, views, and even traces of past human activities (e.g., abandoned campsites and dwellings that have become part of the landscape’s history) could play a symbolic role in hunter-fisher-gatherers’ lives (Grøn et al. 2008; Grøn 2012; Fretheim 2017, 24; Mithen 2019, 2–3; Nordqvist et al. 2019). The same can be seen in modern traditional societies (Pedersen 2003). Memories and stories about places and events also played an important role in the enculturation of landscapes and human behaviour (e.g., Sokolova 1991, 15).

Ethnographic evidence indicates that when building a new pit-house or choosing a site for a new yurt, the Khanty people take into account the location of cemeteries. New settlement must be located upstream of any burial sites, as a downstream location would attract bad luck (Jordan 2003, 133). Furthermore, the attitudes towards building a new dwelling to replace an old one and how materials were reused may have differed from society to society. For the Evenki, building a new dwelling exactly on the place of an old one was unacceptable, as it offended the spirit of the hearth (e.g., Grøn & Kuznetsov 2014, 21). However, if part of the old framework was left in place, it could be reused in a new structure.

It cannot be determined whether people planned the layout of a future settlement in advance (the position of the future house and different zones of activity), or whether a house was erected first and then people’s lives gradually built and developed around it. Whatever the case, it cannot be assumed that a single method was in consistent, ubiquitous use. Ethnographic evidence illustrates that for the Evenki the home is the centre of the universe around which they constructed their lives (e.g., Grøn & Kuznetsov 2003). However, arriving to the site, the first thing for the Evenk is establishing a hearth and feeding the fire (Grøn et al. 2008). In Nganasan society, the leader of the caravan, or, in his absence, his wife marks the centre (hearth) of the future tent with a lump of snow, a stone or a piece of turf when arriving at a campsite for the first time (Popov 1966, 92). This also emphasises the paramount importance of the house.

6.2. Dwelling construction and tools for building

The building of a house involves a specific sequence of activities: the initial planning of the structure and the construction phases, the collection and processing of necessary building materials, the making of the foundation if needed (digging post holes or a pit in the case of pit-houses), the construction of a sturdy frame, and finally, the completion of the exterior and interior design of the dwelling (e.g., Lyapunova 1975, 141–142; Hertell & Manninen 2006, 186–187). This

requires the participation of multiple people and the use of a range of tools for digging, cutting, woodworking, etc. Various planning and construction processes may also have involved rituals and some magical activities, as suggested by ethnographic data (e.g., Lyapunova 1975, 142–143; Sokolova 1997, 335). Evidence of rituals conducted before the dwellings were constructed or occupied are also arguably found in some Stone Age dwellings. In Karelia, sprinkled ochre and different deposits consisting of stone tools also occasionally containing ochre have been documented inside dwellings (e.g., Filatova 1986, 57; Zhulnikov 2003, 96–97).

Before the construction of a dwelling, the area was cleared of forest, stones, waste and, in winter, snow (e.g., Popov 1966, 92; Hertell & Manninen 2006, 186). This marks the beginning of the ancient living surface layer formation (Dempsey & Mandel 2017). Then digging, if necessary, could be started. Soil extracted from the pit might be piled up as an embankment along the perimeter of the pit or even on just one side, moved away, or levelled with the surrounding surface (e.g., Hertell & Manninen 2006, 186–187; Fretheim 2019). This was followed by the construction of the timber frame of the house and its covering with organic materials (for a more detailed discussion on the construction elements and the materials used, see Chapter 8.3). After the erection of the dwelling, the interior space was organised, including floor coverings, hearth, and so on.

Based on the size of the Stone Age pit-houses in Estonia, at least 0.6 to 22 m³ of soil¹² had to be dug out for their initial construction. This required tools for loosening the soil. During the Stone Age, various stone or bone and antler tools may have been used. The Riigiküla I settlement site is the only pit-house site in the research area that is rich in bone and antler tools. More than 50 artefacts made of elk antlers, tentatively called ‘hoes’, were found there. These were interpreted to have been used for various types of earthworks, including digging dwelling pits (Gurina 1967, 42–43, 145–148), but no specific use-wear research has been conducted on these tools.

T-shaped red deer antler axes are known mostly from stray finds in Latvia, Lithuania and Belarus (Malyutina et al. 2019; Vashanov et al. 2020; Rimkus et al. 2023). Based on technical-morphological and use-wear analysis, these axes were multifunctional and therefore could be used for digging and woodworking (Maigrot 2000; Jensen 2001; van Gijn 2007; Malyutina et al. 2019; Vashanov et al. 2020). Similar antler tools were found in Estonia at Riigiküla III (Gurina 1967, 42–43), Akali and Valma (Yanits 1959a, 230–232; 1959b) and the lower part of the Pärnu River (Kriiska & Tvauri 2002, 39). However, none can be directly connected to house building.

Woodworking tools are another important set of tools needed for building in the European forest zone. Even if wooden details of dwellings are rare finds here, most include traces of wood processing (Fig. 12: B; e.g., Vankina 1970;

¹² The estimated volume of excavated soil (V , m³) was calculated based on the size (S , m²) and depth (H , m) of currently known Stone Age house pits in Estonia, using the formula $S \times H = V$.

Rimantienė 2005). Various types of wood-chopping tools (e.g., axes, adzes and chisels) made of different rocks, such as gneiss, diabase, porphyritic stones, slate and flint have been found at the Stone Age settlement sites in the northwestern part of the East European Plain (Yanits 1959a; Loze 1979; Kalechits 1987; Juodagalvis 2010; Yazepenka 2014).

In Estonia, stone axes have been discovered mostly at the larger (and more permanent) Stone Age settlement sites and were present in small amounts or not at all at small (seasonal) sites (Sander & Kriiska 2021, 9; Kriiska 2023, 28). Most of the axes had visually detectable traces of active usage, i.e., damaged blade edges, but use-wear analysis was not undertaken (Fig. 12: A). Such tools were found at sites with remains of buildings at: Riigiküla I (Gurina 1967, 116), Jägala Jõesuu V (mostly in fragments, Paper IV, 91–92), Lommi III (Indreko 1964, 63), Kõnnu (Kriiska 2023, 28), Tamula I (Jaanits et al. 1982, 79–80), Valma (Yanits 1959a, 52–53; 1959b), Akali and Kullamägi (Yanits 1959a, 203–230). Flint wood-chopping tools with clear traces of usage have also been found at the large settlement sites with remains of Stone Age dwellings in Belarus, e.g., Strumien VI, Dubovy Loh IV and Prorva 2 (Kalechits 1987, 46, 68, 72–74; Yazepenka 2014, 34). The same trend can be observed in Latvia at Zvidze and Abora I (Loze 1979, 150–155; 1988, 150–154) and in Lithuania at Nida and Svetoji 4, 6, 23 (Rimantienė 1979, 48–54; 2016, 206–212), where slate tools were used.



Fig. 12. A – Stone wood-chopping tools from the Kõnnu settlement site in Estonia: 1 – AI 4951: 212; 2 – AI 4951: 1195; 3 – AI 4951: 2446; B – Chopped wooden pole from the Tamula I settlement site in Estonia (Photos: A. Kriiska).

In addition to special tools, fire could also be used for working with wood, i.e., for burning, piercing or scorching (see, e.g., Vasilyev 2000, 4). For processing other materials used for houses (e.g., bark, plant fibres, skins etc), different stone knives, scrapers, perforators and other tools could be used. Most likely, building tools were not specialised but used for other everyday practices too.

The question of how many people were needed for the building process and the length of time it took can be resolved only partially using experimental and ethnographic data. The time necessary to build a dwelling definitely depended on the type of building, the experience of the builders, the number of people involved, the size of the building, the availability of the raw materials and the time of year. Based on ethnographic data from Australia, it is known that in some societies of hunters living near Lake Eyre, special craftsmen, i.e., hut builders who had learned their skills from their fathers, could have existed (Tokareva & Tolstova 1956, 138). In Estonia, Russia and Belarus, however, structurally complex wooden village houses were built primarily by the families who would live there even until the 19th century (Lebedeva 1929, 75–76; Rybakov 1948, 182–184; Viires 1960, 12). However, other villagers would help collect the materials needed for the construction. There could be a more experienced person who ‘headed up’ the process, or at least, provided advice (Rybakov 1948, 182). Ethnographic data from the Aleuts in North America suggest that after digging a house pit, a place for each family that would live there was determined, and then each family was responsible for organising their own space (Lyapunova 1975, 142–143). In general, however, very little information is available about the builders themselves, their number and experience, as well as how long it took them to complete the dwelling (e.g., Caruso & Speciale 2016, 52). Ethnographic research has usually been focused on the preparation and construction process, as well as on descriptions of the materials and tools, etc.

Even experimental studies rarely describe details like how long the collecting and preparing of building materials took, how long the building process lasted and how many people were involved (e.g., Vaara 2002, 36; Hurcombe & Cunningham 2016). Research on the construction of Trypillian-type pit-houses (3–3.5 m in diameter and 0.8–2.2 m deep) established that it could take a family from four to 5 or 10 to 12 days to complete the work (Semenov & Korobkova 1983, 85–87). There is information on two experimental dwellings in Lithuania (3 × 2 m and 0.35–0.4 m deep and 9 × 7 m and 0.8 m deep respectively) that were built by two men in about three days in the first case and by three men in about 20 days in the second case (Semenov & Korobkova 1983, 87), however no details on the kind of dwellings as well as references to other publications were provided.

6.3. Settlement site formation

6.3.1. Formation of the cultural layer

Archaeologists only see the settlement or dwelling after it has been abandoned by its inhabitants, and this is in a significantly different state than its original condition when it was in use (e.g., Vaara 2000, 3; 2002, 33). Moreover, once a settlement is abandoned, various natural processes significantly alter it. Thus, what is uncovered during excavations is not always a direct consequence of human activity and as a result, requires careful analysis.

Site formation begins when a cultural layer starts to accumulate in some area because of human activity (Harris 1989, 43–49; Bortolini et al. 2022, and references therein). After the construction of various household structures and dwellings, the inner and outer cultural layers accumulate in different ways, depending on the topography and activities conducted at the site, as well as on the soil quality and climate (Schiffer 1987; Harris 1989, 59–64). The speed at which the cultural layer accumulates inside a dwelling depends on the type of floor covering used – faster for soft coverings (e.g., grass, mats, or bark) than for hard ones (like planks) – and on how regularly the space was cleaned. How the cultural layer accumulates throughout the site also depends on multiple factors, such as the duration of stay, the types of activities, the number of people present, etc.

Cultural layers may be especially thick in *tell*, or *tepe*, sites, where new mud-walled buildings were constructed on the ruins of earlier ones, creating artificial hills of rubble (Seton 1963; Milisauskas 1978, 91–92; Krahtopoulou et al. 2020; Gogâltan et al. 2020). This also applies to excavations in medieval towns, where the organic details of decayed or burned buildings, as well as the rubbish that was usually dumped directly on the street, have formed a layer of sediment several metres high (Kolchin & Yanin 1982; Labutina 1983; Metsallik & Tiirmaa 1983). The accumulation of cultural layers is evident in modern towns, where the windows of centuries-old houses are now at the same level or lower than modern streets (Fig. 13).



Fig. 13. Maria F. Budkevich Women's Gymnasium, an architectural monument of the early 20th century in Barnaul, Altai Krai, Russia. A – View of the building at the beginning of the 20th century on a postcard (image source: Altapress.ru); B – View of the building in 2021: the increase in the cultural layer is between 0.5 and 1 m and the entrance and windows of the ground floor are now covered with earth (image source: Runews24.ru).

At the Stone Age sites in the northwestern part of the East European Plain, the cultural layer forms according to the same principle as in the cases described above, although it is less evident due to the thinness of the layers. At the sites with dwelling remains discussed in this study, the average thickness of the cultural layer in sandy sediments is about 30–40 cm (see, e.g., Yanits 1959a; Isaenko 1976; Paper I), and sunken floors of pit-houses are often about 20–30 cm deeper. Only at some sites, especially in peat soils, do cultural deposits exceed one metre in thickness (e.g., Rimantienė 1979; 2016).

The process of the soil formation can be illustrated using an example from Estonia, where it is slightly faster than in Fennoscandia, though still slowly. Presumably the dwelling depressions remained after the structure completely decayed (see Chapter 6.3.2.), until they were affected by other cultural (e.g., agriculture) and natural processes (e.g., flooding, wind-driven sand movement, the deposition of biomass and soil formation). This is evident in the outlines of decayed pit-houses from almost a century ago, which still stand out in the modern landscape (Fig. 14). This can help explain the location of the Bronze Age burials (dated to 1434–1303 and 1376–1135 calBC) at the Riigiküla I site, which are directly within the boundaries of the Stone Age pit-houses from the 5th millennium BC (Paper I). People in the Bronze Age may have used the depressions visible on the surface to make graves.



Fig. 14. Lõpe wetland in eastern Estonia. The remains of a ruined pit-house from the second quarter of the 20th century are clearly visible in the landscape as a rectangular pit (Photo: I. Khrustaleva).

There can be various explanations for the absence of depressions on the modern surface in the research area, ranging from the absence of local traditions to build pit-houses to the economic development of the area in modern times, especially along the seacoast and riverbanks. The area of the Riigiküla I settlement site was used for farming during modern times. The cultural layer of the Stone Age site of Jägala Jõesuu V was disturbed by ploughing during the Bronze and Iron Ages and later buried in dune sand, which is also likely due to human activities (Kriiska et al. 2023). Similar occurrences could also apply to Lommi III. Other types of land use, such as sand and gravel mining, land reclamation, drainage of bogs, and peatland development, occurred at several settlement sites discussed in this thesis and were, in many cases, the reason for their discovery (Vankina 1970, 10; Isaenko 1976; Papers I and V). All this confirms the strong influence of modern economic activity on the preservation of features and artefacts, as well as the study of archaeological sites.

6.3.2. Destruction of the building

The destruction scenarios for timber-framed and post-construction buildings vary. They can be abandoned, accidentally or deliberately burnt down, disassembled and rebuilt or reused for a new dwelling or household structure, or simply rot away (Kelly et al. 2005, 407; Grøn & Kuznetsov 2014, 21; Hertell & Manninen 2006, 190–192). In the case of natural deterioration, the roof is often the first to collapse, as it endures the most stress from external influences (Fig. 15). Consequently, it decays the fastest and often leaves no trace. Second, over time, the walls, which, depending on the depth of the building, external conditions, the structure, and the materials used, may collapse inward or to one side and then rot in place (Fig. 15). The traces left behind vary depending on how the walls were destroyed (Fig. 16: 4a–c; Bryusov 1953, figs. 1–4; Kankaanpää 2002, 71; Katiskoski 2002, fig. 4).



Fig. 15. The process of a modern country house's destruction. The main part of the structure collapsed inside the house and the roof details have not survived to the present day. Jõgeva County, Estonia (Photo: I. Khrustaleva).

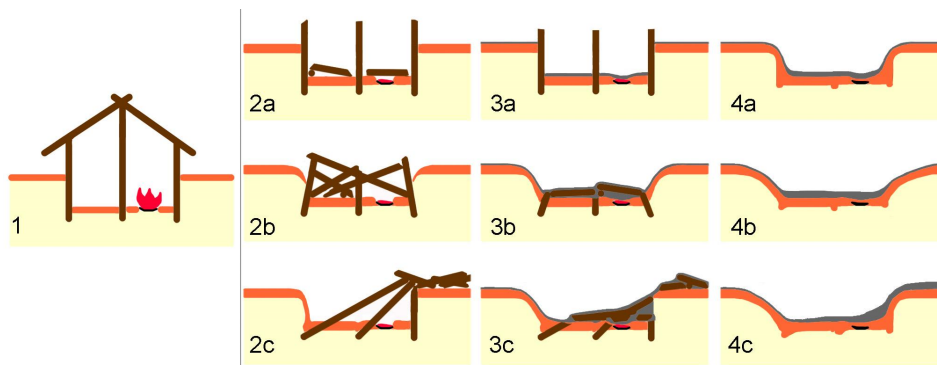


Fig. 16. Three possible collapse scenarios for a sunken timber frame structure: a – the roof collapses and walls rot in place; b – the roof and walls collapse inwards; c – the roof and walls collapse to one side (After: Bryusov 1953, figs. 1–4; Kankaanpää 2002, 71; Katiskoski 2002, fig. 4. Illustration: I. Khrustaleva).

The decayed timber, along with other organic materials used inside the dwelling or for its building, formed an organic-rich deposit inside and around the pit when it decayed in place. Post-frame or log constructions leave different traces in the ground (post holes in the case of post-frame constructions, and long straight lines along the dwelling perimeter for log constructions) with the pit outlines being oval, round, or amorphous for post-frame constructions, and angular for log constructions (see Papers I and IV; Kriiska & Nordqvist 2021; Katiskoski 2002; Zhulnikov 2003).¹³ Burnt constructions often preserve well, leaving charcoal concentrations and partially charred construction details. Hearths can be identified by charcoal deposits, soil (dis)coloration, or concentrations of burnt objects. Since this is a complex feature of Stone Age dwellings, it is discussed in more detail in subchapter 6.5.

After abandoning a pit-house, the site might still be continuously used. In this case, it is likely that the top level of the abandoned pit was later covered with objects or trash left by people (Hertell & Manninen 2006, 192–193; Vanhanen et al. 2023, fig. 5). Abandoned pit-houses could also be repurposed for erecting other buildings or for other activities. When the entire site is abandoned along with the dwelling, the top level is influenced only by natural processes, as the pit begins to fill with sand and/or soil (Karjalainen 1996b, 16; Kravtsov 2002; Marwick et al. 2017).

6.4. Identifying and interpreting Stone Age architecture

The understanding of Stone Age architecture and the recognition of identified structures as remains of human habitation have developed gradually over time

¹³ Thus, in Chapters 9 and 10 shapes and sizes of only remains of dwellings are discussed, which can differ significantly from their original outlines.

(Bailey 2018, 14–24). Pit-houses across central and southern Europe are characterized by the following features: evidence of a roof (such as posts to support it or their traces), a definable shape, *in situ* finds on the floor, remains of an embankment around the pit, and a soil bench along the edge (Greenfield & Jongmsa 2008, 115). While the last two features are not consistently observed at the sites discussed in this text – likely due to variations in pit-house construction – the first three are characteristic of all cases.

The sunken floor of Stone Age pit-houses can be discovered relatively easily due to the coloured spot they leave along a horizontal surface (e.g., Clark 1953, 141; Isaenko 1976, 66–67), while above-ground dwellings can be found only through the excavation of wide areas. The identification of the remains of Stone Age dwellings without any surviving structural elements, i.e., wooden parts or charcoal concentrations (e.g., Leskinen 2002), is a difficult task, because no other clear parameters exist, except for the artefacts and ecofacts distribution (Hertell & Manninen 2006, 183). If a building is not identified using any of these methods during excavations, it may go unnoticed. Furthermore, a dwelling spot may sometimes be visible only under certain conditions (Fig. 17), e.g., when wet or, conversely, dry.



Fig. 17. Hiekkasilta Pre-Pottery Stone Age settlement site, 2019, Finland. A – In humid conditions the sandy cultural layer is almost solid brown in colour; B – In dry sand, the dark layer of the floor in the pit-house (marked by red triangles) is visible in the profile (Photos: A. Kriiska).

Most of the pit-houses in the research area were visible only as coloured spots dug deeper into clean base sand (Paper I and V). No traces of burnt pit-houses, i.e., remains of burnt timber details, were identified in the research area.

When no visible colouration exists at the cultural layer, the remains of dwellings can only be identified based on the remains of hearths (if they are preserved; see Chapter 6.5) or a concentration of finds. Conversely, empty zones can indicate the presence of settlement features (Yanits 1959b; Isaenko 1976, 28–29, 77; Kriiska 1997b; Grøn 2003, 696; Larsson & Sjöström 2011, 237–239; Kriiska et al. 2016; Rostedt & Kriiska 2019). However, these features require special attention and greater probative support, because neither a hearth nor concentration alone qualifies as a dwelling.

It is also useful to determine the minimal, possible size of a feature, which might be regarded as a dwelling. Based on the dimensions of the human body, a dwelling should be no less than 1.8 m in diameter (Zaliznyak 1991, 116). The remains of structures measuring 2 to 3 m in diameter are known from Stone Age settlements in different parts of the world, including Norway, Greece and France (Clark 1953, 143–144; Le Brun, 1997, 19; Todd 1998, 38; Fretheim 2019, fig. 8). Ethnographic data also provide information about the use of small houses ca. 5–7 m² (Popov 1966, 91; Kelly et al. 2005, 407; Fretheim et al. 2016, 181). Therefore, there is no reason to doubt that small dwellings were used, but each case needs to be argued for in a detailed way. Ultimately, interpretation mainly depends on the author's personal experience and image of what a house should be (see, e.g., Jöns et al. 2020, 108).

In some cases, any concentrations and hearths are considered evidence of a dwelling (Milisauskas 1978, 94). Thus, at several Stone Age sites in Belarus and Ukraine, the accumulated sherds of a single large clay pot have been interpreted as the remains of a dwelling (see, e.g., Tyurina 1967, 108; Danilenko 1969, 81; Isaenko 1976, 59, 65–66). Similarly, at the Pūrciems Stone Age site in Latvia, each individual, small excavation area containing a cultural layer with finds was interpreted as a pit-house (Šturms 1936; 1937). On the other end of the spectrum, the interpretation of Stone Age D-shaped pit-houses with wall tranches and post holes in Scandinavia, has been the subject of much criticism and often rejected as misidentified tree falls (Newell 1981; Carlsson & Hennius 1998, 32–33; Carlsson et al. 1999, 63).

Clearer remains of above-ground Comb Ware cultural complex dwellings were identified at the Sārnate site in Latvia, where the structures were preserved on the peat layer in the form of sandy patches with hearths and clusters of finds inside (Vankina 1970, 75–85, Bērziņš 2008, 293–304). In the northwestern part of the East European Plain, there are also settlement sites where the remains of wooden poles have been found (e.g., Jaanits 1955; Jaanits & Jaanits 1975; 1978; Isaenko 1976, 124; Bērziņš 2008; Roio 2020). While some of these are clearly identifiable structures, as are the well-known pile-dwellings in the Baltic area (e.g., Rimantienė 1996a; 1996b; 1979; Girininas 2005; 2009; Pranckėnaitė et al. 2021), others are rather difficult to interpret since they could actually be traces of wooden walkways, boardwalks, fishing structures or some other structure.

It has long been established that small objects e.g., – micro-debris, etc. – usually remain where they were originally deposited (*in situ*; the so-called ‘McKellar principle’), whereas larger objects tend to be displaced (e.g., Schiffer 1983, 679–681; Alperson-Afil et al. 2007, 11). Thus, flint flakes smaller than one centimetre in size had better reflect the spatial organisation of a settlement site than big items (Binford 1978, 153; O’Connell 1987; Grøn 2003, 699; Fiedorczuk 2006). Consequently, small objects often play the most important role in revealing various features of a Stone Age cultural layer. They clearly indicate the location of the dwelling floor in both a horizontal and vertical projection (e.g., Ojanlatva & Alakärppä 2002, 116). Moreover, the position of small objects that

have fallen through the floor covering usually have not moved from their original position (e.g., Grøn & Kuznetsov 2003, 218–219).

It is not only the artefacts, debitage and pottery that are important, but also the so-called ‘kitchen waste’ such as the particles of burnt bones or hazelnut shells (Štavičius & Marcinkevičiūtė 2012, 38; Kriiska et al. 2016, 23; Vanhanen et al. 2023, fig. 6). The concentration of hazelnut shells is highlighted as an important indicator of a dwelling’s floor for Pre-Pottery Stone Age houses in Scandinavia, as well as for the Sārņate-type dwellings in Latvia (Vankiva 1970, 19–75; Grøn 2003). The same is true for the Jägala Jõesuu V settlement site where both hazelnut shells and burnt bones were found only at the dwelling floors. To demonstrate more clearly the importance of small finds, two pictures of the spatial distribution of bone fragments were modelled for Jägala Jõesuu V (Fig. 18). The locations of different sized finds can be observed in the same zones, but representative concentrations of large objects do not exist. Only the concentrations of micro-objects reveal the outlines of the above-ground building at Jägala Jõesuu V (Paper IV).

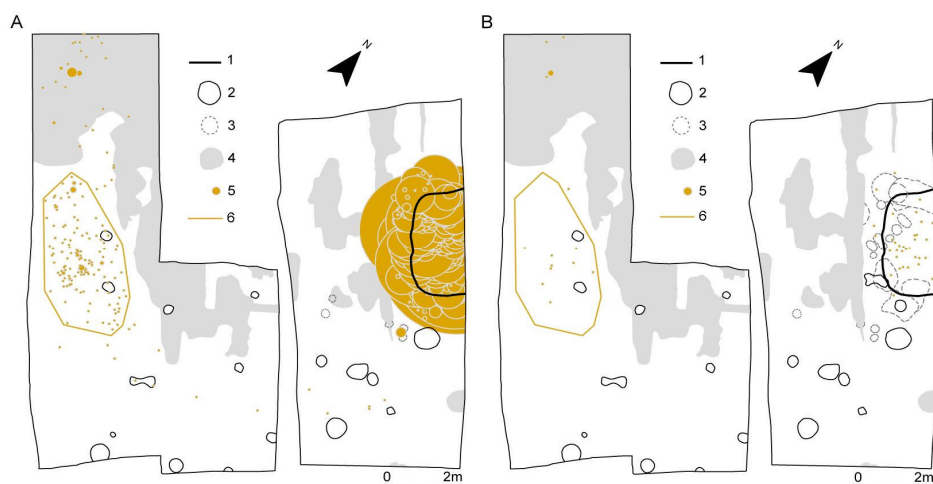


Fig. 18. The different visibility of features in the cultural layer at Jägala Jõesuu V shown through the positioning of the different size finds (1 – outline of the pit-house, 2 – a hearth, 3 – a pit, 4 – mixed layers, 5 – burnt bone (the size of the dot depends on the number of fragments found in the same location, 1 to 80), 6 – the outline of a burnt bones concentration indicating the location of the above-ground building): A – Shows all the fragments of burnt bones collected from the site; B – Shows the fragments of burnt bones which weigh more than 0.3 g. (Illustration: I. Khrustaleva).

The composition of finds and their quantity within the concentration are also important to distinguish a dwelling from a workshop or other production complex, and to indicate the length of time that the site was used. Some have argued that the percentage of stone tools found inside the dwellings should be smaller than those found at the surrounding area of the site (Volkov 2013, 308, 335). Anvil

stones are also used to indicate the floor level, but they are more relevant for sites related to the quartz industry where they were used for bipolar knapping (Kriiska et al. 2016, 23). At Lommi III, the placement of the sandstone whetstones outlined the boundaries of the pit-house's floor (Paper III).

The specific distribution of finds on the dwelling floor and close to its entrance can be related to cleaning. Cleaning might take place in a dwelling because of its prolonged use – it could be a permanent habitation for several seasons or repeatedly reoccupied seasonally – or at the time of its abandonment. Signs of cleaning and removing rubbish from the dwelling were identified in number of dwellings in Finland (Matskainen & Jussila 1984, 31; Halinen et al. 2002, 209–210; Kankaanpää 2002, 74; Hertell & Manninen 2006, 189; Pesonen 2006; Lönnqvist 2009, 318) and Scandinavia (Grøn 1995, 25; Lundberg 1997, 174; Fretheim 2019, 34). Signs include finds scattered along the walls and deposited outside the entrance (e.g., Kauvonkangas; Kankaanpää 2002, 74).

The only signs of cleaning in pit-houses in the northwestern part of the East European Plain were found at the Jägala Jõesuu V settlement site (Paper IV, 101). A large quantity of kitchen waste and small, broken items were found, but no large items or tools. This cleaning was likely associated with the final abandonment of the house, when the occupants took all their belongings with them. It contrasts with some pit-houses in Belarus where whole clay pots were found abandoned inside dwellings (Paper V).

In conclusion, there are many signs which can indicate a dwelling, and identification should always be based on more than one of them (Paper III). However, after determining that these indicators mark the remains of a building, the next task is to understand what kind of building it was. Often concentrations of finds can be interpreted as the remains of above-ground structures. Sometimes the more cautious – and vague – term ‘dwelled area’ is used (e.g., Kolosov 2017b; 2017c). However, only a vertical section can reveal the real profile of the dwelling and depth of its floor (e.g., Kankaanpää 2002; Katiskoski 2002; Paper III).

6.5. Hearth and the Stone Age dwelling

The Stone Age in the northwestern part of the East European Plain is characterised by the use of mostly roundish hearths with and without stone constructions, in both shallow pits and on the surface (Isaenko 1976; Rimantienė 1995, 26; Leskinen 2002, 164; Juodagalvis 2010, 165–171; Marcinkevičiūtė 2016; Sikk 2016). In above-ground dwellings at Abora I and Asne I in Latvia, stones – which presumably were parts of hearth constructions – were found (Loze 1979, 27, 58; 2000, 118). At some sites located on peat, such as Sārņate in Latvia, hearths in the Comb Ware cultural complex dwellings were built on sandy beds, while in the Sārņate-type dwellings, they were constructed on sandy beds placed over structures made of wood and bark (Vankina 1970, 19–75; Bērziņš 2008, 275–292). Such constructions were likely intended to contain the fire, and differences between them can be explained by difference in organic materials preservation

(Bērziņš 2008, 287). Similar features have also been found in neighboring territories within the context of the Comb Ware cultural complex (Kargopol), as well as in the North Belarusian and Lyalovo cultures (Oshibkina 1997, 22; Mazurkevich & Dolbunova 2011, 169; Sidorov 2015, 106).

People used various types of hearths in different ways not only inside, but also outside, their dwellings (Sikk 2016, 28; Bychkov et al. 2021). It could be that different types of hearths at the same sites were used for different purposes, but there is not much archaeological evidence to distinguish the purposes of their uses (e.g., Filatova 1986, 57; Canti & Linford 2000, 385; Vitenkova 2004, 9; Mallol et al. 2007; Bentsen 2012, 95). In Scotland, it was suggested that Pre-Pottery Stone Age structural internal hearths with stone constructions might have had a ritual, rather than prosaic purposes, whereas hearths used for everyday practical activities largely did not have any construction, and consequently left minimal traces (Mithen 2019, 14). At sites with pit-houses in the research area, only oval or roundish hearths mainly without stones were discovered. They were located both in pits and on the surface. No differences in how the hearths were used was distinguishable. Stones related to hearth construction were only found in pit-houses at the Dnieper-Donets cultural complex Juravičy III and IV settlement sites (Paper V). The individual fire-cracked stones found in Stone Age houses in Finland are associated with heating and cooking (Alakärppä 1999, 50; Leskinen 2002, 165) based on ethnographic data (e.g., Morgan 1934, 73).

In some cases, numerous traces of fire in Stone Age settlement sites in the northwestern part of the East European Plain can be observed. However, it is not always easy to date them. The AMS-dated charcoal pieces from the numerous hearths discovered at the Jägala Jõesuu V settlement site – even those located in dwelling contours – indicated that some of them were from the Bronze and Iron Age, even though they were discovered in a rather compact chronological complex of Stone Age structures (Sikk 2016). Some of these hearths even contained Stone Age finds, however, they were caused by later slash-and-burn agriculture (Paper IV).

Furthermore, at the Lommi III settlement site, although the collection of finds identified it as belonging to the ‘pure’ Comb Ware cultural complex (Paper III), a piece of charcoal (AI 3867: 558) from one of the hearths was dated to the modern era (TA-72; Liiva et al. 1966, 435). Similarly, at Juravičy III in Belarus, a piece of charcoal from the hearth discovered in a pit-house attributed to the Dnieper-Donets cultural complex was dated to 1500–1800 calAD (Poz-133571; Paper V, tab. 1). These examples show that in addition to overlapping multi-temporal events, the use of charcoal for dating is risky due to natural contamination and because charcoal is produced constantly through various processes.

Hearths inside a dwelling in many traditional societies are associated with the family group (Morgan 1934, 72; Grøn 2003; see also Zhulnikov 2003, 90). However, there can be other social variants of fire use. In addition to ethnographic examples from Northern America or the Far East where a single hearth was used in big house inhabited by several families (Morgan 1934, 73; Sokolov 2010, 339–340), there are also cases where dwellings were not heated by fire at all, even in

winter-time, and just oil lamps were used for lighting (e.g., the Aleuts; see Lyapunova 1975, 142). In Karelia it was documented that the number of hearths in a Stone Age dwelling does not correlate with the size of the dwelling and so cannot be used to estimate the number of inhabitants (Zhulnikov 2003, 91). It has also been argued that dwellings with two entrances had two hearths for evenly spreading warmth (Zhulnikov 2003, 91).

Although the absence of a hearth in a dwelling can, in some cases, be explained by seasonality, still those devoid of all fire traces cannot be strongly interpreted as being temporary summer structures, as they often are (Gurina 1951, 117–118; Isaenko 1976, 123; Pesonen 2002). These so-called ‘invisible’ hearths are characteristic of Pre-Pottery Stone Age sites across northwestern Europe (Sergant et al. 2006). Experimental studies also demonstrate that in some cases, fire leaves traces on the ground directly beneath it and in others, it does not (Alperson-Afil et al. 2007, 1). Examples of modern open-air hearths, made on sandy lakes or seashores, demonstrate the differences in how fire leaves different visual traces (Fig. 19). The presence of a stone construction, the number and amount of burnings, the type of fuel, the construction of the hearth, the post-depositional processes and the soil chemistry all play important roles in the formation and preservation of (dis)colouration, ash remains and other features of the hearth (Mithen 2019, 12). This suggests that traces of some hearths without stone construction may have disappeared after the abandonment of the dwelling, when natural processes started to influence the site (Canti & Linford 2000; Alperson-Afil et al. 2007, 1; Bentsen 2012, 95–96; Mithen 2019, 12). Moreover, some dwellings might have been reused for storage, production or other household purposes, but did not contain a hearth anymore (Kankaanpää 2002, 77).



Fig. 19. Examples of remains of modern hearths on sand: A – Only separate charcoal pieces mark the hearth on the Peipsi lake shore; B – Only separate charcoal pieces mark the hearth on the Baltic Sea shore; C – Hearth with stone construction on the Baltic Sea shore which was multiply used and shows a bigger concentration of charcoal and ash as well as sand coloration (Photos: I. Khrustaleva).

Often only concentrations of burnt artefacts and other objects – such as fire-cracked stones, burnt bones or hazelnut shells – can mark the place of a hearth (Leesch et al. 2017, 163–167; Osipowicz 2021, 216–217; Stepka et al. 2022). However, it is important to distinguish between fire intentionally used by humans and traces of uncontrolled fire, which can be a cause of contamination (Bellomo 1993; Bertsen 2012; Bychkov et al. 2021). Observations of sites where surface wildfires had taken place revealed that burnt items comprised less than 2% of all the items, although the temperatures of such fires could reach 500°C (Alperson-Afil et al. 2007, 1). This most likely indicates that artefacts and other items require a fire that burns longer than a short-term wildfire to leave clear traces of burning. Consequently, the discovery of burnt items, especially in concentrations, is a strong indicator of a controlled hearth rather than wildfire. Flint can provide the clearest indication of the actual location of a hearth (if it was not displaced), since burnt marks on its surface only appear when flint is directly exposed to fire (Sergant et al. 2006, 1004). Traces of fire-burning on flint, such as (dis)colouration and cracking, develop at around 350–500°C (Alperson-Afil et al. 2007, 1; Polo-Díaz et al. 2023, 12–13), while bone requires a temperature of 700°C for calcination (Sergant et al. 2006, 1006). Nevertheless, Stone Age settlement sites of the northwestern part of the East European Plain typically contain numerous burnt bone remains dispersed on the site or inside the dwelling, which do not indicate a hearth (Paper IV).

In most of the dwellings in the northwestern part of the East European Plain, hearths existed even if their traces are not very evident. In Lithuanian and Belarusian, hearths of pit-houses from the 5th to 4th millennia calBC were identified by concentrations of ash with charcoal pieces and, in rare cases, by the red colouration of burnt sand (Paper V and references therein). Burnt items were found in pit-houses at Lommi III and Jägala Jõesuu V in Estonia, as well as Juravičy IV in Belarus (Papers III, IV and V), however, the hearths original positions and shapes could not be determined.

7. FUNCTIONS OF STONE AGE BUILDINGS

Every building has its functions and Stone Age dwellings probably had a range of them that overlapped. Some of these functions identified in the buildings of the research area are discussed below. Foremost, a dwelling protects its inhabitants from unpleasant environmental elements, e.g., cold weather, rain, insects, wild animals, etc. (see, e.g., Grøn 1995, 12). Other main functions of a building include residential, sacred, production and storage.

7.1. Residential

Since a house is a dwelling for a group of people, its size, shape and internal organisation depend primarily on these people (Clarke 1953, 139). Nganasans, for example, who usually build circular base tents, build elliptical or egg-shaped tents if the number of people living inside is small, or if it is occupied by only one family (Popov 1966, 91). In general, ethnographic sources and ethnoarchaeological research indicate that in hunter-gatherer houses, space is organised in accordance with a specific set of rules including a clear division of personal space for individuals, different families and different genders (Morgan 1934, 69–88; Ränk 1949, 46–59; 1951, 31–57; Popov 1966, 96–97; Grøn 1995; Grøn & Kuznetsov 2003; Zagorska 2012, 121). In most cases, the space is distributed around the hearth, which serves as a common centre (Ränk 1951, 31; Mithen 2019, 6; Grøn & Kuznetsov 2003; 2014; Grøn 2003; 2010; Osipowicz 2021). In dwellings without a hearth, space could be organised in other ways. Because it is impossible to determine the position of the hearth in many of the dwellings discussed in this thesis (see Chapter 6.5), it cannot be assumed that they necessarily formed the centres of Stone Age dwellings in the northwestern part of the East European Plain.

Various areas of the house were used for daytime activities and nighttime recreation, and many areas were multipurpose (see the following Chapters). At night, depending on the traditions, construction and size of the dwelling, people would sleep either in places specially reserved for sleeping or in transformed zones of daytime activities (Grøn 2003, 700–701).

It is also difficult to determine whether one family or multiple families used a dwelling. Size of dwelling, the number of hearths and distribution of finds is often used to make this interpretation (Helskog 1984, 65; Grøn 2003, 698–701; Pesonen 2006). However, it is questionable whether these features can reveal the number of groups or families. According to ethnographic data from Siberian, Far-Eastern and North American hunter-fisher-gatherers, the amount of personal space an individual needs inside a dwelling ranges from 2.5 to 8 m² (Khlobystin 1974, 24; Buzin 1990, 35; Oshibkina 1997). Thus, dwellings more than 20 m² in size could theoretically accommodate more than one small family. Pit-houses of this size were discovered in Estonia (Lommi III and Riigiküla), Lithuania (Rėkučiai 1, Katra 1, Pakretuonės 3 and Žeimenis I) and Belarus (Dziednia and

Juravičy IV; see Appendix 1), but none of them offered any evidence of multi-family occupation. Furthermore, the majority of the pit-houses found in the research area were smaller, so probably only housed one family.

Evidence about Stone Age furniture, besides mats and skins, is scarce and not just in the research area. However, at least two statuettes – found at the agricultural society sites in Malta from the 4th millennium calBC – depict people using beds or benches (Fig. 20). Most ethnographic evidence suggests that northern peoples used earthen benches along the walls of the dwelling (e.g., Lukyanchenko 1997, 109; Lyapunova 1975, 135–139, 342; Sokolov 2010, 341–342). Ethnographic data from different parts of the world also show that hunter-fisher-gatherers generally make bedding material from mats produced from different locally available plants (e.g., Kelly et al. 2005, 404; Lyapunova 1975, 342; Sokolov 2010, 341–342). Rare archaeological evidence of plant use can be found using phytolith analysis (Abric Romaní Rock-Shelter Site; Vallverdú et al. 2010), but this was not used in the research area.

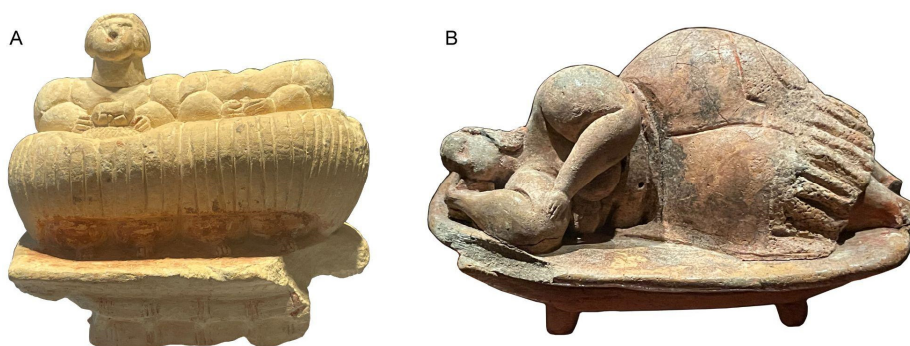


Fig. 20. Figurines showing items of furniture: A – Limestone figurine with two people seated on a bench or sofa, Ġgantija Temples, ca. 3600–2500 calBC, Gozo Island, Malta, La Valletta, National Museum of Archaeology; B – Clay figurine of a sleeping lady, lying on a bed, Hal Saflieni Hypogeum, ca. 3300–3000 calBC, Malta, La Valletta, National Museum of Archaeology (Photos: I. Khrustaleva).

Archaeological evidence of beds made of ground or clay are extremely rare, however they do exist in different contexts and parts of the world, e.g., the Greek settlement sites of early farmers (Todd 1998, 36) and the Taiga zone hunter-fisher-gatherers sites (Kosinskaya 2006, 28). More relevant to the current research is data from Naarajärvi, Finland, where it was concluded that earthen bunks existed along the dwelling walls and included a step that was left during the digging of the pit (Matiskainen & Jussila 1984, 31). In the northwestern part of the East European Plain, the existence of this kind of bench/bedding along the walls is only indicated at dwelling 2 at Riigiküla I, where a sandy step discovered along its perimeter may have such function (Gurina 1967; Khrustaleva et al.

2019; Paper I). Although there are a few pit-houses which probably occupied larger areas than the sunken part of the floor indicate (e.g., Sasonka, Dubovy Loh IV, Gluobių I and Kubilėliai; see Paper V, 515; Juodagalvis 2010, 72, 169) – thus leaving an earthen step inside the dwelling that could have served as a bench – no clear traces of earthen beds or seats have been found in Stone Age dwellings of hunter-fisher-gatherers in the research area.

7.2. Sacred

Based on ethnographic data, cultural anthropology, the history of religion and human psychology in general, it is clear that people's entire lives are ingrained with rituals and beliefs that are part of everyday activities (Zvelebil 2003, 68; Grøn 2012; Peoples et al. 2016; Herva & Lahelma 2020; Men 2021). Hunter-fisher-gatherers' religious practices around the world are usually described in terms of animism, totemism and shamanism, and include the distribution of agency among humans, nonhuman animals, plants, natural features, and spirits (e.g., Harvey 2005; Willerslev 2007; Cummings 2013, 75–93; Low 2018; Macāne 2022, 20–24 and references therein). However, most sacred and religious rituals do not leave material traces in the archaeological record. Some details of the material culture Stone Age settlements that have been interpreted as signs of some kind of rituals are discussed below.

It can be assumed that the beliefs of Stone Age hunter-fisher-gatherers differed from the beliefs of Stone Age farmers. This would suggest that the external, material signs of these beliefs also differed. For many Stone Age agricultural societies and some settled hunter-gatherers, special cult buildings are known to exist within settlements or near to them (Özdoğan & Özdoğan 1998; Mellaart 1967; Berdyev 1970; Trump 2002). These buildings are often similar in design to the dwellings, but larger and decorated differently. Some 'sanctuaries' (e.g., Çatalhöyük in Turkey, Pessejik Depe and Monjukli Depe in Turkmenistan) were decorated with wall paintings (Berdyev 1976, 25–28, 31; Semenov & Korobkova 1983, 82; Pollock et al. 2019). Stone 'temples' and megaliths are also relatively common (Fig. 21) and often contain large quantities of ritual items including stone and/or clay figurines.



Fig. 21. Hagar Qim, megalithic temple complex (3600–3200 calBC; Trump 2002, 55), Malta. Two ‘altars’ are shown in the middle of the picture (Photo: I. Khrustaleva).

For Stone Age hunter-fisher-gatherers in the northwestern part of the East European Plain and surrounding territories, separate ritual buildings have not been discovered, and evidence of special ritual places at archaeological sites are rare (Rimantiene & Kunskas 1984, 37–39; Oshibkina 1997, 38–40). Within contrast to agricultural populations, these groups apparently did not need sacral buildings, and their ritual places were constructed otherwise. From ethnographic data of Finno-Ugrian people, it is known that special cult places with sacred trees or wooden idols and restricted to men were organised nearby or away from settlements in forests (e.g., Ränk 1951, 121; Gemuev 1990; Grøn et al. 2008). Stone Age hunter-fisher-gatherers in the research area could have done something similar, but archaeological evidences of such features are hardly distinguishable.

Some signs of sacred or magical rituals were revealed or, at least, interpreted to have existed in some of the Stone Age dwellings of the research area. At the Sārinate settlement site in Latvia in the eastern corner of a Late Sārinate-type dwelling ‘K’ (most probably dated to ca. 3400–3100 calBC), a pit with an oak phallus was found (Vankina 1970, 129). Among the artefacts from the Stone Age settlements of hunter-fisher-gatherers from the European forest zone interpreted as ritual or magic objects (see, e.g., Jaanits 1961; Jonuks 2009, 402–407), there are numerous clay figurines (Paper II; Kashina 2009). These have variously been interpreted as related to hunting magic (Wyszomirska 1984, 64), female rituals

(Kashina 2009, 294) or home and fertility cults (Loze 1970, 61; Oshibkina 1978, 104). In Paper II, included in this thesis, the direct association of intentionally broken clay figurines with the dwellings at the Jägala Jõesuu V settlement site is demonstrated for the first time, proving the existence of sacral actions inside the dwellings. However, special areas within the dwelling for this sacral action were not identified.

Clay figures are a common feature of the ritual activity of hunter-fisher-gatherers in the 4th millennium calBC for the Comb Ware cultural complex, Pitted Ware and Lyalovo cultures, but they have not been discovered at sites of the Dnieper-Donec cultural complex in Belarus (see Paper II). Ethnographic data on modern hunter-fisher-gatherers of Northern Europe, Siberia and the Far East also provides evidence that special places are usually demarcated inside a dwelling for idols (e.g., Ränk 1951, 126–130; Lukyanchenko 1997, 103–110; Sokolov 2010, 338). Even in traditional country houses in the research area, a back corner served as a sanctuary (Ränk 1949, 90–108).

7.3. Production

The size, organisation of space, and number of people living in a dwelling all affected the types of production that could be undertaken in the house. Apart from cooking, there are several activities that can be done in low light, limited space and not interfere with domestic life (e.g., Volkov 2013, 334). These include, processing hides and plant materials, stone knapping, bone planing, grinding and sharpening stone or bone tools. Most of the evidence of production found in Stone Age dwellings are related to stone processing, because traces of such activities (like flakes, cores, micro-debris, grinding stones, etc.) generally preserve well.

At the Lommi III and Kõnnu sites, dozens of whetstones were found, including in dwellings. Riigiküla I contained a large quantity of bone tools that were produced on-site, including an accumulation of so-called ‘45° bevelled edge tools’, hoes of bone and antler and production waste was (Gurina 1967; Ermolova 1967; Kriiska 2002b, 47; Khrustaleva et al. 2019, 256; Papers I and III). Flint knapping took place in pit-houses 3 and 5 at the Strumien VI as well as in the pit-house at the Kamienska 5 settlement sites in Belarus, where large quantities of flakes and cores were found (Kalechits 1987, 72; Kolosov 2017a, 137), while in the pit-house at Jägala Jõesuu V, mainly knapped quartz was found (Paper IV). Among the above-ground dwellings in the northwestern part of the East European Plain, two dwelling at the Särnate settlement site were interpreted as workshops, one containing a large quantity of amber and the other a significant amount of flint (Vankina 1970, 75–78). In the Užavas Celmi Pre-Pottery Stone Age dwelling in Latvia, areas of craft activities were discovered (Grasis 2021, fig. 6).

In the neighbouring areas, data on the different activities performed in the dwellings is also rare. Wood or bone scraping and tool grinding were identified in different parts of the Stone Age house at Kuorikkikangas site in Finland (Pesonen 2006, 204–205, 210), which was also interpreted as divided into

women's and men's parts of the house. Furthermore, a place for the processing of hides was interpreted to exist at the Juoksemajärvi Westend Stone Age site in Karelia because of the presence of ochre traces (Halinen et al. 2008, 245).

7.4. Storage

At the Stone Age hunter-fisher-gatherer sites in the research area and surrounding territories, the presence of separate storage buildings has not been determined and is only rarely hypothesised (e.g., Fretheim 2019). This can be explained by various factors, including that other types of buildings – traces of which have not been preserved – were used for these purposes. Ethnographic data from northern hunter-fisher-gatherers in Europe, Siberia and America suggest that these alternative buildings may have included above-ground platforms built of living trees or using branches, roots and stakes (e.g., Morgan 1934, 72; Anderson 2006, 18–23; Anderson & Nahshina 2006; Sokolov 2010, 342; Whelan et al. 2013, 667).

Some seasonal buildings, as well as old winter houses, which were not suitable for living any more, could also be used for storage (e.g., Kankaanpää 2002, 77). Thus, the Aleuts kept fishing equipment, food supplies, and some possessions in summer dwellings all year round (Lyapunova 1975, 141). Furthermore, there may have been special storage buildings for fishing and hunting equipment at Stone Age seasonal campsites that were also used for overnight stays, but this assumption has not yet been proven (Kriiska et al. 2020, 112).

Nevertheless, some supplies and daily necessities, including kitchen utensils and clothes, were almost certainly stored directly in the dwelling. According to ethnographic data, it is known that northern peoples used bunks near where they slept or special shelves for storing clothes and personal belongings (Lyapunova 1975, 142; Sokolov 2010, 341). Other parts of rooms related to ritual activities were used for storing food stocks, kitchen utensils, firewood or hunting equipment in some cultures (e.g., Ränk 1951, 58–69; Lyapunova 1975, 140; Lukyanchenko 1997, 109–110). In traditional societies, pit-houses were often used, among other things, for food storage (Gilman 1987, 543).

8. RECONSTRUCTING STONE AGE DWELLINGS

The construction and appearance of a building was influenced by economic conditions, the type of social organisation and cultural traditions, natural conditions, properties of the building materials, the skills of builders and the intended functions of the structure (Clarke 1953, 138; Semenov & Korobkova 1983, 79). Ethnographic data from Northern and Siberian hunter-fisher-gatherers suggest that the shape is more important as the building materials often simply reflect what is available.¹⁴ Today, ethnographers generally use building material as a parameter for identifying regional variations in dwellings (Sokolova 1991, 7), but in archaeology this evidence is more limited.

8.1. Methods and sources for reconstruction

The goal of reconstructing a prehistoric dwelling is to create a possible version based on the evidence available from archaeological, experimental and ethnographic data (e.g., Gurina 1967, 164–165; Vasilyev 2000, 8; Kankaanpää 2002, 72–73; Leskinen 2002, 164–167). The most common method of reconstructing is ‘hypothesis on paper’, i.e., verbal descriptions and graphic images (Tsvetkova 1958; Vankina 1970; Loze 1988; Vasilyev 2000, 12; Katiskoski 2002, 197–199; Zimina & Chikunova 2019), as well as 3-D virtual modelling (e.g., Baranov & Kosinskaya 2006; Kosinskaya 2006). Full-scale constructions, as well as scaled miniature models, can be used scientifically and publicly. They are found in numerous museums and experimental centres nowadays (Vasilyev 2000, 3; Muurimäki 2007b; Apals 2012, 273–398; Nieminen & Viljanmaa 2014; Hurcombe & Cunningham 2016; de Raaff 2020; Grasis 2021). However, they are not properly ‘reconstructions’, but rather ‘models’ or ‘simulations’ because they are not based on concrete archaeological data, which is sparse (Vaara 2002, 33–34).

Only a few ancient images of Stone Age dwellings are known to exist around the world, and even fewer can be verified and correlated with archaeological data (Pidoplichko 1969, fig. 58; Dikov 1977, 38; Marshack 1979, 290; Svoboda 1997, fig. 8; Olenkovskiy 2000, 376; Płonka 2003; García-Diez & Vaquero 2015; Shydlovskiy et al. 2023). Most of them are engraved as symbols shaped like triangles, arcs or semi-circles on bone and stone items, (Fig. 22: 1, and 4; Oshibkina 2006, 40, 57–58;), while some are more complex and have different interpretations (Fig. 22: 2; Clarke 1953, 141). Most of these depictions are dated to the Pre-Pottery Stone Age, and some even were found in the research area (Fig. 22: 2;

¹⁴ As can be seen from ethnographic observations among the Siberian Evenkis, traditional societies easily incorporate modern materials for building, using plastic or tarpaulin on par with or instead of animal skins and other traditional coverings. However, the traditional form of house generally remains unchanged (e.g., Anderson 2006). In 19th-century northern Siberia, local people are even recorded building houses from the planks of abandoned barges found on the shore (Sokolova 1991, 9).

Charniaŭski et al. 2023). There are also images from rock art found at Alta in northern Norway, but the range of dates is quite wide, ca. 4200–300 calBC (Helskog 2014, 95–97).

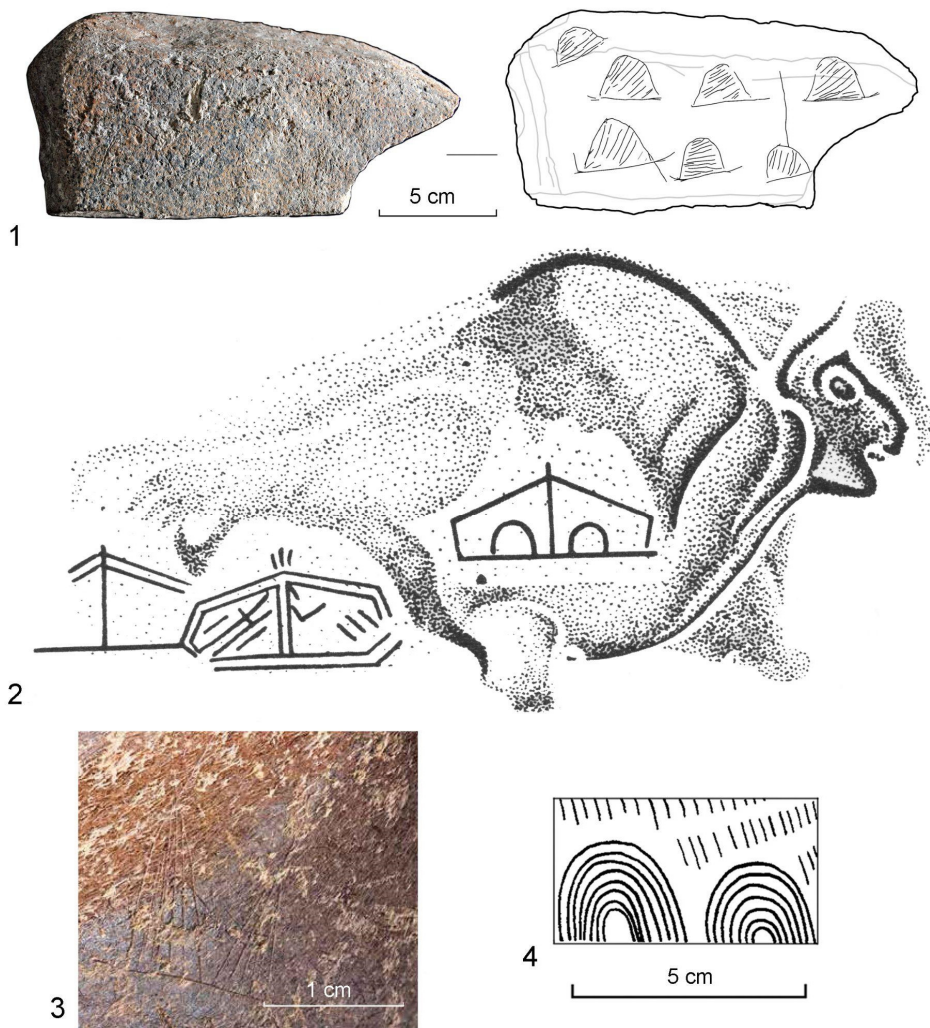


Fig. 22. Various Stone Age images, interpreted as huts 1. – Arc symbols engraved on a slab, Moli del Salt, northern Spain (García-Diez & Vaquero 2015, figs. 3 and 4; ca. 11,800 calBC); 2. – A painting from the Font-de-Gaume cave, France (Elinek 1982, fig. 692; ca. 17,000 calBC); 3. – A schematic image of ‘teepee-like structures’ on antler ‘wand’ from quarry near Klidzianiaty village, Belarus (Charniaŭski et al. 2023, fig. 4: a; ca. 6300 calBC); 4. – Drawing of arc symbols engraved on a mammoth bone from Předmostí, Moravia (Svoboda 1997, fig. 8; ca. 20,000–15,000 calBC).

Depictions of houses directly linked to archaeological material or ethnographic analogies are more important. They are only known to exist in agricultural societies. Thus, clay models of houses found at settlements of the Trypillia-Cucuteni culture in Ukraine, Moldova, and Romania, correlate well with the remains of buildings uncovered during the excavations (Fig. 23: A-1 – B-2; Kordysh 1953; Palaguta & Starkova 2017). There are also images of stone residential buildings on the temple structures of the Mayan culture in Mexico (Fig. 23: C and D; Larrocha & Dante 2010, 42). These rare images, with some level of justification, can be used for the reconstruction of houses that actually existed.

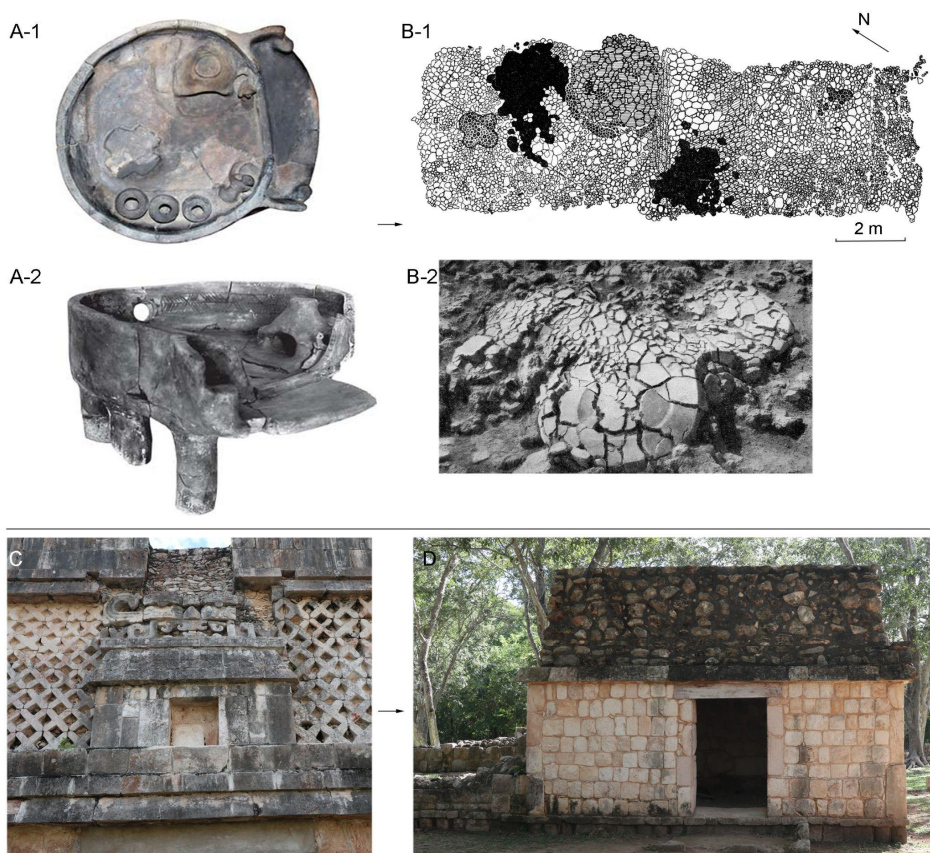


Fig. 23. The correlation of available depictions of dwellings with archaeological data: A-1 – Clay model of Trypillian dwelling, Popudnya settlement site, mid. – third quarter of the 4th millennium calBC, Ukraine (Palaguta & Starkova 2017, fig. 1-1); A-2 – Clay model of the Popudnya dwelling (Palaguta & Starkova 2017, fig. 1-4); B-1 – Plan of the dwelling, Vladimirovka settlement site, Trypillia culture, late 4th millennium calBC, Ukraine (Passek 1949, 82); B-2 – The cross-shaped altar from the Vladimirovka dwelling (Passek 1949, 83); C – Relief of the dwelling on the Southern building (El Candrangulo de las Monjas) in Uxmal, ca. 900–1000 AD, Mexico (Photo: I. Khrustaleva); D – The dwelling in Uxmal (Photo: I. Khrustaleva).

As almost no images of the Stone Age hunter-fisher-gatherers' dwellings in the European forest zone exist, details of their construction can only be gathered through indirect evidence. In this regard, ethnoarchaeological studies and experimental works have a particular importance for reconstructing dwellings (e.g., Kankaanpää 2002). At the same time, ethnographic data on variants of traditional buildings is quite limited. While some researchers distinguish three variants: bent frame (e.g., wigwam), post and beam (e.g., pit-houses, longhouses, winter houses) and compression structures (e.g., tipi, igloo) (Vaara 2000, 5), others distinguish only two variants: frame and log houses (Sokolova 1997). This limitation raises the validity for the use of ethnographic parallels and ethnoarchaeological studies to create archaeological reconstructions, even regardless of geographic location which influence on many details (e.g., used materials), but not the general construction.

8.2. History of Stone Age building reconstruction in the northwestern part of the East European Plain

The first graphic reconstruction of a possible Stone Age building in Estonia was made for the Moksi Pre-Pottery settlement site. During excavations, Richard Indreko found the remains of two upright stakes next to the hearth with stones, as well as two separate fragments of wood. He interpreted these as the remains of a building and even made a proposal for its reconstruction (Indreko 1930, 2; 1932, 217; 1935, 8). He assumed that the building at Moksi was of the same type as the one suggested by Pälsi for the Pitkäjärvi site in Finland (currently in Russia; Fig. 24). 'However,' as another scholar notes, 'Pälsi's interpretations seem to reflect more the general evolutionary views of "primitive housing" of his own time than the factual observable archaeological remains' (Seitsonen 2006, 141). Moreover, the dwelling from Pitkäjärvi was only partially excavated. Pälsi assumed it was a hut, while in fact it was a pit-house. Part of Pälsi's problem was his overreliance on ethnographic parallels even when the archaeological data sometimes contradicted them.¹⁵

¹⁵ Pälsi had been drawing parallels with the dwellings of the modern Giulyaks (Nivkhs) in eastern Siberia (Pälsi 1918, 31). In addition, his ideas about the houses of hunter-fisher-gatherers were most likely influenced by his own ethnographic expeditions to Mongolia, the Far East, and northeastern Siberia (Janhunen 2017; Seitsonen 2017).

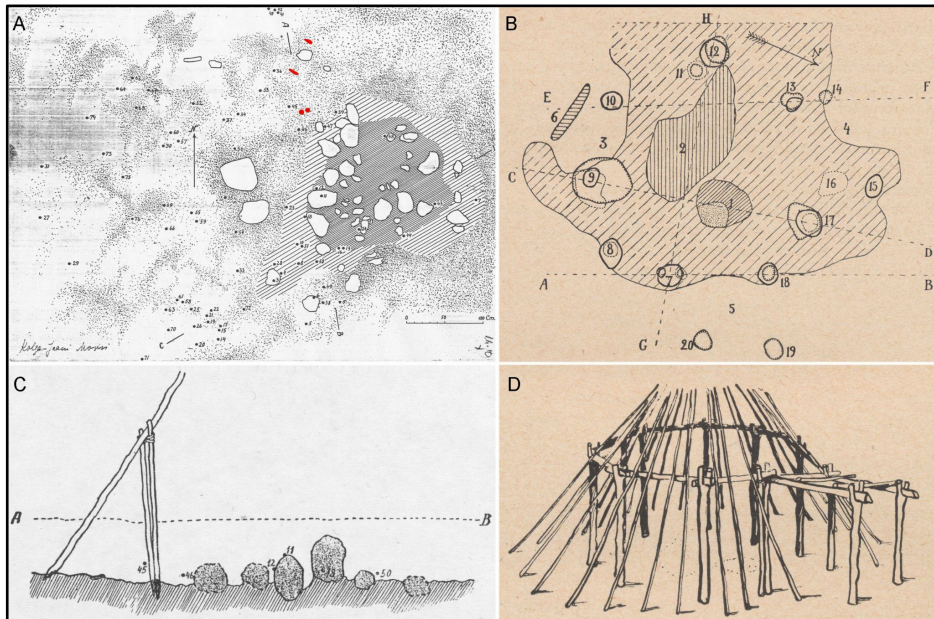


Fig. 24. First graphic reconstructions of Stone Age dwellings in Finland and Estonia. A – Moksi, plan of the hearth, the wooden remains are marked in red (Indreko 1930); B – Pitkäjärvi, plan of the excavated part of the dwelling (Pälsi 1918, fig. 3); C – Moksi, reconstruction (Indreko 1932, fig. 12); D – Pitkäjärvi, reconstruction of the dwelling, drawing by Carl Bengts, 1916 (Pälsi 1918, fig. 4).

Despite their flaws, these first reconstructions influenced people's perceptions of Stone Age dwellings and lifestyles for many decades (e.g., Pesonen 2000; Raaff 2020). Some researchers were unconsciously 'trapped' by preconceptions, i.e., by having a picture in their minds, they unconsciously adapted the fragmentary archaeological data to this image (Seitsonen 2006, 141; Fretheim 2017, 17; see also Paper III, 13). Thus, after a few stake holes were found at the Pulli site, Lembit Jaanits – most likely drawing on the ideas of Pälsi and Indreko – supposed that a conical stake construction must have existed there (Jaanits et al. 1982, 48).

Likewise, Gurina's reconstruction of the dwellings at the Riigiküla I settlement site (Fig. 25: B) was based on ethnographic parallels of conical stake buildings of Siberian people (Gurina 1967, 164–165). Subsequently, the descriptions of the Riigiküla I reconstruction, as well as an image of this reconstruction, were repeatedly used by other archaeologists, including those from neighbouring countries (Vankina 1970, 125; Jaanits et al. 1982, fig. 66; Girininkas 1994a, 210–211; Muurimäki 2007b, 96). Later, Aivar Kriiska offered another reconstruction of the Riigiküla I dwellings (Fig. 25: G; Kriiska 2004, 27), but he wrongly attributed them to the Comb Ware cultural complex and supposed that all the dwellings existed at the site simultaneously (for more details see Khrustaleva et al. 2019; Paper I).

There are three drawn reconstructions of Stone Age dwellings from Latvia. One of them is the Final Palaeolithic hut from Salaspils Laukskola (Zagorska 1994; 2012, fig. 58; Fig. 22: A), which is inspired by ethnographic data about Evenki tents because archaeological data does not provide enough evidence on dwelling shape. The reconstruction of the Zvidze settlement site in Latvia is based on plans of the building's remains in which posts are drawn where the traces of post holes were found (Fig. 25: D; Loze 2001b, fig. 52). The reconstruction of the Sārnate dwelling was based on a combination of data from various structures found at the site (Fig. 25: C; Vankina 1970, 124).

For Lithuanian Stone Age dwellings, only two drawn reconstructions currently exist. A reconstruction of a Kubilėliai site dwelling with a long entrance was suggested by Rimutė Rimantienė (Fig. 25: E; 1995, fig. 14). However, its shape and details of construction are poorly correlated to the archaeological evidence. Later, Vygandas Juodagalvis (2010, 174–175) hypothesised that a long pit, running perpendicular to the border of dwelling and beginning at the inner hearth, could be a hearth chimney, not an entrance. Another reconstruction was made for dwellings discovered at the Šventoji 23 settlement site (Fig. 25: B; Rimantienė 1995, fig. 10; 2005, fig. 40). The structure of these dwellings was described as 'a typical Neolithic dwelling' like many found at other sites in Lithuania (Nida, Lakes Biržulis and Kretuonas) and Latvia (Zvidze; Rimantienė 1995, 22–23).

Perceptions of what Stone Age dwellings in Belarus looked like were influenced by the reconstructions made for the Swiderian culture dwellings in Poland (Charnyauski 2011, fig. 28) and by the drawings made for the Palaeolithic dwellings of the Magdalenian culture in France (Elinek 1982, figs. 337, 353:1; Kalechyts et al. 2009, 341). For the latter, the main ethnographical parallels were the continental Eskimo dwellings in Alaska (Elinek 1982, figs. 427–428). The remains of a circular structure at Dubovy Loh IV were unambiguously described as a 'chum' (tent in Udmurtian) without further comments (Kalechits 1987, 42). At Yurevichi III, it was assumed that the pit-house found there had a light roof supported by a central post (Isaenko 1976, 86). More detailed reconstructions, including graphic ones, do not exist for these sites.

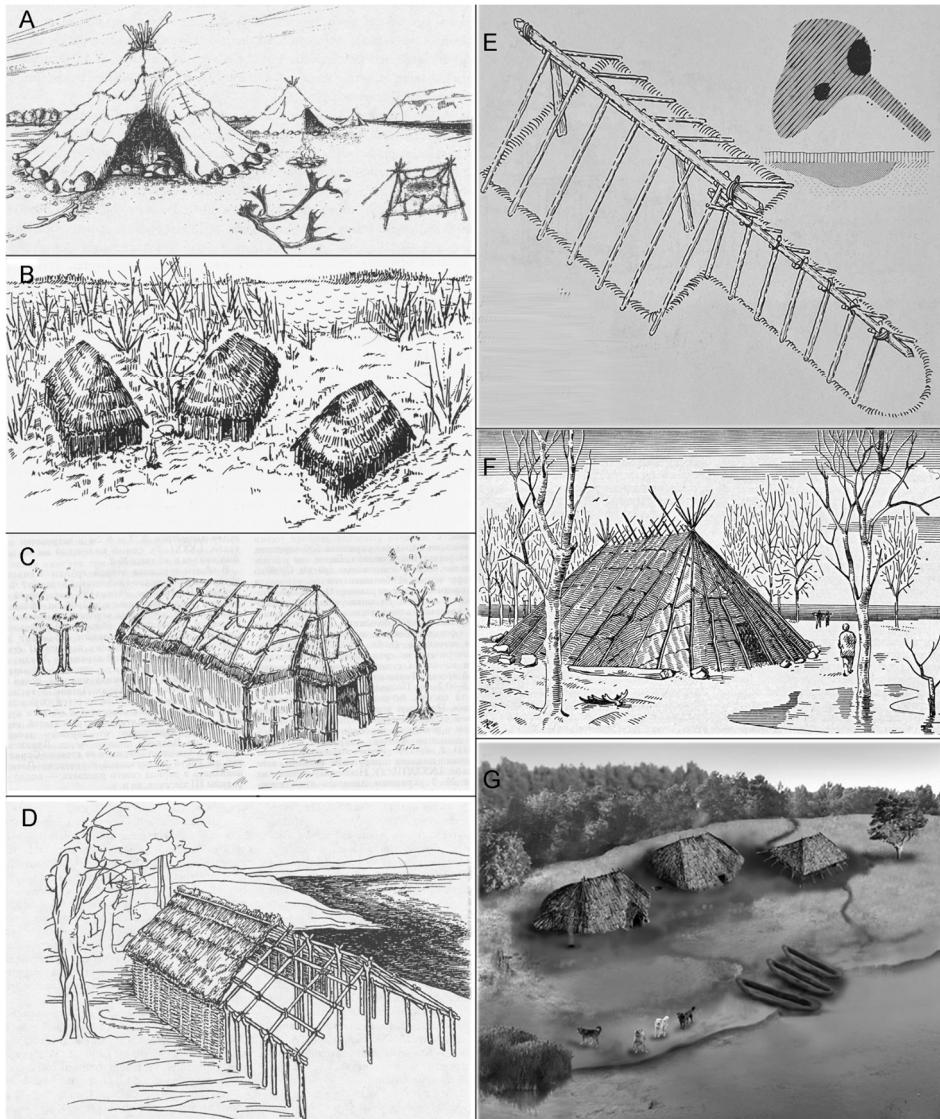


Fig. 25. All the known graphic reconstructions of Stone Age dwellings of hunter-fisher-gatherers for the northwestern part of the East European Plain: A – Salaspils Laukskola, Latvia, Final Palaeolithic; most probably, ca. 10,500–9000 calBC (Zagorska 2012, fig. 58); B – Šventoji 23, Lithuania, Late Narva culture, ca. 3000–2500 calBC (Rimantienė 2005, fig. 40); C – Sārnate, Latvia, Late Narva culture (Sārnate-type, ca. 4300–3100 calBC (Vankina 1970, fig. 145a); D – Zvidze, Latvia, Comb Ware cultural complex, ca. 3900–1800 calBC (Loze 2001b, fig. 52); E – Kubilėliai, Lithuania, Pre-Pottery Stone Age (Rimantienė 1995, fig. 14); F – Riigiküla I, Estonia, Narva culture, 5200–3900 calBC (Gurina 1967, fig. 98); G – Riigiküla I, Estonia, Narva culture, 5200–3900 calBC (Kriiska 2004, 27).

Most of the graphic reconstructions of the dwellings discovered at settlement sites in the Baltic region are schematic and based on a composite of prior perceptions and scholarship, as well as the experience and imagination of the reconstructors. There are some experimental models, too, e.g., the Pre-Pottery Stone Age dwelling from the Užavas Celmi site (Grasis 2021). A number of graphic reconstructions and experimental simulations of Stone Age hunter-fisher-gatherers' dwellings or their sections exist also in neighbouring territories (e.g., Tsvetkova 1958; Matiskainen & Jussila 1984, fig. 8; Broadbent 1999, fig. a; Vaara 2000, 1–2; Kankaanpää 2002, figs. 10–12; Katiskoski 2002, fig. 34; Leskinen 2002, fig. 29; Zhulnikov 2003, fig. 14; Muurimäki 2007b; Nieminen & Viljanmaa 2014; Khrustaleva 2017, fig. 2:2). However, they fall outside the scope of this thesis and are not discussed in detail herein.

8.3. Dwellings' structures and materials

According to archaeological data, several types of Stone Age dwellings of hunter-fisher-gatherer existed in the research area and surrounding territory. Foremost are framed buildings with vertical posts or log constructions. Log-constructed Stone Age pit-houses have been found in Finland (e.g., Katiskoski 2002; Leskinen 2002; Muurimäki 2016), northern Scandinavia (Halén 1996), Karelia (Karjalainen 1996b; Zhulnikov 2003, 48–58) and Middle-Volga region in Russia (Khalikov 1969, 164; Buzin 1990, 34). However, in the context of hunter-fisher-gatherers, only wooden vertical post structures of different dimensions and shapes have been found in the northwestern part of the East European Plain (see Papers I and V as well as reference therein).¹⁶ The size of dwellings is determined by a range of parameters (see Chapter 7): the number of inhabitants, the range of functions and seasonality of the dwelling, the natural environment, cultural traditions and limitations on construction materials.

Most of the data on the construction of dwellings is lacking, especially data about their superstructure. In rare cases, e.g., in the peatbogs of Karelia and Denmark, the posts from the walls have been entirely preserved (Oshibkina 1997, 25 and 31; Grøn 1995, 18). The height of these posts ranges from 1.7 to 1.8 m. More often, data on the height of the Stone Age hunter-fisher-gatherer dwellings can only be supposed based on ethnographic records. The traditional winter house of Taz Selkups in Siberia (Russia) reaches a height of ca. 1.8–1.9 m from floor to ceiling, while Koyukon Indians in America have a winter house of about 1.5 m high (Clark 1981; Piezonka et al. 2022, 161). The height of a building depends, among other things, on the roof shape, which in some cases can be reconstructed from archaeological data. A middle row of posts in elongated rectangular structures can reveal a double-sloped roof (e.g., Vankina 1970, 126–

¹⁶ The earliest known timber frame constructions for Estonia were discovered at the Narva-Jõesuu IIb settlement site in the context of the Corded Ware cultural complex of early farmers (Kriiska & Nordqvist, 2021, 466–467).

131; Loze 1988, 22–23); while a square shape of the dwelling with a centrally positioned of hearth is interpreted as a sign of a conically shaped roof (e.g., Leskinen 2002, 164; Zhulnikov 2003, 49). Conical or domed roofs are known from ethnographic data to be used by different Northern and Far Eastern hunter-fisher-gatherers as well (Sokolova 1997; Sokolov 2010, 341). Such roofs have a hole above the hearth, which is often also used as an entrance (Morgan 1934, 69–88; Lyapunova 1975, 140; Sokolova 1991, 7; Sokolov 2010, 341–342). This is especially important in winter when snow can cover the whole dwelling blocking wall entrances.

Post holes are rare finds in the context of pit-houses (e.g., Matiskainen & Jussila 1984, 31–32; Vaara 2000, 4). In other types of constructions, they were often dug with a diameter of about 0.3–0.4 m for a post diameter of 0.08–0.1 m (e.g., Nielsen & Nielsen 2019, figs. 24–25). The depth of post holes depended on the type of soil where the building was erected, because construction had to be stable. Likewise, it could vary based on the parameters of the person who dug the holes and correspond to the length of their arm from hand to elbow or shoulder (e.g., Kelly et al. 2005, 404, 407). Although clear post holes in the northwestern part of the East European Plain were found only in a few pit-houses in Estonia (Jägala Jõesuu V) and Belarus (Sasonka and Staryja Jurkovičy I), the irregular shapes of the buildings across the research area suggests post constructions may have been widely used (see Papers I, IV and V).

The structure of a pit-house differs from an above-ground dwelling. The underground part of a pit-house should be stabilised and strengthened, which is especially important in soft sandy areas (e.g., Leskinen 2002, 164). For the Stone Age hunter-fisher-gatherers' pit-houses in the northwestern part of the East European Plain, vertical posts or/and wattles may have served this purpose. Of special importance stabilisation of walls in the underground part should be for dwellings, with stepped floors (e.g., Kalechits 1987, 20; Larsson 2008, 118), because in the case of an active exploitation of the area surrounding the sunken part steps can collapse. Such construction of dwellings was supposed at Jägala Jõesuu V in Estonia (see Paper IV), at Sasonka and Dubovy Loh IV in Belarus (see Paper V) and at Gluobių I and Kubilėliai in Lithuania (Juodagalvis 2010, 72, 169) because of the irregular shapes and small sizes of their underground parts as well as the post holes and finds concentrated outside the sunken floors.

In the research area, the remains of organic details of the building materials are mainly preserved at the bog sites, e.g., at Sārnate, Abora I and Lagaža in Latvia (Vankina 1970; Loze 1979, 55–57); Pakretuonės 1, Šaltaliūnė, Žemaitiškė 3 (Girininkas 2005; 2009) and Šventoji 4, 6, and 23 (Rimantienė 1979; 1996a; 1996b) in Lithuania; at number of sites in Denmark (e.g., Grøn 1995) and Russia (e.g., Oshibkina 1997; Piezonka et al. 2020a). These mostly pertain to above-ground dwellings, especially those built on sandy sediments and buried in peat after destruction. Only in a few cases have charred wooden details of the structure been preserved this way of a pit-houses destroyed by fire (Katiskoski 2002; Leskinen 2002; Zhulnikov 2003, 59–61).

The vertical walls of above-ground dwellings at the Särnate settlement site were built of mostly 0.06–0.08 m in diameter poles of various species of deciduous trees, i.e., birch, ash and alder (Vankina 1970, 126–131). Coniferous trees were rarely used. Similar conclusions were made for above-ground dwellings at the Abora I site (Loze 1979, 57), and for post constructions in northwestern Russia where birch prevailed (Oshibkina 1997, 25; Khrustaleva 2017, 146). In contrast, the log frames of pit-houses in Finland and Karelia were mostly built of pine, although birch also was used (e.g., Vaara 2000, 4; Katiskoski 2002, 179; Zhulnikov 2003, 48–58; Muurimäki 2016). In reconstructions, vertical walls are typically interwoven of tree branches and reeds insulated with moss, dry grass and leaves, based on a wide range of ethnographic data (Rimantienė 1979, 169; Oshibkina 1997, 25; Grøn 1995, 18), however, no archaeological data proving this exist.

Sloping or arched walls also played the role of the roof and had to be covered by materials suitable for roofing. In cases of pit-houses where the log or post frame extends little above the ground, there also may have been leaning eaves for the roofs, as is often assumed in Finland and Karelia (Vaara 2000; Katiskoski 2002; Leskinen 2002; Muurimäki 2016; Zhulnikov 2003). Archaeological data, along with experimental works and ethnographic parallels, indicate that the use of birch or conifer bark and/or moss or turf was prevalent among the hunter-fisher-gatherer societies in Finland. The bark formed a waterproofing layer, and the moss or turf formed an insulating layer on top of that (Vaara 2000; Halinen et al. 2002; 2008; Katiskoski 2002, 197; Leskinen 2002; Muurimäki 2016).

It is hypothesised that the roofs of Särnate dwellings were constructed using methods similar to the wall construction (Vankina 1970, 130). According to ethnographic data on northern hunter-fisher-gatherers, their dwellings are covered with grass combined with bark and, in some cases, mats, earth and turf (e.g., Sokolova 1991, 7; Sokolov 2010, 342). During warmer summer months, conical roofs could be covered simply with birch bark or skins (Donner 1979, 69; Kodolányi 1980, 180).

Reed is a very common and available material for people living close to a river or lake. It can also be easily collected in large quantities. However, there is no archaeological evidence of its use in house building during the Stone Age. Nevertheless, the construction of experimental buildings in Sweden, Latvia and Lithuania demonstrates that this material is perfectly suitable for covering roofs or/and walls (Semenov & Korobkova 1983, 86–88; Burenhult 1999b, 186; Grasis 2021). Clay also could have been used for covering different parts of the dwelling. The only evidence of the presence of burnt clay fragments in the research area is known from the pit-house at Jägala Jõesuu V (see Paper II). Yet their small quantity and sizes do not provide any specific structural information.

The remains of floor coverings are a very rare find, known only in some peatbog sites in Scandinavia, Lithuania and Russia (e.g., Oshibkina 1997, 25; Grøn 1995, 13–14, 36; Rimantienė 1979, 169; Khrustaleva 2017, 146). There they were composed mainly of the bark of various tree species, such as spruce or pine, but rarely birch. At the Korvala site in Finland, a layer with organic remains

was interpreted as traces of timber flooring (Vaara 2000, 4; Leskinen 2002, fig. 30). The same was assumed for the Kärnelahti pit-house (Katiskoski 2002, 183). Still, most reconstructions have plain, sand floors without flooring. Often this topic is left undiscussed because of the absence of data.

Among the Stone Age pit-houses in the northwestern part of the East European Plain, only the rectangular buildings of the Dnieper-Donec cultural complex had relatively flat floors, the others were irregular or concave. This irregularity may partially be the result of excavation and documentation methods used (see Chapter 5.1.2), but foremost it may suggest that the floor was not covered with hard, rigid materials (see Papers I, IV and V). Ethnographic data on the hunter-fisher-gatherers of northern Europe and the Far East provide information that winter pit-houses traditionally had earthen floors covered with dry grass, mats, tree branches, etc. (e.g., Sokolova 1991, 8; Anderson & Nahshina 2006, 336). The Gwich'in (or Kutchin) in North America used pine needles (Morgan 1934, 73).

In multiple dwellings in Karelia and Finland, sand floors were covered with red ochre, which was interpreted as traces of ritual activity or a place for tanning hides (see Chapters 7.2 and 7.3; Filatova 1986, 57; Zhulnikov 2003, 96–97; Halinen et al. 2008, 245). Furthermore, the ochre could have been multifunctional and the colouring may even be decoration, as is visible from traces of paint (red ochre was most often used) found on the walls and floors in earthen houses of Dzheitun (Jeitun) culture in Turkmenistan, where evidence suggests that all the surfaces were covered with paint (Berdyev 1976, 23, 25, 30). While this cannot serve as a direct analogue for the Stone Age dwellings of hunter-fisher-gatherers in the European forest zone, it can give some ideas on the topic.

Because a large number of habited caves with Palaeolithic paintings have been preserved, painting is seen in the traditional architecture of the Far East (Sokolova 1991, 9), and wood carving existed in the Medieval wooden architecture (e.g., Novgorod, the exposition of the Novgorod State Museum-Reserve, Russia), there is no reason to assume that the hunter-fisher-gatherers of the European forest zone did not 'decorate'¹⁷ the exteriors and/or interiors of their houses. In addition to technologically important structural elements, dwellings may have had numerous details used for rituals, decoration or some 'non-utilitarian purposes' (Lukyanchenko 1997, 108; Sokolov 2010, 340–341).

¹⁷ The word 'decoration' is used here in a general sense, without reference to questions of semantics, as this is a topic for separate research.

9. STONE AGE ARCHITECTURE OF THE NORTHWESTERN PART OF THE EAST EUROPEAN PLAIN

In order to examine the development of architectural traditions and to see regional differences, all documented Stone Age dwellings in the northwestern part of the East European Plain are discussed below (Appendices 1 and 3). The general characteristics of dwellings from surrounding territories is also given. There are many gaps in the data: no information on the dwellings for all the territories and periods exists. The spatial distribution of sites with remains of dwellings is affected by uneven fieldwork in different areas, particularly in Belarus and Latvia (see Paper V). Consequently, the discussed concentrations of settlements with houses reflect the current situation.

The radiocarbon chronology remains completely unclear for many dwellings. Most are only typo-chronologically referenced with finds and, in addition, many of these typo-chronological phases are poorly dated, if dated at all. This makes it impossible to see the developmental dynamics of Stone Age architecture over the millennia across the whole area. All the data is divided into two chronologically unequal periods, i.e., Pre-Pottery and Pottery Stone Age (see Chapter 2). The Pottery Stone Age is discussed in more detail, especially the 4th millennium calBC, because this period accounts for most of the constructions and has received the most attention in Estonia and Belarus.

9.1. Pre-Pottery Stone Age architecture

Dwellings of the Pre-Pottery Stone Age, dated between ca. 12,000 and 5600/5200 calBC, are known at 24 settlement sites in the northwestern part of the East European Plain. One such dwelling was supposed to exist in Estonia at the Pulli site (Fig. 26; Appendix 1: 1). However, only the remains of wooden stakes were found there, and there is no secure proof of a building at the site (Jaanits & Jaanits 1975; 1978). The structural details were not clear either.

Seven Pre-Pottery Stone Age dwellings at two sites are supposed to exist in Latvia (Fig. 26; Appendix 1: 20–21). Six oval concentrations of flint with an area of 66–176 m² from the Final Palaeolithic site of Salaspils Laukskola were described as remains of above-ground huts (Zagorska 1994; 2012). A round pit-house of ca. 10.2 m², with stake holes along the walls and in the middle, was discovered at Užavas Celmi (Grasis 2010). No traces of a hearth were found inside, but some charcoal pieces were. One of them was dated, giving an age of ca. 6330¹⁸ calBC (Grasis 2010; Appendix 2).

¹⁸ In this Chapter, the median values of calibrated radiocarbon dates (95.4% probability range) are provided. For the raw data see Appendix 1.



Fig. 26. All known Pre-Pottery Stone Age settlement sites with dwellings in the research area (triangle): 8 – Pulli; 13 – Užavas Celmi; 16 – Salaspils Laukskola; 34 – Šventoji 40; 42 – Gluobių I; 43 – Kubilėliai; 44 – Varėnė 2; 49 – Neravai; 50 – Skaruliai; 51 – Sudota 2C; 52–53 – Rėkučiai 1, 2; 63 – Bierascienava; 64 – Niamnova 1; 66 – Babrovičy I; 68 – Opal II; 75 – Bierahavaja Slabada; 83 – Stasieūka; 84 – Ludčycy 1; 85 – Dziednia; 86 – Vuscie 2; 87 – Kryničnaja; 92 – Hlybaūka III; 93 – Novye Gromyki X. The blue colour marks above-ground buildings, while red marks pit-houses. The numbers of the sites on the map correspond to the numbers in Fig. 6: A.

In Lithuania, 15 Pre-Pottery Stone Age dwellings are known from eight settlement sites (Fig. 26; Appendix 1: 38–45). All of them had sunken floors of round, oval, triangular or rectangular shapes and sized between 2 and 28 m² (Juodagalvis 2010, 165–171; Šatavičius & Marcinkevičiūtė 2012; Šatavičius 2016; Gudaitienė 2018, 185–187; Piličiauskas 2018, 107–110). In nine pit-houses (from Kubilėliai; Gluobių I; Rėkučiai 1 and 2; Šventoji 40 and Neravai), round or oval hearths were found accompanied by fire-cracked stones, in some cases. Only in dwellings from Kubilėliai were stake holes found. They had a diameter of ca. 0.06–0.08 m (Juodagalvis 2010, 168). Two dwellings have radiocarbon dates (see Appendix 2): a charcoal piece from Gluobių I is dated to ca. 5960 calBC (Appendix 1: 39; Juodagalvis 2010) and charcoal piece and hazelnut shell from Šventoji 40 are dated to ca. 6130 and 5890 calBC (Appendix 1: 45; Piličiauskas 2018). A dwelling from Rėkučiai 1, as well as one from Neravai, was dated to the end of

the Final Palaeolithic (Štavičius & Marcinkevičiūtė 2012, 38; Štavičius 2016, 27), while others were dated to different stages of the Pre-Pottery Stone Age. Besides these 14, there are three additional oval and rectangular pit-houses without hearths from Sudota 2C, but they can be clearly attributed neither to the Pre-Pottery Stone Age nor the Narva culture (Appendix 1: 46).

In Belarus, information about 24 Pre-Pottery Stone Age dwellings from 12 settlement sites was collected (Fig. 26; Appendix 1: 72–83). Most of them, i.e., 15, are pit-houses of irregular round, oval, and more rarely, triangular and rectangular shapes. Hearths were observed in eight pit-houses (Kalechits 1987, 20–34; Kopytin 1991, 38–40; Abuchouski et al. 2006, 178–179), post holes just in two (Kalechits 1987, 29; Ksenzov 1988, 53–64). The only rectangular pit-house at Bierahavaja Slabada had a post hole in the corner (Ksenzov 1988, 55). More than nine above-ground dwellings were identified. Their exact number, as well as shapes and sizes, are unknown. They were identified as constructions because of the concentrations of finds and hearths in some cases (Isaenko 1976, 28–30; Ksenzov 1988, 88–92; Kolosov 2009a, 28–30). The dwelling area was reported only in two cases: 16 m² at Vuscie 2 and 19.6 m² Stasieŭka (Appendix 1: 82–83).

The following short introduction of the Pre-Pottery Stone Age dwellings from surrounding territories demonstrates the general variability of existing architectural forms. For western Russia, mostly small round or oval above-ground dwellings or pit-houses are known. Rarely have rectangular structures been found (Koltsov 1985; Leonova 2004; Mazurkevich et al. 2012; Khrustaleva 2016). In the Middle-Volga region, mostly pit-houses with a size from 10 to 32 m² have been found, although bigger ones also were discovered (Nikitin 2017, 168–170).

Similar round pit-houses to those found in Belarus have been found in Ukraine (Zaliznyak 1991, 116–123; Kopytin 1991, 38). Round, oval and rectangular pit-houses with post-based constructions were used in Karelia and Finland (Filatova 1986; 1988; Zhulnikov 2003, 33–45; Mökkönen 2011, 26–27). For the Ertebølle culture in southern Scandinavia during the Pre-Pottery Stone Age (Fig. 3: 2), rectangular or oval pit-houses of different sizes with post-based constructions were characteristic, although round post-based above-ground huts existed as well (Karsten & Knarrström 1999; Grøn 2003, 696; Larsson & Sjöström 2011).

Two principal regions can be distinguished in the research area, where all known remains of buildings are concentrated (Fig. 26). These are western Latvia, the south of Lithuania and northwestern Belarus from one side (western group) and the east/south-east of Belarus from another (southeastern group). Most of the buildings are represented by the remains of sunken floors.

The number of pit-houses is nearly the same for both groups – i.e., 18 of them are known at 10 settlement sites in the western group (Appendix 1: 21, 38–45 and 79) and another 14 from 7 sites in the southeastern group (Appendix 1: 72–78). The western group pit-houses are mostly oval or round and have a size of 7 to 14 m², with only three dwellings exceeding this, from 19 to 28 m² (Appendix 1: 39, 42 and 45). The southeastern group pit-houses are also mostly oval or round, however their sizes are smaller, mostly from 3 to 10 m² and only two buildings are bigger, at 16.3 m² and 78 m² (Appendix 1: 76 and 72).

9.2. Pottery Stone Age architecture

During the Pottery Stone Age, the number of archaeologically identifiable dwellings grew in comparison to the previous period (Fig. 27). Furthermore, the pottery inside makes it possible to give coarse temporal designations. In this chapter, dwellings are discussed according to the millennium. However, as archaeological cultures and pottery types have wide chronological frames, and most of the dwellings do not have radiocarbon dates, the division is not accurate.

Oval pit-houses from Vosrtaŭ III and Kamienka 5 in Belarus (Appendix 1: 103–104; Isaenko 1976, 36; Kolosov 2017a, 137–138) cannot be attributed to a certain archaeological culture, consequently they are only shown on the general map (Fig. 27) but not discussed. A few dwellings, which could belong to several archaeological cultures, are discussed in all the relevant chronological periods. These are dwellings from Valma in Estonia; Iča and Abora I in Latvia and Sudota 2C, Katra 1, Žemaitiškė 2, Šventoji 4 and 6, Šarnelė and Daktariškė 1 in Lithuania (Appendix 1: 17, 36, 46–47, 57–61).

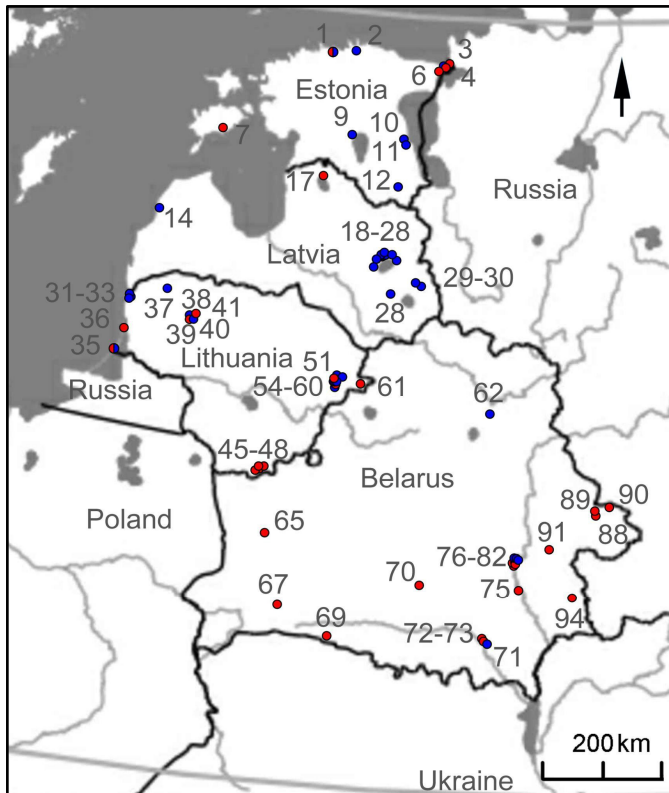


Fig. 27. All known Pottery Stone Age settlement sites in the research area (dot): 1 – Jägala Jõesuu V; 2 – Vihasoo III; 3 – Lommi III; 4 – Riigiküla I; 6 – Narva-Jõesuu IIB; 7 – Kõnnu; 9 – Valma; 10 – Kullamägi; 11 – Akali; 12 – Tamula I; 14 – Särnate; 18 – Iča; 19 – Kvāpāni II; 20 – Abora I; 21 – Zvidze; 22 – Lagaža; 23 – Asne I; 24 – Eiņi; 25 –

Nainiekste; 26 – Piestiņa; 27 – Zvejsala; 28 – Leimaniški; 29 – Jurisdika; 30 – Kreiči; 31–33 – Šventoji 4, 6 and 23; 35 – Nida; 36 – Alksnynė 3; 37 – Šarnelė; 38 – Biržulis; 39 – Kulnikas; 40 – Daktariškė 1; 41 – Širmės kalnas 1; 45–46 – Katra 1 and 2; 47 – Paramėlis 2; 48 – Dubičiai 2; 51 – Sudota 2C; 54 – Kretuonas 1; 55–57 – Žemaitiškė 1–3; 58 – Pakretuonės 1; 59 – Šaltaliūnė; 60 – Pakretuonės 3; 61 – Žeimenis I; 62 – Asaviec 7; 65 – Navasiolki 1; 67 – Pierasudavičy; 69 – Vosrtaū III; 70 – Staryja Jurkovičy I; 71 – Slabodka I; 72–73 – Juravičy III and IV; 75 – Nižniaja Alba 1; 76 – Sasonka; 77 – Borok Seminauski; 78 – Prorva 2; 79 – Kamaryn 5; 80 – Kamaryn 5 A; 81 – Ksendzova gora; 82 – Zavalje; 88 – Rudnia I; 89 – Kamienka 5; 90 – Stary Dziedzin 4; 91 – Strumien VI; 94 – Dubovy Loh IV. The blue colour marks above-ground buildings, while red marks pit-houses. The numbers of the sites on the map correspond to the numbers in Fig. 6: A.

9.2.1. 5th millennium calBC

All the known dwellings in the research area from the 5th millennium calBC were discovered in Estonia and Lithuania. Most of them, at least 12, have been attributed to the Narva culture (Fig. 28). Seven dwellings were excavated at four sites in Estonia. Two dwellings were above-ground (Appendix 1: 7–8; Jaanits 1959, 29–65; Kriiska 1997b): at Vihasso III they were represented by oval concentrations of finds around the hearth and at the Akali site remains of wooden stakes were found, but no details of the construction were discovered. The remainder of the dwellings were pit-houses from Riigiküla I and Kõnnu (Appendix 1: 2–6; Gurina 1967; Jaanits 1979). No clear traces of hearths or post holes were found at any of these pit-houses. Triangular and rectangular pits with sizes from 3 to 7 m² were discovered at Kõnnu; however, because of their small sizes and irregular shapes, they have been interpreted to be a part of larger, unidentifiable dwellings (Jaanits 1979; Paper I). Oval in shape pit-houses (no. 1 and 2) were found at Riigiküla I from 48 to 56 m² in size (Appendix 1: 9; Paper I). Pit-house no. 2 had a stepped floor, a ‘niche’ and a ‘corridore’-like entrance. Another pit-house from Riigiküla I (no. 3a) contained Narva and Comb ware finds; however, it is most probably related to the Narva culture.

A few radiocarbon dates were obtained for Narva culture dwellings in Estonia (see Appendix 2). Radiocarbon dating of bone tools from Riigiküla I gave an age of ca. 5190 and 4190 calBC for dwelling 1; ca. 4120 calBC for dwelling 2 and ca. 4400 and 4200 calBC for dwelling 3a (Paper I). The earliest date for dwelling 1 seems dubious, because according to the palaeogeographical reconstruction of the Baltic Sea palaeocoastlines, at this time the area was mostly likely covered by water (see Rosentau et al. 2013, fig. 7: D & E). Furthermore, the dating of a human bone from dwelling 1 at Kõnnu, ca. 5200 calBC, has a reservoir effect and, after correction, has been dated at ca. 4700 calBC (see Tõrv 2016; Paper I, table 1). The Narva culture dwellings at the Kõnnu and Riigiküla I settlement sites are the earliest pit-houses in Estonia.



Fig. 28. Pottery Stone Age settlement sites with dwellings dated to the 5th millennium calBC in the research area (dot): 2 – Vihasoo III; 4 – Riigiküla I; 7 – Kõnnu; 11 – Akali; 46–47 – Katra 1 and 2; 51 – Sudota 2C; 60 – Pakretuonės 3; 61 – Žeimenis I. The blue colour marks above-ground buildings, while red marks pit-houses. The numbers of the sites on the map correspond to the numbers in Fig. 6: A.

In Lithuania, five Narva culture dwellings at settlement sites Katra 2, Pakretuonės 3 and Žeimenis I dated to the 5th millennium calBC have been found (Appendix 1: 48–51; Girininkas 1988, 7–10; 2009, 231–233; Marcinkevičiūtė 2016, 62–63).¹⁹ One dwelling from Katra 1 is attributed to the Narva or Neman (Dubičiai) culture (Appendix 1: 47; Marcinkevičiūtė 2016, 61). These dwellings are all pit-houses of oval or rectangular form with two gradations of sizes, i.e., 2–6 m² (two dwellings) and 24–38 m² (three dwellings). Remains of small round hearths were found in dwellings of Pakretuonės 3 and Žeimenis I (Girininkas 2009, 231–233). At Žeimenis I, in addition, a stripe of organic sediments and stones outlined the dwelling's borders (Girininkas 2009, fig. 179). A charcoal piece from one pit-

¹⁹ In Paper V (p. 516), they were interpreted to be dated to the 4th millennium calBC in accordance with the opinion of archaeologist who conducted excavation there on typochronology of finds, in this work, however, they are discussed in accordance with the previously published attribution and radiocarbon dates.

house at Katra 2 dates from ca. 4170 calBC (Appendix 2; Marcinkevičiūtė 2016, 61–62).

There are other dwellings from surrounding territories, which have been attributed to the Narva culture. Above-ground dwellings of the Rudnya-type are known in western Russia at the Serteya XIV settlement site (Khrustaleva 2017). There are remains of two structures of oval and rectangular shapes with sizes of 11.9 m² and 16.4 m², evidenced by post holes, remains of wooden details and concentrations of finds.

There are oval-shaped pit-houses with ‘corridor’-like entrances in the Valday culture, however their chronology is not clear (Zimina 1973; Vereshchagina et al. 1995; 1997). Moving further to east, it can be concluded that a considerable part of Lyalovo culture dwellings (Fig. 3: 5) had above-ground floors with hearths (Sidorov 2015, 106). Dwellings with slightly sunken floors were discovered there, but it was suggested that they were trampled rather than dug, however this would require the turf to be removed (Sidorov 2015, 107). Only one pit-house was discovered for the middle stage of the Lyalovo culture (Sakhtysh I, which can be dated ca. 4300–4200 calBC; Fig. 5: A, 83; Zaretskaya & Kostyleva 2011, 178). However, in the Middle-Volga region, mostly rectangular Lyalovo culture pit-houses with size from 8.5 to 35 m² were found, although above-ground dwellings also were discovered (Nikitin 2017, 172–173).

For the Neman culture (Fig. 3: 6), other dwellings in the northwestern part of the East European Plain – with the possible exception of a dwelling from Katra 1 in Lithuania – are not known. To the north, only two above-ground dwellings are known for the Sperrings culture (Fig. 3: 1): at Ilekka V in Karelia (Kosmenko 1992, 47–48) and at Lappeenranta Etu- ja Taka-Muntero in Finland (Nordqvist et al. 2018, 85). To the west, the Linear Pottery culture (Fig. 3: 8) of early farmers dominates and is mainly characterised by longhouses of post construction (Startin 1978; Pavlů 2016; Saile et al. 2016). For the Ertebølle culture (Fig. 3: 2), rectangular or oval pit-houses of different sizes, as well as round above-ground huts have been discovered (Karsten & Knarrström 1999; Grøn 2003, 696; Larsson & Sjöström 2011).

It can be concluded that there is not enough data about the Narva culture dwellings to discuss the development of architectural traditions. However, two zones where Narva culture pit-houses are known show the diversity of dwellings in form and size. While the Kõnnu dwellings from Estonia resemble the Lithuanian Narva culture pit-houses in size, the shape of the Lithuanian sunken floors are mostly round, while in Kõnnu they are triangular or rectangular. Likewise, the pit-houses of the Riigiküla I settlement site have similarities in shape, size and shape of entrance with some of pit-houses of the Valday culture in western Russia (Fig. 3: 4), like those found at the Zalesje I site (Timofeev 1997) and at Ust'-Valdayka I site in the basin of the Msta River in Russia (see Fig. 5: A; Zimina 1973, 169; 2014).

9.2.2. 4th millennium calBC

Dwellings from the 4th millennium calBC in the research area have been attributed to the Comb Ware and Dnieper-Donec cultural complexes and to the Late Narva and Neman cultures (Fig. 29). For the Comb Ware cultural complex (Fig. 4: 1), 40–46 dwellings are known across 18 settlement sites in Estonia and Latvia (Appendix 1: 10–16, 23–35). In Estonia, two rectangular pit-houses were discovered at Lommi III (Paper III) and Jägala Jõesuu V (Paper IV). In the pit-house at Jägala Jõesuu V, post holes were discovered, but it was only excavated in part. The estimated size of dwelling at Lommi III is ca. 31.2 m², but no details of its construction were discovered. Moreover, five dwellings at Riigiküla I, Jägala Jõesuu V, Kullamägi and Tamula I included concentrations of finds or remains of stakes. However, only at Jägala Jõesuu V was it observed that the concentration of finds had a rectangular shape and size ca. 18 m². In addition to these pit-houses, eight to ten supposed above-ground constructions were discovered at the Valma site. They were identified by cleaned areas around the hearths. They have been associated with Comb or Corded Ware cultural complexes because of certain pottery finds in the hearths (Appendix 1: 17; Yanits 1959a, 104). A few radiocarbon dates were also obtained (Appendix 2): a burnt animal bone and a hazelnut shell from a pit-house at Jägala Jõesuu V were dated at ca. 3180 and 3130 calBC; a hazelnut shell from an above-ground construction at Jägala Jõesuu V was dated at ca. 3110 calBC; and an organic crust from potsherds found in a pit-house at Lommi III was dated at ca. 3790 and 3800 calBC. No reservoir effect was revealed for these samples (see Paper III).

In Latvia, a corner of a single supposed pit-house of the Comb Ware cultural complex was discovered at the Zvejnieki site (Appendix 1: 23; Larsson et al. 2017, 61). At the Sārņate site, 15 above-ground dwellings have been discovered (Vankina 1970; Bērziņš 2008). They were identified as round or oval sand lenses of 12 to 72 m² in size and included concentrations of finds and oval hearths at the peat layer. From 16 to 22 above-ground constructions identified by rows of post holes and forming rectangular outlines have been discovered at Zvidze, Kvāpāni II, Abora I, Lagaža, Asne I, Eiņi, Nainiekste, Piestiņa, Zvejsala, Jurizdika I and Kreiči (Zagorskis 1963, 24; Loze 1979, 11–38, 42; 1988, 22–23, 93; 2000, 117–118; 2001b, 80; 2008, fig. 17; 2015; Urtāns 2021; Zagorska 2021). The structures at Lagaža are similar to the remains of fishing constructions (for comparison see Brinkhuizen 1983, Lozovski et al. 2013, because the rectangular shape described by the archaeologist who excavated the site (Loze 1979, 11–26) is not visible on plans. Consequently, these structures require a special study. Three dates obtained from wooden poles of ‘dwelling A’ from Lagaža gave an age ca. 2060–1530 calBC (Appendix 2; Loze 1979, 121), which only partially corresponds to the final stage of the Comb Ware cultural complex (see Fig. 2). The Abora I settlement site contains multicultural materials, thus the dwellings discovered there have only presumably been interpreted as belonging to the Comb Ware cultural complex. Another supposed above-ground construction represented by rows of post holes is known at the Iča site. Its cultural attribution is unclear (Comb

or Corded Ware cultural complexes or Lubāns-type), but it has five radiocarbon dates obtained from wood, with a mean of ca. 3340–2290 calBC (Appendices 1: 36; 2; Loze 2010).

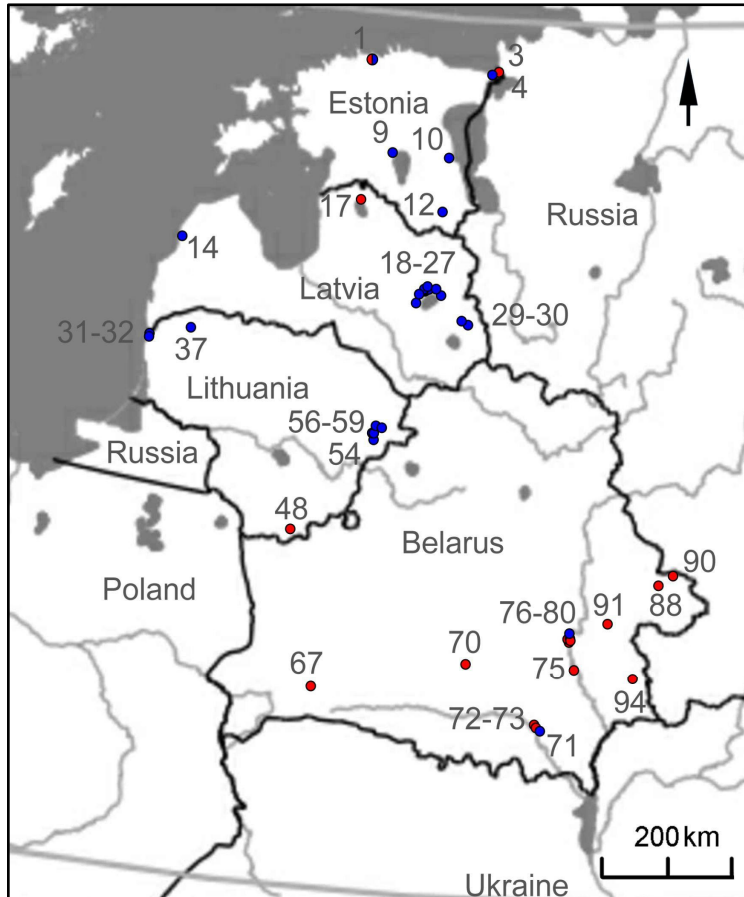


Fig. 29. Pottery Stone Age settlement sites with dwellings dated to the 4th millennium calBC in the research area (dot): 1 – Jägala Jõesuu V; 3 – Lommi III; 4 – Riigiküla I; 9 – Valma; 10 – Kullamägi; 12 – Tamula I; 14 – Sārņate; 18 – Iča; 19 – Kvāpāni II; 20 – Abora I; 21 – Zvidze; 22 – Lagaža; 23 – Asne I; 24 – Eiņi; 25 – Nainiekste; 26 – Piestiņa; 27 – Zvejsala; 29 – Jurisdika; 30 – Kreiči; 31–32 – Šventoji 4 and 6; 37 – Šarnelē; 48 – Dubičiai 2; 54 – Kretuonas 1; 56–57 – Žemaitiškē 2–3; 58 – Pakretuonēs 1; 59 – Šaltaliūnē; 67 – Pierasudavičy; 70 – Staryja Jurkovičy I; 71 – Slabodka I; 72–73 – Juravičy III and IV; 75 – Nižniaja Alba 1; 76 – Sasonka; 77 – Borok Seminauski; 78 – Prorva 2; 79 – Kamaryn 5; 80 – Kamaryn 5 A; 88 – Rudnya I; 90 – Stary Dziedzin 4; 91 – Strumien VI; 94 – Dubovy Loh IV. The blue colour marks above-ground buildings, while red marks pit-houses. The numbers of the sites on the map correspond to the numbers in Fig. 6: A.

Multiple above-ground constructions attributed to the Late Narva culture and roughly dated to the 4th millennium calBC were discovered at sites in Latvia and Lithuania. At the Sārņate site (Sārņate-type) in Latvia, 25 were found (Appendix 1: 22; Vankina 1970; Bērziņš 2008). They were all identified as rectangular constructions with timber post remains, hearths made of bark covered by sand, and concentrations of finds. Six radiocarbon dates obtained for these dwellings give a wide range from ca. 4440 to 2490 calBC (Appendix 2; Bērziņš 2008, tab. 2). However, the earliest date – taken from an organic crust on potsherds – is most likely skewed by the reservoir effect, but its offset is unknown. In general, it can be concluded that the Sārņate dwellings belong to the 4th through mid-3rd millennia calBC.

In Lithuania, Late Narva culture rectangular constructions were identified from the remains of stakes or hearths at sites Pakretuonės 1, Šaltaliūnė, Kretuonas 1 and Žemaitiškė 3 (Appendix 1: 53–56; Girininkas 2009, 233–234; Grinkevičiūtė 2005, tab. 3). Other above-ground constructions identified by remains of wooden stakes and logs were found at Žemaitiškė 2, Šventoji 4 and 6 and Šarnelė, while rows of post holes were discovered at Daktariškė 1 (Appendix 1: 57–61; Rimantienė 1996a; 1996b; Girininkas 2005, 35–43; Butrimas 2019, 227). Some of these constructions could be pile-dwellings with raised floors built in wetland (see Pranckėnaitė et al. 2021). Their exact number is unknown and may be larger than twenty. They are attributable to the Late Narva, Corded Ware, or Globular Amphora cultures and are dated to the 4th or 3rd millennium calBC.

Data on two Neman culture (late stage) pit-houses found at the Pierasudaviči site in Belarus is too limited for further description, it can only be concluded that they are pit-houses (Appendix 1: 84; Isaenko 1963, 9–11; Paper V). There is also information about one supposed Neman culture pit-house with remains of a hearth and post holes at the Dubičiai 2 site in Lithuania (Appendix 1: 52; Rimantienė 1999, 81–86), but no other details of the dwelling exist. For the Dnieper-Donec cultural complex in Belarus, more information is available. In total, 29 dwellings have been discovered across 14 settlement sites (Appendix 1: 85–98). Dwellings at two of the settlement sites are above-ground, while the rest are pit-houses. At Kamaryn 5A, a rectangular concentration of finds and burnt shells was discovered (Razlutskaya 2011; 2013). Nine supposed above-ground dwellings were hypothesised to exist at Slabodka I based on artefacts concentrated around hearths (Isaenko 1976, 77).

The pit-houses were mostly round, oval or irregular in shape and ranged from 3.4 m² to 17 m² in size. Only four pit-houses from Juravičy IV, Kamaryn 5, Nižniaja Alba 1 and Sasonka were rectangular (Artemenko 1964; Isaenko 1967; Yazepenka 2007; Yazepenka & Yuretski 2013). Their sizes ranged from 3.4 to 36.8 m². Most of the pit-houses had round hearths. The rectangular dwelling at Sasonka was surrounded by post holes and had a ‘corridor’-like entrance (Artemenko 1964; Paper V).

Materials from seven dwellings were radiocarbon dated. Three gave results in contradiction to the typo-chronological context of the analysed dwellings and are therefore not discussed here: Rudnia I, Juravičy III and Borok Seminauski (see

Chapter 5.2.1; Appendix 1: 87, 89 and 96). At Kamarin 5, a date was obtained ca. 3560 calBC, for Staryja Jurkovičy I – ca. 3130 calBC, Nižniaja Alba 1 – ca. 3260 and 3000 calBC and for Prorva 2 – ca. 3440 calBC (see Appendix 2). The date for Prorva 2 was obtained from an organic crust on pottery and may be skewed by the reservoir effect, but no isotope analysis was done. However, this date correlates well with dates obtained from other materials from pit-houses of the Dnieper-Donec cultural complex.

The Dnieper-Donec cultural complex covered also the northern part of Ukraine, where – at the sites Mnevo-Les, Hryshivka and Vita Litovskaya – rectangular pit-houses with hearths and vertical post constructions were found (Telegin 1961, 27; Mitrofanova 1966, 71–72; Berezanskaya 1975, 150–159; Neprina 1976, 69–72, 107). To the southwest, the Dnieper-Donec cultural complex bordered farmers of the Trypillia culture (Fig. 4: 10). Trypillian dwellings were mostly rectangular, above-ground and built of wooden posts and clay, although oval-shaped pit-houses also existed (e.g., Kordysh 1953).

To the east of the area under research, Valday culture probably continues its existence (Fig. 4: 5; Gurina 1958), and some of the pit-houses found there may belong to the 4th millennium calBC as well, but without dates they cannot be distinguished and discussed here. In the Middle-Volga region, pit-houses appeared numerously only during the middle stage of the Volosovo culture, in the second half of the 4th millennium calBC (Figs. 4: 14; Sidorov 2015, 108). These were rectangular pit-houses, often connected by passages, which are similar in shape to Karelian and Finnish buildings dated predominantly after ca. 3300 calBC and related to the Asbestos Ware culture (Pesonen 2002; Zhulnikov 2003; Mökkönen 2011, 26). Furthermore, the morphology and construction of pit-houses changed between the early and late 4th millennium in the Middle-Volga region, Karelia and Finland. Yet, the most important fact is that pit-houses are most abundant for the Comb Ware cultural complex, Asbestos Ware and Volosovo culture (Fig. 4: 13) in Finland, the Karelian Isthmus, Karelia and the Middle-Volga region (Nikitin 1996, 2017; Zhulnikov 2003; Mökkönen 2011).

In southern Scandinavia, Pitted Ware culture (Fig. 4: 2) dwellings of hunter-fisher-gatherers of the 4th millennium calBC were identified as round, oval or rectangular above-ground huts, based on post construction (e.g., Larsson 2009b, 282–284; Björck 2011, 17–18). At the same time, the Funnel Beaker culture (Fig. 4: 7) of early farmers is mainly characterised by big rectangular houses of post construction with walls covered with daub and sometimes slightly sunken floors (e.g., Hallgren 2008, 92–106; Nielsen 2020).

The 4th millennium calBC thus marks a period of increasing complexity and variety of dwellings compared to previous periods. For the Comb Ware cultural complex, two main regional variations with different architectural traditions can be outlined. First, one with oval or rectangular with rounded corners pit-houses including the northern coast of Estonia where dwellings are comparable to those known in Finland and Karelia during the same period (Pesonen 2002; Zhulnikov 2003; Mökkönen 2011). It is characterised by round/oval pit-houses during the earlier period and rectangular pit-houses from the mid-4th millennium. Above-

ground constructions are rather rare finds here, although some are known. It is important to note that pit-houses of the 4th millennium calBC in Estonia are comparable in shape and size to the previous Narva culture dwellings from the Riigi-küla I settlement site.

In the second region of the Comb Ware cultural complex including Latvia, a part of only one pit-house is known in the northern part of the country, and other remains of architecture have been identified as above-ground structures. It is difficult to discuss the origins of big rectangular above-ground constructions in the eastern Baltic because for the previous periods there is not much data. At the same time in Lithuania, only rectangular above-ground constructions are known for the Late Narva culture. Only in southern Lithuania was a supposed pit-house related to the Neman culture found.

In comparison to Latvia and Lithuania, the situation changes in the southwest where the Dnieper-Donec cultural complex and Neman culture in Belarus almost only pit-houses are known. This, however, does not rule out the possibility that above-ground structures in this region have simply not been discovered or identified. Pit-houses in Belarus are mostly represented by small rounded or oval and rarely rectangular in shape pits. Their shapes and sizes, therefore, differ significantly from the pit-houses of the Comb Ware cultural complex in Estonia and resemble more those of previous periods. The appearance of rectangular shaped pit-houses in the Dnieper-Donec cultural complex can be supposed as an influence of Trypillian architecture (see Paper V).

9.2.3. 3rd millennium calBC

Dwellings from the 3rd millennium calBC have been attributed to the Late Narva, North Belarusian and Globular Amphora cultures, and Corded Ware cultural complex (Fig. 30). However, the problem is that most of the structures from this period were found in multi-layered settlements, and because all that remains of them are posts or post holes they cannot be clearly linked to a particular culture. In addition, the definitions of materials used also need to be revised because modern knowledge is much broader than presented in old publications and there is a lack of radiocarbon dates. Thus, most of the data for the 3rd millennium calBC need to be analysed more carefully, but this is beyond the scope of this paper. Here I only offer a short overview.

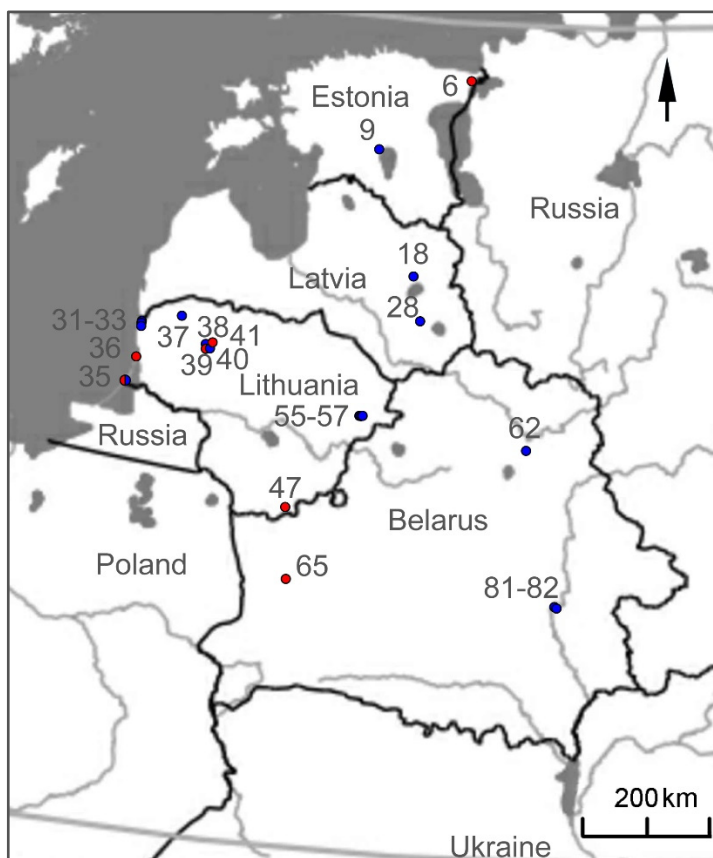


Fig. 30. Pottery Stone Age settlement sites with dwellings dated to the 3rd millennium calBC in the research area (dot): 6 – Narva-Jõesuu IIB; 9 – Valma; 18 – Iča; 28 – Leimaniški; 31–33 – Šventoji 4, 6 and 23; 35 – Nida; 36 – Alksnynė 3; 37 – Šarnelė; 38 – Biržulis; 39 – Kulnikas; 40 – Daktariškė 1; 41 – Širmės kalnas 1; 47 – Paramėlis 2; 55–57 – Žemaitiškė 1–3; 62 – Asaviec 7; 65 – Navasiolki 1; 81 – Ksendzova gora; 82 – Zavalje. The blue colour marks above-ground buildings, while red marks pit-houses. The numbers of the sites on the map correspond to the numbers in Fig. 6: A.

Seven dwellings from Lithuania attributed to the Late Narva culture are roughly dated to the 3rd millennium calBC (Appendix 1: 62–65). Three oval and rectangular pit-houses were discovered at the Paramėlis 2 site (Marcinkevičiūtė 2016, 63). A charcoal piece from the rectangular pit-house at Paramėlis 2 was dated ca. 2200 calBC (see Appendix 2).²⁰ Dwellings at Žemaitiškė 1 and Šventoji 23 were identified by remains of wooden stakes and a rectangular shape (Rimantienė 1979; 2005, 422–429; Girininkas 2005, 37–39). The dwelling from

²⁰ In Paper V (p. 516) it was interpreted to be dated to the 4th millennium calBC in accordance to the opinion of archaeologist who excavated the site and the typochronology of finds. In this thesis, however, its radiocarbon date is given.

Žemaitiškė 3 is supposed to be of the Late Narva culture and can belong either to the fourth or third millennium calBC (Girininkas 2005, 39). Some of above-ground constructions at Žemaitiškė 2, Šventoji 4 and 6, and Šarnelė were identified by remains of wooden stakes and logs, and by rows of post pits at Daktariškė 1 (see Chapter 9.2.2). It is attributed to the Late Narva, Corded Ware or Globular Amphora cultures and can be dated to the 3rd millennium calBC (Appendix 1: 57–61; Rimantienė 1996a; 1996b; Girininkas 2005, 35–43). Some of the dwellings could be pile-dwellings, i.e., raised floors built in wetland (see Pranckėnaitė et al. 2021). One supposed pile-dwelling attributed to the North Belarusian culture may exist at the Asaviec 7 site in Belarus (Appendix 1: 99; Charniauskis & Kryvaltsevich 2011, 108).

Seventeen dwellings of the Corded Ware cultural complex are known in Estonia, Latvia, Lithuania and Belarus (Appendix 1: 18–19, 37, 66–71, 100–102). Seven round/oval or rectangular pit-houses ranging from 8 to 48 m² in size were found at Narva-Jõesuu IIB in Estonia (Kriiska & Nordqvist 2021; Vanhanen et al. 2023); Nida (Rimantienė 2016, 50–54), Kulnikas (Grinkevičiūtė 2005, tab. 3), Širmės kalnas 1 (Butrimas 2019, 254–255) and Alksnynė 3 (Piličiauskas 2018, 28–35) in Lithuania; and Navasiolki 1 in Belarus (Lakiza et al. 2006, 183–184). The remaining structures found at Leimaniški in Latvia (Vankina 1980, 57), Nida (Rimantienė 2016, 68–71) and Biržulis (Grinkevičiūtė 2005, tab. 3) in Lithuania, and Ksendzova gora (Artemenko 1962, 65–66) and Zavalje (Artemenko 1962, 71–72) in Belarus, were identified by rows of post-holes and concentrations of finds. Four Corded Ware cultural complex dwellings have radiocarbon dates: ca. 2790 calBC for pit-house 1 from Narva-Jõesuu IIB, from ca. 2690 to 2360 calBC at Alksnynė 3, ca. 2670 at Širmės kalnas 1, and ca. 2580 calBC for one of the above-ground constructions at Nida (see Appendix 2). It is clear the use of pit-houses in the northwestern part of the East European Plain continued into the 3rd millennium calBC, adapting to the new reality of early farmers.

In Finland, the Karelian Isthmus and Karelia, Comb Ware cultural complex pit-houses were used for at least the first half of the 3rd millennium and perhaps even longer (Zhulnikov 2003, 64; Mökkönen 2011, 24–29; Gusentsova & Sorokin 2011, 426–427). Only a few Corded Ware cultural complex houses are known there though. They include above-ground dwellings along with square and oval pit-houses (Mökkönen 2023). However, large, rectangular, post-based above-ground constructions – as well as pile-dwellings attributed to different archaeological cultures – emerged in the 4th millennium calBC and seem to become a more common form of architecture during the 3rd millennium calBC not only in Circum-Baltic area, but in western Russia as well (Girininkas 2010; Zaltsman 2010; Mazurkevich & Dolbunova 2011; Pranckėnaitė et al. 2021).

9.3. General remarks and discussion

It is impossible to know when, why and where pit-houses appeared for the first time, however it is clear they were widely used in different times and territories.

Drawing on ethnographic data collected from historically-documented societies who used pit houses around the world, Patricia Gilman (1987, 541) found that the main conditions for that include: a non-tropical climate, a minimally bi-seasonal settlement pattern, and the reliance on stored food while the pit-house is inhabited. Her research further showed that pit-houses were mainly used in winter-time indicating a sedentary way of life during that period (Gilman 1987, 543).

From the earliest studies of pit-houses, one of the main reasons cited for their construction was that they are 'warm and easily constructed' (Childe 1929, 43). While the latter statement is debatable and depends on the specific type of construction, the former is well-supported. The pit structure provides protection from winter cold in northern climates, while also offering cooling during the summer.

Ethnographic evidence suggests that pit-houses were used not only for habitation but also for ritual activities and storage (Clarke and Piggott 1965, 76; Lyapunova 1975, 142; Sokolov 2010, 341), making them particularly suitable for sedentary lifestyles and winter occupancy. At the same time, Alasdair Whittle (1996, 52) proposed that smaller pit-houses imply mobility, as they reflect limited investment in constructing structures meant for long-term use.

Additionally, the significant labor required to construct a pit-house, compared to above-ground dwellings, suggests that this building tradition was more aligned with a sedentary lifestyle and winter use. For highly mobile communities, the effort involved in building such structures might not have been justified. In archaeological material, this is often assessed in conjunction with specific combinations and quantities of finds (Leskonen 2002; Ojanlatva & Alakärppä 2002; Mökkönen 2011, 35–41).

The emergence of sedentism during the Stone Age was gradual (Kabo 1986, 208; Zaliznyak 1989, 19; Demchenko 2017, 174; Haas 2021). However, even returning to the same place in annual cycles can be interpreted as increasing sedentism (Bergsvik 2001, 6). Several features are discussed as signs of sedentism including the composition of artefacts found at the settlement site. The presence of certain types of finds (e.g., woodchopping tools, pottery, grinding stones), or more precisely their absence, have been used to justify seasonal rather than the permanent settlement in Estonia in the Stone Age (Sander & Kriiska 2021, 9; Sander 2023, 29–32).

Sunken-floor buildings have been primarily interpreted as winter and/or stationary dwellings, and this has been corroborated by ethnographic data (Gurina 1951, 117; Gilman 1987, 541–542; Mökkönen 2011, 21). Although some rare evidence exists of people living in pit-houses during the summer (Gilman 1987, 542), above-ground dwellings are primarily perceived as having been used in summer. This is especially true where no traces of a hearth can be found (Gurina 1951, 117–118; Isaenko 1976, 123; Pesonen 2002). In contrast, the presence of stone-built hearths is interpreted as an indicator of a winter house (see, e.g., Girininkas 2009, 231). In Ukraine, Pre-Pottery Stone Age pit-houses have been unambiguously interpreted as winter residences. Their absence has even been argued as an indicator that the site was used only in the summer (Zaliznyak 1991,

122). On the other hand, ethnographic data from northern hunter-fisher-gatherers reveals that above-ground dwellings are also sometimes used in winter (e.g., Lukyanchenko 1997, 107; Sokolov 2010).

Regarding the Stone Age pit-houses of the northwestern part of the East European Plain that this thesis explores, it cannot be postulated that they were only used in winter. Most likely, however, most of them were related to the (semi)sedentary way of life. Winter dwellings can be assumed for the Jägala Jõesuu V and Lommi III pit-houses, where most of the finds were located inside the dwellings (Papers II–III). Other sites were multiple visited by the Stone Age people, often had a few asynchronous dwellings and palimpsests (Gurina 1967; Kalechits 1987; Papers II, III and IV). However, the difference between small round houses and large oval or rectangular houses may also reflect different uses of space due to specific cultural or economic factors. In large houses, most activities likely took place indoors, as evidenced by finds located exclusively inside, while small buildings were primarily used for shelter, with most work likely performed outside.

Digging is required to build a pit-house. In Fennoscandia, a conceptual link between the emergence of pottery – which also requires digging for clay mining – and the increase in the number of pit-houses was proposed (Herva et al. 2017). However, in the northwestern part of the East European Plain this link cannot be established. While the emergence of pit-houses in coastal Estonia is roughly synchronous to the emergence of pottery, in Lithuania and Belarus pit-houses existed long before the Pottery period and their number did not increase after the beginning of pottery use. In Latvia, the known structures were mostly above-ground during the whole Stone Age period.

Some transformations in architecture during the Stone Age can be noticed in different regions of the northwestern part of the East European Plain. Traces of above-ground structures were documented in the whole area from the earliest stages of the Pre-Pottery Stone Age, however, only beginning with 4th millennium it become possible to reveal some details in their structure – and only in Latvia and Lithuania. During this period, dwellings were composed of big rectangular post-based constructions.

Rounded pit-houses of small sizes existed in Lithuania from the Final Paleolithic to the Bronze Age (Rimantienė 2016, 50–51; Šatavičius 2016, 27). In Estonia, however, a new form of architecture, i.e., oval pit-houses appeared at the beginning of the 5th millennium calBC (Paper I). The influence was mostly likely from Finland and Karelia because nothing is known about dwellings of this period to the east from the northern coast of Estonia. In Finland and Karelia, oval, round and rectangular (with rounded corners) pit-houses appeared during the Pre-Pottery Stone Age (Pankrushev 1978, 58–59; Zhulnikov 2003, 33–45; Mökkönen 2011, 26–27; Kriiska et al. 2016). In Estonia, rectangular pit-houses with rounded corners and post-based constructions from the 4th millennium calBC were found (Papers I, III and IV). They appeared here in the context of the Comb Ware cultural complex. Since the middle of the 4th millennium calBC, a rectangular-cornered form of pit-house spread widely across Finland, Karelia and Northern

Sweden, replacing earlier rounded forms (Karjalainen 1999, 188). This marks the early stages of log construction usage (see e.g., Weslager 1969). In the northwestern part of the East European Plain, the earliest rectangular-cornered pit-houses are dated to the 3rd millennium calBC, but already in the context of early farmers (Kriiska & Nordqvist 2021).

The 4th millennium calBC was not only a time of extensive contacts, but its first half was also a period of material cultural unification. This period is marked by Comb Ware pottery, common art forms and a series of tool forms in the northern and eastern Baltic, as well as by the use of specific raw materials, such as metatuff, amber and flint, even in areas where they did not naturally occur (e.g., Zhulnikov 2008; Kriiska 2015; Tarasov & Nordqvist 2022; Paper II). Moreover, ancient DNA studies indicate that the spread of the Comb Ware cultural complex involved migration (e.g., Solberg 1989; Skoglund et al. 2014; Saag et al. 2017). Nevertheless, the architecture does not take a ‘universal’ form across the area.

In Belarus, the continual use of rounded houses tradition throughout the Stone Age can be traced, while rectangular pit-houses appeared mainly at the end of the Stone Age – probably under the influence of Trypillian architecture – and were common for the Bronze Age (Kordysh 1953; Neprina 1976; Paper V). Above-ground dwellings have also been found for different periods of the Stone Age in Belarus, but because of their small number and unidentified structures, no conclusions on their details can be made.

Thus, despite the uneven coverage of archaeological research and material for the northwestern part of the East European Plain as a whole, regional differences in dwellings can be seen from the earliest stage of people habitation in the region. It is important to notice that these differences are related more to the geography of the sites rather than their chronology and cultural attribution. However, even dwellings found in the same geographical conditions and same period demonstrated variation (Halén 1996, 285; Grøn 1995; 2003, 696). This can be explained by the different functions of the dwellings, seasonal differences, permanence of the settlement, or number of inhabitants. Differences in dwellings within a single cultural community may be related to the cultural traditions of multiple communities, which may indicate that archaeological cultural attributions are inaccurate and require more detailed analysis. On the other hand, the differences may be because innovations arriving with new populations were not immediately apparent or were not apparent at all, unless there was a complete population change. The latter assumption seems more probable and can help to answer the question of why similar types of dwellings continue to exist in different regions over hundreds of years. This can be seen in both the pit-houses of the Narva culture and Comb Ware cultural complex in Estonia (Paper I) and in the pit-houses of the Late Narva culture, Neman culture and Dnieper-Donec cultural complex of southern Lithuania and Belarus (Paper V). Similar observations have been made in other regions as well (e.g., Vybornov & Stavitsky 2022, 85).

Based on territory requirements of Stone Age hunter-fisher-gatherers, it is supposed that the population of Estonia during the final stage of Narva culture

and the beginning of the Comb Ware cultural complex (ca. 3900 calBC) was, at a maximum, about 6,000 people, and by 2000 calBC it could have increased to a maximum of 10,000 people (see Kriiska et al. 2020, 141–142). Allotting three to 15 people per dwelling means there should have been roughly 400 to 2,000 dwellings functioning simultaneously in Estonia at the beginning of the 4th millennium calBC. According to ethnographic data, stationary dwellings are in use for 15 to a hundred(s) years, depending on the type of construction, environments and traditions of reusing the same dwellings. Moreover, people move as the resources around them (primarily firewood) become depleted (Grøn & Kuznetsov 2003, 219; Kelly et al. 2005, 407). In addition, temporary camps and seasonal structures also certainly existed. Consequently, just in Stone Age Estonia there must have been dwellings in the thousands.

The remains of a bit more than 200 dwellings have been discovered in the whole northwestern part of the East European Plain to date (see Fig. 6 and Appendix 1). Thus, the question remains: Are settlement sites with dwellings yet to be discovered or have the remains simply been lost to time or poor excavation methods? Most likely, pit-houses were less numerous in the research area than in Fennoscandia and Karelia. Furthermore, ethnographic data gives evidence of transportable conical constructions widely used by traditional northern hunter-fisher-gatherer's societies regardless of their cultural and linguistic background (e.g., Ränk 1951, 10–11; Kodolányi 1980, 128; Lukyanchenko 1997). These are light constructions and would not have left archaeological traces. This type of dwelling could have been prevalent in Stone Age Estonia, Latvia, Lithuania and also Belarus. Even at sites with a rich cultural layer, concentrations of finds at the places of temporal dwellings may go unnoticed. This is especially true if dwellings were repeatedly built at the same site.

10. CONCLUSION

In this thesis, all currently available data on Stone Age architecture from the north-western part of the East European Plain – including more than 200 dwellings – are analysed in detail. This is the first comprehensive regional summary of all known Stone Age dwellings discovered in the large area southeast of the Baltic Sea, covering Estonia, Latvia, Lithuania, and Belarus (Appendix 1). The main types of buildings as well as their relative chronology were determined, and all the preserved features of construction, internal organisation, external appearance and possible activities of the inhabitants were reconstructed and described. All the possible pit-houses of hunter-fisher-gatherers from Estonia, as well as those which had been typo-chronologically attributed to the 4th millennium calBC from Belarus, were radiocarbon dated (Appendix 2). This accounts for 30% of all radiocarbon dates for dwellings in the northwestern part of the East European Plain.

Research on Stone Age architecture in the northwestern part of the East European Plain began seriously only after the 1950s, and data on it grew slowly and unevenly. Different levels of preservation, influenced by how the dwelling was destroyed, post-deposition processes, natural environmental impacts, and variations in field documentation methods – all produce uneven amounts of data. Despite challenges in identifying dominant trends across the entire region, some localised architectural traditions were observed.

The combination of methods used in this thesis allowed for extracting information on the construction and organisation of dwellings, whether excavated recently or several decades ago. Although the buildings, tools used, and materials cannot be completely reconstructed, some assumptions and conclusions could still be drawn. According to the available data, dwellings featured vertical post-based timber structures. The main tools associated with the building process are stone and bone axes and adzes, found at the examined settlement sites.

For some pit-houses in Estonia and Belarus, it was concluded that the dwellings extended beyond the area of the sunken floor. However, no features of the internal organisation of the dwellings were identified. Most of the dwellings had hearths without stone constructions. Certain types of activities conducted by the inhabitants were identified in some dwellings through specific finds, e.g., quartz and flint knapping, and grinding (Papers II–IV). Bone and amber processing had previously been identified by other researchers. It is also clear that these pit-houses served not only protective and residential functions, but also production, storage, and ritual purposes (Chapter 7). It is possible to suggest that the inhabitants of the pit-houses were at least partially sedentary in Estonia and Belarus.

Furthermore, the estimated population of Stone Age Estonia suggests that many Stone Age dwellings are still waiting to be discovered. While some may have been destroyed by subsequent land use, others may have already been excavated but simply not recognised. This further suggests that a review of archival materials and old collections can help reveal at least some of these

dwellings as demonstrated by Riigiküla I, Lommi III and Jägala Jõesuu V (Papers I, III and IV).

The thesis's main goal – namely, to determine the overall developmental trends of Stone Age architecture in Estonia, Latvia, Lithuania, and Belarus and to identify their territorial, cultural and chronological features – was achieved. Of course, this merely reflects the current state of our knowledge, and certain periods and regions require further research due to limited data availability. Most of the results from the study of the Stone Age hunter-fisher-gatherer architecture of the 5th and 4th millennia calBC in the northwestern part of the East European Plain have been published in Papers I–V (Fig. 31).

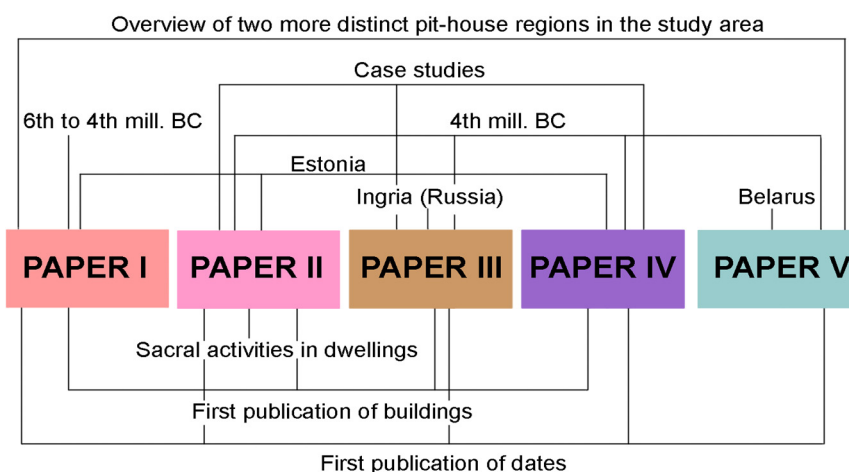


Fig. 31. Graphic scheme describes the main content of published papers (Graphic: I. Khrustaleva).

The relatively small number of currently known Stone Age dwellings in the research area, particularly their absence across large inland territories, is most likely due to insufficient research in these regions. Nevertheless, based on the available data, distinct zones of dwelling distribution with varying characteristics can be clearly identified in the northwestern part of the East European Plain.

For the Pre-Pottery Stone Age, two distinct zones of dwelling distribution were identified. The first encompasses the sites in Lithuania and Latvia, while the second zone encompasses eastern Belarus. In both zones, oval and round pit-houses are the main forms of dwelling, also observed in surrounding areas. For the earlier period of the Pottery Stone Age, i.e., for the 5th millennium calBC, too few dwellings are known to draw conclusions about their features; however, this period saw the appearance of pit-houses in Estonia (Fig. 32). In Lithuania, the tradition of pit-houses continued from the preceding periods. This development of pit-houses has been associated with the Narva culture.

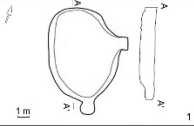
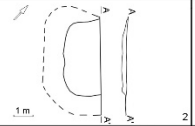
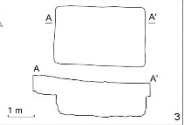

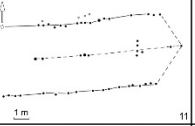

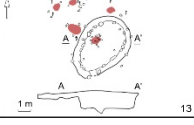
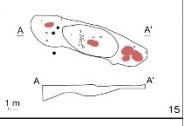
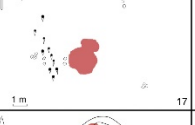
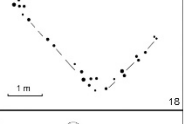
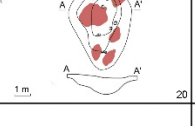
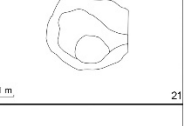






Country	Building type	5 mill. BC	4 mill. BC	3 mill. BC			
Estonia	pit-houses						
	above-ground dwellings	?		?			
Latvia	pit-houses	-	?	-			
	above-ground dwellings	-					
Lithuania	pit-houses		?				
	above-ground dwellings	-					
Belarus	pit-houses	-					
	above-ground dwellings	-	?	?			
Symbols		 -A	 -B	 -C	 -D	 -E	 -F

Fig. 32. Scheme showing trends in Stone Age architectural development in the north-western part of the East European Plain according to the current state of knowledge. 1 – Riigiküla I (Gurina 1967, figs. 10 and 14); 2 – Jägala Jõesuu V (Paper I, figs. 5–6; Paper IV, fig. 16); 3 – Narva-Jõesuu IIB (Vanhanen et al. 2023, figs. 5–6); 5 – Jägala Jõesuu V (Paper IV, fig. 16); 11 – Zvidze (Loze 1988, fig. 18); 12 – Leimaniški (Vankina 1980, fig. 10); 13 – Pakretuonės 3 (Girininkas 2009, fig. 179); 15 – Nida (Rimantienė 2016, fig. 41); 16 – Remains of buildings are unknown; 17 – Pakretuonės 1 (Girininkas 2009, fig. 180); 18 – Daktariškė 1 (Butrimas 2019, fig. 195); 20 – Juravičy III (Isaenko 1976, fig. 32); 21 – Navasiolki 1 (Lakiza et al. 2006, fig. 1); ‘?’ – The known building remains do not provide sufficient information about architectural details, ‘-’ – No building remains known. Symbols: A – Outlines of the pit; B – Concentration of finds; C – Post hole; D – Wooden post; E – Hearth; F – Stone (Drawing: I. Khrustaleva).

Moving into the 4th millennium calBC, the dwellings are concentrated in two areas: first, Estonia, Latvia and Lithuania, and second, northern and eastern Belarus. For the first group, clear pit-houses are known only in northern Estonia (plus one supposed from northern Latvia) and similar to those found in Karelia and Finland. In southern Estonia, Latvia, and Lithuania, only post-based above-ground dwellings are known (with one exception from northern Latvia) (Fig. 32). These dwellings have been associated with the Comb Ware cultural complex and the Late Narva culture. For the second group, oval and round pit-houses are characteristic of the second group and have been attributed to the Dnieper-Donec cultural complex.

In the 3rd millennium calBC, dwelling distribution changed significantly. Most of these dwellings are above-ground and found primarily in Lithuania, while in Estonia, Latvia, and Belarus, only a few are known (Fig. 32). Pit-houses were found in Estonia, Lithuania, and Belarus (Fig. 32). Many of these dwellings might be associated with the Corded Ware cultural complex.

In general, the thesis indicated that Pottery Stone Age pit-houses were distributed unevenly in different areas. First, a clear ‘northern tradition’ was identified, which includes the northern coastal zone of Estonia, western Russia (Karelian Isthmus and Karelia), and Finland. This tradition significantly differs from the ‘southern tradition’, which was identified in southeastern Lithuania and Belarus. More noticeably, by the 4th millennium calBC, these two ‘traditions’ were split by large areas of southern Estonia, Latvia, Lithuania, and northern Belarus, where ubiquitously only above-ground dwellings are known. These different traditions appear to have developed independently in their respective regions, where architectural forms were shaped by varying cultural and environmental factors.

Three major conclusions may be drawn regarding the distribution of various types of dwellings in the northwestern part of the East European Plain:

1. In several regions, even within the same settlements, different types of dwellings coexisted.
2. Within the same chronological period and within the context of a single archaeological culture or cultural complex, different types of structures existed in various zones.
3. Dwellings located in the same geographical zone could be similar in form and size, even if they belonged to different chronological periods and archaeological cultures.

Different types of dwellings cannot be strictly associated with different seasons of use (there is no reason to claim that pit-houses were only for winter and above-ground dwellings only for summer). They also cannot be fully explained by regional or natural differences. The presence of the same types of dwellings across different chronological stages does not necessarily mean that the cultural traditions or ethnic groups responsible for them remained the same. All of this suggests that the types of dwellings were influenced by a complex set of factors, including not only natural conditions and traditions but also seasonality and family size.

On the one hand, variations in dwellings within the same cultural complex may be attributable to the cultural traditions of different groups within it, suggesting that archaeological cultural attributions are inaccurate and require more detailed analysis. On the other hand, the reason may lie in the fact that architecture developed according to its own principles, independent of specific archaeological cultures. Innovations introduced by new populations may not have manifested immediately, or at all, unless there was a complete population replacement. Among these possibilities, the latter hypothesis seems more likely.

The relatively small number of known Stone Age dwellings in the northwestern East European Plain highlights the significant potential for further study. This finding suggests that pit-houses may not have been the dominant architectural form in this region during the Stone Age. Therefore, future research should focus on identifying dwellings that leave less distinct archaeological traces compared to sunken structures.

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SUMMARY IN ESTONIAN

Süvendpõhjalised ehitised Ida-Euroopa lauskmaa loodeosas V-IV aastatuhandel eKr

1. Sissejuhatus

Euroopa metsavööndi kiviaegsed kütt-kalur-korilaste ehitised jäetakse sageli arhitektuuri määratluse raamidest teenimatult välja, kuigi need vastavad kõigiti selle mõiste kriteeriumidele. Nende eripära seisneb selles, et peamiselt puidust või puust ja pinnasest ehitised on säilinud halvasti ning pakuvad seetõttu vähe teavet algupäraste struktuuride rekonstrueerimiseks. Niisuguste ehitiste leviala ja kronoloogia on väga lai ning hõlmab muu hulgas käesolevas doktoritöös käsitletavaid Baltimaid ja Valgevenet.

Säilivus ning erinevad kaevamis- ja dokumenteerimistehnikad on põhjus, miks andmed kiviaja ehitiste kohta on sellel alal ebaühtlased. Ainult väike osa neist on dateeritud radiosüsiniku meetodil. Senini ei olnud selge, kas erinevate ehitiste tüüpide ja konkreetsete arheoloogiliste kultuuride, looduslike tingimuste või geograafiliste piirkondade vahel on seos või see puudub. Enamik andmeid Euroopa metsavööndi kiviaegsete ehitiste kohta on avaldatud vaid osaliselt ja erinevates keeltes. Ehitised on atribueeritud ja tõlgendatud vastavalt piirkondlikele arusaamadele arheoloogilistest kultuuridest, mis sageli ei võimalda neid omavahel võrrelda. Seetõttu on tekkinud vajadus süstematiseerida Ida-Euroopa lauskmaa loodeosa kiviaegse arhitektuuri andmestikku.

1.1. Uurimisküsimused

Käesolevas doktoritöös on koondatud andmed enam kui kahesaja ehitisjäänuse kohta, mida tõlgendatakse kui kiviaegseid hooneid ja mis pärinevad XII aastatuhandest kuni III aastatuhande lõpuni eKr (jn 1; lisa 1 ja 3). Nende tõlgendamiseks ning rekonstrueerimiseks kasutatakse võrdlusmaterjalina andmeid ja analooge naaberaladelt Soomest, Venemaa lääneosast ja Põhja-Ukrainast, vähemal määral ka Rootsist, Norrast ja Taanist.

Põhiline uurimisobjekt on V ja IV aastatuhandest eKr pärnevad kütt-kalur-korilaste süvendpõhjalised elamud, sest need kujutavad endast kõige selgema arhitektuuri jälgi ning neid on võimalik ka rohkem või vähem usaldusväärselt siduda arheoloogiliste kultuuridega ja dateerida hoonete täitepinnasest leitud esemete põhjal. *Süvendpõhjaliste elamutena* käsitletakse siin arheoloogilisi ehitiste jäänuseid, millel on kunstlikult süvendatud põrandaosa, sõltumata selle sügavusest.

Uurimistöö peamine eesmärk oli teha kindlaks kiviaja kütt-kalur-korilaste elamutüüpide arengu üldised suundumused V ja IV aastatuhandel eKr Eestis, Lätis, Leedus ja Valgevenes ning tuvastada nende territoriaalsed, kultuurilised ja kronoloogilised eripärad.

1.2. Doktoritöö struktuur

Doktoritöö koosneb sünteesivast tekstist, mis hõlmab laia spektrit Euroopa metsavöötme kiviaja arhitektuuri uurimisega seotud teoreetilistest ja metodoloogilistest aspektidest, koondvaadet Ida-Euroopa lausmaa loodeosa XII–III aastatuhande eKr arhitektuurile ning viiest aastatel 2020–2023 avaldatud artiklist.

I artiklis antakse ülevaate Eesti kiviaja arhitektuurist, tuginedes kuni 2019. aastani publitseeritud ja välitööde aruannetes esitatud andmetele. Eelkõige käsitletakse selles Kõnnu, Jägala Jõesuu V ja Riigiküla I (venekeelses kirjanduses on kasutatud ka nime Narva või Narva-Riigiküla) asulakohtadest väljakaevatud süvendpõhjaliste ehitiste jäänuseid. Peamise tähelepanu all on Riigiküla I asulakoha andmestik ja selle ainese dateerimine. Artiklis määratletakse asulakoha kasutuse kronoloogilised etapid, täpsustakse avastatud elamujäänuste kultuuriline kuuluvus ja esitatakse oletus, et seal on olnud veel ehitisi, mida varem ei eristatud. Samuti piiritletakse Skandinaaviat, Soomet, Loode-Venemaad ja Eesti põhjarannikut hõlmava süvendpõhjaliste elamute „põhjatraditsiooni“ leviku lõunapiiri.

II artiklis on peamine uurimisobjekt Jägala Jõesuu V asulakoha keraamilised figuurid. Nende seisundi ja ruumilise jaotuse analüüs asulakohal näitas, et esiteks on need seotud elamutega ning teiseks on paljud esemed minevikus tahtlikult purustatud. Saadud andmed, mis võimaldasid järeldada, et elamutes viidi läbi sakraalseid toiminguid, koos üldise ülevaatega Läänemere piirkonna kiviaegsetest savifiguuridest moodustavad artikli aluse. Lisaks sisaldab artikkel Eesti kiviaja keraamiliste kujukeste kataloogi.

III artiklis käsitletakse Lommi III asulakoha materjale, kus tänu kõrgetasemelisele väliandmete dokumentatsioonile ja üksikasjalikule andmeanalüüsile õnnestus kinnitada süvendpõhjalise elamu olemasolu rohkem kui 80 aastat pärast kaevamisi. Artiklis pööratakse erilist tähelepanu Euroopa metsavööndi kiviaja ehitiste uurimise teoreetilistele aspektidele. Lommi III asulakohalt saadi vanimad usaldusväärsed radiosüsiniku dateeringud kammkeraamika kultuurikompleksi elupaigale Läänemere lõunarannal.

IV artiklis esitatakse üksikasjalik analüüs Jägala Jõesuu V asulakoha materjalidest. See on Eesti ainus ühekihiline kammkeraamika kultuurikompleksi asulakoht, kust on välja kaevatud süvendpõhjalise ehitise jäänused ja kus rakendati väljakaevamiste ajal kolmemõõtmelist dokumenteerimist. Uurimistöö tulemusena õnnestus teha kindlaks avastatud objektide kronoloogia, määratleda erinevad tegevustsoonid asulakohal, täpsustada andmeid süvendpõhjalise elamu kohta ning saada tõendeid veel ühe maapealse ehitise olemasolust, mida varem ei eristatud.

V artiklisse on koondatud andmed Valgevene kiviaja arhitektuuri kohta ja analüüsitud süvendpõhjalisi elamuid, mis arvatavasti pärinevad IV aastatuhandest eKr. Tehti kindlaks, et sealne arhitektuur ei olnud seotud süvendpõhjaliste elamute „põhjatraditsiooniga“ (vt I artikkel), vaid tõenäoliselt on kohalikku päritolu.

2. Kultuuriline kontekst ja kronoloogia

Savinõude kasutamine Ida-Euroopa lausmaa loodeosas sai alguse VI aastatuhande lõpus ja V aastatuhande alguses eKr kütt-kalur-korilaste kogukondades. Et vältida määratluste lahknevusi (nagu keraamikaga mesoliitikum, metsaneoliitikum, paraneoliitikum jne), kasutatakse käesolevas väitekirjas termineid *keraamikaeelne kiviaeg* ja *keraamikaga kiviaeg* ning üksikasjalikumalt kirjeldatakse ainult neid keraamikaga kiviaja arheoloogilisi kultuure, mis on uurimistöö keskmes (jn 2–4). Kultuuriliste koosluste puhul, milles eristatakse mitut varianti, tüüpi või isegi kultuuri (enamasti keraamika erinevuste alusel), kasutatakse terminit *kultuurikompleks*. Nende hulka kuuluvad Dnepri-Donetsi kultuurikompleks, kammkeraamika kultuurikompleks ja nõorkeraamika kultuurikompleks.

Kõige varasem keraamikaga kiviaja arheoloogiline kultuur, mis hõlmas peamise osa uurimisalast – Eesti, Läti, Leedu, Põhja-Valgevene ja osa Lääne-Venemaast, oli Narva kultuur (5400–1800 eKr). Valgevene lääne- ja edelaosas, samuti Kirde-Poolas, Loode-Ukrainas ja Lõuna-Leedus eristatakse Neemeni kultuuri (5500–2000 eKr). Valgevene ida- ja kaguosa, samuti väikest osa Venemaast ja Ida-Ukrainast hõlmas sel ajal Dnepri-Donetsi kultuurikompleks (5000–1800 eKr). Lõuna-Skandinaavias seondus vanim keraamika Ertebølle kultuuriga (4700–3800 eKr) ning Lõuna-Soomes, Karjalas ja Karjala maakitsusel Venemaal Sperringsi kultuuriga (5300–3800 eKr); neist idas paiknes Kargopoli kultuur (5200–3700 eKr). Venemaa Euroopa-osas eristatakse Valdai (5900–2100 eKr) ja Ülem-Volga (5700–5000 eKr) kultuuri, mille alad hõlmas osaliselt hiljem Ljalovo kultuur (5200–3700 eKr).

Dnepri-Donetsi kultuurikompleks ja Neemeni kultuur piirnesid lõunas ja läänes varaste viljelusmajanduslike kultuuridega. Paelkeraamika kultuur (5700–5000 eKr) levis ulatuslikel aladel Saksamaal, Tšehhis, osas Austriast, Sloveenias, Horvaatias, Ungaris, Slovakkias, Poolas, Lääne-Ukrainas, Moldovas ja Lääne-Rumeenias. Bug-Dnestri kultuur (6000–4700 eKr) eksisteeris Edela-Ukrainas mõnda aega koos Tripolje kultuuriga (5400–2700 eKr) ning lõpuks hõlmati sellesse.

Kuigi mõned arheoloogilised kultuurid ja kultuurikompleksid (Valdai, Neemen, Narva ja Dnepri-Donets) jätkasid osaliselt oma eksistentsi varasematel aladel, tekkisid IV aastatuhandel eKr uued ühiskondlikud võrgustikud, mis väljendusid ühelt poolt kultuurirühmade mitmekesisuses kultuurikomplekside raames ning teiselt poolt import- ja eksootiliste esemete ja materjalide laialdases levikus. Need muutused olid eelkõige seotud kammkeraamika kultuurikompleksi (3900–1750 eKr) kujunemisega Soomes, Lääne-Venemaal, Eestis, Lätis, Põhja-Leedus ja Valgevenes.

III aastatuhandel eKr levisid Ida-Euroopa lausmaa loodeosas varased viljelusmajanduslikud kultuurid: nõorkeraamika kultuurikompleks (2800–2000 eKr) ja keraamiforate kultuur (3000–2400 eKr). See tõi kaasa märkimisväärsed muutusi paljudes eluvaldkondades, sealhulgas asustussüsteemis. Venemaa ja Valgevene piiril eristatakse Põhja-Valgevene (Žižitsa) kultuuri (2900–1800 eKr).

Arheoloogilised andmed koos vana DNA uuringute tulemustega näitavad, et kiviaja materiaalse kultuuri muutusi Euroopa metsavööndis võisid mõjutada nii migratsioonilised kui ka jätkuvusprotsessid. Migratsioonid on tuvastatud kammkeraamika kultuurikompleksi ja nõorkeraamika kultuurikompleksi puhul, samas kui pikaajaline areng ilma märkimisväärse rahvastikuvahetusega on tõestatud Narva ja Neemeni kultuuri puhul. Neis toimunud innovatsioonid olid arvatavasti seotud eelkõige ideede leviku, kultuurilise ülekande ja teabevahetusega. Nii-sugused erinevad protsessid pidid ühel või teisel viisil avalduma ka arhitektuuris, mis sõltub suuresti ühiskonna traditsioonidest.

3. Kiviaja arhitektuur Ida-Euroopa lauskmaa loodeosas ja naaberaladel

3.1. Uurimislugu

Esimene Ida-Euroopa lauskmaa kiviaegne süvendpõhjaline ehitis avastati ja tõlgendati elamuna 1910. aastal Venemaal Nižni Novgorodi kubermangus. See ei saanud siiski kiviaegse elamuarhitektuuri süstemaatilise uurimise aluseks. Ainult mõned hüpoteesid kiviaja elamute olemasolu kohta esitati sel ajal Soomes ja Baltimaades. Rootsis, Norras, Soomes ja Karjalas leiti esimesed ehitised 1920.–1930. aastatel, kuid nende uurimine kulges aeglaselt (jn 5).

1930. aastate lõpul avastati Eestist ja Lätist mitmeid maapealsete ehitiste jäänuseid, kuid need avaldati hiljem ning nende struktuur, kuju ja mõõtmed on paljudel juhtudel senini ebaselged. Baltimaadest, suuremal alal Venemaa Euroopaosast ja Valgevenest, leiti ehitiste jäänuseid alles iga-aastaste ulatuslike arheoloogiliste välitööde tulemisel, mis algasid 1940. aastate lõpul. Baltimaade esimesed süvendpõhjalised elamud kaevati välja Riigiküla I asulakohast Kirde-Eestis 1950. aastate alguses (I artikkel). Valgevenes leiti esimene süvendpõhjaline ehitis 1956. aastal Sasonka asulakohast, enamik seni teadaolevatest elamutest aga 1960.–1970. aastatel (V artikkel).

Kiviaja ehitiste uurimise tõus (eelkõige süvendpõhjaliste ehitiste osas) toimus 1990. aastatel Soomes, Karjalas, Põhja-Norras ja Rootsis. Need tööd panid aluse nüüdisaegsele arusaamale süvendpõhjaliste elamute struktuurist, kronoloogiast ja territoriaalsest levikust.

Leedus ja Valgevenes avastati 1990.–2000. aastatel peaaegu kakskümmend ehitise jäänust, Eestis ja Lätis teostati 2010. aastatel väljakaevamisi neljal uuel ehitisjäänustega asulakohal.

3.2. Kiviaegsete elamute jaotumine uuritava alal ja naaberriikides

Ida-Euroopa lauskmaa loodeosast on praegu teada üle kahesaja kiviaegse elamu (lisa 1). Nende jaotumine on ebaühtlane ja seotud peamiselt piirkondadega, kus on tehtud ulatuslikke arheoloogilisi väljakaevamisi (jn 6).

Eestist on avastatud 10 süvendpõhjalist ja 16–18 maapealset ehitist (I artikkel). Need on leitud Läänemere rannikul, Lõuna-Eestis Võrtsjärve ja Ida-Eestis

Peipsi järve kallastel ning neisse suubuvate jõgede valgaladel paiknevatest asulakohtadest. Vanimad maapealsed ehitised pärinevad keraamikaelsest kiviajast, süvendpõhjalised elamud seonduvad Narva kultuuri, kammkeraamika kultuurikompleksi ja nöörikeramika kultuurikompleksiga.

Lätist on avastatud kaks süvendpõhjalist ning 65–70 maapealset elamut. Ainult üks süvendpõhjaline ehitis pärineb keraamikaelsest kiviajast, ülejäänud seonduvad hilise Narva kultuuri (Särnate tüüp) ja kammkeraamika kultuurikompleksiga. Need paiknevad kahes piirkonnas: Läänemere rannikul ja Lubāna nõos riigi idaosas. Leedust on teada 30 süvendpõhjalist ja 36 maapealset ehitist (V artikkel). Elamutega asulakohad paiknevad seal nii Läänemere rannikualal, sisemaa järvede kallastel kui ka Neemeni jõe valgalal riigi lõunaosas ja need seonduvad keraamikaelse kiviajaga (vanemad leiud dateeritakse paleoliitikumi), Narva kultuuriga ning nöörikeramika kultuurikompleksi ja/või keraamiforate kultuuriga.

Valgevenest on teada 38 süvendpõhjalist ja 20 maapealset ehitist. Need paiknevad peamiselt riigi ida- ja kaguosas, Prõpjatsi, Soži ja Dnepri jõe valgaladel ning vähemal määral Neemeni jõe valgalal läänes (V artikkel). Elamud seonduvad keraamikaelse kiviajaga ning Neemeni kultuuri, Dnepri-Donetsi kultuurikompleksi, Põhja-Valgevene kultuuri ja nöörikeramika kultuurikompleksiga.

Teadaolevate süvendpõhjaliste ehitiste jaotus naaberladel on samuti ebaühtlane. Fennoskandias on väljakaevatud ehitiste arv oluliselt väiksem, kui on kiviaegsetest süvendpõhjalistest ehitistest jäänud tänapäevasel maapinnal nähtavate hoonelohkude arv. Need dateeritakse enamasti V–III aastatuhandesse eKr. Tuhanded süvendpõhjalised elamud paiknevad Skandinaavia põhja- ja kümned lõunaosas. Rootsis on enam hoonelohke teada riigi põhjaosast. Norra põhjarannikult tuntakse tuhandeid hoonelohke ja mõnesajal neist on tehtud väljakaevamisi. Soomest on teada rohkem kui 3500 süvendpõhjalist ehitist, millest enam kui 120-l on tehtud väljakaevamisi. Peamiselt tuntakse neid Läänemere rannikupiirkondades ja Saimaa järvistu kallastel riigi kaguosas. Enamik ehitisi pärineb kiviajast, peamiselt vahemikust 4000–2300 aastat eKr.

Lääne-Venemaal on kiviaja erinevate perioodide elamujäänuseid põhjalikult uuritud Karjalas ja Kesk-Volga piirkonnas. Kokku on seal tuvastatud üle tuhande hoonelohu ja peaaegu 400-l neist on tehtud väljakaevamisi. Enamik ehitisi on seotud kammkeraamika kultuurikompleksiga ja Volosovo kultuuriga IV aastatuhandest eKr. Teistes Venemaa Euroopa-osa piirkondades on pikaajaliste ja ulatuslike väljakaevamiste tulemusel avastatud vaid mõnikümmend elamut üksikutes kohtades.

4. Materjalid

Doktoritöös käsitletakse enam kui 200 Ida-Euroopa lausmaa loodeosa kiviaegset elamujäänust, mis on dateeritud XII–III aastatuhandesse eKr (lisa 1 ja 3). Analüüsitud on Eesti, Läti, Leedu ja Valgevene asulakohtade kohta avaldatud andmeid ja arhiividokumente. Täpset elamute arvu pole siiski võimalik kindlaks

teha, kuna mitmes asulakohas ei ole maapealsetel ja mõnikord ka süvendpõhjalistel ehitistel selget struktuuri ning need on määratletud vaid oletuslikult. Kokku on kogutud andmed 26/28 elamu kohta 11 asulakohast Eestis, 67/72 elamu kohta 17 asulakohast Lätis, 66 elamu kohta 31 asulakohast Leedus ja 58 elamu kohta 31 asulakohast Valgevenes (jn 6: A). Mõnda kirjanduses mainitud kiviaja ehitisjäänust ei käsitleta väitekirjas seetõttu, et nende kohta on olemas liiga vähe andmeid või on ebaselge kronoloogia. Võimalik, et mingite elamute kohta käiv teave (näiteks väikestes kohalikes ajakirjades ja kogumikes avaldatud või ainult välitööde aruannetes mainitud) on käesolevas uurimuses jäänud tähelepanuta, kuid arvatavasti on neid siiski vähe.

Uurimise lähtepunkt on Eesti. Artiklites I–IV käsitletakse Eesti kiviaegse Narva kultuuri ja kammkeraamika kultuurikompleksi asulakohti, kust on leitud kütt-kalur-korilaste süvendpõhjaliste elamute jäänuseid (jn 6: B). Muu hulgas kirjeldati ja määrati peaaegu 11 500 Jägala Jõesuu V asulakoha arte- ja ökofakti (artiklid II ja IV), üle 1500 Lomm III asulakoha artefakti (artikkel III) ning üle 1200 Riigiküla I asulakoha keraamikakillu (artikkel I). Tehti ka nende tüpoloogiline ja ruumianalüüs. Uuritud materjale säilitatakse Tartu Ülikooli ja Tallinna Ülikooli arheoloogiakolleksioonides ning Peterburis Venemaa Teaduste Akadeemia Peeter Suure nimelise Antropoloogia ja Etnograafia Muuseumi (Kunstkamera) arheoloogia osakonnas. Kasutatud arhiivimaterjale (kaevamisaruanded (6), kaardid, plaanid, fotod, joonised ja välitööde päevikud) säilitatakse Tallinna Ülikooli arheoloogia teaduskogu arhiivis ja Tartu Ülikooli arheoloogiaarhiivis, samuti Moskvas Venemaa Teaduste Akadeemia Arheoloogia Instituudi arhiivis ning Peterburis Venemaa Teaduste Akadeemia Materiaalse Kultuuri Ajaloo Instituudi arhiivis. Lisaks kasutati kõiki juba varem avaldatud andmeid.

Teave Leedu elamute kohta põhineb avaldatud allikatel ja kaevamisi juhatanud arheoloogide küsitlusel (Egidijus Šatavičius, Vygandas Juodagalvis ja Gytis Piličiauskas, detsember 2022). Läti elamute andmed koguti arhiivi- ja avaldatud allikatest ning nelja kaevamiste juhataja küsitlusest (Normunds Grasis, detsember 2022; Lars Larsson, Ilga Zagorska, Valdis Bērziņš, juuni 2024). Samuti kasutati mõningaid kaevamisaruandeid (10), jooniseid ja fotosid, mida säilitatakse Riias Läti Rahvusliku Ajaloomuuseumi arhiivis.

Teave Valgevene kiviaegsete elamute kohta on kogutud arhiivi- ja avaldatud allikatest (V artikkel). Töös kasutati kaevamisaruandeid (18), kaarte, jooniseid ja fotosid, mida säilitatakse Valgevene Rahvusliku Teaduste Akadeemia Teaduslikus Keskarhiivis. Küsitleti ka kaevamisi teostanud arheolooge (Igor Jezепенko, Nikolai Krivaltsevitš, Maksim Tšernjavski, Jelena Kalečits ja Aleksandr Kolosov, veebruar ja oktoober 2018, veebruar 2019, jaanuar 2020 ja mai 2021). Mõne elamu kultuurilise kuuluvuse kindlakstegemiseks analüüsiti kokku u 200 artefakti, mida säilitatakse Valgevene Rahvusliku Teaduste Akadeemia Ajaloo Instituudi arheoloogilistes kogudes.

Võrdlusmaterjalina kasutati Venemaa lääneosa ja Soome kiviaegsete elamute kohta avaldatud andmeid. Skandinaavia ja Põhja-Ukraina kiviaja arhitektuuri

käsitletakse vaid üldistatud kujul. Lisaks kütt-kalur-korilaste elamutele on uurimisse kaasatud mõnevõrra ka avaldatud andmeid varase viljelusmajandusliku kiviaja arhitektuuri kohta.

5. Kiviaegse arhitektuuri uurimise meetodid

Peamised raskused, mis on seotud kiviaja elamute tuvastamise ja tõlgendamisega, on halb säilivus, puudulikud kaevamistehnikad ja halb dokumentatsioon. Arheoloogid ei saa muuta säilivust, samas uurimismeetodid arenevad pidevalt. Selles peatükis esitatakse ülevaade meetoditest, mida on rakendatud Ida-Euroopa lausmaa loodeosa kiviaja elamute uurimisel käesolevas dissertatsioonis (jn 7).

5.1. Välitööde meetodid

Kiviaegsete asulakohtade kaevamised Ida-Euroopa lausmaa loodeosas ja selle lähialadel on teostatud peamiselt tehniliste 0,05–0,2 m paksuste kihtide kaupa, erandiks vaid mõned asulakohad. Leiud on kogutud 0,5 × 0,5 või 1 × 1 m ruutude kaupa. Enamikul XX sajandil kaevatud Valgevene, Läti ja Leedu asulakohtadel ning Eestis Riigiküla I asulakohal tehti kaevamisi labidatega ja ilma sõelumiseta. Välitööde joonistele kanti kultuurkihi objektid ja leidude üldarv ruutude kaupa. Eestis on vaatlusalustest asulakohtadest ainult Jägala Jõesuu V ja Lommi III leiud ja kultuurkihi objektid dokumenteeritud kolmemõõtmelises koordinaatsüsteemis (jn 8).

5.2. Välitööde järgsed meetodid

Kõigi doktoritöös käsitlevate asulakohtade leiumaterjali puhul kasutati tüpokronoloogilist analüüsi ja see oli tihti ainus võimalus ehitisjäänuste dateerimiseks. Lisaks tehti elamutest 14 radiosüsiniku (AMS) dateeringut: üheksa Eestist ja viis Valgevenest (lisa 1 ja 2). Need moodustavad 30% kõigist Ida-Euroopa lausmaa loodeosa elamute radiosüsiniku dateeringutest.

Arheostratigraafiline analüüs ja superpositsiooni printsiipt, mis keskenduvad kultuurkihi sisemisele struktuurile, on meetodid, mille eesmärk on selgitada kultuurkihi säilivust ja koostist ning määrata arheoloogilist kronoloogiat (jn 9). Ruumianalüüs, mille jaoks saab rakendada erinevaid tehnikaid ja tulemuste esitamise viise (jn 10), on väga oluline kiviaja asulate struktuuri uurimisel. Artefaktide remonteerimine (aplikatsioonimeetod), mida varem uuritava alal peaaegu ei ole kasutatud, aitab lahendada kultuurkihi säilivuse, eriaegsete materjalide olemasolu ja lasuvuse küsimusi. See meetod võimaldab määrata struktuuride piire, tuvastada erinevusi majandus- ja elustruktuuride vahel ning selgitada nende kronoloogilisi seoseid.

Eksperimentaalsetes ja etnoarheoloogilistes uuringutes kasutatakse erinevaid meetodeid, kuid nende ühine eesmärk on rekonstrueerida (või vähemalt oletada) mineviku elutegevuse üksikasju, et paremini mõista arheoloogilisi andmeid. Kuna mõlemaga seonduvad teemaatikad on väga ulatuslikud, on dissertatsioonis

toodud vaid mõningad andmed, mis aitavad illustreerida elamute ehitamise, sisustamise ja toimimisega seotud põhiideid (jn 11).

6. Asulate kujunemise protsess ja kiviaja elamute tuvastamine

Selleks et aru saada, kuidas töötada erinevatelt arheoloogilistelt objektidelt saadud andmetega, on oluline teada, kuidas need kujunesid ja aja jooksul muutusid. On vaja leida ja mõista varasemate protsesside nähtavaid jälgi.

6.1. Maastik ja elukoha valik

Hulk kriteeriume, mis ei muutunud sadade ja isegi tuhandete aastate jooksul, olid aluseks kiviaja inimeste elukohavalikule. Kütt-kalur-korilased pidasid esmajärjekorras oluliseks mugavat asukohta, vajalike elatusressursside olemasolu, turvalisust, kuid tõenäoliselt on oma osa olnud ka traditsioonidel ja kultuurilistel iserasustel.

6.2. Elamu ehitamise protsess ja ehitusriistad

Maja ehitamine hõlmab kindlat tegevuste jada, mis sisaldab koha valimist ja ettevalmistamist, ehitise esialgset planeerimist ja ehitusetappe, karkassi, katuse, seinete, põranda rajamiseks vajalike ehitusmaterjalide kogumist ja ettevalmistamist, süvendpõhjaliste hoonete puhul lohu kaevamist maapinda, tugeva ja stabiilse karkassi püstitamist ning lõpuks välist ja sisemist viimistlust. See nõuab teatud hulga inimeste osalemist ja erinevate tööriistade kasutamist erinevate tööoperatsioonide jaoks (jn 12). Planeerimis- ja ehitusprotsessidega võisid kaasneda rituaalid ja teatud maagilised toimingud, mille kohta annavad tunnistust etnograafilised andmed.

6.3. Asulakoha kujunemine

6.3.1. Kultuurkihi moodustumise protsess

Kultuurkiht hakkab moodustuma mingil alal antropogeense mõju tagajärjel. Pärast hoonete rajamist koguneb kultuurkiht ehitiste sise- ja väliskülgedele erinevalt, sõltudes inimtegevuse tüübist ja intensiivsusest, pinnasest ja kliimast. Pikaajalise elamise tulemusel samas kohas võib kultuurkihi paksus hoone välisküljel olla märkimisväärne, mis on jälgitav näiteks tänapäevastes linnades (jn 13). Kultuurkihi tekke kiirus hoone sees sõltub põrandakatte tüübist ja koristamise regulaarsusest.

Dissertatsioonis käsitletavate Ida-Euroopa lausmaa loodeosa ehitisjäänustega asulakohtade keskmine kultuurkihi paksus liivikutel on 0,3–0,4 m. Ainult mõnel, eriti turbas paikneval asulakohal võib kultuurkihi paksus ületada 1 m. Liivases pinnases orgaanilised materjalid praktiliselt ei säili. Tänapäevasel maapinnal ei ole muistsetest elamutest jäänud lohkusid näha. Tõenäoliselt on selle põhjuseks nende alade aktiivne majanduslik kasutamine uusajal, mistõttu on kiviaja elamute avastamiseks vajalik teha väljakaevamisi (jn 14). Enamikule uuritud

süvendpõhjalistele ehitistele on iseloomulik see, et leidude kontsentratsioon on hoonete sees oluliselt suurem kui selle ümber.

6.3.2. Ehitiste hävimise protsess

Kiviaja puitkonstruktsioonide hävimise stsenaariumid võisid olla erinevad. Need võisid põleda, mädaneda, olla lammutatud ja/või ümber ehitatud. Sõltuvalt hävimisviisist on süvendpõhjaliste ehitiste jäänused erineva väljanägemise ja säilivusega ning maapinnal nähtavad lohud erineva kujuga (jn 15, 16). Mõju avaldas ka see, kas kohta kasutati edasi või ei.

6.4. Kiviaja arhitektuuri avastamine ja tõlgendamine

Kui kiviaegse süvendpõhjalise ehitise põrandat võib avastada isegi väikeste väljakaevamiste korral, näiteks tranšee või prooviauguga, tänu selle nähtavusele (mõnikord ainult teatud tingimustel; jn 17) kaevandi profiilis või elamulaiguna horisontaalpinnal, siis maapealseid rajatisi on enamasti võimalik kindlaks teha ainult ulatuslike väljakaevamistega. Orgaanilisest materjalist detailide puudumisel on need tuvastatavad ainult leidude kontsentratsioonide või vastupidi, tühjade alade järgi. Eriti tähtsad võivad selleks olla kivitöötlemise mikrojääkide kontsentratsioonid, väikesed luu- ja pähklikoorte tükid (jn 18) ning tuleasemed.

Süvendpõhjalisi ehitisi tõlgendatakse sageli talviste ja maapealseid suviste elamutena. Siiski osutavad etnograafilised andmed, et erinevad põhjapoolsed kütt-kalur-korilaste kogukonnad võisid suvel elada ka süvendpõhjalistes ja talvel maapealsetes ehitistes. Ka tulease ei ole tingimata vaid talvise elamu kohustuslik atribuut.

6.5. Tuleasemed ja kiviaja elamud

Ida-Euroopa lausmaa loodeosas asuvatele kiviaegsetele asulakohtadele on iseloomulikud peamiselt ümarad kividega või kivideta maapinda süvendatud või maapinnal paiknenud tuleasemed. Erinevaid tuleasemeid ei kasutatud mitte ainult hoonetes, vaid ka väljaspool ehitisi. Siiski ei ole neid alati lihtne dateerida ega tõlgendada, kuna tulejälgi on asulakohtades tavaliselt palju ja need võivad olla eriaegsete sündmuste või looduslike põlengute tagajärg. Seetõttu võib sõe kasutamine kiviaja asulakohtade dateerimisel ja tuleasemete tõlgendamine konkreetse arheoloogilisse konteksti olla ekslik. Samas aga sõltuvalt tuleaseme kasutamise kestusest, konstruktsioonist, küttematerjali tüübist ja pinnase omadustest ei pruugi tulejäljed üldse säilida (vt jn 19).

7. Kiviaja ehitiste funktsioonid

Kiviaegsed ehitised täitsid tõenäoliselt mitut funktsiooni, mis võisid omavahel kombineeruda erinevates proportsioonides. Eelkõige kaitseb elamu oma elanikke ebasoodsate keskkonnategurite eest, seal elatakse ja hoitakse varusid, samuti võib see täita ka sakraalset- ja tootmisfunktsiooni.

Kuna maja on elamu mingile inimrühmale, sõltus selle suurus, kuju ja sise-mine ruumijaotus esmajoones selle rühma suurusest ja struktuurist. Paraku on andmed Ida-Euroopa lauskmaa loodeosa elamute sisemise korralduse kohta pea olematud. Tõendid võimaliku mööbli kasutamise kohta majades on olemas ainult viljelusmajanduslikest kultuuridest (jn 20), kuid käesolevas väitekirjas uuritud elamute puhul võib siiski vähemalt oletada pinnasest lavatsite ja mõne süvend-põhjalise elamu puhul ka taimsetest materjalidest valmistatud mattide kasutamist.

Tõendid sakraalse tegevuse kohta elupaikades on mõnel juhul otseselt seotud elamutega. Sellise tunnuseks käsitletakse väitekirjas Jägala Jõesuu V asulast leitud tahtlikult purustatud saviesemeid. Eraldi tempelrajatisi, nagu neid on teada ennekoike viljelusmajanduslike kultuuride puhul (jn 21), metsavöötme kiviaeg-setest kütt-kalur-korilaste asulakohtadest leitud ei ole.

Piiratud ruumiga elamus sai teha vaid teatud liiki tootmistegevust, mis ei sega-nud igapäevaelu ja mida sai läbi viia vähese valgustuse korral. Nende hulka kuu-lusid eelkõige nahkade töötlemine, kivi lõhestamine, luutöötlemine, kivist või luust tööriistade lihvimine ja teritamine. Enamik kiviaja elamutes leitud tootmis-tegevuse tõendeid on seotud kivitöötlemisega, kuna selle jäljed (kilud, nukleused, mikrojääd, lihvimiskivid jne) säilivad kõige paremini.

Kiviaegsete elamute kasutamist hoiustamiskohana võib oletada esmajoones etnograafiliste andmete põhjal. Kuigi asulates võisid olla spetsiaalsed rajatised toiduarvude ning jahi- ja kalapüügiinventari jaoks, hoiti tõenäoliselt osa toidu-aineid, kööginõusid ja isiklikke esemeid elamutes.

8. Kiviaja elamute rekonstruktsioonid

Elamute ehitust ja välimust mõjutasid majandusviisid, kultuuritraditsioonid, loo-duslikud tingimused, ehitusmaterjalide omadused, ehitajate oskused ning ühis-konna sotsiaalse organisatsiooni tüüp. Rekonstrueerimise ülesanne on luua või-malik versioon olemasolevast objektist, tuginedes arheoloogilistele tõenditele, elamute kujutistele ning etnograafilistele ja eksperimentaalsetele andmetele.

Kiviaja elamute kujutised on kogu maailmas väga haruldased ja neid teatakse enamasti ainult keraamikaelsest kiviajast (jn 22). Vaid väikest osa neist saab seostada reaalselt arheoloogilistele andmetega (jn 23), mistõttu on võimalik ehi-tiste konstruktsioonide üksikasju uurimispriirkonnas rekonstrueerida ainult kaud-sete tunnuste ja nende kogumite järgi. Etnoarheoloogilised uuringud ja eksperi-mentaalsed tööd mängivad siin peamist rolli.

Eesti ja Soome esimesed kiviaja elamute graafilised rekonstruktsioonid, mis loodi 1910. ja 1930. aastatel, põhinesid pigem etnograafilistel andmetel kui arheoloogilistel tõenditel (jn 24). Need kujutised mõjutasid pikka aega nii aru-saamu kui ka järgmisi rekonstruktsioone metsavööndi kiviaegsete elamute välja-nägemisest. Kokku on teada vähem kui 10 Ida-Euroopa lauskmaa loodeosa kivi-aegsete elamute graafilist rekonstruktsiooni ja ainult mõned neist vastavad arheo-loogilistele tõenditele, enamik põhineb vaid autorite kogemusel ja kujutlusvõimel (jn 25).

Arheoloogiliste andmete kohaselt eksisteerisid eri piirkondades kiviaegsetel kütt-kalur-korilastel erinevat tüüpi ehitised. Eelkõige olid need püstpost- või rõhtpalkkonstruktsiooniga karkassrajatised. Rõhtpalkidest süvendpõhjalisi ehitisi on leitud Soomest, Põhja-Skandinaaviast, Karjalast ja Venemaalt Volga-Oka jõgede vaheliselt alalt. Ida-Euroopa lauskmaa loodeosast tuntakse ainult postkonstruktsiooniga ehitisi. Võisid eksisteerida ka kaldus seintega/katusega või kaarja raamistikuga ehitised ning maa-aluse karkassiga süvendpõhjalistel ja väikeste või üldse puuduvate maapealsete vertikaalsete seintega elamutel võis olla näiteks kahe kaldega katus, mis toetus maapinnale.

Vähestele andmetele põhinedes näib, et püstpostkonstruktsiooniga elamute vertikaalsed seinad ehitati peamiselt lehtpuudest, samas kui Soome ja Karjala rõhtpalkidest elamutes kasutati peamiselt mäнди, harvem kaske. Seinte ja katuse katmiseks võidi tarvitada põimitud puuksi ja pilliroogu, soojustatuna sambla, heina ja lehtedega, või heina koos kasetohu, rohumattide, mulla ja turbaga ning samuti loomanahku.

Põrandakatte jäänuseid on leitud väga harva, neid teatakse vaid mõnest soosulakohast. Peamiselt kasutati männi- või kuusekoort, harvem kasetohtu. Üksikute Soome asulakohtade puhul on oletatud ka puidust põrandaid. Tõenäoliselt olid Ida-Euroopa lauskmaa kiviaegsetes elamutes enamasti siiski ilma kõvakatteta põrandad.

9. Ida-Euroopa lauskmaa kiviaegne arhitektuur

Selleks et jälgida arhitektuuritraditsioonide arengut ning näha piirkondlikke erinevusi, vaadeldakse käesolevas ülevaates kõiki Ida-Euroopa lauskmaa loodeosa kiviaegseid elamuid (jn 26–30; lisa 1 ja 2). Samuti antakse lühike ülevaade naaberalade kiviaegsetest ehitistest. Enamasti on kõige selgemaid arheoloogilisi jälgi jätnud süvendpõhjalised elamud, mis on seetõttu paremini identifitseeritavad ja suurima teabeväärtusega arhitektuuriajaloo allikas. Seetõttu on ka käesoleva doktoritöö keskmes V aastatuhande eKr ja eriti IV aastatuhande eKr süvendpõhjalised elamud.

9.1. Keraamikeelse kiviaja arhitektuur

Ida-Euroopa lauskmaa keraamikaelse kiviaja elamuid (u 12 000 – 5600/5200 aastat eKr) vaadeldakse ühiselt, kuna sageli ei ole neid võimalik täpselt dateerida ega atribueerida. Üks selle perioodi oletatav ehitis on teada Eestist, seitse elamut kahest asulakohast Lätist, 14 elamut kaheksast asulakohast Leedust ja 22 elamut 12 asulakohast Valgevenest.

Eristada võib kahte peamist piirkonda, kus paikneb enamik teadaolevaid keraamikaelse kiviaja ehitisjäänuseid. Üks neist hõlmab Lääne-Läti, Lõuna-Leedu ja Loode-Valgevene (läänerühm) ning teine Valgevene ida- ja kaguosa (kagurühm). Enamik ehitistest, 17 lääne- ja 14 kagurühmas, on süvendpõhjaliste elamute jäänused. Läänerühma süvendpõhjalised elamud on peamiselt ovaalse või ümara põhjaga ning nende pindala 7–14 m². Ka kagurühma elamupõhjad on ovaalsed või ümarad, kuid väiksemad, 3–10 m² suuruse pindalaga. Naaberaladelt

tuntakse keraamikaelsest kiviajast enamasti ovaalseid või ümaraid ehitisjäänuseid, mis võivad olla nii süvendpõhjalised kui ka maapealsed.

9.2. Keraamikaga kiviaja arhitektuur

Võrreldes eelmise perioodiga tuntakse keraamikaga kiviajast elamuid tunduvalt rohkem.

9.2.1. V aastatuhat eKr

V aastatuandest eKr teatakse peamiselt Narva kultuuri ehitisi: seitse elamut neljast Eesti asulakohast ja neli kuni kuus ehitist viiest asulakohast Leedus. Üksteist ehitist on süvendpõhjalised, millest saadud üheksa radiosüsiniku dateeringud on keskmistatult vahemikust 4900–4100 eKr.

Narva kultuuri elamute kohta on veel liiga vähe andmeid, et arutleda selleaegsete arhitektuuritraditsioonide arengu üle. Siiski näitavad kaks piirkonda, kus on teada Narva kultuuri elamud, ehitiste mitmekesisust kujus ja mõõtudes. Eesti Kõnnu ja Leedu süvendpõhjalised elamud on sarnased mõõtmetelt (3–7 m²), samas on Leedu elamujäänused peamiselt ümmargused, Kõnnu ehitiste põhjad aga kolmnurksed või ristkülikukujulised. Vähemalt ida pool ei ole neile analooge. Riigiküla I asulakoha ehitisjäänused on ovaalse kujuga, mõõtudega 48–56 m² ja üks neist on koridorilaadse sissepääsuga. Analooge neile pakuvad Valdai kultuuri elamud Lääne-Venemaal.

9.2.2. IV aastatuhat eKr

Kammkeraamika kultuurikompleksist IV aastatuhandel eKr on teada 38–45 elamut 17 asulakohast Eestist ja Lätist. Nende hulgas on ainult kaks süvendpõhjalist ristkülikukujulist ehitisjäänust Eestist ja üks oletatav Lätist. Ülejäänud on maapealsete rajatiste jäänused, mis eristuvad postiaukude ridadena, puitvaiade tükkidena, liivaläätседena turbal, tuleasemetena ja leidude kontsentratsioonialadena. Kolmest Eesti elamust on saadud viis radiosüsiniku dateeringut keskmistatud vanusega 3800–3100 aastat eKr.

Läti ja Leedu asulakohtadest on leitud üle 45 maapealse rajatise, mis kuuluvad hilisesse Narva kultuuri ja pärinevad tõenäoliselt IV aastatuhandest eKr. Sama aastatuhande Neemeni kultuuriga seonduvad kaks süvendpõhjalise ehitise jäänust ühest asulakohast Valgevenes ja üks süvendpõhjaline ehitis ühest Leedu asulakohast. Paraku on andmed nende kohta väga napid.

Dnepri-Donetsi kultuurikompleksist on teada 29 elamut, neist 19 süvendpõhjalist on leitud 14 asulakohast Valgevenes. Süvendpõhjalistest ehitistest on saadud viis radiosüsiniku dateeringut keskmistatult vahemikust 3600–3000 aastat eKr.

Võrreldes varasemaga on IV aastatuhandel eKr elamutüüpide jaotus keerulisem kui varasematel perioodidel. Kammkeraamika kultuurikompleksis võib eristada kahte piirkonda. Esimene on Eesti põhjarannik, Soome ja Karjala ümarate/ovaalsete süvendpõhjaliste elamutega IV aastatuhande esimesel poolel

ning riskülikukujuliste süvendpõhjaliste elamutega selle aastatuhande teisel poolel. Maapealseid rajatise leidub harva, kuid neid siiski esineb. Eesti süvendpõhjalised ehitised on põhja kujult ja mõõtudelt sarnased eelneva Narva kultuuri Riiagiküla I asulakoha elamutega. Teine piirkond hõlmab Lāti ja sealt on teada peamiselt maapealsete elamute jäänuseid, mis eristuvad enamasti riskülikukujuliste postkonstruktsioonidena. Selle traditsiooni seos varasemete perioodidega ei ole jälgitav.

Samal ajal on Leedus hilisest Narva kultuurist teada vaid riskülikukujulisi maapealseid ehitisjäänuseid. Ainus oletatav süvendpõhjaline ehitise on Lõuna-Leedus ja võib olla seotud Neemeni kultuuriga. Teistsugune olukord on Valgevenes – sealsest Dnepri-Donetsi kultuurikompleksist ja Neemeni kultuurist on teada peamiselt süvendpõhjalisi elamuid. Nende põhja kujud ja mõõdud erinevad oluliselt kammkeraamika kultuurikompleksi süvendpõhjalistest ehitistest ning meenutavad rohkem neid, mis eksisteerisid siin varasematel perioodidel.

9.2.3. III aastatuhat eKr

Seitse elamut Leedus, millest kolm on süvendpõhjalised, seonduvad hilise Narva kultuuriga ja pärinevad arvatavasti III aastatuhandest eKr. Ühest süvendpõhjalisest ehitisest on saadud dateering keskmistatud vanusega 2200 aastat eKr. Mõned maapealsed elamud võisid olla vaiehitised, mille põrand paiknes maapinnast kõrgemal. Üks puidust vaiade jäänustega hoone on teada Valgevenest ja seondub Põhja-Valgevene kultuuriga. Eestist, Lätist, Leedust ja Valgevenest on teada 17 nöörikeramika kultuuri elamut. Neist seitse on süvendpõhjalised, ovaalse või riskülikukujulise põhjaga, mõõtmetega 8–48 m². Seitse radiosüsiniku dateeringut Eesti ja Leedu ehitistest on keskmistatud vanusega 2800–2600 aastat eKr.

9.3. Üldised tähelepanekud ja diskussioon

Ei ole võimalik teha kindlaks, millal, miks ja kus hakati süvendpõhjalisi ehitise esmakordselt rajama, kuid neid on kasutatud laialdaselt eri aegadel ja erinevatel aladel. Etnograafilised andmed näitavad, et süvendpõhjaliste ehitiste olemasolu peamised „tingimused“ on mittetroopiline kliima, vähemalt kahe hooaja mudel asustuses ning sõltuvus toiduvarudest elamu kasutamise ajal. Need uuringud osutavad, et süvendpõhjalisi elamuid kasutati peamiselt (kuigi on ka erandeid) talvel, mis osutab püsivale asustusele sellel aastaajal. Loomulikult ei saa väita, et kõiki doktoritöös kajastatud Ida-Euroopa lausmaa loodeosa kiviaegseid süvendpõhjalisi elamuid kasutati ainult talvisel ajal, kuid tõenäoliselt oli enamik neist siiski seotud paikse(ma) austusetapiga.

Ida-Euroopa lausmaa loodeosa erinevates piirkondades võib täheldada kronoloogilisi muutusi kiviaegses arhitektuuris. Maapealsete rajatiste jälgi on leitud kogu alal juba keraamikaelse kiviaja etappidest, kuid alles alates IV aastatuhandest eKr on vähemalt Lätis ja Leedus võimalik määratleda nende kuju, mõõtmete ja konstruktsioonide detaile, mis viitab arhitektuuritraditsiooni vahetumisele.

Leedus rajati ümmargusi väikeseid süvendpõhjalisi ehitisi paleoliitikumi lõpust kuni pronksiajani, samas kui Eestis on süvendpõhjalisi hooneid teada alles alates V aastatuhande esimesest poolest eKr. Uus arhitektuurivorm tekkis siin tõenäoliselt Soome ja Karjala alalt lähtunud mõjutustel, kus ovaalseid, ümaraid ja ümardatud nurkadega nelinurkseid elamuid ehitati juba keraamikaelsel kiviajal. IV aastatuhandel eKr rajati Eestis kammkeraamika kultuurikompleksi kontekstis postkonstruktsioonis ümardatud nurkadega nelinurksed elamuid. Alates IV aastatuhande keskpaigast eKr levisid kindlapiirilised riskülikukujulised süvendpõhjalised elamud Soomes, Karjalas ja Põhja-Rootsis, vahetades välja ümarvormsed ehitised, samas kui Ida-Euroopa lausmaa loodeosas dateeritakse vanimad sellise kujuga elamud III aastatuhandesse eKr.

Valgevenes ehitati ümmarguse süvendpõhjaga elamuid kogu kiviaja vältel, riskülikukujulised vormid ilmusid peamiselt kiviaja lõpul tõenäoliselt mõjutatuna Tripoli kultuuri arhitektuurist ja olid eriti iseloomulikud pronksiajale. Maa-pealseid elamuid on tuvastatud kiviaja erinevatest perioodidest, kuid andmestik nende kohta on väga napp.

Erinevused ehitiste tüüpides on seotud pigem nende regionaalse asukohaga kui kronoloogia ja kultuurilise atribuutsiooniga. Siiski erinevad mõnikord üksteisest isegi samades geograafilistes tingimustes leitud ja samaaegsed ehitised. See võis olla tingitud sesoonsusest, kasutuskestusest, elanike arvust ja muudest põhjustest. Nii jääb ühelt poolt selgusetuks, mis on tegelikult arheoloogide poolt nähtavate elamujäänuste kuju ja mõõtmete erinevuste põhjus – ainult tüpologia, kultuuridünaamika heiastus ja kultuurimuutuste protsessid, kohalike ja sissetoodud traditsioonide samaaegne eksisteerimine või erineva paiksuse astmega asustusviis. Teiselt poolt tekib küsimus, miks samad elamutüübid eksisteerivad sadu või isegi tuhandeid aastaid ja kas need on tegelikult ka samad või lihtsalt sarnased arheoloogilisest vaatenurgast.

Eestis puhul oletatakse, et Narva kultuuri lõpul ja kammkeraamika kultuurikompleksi algul (u 3900 aastat eKr) võis sealne rahvaarv olla maksimaalselt u 6000 inimest. Keskmise arv inimesi, kes võisid elada ühes elamus, võis olla vahemikus 3–15. Seega pidi IV aastatuhande algul eKr Eestis samal ajal olema 400–2000 elamut. Lisaks vahetasid inimesed elukohti, ehtasid elamuid ümber ja uuendasid ehitisi ning eksisteerisid ka ajutised laagrid ja hooajalised rajatised. Seega pidi kiviaja jooksul rajatama Eestis tuhandeid elamuid. Siiski on kogu Ida-Euroopa lausmaa loodeosast avastatud praeguseks ainult veidi üle kaheksa ehitise jäänuse. Lisaks ebapiisavale uurimisele võib see osutada ka sellele, et seal ei rajatudki süvendpõhjalisi elamuid arvukalt. Etnograafilistest andmetest on teada, et traditsioonilistes põhjamaistes kütt-kalur-korilaste kogukondades kasutati sõltumata nende kultuurilisest ja keelelisest kuuluvusest laialdaselt portatiivseid koonusjaid ehitisi. Sellised rajatised või muud ajutised elamud, mis ei jätnud maha ilmselgeid arheoloogilisi jälgi, võisid Eestis, Lätis, Leedus ja Valgevenes olla kõige levinumad kiviaja arhitektuuri vormid.

10. Kokkuvõte

Käesolev väitekiri on esimene regiooniuulene kokkuvõte kõigist teadaolevatest kiviaegsetest elamutest, mis on avastatud laialt alalt Ida-Euroopa lauskmaa loodeosast. Koondatud on andmed rohkem kui kaheksa Eestist, Lätist, Leedust ja Valgevenest väljakaevatud kiviaegse elamu kohta, mis pärinevad XII–III aastatuhandest eKr. Hoonete kuju ja mõõtmete analüüsi tulemusena on määratletud nende peamised tüübid, selgitatud suhteline ja absoluutne kronoloogia, rekonstrueeritud kõik säilinud konstruktsioonilised eripärad, sisemine struktuur ja välisilme, samuti mõned nende asukate tegevused, ning kirjeldatud neid. Suur osa uuringute tulemustest on avaldatud artiklites I–V (jn 31).

Tehti kindlaks, et Ida-Euroopa lauskmaa loodeosa kütt-kalur-korilaste hooned olid postkonstruktsioonidega. Paljud süvendpõhjalised ehitised eristusid ümbritsevast alast suurema leidude kontsentratsiooni poolest, kusjuures mõnel puhul võib arvata, et süvendatud põrandapind hõlmas ainult osa suuremast rajatisest.

Elamutüüpide kaardistamine näitas nende paiknemistsoonid erinevatel kronoloogilistel perioodidel. Keraamikaeelse kiviaja elamute puhul on näha kaks tsooni: esimene Leedus ja Lätis, teine Ida-Valgevenes. Neis mõlemas on rajatud ovaalse või ümara põhja kujuga süvendpõhjalisi elamuid, kuid erinevate mõõtudega.

V aastatuhande eKr kohta on andmestik elamute kohta veel ebapiisav. Sellest ajast pärinevad Eesti esimesed süvendpõhjalised ehitised, mis seonduvad Narva kultuuriga (jn 32). Leedus jätkus juba varem alguse saanud süvendpõhjaliste elamute ehitustraditsioon.

IV aastatuhandest eKr on võrreldes varasemaga teada märksa rohkem elamuid. Need paiknevad kahes rühmas: (1) Eestis, Lätis ja Leedus ning (2) Põhja- ja Ida-Valgevenes. Baltimaadest on avastatud riskülikukujulisi süvendpõhjalisi elamuid ainult Põhja-Eestist ja Põhja-Lätist. Lõuna-Eestist ning suuremast osast Lätist ja Leedust on teada ainult postkonstruktsiooniga maapealseid ehitisi (jn 32). Lätis ja Leedus, kus need on seotud kammkeraamika kultuurikompleksi ja hilise Narva kultuuriga, on need riskülikukujulised ja suhteliselt suured. Teisele rühmale, mis kuulub Dnepri-Donetsi kultuurikompleksi, on iseloomulikud peamiselt ovaalse või ümara kujuga elamud.

III aastatuhandel eKr on toimunud olulised muutused. Enamik ehitisi seondub nöörikeramika kultuurikompleksiga. Valdav osa elamutest on maapealsed ja leitud Leedust, samas kui Eestist, Lätist ja Valgevenest on neid avastatud seni vähe (jn 32). Eestist, Leedust ja Valgevenest on teada ka mõned süvendpõhjalised elamud.

Vaadeldes keraamikaga kiviaega tervikuna, saab eristada kütt-kalur-korilaste süvendpõhjaliste elamute erinevaid levialasid. Esimene piirkond – „põhjatraditsioon“ – eristub Põhja-Eesti rannikualal, Venemaa lääneosas (Karjala maakitsus ja Karjala) ja Soomes ning erineb oluliselt „lõunatraditsioonist“ Kagu-Leedus ja Valgevenes. Need kaks ehitustraditsiooni on eriti selged IV aastatuhandel eKr, mil neid eraldab ulatuslik ala Lõuna-Eestis, Lätis, Leedus ja Põhja-Valgevenes, kust on (vaid ühe erandiga) teada ainult maapealseid elamuid. „Põhjatraditsiooni“

süvendpõhjalistest ehitistest on muu hulgas leitud tõendeid sakraalse tegevuse kohta, mida väljendavad tahtlikult purustatud miniatuursed savifiguurid.

Väitekirjas saavutati püstitatud põhieesmärk – Eesti, Läti, Leedu ja Valgevene V–IV aastatuhande eKr arhitektuuri arengusuundade kindlakstegemine ning nende piirkondlike, kultuuriliste ja kronoloogiliste iseärasuste väljaselgitamine. Kõik võimalikud Eesti kiviaja kütt-kalur-korilaste elamud ning IV aastatuhandesse eKr kuuluvad Valgevene süvendpõhjalised ehitised dateeriti radiosüsiniku meetodil (lisa 2). Uued dateeringud moodustavad 30% kõigist Ida-Euroopa lausmaa loodeosa kiviaja elamute radiosüsiniku dateeringutest.

Ida-Euroopa lausmaa loodeosa erinevat tüüpi elamute paiknemise kohta võib teha kolm olulist järeldust:

1. Mitmes piirkonnas ja isegi samades asulates oli ühel ajal erinevat tüüpi elamuid.
2. Ühe arheoloogilise kultuuri või kultuurikompleksi sees on eksisteerinud erinevate elamutüüpidega tsoone. Näiteks kammkeraamika kultuurikompleksi lõunapoolses osas tuntakse peamiselt maapealseid elamuid, põhjapoolses osas aga ka süvendpõhjalisi elamuid.
3. Erinevatesse kronoloogilistesse perioodidesse ja arheoloogilistesse kultuuridesse kuuluvad elamud, mis asuvad samas geograafilises piirkonnas, võivad olla kujult ja mõõtudel sarnased. See on näha nii Narva kultuuri ja kammkeraamika kultuurikompleksi süvendpõhjaliste elamute puhul Eestis kui ka hilise Narva ja Nemani kultuuri ning Dnepri-Donetsi kultuurikompleksi süvendpõhjaliste ehitiste puhul Lõuna-Leedus ja Valgevenes.

Erinevaid elamutüüpe ei saa kindlalt seostada nende võimalike kasutusesoonidega, pole alust väita, et süvendatud põhjaga elamud olid ainult talveks ja maapealsed suveperioodiks. Neid ei saa täielikult seletada ka piirkondlike või looduslike erinevustega. Samasugused elamutüübid erinevates kronoloogilistes etappides ei pruugi aga omakorda osutada kultuurilisele järjepidevusele. Kõik see osutab sellele, et erinevusi elamutüüpides mõjutas korraka mitu tegurit, sealhulgas mitte ainult looduslikud tingimused ja traditsioonid, vaid ka asustuse sesoonsus, perekonna suurus jne.

Ühelt poolt võisid elamute erinevused ühe kultuurikompleksi piires olla seotud näiteks sellesse kuuluvate erinevate kogukondade kultuuriliste traditsioonidega, viidates sellele, et arheoloogilis-kultuurilised atribuutsioonid on ebatäpsed ja nõuavad palju üksikasjalikumat analüüsi. Teisalt, ja küllalt usutavalt, võis põhjus seisneda selles, et arhitektuur arenes omaenda seaduste järgi väljaspool konkreetsete arheoloogiliste kultuuride raame ja uuendused, mis saabusid uue rahvastikuga, ei avaldunud kohe või ei avaldunud üldse, välja arvatud juhul, kui rahvastiku vahetus täielikult.

Suhteliselt tagasihoidlik teadaolevate kiviaja elamute arv Ida-Euroopa lausmaa loodeosast osutab kindlasti nende edasise uurimise perspektiivikusele, kuid ka sellele, et arvestama peab võimalusega, et süvendpõhjalised ehitised ei olnud kiviajal selles piirkonnas valitsev arhitektuurivorm ja senisest rohkem tuleks edaspidi otsida võimalusi, kuidas selgitada välja elamuid, millest ei jää nii selget arheoloogilist jälge kui süvendpõhjalistest hoonetest.

SUMMARY IN RUSSIAN

Углубленные постройки V–IV тыс. до н.э. в северо-западной части Восточно-Европейской равнины

1. Введение

Постройки охотников-рыболовов-собирателей каменного века в Европейской лесной зоне часто незаслуженно оставляют за рамками определения архитектура, хотя они соответствуют всем критериям этого термина. Их особенность заключается в том, что, будучи представлены в основном деревянными или дерево-земляными сооружениями, которые плохо сохраняются, они предоставляют мало информации для реконструкции оригинальных структур. Территория и хронология распространения таких построек очень широка и включает, в числе прочего, Восточную Прибалтику и Беларусь, которые рассматриваются в данной работе.

Состояние сохранности, различные техники раскопок и способы ведения документации являются причинами неравномерного количества данных о структуре построек каменного века на этой территории. Лишь небольшая часть из них имеет радиоуглеродные датировки. Нет полного представления о наличии или отсутствии связи между различными типами построек и конкретными археологическими культурами, природными условиями или географическими районами. Большинство данных о постройках каменного века, найденных в лесной зоне Европы, опубликованы лишь частично и на разных языках. Они атрибутированы и интерпретированы в соответствии с региональными пониманиями рамок археологических культур, что зачастую не позволяет сопоставлять их друг с другом. В связи с этим назрела необходимость систематизации имеющихся данных об архитектуре каменного века на северо-западе Восточно-Европейской равнины.

1.1. Вопросы исследования

В данной работе собраны сведения об остатках более чем двухсот сооружений, интерпретируемых как постройки каменного века, датированных примерно с XII до конца III тыс. до н.э., найденных в северо-западной части Восточно-Европейской равнины, т.е. Эстонии, Латвии, Литве и Беларуси (рис. 1; Приложения 1 и 3). В качестве сравнительного материала для их интерпретации и реконструкции используются данные и аналогии с сопредельных территорий: Финляндии, запада европейской части России и северной Украины, в меньшей степени Швеции, Норвегии и Дании.

Основным объектом исследования являются углубленные жилища охотников-рыболовов-собирателей V и IV тыс. до н.э., поскольку, во-первых, они представляют собой наиболее четкие следы архитектуры, во-

вторых, они могут быть более или менее надежно соотнесены с археологическими культурами и датированы по находкам из заполнения. Под *углубленными жилищами* здесь понимаются археологические остатки построек с искусственно углубленными полами любой глубины.

Основная цель исследования заключается в определении общих тенденций развития форм жилищ охотников-рыболовов-собирателей каменного века в V и IV тыс. до н. э. в Эстонии, Латвии, Литве и Беларуси, выявлении их территориальных, культурных и хронологических особенностей.

1.2. Структура диссертации

Диссертация состоит из обобщающего текста, включающего широкий спектр теоретических и методологических вопросов, связанных с изучением архитектуры каменного века лесной зоны Европы, и обзор архитектуры северо-западной части Восточно-Европейской равнины XII–III тысячелетий до н.э., и пяти статей, опубликованных в период с 2020 по 2023 год.

Статья I посвящена общему обзору архитектуры каменного века Эстонии, известной до 2019 года по публикациям и полевым отчетам. Прежде всего, в статье рассматриваются остатки углубленных построек на поселениях Кынну, Ягала Йьэсуу V и Рийгикюла I (в русскоязычной литературе использовались также названия Нарва или Нарва-Рийгикюла). Основное внимание уделено пересмотру данных поселения Рийгикюла I и датированию его материалов. В статье определены хронологические этапы существования поселения, уточнена культурная принадлежность обнаруженных здесь жилищ и высказано предположения о наличии построек, которые раньше не определялись. Очерчена южная граница распространения “северной традиции” углубленных жилищ каменного века, которая включает Скандинавию, Финляндию, северо-западную Россию и северное побережье Эстонии.

В **Статье II** главным объектом исследования являются глиняные фигурки поселения Ягала Йьэсуу V. Анализ их состояния и особенностей пространственного распределения по территории поселения показал, что, во-первых, они связаны с жилищами, а во-вторых, многие из них были намеренно разбиты в древности. Эти данные, позволившие сделать вывод о проведении сакральных действий в жилищах, наряду с общим обзором глиняных фигурок каменного века Балтийского региона, легли в основу статьи. Кроме того, в нее включен каталог глиняных фигурок каменного века Эстонии.

В **Статье III** рассматриваются материалы поселения Ломми III, где благодаря высокому качеству полевой документации и подробному анализу данных удалось подтвердить существование углубленного жилища более чем через 80 лет после раскопок. Особое внимание в статье уделено теоретическим аспектам изучения построек каменного века в лесной зоне

Европы. На поселении Ломми III были получены самые ранние достоверные радиоуглеродные даты для стоянки культурной общности гребенчатой керамики, расположенной к югу от Финского залива.

В **Статье IV** проведен полный детальный анализ материалов поселения Ягала Йыэсуу V. Это единственное в Эстонии однослойное поселение культурной общности гребенчатой керамики, включающее остатки углубленной постройки, раскопки которого проводились с использованием трехмерной документации всех находок и объектов. В результате исследования удалось установить хронологию обнаруженных объектов, определить различные зоны активности на поселении, уточнить данные об углубленном жилище, а также получить доказательства существования еще одной, наземной, постройки, о которой ранее не было известно.

В **Статье V** собраны данные по архитектуре каменного века Беларуси и проанализированы углубленные жилища, предположительно относящиеся к IV тыс. до н.э. Установлено, что эта архитектура не была связана с “северной традицией” углубленных жилищ (см. Статью I), а, вероятно, имеет местное происхождение.

2. Культурный контекст и хронология

Использование глиняной посуды в северо-западной части Восточно-Европейской равнины началось с конца VI по начало V тысячелетия до н. э. в сообществах охотников-рыболовов-собирателей. Чтобы избежать разночтений в определениях (таких как керамический мезолит, лесной неолит, паранеолит и пр.), в данной диссертации используются термины *докерамический каменный век* и *керамический каменный век*, и только археологические культуры керамического каменного века, которые в фокусе исследования, описываются более подробно (рис. 2–4). Для культурных образований, в рамках которых выделяются несколько вариантов, типов или даже культур (чаще всего на основании различий в керамике), в тексте используется термин *культурная общность*. К ним относятся днепродонецкая культурная общность, культурная общность гребенчатой керамики и культурная общность шнуровой керамики.

Самой ранней археологической культурой керамического каменного века, занимающей основную часть территории исследования – Эстонию, Латвию, Литву, северную Беларусь и часть западной России, была нарвская культура (5400–1800 лет до н.э.). В западной и юго-западной части Беларуси, а также в северо-восточной Польше, северо-западной Украине и южной Литве была выделена неманская культура (5500–2000 лет до н.э.). Восточную и юго-восточную части Беларуси, а также небольшую часть России и Восточную Украину в это время охватывала днепродонецкая культурная общность (5000–1800 лет до н.э.). В южной Скандинавии первая керамика связана с культурой Эртебёлле (4700–3800 лет до н.э.), в южной части Финляндии, российской Карелии и на Карельском перешейке – с культурой сперрингс (5300–3800 лет до н.э.). К востоку от нее небольшую

территорию занимала каргопольская культура (5200–3700 лет до н.э.). Для европейской части России были выделены валдайская (5900–2100 лет до н.э.) и верхневолжская (5700–5000 лет до н.э.) культуры, территория которых в последствии была частично занята льяловской культурой (5200–3700 лет до н.э.).

На юге и западе днепро-донецкая культурная общность и неманская культура граничили с культурами ранних земледельцев. Культура линейно-ленточной керамики (5700–5000 лет до н.э.) распространялась на обширных территориях, включая Германию, Чехию, часть Австрии, Словении, Хорватии, Венгрии и Словакии, Польшу, западную Украину, Молдову и западную Румынию. Буго-днестровская культура (6000–4700 лет до н.э.) на юго-западе Украины, какое-то время сосуществовала с трипольской культурой (5400–2700 лет до н.э.) и в конце концов была вытеснена ею.

В IV тысячелетии до нашей эры, хотя некоторые археологические культуры (валдайская, неманская и нарвская, а также днепро-донецкая культурная общность) частично продолжали существовать на прежних территориях, между людьми начали формироваться новые системы связей, которые выражались, с одной стороны, в разнообразии культурных групп, выделенных в рамках культурных общностей, а с другой – в широкой сети распространения импортных и экзотических предметов и материалов. Эти изменения были связаны, прежде всего, с формированием на территорию Финляндии, западной части России, Эстонии, Латвии, северной части Литвы и Беларуси культурной общности гребенчатой керамики (3900–1750 лет до н.э.).

В III тыс. до н. э. на северо-западе Восточно-Европейской равнины распространились культуры ранних земледельцев: культурная общность шнуrowой керамики (2800–2000 лет до н.э.) и культура шаровидных амфор (3000–2400 лет до н.э.). Это повлекло за собой значительные изменения во многих аспектах жизни людей, в том числе в системе расселения. На границе России и Беларуси была выделена северобелорусская (жижицкая) культура (2900–1800 лет до н.э.).

Археологические данные в сочетании с результатами исследований древней ДНК показывают, что на изменения материальной культуры в каменном веке в лесной зоне Европы могли влиять миграционные и непрерывные процессы. Миграции выявлены для культурной общности гребенчатой керамики и культурной общности шнуrowой керамики, в то время как длительное развитие без относительной смены населения доказано для нарвской и неманской культур. Для последних появление инноваций может быть связано прежде всего с распространением идей, культурной трансмиссией и обменом информацией. Эти различные процессы должны были найти тем или иным образом свое выражение и в архитектуре, которая во многом зависит от традиций общества.

3. Архитектура каменного века северо-западной части Восточно-Европейской равнины и соседних территорий

3.1. История изучения

Первая углубленная постройка каменного века на Восточно-Европейской равнине была обнаружена и интерпретирована как жилище в 1910 г. в Нижегородской губернии России. Тем не менее это не стало отправной точкой для систематического изучения жилищ. Лишь некоторые гипотезы о существовании жилищ каменного века выдвигались в это время в Финляндии и Прибалтике. В Швеции, Норвегии, Финляндии и Карелии первые постройки были найдены в 1920-х – 1930-х гг., но их изучение продвигалось медленно (рис. 5).

В конце 1930-х гг. в Эстонии и Латвии был обнаружен ряд остатков наземных построек, однако они были опубликованы значительно позже, а их структура, форма и размеры во многих случаях остаются неясными до сих пор. В Прибалтике, на большей части европейской части России и в Беларуси постройки были найдены только в результате ежегодных масштабных полевых работ, начавшихся с конца 1940-х гг. Первые углубленные жилища в Прибалтике были раскопаны на стоянке Рийгикюла I в северо-восточной Эстонии в начале 1950-х гг. (Статья I). В Беларуси первая углубленная постройка была найдена в 1956 году на поселении Сасонка, а большинство жилищ было открыто в 1960–1970-х гг. (Статья V).

Основной всплеск изучения построек каменного века (в первую очередь углубленных) в Финляндии, Карелии, Северной Норвегии и Швеции пришелся на 1990-е гг. Эти исследования заложили основу для современного понимания структуры углубленных жилищ, их хронологии и территориального распространения.

В Литве и Беларуси в 1990–2000-х гг., было открыто почти два десятка построек, а в 2010-х гг. в Эстонии, Латвии и Литве было раскопано четыре новых поселения с постройками.

3.2. Распределение жилищ на изучаемой территории и в сопредельных странах

На северо-западе Восточно-Европейской равнины в настоящее время известно более двух сотен жилищ каменного века (Приложение 1). Их распределение неравномерно и связано в первую очередь с регионами, где проводились масштабные раскопки (рис. 6).

В Эстонии известно десять углубленных и от 16 до 18 наземных построек (Статья I). Они найдены на поселениях, связанных с побережьем Балтийского моря, озерами Выртъярв в южной и Пейпси (Чудское) в восточной части страны, и бассейнами впадающих в них рек. Самые ранние наземные постройки относятся к докерамическому каменному веку, а углубленные жилища – к нарвской культуре, культурной общности гребенчатой керамики и культурной общности шнуровой керамики.

В Латвии обнаружены две углубленные постройки и от 65 до 70 наземных. Лишь одна углубленная относится к докерамическому каменному веку, а остальные к поздней нарвской культуре (сарнатского типа) и культурной общности гребенчатой керамики. Они находятся в двух регионах: вблизи побережья Балтийского моря и в Лубанской низине в восточной части страны. В Литве известно 30 углубленных и 36 наземных построек (Статья V). Поселения с жилищами связаны с побережьем Балтийского моря, внутренними озерами и с бассейном реки Неман на юге страны, и относятся к докерамическому каменному веку (самые древние находки датируются эпохой палеолита), нарвской культуре, культурной общности шнуровой керамики и/или культуре шаровидных амфор.

В Беларуси известно 38 углубленных и 20 наземных построек, найденных в основном в восточной и юго-восточной частях страны, в бассейнах рек Припять, Сож и Днепр, и в меньшей степени – в бассейне реки Неман на западе (Статья V). Жилища относятся к докерамическому каменному веку, неманской культуре, днепро-донецкой культурной общности, северо-белорусской культуре и культурной общности шнуровой керамики.

Распределение известных углубленных построек на соседних территориях также неравномерно. В Фенноскандии количество раскопанных построек значительно меньше количества видимых на современной поверхности жилищных западин. Датируются они в основном V–III тыс. до н.э. Тысячи углубленных жилищ расположены в северных регионах Скандинавии и десятки – в южных. Большинство жилищных западин в Швеции сосредоточено в северной части страны. На северном побережье Норвегии известны тысячи углубленных жилищ, и несколько сотен из них раскопано. В Финляндии насчитывается более 3500 жилищных западин, из которых раскопано более 120. В основном они сосредоточены на западе страны вдоль побережья Балтийского моря и на юго-востоке вокруг озера Саймаа. Основная часть построек здесь датируется каменным веком, в частности 4000–2300 лет до н.э.

На западе России остатки жилищ различных периодов каменного века детально изучены в Карелии и среднем Поволжье. Всего там выявлено более тысячи углубленных жилищ и почти 400 из них раскопано. Большинство построек связано с культурной общностью гребенчатой керамики и волосовской культурой IV тыс. до н. э. В других регионах Европейской части России несколько десятков жилищ были обнаружены лишь в отдельных пунктах в результате длительных и масштабных раскопок.

4. Материалы

В диссертации рассматривается информация об остатках более чем двух сотен жилищ каменного века на северо-западе Восточно-Европейской равнины, датируемых периодом с XII по III тысячелетие до н.э. (Приложение 1 и 3). Доступные источники, т.е. опубликованные и архивные данные, были проанализированы для поселений Эстонии, Латвии, Литвы и Беларуси.

Окончательное количество жилищ подсчитать нет возможности, так как на ряде поселений наземные, а иногда и углубленные постройки не имеют четкой структуры и лишь предположительно определены. Всего собраны данные о 26/28 жилищах на 11 поселениях Эстонии, 67/72 жилищах на 17 поселениях Латвии, 66 жилищах на 31 поселении Литвы и 58 жилищах на 31 поселении Беларуси (рис. 6: А). Некоторые упоминаемые в литературе следы сооружений на стоянках каменного века не рассматриваются в тексте из-за малого количества данных или неясной хронологии. Возможно, информация о каких-то жилищах (например, опубликованная в небольших местных журналах и сборниках, или упомянутая только в полевых отчетах) упущена в данном исследовании, но я полагаю, что она немногочисленна.

Отправной точкой исследования стала Эстония. Статьи I–IV посвящены поселениям каменного века с остатками углубленных жилищ охотников-рыболовов-собирателей нарвской культуры и культурной общности гребенчатой керамики Эстонии (рис. 6: В). Было описано: почти 11500 артефактов и экофактов для поселения Ягала-Ййэсуу V (Статьи II и IV), более 1500 артефактов для поселения Ломми III (Статья III) и более 1200 фрагментов керамики для поселения Рийгикюла I (Статья I). Был проведен их типологический и пространственный анализ. Исследованные материалы хранятся в археологических коллекциях Тартуского и Таллиннского университетов в Эстонии и в отделе археологии Музея антропологии и этнографии имени Петра Великого (Кунсткамера) РАН в Санкт-Петербурге в России. Использованные архивные данные (отчеты о раскопках (6), карты, планы, фотографии, рисунки и полевые дневники) хранятся в археологической коллекции Таллиннского университета и в архиве археологии Тартуского университета, архивах Института археологии РАН в Москве и Института истории материальной культуры РАН в Санкт-Петербурге в России. Были также задействованы все опубликованные ранее данные.

Информация о жилищах Литвы взята из опубликованных источников и личных сообщений авторов раскопок (Эгидиус Шатавичюс, Вигандас Юодагалвис и Гитис Пиличяускас, декабрь 2022 г.). Данные о жилищах Латвии были собраны из архивных и опубликованных источников и личных сообщений авторов раскопок (Нормундс Грасис, декабрь 2022 г.; Ларс Ларссон, Илга Загорска и Валдис Берзиньш, июнь 2024). Были использованы некоторые отчеты о раскопках (10), рисунки и фотографии, хранящиеся в архиве Национального исторического музея Латвии в Риге.

Информация о жилищах каменного века Беларуси собрана из архивных и опубликованных источников (Статья V). В работе использовались отчеты о раскопках (18), карты, рисунки и фотографии, хранящиеся в Центральном научном архиве Национальной академии наук Беларуси. Были опрошены исследователи, проводившие раскопки жилищ (Игорь Езепенко, Николай Кривальцевич, Максим Чернявский, Елена Калечиц и Александр Колосов, февраль и октябрь 2018 г., февраль 2019 г., январь 2020 г., май 2021 г.). Для определения культурной принадлежности некоторых жилищ было в общей сложности проанализировано около 200 артефактов из археологических

коллекций, хранящихся в Институте истории Национальной академии наук Беларуси.

В качестве сравнительного материала использованы опубликованные данные по жилищам каменного века западной части России и Финляндии. Архитектура каменного века Скандинавии, а также северной Украины привлекается лишь в обобщенном виде. Помимо жилищ охотников-рыболовов-собираателей, в исследование включены опубликованные данные по архитектуре ранних земледельцев каменного века.

5. Методы изучения архитектуры каменного века

Основными сложностями, связанными с выявлением и интерпретацией жилищ каменного века, являются плохая сохранность, несовершенные техники раскопок и ведения документации. Археологи не могут изменить сохранность, при этом методы исследований постоянно развиваются. В этой главе представлен обзор методов, использованных при изучении жилищ каменного века на северо-западе Восточно-Европейской равнины, рассматриваемых в диссертации (рис. 7).

5.1. Полевая методика

В основном раскопки стоянок каменного века на северо-западе Восточно-Европейской равнины, а также на прилегающих территориях, проводились по условным горизонтам толщиной 0,05–0,2 м, за исключением некоторых поселений. Находки собирали по квадратам 0,5×0,5 или 1×1 м. На большинстве стоянок в Беларуси, Латвии и Литве, раскопанных в XX в., а также на поселении Рийгикюла I в Эстонии, раскопки проводились лопатами, без просеивания. На полевые чертежи наносились объекты культурного слоя и общее количество находок по квадратам. В Эстонии из рассматриваемых поселений только на Ягала-Йыэсуу V и Ломми III находки и все объекты культурного слоя были задокументированы в трехмерной системе координат (рис. 8).

5.2. Пост-полевые методы

Типо-хронологический анализ применялся для материалов всех рассматриваемых в диссертации поселений и часто был единственной возможностью датировать остатки построек. Кроме того, 14 новых АМС радиоуглеродных дат было получено для жилищ: 9 для Эстонии и 5 для Беларуси (Приложения 1 и 2). Это составляет 30% от всех имеющихся дат для жилищ северо-западной части Восточно-Европейской равнины.

Археостратиграфический анализ и принцип суперпозиции, которые фокусируются на внутренней структуре культурного слоя, являются методами, направленными на исследование сохранности и состава культурного слоя и определения хронологии в археологии (рис. 9). Пространственный анализ, различные техники и способы представления результатов которого

могут использоваться (рис. 10), очень важен для изучения структуры поселений каменного века. Ремонт артефактов (метод аппликаций), который ранее практически не применялся на памятниках исследуемой территории, помогает решить вопросы сохранности культурного слоя, наличия разновременных материалов и их палимпсестов. Этот метод дает возможность установить границы структур, выявить различия между хозяйственными и жилыми сооружениями, а также определить хронологическую взаимосвязь между ними.

Экспериментальные и этноархеологические исследования используют разные методы, но имеют общую цель – реконструировать (или хотя бы предположить) детали жизни в прошлом чтобы лучше понять археологические данные. Поскольку эти темы в целом очень обширны, в диссертации приведены лишь некоторые данные, помогающие проиллюстрировать основные идеи, связанные со строительством, обустройством и функционированием жилищ (рис. 11).

6. Процесс формирования поселений и выявление жилищ каменного века

Для того, чтобы понять, как работать с данными, полученными с различных археологических объектов, важно разобраться, как они формировались и преобразовывались в течение времени. Необходимо найти и понять видимые следы предыдущих процессов.

6.1. Ландшафт и выбор места для проживания

Ряд критериев, не меняющихся на протяжении сотен и даже тысяч лет, лежал в основе выбора места для проживания людей каменного века. Для охотников-рыболовов-собирателей к ним, прежде всего, относятся удобное расположение, наличие необходимых для проживания ресурсов и безопасность, но отдельную роль также играли традиции и культурные особенности.

6.2. Процесс строительства жилища и инструменты для строительства

Строительство дома подразумевает определенную последовательность действий, включающую выбор и подготовку места, первоначальное планирование постройки и этапов строительства, сбор и подготовку строительных материалов, необходимых для каркаса, крыши, стен и пола, рытье котлована, в случае строительства углубленной постройки; возведение прочного устойчивого каркаса и, наконец, завершение внешнего и внутреннего оформления. Это требует участия определенного количества людей и использования большого набора инструментов для разных видов операций

(рис. 12). Различные процессы планирования и строительства могли сопровождаться ритуалами и некоторыми магическими действиями, о чем свидетельствуют этнографические данные.

6.3. Формирование поселения

6.3.1. Процесс формирования культурного слоя

Культурный слой начинает формироваться в результате антропогенного влияния на каком-то участке местности. После строительства различных хозяйственных построек и жилищ внутри и снаружи сооружений культурный слой накапливается по-разному, в зависимости от вида и интенсивности человеческой деятельности, почвы и климата. В результате длительного проживания на одном и том же месте мощность культурного слоя снаружи постройки может быть весьма значительной, что можно наблюдать даже в современных городах (рис. 13). Скорость накопления культурного слоя внутри жилища зависит также от типа напольного покрытия и регулярности уборки.

Для рассматриваемых в диссертации поселений с остатками жилищ северо-западной части Восточно-Европейской равнины средняя мощность культурного слоя в песчаных отложениях составляет около 0,3–0,4 м. Лишь на некоторых стоянках, особенно расположенных в торфе, толщина культурных отложений может превышать 1 м. В песчаных почвах органические материалы практически не сохраняются. На современной поверхности следы древних жилищных западин не видны, вероятно, в связи с активным хозяйственным освоением этих территорий в Новое время, поэтому для обнаружения жилищ каменного века необходимы раскопки (рис. 14). Для основной части рассматриваемых в работе углубленных построек характерна более значительная концентрация находок внутри них по сравнению с окружающей территорией.

6.3.2. Процесс разрушения постройки

Сценарии разрушения деревянных столбовых конструкций каменного века могли быть различны. Они могли сгореть, сгнить, быть разобраны и/или перестроены. В зависимости от способа разрушения остатки углубленного дома имеют различный вид и сохранность, а ямы, видимые на поверхности, – разную форму (рис. 15, 16). На это влияло и то, продолжалось ли дальнейшее использование этого места.

6.4. Выявление и интерпретация архитектуры каменного века

В то время как пол углубленной постройки каменного века можно обнаружить даже при небольших масштабах раскопок, например, при рытье траншеи или ямы, благодаря видимому (иногда только при определенных условиях; рис. 17) в профиле раскопа или на горизонтальной поверхности жилищному пятну, то наземные сооружения в основном можно выявить

только при широкой площади раскопок. Они, в отсутствие сохранившихся органических деталей, определяются только по концентрациям находок или, наоборот, пустым зонам. Особое значение могут иметь концентрации микродебитажа, мелких фрагментов костей и скорлупы орехов (рис. 18), а также наличие очагов.

Углубленные постройки чаще всего интерпретируют как зимние жилища, а наземные – как летние. Однако данные этнографии указывают на то, что разные северные общества охотников-рыболовов-собираателей могли также жить летом в углубленных постройках, а зимой в наземных. Очаг тоже не является обязательным атрибутом именно зимнего жилища.

6.5. Очаги и жилища каменного века

Поселения каменного века на северо-западе Восточно-Европейской равнины характеризуются преимущественно остатками округлых кострищ с каменными конструкциями и без них, в неглубоких ямах и на поверхности. Люди по-разному использовали различные типы кострищ не только внутри, но и снаружи жилища. Однако их не всегда легко датировать и интерпретировать, поскольку следы огня на поселениях обычно многочисленны и могут быть результатом наложения разновременных событий, а также природных пожаров. Поэтому использование древесного угля для датировки поселений каменного века, и интерпретация кострищ как связанных с конкретным археологическим контекстом, может быть ошибочным. С другой стороны, в зависимости от продолжительности использования кострища, его конструкции, типа топлива и свойств почвы следы огня могут вообще не сохраниться (рис. 19).

7. Функции построек каменного века

Постройки каменного века, вероятно, выполняли целый ряд функций, которые могли сочетаться между собой в разных пропорциях. Прежде всего, жилище защищает своих обитателей от неприятных факторов окружающей среды, оно используется для проживания и хранения запасов, также может выполнять сакральную и производственную функции.

Поскольку дом – это жилище для группы людей, то его размер, форма и внутренняя организация пространства зависели в первую очередь от размеров и структуры этой группы. Однако данных о внутренней организации жилищ каменного века на северо-западе Восточно-Европейской равнины практически нет. Свидетельства возможного использования мебели известны только для земледельческих культур (рис. 20), а для исследуемых в диссертации жилищ, как минимум, можно предположить использование земляных нар в некоторых углубленных постройках и циновок, сплетенных из растительных материалов.

Свидетельства сакральной деятельности на поселениях в некоторых случаях могут быть связаны непосредственно с жилищами. В качестве

такого признака в диссертации рассматривается присутствие преднамеренно разбитых глиняных поделок из построек поселения Ягала Йыэсуу V. Отдельных храмовых построек, какие известны в первую очередь для земледельческих культур (рис. 21), на поселениях охотников-рыболовов-собирателей каменного века лесной зоны не известно.

В ограниченном пространстве жилищ можно было осуществлять лишь некоторые виды производственной деятельности, которые не мешали жизни внутри и могли быть предприняты при слабом освещении. К ним относятся, в первую очередь, обработка шкур, расщепление камня, строгание кости, шлифовка и заточка каменных или костяных орудий. Большинство свидетельств производственной деятельности, обнаруженных в жилищах каменного века, связаны с обработкой камня, поскольку ее следы (отщепы, нуклеусы, микродебитаж, шлифовальные камни и т. д.) сохраняются лучше всего.

Об использовании жилищ каменного века для хранения можно в первую очередь предполагать исходя из данных этнографии. Хотя на поселениях могли существовать специальные сооружения для хранения запасов еды и, например, охотничьего и рыболовного инвентаря, какая-то часть продовольствия, кухонная утварь и личные вещи наверняка хранились в жилищах.

8. Реконструкции жилищ каменного века

На строительство и внешний вид жилища влияли экономика, культурные традиции, природные условия, свойства строительных материалов, мастерство строителей, а также тип социальной организации общества. В задачи реконструкции входит создание возможной версии существовавшего объекта на основе имеющихся археологических свидетельств, изображениях жилищ, этнографических и экспериментальных данных.

В целом в мире изображения жилищ каменного века очень редки и известны, в основном, только для докерамического каменного века (рис. 22). Еще меньшее количество из них можно соотнести с реальными археологическими данными (рис. 23), поэтому детали конструкции построек керамического каменного века на изучаемой территории можно реконструировать только по косвенным признакам и их совокупности. Этноархеологические исследования и экспериментальные работы играют здесь особую роль.

Первые графические реконструкции жилищ каменного века в Финляндии и Эстонии, созданные в 1910-х и 1930-х гг., были основаны больше на этнографических данных, чем на археологических свидетельствах (рис. 24). Эти изображения долгое время влияли на представления исследователей о том, как выглядели постройки каменного века лесной зоны, и на последующие реконструкции. Всего на северо-западе Восточно-Европейской равнины известно менее 10 графических реконструкций жилищ каменного века, и лишь некоторые из них соответствуют археологическим данным, в

то время как большинство остальных основано только на опыте и воображении авторов (рис. 25).

Согласно археологическим данным, в разных регионах в обществах охотников-рыболовов-собирателей каменного века существовали разные типы построек. Прежде всего, это каркасные сооружения со столбовой или срубной конструкцией. Срубные углубленные постройки были обнаружены в Финляндии, Северной Скандинавии, Карелии и Волго-Окском междуречье в России. Однако, на северо-западе Восточно-Европейской равнины известны только постройки со столбовыми конструкциями. Могли существовать постройки с наклонными стенами/крышами или арочными каркасами, у углубленных жилищ с подземными каркасами и небольшими или отсутствующими наземными вертикальными стенами, могли быть, например, двухскатные крыши, опиравшиеся на землю.

На основе немногочисленных данных можно заключить, что вертикальные стены жилищ со столбовыми конструкциями были построены в основном из лиственных пород деревьев, а срубы в жилищах Финляндии и Карелии, в основном из сосны, хотя использовалась и береза. Для покрытия стен и крыши могли использоваться переплетенные ветви деревьев и камыш, утепленные мхом, сухой травой и листьями; или трава в сочетании с березовой корой, матами, землей и дерном; а также шкуры животных.

Остатки напольных покрытий находят очень редко, они известны на некоторых поселениях в торфяниках и болотах. В основном они представлены корой ели или сосны, реже березы. В единичных случаях на поселениях Финляндии предполагалось наличие деревянных полов по найденным остаткам досок. Тем не менее, главным образом полы в жилищах каменного века северо-западной части Восточно-Европейской равнины, вероятно, не имели твердого покрытия.

9. Архитектура каменного века северо-западной части Восточно-европейской равнины

Для того чтобы проследить развитие архитектурных традиций и увидеть региональные различия, в данном обзоре рассматриваются все жилища каменного века северо-западной части Восточно-Европейской равнины (рис. 26–30; Приложения 1 и 2). Также дается краткая характеристика жилищ каменного века сопредельных территорий. Самые четкие археологические следы оставляют в основном только углубленные постройки, благодаря чему они легче идентифицируются и являются наиболее информативным источником для истории архитектуры. Поэтому углубленные жилища V тыс. до н.э., а и особенно IV тыс. до н.э являются главным объектом исследования в представленной диссертации.

9.1. Архитектура докерамического каменного века

Жилища докерамического каменного века на северо-западе Восточно-Европейской равнины (примерно с 12000 до 5600/5200 лет до н.э.) рассматриваются все вместе, поскольку часто не получается точно их датировать и атрибутировать. Одно предполагаемое сооружение этого периода известно Эстонии, семь жилищ на двух поселениях в Латвии, четырнадцать на восьми поселениях в Литве и двадцать два на двенадцати поселениях в Беларуси.

Можно выделить два основных региона, где сосредоточены остатки построек докерамического каменного века. Это западная Латвия, юг Литвы и северо-запад Беларуси (западная группа) с одной стороны, и восток и юго-восток Беларуси (юго-восточная группа) с другой. Большинство построек представлено остатками углубленных жилищ: 17 для западной группы и 14 для юго-восточной. Углубленные жилища западной группы в основном имеют овальную или круглую форму и площадь от 7 до 14 м², а юго-восточной – в основном тоже имеют овальную или круглую форму, но их размеры меньше, в основном от 3 до 10 м². Жилища докерамического каменного века окружающих территорий представлены в большинстве своем овальными или округлыми углубленными и наземными сооружениями.

9.2 Архитектура керамического каменного века

Для керамического каменного века количество известных жилищ значительно больше по сравнению с предыдущим периодом.

9.2.1. V тыс. до н.э.

Для V тыс. до н.э. известны в основном постройки нарвской культуры: семь на четырех поселениях в Эстонии и от четырех до шести на пяти поселениях в Литве. Одиннадцать построек являются углубленными, для них получено 9 радиоуглеродных дат со средним значением от 4900 до 4100 лет до н.э.

В целом данных о жилищах нарвской культуры недостаточно, чтобы рассуждать о развитии архитектурных традиций. Однако две зоны, где известны жилища нарвской культуры, показывают их разнообразие по формам и размерам. Углубленные постройки поселения Кынну из Эстонии и постройки из Литвы сходны по размерам, 3–7 м², при этом формы жилищ Литвы в основном круглые, в то время как на Кынну они треугольные или прямоугольные. По крайней мере на территории к востоку от них, они не имеют аналогий. Постройки поселения Рийгикюла I имеют овальную форму и размеры от 48 м² до 56 м², одна из них имеет коридорообразный вход. Аналогии для них есть среди жилищ валдайской культуры на западе России.

9.2.2. IV тыс. до н.э.

Для культурной общности гребенчатой керамики IV тыс. до н.э. известно от тридцати восьми до сорока пяти жилищ на семнадцати поселениях в Эстонии и Латвии. Среди них есть только две углубленные прямоугольные постройки в Эстонии и одна в Латвии, остальные – остатки наземных сооружений, представленные рядами столбовых ям, обломками деревянных свай, линзами песка на торфе, кострищами и концентрациями находок. Для трех построек с территории Эстонии было получено 5 радиоуглеродных дат со средними значениями от 3800 до 3100 лет до н.э.

На поселениях Латвии и Литвы обнаружено более 45 наземных сооружений, относящихся к поздней нарвской культуре и датируемых, вероятно, IV тыс. до н.э. К жилищам неманской культуры IV тыс. до н.э. могут быть отнесены остатки двух углубленных построек одного поселения в Беларуси и одной углубленной постройки в Литве, но данных о них очень мало.

Днепро-донецкая культурная общность представлена двадцатью девятью жилищами, девятнадцать из которых углубленные, обнаруженными на четырнадцати поселениях в Беларуси. Для углубленных построек было получено 5 радиоуглеродных дат со средними значениями от 3600 до 3000 лет до н.э.

В целом, для IV тыс. до н.э. наблюдается более сложная картина распределения различных типов жилищ по сравнению с предыдущими периодами. Для культурной общности гребенчатой керамики можно выделить два региона. Первый – северное побережье Эстонии, Финляндия и Карелия с круглыми/овальными в ранний период и прямоугольными углубленными постройками с середины IV тыс. до н.э., наземные сооружения здесь встречаются довольно редко, хотя и известны. При этом углубленные постройки в Эстонии сопоставимы по формам и размерам с жилищами предыдущей нарвской культуры поселения Рийгикюла I. Для второго региона, включающего Латвию, известны в основном только наземные постройки, представленные в подавляющем большинстве прямоугольными сооружениями столбовой конструкции. Истоки этой традиции в предыдущих периодах не просматриваются.

В то же время в Литве для поздней нарвской культуры также известны только прямоугольные наземные постройки. Единственная предполагаемая углубленная постройка в южной Литве может быть связана с неманской культурой. По сравнению с Латвией и Литвой, иная ситуация наблюдается на территории Беларуси, где для днепро-донецкой культурной общности и неманской культуры известны практически только углубленные жилища. Их формы и размеры значительно отличаются от углубленных построек культурной общности гребенчатой керамики и больше напоминают те, что существовали здесь в предшествующие периоды.

9.2.3. III тыс. до н.э.

Семь жилищ из Литвы, три из которых углубленные, относятся к поздней нарвской культуре и предположительно датируются III тыс. до н.э. Для одной углубленной постройки есть радиоуглеродная дата со средним значением 2200 лет до н.э. Некоторые из наземных построек могли представлять собой свайные жилища с приподнятым над поверхностью земли полом, одно из них, относимых к северобелорусской культуре, могло существовать в Беларуси, где были найдены остатки деревянных свай. Семнадцать жилищ культурной общности шнуровой керамики известны в Эстонии, Латвии, Литве и Беларуси. Семь из них углубленные, овальных или прямоугольных форм с размерами от 8 до 48 м². Семь радиоуглеродных дат для построек из Эстонии и Литвы дают в среднем возраст от 2900 до 2200 лет до н.э.

9.3. Общие замечания и дискуссия

Невозможно установить, когда, почему и где впервые появились углубленные постройки, однако они широко использовались в разные времена и на разных территориях. По этнографическим данным основными “условиями” существования углубленных жилищ являются: нетропический климат, минимально двухсезонная модель поселения и зависимость от запасов пищи во время проживания в таком жилище. Эти исследования показывают, что углубленные жилища использовались в основном в зимнее время (хотя есть и исключения), что свидетельствует об оседлом образе жизни в этот период. Относительно рассмотренных в диссертации углубленных жилищ каменного века северо-западной части Восточно-Европейской равнины нельзя утверждать, что все они использовались только в зимнее время, хотя вероятно, большинство из них все же было связано с (полу)оседлым этапом обитания.

В разных регионах северо-западной части Восточно-Европейской равнины можно отметить хронологические изменения в архитектуре каменного века. Следы наземных сооружений выявлены на всей территории с докерамического каменного века, однако только начиная с IV тыс. до н.э. по крайней мере для территории Латвии и Литвы становится возможно определить их формы, размеры и детали конструкции, что, вероятно указывает на смену архитектурной традиции в этот период.

Округлые углубленные сооружения небольших размеров существовали в Литве с финального палеолита до бронзового века включительно, в то время как для Эстонии углубленные постройки известны только с первой половины V тыс. до н.э. Новая форма архитектуры, скорее всего, возникла здесь под влиянием с территории Финляндии и Карелии, где, в свою очередь овальные, круглые и прямоугольные с закругленными углами жилища появились уже в докерамическом каменном веке. В IV тыс. до н.э., в контексте культурной общности гребенчатой керамики, в Эстонии существовали углубленные постройки столбовой конструкции прямоугольной

формы с закругленными углами. С середины IV тыс. до н.э. четкая прямоугольная форма углубленных построек широко распространилась в Финляндии, Карелии и северной Швеции, вытеснив более ранние округлые формы, однако на северо-западе Восточно-Европейской равнины самые ранние углубленные прямоугольные сооружения датируются III тыс. до н.э.

В Беларуси прослеживается продолжение традиции строительства округлых углубленных жилищ на протяжении всего каменного века, а прямоугольные формы появились в основном в его конце, вероятно, под влиянием архитектуры трипольской культуры, и были особенно характерны для бронзового века. Наземные жилища также были выявлены для разных периодов каменного века, но данных о них недостаточно.

Различия в типах построек связаны скорее с их региональным расположением, чем с хронологией и культурной атрибуцией. Тем не менее, даже найденные в одних и тех же географических условиях и датированные одним и тем же периодом, постройки могут отличаться друг от друга. Это может объясняться сезонностью, продолжительностью проживания, количеством обитателей и другими причинами. Таким образом, с одной стороны, остается невыясненным чем в реальности являются видимые археологу различия в формах и размерах жилищ: только типологией, отражением культурной динамики и процессов культурной трансформации, сосуществованием местных и пришлых традиций или различной степенью оседлости и в структуре расселения. С другой стороны, существует вопрос почему одни и те же типы жилищ продолжают существовать на протяжении сотен или даже тысяч лет и действительно ли они одни и те же, или просто похожи с археологической точки зрения.

Для Эстонии предполагается, что на заключительном этапе существования нарвской культуры и начала культурной общности гребенчатой керамики (ок. 3900 г. до н.э.) население могло составлять максимум около 6000 человек. При среднем количестве людей, которые могли разместиться в одном жилище, от 3 до 15, в Эстонии в начале IV тыс. до н.э. должно было одновременно функционировать от 400 до 2000 жилищ. Кроме того, люди перемещались, перестраивали и обновляли свои постройки, также существовали временные лагеря и сезонные сооружения. Таким образом, тысячи жилищ должны были существовать только в Эстонии каменного века. Однако, на всей северо-западной части Восточно-Европейской равнины к настоящему времени их обнаружено лишь чуть более двух сотен. Помимо недостаточной изученности, может быть это говорит о том, что углубленные жилища здесь были не столь многочисленны. Из этнографических данных известно, что переносные конические сооружения широко использовались традиционными северными обществами охотников-рыболовов-собираателей независимо от их культурно-языковой принадлежности. Такие постройки или другие временные жилища, не оставившие явных археологических следов, в действительности могли быть более распространенной формой архитектуры каменного века Эстонии, Латвии, Литве и Беларуси.

10. Заключение

Диссертация представляет собой первое общерегиональное обобщение всех известных жилищ каменного века, обнаруженных на большой территории северо-запада Восточно-Европейской равнины. Здесь собраны данные о более чем двухстах жилищах каменного века XII–III тыс. до н.э. Эстонии, Латвии, Литвы и Беларуси. В результате анализа форм и размеров построек были определены их основные типы, установлена относительная и абсолютная хронология, реконструированы и описаны все сохранившиеся особенности конструкций, внутреннего устройства и внешнего облика, а также некоторые виды деятельности, которыми занимались их обитатели. Большинство результатов по изучению архитектуры каменного века на северо-западе Восточно-Европейской равнины были опубликованы в статьях I–V (рис. 31).

Было установлено, что постройки охотников-рыболовов-собирателей северо-западной части Восточно-Европейской равнины имели столбовые конструкции. Многие углубленные постройки отличались большей концентрацией находок относительно окружающей территории, при этом для некоторых из них можно было предположить, что углубленная часть пола занимала только часть сооружения, которое в реальности было больше.

Картирование основных типов жилищ показала зоны их расположения для разных хронологических периодов. Все известные жилища докерамического каменного века сосредоточены в двух зонах. Первая – в Литве и Латвии, вторая – в восточной Беларуси. В обеих зонах основной формой жилища являются овальные или круглые углубленные постройки, но размеры их различаются.

Для V тыс. до н.э. данных о жилищах пока недостаточно. В Эстонии в этот период появились первые углубленные постройки, связанные с нарвской культурой (рис. 32). В Литве традиция углубленных построек сохранилась с предыдущего периода.

Количество известных жилищ IV тыс. до н.э. значительно больше, чем для предыдущего периода. Они известны в Эстонии, Латвии и Литве с одной стороны, и в северной и восточной Беларуси – с другой. Для первой группы углубленные жилища прямоугольной формы открыты только в северной Эстонии и северной Латвии. В южной Эстонии, основной части Латвии и Литве известны только наземные сооружения столбовой конструкции (рис. 32). При этом в Латвии и Литве, где они связаны с культурной общностью гребенчатой керамики и поздней нарвской культурой, они приобретают прямоугольные формы и относительно большие размеры. Для второй группы, относящейся к днепро-донецкой культурной общности, характерны в основном овальные или круглые углубленные жилища.

Для III тыс. до н.э. картина распределения жилищ существенно меняется, в основном они связаны с культурной общностью шнуровой керамики. Большинство из них наземные и обнаружены в Литве, тогда как в

Эстонии, Латвии и Беларуси их открыто совсем немного (рис. 32). В Эстонии, Литве и Беларуси известно также несколько углубленных жилищ.

Если рассматривать керамический каменный век в целом, то могут быть очерчены различные области распространения углубленных жилищ охотников-рыболовов-собирателей. Первый ареал выделяется в северной прибрежной зоне Эстонии, западной части России (Карельский перешеек и Карелия) и Финляндии, образуя “северную традицию”. Эти постройки существенно отличаются от “южной традиции”, выделенной в юго-восточной Литве и Беларуси. Более заметно эти две “традиции” проявляются в IV тыс. до н. э., где они разделены большой территорией южной Эстонии, Латвии, Литвы и северной Беларуси, на которой известны только (за одним исключением) наземные жилища. Для углубленных построек “северной традиции”, помимо прочего, были обнаружены свидетельства сакральной деятельности, выраженные в наличии намеренно разбитых миниатюрных глиняных скульптур.

В диссертации была достигнута основная цель – определение направлений развития архитектуры каменного века в течение V–IV тыс. до н.э. в Эстонии, Латвии, Литве, Беларуси и выявление их территориальных, культурных и хронологических особенностей. Все возможные жилища охотников-рыболовов-собирателей каменного века Эстонии, а также типохронологически отнесенные к IV тыс. до н.э. углубленные постройки Беларуси, были датированы радиоуглеродным методом (Приложение 2). Это составляет 30% от всех дат для жилищ северо-западной части Восточно-Европейской равнины.

Можно сделать три важнейших вывода относительно расположения различных типов жилищ в северо-западной части Восточно-Европейской равнины:

1. В ряде регионов, даже на одних и тех же поселениях, сосуществовали разные типы жилищ.
2. В пределах одной археологической культуры или культурной общности существовали зоны с разными типами построек. Например, в южной части культурной общности гребенчатой керамики известны преимущественно наземные жилища, а в северной части – также углубленные жилища.
3. Относясь к разным хронологическим периодам и археологическим культурам, жилища, расположенные в одной географической зоне, могли быть схожи по формам и размерам. Это видно как по углубленным жилищам нарвской культуры и культурной общности гребенчатой керамики в Эстонии, так и по углубленным постройкам поздней нарвской и неманской культур, а также днепро-донецкой культурной общности Южной Литвы и Беларуси.

Разные типы жилищ не могут быть жестко связаны с разными сезонами их использования (нет оснований утверждать, что углубленные жилища только для зимы, а наземные для летнего периода). Их также нельзя в полной мере объяснить региональными или природными различиями. Одинаковые

типы жилищ для разных хронологических этапов, в свою очередь, не обязательно указывают на культурную преемственность. Все это говорит о том, что на типы жилищ влиял комплекс причин, среди которых были не только природные условия и традиции, но и сезонность, размеры семьи и т. д.

С одной стороны, различия жилищ в рамках одной культурной общности могут быть связаны, например, с культурными традициями разных сообществ, входивших в ее состав и указывать на то, что археологические культурные атрибуции неточны и требуют более подробного анализа. С другой стороны, причина может заключаться в том, что архитектура развивалась по своим собственным законам вне рамок конкретных археологических культур, а новации, приходящие с новым населением, проявлялись не сразу или не проявлялись вовсе, если только не происходила полная смена населения. И последнее предположение представляется более вероятным.

Общее относительно небольшое количество известных на данный момент жилищ каменного века на северо-западе Восточно-Европейской равнины указывает, безусловно, на перспективность их дальнейшего изучения, а также на необходимость учитывать возможность того, что углубленные постройки не были доминирующей архитектурной формой в каменном веке в этом регионе, и что в будущем следует искать способы определить те жилища, которые оставляют менее четкие археологические следы по сравнению с углубленными постройками.

APPENDICES

Appendix 1. Short description of all now known Stone Age remains of buildings from Estonia, Latvia, Lithuania and Belarus. Grey colour marks Stone Age buildings revealed during work on this thesis by the author.

*Included here in Estonia (currently a part of Russia), because it was a territory of Estonia during excavations.

**Dated material is unknown.

***Laboratory code is unknown.

****Radiocarbon dates which do not correspond to the supposed age of the building, based on the typo-chronology of finds.

No	Site (No in Fig. 6: A)	No of building	Building shape	Signs of building (depth of a sunken floor, m)	Size, m ²	Period, Archaeo- logical sub- divisions	Published radiocarbon dates of buildings (94.5% probability) and dated materials	Year of first excavation at the site	References
ESTONIA									
1	Pulli (8)	?	?	remains of stakes	?	Pre-Pottery Stone Age	no	1968	Jaanits & Jaanits 1975; Jaanits & Jaanits 1978.
2	Riigiküla I (4)	1	oval	sunken floor (0.4)	>55.6	Narva	bone tools; KIA-53825 6237±27 BP, KIA- 53824 5364±27 BP (5304–5076 calBC, 4327–4061 calBC)	1951	Gurina 1967; Paper I.
3	Riigiküla I (4)	3a	?	sunken floor? concentration of finds	?	Narva	bone tools, KIA-53828 5385±30 BP, KIA-53827 5559±28 BP (4334–4075 calBC, 4451–4350 calBC)	1951	Gurina 1967; Paper I.
4	Kõnnu (7)	1	rectangular	sunken floor (0.3)	7	Narva	human bone, UBA-26077 6277±45 BP (5359–5077 calBC)	1977	Jaanits 1979; Paper I.

No	Site (No in Fig. 6: A)	No of building	Building shape	Signs of building (depth of a sunken floor, m)	Size, m ²	Period, Archaeo- logical sub- divisions	Published radiocarbon dates of buildings (94.5% probability) and dated materials	Year of first excavation at the site	References
5	Kõnnu (7)	2	triangular	sunken floor (0.2)	6	Narva ?	no	1977	Jaanits 1979; Paper I.
6	Kõnnu (7)	3	triangular	sunken floor (0.2)	3	Narva ?	no	1977	Jaanits 1979; Paper I.
7	Vihasso III (2)	1	round/oval ?	find concentration around hearths	>10	Narva	no	1996	Kriiska 1997b; Kriiska et al. 2017, 63.
8	Akali (11)	?	?	remains of stakes	?	Narva ?	no	1938	Yanits 1959a, 26–65.
9	Riigiküla I (4)	2	oval	sunken floor (0.5)	48	Narva or Comb Ware	bone tool, KIA-53826 5285±30 BP (4232–4000 calBC)	1951	Gurina 1967; Paper I.
10	Jägala Jõesuu V (1)	1	rectangular	sunken floor (0.2)	>14.8	Comb Ware	burnt animal bone and hazelnut shell, Poz-115983, 4460±35 BP, UBA-29062, 4438±29 BP (3342– 3013 calBC, 3331–2929 calBC)	2011	Paper IV.
11	Lommi III* (3)	1	rectangular	sunken floor (0.7)	31.2	Comb Ware	organic crust on pottery, Poz- 133669 4970±70 BP, Poz-133186 5020±40 BP (3946–3642 calBC, 3948–3661 calBC)	1940	Paper III.
12	Riigiküla I (4)	3b	?	concentration of finds	?	Comb Ware	no	1951	Gurina 1967; Paper I.
13	Riigiküla I (4)	4	?	concentration of finds	?	Comb Ware	no	1951	Gurina 1967; Paper I.

No	Site (No in Fig. 6: A)	No of building	Building shape	Signs of building (depth of a sunken floor, m)	Size, m ²	Period, Archaeo- logical sub- divisions	Published radiocarbon dates of buildings (94,5% probability) and dated materials	Year of first excavation at the site	References
14	Jägala Jõesuu V (1)	2	rectangular ?	concentration of finds	18	Comb Ware	hazelnut shell, Poz-115982, 4400±35 BP (3315–2911 calBC)	2011	Paper IV.
15	Kullamägi (10)	?	?	remains of stakes	?	Comb Ware	no	1951	Yanits 1959a, 66–83.
16	Tamula I (12)	?	?	remains of stakes	?	Comb Ware	no	1942	Yanits 1959a, 101–103.
17	Valma (9)	1–8/10 ?	?	territory around hearths cleaned from stones	?	Comb Ware and Corded Ware	no	1950	Yanits 1959a, 103–105; 1959a.
18	Narva-Jõesuu IIB (6)	1	rectangular	sunken floor (0.7– 0.8)	>8	Corded Ware	burnt animal bone, Poz-58913 4215±35 BP (2905–2672 calBC)	2011	Kriiska & Nordqvist 2021; Vanhanen et al. 2023.
19	Narva-Jõesuu IIB (6)	2	rectangular	sunken floor (1.3)	8	Corded Ware	no	2011	Kriiska & Nordqvist 2021.
L A T V I A									
20	Salaspils Laukskola (16)	1–6	oval	concentrations of finds	?	Pre-Pottery Stone Age	no	1967	Zagorska 1994; 2012.
21	Užavas Celmi (13)	1	round	sunken floor (0.4)	10.2	Pre-Pottery Stone Age	charcoal, Tln-2917 7510±80 BP (6562–6104 calBC)	2001	Grasis 2010.

No	Site (No in Fig. 6: A)	No of building	Building shape	Signs of building (depth of a sunken floor, m)	Size, m ²	Period, Archaeo- logical sub- divisions	Published radiocarbon dates of buildings (94,5% probability) and dated materials	Year of first excavation at the site	References
22	Sārnate (14)	1-25	rectangular	timber post remains and concentrations of finds	16-40	Late Narva (Sārnate- type)	organic crust from a potsherd, animal bone, charcoal and wood, Ua-33828 5480±40 BP, Ua-15984 5065±75 BP, TA-26 4700±250 BP, TA-265 4630±70 BP, Tln-2918 4570±65 BP, Le-814 4510±110 BP, Bln-769 4639±100 BP, TA-24 4490±250 BP (4443-2493 calBC)	1938	Vankina 1970; Bērziņš 2008.
23	Zvejnieki I (17)	1	?	sunken floor (?)	?	Comb Ware	no	1964	Larsson et al. 2017, 61.
24	Sārnate (14)	26-40	round, oval or irregular	sand lens with concentration of finds	12-72	Comb Ware	no	1938	Vankina 1970; Bērziņš 2008.
25	Zvidze (21)	1	rectangular	rows of post holes and wooden remains	40	Comb Ware	no	1973	Loze 1988, 22- 23.
26	Kvāpāni II (19)	1	rectangular	rows of post holes	12-16	Comb Ware	no	1976	Loze 2001b, 80.
27	Abora I (20)	1-5/10?	rectangular?	rows of post holes	?	Comb Ware ?	no	1964	Loze 1979, 11- 26.
28	Lagaža (22)	1-2?	rectangular?	rows of post holes and wooden remains	?	Comb Ware	wood, TA-749 3685±80 BP, TA- 396 3640±70 BP, JIE-868 3240±70 BP (2061-1526 calBC)	1965	Loze 1979, 30- 38.
29	Asne I (23)	1-2	?	post holes	?	Comb Ware	no	1963	Loze 1979, 29.

No	Site (No in Fig. 6: A)	No of building	Building shape	Signs of building (depth of a sunken floor, m)	Size, m ²	Period, Archaeo- logical sub- divisions	Published radiocarbon dates of buildings (94,5% probability) and dated materials	Year of first excavation at the site	References
30	Eiņi (24)	1	?	rows of post holes and wooden remains	?	Comb Ware	no	1966	Loze 1979, 42.
31	Naimēkste (25)	1-?	rectangular	post holes	?	Comb Ware	no	1964	Loze 1988, 93; 2008, fig. 17.
32	Piestīpa (26)	1	?	post holes	?	Comb Ware	no	1963	Zagorska 2021.
33	Zvejsala (27)	1	?	post holes	?	Comb Ware	no	1963	Loze 2015.
34	Jurizdika I (29)	1	?	post holes	?	Comb Ware	no	1959	Urtāns 2021.
35	Kreitī (30)	1	?	post holes	?	Comb Ware	no	1956	Zagorskis 1963, 24.
36	Iča (18)	1	rectangular	rows of post-holes	25	Comb / Lubāns-type / Corded Ware	wood, TA-2248 4420±80 BP, TA- 2247 4390±80 BP, TA-2249 4260±70 BP, TA-2143 4120±90 BP, TA-2390 3950±50 BP (3341- 2291 calBC)	1938	Loze 2010.
37	Leimaniški (28)	1	rectangular	rows of post-holes	?	Corded Ware	no	1961	Vankina 1980, 57
L I T H U A N I A									
38	Skaruliai 2 (50)	1	oval or round	sunken floor (1.3)	5	Pre-Pottery Stone Age	no	1999	Gudaitienė 2018, 185-187, figs. 157-158, 174.

No	Site (No in Fig. 6: A)	No of building	Building shape	Signs of building (depth of a sunken floor, m)	Size, m ²	Period, Archaeo- logical sub- divisions	Published radiocarbon dates of buildings (94,5% probability) and dated materials	Year of first excavation at the site	References
39	Glubiqi I (42)	1	rectangular	sunken floor (0.2– 0.4)	19.5	Pre-Pottery Stone Age	charcoal, Jle-4714 7060±270 BP (6443–5481 calBC)	1984	Juodagalvis 2010, 25–27 169–171.
40	Kubilėliai (43)	1–3	Triangular and oval	sunken floor (0.3– 0.6)	7–14	Pre-Pottery Stone Age	no	1984	Juodagalvis 2010, 165–169.
41	Neravai (49)	1–3	oval, round or square, rectangular	sunken floor (0.6– 1.5)	7–12	Pre-Pottery Stone Age	no	2009	Štavičius & Marcinkevičiūtė 2012, 37–38.
42	Rėkūčiai 1 (52)	1	round	sunken floor (0.5)	28	Pre-Pottery Stone Age	no	1994	Štavičius 2016, 26–27.
43	Rėkūčiai 2 (53)	1–2 ?	triangular or rectangular	sunken floor (?)	?	Pre-Pottery Stone Age	no	2006	Štavičius 2016, 32.
44	Varėnė 2 (also Gilūko 11) (44)	1–3	oval	sunken floor (0.9– 1.7)	2–7	Pre-Pottery Stone Age	no	1995	Štavičius 2016, 32.
45	Šventoji 40 (36)	1	irregular round	sunken floor (0.3)	19	Pre-Pottery Stone Age	charcoal and hazelnut shell, Poz- 65434 7260±50 BP, Poz-8527 7010±50 BP (6226–6031 calBC, 5998–5775 calBC)	1967	Piličiauskas 2018, 107–110.
46	Sudota 2C (51)	1–3	oval and rectangular	sunken floor (0.4– 0.5)	8	Pre-Pottery Stone Age/Narva Ware	no	1990	Štavičius 2016, 36–38.

No	Site (No in Fig. 6: A)	No of building	Building shape	Signs of building (depth of a sunken floor, m)	Size, m ²	Period, Archaeo- logical sub- divisions	Published radiocarbon dates of buildings (94,5% probability) and dated materials	Year of first excavation at the site	References
47	Katra 1 (45)	1	oval	sunken floor (0.4– 0.5)	24	Neman (Dubičiai- type) / Narva	no	1998	Marcinkevičiūtė 2016, 59–61.
48	Katra 2 (46)	1–2	rectangular	sunken floor (0.2– 0.3)	2	Narva	no	1998	Marcinkevičiūtė 2016, 61–62.
49	Katra 2 (46)	3	rectangular	sunken floor (0.4– 0.6)	6	Narva	charcoal, Ki-7646 5360±70 PB (4341–4000 calBC)	1998	Marcinkevičiūtė 2016, 61–62.
50	Pakretuonės 3 (60)	1	oval	sunken floor (0.9)	28	Narva	no	1986	Girininkas 1988, 7–10; 2009, 233.
51	Žeimenis I (61)	1	oval	sunken floor (0.4)	38	Narva	no	1986	Girininkas 2009, 231.
52	Dubičiai 2 (48)	1	?	sunken floor (0.5 ?), remains of a hearth and post holes	?	Neman	no	1962	Rimantienė 1999.
53	Pakretuonės 1 (58)	1	rectangular	remains of stakes and stones	?	Late Narva	no	1977	Girininkas 2009, 233–234.
54	Šaltaliūnė (59)	1	rectangular	remains of stakes	24	Late Narva	no	1987	Girininkas 2009, 233.
55	Kretuonas 1 (54)	1	rectangular	remains of stakes and hearths	18	Late Narva	no	1979	Girininkas 1994b, 11.

.№	Site (No in Fig. 6: A)	No of building	Building shape	Signs of building (depth of a sunken floor, m)	Size, m ²	Period, Archaeo- logical sub- divisions	Published radiocarbon dates of buildings (94,5% probability) and dated materials	Year of first excavation at the site	References
56	Žemaitiškė 3 (57)	1?	?	remains of stakes	?	Late Narva	no	1984	Girininkas 2005, 39.
57	Žemaitiškė 2 (56)	1–15?	?	stakes and platform-bearing logs	?	Late Narva / Comb Ware/Bronz e Age	no	1979	Girininkas 1990, 88; 2005, 35–37; 2010.
58	Šventoji 4 (31)	1?	?	remains of wooden stakes and logs	?	Late Narva or Globular Amphora	no	1967	Rimantienė 1996a; Girininkas 2005, 41–42.
59	Šventoji 6 (32)	1–3	rectangular	remains of stakes	?	Late Narva or Globular Amphora	no	1982	Rimantienė 1996b; Girininkas 2005, 42–43.
60	Šarnelė (37)	1?	rectangular	remains of stakes	60	Late Narva or Corded Ware	no	1973	Girininkas 2005, 40.
61	Daktariškė 1 (40)	1?	rectangular	rows of post-holes	?	Late Narva or Corded Ware	no	1980	Butrimas 2019, 213–227.
62	Paramėlis 2 (47)	1–2	oval	sunken floor (1.5)	1–2	Late Narva	no	2002	Marcinkevičiūtė 2016, 63.
63	Paramėlis 2 (47)	3	square?	sunken floor (0,5 ?)	9	Late Narva	charcoal, ** 3750±70 PB (2450– 1953 calBC)	2002	Marcinkevičiūtė 2016, 63.

.№	Site (No in Fig. 6: A)	No of building	Building shape	Signs of building (depth of a sunken floor, m)	Size, m ²	Period, Archaeo- logical sub- divisions	Published radiocarbon dates of buildings (94.5% probability) and dated materials	Year of first excavation at the site	References
64	Žemaitiškė I (55)	1	?	remains of stakes	?	Late Narva	no	1978	Girinkas 2005, 37–39
65	Šventoji 23 (33)	1–3	rectangular	remains of stakes	2.5–3.6	Late Narva	no	1970	Rimantienė 1979; 2005, 422–429.
66	Alksnynė 3 (36)	1	oval	sunken floor (0.15)	9.6	Corded Ware	burnt animal bones and charcoal, Poz-49777 4110±35 BP, Poz- 89745 4030±35 BP, Poz-85281 3955±35 BP, Poz-85280 3905±35 BP (2869–2236 calBC)	2016	Piličiauskas 2018, 28–35.
67	Nida (35)	1	oval	sunken floor (0.4)	48	Corded Ware	no	1974	Rimantienė 2016, 50–54, 71.
68	Kulnikas (39)	1	oval	sunken floor (0.6– 0.7)	8	Corded Ware	no	1985	Grinkevičiūtė 2005, tab. 3; Butrimas 2019, 136–142.
69	Širmės kalnas I (41)	1	rectangular	sunken floor (0.4– 0.6)	14	Corded Ware	charcoal, Vs-319 4070±80 BP (2886–2456 calBC)	1978	Butrimas 2019, 254–264.
70	Nida (35)	2–7?	rectangular or oval	rows of post-holes	28–96?	Corded Ware	charcoal, Bln-2592 4070±150 BP (3011–2150 calBC)	1974	Rimantienė 2016, 68–71, 253.
71	Biržulis (38)	1	?	find concentration	?	Corded Ware	no	1984	Grinkevičiūtė 2005, tab. 3.

B E L A R U S									
No	Site (No in Fig. 6: A)	No of building	Building shape	Signs of building (depth of a sunken floor, m)	Size, m2	Period, Archaeo- logical sub- divisions	Published radiocarbon dates of buildings (94.5% probability) and dated materials	Year of first excavation at the site	References
72	Dziednia (85)	1	irregular oval	sunken floor (0.2– 0.45)	78	Pre-Pottery Stone Age	no	1991	Kolosov 2009b, 41–44; 2017c.
73	Bierascienava (63)	1–3	oval	sunken floor (0.3)	4.9– 10.2	Pre-Pottery Stone Age	no	1987	Ksenzov 2006, 16–17, fig. 2.
74	Novyja Hramyki X (also Atramaŭ Buhor) (93)	1–2	irregular round	sunken floor (0.4– 0.5)	3–6	Pre-Pottery Stone Age	no	1977	Kalechits 1987, 20–26; 1990, 94–96.
75	Hlybaŭka III (also Babulin Buhor) (92)	1–5	irregular and triangular	sunken floor (0.5– 1.2)	3–5.5	Pre-Pottery Stone Age	no	1980	Kalechits 1987, 26–34; 1990, 94–96.
76	Bierahavaja Slabada (74)	1	rectangular	sunken floor (0.4)	16.3	Pre-Pottery Stone Age	no	1977	Ksenzov 1988, 53–64.
77	Ludŭcy 1 (84)	1	irregular round	sunken floor (0.2)	4.9	Pre-Pottery Stone Age	no	1972	Kopytin 1991, 38–40.
78	Krymčŭnaja (87)	1	rectangular	sunken floor (0.4)	9.4	Pre-Pottery Stone Age	no	1972	Lipnitskaya 1979.
79	Niamnova 1 (64)	1	irregular round	sunken floor (0.5)	7	Pre-Pottery Stone Age	no	2005	Abuchouski et al. 2006, 178– 179.

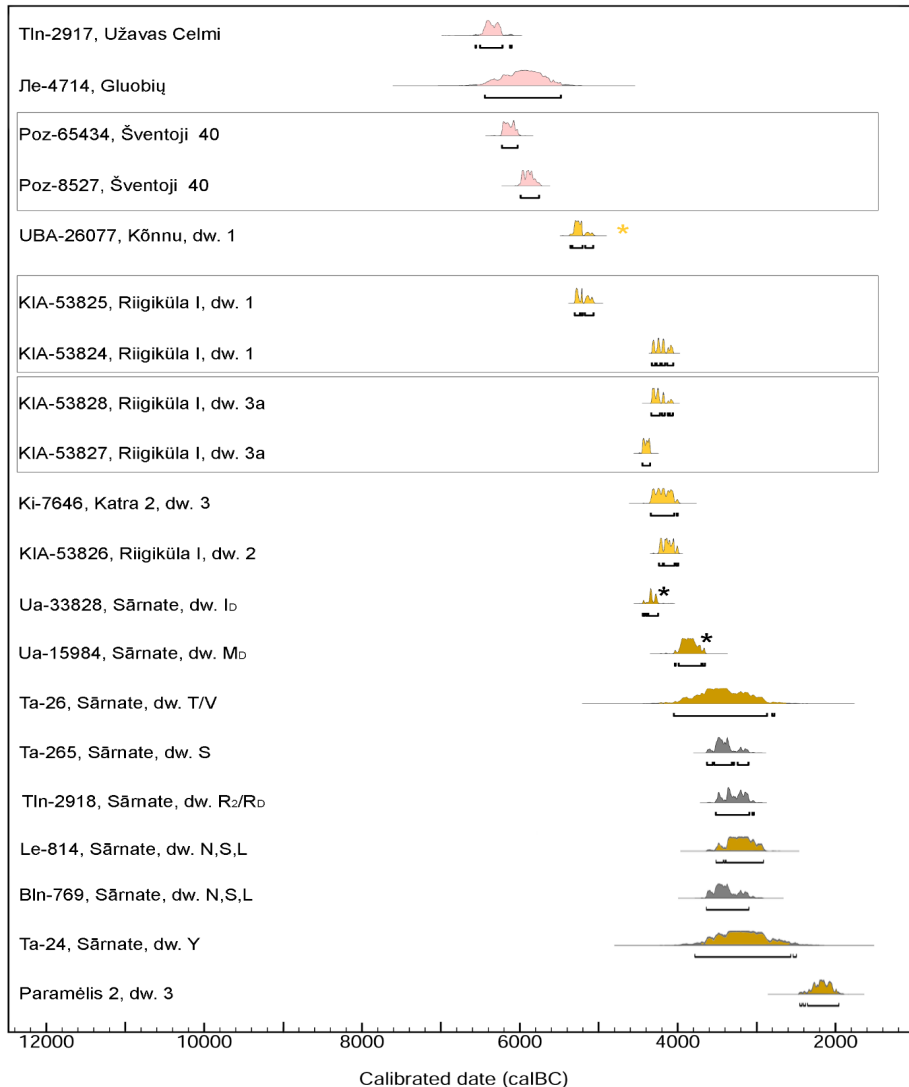
No	Site (No in Fig. 6: A)	No of building	Building shape	Signs of building (depth of a sunken floor, m)	Size, m2	Period, Archaeo- logical sub- divisions	Published radiocarbon dates of buildings (94,5% probability) and dated materials	Year of first excavation at the site	References
80	Babrovičy I (66)	1–6	?	concentration of finds around hearths	?	Pre-Pottery Stone Age	no	1989	Isaenko 1976, 28–29; Lakiza & Lyashkevich 2009.
81	Opal II (68)	?	?	concentration of burnt stones	?	Pre-Pottery Stone Age	no	1963	Isaenko 1976, 29–30.
82	Vuscite 2 (86)	1	round	concentration of finds	16	Pre-Pottery Stone Age	no	2005	Kolosov 2009b, 28–30.
83	Stasiučka (83)	1	round	concentration of finds around hearths	19.6	Pre-Pottery Stone Age	no	1978	Ksenzov 1988, 88–92.
84	Pierasudavičy (67)	1–2	?	sunken floor (0.3– 0.4)	?	Neman	no	1963	Isaenko 1963, 9–11; 1976, 66– 67.
85	Strumien VI (also Loša I & Loša II) (91)	1–6	oval or round	sunken floor (0.4– 0.8)	5.8– 11.3	Dnieper- Donec cultural complex	no	1975	Kalechits 1987, 61–77.
86	Dubovy Loh IV (also Mišurova hryva) (94)	2	round	sunken floor (0.4– 0.5)	3.8; 7.1	Dnieper- Donec cultural complex	no	1980	Kalechits 1987, 41–44.
87	Rudnia I (88)	1	irregular	sunken floor (0.2– 0.5)	8.8	Dnieper- Donec cultural complex	burnt animal bone, Poz-150691 8560±50 BP (7713–7518 calBC)*****	2006	Kolosov 2009a, 58; 2009b; Paper V, tab. 1.

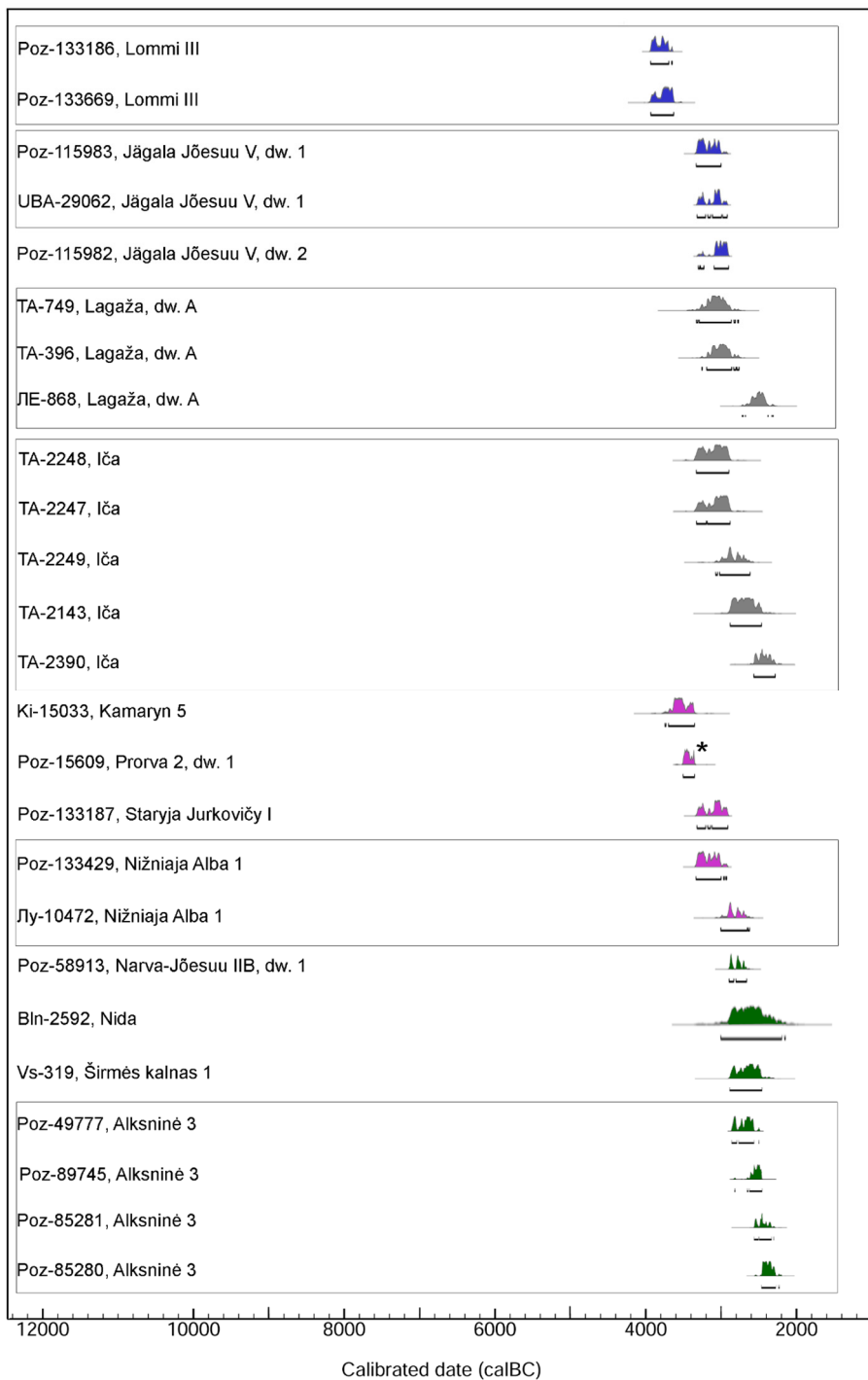
№	Site (No in Fig. 6: A)	No of building	Building shape	Signs of building (depth of a sunken floor, m)	Size, m²	Period, Archaeo- logical sub- divisions	Published radiocarbon dates of buildings (94,5% probability) and dated materials	Year of first excavation at the site	References
88	Stary Dziedzin 4 (90)	1	irregular	sunken floor (0.6– 0.8)	9.6	Dnieper- Donec cultural complex	no	2006	Kolosov 2019, 46.
89	Juravičy III (also Litvin 1) (72)	1	oval	sunken floor (0.7)	17	Dnieper- Donec cultural complex	charcoal, Poz-133571 250±30 BP (1500–1800 calAD)*****	1962	Isaenko 1963; 1967; 1976, 85– 86; Paper V, tab. 1.
90	Juravičy IV (also Litvin 2) (73)	1	rectangular	sunken floor (0.2– 0.3)	36.8	Dnieper- Donec cultural complex	no	1964	Isaenko 1963; 1967; 1976, 86– 87.
91	Kamaryn 5 (79)	1	rectangular	sunken floor (0.3)	3.8	Dnieper- Donec cultural complex	organic sediment from a hearth, KI-15033 4780±90 PB (3758–3363 calBC)	1998	Yazepenko 2007; Ezepenko 2016, 281, Ezepenko & Voronenko 2017.
92	Staryja Jurkovičy I (70)	1	irregular triangular	sunken floor (1)	4.7	Dnieper- Donec cultural complex	charcoal, Poz-133187 4430±40 BP (3330–2920 calBC)	1985	Kryvalisevich 1986; Paper V, tab. 1
93	Nižniaja Alba I (also Lukošynica) (75)	1	rectangular	sunken floor (0.3)	3.4	Dnieper- Donec cultural complex	charcoal, Jly-10472 4250±60 BP, Poz-133429 4360±40 BP (3500– 3029 calBC, 3093–2898 calBC)	2011	Yazepenko & Yuretski 2013; Paper V, tab. 1

No	Site (No in Fig. 6: A)	No of building	Building shape	Signs of building (depth of a sunken floor, m)	Size, m2	Period, Archaeo- logical sub- divisions	Published radiocarbon dates of buildings (94,5% probability) and dated materials	Year of first excavation at the site	References
94	Sasonka (76)	1	rectangular	sunken floor (0.2– 0.3)	>8.2	Dnieper- Donec cultural complex	no	1956	Artemenko 1964; Yazepenko 2014, 23.
95	Prorva 2 (78)	1–2	oval	sunken floor (0.7)	>6	Dnieper- Donec cultural complex	organic crust from a potsherd, Poz- 15609 4650±35 BP (3516–3365 calBC)	1995	Yazepenko 2014, 31; Paper V, tab. 1
96	Borok Seminauski (also Lučyn Barok Siamionauski) (77)	1	oval	sunken floor (0.5)	4.6	Dnieper- Donec cultural complex	unburnt animal tooth, modern time	1957	Yazepenko 2006, 20; Paper V, tab. 1
97	Kamaryn 5A (80)	1	rectangular?	concentration of burnt shells and finds	?	Dnieper- Donec cultural complex	no	2008	Razlutskaya 2013.
98	Slabodka I (71)	1–9	oval	concentration of finds around hearths	20	Dnieper- Donec cultural complex	no	1964	Isaenko 1976, 77.
99	Asaviec 7 (62)	1?	?	remains of stakes	?	North Belarusian	no	2000	Charniauski & Kryvalitsevich 2011, 108; Chernyavskiy 2008.

No	Site (No in Fig. 6: A)	No of building	Building shape	Signs of building (depth of a sunken floor, m)	Size, m ²	Period, Archaeo- logical sub- divisions	Published radiocarbon dates of buildings (94.5% probability) and dated materials	Year of first excavation at the site	References
100	Navasiolki 1 (65)	1	round	sunken floor (0.5)	9	Corded Ware	no	2005	Lakiza et al. 2006, 183–184.
101	Ksendzova gora (81)	?	?	post holes and hearths with and without stones	?	Corded Ware	no	1959	Artemenko 1962, 65–66.
102	Zavalje (82)	1	?	concentration of charcoal pieces, burnt wooden fragments and ash around a hearth; remains of stakes	11?	Corded Ware	no	1956	Artemenko 1962, 71–72.
103	Kamienka 5 (89)	1	oval	sunken floor (0.95)	10	?	no	2004	Kolosov 2017a, 137–138.
104	Vostraŭ III (69)	1–2	oval	sunken floor (0.7 ?)	>7	?	no	1964	Isaenko 1976, 36.

Appendix 2. All known dates of the Stone Age hunter-fisher-gatherers dwellings in Estonia, Latvia, Lithuania and Belarus: rose – buildings of the Pre-Pottery Stone Age; yellow – buildings of the Narva culture; orange – buildings of the Late Narva culture; blue – buildings of the Comb Ware cultural complex; violet – buildings of the Dnieper-Donec cultural complex; green – buildings of the Corded Ware culture; grey – buildings without clear cultural attribution; yellow star shows an approximate age of the sample after reservoir effect correction; black star indicate a presence of reservoir effect, offset of which is unknown. OxCal v4.4.4 Bronk Ramsey (2021); r:5 Atmospheric data from Reimer et al (2020). Original dates see in Appendix 1.





Appendix 3. Catalogue of Stone Age settlement sites with the remains of buildings discussed in the text. Plans of sites and dwellings are provided where they are available.

ESTONIA

1. Akali Stone and Early Metal Age settlement site

In the first publications the name Konsa was used.

Eastern Estonia, the bank of the River Akali. The site was discovered in 1937 by a local farmer. Excavations were carried out in 1938–1939 under the leadership of Richard Indreko, and in 1949–1952 and 1966 under the supervising of Lembit Jaanits. In total, an area of 542 m² has been excavated. Several hearths and remains of wooden stakes associated with the Narva culture, the Comb Ware cultural complex, or the Corded Ware cultural complex were found at the settlement site. Vertically positioned wooden stakes have been interpreted as possible remains of above-ground dwellings. Akali has been inhabited repeatedly during the Stone Age from the end of the 6th millennium to the end of the 3rd millennium BC, but also later, as indicated by pottery fragments from the Bronze and Iron Age.

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Jaanits, L. 1955. Neoliitilised asulad Eesti NSV territooriumil. – *Muistsed asulad ja linnused*. (Arheoloogiline kogumik, I). Eds. H. Moora & L. Jaanits. Eesti Riiklik Kirjastus, Tallinn, 176–201.

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Tõrv, M. 2018. Persistent Practices. A Multi-Disciplinary Study of Hunter-Gatherer Mortuary Remains from c. 6500–2600 cal. BC, Estonia. (*Untersuchungen und Materialien zur Steinzeit in Schleswig-Holstein und im Ostseeraum*, 9). Kiel/Hamburg.

Янитс Л.Ю. 1959. Поселения эпохи неолита и раннего металла в приустье р. Эмайыги (Эстонская ССР). Институт истории Академии наук Эстонской ССР, Таллин.

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2. Jägala Jõesuu V Stone Age settlement site

Northern Estonia, the bank of the River Jägala. The site was discovered in 2011 and was excavated the same year under the leadership of Aivar Kriiska and Raido Roog. In total, an area of 275 m² has been excavated. Several hearths and one larger depression in the natural ground filled by the cultural layer were found. Based on the cultural layer and the concentration of finds, one pit-house and one above-ground dwelling were distinguishable. The settlement site was used for a relatively short time at the end of the 4th millennium BC and is associated with the Comb Ware cultural complex.

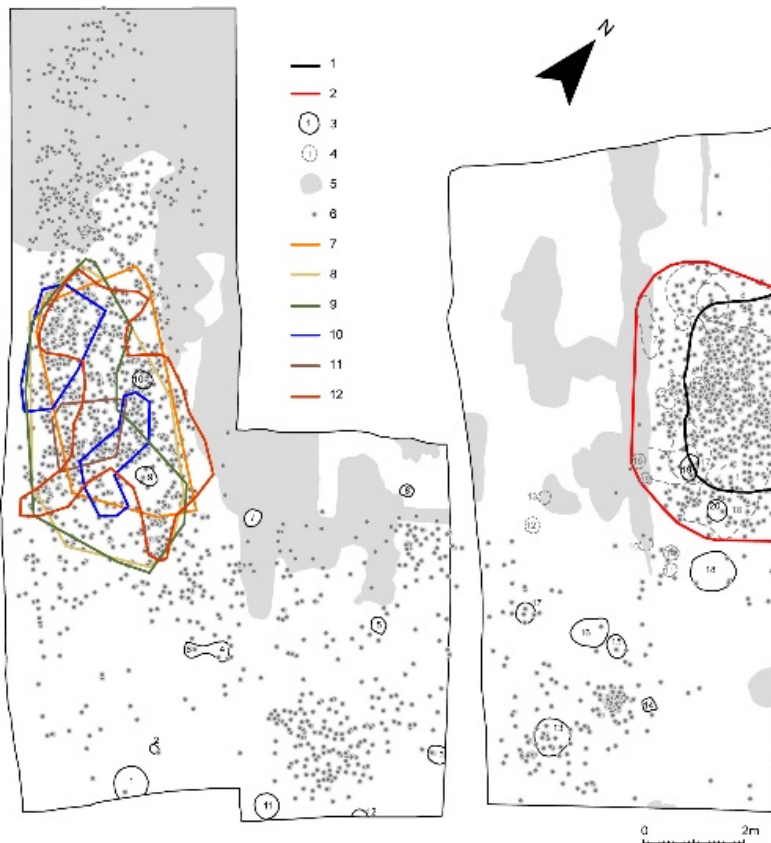


Illustration 1. Plan of the site with the pit-house (black and red contours), hearths and pits (grey contours). An above-ground dwelling is outlined by the concentration of finds (areas of concentration of different types of finds are shown by coloured contours). After Khrustaleva & Kriiska 2022, fig. 16.

References:

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- Khrustaleva, I. & Kriiska, A.** 2020. Inside the Dwelling: Clay Figurines of the Jägala Jõesuu V Stone Age Settlement Site (Estonia). – *Baltic Journal of Art History*, 20, 11–57.
- Khrustaleva, I. & Kriiska, A.** 2022. Jägala Jõesuu V Stone Age settlement site in northern Estonia: Spatial and contextual analysis of finds. – *Estonian Journal of Archaeology*, 26 (2), 79–122.

3. Kullamägi Stone and Early Metal Age settlement site

Eastern Estonia, the bank of the River Emajõgi. The site was discovered in 1939 by Richard Indreko and was excavated in 1951–1952 under the leadership of Lembit Jaanits. In total, an area of 224 m² has been excavated. Remains of wooden stakes interpreted as possible remains of an above-ground dwelling, were found at the settlement site. Kullamägi is associated with the Comb Ware cultural complex and the Corded Ware cultural

complex and dates to the 3rd millennium BC. The same site was also used over the following two millennia during the Early Metal Age.

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4. Kõnnu Stone Age settlement and burial site

Western Estonia, Saaremaa Island, the coastal formation of the former Baltic Sea (the Litorina Sea). The site was discovered and partly destroyed during gravel mining in 1977. The fieldwork took place in 1977 under the leadership of Vello Lõugas, and in 1977–1986 under the supervision of Lembit Jaanits. It was possible to examine only the lower part of the cultural layer and collect finds from the piles of compacted soil. In total, an area of 5000 m² has been excavated. More than a hundred pits and coloured spots in soil were excavated. Some of these have been interpreted as hearths, and in three cases, they are likely remains of the pit-houses. Three graves were also excavated, and loose human bones were collected from several locations. The site was used during the Narva culture at the end of the 6th millennium and in the first half of the 5th millennium BC.

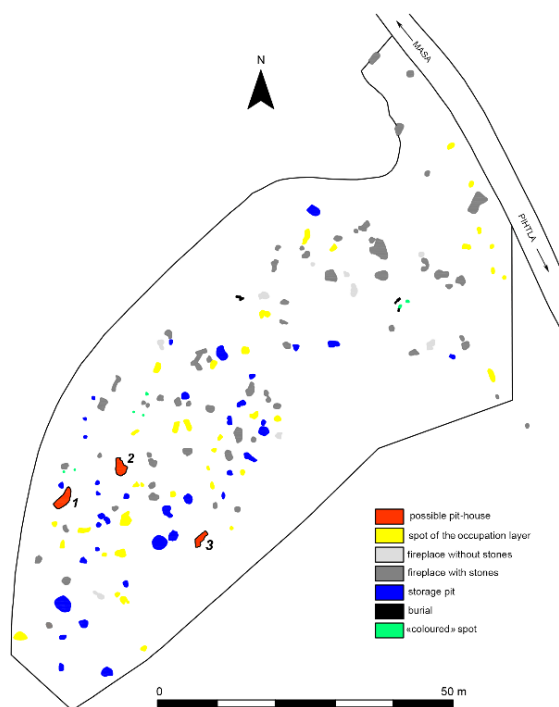


Illustration 2. Plan of the site with the pit-houses (red), hearths (grey), different pits and spots (yellow, blue and green) and burials (black). After Jaanits 1979.

References:

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5. Lommi III Stone Age settlement site

Western Russia (Ingria; Estonian territory before World War II), the bank of the River Notika. The site was discovered in 1939 and excavated under the leadership of Richard Indreko in 1940. In total, an area of 152 m² has been excavated. Some hearths were found. According to the distribution of the finds shown on the excavation plans, one pit-house was identified at the site. The settlement site is associated with the Narva culture (isolated finds) and the Comb Ware cultural complex, and dates from the first half of the 5th millennium BC to the beginning of the 4th millennium BC.

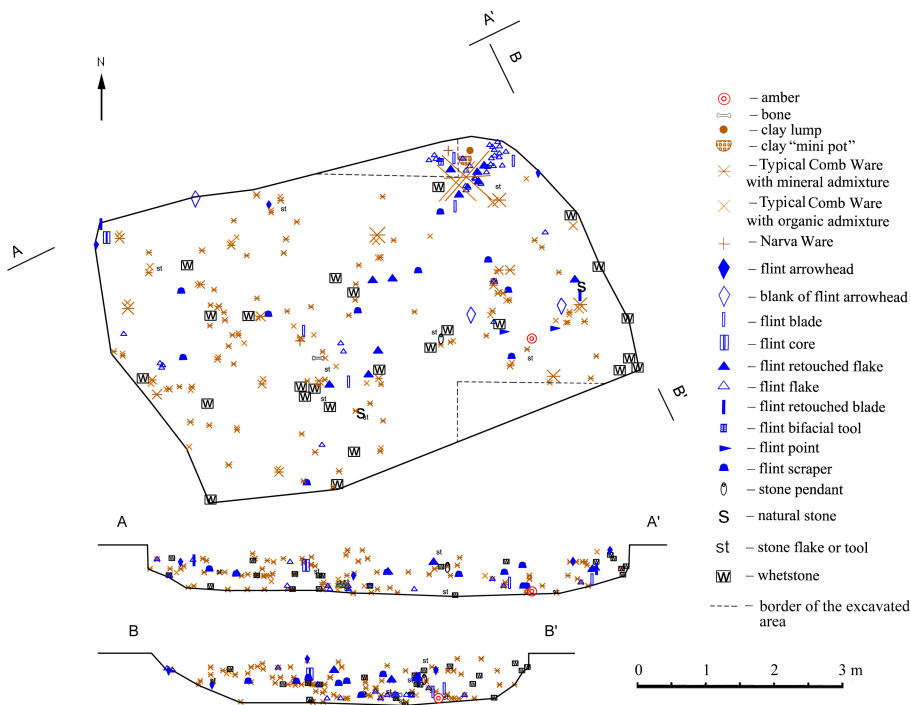


Illustration 3. Plan and profiles of the pit-house, different types of finds are shown by different symbols. After Khrustaleva & Kriiska 2021, fig. 7.

References:

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6. Narva-Jõesuu IIB Stone Age settlement and burial site

Northeastern Estonia, the bank of Kurduküla Stream. Discovered in 2008 and excavated in 2011–2018 under the leadership of Aivar Kriiska and Kerkko Nordqvist. In total, an area of 111.5 m² has been excavated. Two pit-house remains and two burials have been discovered from the settlement site. Narva-Jõesuu IIB is associated with the Comb Ware cultural complex (isolated finds) and Corded Ware cultural complex, and dates to the second half of the 4th and the 3rd millenni BC.

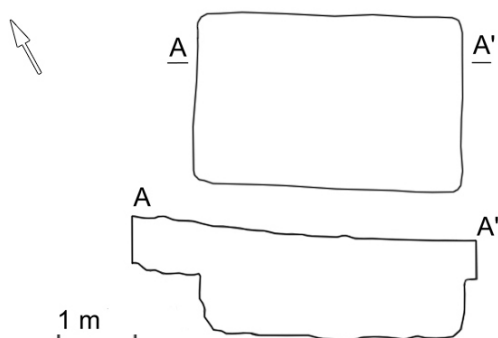


Illustration 4. Plan and profile of one of the pit-houses. After Vanhanen et al. 2023, figs. 5–6.

References:

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7. Pulli Stone Age settlement site

Southwestern Estonia, the bank of the River Pärnu. The site was discovered by geologists in 1967 during the investigation of a gravel pit. Archaeological excavations were conducted in 1968–1973 and 1975–1976 under the leadership of Lembit Jaanits. In total, an area of 1159 m² has been excavated. Several hearths and remains of sharpened wooden stakes were discovered, which were interpreted as possible remains of above-ground dwellings. Settlement site is associated with the Pre-Pottery Stone Age and dates from the first half of the 9th millennium BC.

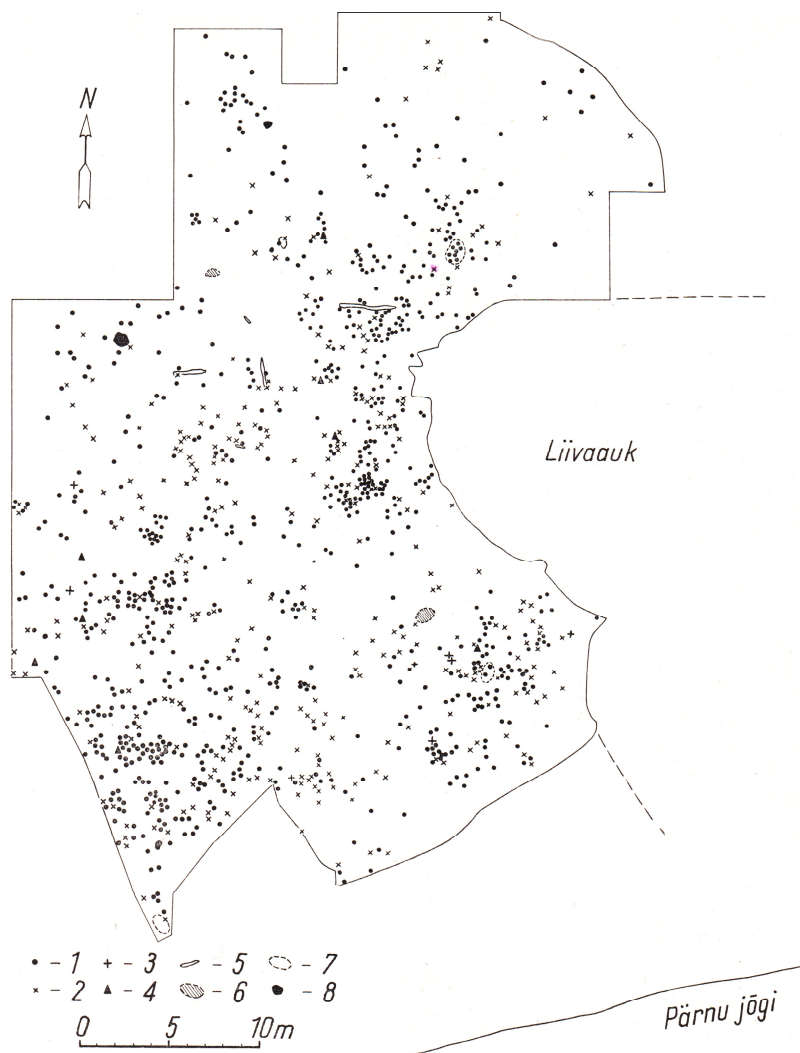


Illustration 5. Plan of the site with remains of wooden details and stakes (3 and 5), hearths (6 and 7), stone and bone artefacts (1 and 2). After Jaanits et al. 1982, fig. 14.

References:

- David, É.** 2005. Preliminary results on a recent technological study of the Early Mesolithic bone and antler industry of Estonia, with special emphasis on the Pulli site. – From Hooves to Horns, from Mollusc to Mammoth. Manufacture and Use of Bone Artefacts from Prehistoric Times to the Present. Proceedings of the 4th meeting of the ICAZ Worked Bone Research Group at Tallinn, 26th–31st of August 2003. Eds. H. Luik, A. M. Choyke, C. E. Batey & L. Lõugas. (Muinasaja Teadus, 15). Tallinn, 67–74.
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8. Riigiküla I Stone Age settlement and Bronze Age burial site

The names Narva I and Narva-Riigiküla I were also used.

Northeastern Estonia, the bank of the River Narva. The site was discovered in 1951 and was excavated in 1951–1953 under the leadership of Nina Gurina. In total, an area of 388 m² has been excavated. Several hearths and pits were found. According to the cultural layer and concentration of finds, the bottoms of three pit-houses and two above-ground dwellings associated with the Narva culture and the Comb Ware cultural complex, as well as finds of the Corded Ware cultural complex have been distinguished there. The site has been repeatedly inhabited during the Stone Age from the end of the 5th millennium to the end of the 3rd millennium BC. During the Bronze Age, an area of two Stone Age pit-houses was used as burial grounds.

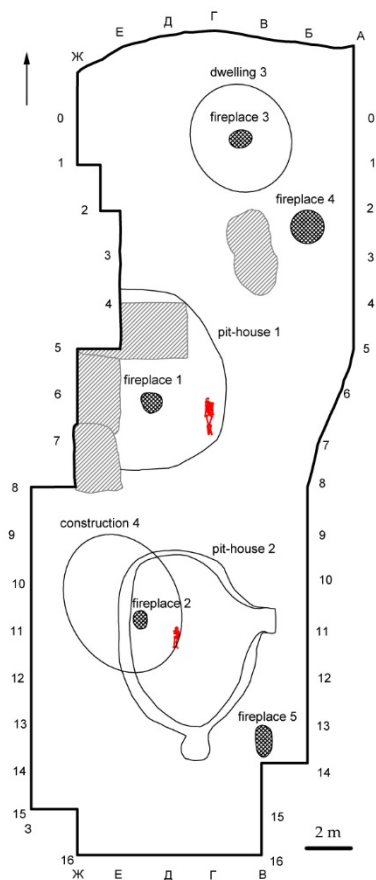


Illustration 6. Plan of the site with the pit-houses and contours of above-ground dwellings (grey contours), hearths (dark-grey polygons), and burials (red). Khrustaleva et al. 2020, fig. 11.

References:

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9. Tamula I Stone Age and Bronze Age settlement and Stone Age burial site

Southeastern Estonia, the shore of Lake Tamula. The site was discovered in 1938, and Richard Indreko conducted archaeological observations the same year. Excavations were carried out in 1942–1943 by Richard Indreko, in 1946 by Harri Moora, and in the years 1955–1956, 1961, 1968, and 1988–1989 under the leadership of Lembit Jaanits. In total, an area of 657 m² has been excavated. Several hearths and ends of wooden stakes, which were interpreted as possible remains of an above-ground dwelling, were found at the settlement site. Although the materials found in Tamula I cover generally the period from the 9th to 2nd millennium BC, the site is foremost associated with the Comb Ware cultural complex. Twenty-five graves discovered at the site date from the 4th to 3rd millennium BC.

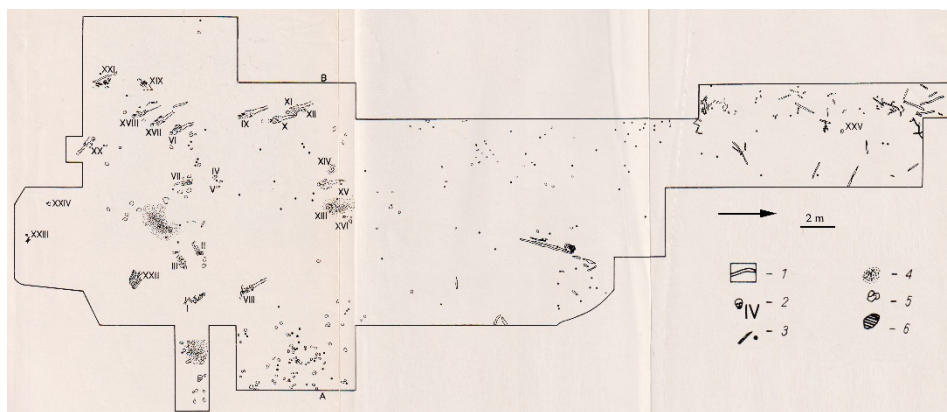


Illustration 7. Plan of the site with remains of wooden details and stakes (1, 3 and 6), burials (2); hearths (4) and stones (5). After Jaanits et al. 1982, tab. IV.

References:

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10. Valma Stone Age settlement and burial site

Southern Estonia, the shore of Lake Võrtsjärv. The site was discovered in 1948 and excavated in 1950 and 1953–1955 under the leadership of Lembit Jaanits. In total, an area of 992 m² has been excavated. Several hearths were found at the settlement site, in some

places, the ground around them had been cleared of stones. Thus, part of the hearths have been interpreted as belonging to above-ground dwellings. The finds, dated from the 4th and 3rd millennia BC, are associated with the Comb Ware cultural complex and the Corded Ware cultural complex. Two graves found at the site date from the 4th millennium BC.

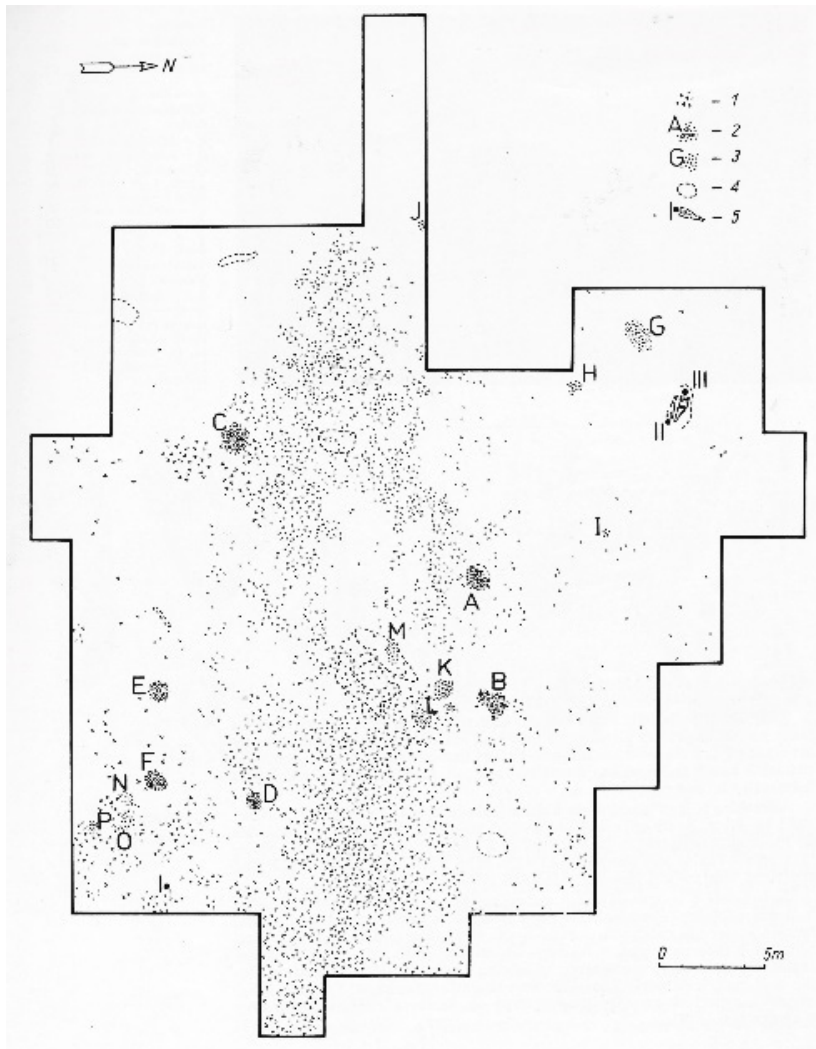


Illustration 8. Plan of the site with hearths (marked with letters), stones and burials. After Jaanits et al. 1982, fig. 44.

References:

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- Ots, M.** 2010. Loomakujukesed Valma keskneoliitilisest kaksikmatusest. – Ilusad asjad. Tähelepanuväärseid leide Eesti arheoloogiakogudest. Ed. Tamla, Ü. (Muinasaja Teadus, 21). Tallinn, 11–22.
- Tõrv, M.** 2018. Persistent Practices. A Multi-Disciplinary Study of Hunter-Gatherer Mortuary Remains from c. 6500–2600 cal. BC, Estonia. (Untersuchungen und Materialien zur Steinzeit in Schleswig-Holstein und im Ostseeraum, 9). Kiel/Hamburg.

11. Vihasoo III Stone Age settlement site

Northern Estonia, the bank of the River Loobu. The site was discovered in 1995 and excavated in 1996 under the leadership of Aivar Kriiska. In total, an area of 44.5 m² has been excavated. The concentration area of the finds was interpreted as the remains of an above-ground dwelling. The settlement site is associated with the Narva culture and dates from the first half of the 5th millennium BC.

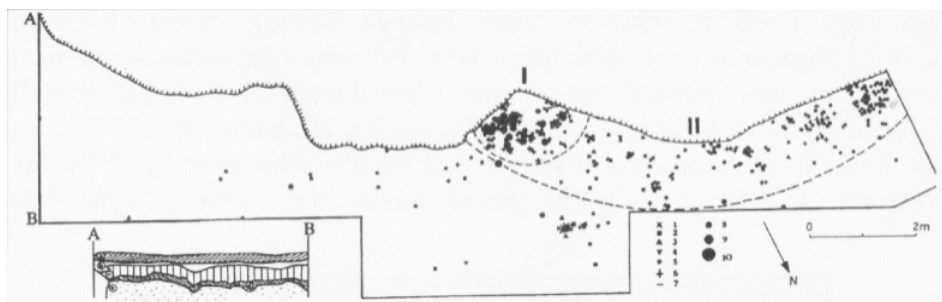


Illustration 9. Plan of the site with concentration of finds outlining contours of a supposed above-ground dwelling (dashed line), stones and burials. After Kriiska 1997, fig. 2.

References:

- Kriiska, A.** 1997. Excavations of the Stone Age Site at Vihasoo III. – Archaeological field works in Estonia in 1996. (Stilus, 7), 19–28.
- Kriiska, A.** 1997. Kroodi ja Vihasoo III asula Eesti varaneoliitiliste kultuurirühmade kontekstis. – Journal of Estonian Archaeology, 1, 7–25.
- Kriiska, A., Oras, E., Lõugas, L., Meadows, J., Lucquin, A. & Craig, O. E.** 2017. Late Mesolithic Narva stage in Estonia: pottery, settlement types and chronology. – Estonian Journal of Archaeology, 21 (1), 52–86.

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12. Abora I Stone Age – Iron Age settlement and burial site

Eastern Latvia, the bank of the River Abora. The settlement site was discovered in 1963 and the excavations were conducted in 1964–1965 and 1970–1971 under the leadership of Ilze Loze, in 2023 under the supervising of Vanda Haferberga and Agnese Čakare and in 2024 of Vanda Haferberga. In total, an area of more than 1300 m² has been excavated. Several hearths and rows of post holes were found at the settlement site. The latter have been interpreted as possible parts of above-ground dwellings. The Stone Age settlement site is associated with the Comb Ware cultural complex and Corded Ware cultural complex, and can be dated mostly from the 4th and 3rd millennia BC. However, this site was also inhabited during the Bronze and Iron Ages. Moreover, 61 burials most of which date from the 4th and 3rd millennia BC have been discovered there.

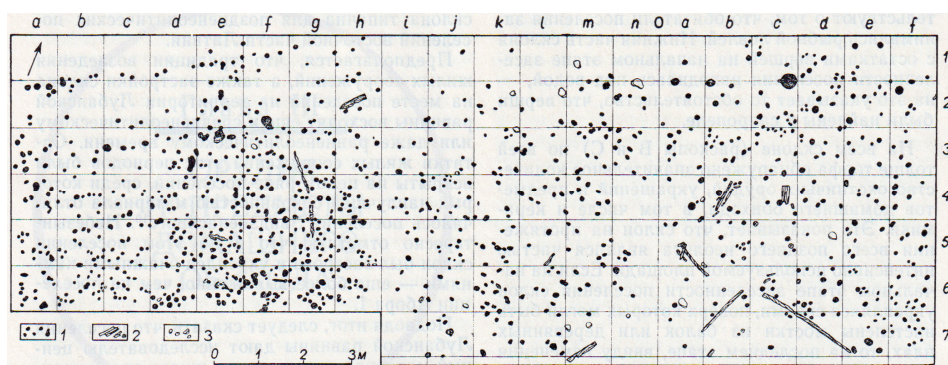


Illustration 10. Part of the plan of the site (areas B, C, D) with post holes (1), remains of wooden details (2) and stones (3) outlining contours of a supposed above-ground dwellings. After Ло́зе 1979, fig. 54.

References:

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- Loze, I.** 2000. Stone Age settlements in the Lake Lubāns wetland in Latvia, and subsistence strategies of the population. – Latvijas PSR Zinātņu Akadēmijas, 54, 3/4(608/609), 109–122.
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- Macāne, A. & Nordqvist, K.** 2021. More than just Zvejnieki: An overview of Latvian Stone Age burials. – European Journal of Archaeology, 24: 3, 299–323.
- Ло́зе, И.А.** 1979. Поздний неолит и ранняя бронза Лубанской низины. Зинатне, Рига.

13. Asne I Stone Age settlement site

Eastern Latvia, the bank of the River Asne. The settlement site was discovered in 1961 and was excavated during 1963–1964 under the leadership of Ilze Loze. In total, an area of 78 m² has been excavated. Some hearths and rows of post-holes, which were interpreted as possible remains of two above-ground dwellings associated with the Comb Ware cultural complex, as well as the Corded Ware cultural complex objects were found at the site. The finds from the site date from the 4th and 3rd millennia BC.

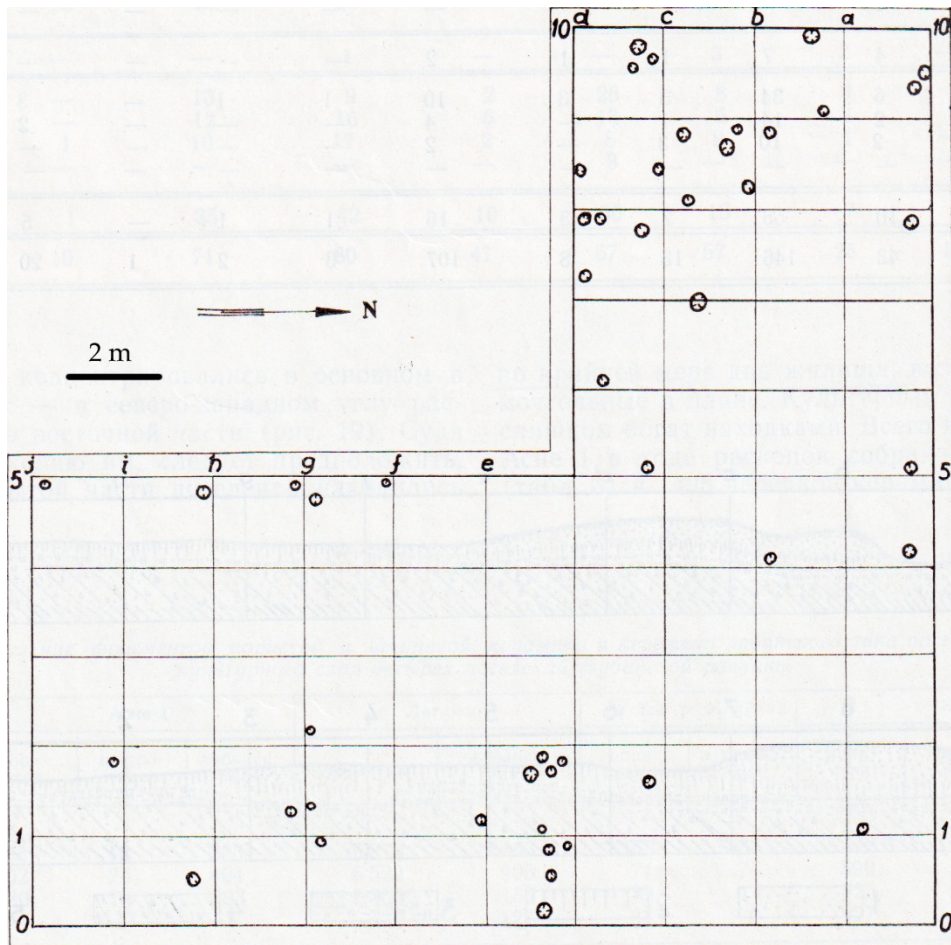


Illustration 11. Plan of the site with post holes outlining contours of a supposed above-ground dwellings. After Лозе 1979, fig. 19.

References:

- Ло́зе, И.А. 1979. Поздний неолит и ранняя бронза Лубанской низины. Зинātне, Рига.
- Loze, I. 2006. Asnes veta neolīta apmetne Lubāna ezera mitrājā. – Arheoloģija un Etnoģrāfija, XXIII, 148–162.
- Loze, I.B. 2021. Asnes apmetnes. – Latvijas arheoloģijas rokasgrāmata. Eds. A. Vasks & G. Zariņa. Zinātne, Riga, 113.

14. Eīņi Stone Age settlement site

Eastern Latvia, the shore of the former Lake Lubāns. The settlement site was discovered in 1965 and excavated in 1966–1967 under the leadership of Ilze Loze. In total, an area of 60 m² has been excavated. Some wooden constructions interpreted as the remains of an above-ground dwelling associated with the Comb Ware cultural complex, as well as the Corded Ware cultural complex and possibly the early Bronze Age objects were found at the site. The finds from the site date from the 4th to the first half of the 2nd millennium BC.

References:

Лозе, И.А. 1979. Поздний неолит и ранняя бронза Лубанской низины. Зинатне, Рига.

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15. Iča Stone Age settlement site

Sometimes, two settlement sites are distinguished as Iča I and Iča II.

Eastern Latvia, the bank of the River Iča. The settlement site was discovered during land improvement works in 1937 and excavated in 1938–1939 under the leadership of Eduards Šturms, in 1964 by Francis Zagorskis and in 1988–1990 by Ilze Loze. In total, an area of 929 m² has been excavated. Some hearths and rows of post-holes, which were interpreted as possible remains of an above-ground dwelling, were found at the settlement site associated with the Narva culture and the Comb Ware cultural complex, as well as finds of the Corded Ware. Loose human bones have also been collected from the cultural layer. Iča was inhabited repeatedly in the 5th, 4th and possibly also in the 3rd millennia BC.

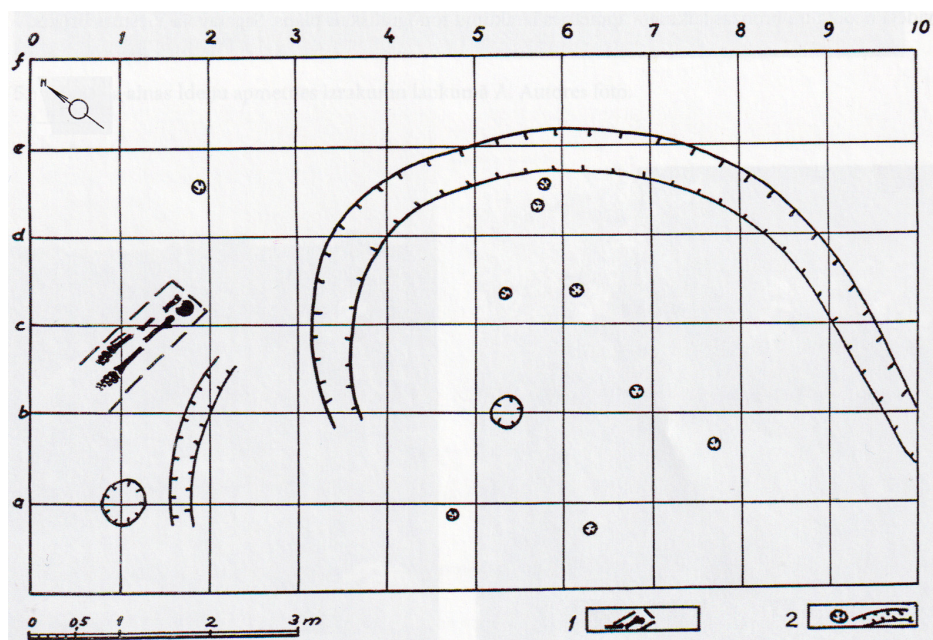


Illustration 12. Part of the plan of the site with a burial (1), contours of pits and post holes (2) belonging to the supposed above-ground dwellings. After Лозе 2015, fig. 2.

References:

Loze, I. 1993. Arheoloģiskie pētījumi Ičas neolīta apmetnē. – Latvijas Vēstures Institūta Žurnāls, 3, 9–21.

Loze, I. 2010. Iča Neolithic Settlement in the Lake Lubāns Wetland. – At the Origins of the Culture of the Balts. *Archaeologia Baltica*, 13, 91–109.

Loze, I.B. 2021. Ičas I un II apmetne. – Latvijas arheoloģijas rokasgrāmata. Eds. A. Vasks & G. Zariņa. Zinātne, Rīga, 115–116.

Macāne, A. & Nordqvist, K. 2021. More than just Zvejnieki: An overview of Latvian Stone Age burials. – *European Journal of Archaeology*, 24: 3, 299–323.

16. Jurizdika I Stone Age settlement site

Eastern Latvia, the shore of Lake Lielais Ludza. The settlement site was discovered in 1959 and was excavated the same year under the leadership of Rauls Šnore. In total, an area of 35 m² has been excavated. Some wooden constructions have been found there were interpreted as the remains of an above-ground dwelling. The finds from the site date from the 4th and 3rd millennia BC.

References:

- Šnore, R.** 1995. Budjankas un Jurizdikas apmetnes Lielā Ludzas ezera piekrastē. – Latvijas Vēstures Institūta Žurnāls, 3, 9–28.
- Utrāns, J.** 2021. Jurizdikas I un II apmetne. – Latvijas arheoloģijas rokasgrāmata. Eds. A. Vasks & G. Zariņa. Zinātne, Rīga, 117.

17. Kreiči Stone Age – Historical period settlement and burial site

Eastern Latvia, the bank of the River Isnauda. The site was discovered during sand quarrying in 1955 by Elvīra Šnore and excavated in 1956–1957 under the leadership of Lūcija Vankina, in 1958–1959 by Francis Zagorskis and in 2022 by Mārcis Kalniņš and Aija Macāne. In total, an area of about 760 m² has been excavated. Several hearths, pits, ends of wooden stakes and post holes, which were interpreted as possible remains of an above-ground dwelling, were found. The area of the settlement site has been used as a burial ground, and a total of at least 23 graves have been excavated from there. Settlement and burial site was mainly in use during the 4th and 3rd millennia BC, but some finds from the Bronze Age, Iron Age, and historical periods have also been discovered there.

References:

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18. Kvāpāni II Stone Age – Historical period settlement site and Stone Age burial site

Eastern Latvia, the bank of the River Rēzekne. The settlement site was discovered in 1974 and excavated in 1976–1979 under the leadership of Ilze Loze. In total, an area of 2069 m² has been excavated. Several hearths, ends of wooden stakes and rows of post holes were found at the settlement site. The latter have been interpreted as parts of above-ground dwellings. From the settlement site, 15 burials have been discovered. The site was mainly in use during the Pre-Pottery and Pottery Stone Age, and most of the finds date from the 4th millennium BC (the Comb Ware cultural complex). However, some finds from the 3rd millennium BC (the Corded Ware cultural complex), the Bronze and Iron Ages, as well as historical periods have also been discovered there. The burials likely date from the Stone Age.

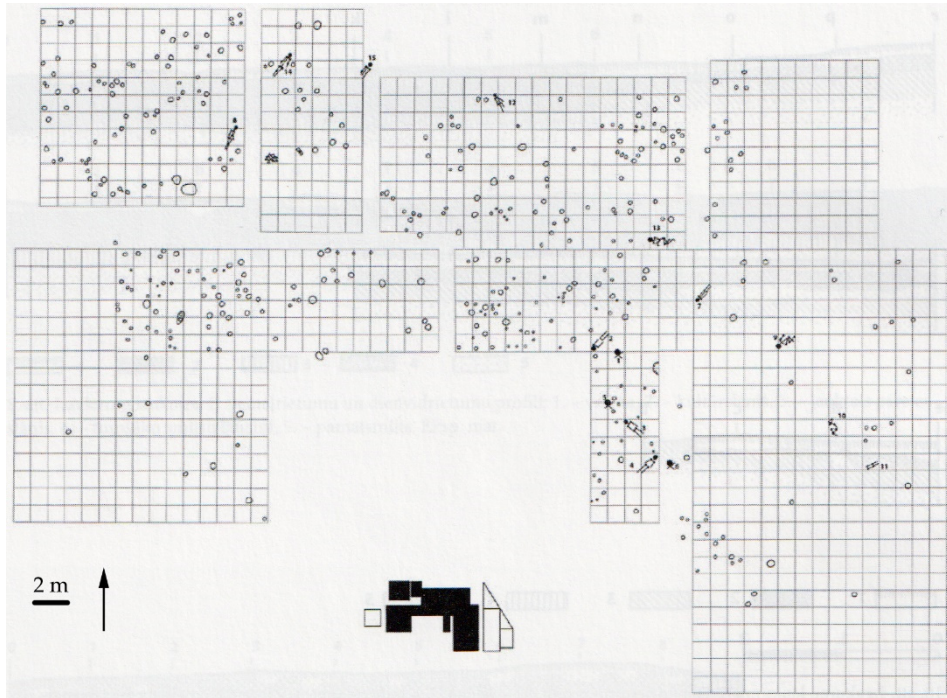


Illustration 13. Plan of the site with post holes belonging to the supposed above-ground dwellings and burials. After Loze 2015, fig. 12.

References:

- Loze, I.** 2015. Lubāna mitrāja apdzīvotība akmens laikmetā. Rēzeknes novada mezolīta un neolīta aometnes. Rēzeknes Augstskola, Rēzekne.
- Loze, I. B.** 2021. Kvāpānu I, II un III apmetne. – Latvijas arheoloģijas rokasgrāmata. Eds. A. Vasks & G. Zariņa. Zinātne, Rīga, 121.
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19. Lagaža Stone and Bronze Age settlement site

Eastern Latvia, banks of the Rivers Lagaža and Posma. The settlement site was discovered in 1964 and excavated in 1965–1966 and 1968 by Ilze Loze. In total, an area of 377 m² has been excavated. Several hearths, rows of post holes and wooden remains, which were interpreted as possible remains of above-ground dwellings associated with the Comb Ware cultural complex, were found at the settlement site. Lagaža was inhabited during the 4th and 3rd millennia BC, and also in the early Bronze Age, during the first half of the 2nd millennium BC.



Illustration 14. Plan of the site with remains of wooden details (1, 2 and 5), post holes (3 and 4) outlining contours of a supposed above-ground dwellings, and ash (6). After Лозе 1979, fig. 50.

References:

- Loze, I. B.** 2021. Lagažas apmetne. – Latvijas arheoloģijas rokasgrāmata. Eds. A. Vasks & G. Zariņa. Zinātne, Rīga, 121–122.
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20. Leimaniški Stone Age settlement site

Southeastern Latvia, the bank of the River Malta. The settlement site was discovered and excavated under the leadership of Lūcija Vankina in 1961. In total, an area of 80 m² has been excavated. One hearth and rows of post holes found at the settlement site, were interpreted as parts of an above-ground dwelling. Leimaniški is associated with the Corded Ware cultural complex and dates from the 3rd millennium BC.

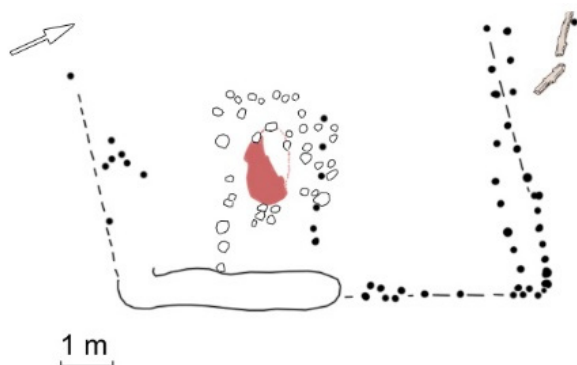


Illustration 15. Plan of the above-ground dwelling with a hearth (brown), stones (grey contours) and rows of post holes (black). Ванкина 1980, fig. 10.

References:

- Vankina, L.** 1962. Arheoloģiskie izrakumi vēlā neolīta apmetnē Maltas upes krastā pie Leimanišķiem. Referātu tēzes zinātniskai atskaites sesijai par 1961. gada arheoloģiskām un etnogrāfiskām ekspedīcijām. Rīga, 13–15.
- Vasks, A.** 2021. Leimanišķu apmetne. – Latvijas arheoloģijas rokasgrāmata. Eds. A. Vasks & G. Zariņa. Zinātne, Rīga, 121.
- Ванкина, Л.Я.** 1980. Шнуровая керамика на территории Латвии. – Из древнейшей истории балтийских народов (по данным археологии и антропологии). Ed. Э.С. Мугуревич. Зинатне, Рига, 47–58.

21. Nainiekste Stone Age settlement site

Eastern Latvia, the shore of the former Lake Nainiekste. The settlement site was discovered in 1963 and excavated under the leadership of Ilze Loze in 1964. In total, an area of 116 m² has been excavated. Some hearths and rows of post holes were discovered, which have been interpreted as parts of an above-ground dwelling. The site was mainly in use during the 4th and 3rd millennia BC and is associated with the Comb Ware cultural complex.

References:

- Loze, I.** 2021. Nainiekstes apmetne. – Latvijas arheoloģijas rokasgrāmata. Eds. A. Vasks & G. Zariņa. Zinātne, Rīga, 121.
- Лозе, И.А.** 1988. Поселения каменного века Лубанской низины. Мезолит, ранний и средний неолит. Зинатне, Рига.

22. Piestiņa Stone Age settlement site

Eastern Latvia, the bank of the River Piestiņa. The settlement site was discovered in 1961 and was excavated in 1963–1964 under the leadership of Francis Zagorskis. Some hearths and remains of wooden stakes were discovered, which were interpreted as possible remains of above-ground dwellings. Piestiņa was primarily in use during the 4th millennium BC and is associated with the Comb Ware cultural complex.

References:

- Zagorska, I.** 2021. Piestiņas apmetne. – Latvijas arheoloģijas rokasgrāmata. Eds. A. Vasks & G. Zariņa. Zinātne, Rīga, 128.

23. Salaspils Laukskola Stone Age settlement site

Central Latvia, the bank of the River Daugava. The settlement site was discovered in 1967 and excavated in 1967–1975 under the leadership of Anna Zariņa (in 1973–1974, in collaboration with Ilga Zagorska). The entire excavated area of Laukskola covers approximately 10 hectares. From an area approximately 500 m long and 50 m wide, six concentrations of flint artefacts have been identified. These finds have been interpreted as the remains of above-ground dwellings. The settlement site dates from the end of the Palaeolithic period.

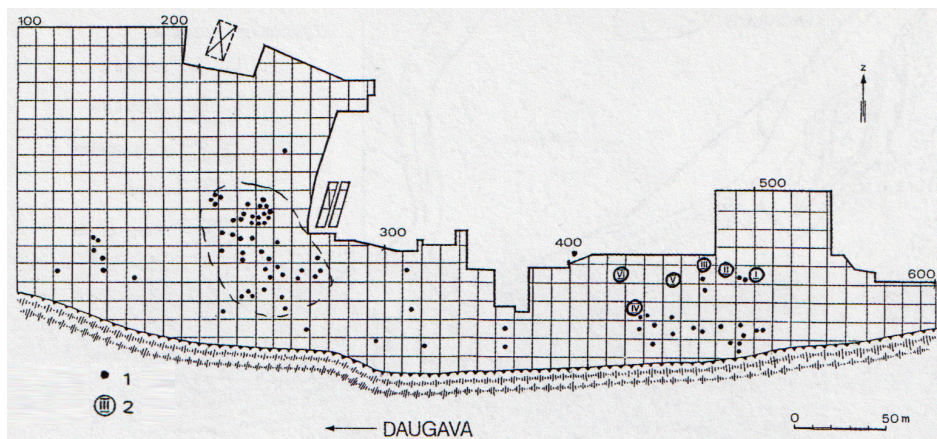


Illustration 16. Plan of the site with flint finds (1) and their concentrations (2). Zagorska 2012, fig. 24.

References:

- Zagorska, I.** 1994. Salaspils Laukskolas akmeņu laikmeta apmetne. – *Arheoloģija un etnogrāfija*, XVI. 16, 14–28.
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- Zagorska, I.** 2012. Senie ziemeļbriežu mednieki Latvijā. *Zinātne*.
- Zagorska, I.** 2021. Laukskolas apmetne. – *Latvijas arheoloģijas rokasgrāmata*. Eds. A. Vasks & G. Zariņa. *Zinātne*, Rīga, 122.

24. Sārnate Stone Age settlement site

Western Latvia, the shore of a former lake near the Baltic Sea. The site was discovered in 1938 during reclamation works. The excavations were carried out in 1938–1940 under the leadership of Eduards Šturms, and in the years 1949 and 1953–1959 under the supervision of Lūcija Vankina. In total, an area of 2876 m² has been excavated. From the settlement site, 40 remains of above-ground dwellings have been discovered. Of these, 15 are associated with the Comb Ware cultural complex, and 25 with the Late Narva (Sārnate Ware) culture. The settlement site dates to the 4th millennium BC.

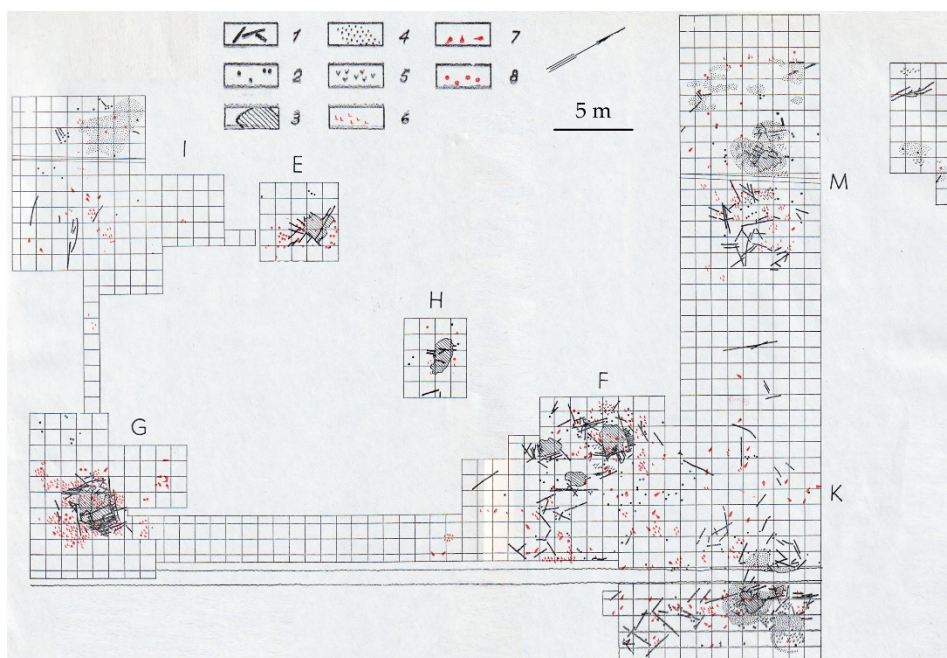


Illustration 17. Plan of the site with remains of above-ground Sārņate-type dwellings: remains of wooden details (1–3), sand (4), nut shells (5), pottery (6), wooden items (7) and amber (8). Ванкина 1970, fig. 4.

References:

- Bērziņš, V.** 2008. Sārņate: Living by a Coastal Lake during the East Baltic Neolithic. Acta Universitatis Ouluensis B, 86. Oulu University Press, Oulu <http://herkules.oulu.fi/isbn9789514289415/>.
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- Šturms, E.** 1948. Die Moorsiedlungen im Ostbaltikum und Westsibirien. – Fornvännen, 5–6, 364.
- Ванкина, Л.Я.** 1970. Торфяниковая стоянка Сарņате. Зинатне, Рига.

25. Užavas Celmi Stone Age settlement site

Western Latvia, likely the shore of a former lake or Baltic Sea lagoon. The settlement site was discovered in 2000 during the field survey led by Valdis Bērziņš and excavated in 2001 under the leadership of Normunds Grasis and Egita Ziediņa. In total, an area of 130 m² has been excavated. The remains of a pit-house, dating from the second half of 7th millennium BC, were discovered there. The same site was also used during the 3rd millennium BC and is associated with the Corded Ware cultural complex.

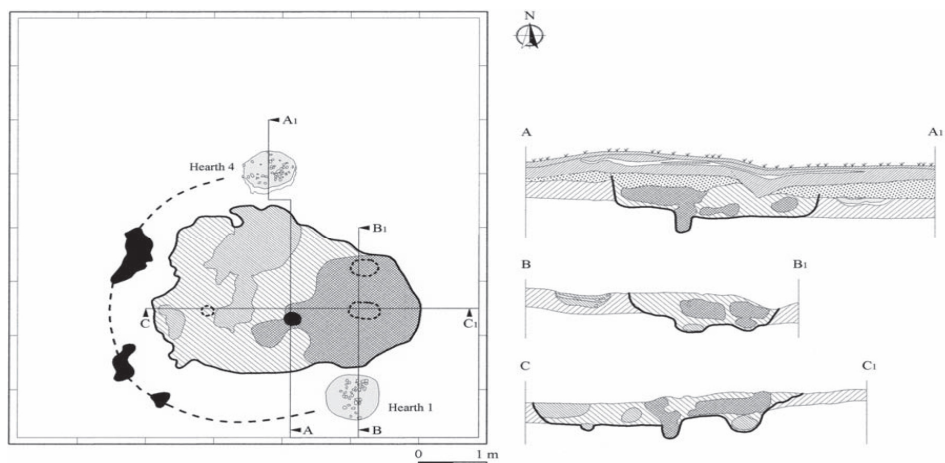


Illustration 18. Plan and profiles of the pit-house with hearths (light grey), and post holes (black). Grasis 2010, fig. 2.

References:

- Grasis, N.** 2010. A Mesolithic dwelling: evidence interpreting from the Užavas Celmi site in Latvia. At the Origins of the Culture of the Balts. – *Archaeologia Baltica*, 13, 58–68.
- Grasis, N.** 2021. Celmu apmetne. – *Latvijas arheoloģijas rokasgrāmata*. Eds. A. Vasks & G. Zariņa. Zinātne, Rīga, 114.
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26. Zvejnieki I Stone Age settlement site

Northern Latvia, the bank of the River Rūja. The settlement site was discovered in the second half of the 19th century by Carl Georg Sievers and excavated in 1964–1966 under the leadership of Francis Zagorskis and in 2005–2009 under the supervision of Ilga Zagorska, Lars Larsson and Valdis Bērziņš. In total, an area of 287 m² has been excavated. Among other finds, a section of a depression extending into the natural ground was found, which has been interpreted as part of a pit-house associated with the Comb Ware cultural complex. Zvejnieki I dates from the 4th millennium.

References:

- Larsson, L., Stutz, L. N., Zagorska, I., Bērziņš, V., & Ceriņa, N.** 2017. New Aspects of the Mesolithic-Neolithic Cemeteries and Settlement at Zvejnieki, Northern Latvia. – *Acta Archaeologica*, 88 (1), 57–93.
- Zagorska, I.** 2017. Secrets of Ancient Lake Burtnieks. Stone Age sites by the shore of Lake Burtnieks. Zinātne.
- Zagorska, I.** 2021. Zvejnieku I un II apmetne. – *Latvijas arheoloģijas rokasgrāmata*. Eds. A. Vasks & G. Zariņa. Zinātne, Rīga, 142.

27. Zvejsala Stone and Bronze Age settlement site

Eastern Latvia, the bank of the River Malta. The settlement site was discovered in 1962 and excavated in 1963–1964 and 1968–1969 under the leadership of Ilze Loze. In total, an area of 287 m² has been excavated. Several rows of post holes, which were interpreted as possible remains of an above-ground dwelling, were found at the settlement site

associated with the Narva culture and the Comb Ware cultural complex. Zvejsala was repeatedly inhabited from the 5th to 3rd millennium BC. Some finds also date back to the early Bronze Age – the first half of the 2nd millennium BC.

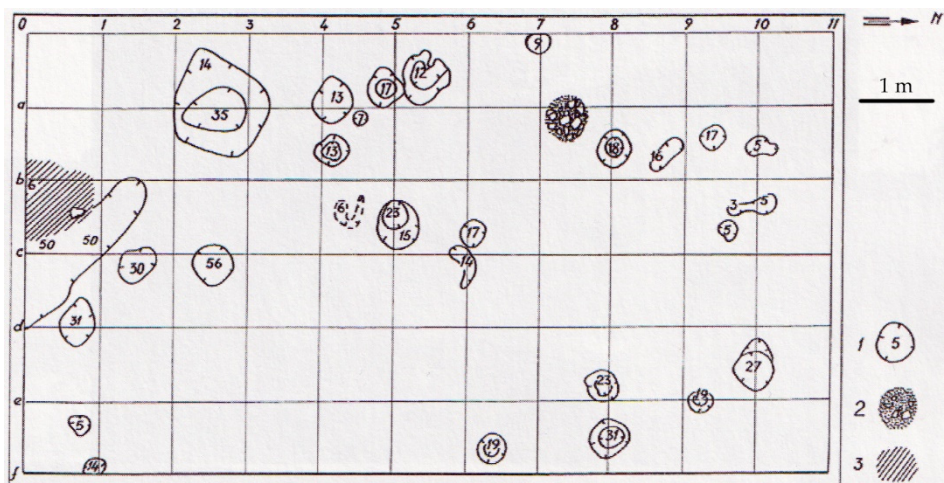


Illustration 19. Plan of the site with pits and post holes (1), hearth (2), and redeposited sand (3). Loze 2015, fig. 7.

References:

- Loze, I.** 1994. Zvejsalu neolita apmetne Lubāna ieplaka. – *Arheoloģija un Etnogrāfija*, XVI, 29–45.
- Loze, I.** 2015. Lubāna mitrāja apdzīvotība akmens laikmetā. Rēzeknes novada mezolīta un neolīta apmetnes. Rēzeknes Augstskola, Rēzekne.
- Loze, I.** 2021. Zvejsalu apmetne. – *Latvijas arheoloģijas rokasgrāmata*. Eds. A. Vasks & G. Zariņa. Zinātne, Rīga, 143.
- Лозе, И.А.** 1979. Поздний неолит и ранняя бронза Лубанской низины. Зинатне, Рига.

28. Zvidze Stone Age settlement site

Eastern Latvia, the shore of the former Lake Lubāns. The settlement site was discovered in 1973 and excavated in 1973–1975, 1981–1984, 1999 and 2007 under the leadership of Ilze Loze. In total, an area of 449 m² has been excavated. Rows of post holes were discovered that mark the outline of an above-ground dwelling associated with the Comb Ware cultural complex. Zvidze is a multi-layered settlement site that has been inhabited repeatedly from the second half of the 7th to the 3rd millennium BC.



Illustration 20. Plan of an above-ground dwelling with rows of post holes. Loze 2001, fig. 52.

References:

- Loze, I.** 2000. Stone Age settlements in the Lake Lubāns wetland in Latvia, and subsistence strategies of the population. – *Latvijas PSR Zinātņu Akadēmijas*, 54, 3/4(608/609), 109–122.
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LITHUANIA

29. Alksnynė 3 Stone Age settlement site

Western Lithuania, the coast of the Baltic Sea. The site was discovered by Gytis Piličiauskas in 2012 and excavations under his leadership were conducted in 2016. In total, an area of 32 m² has been excavated. Remains of a hearth, pits and remains of a pit-house associated with the Corded Ware cultural complex were discovered at the site. The finds from the site date from the 3rd millennium BC.

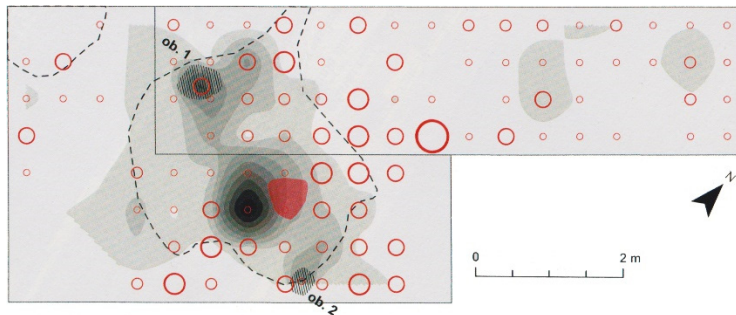


Illustration 21. Plan of the site with the pit-house (dashed line), hearths (red polygon) and pits (hatched polygons). Red circles show pottery density, grey colour shows density of burnt bones. After Piličiauskas 2018, fig. 7.

References:

Piličiauskas, G. 2018. Virvelinės keramikos kultūra Lietuvoje, 2800–2400 cal BC. Lietuvos Istorijos Institutas, Vilnius.

30. Biržulis Stone Age settlement site

Western Lithuania, the shore of the former Lake Biržulio. The site was discovered by Adomas Butrimas in 1983 and excavations under his leadership were conducted in 1984 and 1985. In total, an area of 356 m² has been excavated. A concentration of finds discovered at the site were interpreted as remains of an above-ground dwelling associated with the Corded Ware cultural complex. The finds from the site date from the Pre-Pottery to the end of the Pottery Stone Age.

References:

Butrimas, A., Ostrauskienė, D. 2004. Biržulio apyežerio neolito gyvenviečių virvelinė keramika. – *Acta Academiae Artium Vilnensis*, 34, 121–144.

Piličiauskas, G. 2018. Virvelinės keramikos kultūra Lietuvoje, 2800–2400 cal BC. Lietuvos Istorijos Institutas, Vilnius.

31. Daktariškė 1 Stone Age settlement site

Western Lithuania, the shore of the former Lake Biržulio. The site was discovered by Adomas Butrimas in 1979 and excavations under his leadership were conducted in 1980. In total, an area of 524 m² has been excavated. Several hearths and pits were discovered at the site. The rows of post holes discovered there were interpreted as the remains of an above-ground dwelling associated with the Late Narva culture or Corded Ware cultural complex. The finds from the site date from the late stage of the Pottery Stone Age.

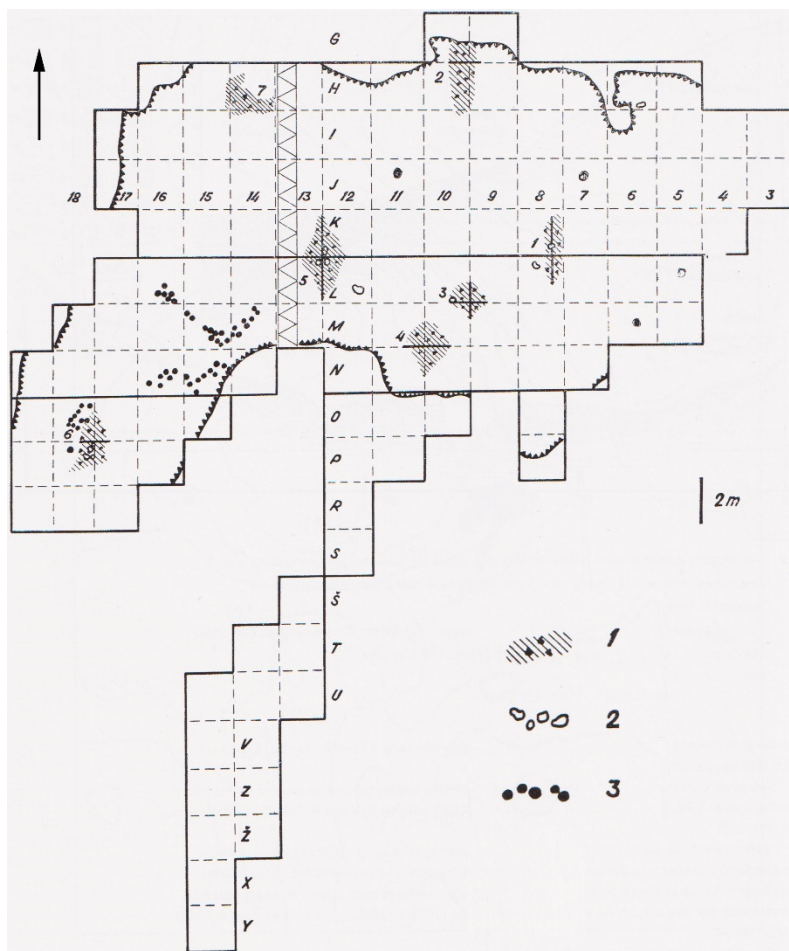


Illustration 22. Plan of the site with hearths (1), stones (2) and post holes (3). After Butrimas 2019, fig. 192.

References:

- Butrimas, A.** 2019. Biržulis. Medžiotojai, žvejai ir senieji žemdirbiai X–II tūkstantmetyje pr. Kr. I Paminklų tyrinėjimai. Vilniaus dailės akademijos leidykla, Vilnius.
- Butrimas, A., Ostrauskienė, D.** 2004. Biržulio apyežerio neolito gyvenviečių virvelinė keramika. – *Acta Academiae Artium Vilnensis*, 34, 121–144.
- Piličiauskas, G.** 2018. Virvelinės keramikos kultūra Lietuvoje, 2800–2400 cal BC. Lietuvos Istorijos Institutas, Vilnius.

32. Dubičiai 2 Stone Age settlement site

Southeastern Lithuania, the shore of the former Lake Pelesos. The site was discovered by Vandalinas Šukevičius in the 19th century and investigated in 1953–1955 by Konstantinas Jablonskis. Excavations were conducted under the leadership of Rimutė Rimantienė in 1962. In total, an area of 330 m² has been excavated. Number of hearths, pits and post holes (supposed remains of a pit-house) associated with the Neman culture, as well as

hearths of the Corded Ware cultural complex were discovered at the site. The finds from the site date from the Late Palaeolithic to the end of the Stone Age.

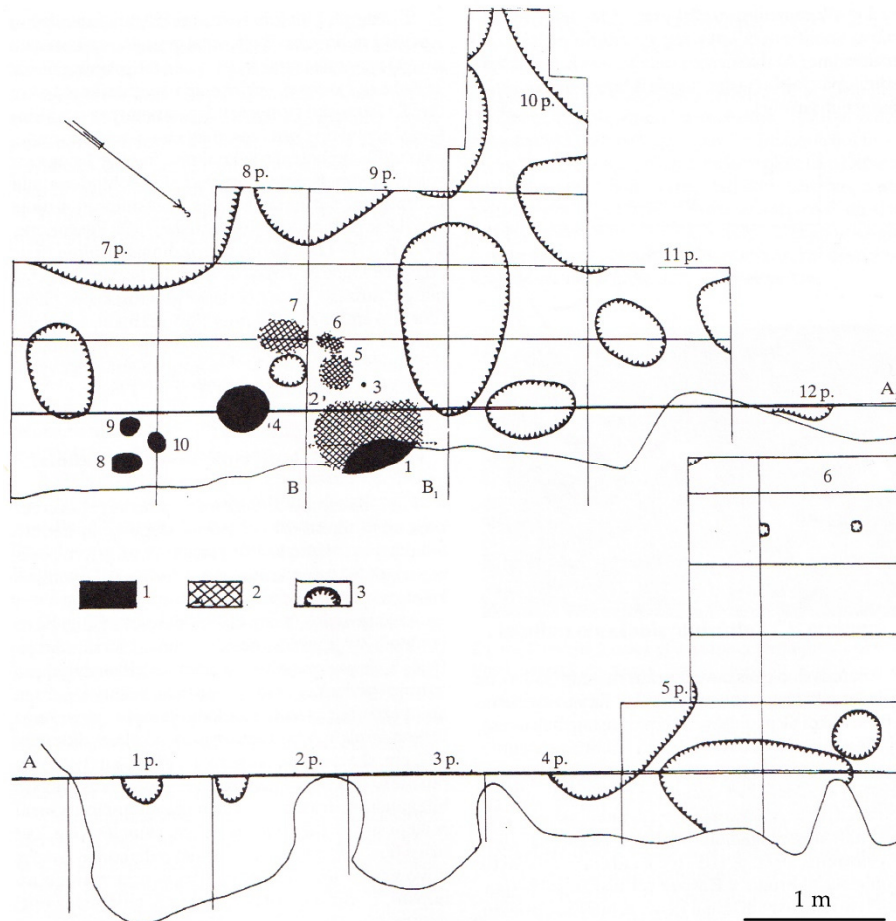


Illustration 23. Plan of the site with pits and post holes (1), hearths (2), and modern pits disturbed the cultural layer (3). After Rimantienė 1999, fig. 4.

References:

Rimantienė, R. 1999. Pelesos paežerių akmens amžiaus stovyklos ir gyvenvietės. – Lietuvos archeologija, 16, 79–108.

33. Gluobių I Stone and Iron Age settlement site

Western Lithuania, the bank of the River Šešupė. The site was discovered in 1984 by Vygandas Juodagalvis and excavated under his leadership in 1984, 1990 and 1991. In total, an area of 84 m² has been excavated. A few hearths, post holes and remains of a Pre-pottery Stone Age pit-house were discovered at the site. The finds from the site date from the Pre-Pottery Stone Age to the Iron Age.

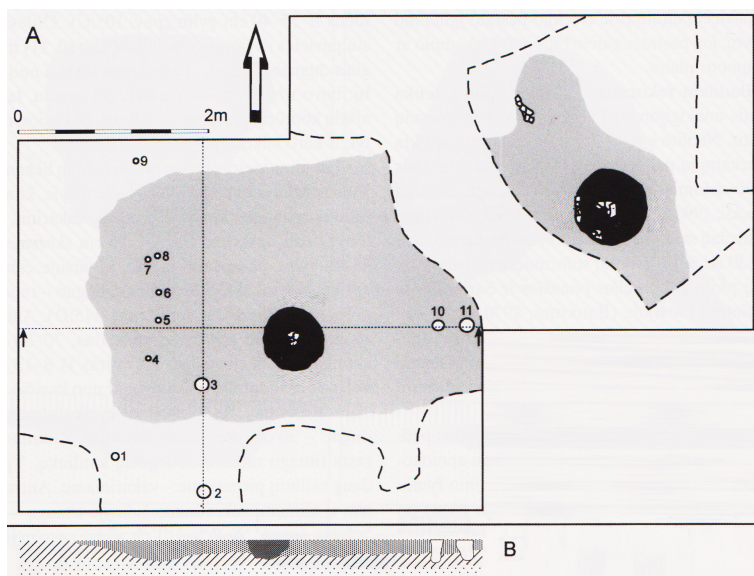


Illustration 24. Plan of the site: A – The pit-house (grey) with hearths (black) and post holes (numbered white spots); B – Profile of a part of the pit-house. After Juodagalvis 2010, fig. 115.

References:

Juodagalvis, V. 2010. Užnemunės priešistorė. Diemedžio, Vilnius.

34. Katra 1 Stone Age and Early Iron Age settlement site and Middle Ages burial site Southern Lithuania, the wetland of the Katra River valley. The site was discovered by Algirdas Girininkas in 1998 and excavated under his leadership in 1998–1999. In total, an area of 2029 m² has been excavated. Number of hearths, pits and remains of a pit-house associated with the Dubičiai or Narva culture were discovered at the site. Moreover, two cremations from the 9th–11th centuries were found there. The finds from the site date from the Late Palaeolithic to the Early Iron Age and from the Middle Ages.

References:

Marcinkevičiūtė, E. 2016. The Neolithic in South-east Lithuania. – Hundred years of archaeological discoveries in Lithuania. Eds. G., Zabiela, Z. Baubonis & E. Marcinkevičiūtė. Society of Lithuanian Archaeology, Vilnius, 50–65.

Girininkas, A. 2000. Katros 1-oji gyvenvietė. – Archeologiniai tyrinėjimai Lietuvoje 1998 ir 1999 metais, 12–14.

35. Katra 2 Stone Age and Early Iron Age settlement site

Southern Lithuania, the wetland of Katra River valley. The site was discovered in 1998 by Algirdas Girininkas and excavated under his leadership in the same year. In total, an area of 1520 m² has been excavated. Number of hearths, post holes, pits and remains of three pit-houses associated with the Narva culture were discovered at the site. The finds from the site date from the Pre-Pottery Stone Age to the Early Iron Age.

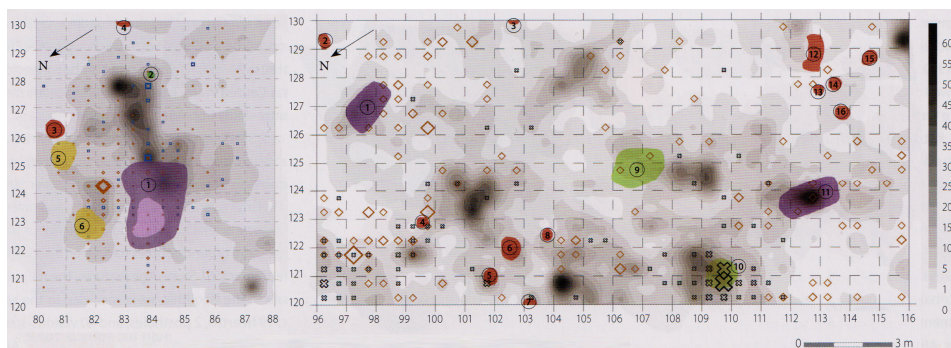


Illustration 25. Plan of the site with pit-houses (violet), hearths (red) and refused pits (yellow and green). Different types of finds are show with symbols, grey colour shows density of flint artefacts. After Marcinkevičiūtė 2016, fig. 20–21.

References:

- Brazaitis, D.** 2000. Katros 2-oji gyvenvietė. – Archeologiniai tyrinėjimai Lietuvoje 1998 ir 1999 metais, 5–8.
- Marcinkevičiūtė, E.** 2016. The Neolithic in South-east Lithuania. – Hundred years of archaeological discoveries in Lithuania. Eds. G., Zabiela, Z. Baubonis & E. Marcinkevičiūtė. Society of Lithuanian Archaeology, Vilnius, 50–65.

36. Kretuonas 1 Stone – Bronze Age and Middle Ages settlement site and burial site Eastern Lithuania, the shore of Lake Kretuonas. The site was discovered in 1978 by Algirdas Girininkas and excavated in 1979–1985 and 1996–2001 under his leadership. In total, an area of 3196 m² has been excavated. Number of hearths, stones and remains of wooden stakes associated with Narva culture and finds of the Pre-Pottery Stone Age, Comb Ware cultural complex, Corded Ware cultural complex and Bronze Age were found. In addition, a burial and finds date from the 10th–11th centuries, as well as remains of a house date from the 19th–mid. 20th century AD were discovered at the site. Thus, the finds from the site date from the 11th millennium BC to the 20th century AD.

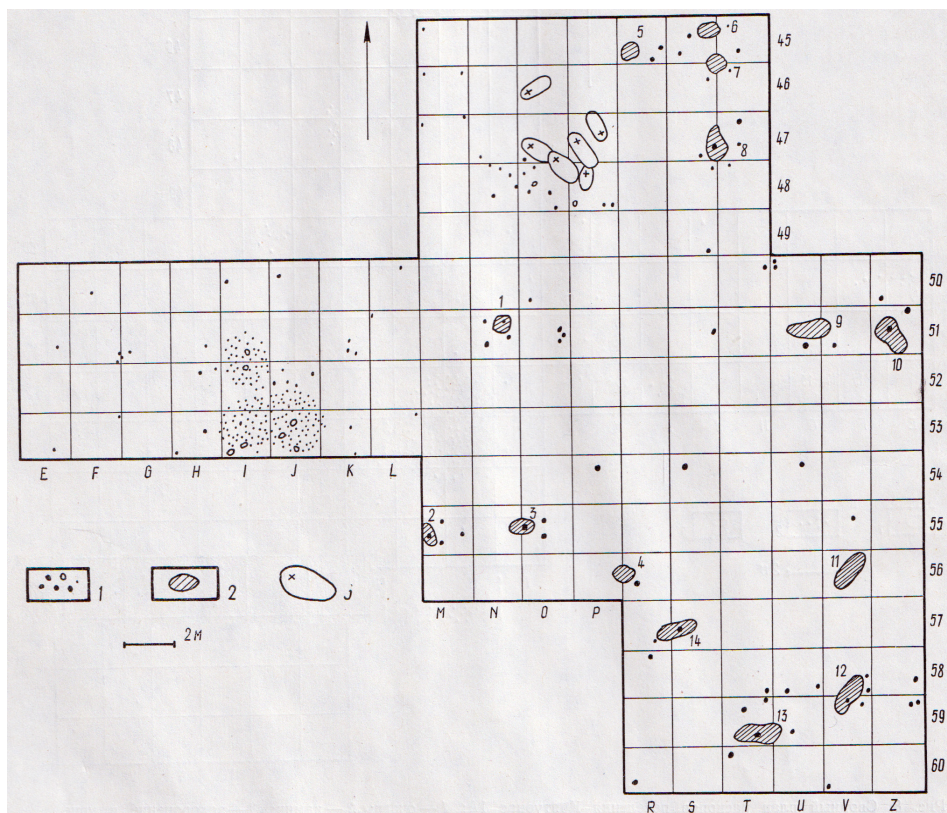


Illustration 26. Part of the plan of the site 36 (Kretuonas 1B) with stones (1), hearths (2) and burials (3). After Girininkas 1990, fig. 10.

References:

- Girininkas, A.** 1980. Kretuono (Švenčionų r.) I gyvenvietės tyrinėjimai 1979 metais. – Archeologiniai tyrinėjimai Lietuvoje 1978 ir 1979 metais, 10–11.
- Girininkas, A.** 1982. Kretuono I gyvenvietė. – Archeologiniai tyrinėjimai Lietuvoje 1980 ir 1981 metais, 9–12.
- Girininkas, A.** 1984. Kretuono I-oji gyvenvietė. – Archeologiniai tyrinėjimai Lietuvoje 1982 ir 1983 metais, 7–9.
- Girininkas, A.** 1986. Kretuono I-os gyvenvietės tyrinėjimai 1984–1985 m. – Archeologiniai tyrinėjimai Lietuvoje 1984 ir 1985 metais, 9–12.
- Girininkas, A.** 1990. Kretuonas. Vidurinis ir vėlyvasis neolitas. – Lietuvos archeologija, 7, 6–111.
- Girininkas, A.** 1994. Tyrinėjimai Kretuono apyežeryje. – Archeologiniai tyrinėjimai Lietuvoje 1992 ir 1993 metais, 10–14.
- Girininkas, A.** 2000. Kretuono I-oji gyvenvietė. – Archeologiniai tyrinėjimai Lietuvoje 1998 ir 1999 metais, 16–18.
- Girininkas, A.** 2005. Ar buvo polinių gyvenviečių akmens amžiuje Lietuvoje? – Lituanistica, 62: 2, 33–45.

37. Kubilėliai Stone Age and Iron Age settlement site

Southern Lithuania, the bank of the River Šešupė. The site was discovered in 1982 by Vygandas Juodagalvis and excavated under his leadership in 1984–1989. In total, an area of 938 m² has been excavated. Number of hearths, post holes, pits and remains of three Pre-Pottery Stone Age pit-houses were discovered at the site. The finds from the site date from the Pre-Pottery Stone Age to the Iron Age.

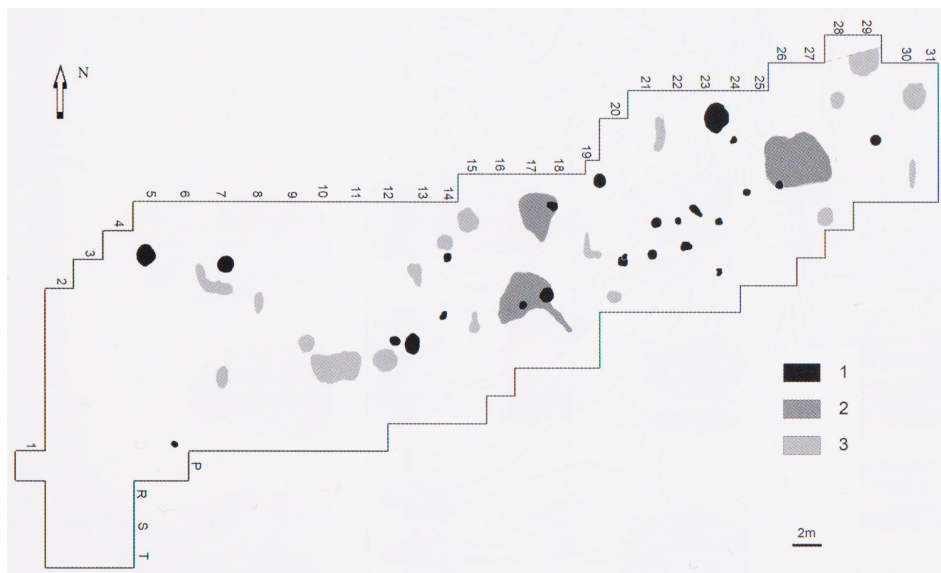


Illustration 27. Plan of the site with hearths (1), pit-houses (2) and pits (3). After Juodagalvis 2010, fig. 113.

References:

Juodagalvis, V. 2010. Užnemunės priešistorė. Diemedžio, Vilnius.

Juodagalvis, V. 2016. The Neolithic-Early Bronze Age in the Trans-nemunas region (Užnemunė). – Hundred years of archaeological discoveries in Lithuania. Eds. G. Zabiela, Z. Baubonis & E. Marcinkevičiūtė. Society of Lithuanian Archaeology, Vilnius, 66–85.

38. Kulnikas Stone Age settlement site

Western Lithuania, the shore of the former Lake Biržulio. The site was discovered by Adomas Butrimas in 1985 and excavations under his leadership were conducted in the same year. In total, an area of 180 m² has been excavated. A few pits, hearths and remains of a pit-house associated with the Corded Ware cultural complex were discovered at the site. The finds from the site date from the Pre-Pottery to the end of the Pottery Stone Age.

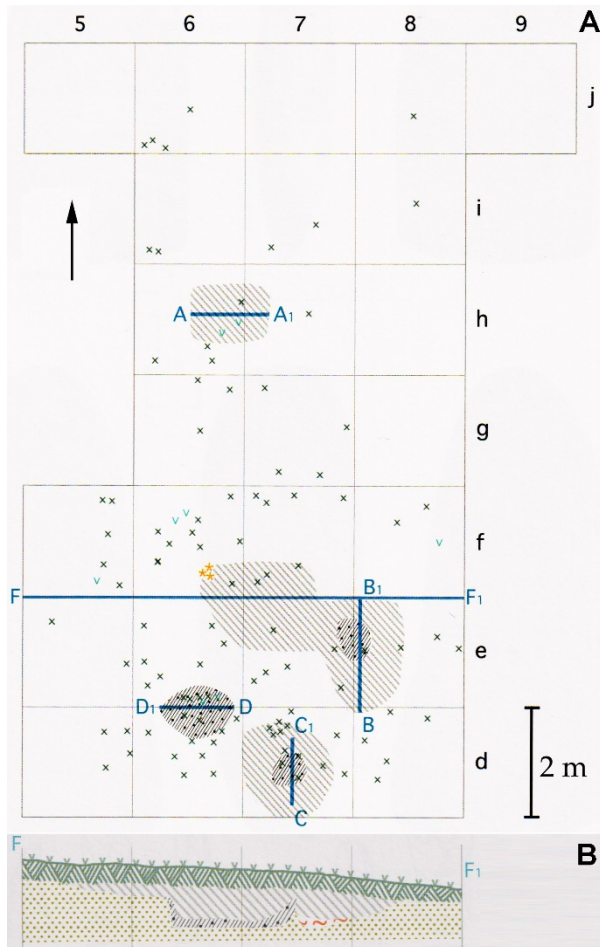


Illustration 28. A – Plan of the site with hearths (black hatching) and pits (grey hatching), the biggest of which is a pit-house; B – Profile of the pit-house. After Butrimas 2019, fig. 113.

References:

Butrimas, A. 2019. Biržulis. Medžiotojai, žvejai ir senieji žemdirbiai X–II tūkstantmetyje pr. Kr. I Paminklų tyrinėjimai. Vilniaus dailės akademijos leidykla, Vilnius.

39. Neravai Stone Age – Historical Period settlement site

Southern Lithuania, the bank of the River Vokė. The site was discovered in 2008 by Rėda Nemickienė, and excavated in 2009–2010 under the leadership of Egidijus Šatavičius. In total, an area of ca. 450 m² has been excavated. Several pits and remains of three pit-houses associated with the Pre-Pottery Stone Age, as well as remains of a house from the late 19th–mid. 20th century AD were discovered at the site. Thus, the finds from the site date from the 11th millennium BC to the 20th century AD.

References:

Štavičius, E. & Marcinkevičiūtė, E. 2012. The Excavation of Neravai Settlement. – Archaeological investigations in independent Lithuania: 1990–2010. Eds. G. Zabiela, Z. Baubonis, E. Marcinkevičiūtė. Lietuvos archeologijos draugija, Vilnius, 35–39.

40. Nida Stone Age settlement site

Western Lithuania, the coast of the Baltic Sea. Although the site was already discovered in the 19th century, regular studies started in 1973 when Rimutė Rimantienė newly found it. Excavations were conducted in 1974–1978 under the leadership of Rimutė Rimantienė and in 2011–2013 and 2016 under the supervising of Gytis Piličiauskas. In total, an area of 4773 m² has been excavated. Numerous pits, hearths, rows of post-holes interpreted as remains of above-ground dwellings, and remains of a pit-house associated with the Corded Ware cultural complex were discovered at the site. The finds from the site date from the 4th to the 2nd millennium BC.

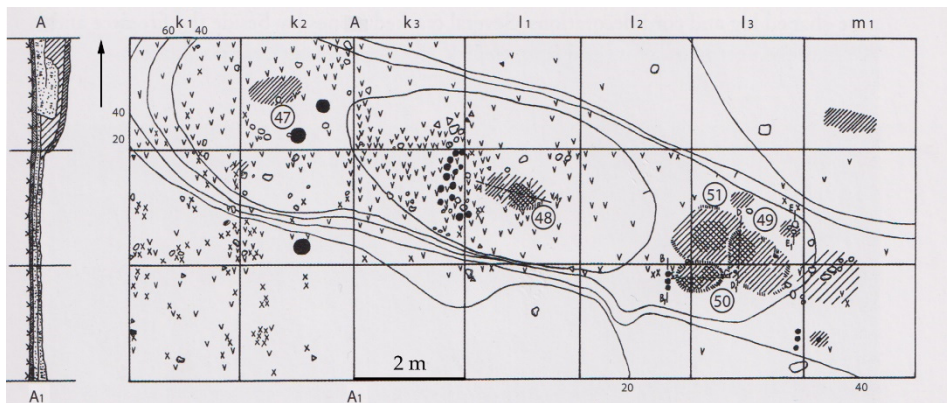


Illustration 29. Plan of the pit-house with hearths (marked with numbers); different types of finds are shown by different symbols. After Rimantienė 2016, fig. 41.

References:

- Piličiauskas, G.** 2018. Virvelinės keramikos kultūra Lietuvoje, 2800–2400 cal BC. Lietuvos Istorijos Institutas, Vilnius.
- Piličiauskas, G., Heron, C.** 2015. Aquatic Radiocarbon Reservoir Offsets in the South-eastern Baltic. *Radiocarbon*, 57: 4, 539–556.
- Rimantienė, R.** 1989. Nida. Senųjų baltų gyvenvietė. Mokslas, Vilnius.
- Rimantienė, R.** 2016. Nida. A Bay Coast culture settlement on the Curonian Lagoon. Vilnius.

41. Pakretuonės 1 Stone Age settlement site

Eastern Lithuania, the shore of Lake Kretuonas. The site was discovered in 1977 by Algirdas Girininkas and was excavated under his leadership in 1977 and 1979. In total, an area of 536 m² has been excavated. Several pits, hearths and remains of wooden stakes interpreted as remains of above-ground dwelling associated with the Late Narva culture, as well as finds of the Corded Ware cultural complex were discovered at the site. The finds from the site date from the 3rd to the 2nd millennium BC.

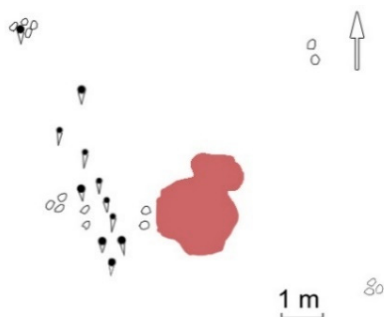


Illustration 30. Plan of the above-ground dwelling with a hearths (brown), remains of wooden stakes (black spots) and stones (grey contours). After Girininkas 2009, fig. 180.

References:

Girininkas, A. 1978. Pakretuonės (Švenčionių raj.) I gyvenvietės tyrinėjimai 1977 metais. – Archeologiniai tyrinėjimai Lietuvoje 1976 ir 1977 metais. Lietuvos TSR Mokslų Akademijos Istorijos institutas, Vilnius, 74–76.

Girininkas, A. 1980. Pakretuonės (Švenčionių raj.) I gyvenvietės tyrinėjimai 1979 metais. – Archeologiniai tyrinėjimai Lietuvoje 1978 ir 1979 metais. Lietuvos TSR Mokslų Akademijos Istorijos institutas, Vilnius, 12–13.

Girininkas, A. 2009. Lietuvos Archeologija I: Akmens Amžius. Versus aureus, Vilnius.

42. Pakretuonės 3 Stone Age settlement site

Eastern Lithuania, the shore of Lake Kretuonas. The site was discovered in 1986 by Algirdas Girininkas and was excavated under his leadership in 1986–1988 and 1992–1993. In total, an area of 132 m² has been excavated. Several pits, remains of wooden stakes and a pit-house associated with the Late Narva culture were discovered at the site. The finds from the site date from the Pre-Pottery to the Pottery Stone Age.

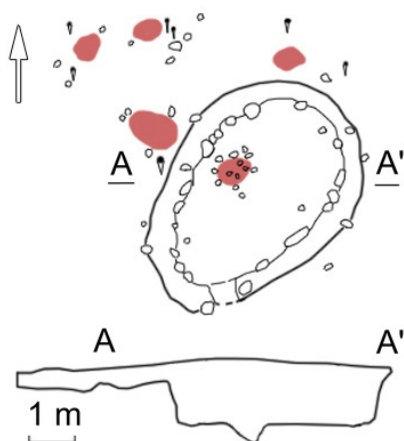


Illustration 31. Plan of the pit-house with a hearths (brown), remains of wooden stakes (black spots) and stones (grey contours). After Girininkas 2009, fig. 179.

References:

- Girininkas, A.** 1988. Pakretuonės 3-čia gyvenvietė. – Archeologiniai tyrinėjimai Lietuvoje 1986 ir 1987 metais. Lietuvos TSR Mokslų Akademijos Istorijos institutas, Vilnius, 7–10.
- Girininkas, A.** 1994. Pakretuonės 3-ioji akmens amžiaus gyvenvietė. – Archeologiniai tyrinėjimai Lietuvoje 1992 ir 1993 metais. Lietuvos TSR Mokslų Akademijos Istorijos institutas, Vilnius, 9–10.
- Girininkas, A.** 2009. Lietuvos Archeologija I: Akmens Amžius. Versus aureus, Vilnius.

43. Paramėlis 2 Stone and Bronze Age settlement site

Southern Lithuania, the bank of the River Katra. The site was discovered in 2002 by Egidijus Šatavičius and was excavated under his leadership in 2002–2004 and 2007–2009. In total, an area of 600 m² has been excavated. A few hearths and remains of at least three pit-houses associated with the Late Narva culture were discovered at the site. The finds from the site date from the Pottery Stone Age to the Early Bronze Age.

References:

- Marcinkevičiūtė, E.** 2016. The Neolithic in South-east Lithuania. – Hundred years of archaeological discoveries in Lithuania. Eds. G., Zabiela, Z. Baubonis & E. Marcinkevičiūtė. Society of Lithuanian Archaeology, Vilnius, 50–65.

44. Rėkučiai 1 Stone Age settlement site

Eastern Lithuania, the shore of Lake Kretuonas. The site was discovered in 1994 by Egidijus Šatavičius and was excavated under his leadership in 1994–1997 and 2001–2002. In total, an area of 160 m² has been excavated. Remains of a pit-house dating from the end of the Final Palaeolithic were discovered at the site.

References:

- Šatavičius, E.** 1998. Rėkučių 1-osios akmens amžiaus gyvenvietės tyrinėjimai. – Archeologiniai tyrinėjimai Lietuvoje 1996 ir 1997 metais, 43–45.
- Šatavičius, E.** 2002. Rėkučių 1-oji akmens amžiaus gyvenvietė. – Archeologiniai tyrinėjimai Lietuvoje 2001 metais, 36–37.
- Šatavičius, E.** 2003. Rėkučių-1 akmens amžiaus gyvenvietės tyrimai. – Archeologiniai tyrinėjimai Lietuvoje 2002 metais, 20–21.
- Šatavičius, E.** 2016. The First Palaeolithic Inhabitants and the Mesolithic in Lithuanian Territory. – Hundred years of archaeological discoveries in Lithuania. – Society of Lithuanian Archaeology. Eds. G. Zabiela, Z. Baubonis & E. Marcinkevičiūtė. Vilnius, 8–39.

45. Rėkučiai 2 Stone Age settlement site

Eastern Lithuania, the shore of Lake Kretuonas. The site was known already since the end of the 1980s. In 1986–1992, finds were systematically collected from the land surface disturbed by ploughing and reclamation works. Excavations were conducted under the leadership of Egidijus Šatavičius in 2006–2007. In total, an area of 80 m² has been excavated. Remains of two pit-houses dating from the Pre-Pottery Stone Age were discovered at the Rėkučiai 2. The finds from the site date to the 9th–8th millennia BC.

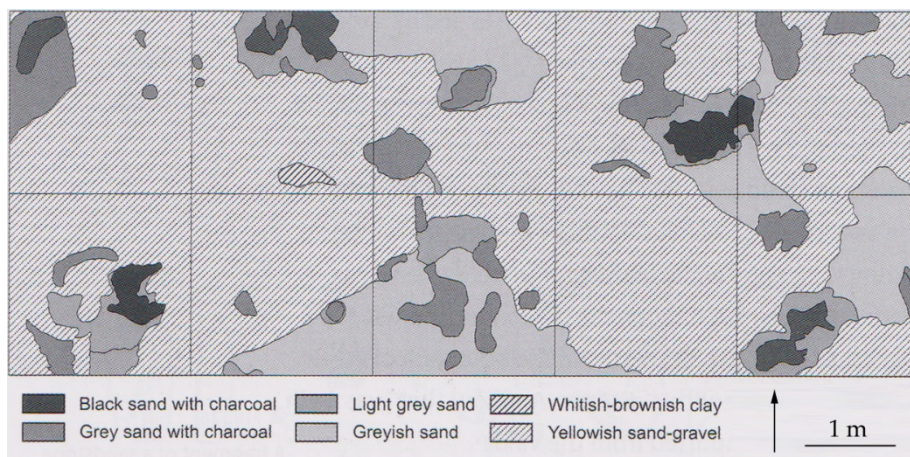


Illustration 32. Plan of the site with pit-houses (grey polygons) and hearths (black polygons). After Šatavičius 2016, fig. 28.

References:

- Šatavičius, E. 2007. Rėkučių 2-oji senovės gyvenvietė. – Archeologiniai tyrinėjimai Lietuvoje 2006 metais, 46–49.
- Šatavičius, E. 2008. Rėkučių 2-oji senovės gyvenvietė tyimai. – Archeologiniai tyrinėjimai Lietuvoje 2007 metais, 44–47.
- Šatavičius, E. 2016. The First Palaeolithic Inhabitants and the Mesolithic in Lithuanian Territory. – Hundred years of archaeological discoveries in Lithuania. – Society of Lithuanian Archaeology. Eds. G. Zabiela, Z. Baubonis & E. Marcinkevičiūtė. Vilnius, 8–39.

46. Skaruliai 2 Stone Age – Historical period settlement site and Iron Age burial site
 Central Lithuania, the bank of the River Neris. The first data on the barrow was available already in the 19th and the beginning of the 20th century. The excavations at the site were conducted under the leadership of Eugenijus Ivanauskas in 1999, 2001 and 2005, Rėda Nemickienė in 2002, Eglė Zimaitytė in 2008 and Eglė Marcinkevičiūtė in 2009–2014. In total, an area of more than 7800 m² has been excavated. The remains of a Pre-Pottery Stone Age pit-house, Iron Age barrows and layers of the town of the 15th–20th-centuries were discovered at the site.

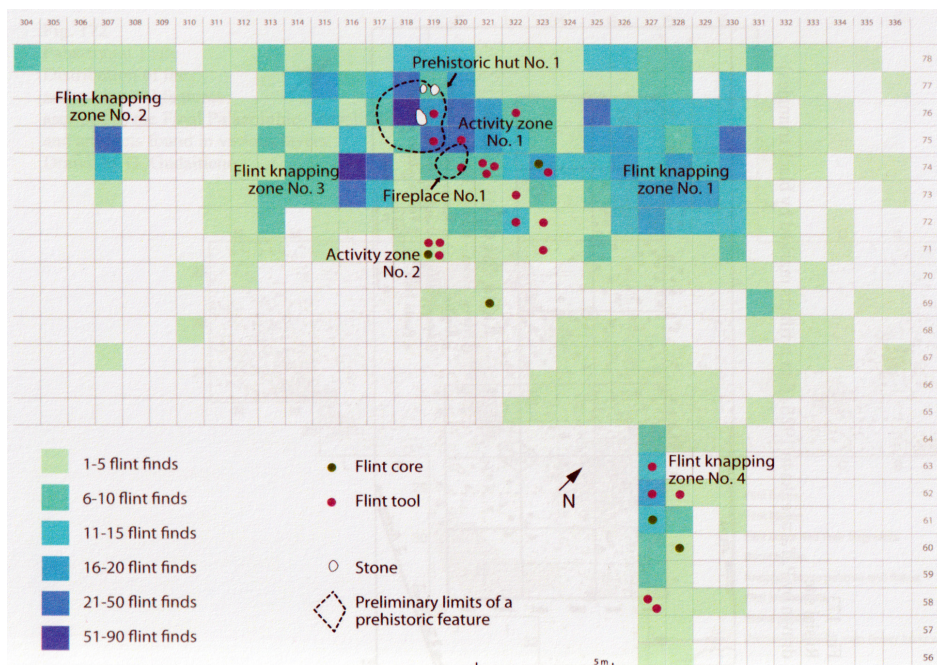


Illustration 33. Plan of the site with the pit-house and other features of the cultural layer and concentrations of flint finds. After Gudaitienė 2018, fig. 174.

References:

Gudaitienė, G. 2018. The first inhabitants in the western part of the Neris River basin in Lithuania. Doctoral dissertation. Humanitarian Sciences, History (05H), Vilnius.

Marcinkevičiūtė, E., Šatavičius, E. 2013. Skarulių pilkapių vietos tyrimai. – Archeologiniai tyrinėjimai Lietuvoje 2012 metais, 23–26.

Marcinkevičiūtė, E., Šatavičius, E. 2014. Skarulių pilkapių vietos tyrimai. – Archeologiniai tyrinėjimai Lietuvoje 2013 metais, 23–27.

Marcinkevičiūtė, E., Šatavičius, E. 2015. Skarulių pilkapių vietos tyrimai. – Archeologiniai tyrinėjimai Lietuvoje 2014 metais, 57–62.

Šatavičius, E., Marcinkevičiūtė, E. 2011. Skarulių pilkapių vietos tyrimai 2009–2010 metais. – Archeologiniai tyrinėjimai Lietuvoje 2010 metais, 102–113.

47. Sudota 2C Stone Age settlement site

Eastern Lithuania, the bank of the River Žeimena. The site was discovered in 1990 by Egidijus Šatavičius and was excavated under his leadership in 1990–2009. In total, an area of 944 m² has been excavated. Number of hearths, a pit, and remains of three pit-houses from the Pre-Pottery Stone Age were discovered at the site. The finds from the site date from the first half of the 6th millennium BC, i.e. the end of the Pre-Pottery – beginning of the Pottery Stone Age.

References:

Šatavičius, E. 2016. The First Palaeolithic Inhabitants and the Mesolithic in Lithuanian Territory. – Hundred years of archaeological discoveries in Lithuania. – Society of Lithuanian Archaeology. Eds. G. Zabiela, Z. Baubonis & E. Marcinkevičiūtė. Vilnius, 8–39.

48. Šaltaliūnė Stone Age settlement site and Iron Age burial site

Eastern Lithuania, the shore of Lake Žeimenio. The site was discovered in 1987 by Tomas Ostrauskas and was excavated under his leadership in 1987–1988, 1990–1995. In total, an area of 682 m² has been excavated. A number of hearths, pits, and remains of wooden stakes interpreted as the remains from the Late Narva culture above-ground dwelling were discovered at the site. The finds from the site date from the 7th to the 3rd millennium BC and to the second half of the 1st millennium AD.

References:

Girininkas, A. 2009. Lietuvos Archeologija I: Akmens Amžius. Versus aureus, Vilnius.

Ostrauskas, T. 1992. Šaltaliūnės akmens amžiaus stovyklavietė-gyvenvietė. – Archeologiniai tyrinėjimai Lietuvoje 1990 ir 1991 metais, 29–31.

Ostrauskas, T. 1994. Šaltaliūnės akmens amžiaus stovyklavietės-gyvenvietės tyrinėjimai. – Archeologiniai tyrinėjimai Lietuvoje 1992 ir 1993, 20–23.

Ostrauskas, T. & Steponaitis, V. 1996. Šaltaliūnės akmens amžiaus gyvenvietė. – Archeologiniai tyrinėjimai Lietuvoje 1994 ir 1995, 17–19.

49. Šarnelė Stone Age settlement site

Western Lithuania, the shore of the former Lake Biržulio. The site was discovered in 1940 by local teacher Brunza, and was investigated in 1965 by Konstantinas Bružas. Excavations under the leadership of Rimutė Rimantienė were conducted in 1973 and under the supervising of Adomas Butrimas in 1981–1982. In total, an area of 568 m² has been excavated. Number of pits, hearths, post holes, remains of stakes and other wooden details discovered at the site were interpreted as the remains of an above ground dwelling (or dwellings) associated with the Late Narva or Corded Ware cultural complex. The finds from the site date from 11th to the 3rd millennium BC.

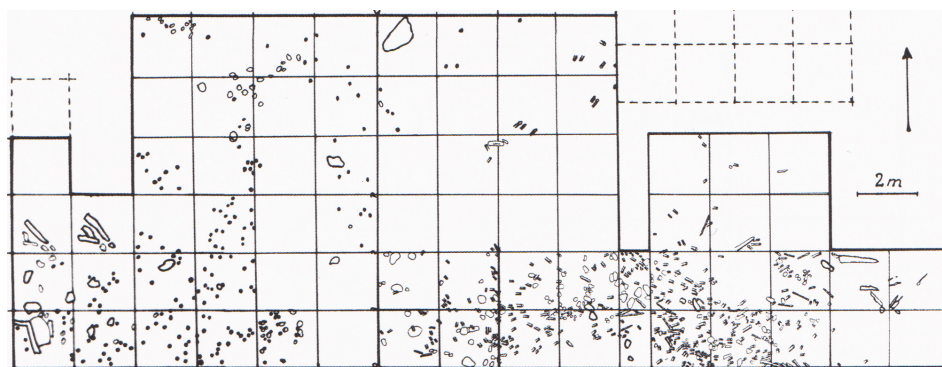


Illustration 34. Plan of the site with remains of wooden structures. After Butrimas 2019, fig. 252.

References:

Girininkas, A. 2005. Ar buvo polinių gyvenviečių akmens amžiuje Lietuvoje? – *Lituanistica*, 62: 2, 33–45.

Butrimas, A. 2019. Biržulis. Medžiotojai, žvejai ir senieji žemdirbiai X–II tūkstantmetyje pr. Kr. I Paminklų tyrinėjimai. Vilniaus dailės akademijos leidykla, Vilnius.

50. Širmės kalnas 1 Stone Age settlement site

Western Lithuania, the shore of the former Lake Biržulio. The site was discovered by Adomas Butrimas in 1978 and the excavations under his leadership were conducted in 1978–1979. In total, an area of 544 m² has been excavated. A few pits, hearths, and remains of a pit-house associated with the Corded Ware cultural complex were discovered at the site. The finds from the site date from the 3rd millennium BC.

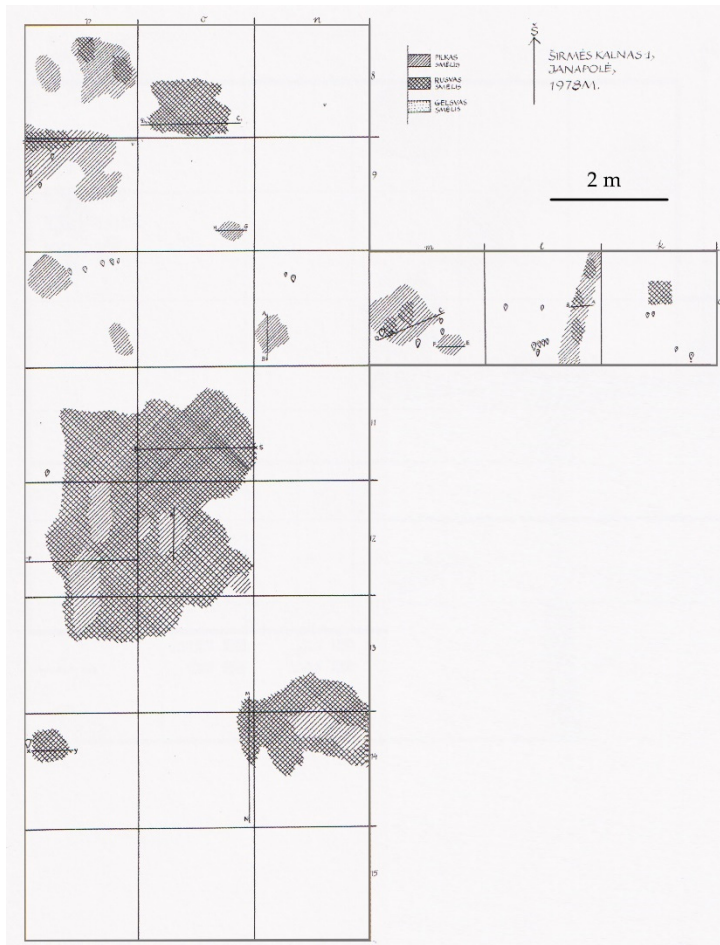


Illustration 35. Plan of the site with pits, the biggest of which is a pit-house, hearths and post holes. After Butrimas 2019, fig. 239.

References:

Butrimas, A. 2019. Biržulis. Medžiotojai, žvejai ir senieji žemdirbiai X–II tūkstantmetyje pr. Kr. I Paminklų tyrinėjimai. Vilniaus dailės akademijos leidykla, Vilnius.

51. Šventoji 4 Stone Age settlement site

Western Lithuania, the coast of the Baltic Sea. The site was discovered in 1967, and was excavated in 1967, 1969, 1972, 1986–1995 under the leadership of Rimutė Rimantienė, in 1997–1998 and 2002–2005 under the leadership of Vygandas Juodagalvis, in 2006 under the leadership of Džiugas Brazaitis, and in 2014 under the supervising of Gytis Piličiauskas and Giedrė Piličiauskienė. In total, an area of 2254 m² has been excavated. Numerous pits, hearths, remains of wooden stakes and logs discovered at the site, were interpreted as the remains of above-ground dwellings associated with the Late Narva or Globular Amphora culture. The finds from the site date from the 4th to the 3rd millennium BC.

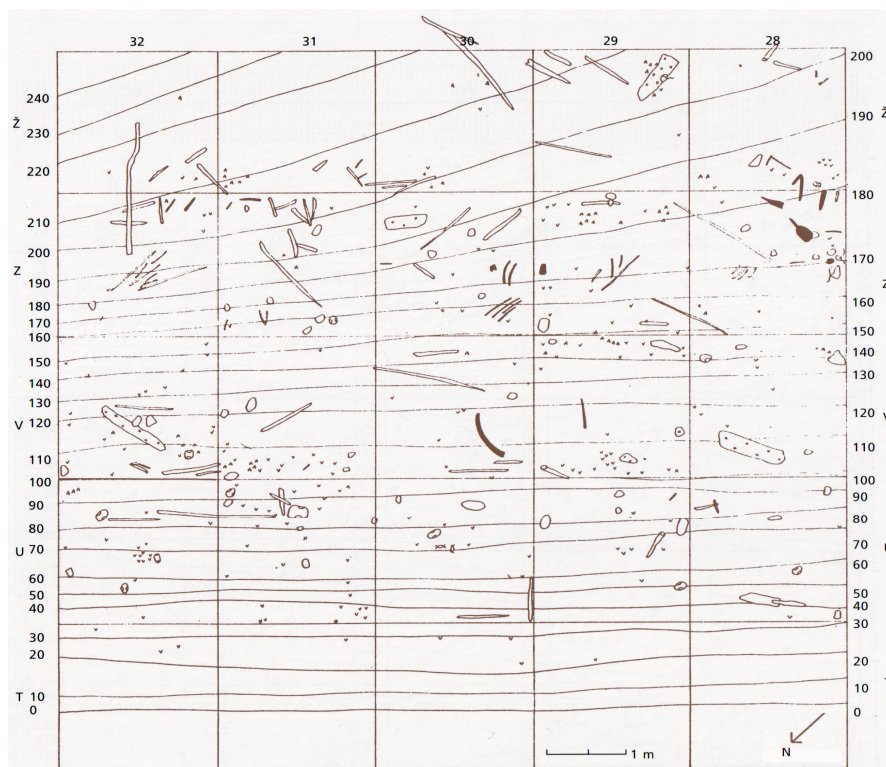


Illustration 36. Plan of the part of the site (area 18) with the remains of wooden details and stones (grey contours), different types of finds are shown by different symbols. After Rimantienė 2005, fig. 139.

References:

- Girininkas, A.** 2005. Ar buvo polinių gyvenviečių akmens amžiuje Lietuvoje? – *Lituanistica*, 62: 2, 33–45.
- Piličiauskas G.** 2016. Lietuvos pajūris subneolite ir neolite. Žemės ūkio pradžia. – *Lietuvos Archeologija*, 42, 25–103.
- Rimantienė, R.** 1996. Šventosios 4-oji radimvietė. – *Lietuvos archeologija*, 14, 5–79.
- Rimantienė, R.** 2005. Die Steinzeitfischer an der Ostseelagune in Litauen. Forschungen in Šventoji und Būtinge. Litauisches Nationalmuseum, Vilnius.

52. Šventoji 6 Stone Age settlement site

Western Lithuania, the coast of the Baltic Sea. The site was discovered in 1982, and was excavated in 1982–1988 under the leadership of Rimutė Rimantienė, and in 1997 under the supervising of Vygandas Juodagalvis. In total, an area of ca. 2000 m² has been excavated. Remains of wooden stakes discovered at the site, were interpreted as the remains of above-ground dwellings associated with the Late Narva or Globular Amphora culture. The finds from the site date from the 4th to the 3rd millennium BC.

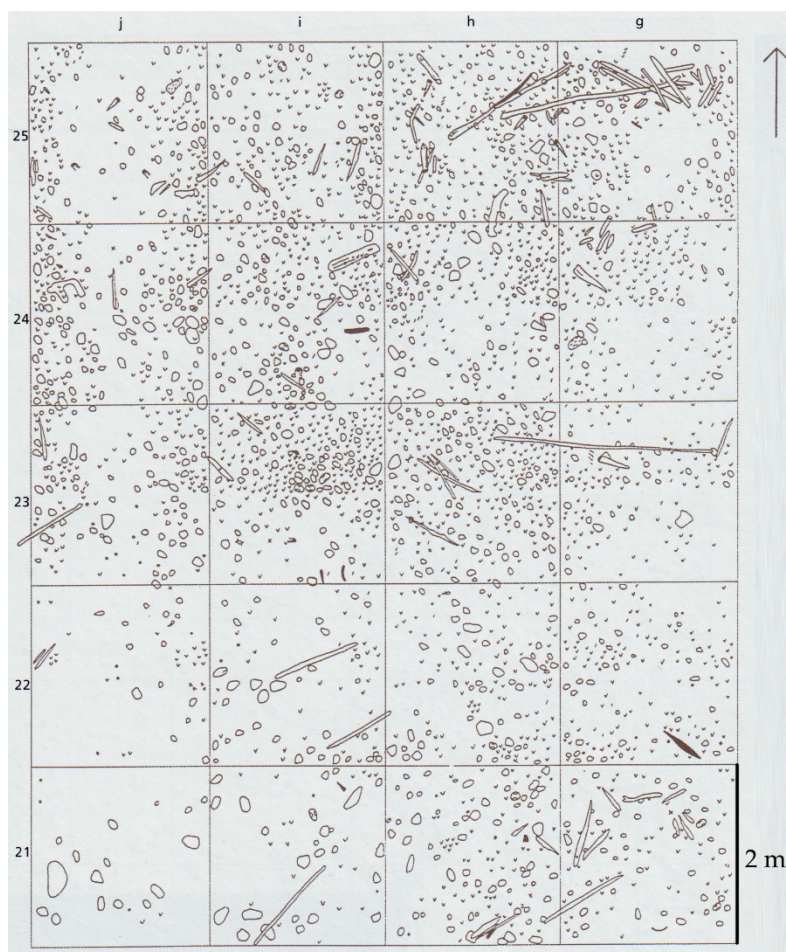


Illustration 37. Plan of the part of the site (area 7) with the remains of wooden details and stones (grey contours), different types of finds are shown by different symbols. After Rimantienė 2005, fig. 239.

References:

- Girininkas, A.** 2005. Ar buvo polinių gyvenviečių akmens amžiuje Lietuvoje? – *Lituanistica*, 62: 2, 33–45.
- Piličiauskas G.** 2016. Lietuvos pajūris subneolite ir neolite. Žemės ūkio pradžia. – *Lietuvos Archeologija*, 42, 25–103.
- Rimantienė, R.** 1996. Šventosios 6-oji gyvenvietė. – *Lietuvos archeologija*, 14, 83–173.

Rimantienė, R. 2005. Die Steinzeitfischer an der Ostseelagune in Litauen. Forschungen in Šventoji und Būtinge. Litauisches Nationalmuseum, Vilnius.

53. Šventoji 23 Stone Age settlement site

Western Lithuania, the coast of the Baltic Sea. The site was discovered in 1967 by Rimutė Rimantienė, and was excavated in 1970–1971 under her leadership. In total, an area of 1268 m² has been excavated. Remains of wooden stakes discovered at the site, were interpreted as the remains of above-ground dwellings associated with the Late Narva culture. The finds from the site date from the 4th to the 3rd millennium BC.

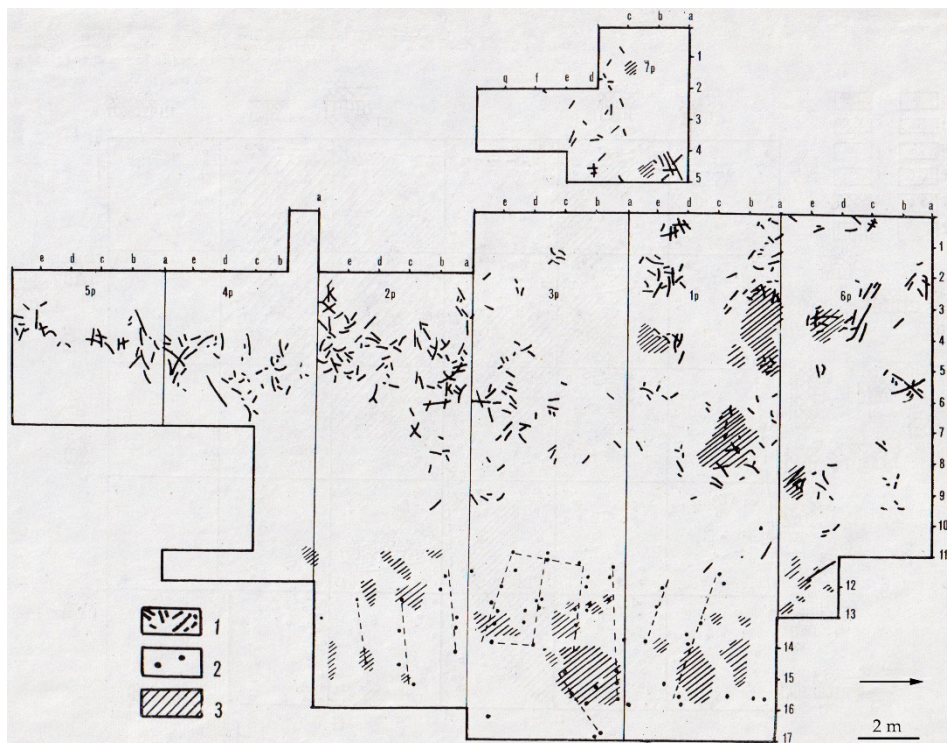


Illustration 38. Plan of the site with the remains of above-ground dwellings (shown by dotted line), remains of wooden details (1 and 2) and hearths (3). After Rimantienė 1979, fig. 64.

References:

- Piličiauskas G.** 2016. Lietuvos pajūris subneolite ir neolite. Žemės ūkio pradžia. – Lietuvos Archeologija, 42, 25–103.
- Rimantienė, R.** 1979. Šventoji. Narvos kultūros gyvenvietės. Mokslas, Vilnius.
- Rimantienė, R.** 2005. Die Steinzeitfischer an der Ostseelagune in Litauen. Forschungen in Šventoji und Būtinge. Litauisches Nationalmuseum, Vilnius.

54. Šventoji 40 Stone and Bronze Age settlement site

Western Lithuania, the coast of the Baltic Sea. The site was discovered in 1967 by Rimutė Rimantienė and was excavated in the same year under her leadership. In 2013 and 2016, excavations were conducted under the supervising of Gytis Piličiauskas. In total, an area

of 67 m² has been excavated. A few hearths and remains of a pit-house from the Pre-Pottery Stone Age were discovered at the site. The finds from the site date from the 7th to the 3rd millennium BC and from the Bronze Age.

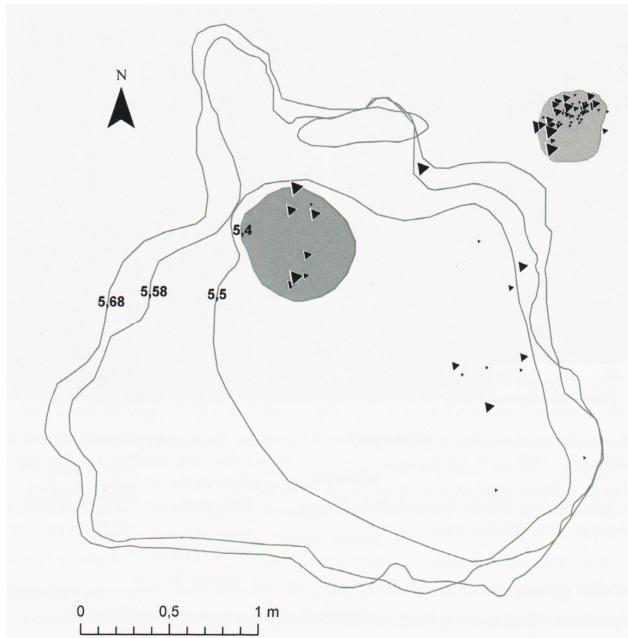


Illustration 39. Plan of the pit-house with hearths (grey polygons) and stones (black triangles). After Piličiauskas 2018, fig. 64.

References:

- Piličiauskas G.** 2016. Lietuvos pajūris subneolite ir neolite. Žemės ūkio pradžia. – Lietuvos Archeologija, 42, 25–103.
- Piličiauskas, G.** 2018. Virvelinės keramikos kultūra Lietuvoje, 2800–2400 cal BC. Lietuvos Istorijos Institutas, Vilnius.

55. Varėnė 2 (also Glūko 11) Stone Age settlement site

Southern Lithuania, the bank of the River Varėnės. The site was first discovered and investigated in 1939, 1957, 1958 and 1965 by Konstantinas Jablonskis and in 1995 by Laisvūnas Kavaliauskas. Excavations were conducted in 1995–1997 under the leadership of Tomas Ostrauskas. In total, an area of 184 m² has been excavated. A few pits, hearths and remains of three pit-houses dating from the Pre-Pottery Stone Age were discovered at the site.

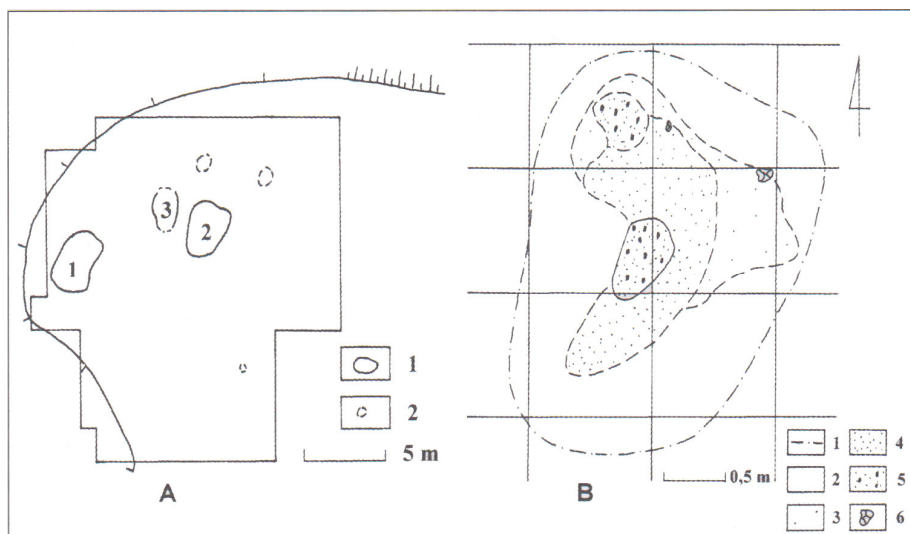


Illustration 40. Plan of the site: A – Pit-houses (1) and pits (2); B – Pit-house 2 with hearths (5) and stones (6). After Ostrauskas 2001, fig. 1.

References:

- Girininkas, A.** 2009. Lietuvos Archeologija I: Akmens Amžius. Versus aureus, Vilnius.
- Ostrauskas, T.** 2001. Glūko ir Varėnio ežerų apylinkės. – Akmens amžius Pietų Lietuvoje (geologijos, paleogeografijos ir archeologijos duomenimis). Red. V. Baltrūnas. Geologijos institutas, Vilnius. 179–182.
- Šatavičius, E.** 2016. The First Palaeolithic Inhabitants and the Mesolithic in Lithuanian Territory. – Hundred years of archaeological discoveries in Lithuania. – Society of Lithuanian Archaeology. Eds. G. Zabiela, Z. Baubonis & E. Marcinkevičiūtė. Vilnius, 8–39.

56. Žeimenis I Stone Age settlement site

Žeimenis I was uneted with Žeimenis II settlement site

Eastern Lithuania, the shore of Lake Žeimenio. The site was discovered in 1977 by Algirdas Girininkas and was excavated under his leadership in 1986–1987 and 1997. In total, an area of 364 m² has been excavated. A few pits associated with the Pre-Pottery Stone Age, and remains of a pit-house associated with the Narva culture were discovered at the site. The finds from the site date from the Pre-Pottery Stone Age to the 4th millennium BC.

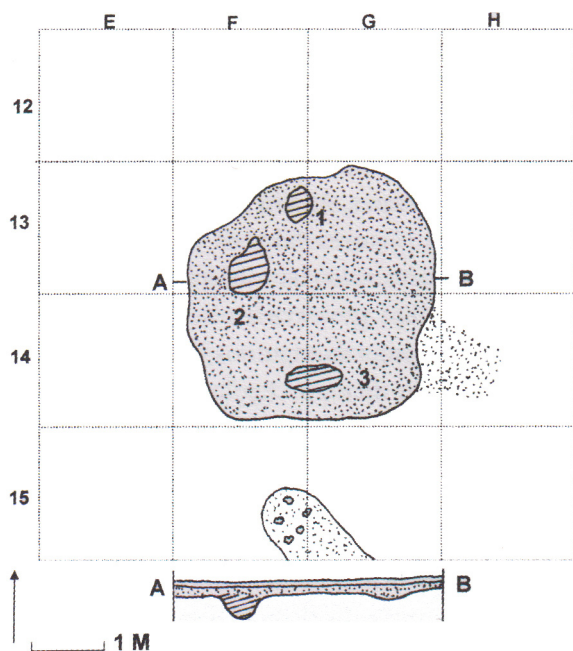


Illustration 41. Plan and profile of the pit-house with hearths (marked with numbers). After Girininkas 2009, fig. 176.

References:

- Girininkas, A.** 1988. Žeimenio 1-ma gyvenvietė. – Archeologiniai tyrinėjimai Lietuvoje 1986 ir 1987 metais, 10–12.
- Girininkas, A.** 1998. Žeimenio ežero 1-osios gyvenvietės tyrinėjimai. – Archeologiniai tyrinėjimai Lietuvoje 1996 ir 1997 metais, 11–14.
- Girininkas, A.** 2009. Lietuvos Archeologija I: Akmens Amžius. Versus aureus, Vilnius.

57. Žemaitiškė 1 Stone and Bronze Age settlement site

Eastern Lithuania, the shore of Lake Kretuonas. The site was discovered in 1978 by Algirdas Girininkas and was excavated under his leadership in 1978–1979. In total, an area of 704 m² has been excavated. Remains of wooden stakes found at the site were interpreted as the remains of an above-ground dwelling associated with the Late Narva culture; the ditches with remains of wooden poles were also discovered. The finds from the site date from the 3rd millennium BC.

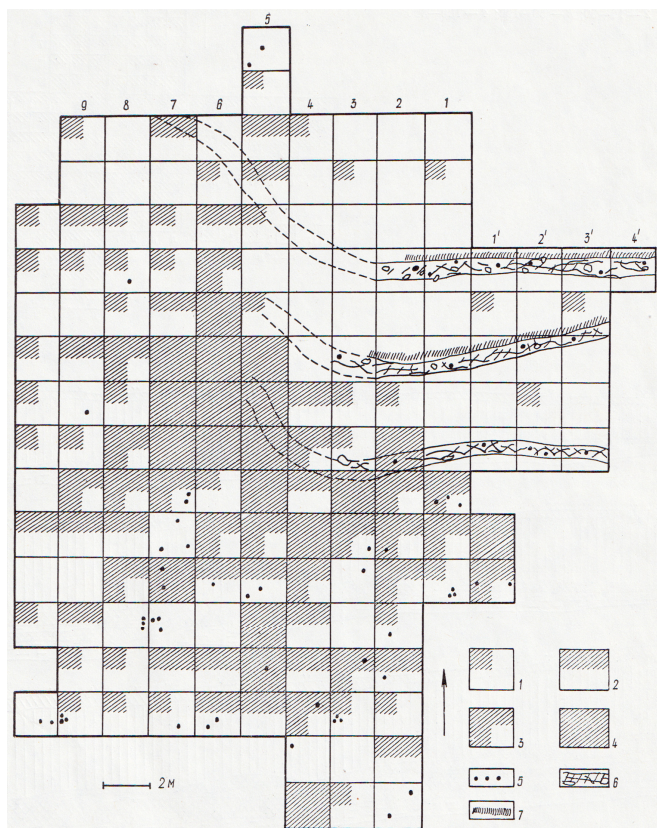


Illustration 42. Plan of the site with density of pottery (1–4), remains of wooden stakes (5), poles and stones (6) and tranches (7). After Girininkas 1990, fig. 13.

References:

- Girininkas, A.** 1990. Kretuonas. Vidurinis ir vėlyvasis neolitas. – Lietuvos archeologija, 7, 6–111.
- Girininkas, A.** 2005. Ar buvo polinių gyvenviečių akmens amžiuje Lietuvoje? – Lituania, 62: 2, 33–45.

58. Žemaitiškė 2 Stone and Bronze Age settlement site

Eastern Lithuania, the shore of Lake Kretuonas. The site was discovered in 1979 by Algirdas Girininkas and was excavated under his leadership in 1979–1983, and under the joint leadership of him and Džiugas Brazaitis in 2000–2001. In total, an area of 388 m² has been excavated. Remains of wooden stakes and platform-bearing logs were interpreted as the remains of numerous pile-dwellings, other groups of stakes were interpreted as the remains of fishing constructions. Materials from the Late Narva culture, the Comb Ware cultural complex and Bronze Age were found at the site.

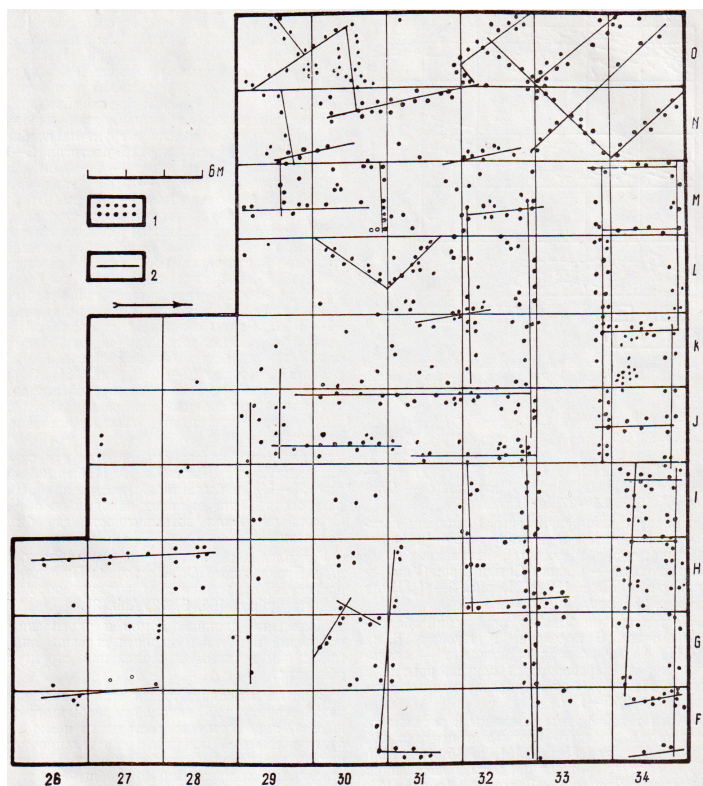


Illustration 43. Plan of the site with remains of wooden stakes (1) and reconstructed walls of dwellings (2). After Girininkas 1990, fig. 112.

References:

- Girininkas, A.** 1984. Žemaitiškes 2-oji gyvenvietė. – Archeologiniai tyrinėjimai Lietuvoje 1982 ir 1983 metais, 10–11.
- Girininkas, A.** 1990. Kretuonas. Vidurinis ir vėlyvasis neolitas. – Lietuvos archeologija, 7, 6–111.
- Girininkas, A.** 2005. Ar buvo polinių gyvenviečių akmenis amžiuje Lietuvoje? – Lituanistica, 62: 2, 33–45.
- Girininkas, A. & Brazaitis, D.** 2002. Žemaitiškes 2-oji gyvenvietė. – Archeologiniai tyrinėjimai Lietuvoje 2001 metais, 12–16.

59. Žemaitiške 3 Stone and Bronze Age settlement site

Eastern Lithuania, the shore of Lake Kretuonas. The site was discovered in 1984 by Algirdas Girininkas and was excavated under his leadership in 1984–1985. In total, an area of a few hundred m² has been excavated. Remains of wooden stakes found at the site were interpreted as the remains of the Late Narva culture above-ground dwelling. The finds from the site date from the 4th to the 3rd millennium BC.

References:

- Girininkas, A.** 2005. Ar buvo polinių gyvenviečių akmenis amžiuje Lietuvoje? – Lituanistica, 62: 2, 33–45.

BELARUS

60. Asaviec 7 Stone and Bronze Age settlement site

Northeastern Belarus, the bank of the River Kryvinka. The site was discovered in 2000 by Michail Charniaŭski, excavations were conducted in 2000–2007 under the leadership of Maxim Charniaŭski. In total, an area of 96 m² has been excavated. A few hearths and details of wooden constructions, presumed to be the remains of the buildings of the North Belarusian culture were discovered at the site. The finds from the site date from the 3rd to the mid-2nd millennium BC.

References:

- Чарняўскі Макс.М.** 2006. Керамічны комплекс стаянкі Асавец-7. – Гістарычна-археалагічны зборнік, 21, 38–47.
- Чернявский, Макс. М.** 2008. Асавец 7 – новое поселение Кривинского торфяника. – Человек. Адаптация. Культура. Российская Академия наук, Москва, 374–388.
- Charniauski, M. & Kryvaltsevich, M.** 2011. Belarusian wetland settlements in Prehistory. – Wetland settlements of the Baltic: A prehistoric perspective. Ed. E. Prackėnaitė. Center of underwater archaeology et al., Vilnius, 113–131.

61. Babrovičy I Stone Age settlement site

Southwestern Belarus, the shore of Lake Babrovičskoe. The site was discovered in 1963 by Vladimir Isaenko and was investigated by Natallya Shablyuk in 1989. The data on a total area excavated is not available. Remains of six hearths with stones were interpreted as the remains of above-ground dwellings from the Pre-Pottery Stone Age. The finds from the site date from the 10th to the 6th millennium BC.

References:

- Исаенко, В.Ф.** 1976. Неолит Припятского Полесья. Академия наук БССР, Институт истории, Минск.
- Лакіза, В.Л., Ляшкевіч, Э.А.** 2009. Бабровічы. – Археалогія Беларусі: Энцыклапедыя, 1, А-К. Беларуская энцыклапедыя, Мінск, 78.

62. Bierahavaja Slabada Stone Age settlement site

Southeastern Belarus, the bank of the River Dnieper. The site was discovered in 1977 by Uladzimir Ksyandzoŭ and excavations were conducted in 1977–1983 under his leadership. In total, an area of 989 m² has been excavated. Several pits, hearths, and remains of a pit-house associated with the Dnieper-Desna culture were discovered at the site. The finds from the site date from the Pre-Pottery Stone Age.

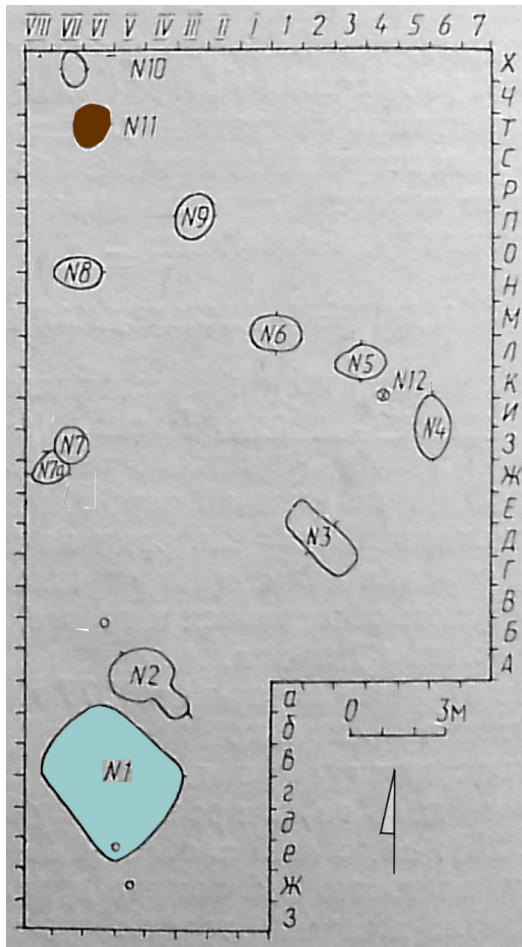


Illustration 44. Plan of the site with a pit-house (blue), a hearth (brown spot) and pits (black contours). After Ксензов 1988, fig. 20.

References:

Ксензов, В.П. 1988. Палеолит и мезолит Белорусского Поднепровья. Минск.

63. Bierascienava Stone Age settlement site

Eastern Belarus, the bank of the River Dnieper. The site was discovered in 1984 by Uladzimir Ksyandzoŭ and the excavations were conducted in 1987–1988 under his leadership. In total, an area of 829 m² has been excavated. A pit and remains of three pit-houses discovered at the site are associated with the Grenskaya culture. The finds from the site date from the Pre-Pottery Stone Age.

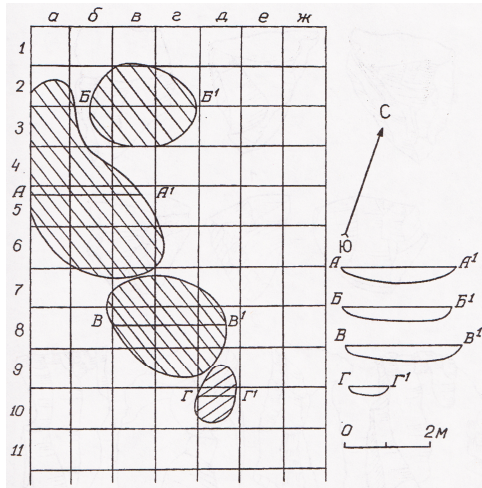


Illustration 45. Plan of the site with contours of three pit-houses (A, Б, В) and a pit (Г). After Ксензов 2006, fig. 2.

References:

Ксензов, В.П. 2006. Мезолит Северной и Центральной Беларуси (Матэрыялы па археалогіі Беларусі, 13). Інстытут гісторыі НАН Беларусі, Мінск.

64. Borok Seminaŭski Stone and Bronze Age settlement site

The name Lučin Borok Seminaŭski was also used.

Southeastern Belarus, the bank of the River Dnieper. The site was discovered in 1957 by Ivan Artemenko. The excavations were conducted in 1957–1958 under his leadership, and in 2000–2001 under the supervising of Ihar Yazepenka. In total, an area of 103 m² has been excavated. Remains of a pit-house associated with the Dnieper-Donec cultural complex were discovered at the site. The finds from the site date from the 4th to the 2nd millennium BC.

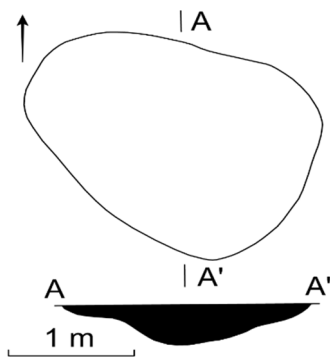


Illustration 46. Plan of the pit-house. After Язэпенка 2006, fig. 3.

References:

Язэпенка, І.М. 2006. Паселішча эпохі неаліту і ранняга перыяду бронзавага веку Борак Семінаўскі (вынікі даследаванняў 2000 і 2001 гадоў). Древности Беларусі в системе межкультурных связей. – Матэрыялы па археалогіі Беларусі, 11, 20–43.

Язэпенка, І.М. 2014. Паселішчы неаліту і ранняга перыяду эпохі бронзы міжрэчча Бярэзіны і Дняпра. Магілёў.

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65. Dubovy Loh IV Stone Age settlement site

The name Mišurova Hryva was also used.

Eastern Belarus, the bank of the River Iput. The site was discovered in 1979 by Elena Kalechits and was excavated under her leadership in 1980–1983. In total, an area of 168 m² has been excavated. The remains of two pit-houses, hearths, and household pits associated with the Dnieper-Donec cultural complex were discovered. The finds from the site date from the 4th to the 2nd millennium BC.

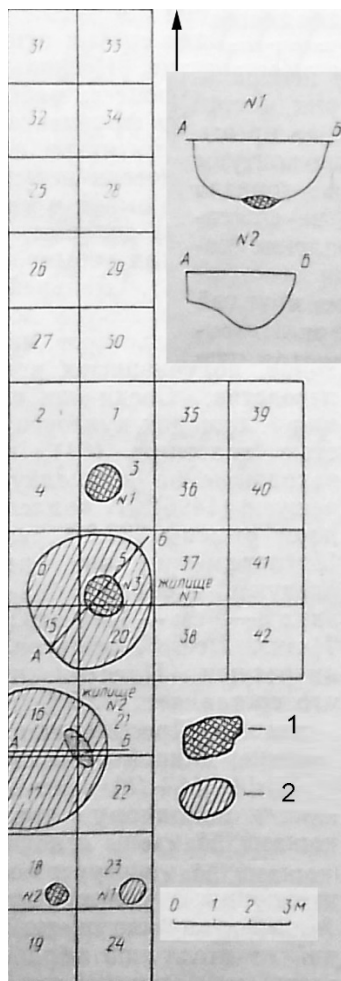


Illustration 47. Plan of the site with hearths (1) and pit-houses (2). After Калечиц 1987, fig. 13.

References:

Калечиц, Е.Г. 1987. Памятники каменного и бронзового веков Восточной Белоруссии. Наука и техника, Минск.

Калечиц, Е.Г. 1990. Об изучении жилищ каменного века в Посожье. – Полевая археология мезолита-неолита: сборник научных трудов. Eds. Н.Н. Гурина, В.И. Тимофеев. Академия наук СССР, Ленинградское отделение Института археологии, Ленинград, 93–101.

Khrustaleva, I., Yazepenko, I., Tkachova, M., Kalechits, E., Kolosov, A., Kryvaltsevich, M. & Kriiska, A. 2023. Pit-houses of the Stone Age Belarus in 4th millennium BC. – *Prachistorische Zeitschrift*, 98: 2, 500–521.

66. Dziednia Stone – Middle Ages settlement site

Eastern Belarus, the bank of the River Koshanka. The site was discovered in 1991 by Vyacheslav Kopytin. The excavations were conducted in 1991 and 1993 under his leadership, and in 2006–2007 under the supervising of Alexandr Kolosov. In total, an area of 408 m² has been excavated. Several pits and remains of a pit-house of the Butova culture, as well as pits, hearths, and details of building constructions of the Bronze, Iron and Middle Ages were found. The finds from the site date from the Pre-Pottery Stone Age to the Early Middle Ages.

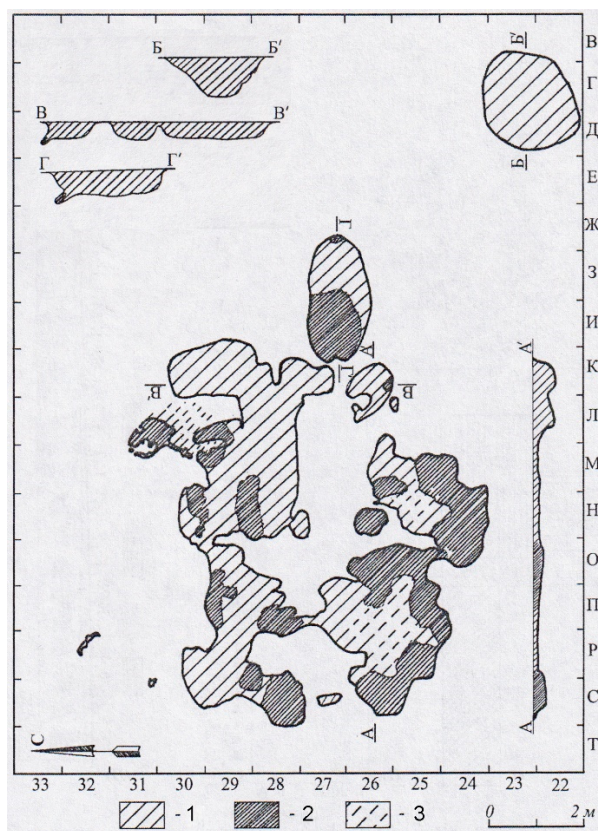


Illustration 48. Plan of remains of a pit-house marked by grey sand of different shades (1–3). After Колосов 2008, fig. 3.

References:

Колосов, А.В. 2008. Мезолитическая стоянка Дедня. – *Acta Archeologia Albaruthenica*, III, 42–66.

Колосов, А.В. 2009. Археологические древности Могилевского Посожья. По материалам экспедиции 2002–2008 гг. Могилевский государственный университет им. А.А. Кулешова, Могилев.

Копытин, В.Ф. 1995. Дедня – новый памятник мезолита в бассейне р. Проня. – *Гістарычныя лёсы Верхняга Падняпроўя: рэгіянальная навуковая канферэнцыя*, 1. Археалогія. Магілёў, 3–13.

67. Шубайка III Stone Age settlement site

The name Babulin Buhor was also used.

Eastern Belarus, the bank of the River Besed. The site was discovered in 1979 by Elena Kalechits, the excavations under her leadership were conducted in 1980–1982. In total, an area of 558 m² has been excavated. Numerous hearths, pits and remains of five pit-houses were found at the site. The finds from the site date from the Pre-Pottery Stone Age.

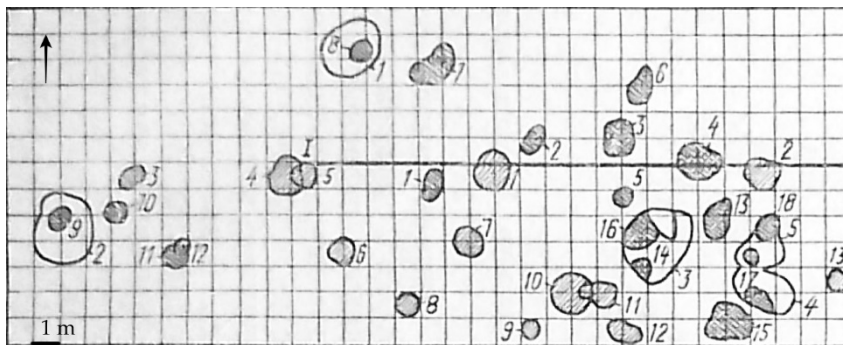


Illustration 49. Plan of the site with hearths (grey polygons) and pit-houses (black contours). After Калечиц 1987, fig. 9.

References:

Калечиц, Е.Г. 1987. Памятники каменного и бронзового веков Восточной Белоруссии. Наука и техника, Минск.

Калечиц, Е.Г. 1990. Об изучении жилищ каменного века в Посожье. – *Полевая археология мезолита-неолита: сборник научных трудов*. Eds. Н.Н. Гурина, В.И. Тимофеев. Академия наук СССР, Ленинградское отделение Института археологии, Ленинград, 93–101.

68. Juravičy III Stone Age settlement site

The name Litvin 1 was also used.

Southeastern Belarus, the shore of Lake Litvin. The site was discovered in 1962 by Vladimir Isaenko and the excavations under his leadership were carried out in 1962–1963. In total, an area of 180 m² has been excavated. Remains of a pit-house associated with the Dnieper-Donec cultural complex were found. The finds from the site date from the 4th to the 2nd millennium BC.

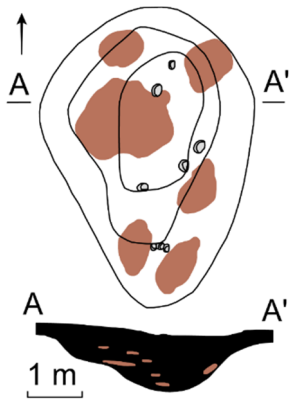


Illustration 50. Plan of a pit-house with hearths (brown spots). After Isaenko 1967, fig. 3.

References:

Исаенко, В.Ф. 1967. Неолитические памятники типа Литвин на нижней Припяти. – Белорусские древности: доклады к конференции по археологии Белоруссии, январь–февраль 1968 г. Eds. В.Д. Будько, Я.Г. Зверуго, В.Ф. Исаенко, К.П. Шут. Академия наук БССР, Институт истории, Минск, 48–106.

Исаенко, В.Ф. 1976. Неолит Припятского Полесья. Академия наук БССР, Институт истории, Минск.

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69. Juravičy IV Stone Age settlement site

The name Litvin 2 was also used.

Southeastern Belarus, the shore of Lake Litvin. The site was discovered in 1962 by Vladimir Isaenko and the excavations under his leadership were carried out in 1964–1966. In total, an area of 568 m² has been excavated. Remains of a pit-house and hearths with stones associated with the Dnieper-Donc cultural complex were found. The finds from the site date from the 4th to the 2nd millennium BC.

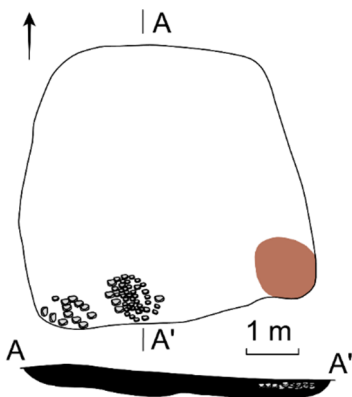


Illustration 51. Plan of a pit-house with a hearth (brown spot) and stones (black). After Isaenko 1967, 73.

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70. Камарын 5 Stone and Bronze Age settlement site and burial site

Southeastern Belarus, the bank of the River Dnieper. The site was discovered in 1995 by Aliaksandr Rykunou, the excavations were conducted in 1998, 2005–2007 and 2011 under joint leadership of him and Ihar Yazepenko. In total, an area of 180 m² has been excavated. The remains of a pit-house, a few household pits and two burials were revealed at the site. The finds are associated with the Dnieper-Donec cultural complex and date from the 4th to the 2nd millennium BC.

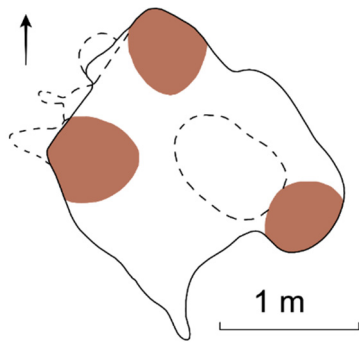


Illustration 52. Plan of a pit-house with hearths (brown spots). After Езепенко 2016, 286.

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71. Kamaryn 5A Stone and Bronze Age settlement site

Southeastern Belarus, the bank of the River Dnieper. The site was discovered in 2007 by Ihar Yazepenka, and the excavations were conducted in 2008 and 2010 under the leadership of Anzhela Razlutsкая. In total, an area of ca. 60 m² has been excavated. A concentration of burnt shells and finds discovered at the site have been interpreted as the remains of an above-ground dwelling of the Dnieper-Donec cultural complex. The finds from the site date from the 4th to the 2nd millennium BC.

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Язэпенка, І.М., Разлуцкая, А.А., Крывальцэвіч, М.М. 2009. Камарын. – Археалогія Беларусі: Энцыклапедыя, 1, А-К. Беларуская энцыклапедыя, Мінск, 402–403.

72. Kamienka 5 Stone Age settlement site

Eastern Belarus, the bank of the River Sozh. The site was discovered in 1998 by Vyacheslav Kopytin and was excavated in 2004–2005 and in 2009 under the leadership of Alexander Kolosov. In total, an area of 138 m² has been excavated. A hearth and remains of a pit-house presumably dating from the Pre-Pottery Stone Age were discovered at the site. The finds from the site date from the 9th to the 2nd millennium BC.

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73. Kryničnaja Stone Age settlement site

Eastern Belarus, the bank of the River Sozh. The site was discovered in 1928 by Konstantin Polikarpovich. It was excavated in 1977–1978 under the leadership of Volga Lipnitskaya, and in 1972, 1984 and 1986 under the leadership of Vyacheslav Kopytin. In total, an area of 406 m² has been excavated. Several hearths and remains of a pit-house associated with the Butovo culture were discovered at the site. The finds from the site date from the 7th to the 6th millennium BC.

References:

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74. Ksendzova gora Stone and Bronze Age settlement site

Eastern Belarus, the bank of the River Dnieper. The site was discovered in 1928 by Konstantin Polikarpovich and was excavated under his leadership in 1959. In total, an area of 420 m² has been excavated. Several hearths and post holes interpreted as the remains of above-ground dwellings of the Middle-Dnieper culture were discovered at the site. The finds from the site date from the late Pottery Stone Age to the Bronze Age.

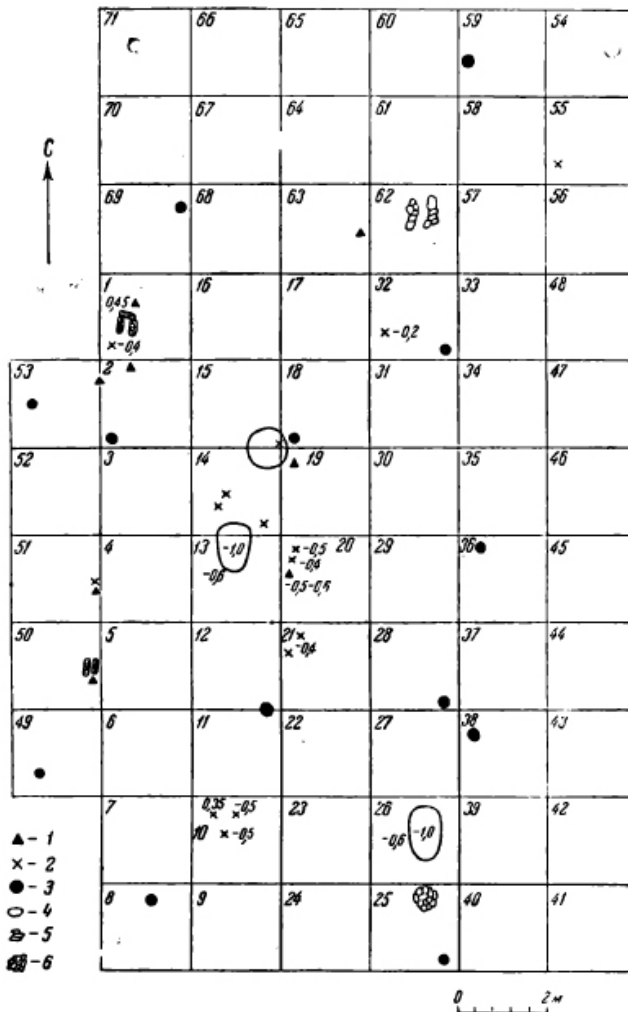


Illustration 53. Plan of the site with concentrations of pottery (1), flint arrowheads (2), post holes (3), pits (4), hearth without and with stones (4, 5) and stones (6). After Артеменко 1962, fig. 15.

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75. Ludčycy Stone Age settlement site

Eastern Belarus, the bank of the River Dnieper. The site was discovered in 1972 by Vyacheslav Kopytin and was excavated under his leadership in 1972–1973 and 1988. In total, an area of 330 m² has been excavated. Remains of a pit-house associated with the Grensk culture were discovered at the site. The finds from the site date from the Pre-Pottery Stone Age.

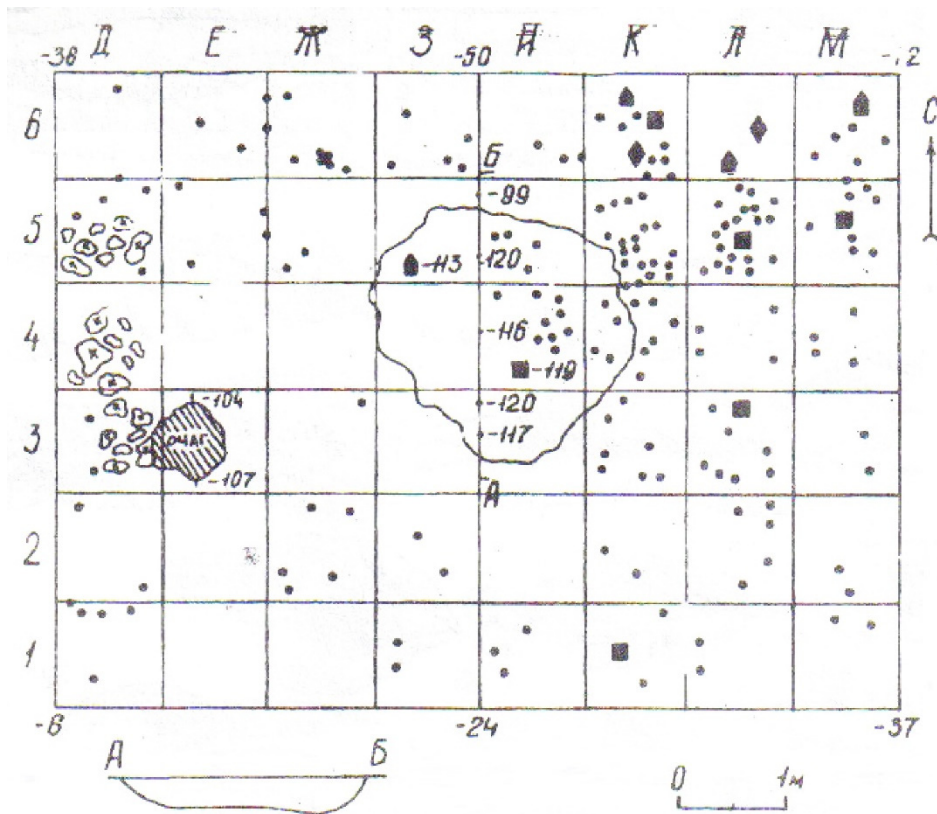


Illustration 54. Plan of the site with a pit-house (the biggest feature), a hearth (dark-grey spots) and stones. Different types of flint finds are shown with different symbols. After Копытин 1991, fig. 9.

References:

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76. Navasiolki 1 Stone and Bronze Age settlement site

Western Belarus, the bank of the River Babachka. The site was discovered in 2004 by Vadzim Lakiza and was excavated under his leadership in 2005. In total, an area of 160 m² has been excavated. Several hearthes and remains of a pit-house associated with the Corded Ware cultural complex were discovered at the site. The finds from the site date from the end of the 3rd to the 2nd millennium BC.

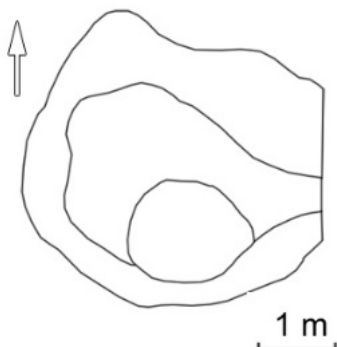


Illustration 55. Plan of a pit-house. After Лакіза et al. 2006, fig. 1.

References:

Лакіза, В., Калечыц, А., Абухоўскі, В. 2006. Археалагічныя раскопкі на помніку позняга неаліту – бронзавага веку Навасёлкі 1. – Гістарычна-археалагічны зборнік, 21, 183–184.

77. Niamnova 1 Stone Age settlement site and burial site

Western Belarus, the bank of the River Neman. The site was discovered in 2004 by Vadzim Lakiza and Viktor Abuhovski and was excavated under their leadership in 2005. In total, an area of 245 m² has been excavated. Several pits, a hearth, and the remains of a pit-house associated with the Pre-Pottery Stone Age were discovered at the site. The finds from the site date from the 9th to the 5th millennium BC.

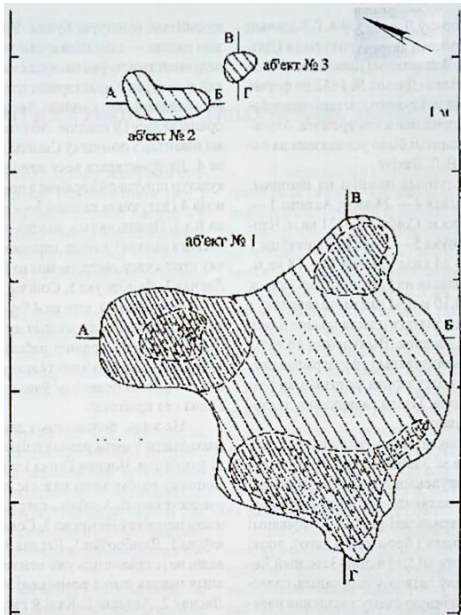


Illustration 56. Plan of the site with a pit-house (No 1), hearths (dark-grey spots) and pits (Nos 2 and 3). After Абухоўскі et al. 2006, fig. 1.

References:

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78. Nižniaja Alba 1 Stone – Late Middle Ages settlement site

The name Lukošynica was also used.

Southeastern Belarus, the bank of the River Dnieper. The site was discovered in 1925 by Konstantin Polikarpovich, in 1977 Uladzimir Ksyandzov conducted a survey there, and in 2011–2013 the excavations were carried out under the leadership of Ihar Yazepenka. In total, an area of more than 100 m² has been excavated. Several pits and remains of a pit-house associated with the Dnieper-Donc cultural complex, as well as the remains of a dwelling from the 14th–15th centuries AD were excavated at the site. The finds from the site date from the Pre-Pottery Stone Age to the Late Middle Ages.

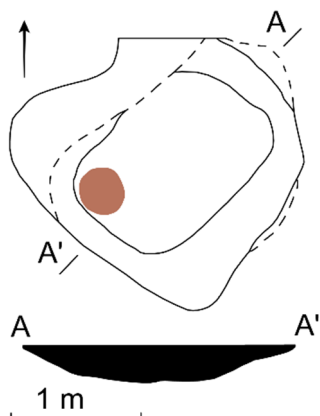


Illustration 57. Plan of a pit-house with a hearth (brown spot). After Язэпенка, Юрэцкі 2013, 324.

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79. Novyja Hramyki X Stone – Middle Ages settlement site

The name Aŭramaŭ Buhor was also used.

Eastern Belarus, the bank of the River Besed. The site was discovered in 1975 by Elena Kalechits, the excavations were conducted in 1977–1981 under her leadership. In total, an area of 775 m² has been excavated. Remains of two Stone Age pit-houses, an Iron Age pit-house, and the remains of wooden constructions from the Middle Ages were discovered at the site. The finds from the site date from the Pre-Pottery Stone Age to the Middle Ages or Modern period.

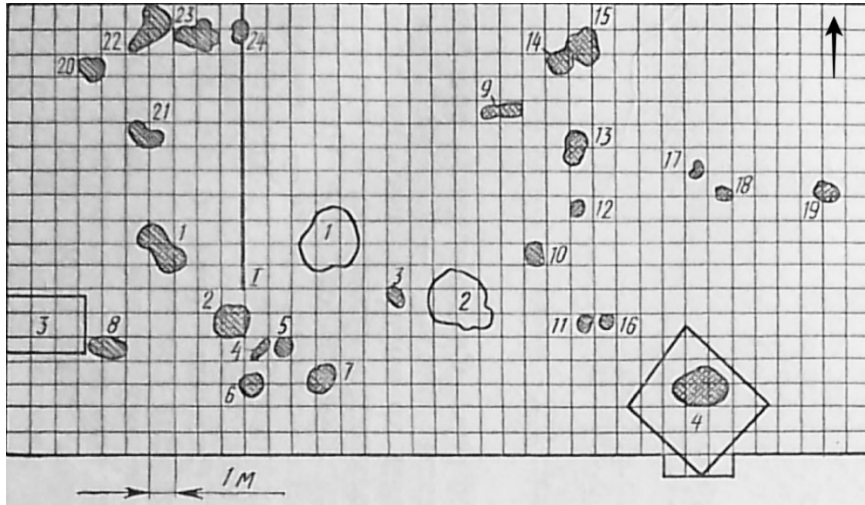


Illustration 58. Plan of the site with hearths (grey polygons) and pit-houses (black contours). After Калечиц 1987, fig. 4.

References:

Калечиц, Е.Г. 1987. Памятники каменного и бронзового веков Восточной Белоруссии. Наука и техника, Минск.

Калечиц, Е.Г. 1990. Об изучении жилищ каменного века в Посожье. – Полевая археология мезолита-неолита: сборник научных трудов. Eds. Н.Н. Гурина, В.И. Тимофеев. Академия наук СССР, Ленинградское отделение Института археологии, Ленинград, 93–101.

80. Opal II Stone Age settlement site

Southwestern Belarus, the shore of Lake Motol. The site was discovered in 1963 by Vladimir Isaenko. The data on a total excavated area is not available. Remains of hearths with stones have been interpreted as the remains of above-ground dwellings, however, their number is unknown. The finds from the site date from the Pre-Pottery Stone Age.

References:

Исаенко, В.Ф. 1976. Неолит Припятского Полесья. Академия наук БССР, Институт истории, Минск.

81. Pierasudavičy Stone Age settlement site

Southwestern Belarus, the shore of Lake Beloe. The site was discovered in 1963 by Vladimir Isaenko in trenches dug by bulldozers through the settlement area. The remains of two pit-houses associated with the Neman culture were found at the site. The finds from the site presumably date from the 4th millennium BC.



Illustration 59. Profiles of two pit-houses with hearths (brown polygons). After Исаенко 1963, 12.

References:

Исаенко, В.Ф. 1963. Отчет о полевых работах и исследованиях 1962 года. Центральный научный архив Национальной академии наук Беларуси. ФАНД, Арх. №№ 158, 158а (Альбом) (Минск 1963).

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82. Prorva 2 Stone Age settlement and Bronze Age burial site

Southeastern Belarus, the bank of the River Dnieper. The site was discovered in 1994 by Ihar Yazepenko, Mikola Kryvaltsevich and Aliaksandr Rykunou, and the excavations under their leadership took place in 1995–1996 and 1998. In total, an area of 341 m² has been excavated. A series of pits were discovered at the settlement site, two of which (partly excavated) were interpreted as pit-houses associated with the Dnieper-Donets cultural complex. Two burials of the Middle-Dnieper culture were also excavated at the site. The finds from the site date from the 4th to the 2nd millennium BC.

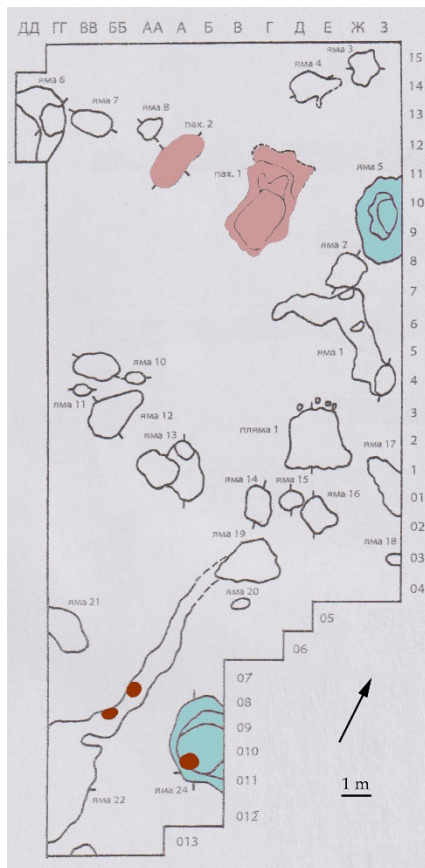


Illustration 60. Plan of the site with pits (black contours), hearths (brown polygons), pit-houses (blue polygons) and burials (rose polygons). After Язэпенка 2014, fig. 73.

References:

Язэпенка, І.М. 2014. Паселішчы неаліту і ранняга перыяду эпохі бронзы міжрэчча Бярэзіны і Дняпра. Магілёў.

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83. Rudnia I Stone Age – Early Modern period settlement site

Eastern Belarus, the bank of the River Sozh. The site was discovered in 1994 by Vyacheslav Kopytin and the excavations were conducted in 2006–2008 under the leadership of Alexander Kolosov. In total, an area of 350 m² has been excavated. The remains of a pit-house and a pit associated with the Dnieper-Donetsk cultural complex were found at the site. The finds from the site date from the Final Paleolithic (12th–10th millennia BC) to the 17th–18th centuries AD.

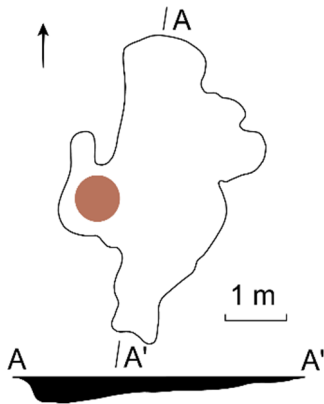


Illustration 61. Plan of a pit-house with a hearth (brown spot). After Колосов 2009, fig. 13.

References:

Колосов, А.В. 2009. Археологические древности Могилевского Посожья. По материалам экспедиции 2002–2008 гг. Могилевский государственный университет имени А. А. Кулешова, Могилев.

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84. Sasonka Stone Age settlement site

Southeastern Belarus, the bank of the River Dnieper. The site was discovered in 1956 by Ivan Artemenko. Excavations under his leadership were conducted in 1956–1957 and in 1993 under the supervision of Ihar Yazepenko. In total, an area of 391 m² has been excavated. Remains of a pit-house and number of hearths associated with the Dnieper-Donetsk cultural complex were discovered at the site. The finds from the site date from the 4th to the 2nd millennium BC.

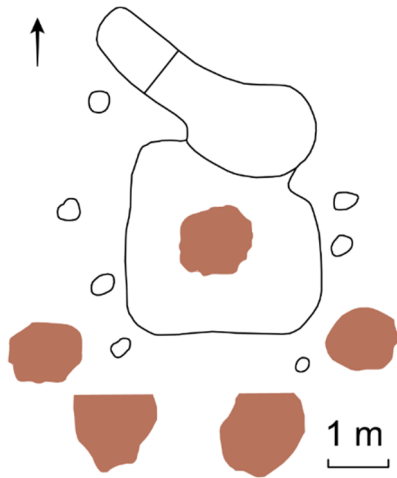


Illustration 62. Plan of a pit-house with hearths (brown spots) and post holes. After Язэпенка 1995, fig. 2.

References:

- Арменко, И.И.** 1964. Неолитическое поселение в урочище Сосонка. – Краткие сообщения Института Археологии, 101, 111–115.
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85. Slabodka I Stone Age settlement site

Southern Belarus, the bank of the River Turja. The site was discovered in 1960 by Vladimir Isaenko, who collected of finds from the ploughed surface. The excavations under his leadership were conducted in 1964. In total, an area of 192 m² has been excavated. Nine concentrations of finds around hearths have been interpreted as remains of above-ground dwellings associated with the Dnieper-Donec cultural complex. However, only one of them has been excavated. The finds from the site presumably date from the 4th millennium BC.

References:

- Исаенко, В.Ф.** 1976. Неолит Припятского Полесья. Академия наук БССР, Институт истории, Минск.

86. Stary Dziedzin 4 Stone and Bronze Age settlement site

Eastern Belarus, the bank of the River Oster. The site was discovered in 2006 by Alexander Kolosov and Mikhail Duktov and the excavations under their leadership were conducted in 2006, 2010 and 2012. In total, an area of 232 m² has been excavated. Remains of a pit-house, a hearth, and several pits associated with the Dnieper-Donec cultural complex were discovered at the site. The finds from the site cover the period from the 4th to the 1st millennium BC.

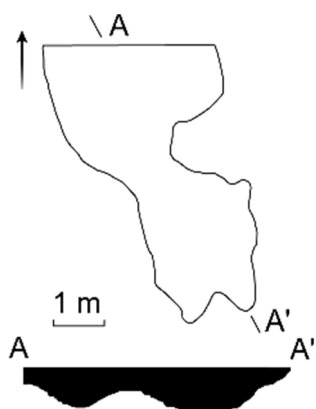


Illustration 63. Plan of a pit-house. After Khrustaleva et al. 2023, tabl.1/19.

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87. Staryja Jurkovičy I Stone – Middle Ages settlement site and Middle Ages burial site Southern Belarus, the bank of the River Aresa. The site was discovered in 1980 by Mikola Kryvaltsevich, and excavations under his leadership were conducted in 1985–1987. In total, an area of 688 m² has been excavated. Remains of a pit-house, several hearths, and pits associated with the Dnieper-Donec cultural complex were discovered at the site. Moreover, a hearth of the Zarubintsy culture, a dwelling of the Prague-Korchak culture, and Middle Ages burials were found there. The finds from the site date from the 4th millennium BC to the Middle Ages.

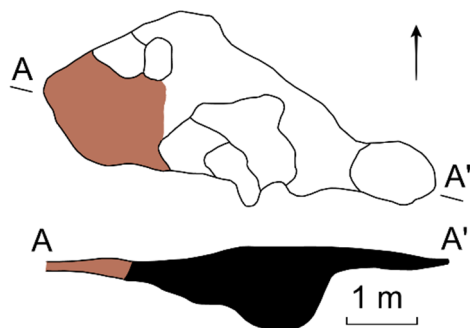


Illustration 64. Plan of a pit-house with a hearth (brown spot). After Крывальцевіч 1986, fig. 7.

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88. Stasiuška Stone Age settlement site

Southeastern Belarus, the bank of the River Berezina. The site was discovered in 1978 by Uladzimir Ksyandzoŭ and the excavations were conducted in 1978 under his leadership. In total, an area of 90 m² has been excavated. Hearth surrounded by a coloured spot in soil and concentration of finds interpreted as the remains of an above-ground dwelling associated with the Dnieper-Desna culture were discovered at the site. The finds from the site date from the Pre-Pottery Stone Age.

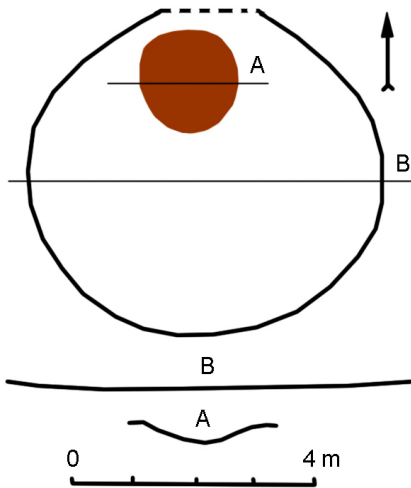


Illustration 65. Plan of a pit-house with a hearth (brown spot). After Ксензов 1988, fig. 46.

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89. Strumien VI Stone and Bronze Age settlement site and burial site

Names Loša I and Loša II were also used for different parts of the site.

Eastern Belarus, the bank of the River Sozh. The site was discovered in 1927 by Konstantin Polikarpovich, extensive surface collecting was conducted by Elena Kalechits in 1975–1976, and the excavations under her leadership were carried out in 1976–1980. In total, an area of ca. 3000 m² has been excavated. Remains of a pit-house associated with the Dnieper-Donec cultural complex, three Bronze Age buildings, number of household pits and hearths, as well as three inhumations of the Middle-Dnieper culture were discovered at the site. The finds discovered from the site cover the period from the 4th to the 1st millennium BC.

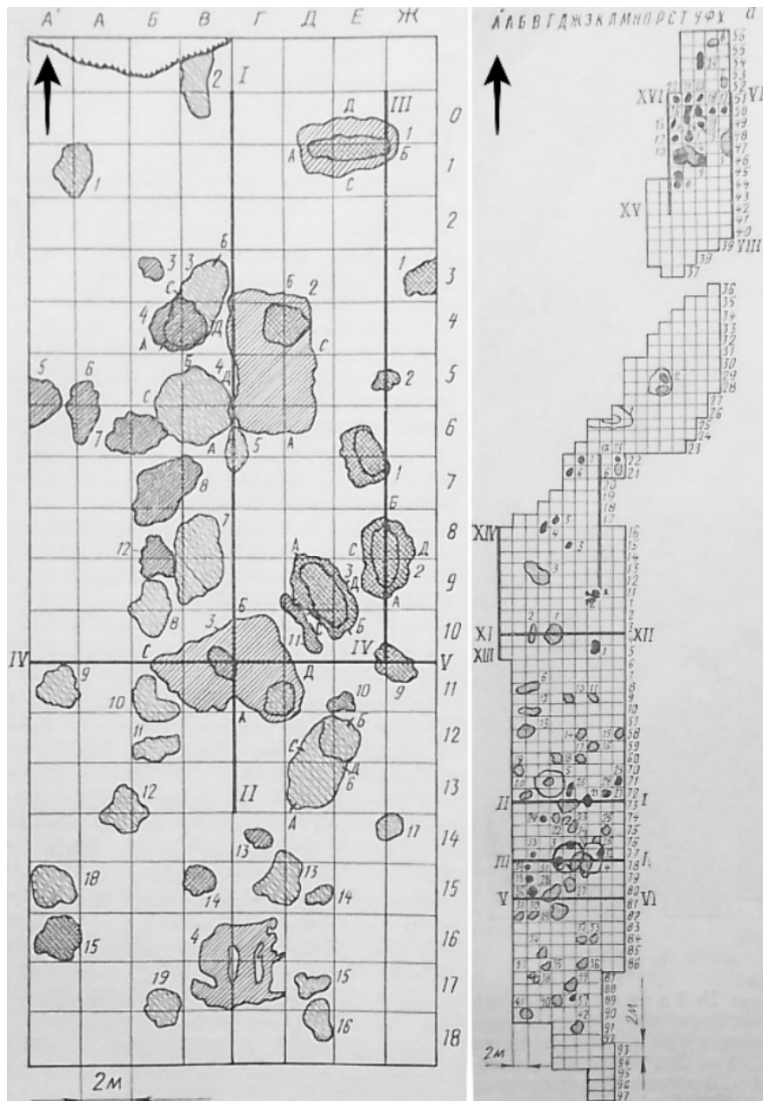


Illustration 66. Plan of the site with hearths, pits and pit-houses. After Калечиц 1987, figs. 28, 31.

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90. Vostrau III Stone Age settlement site

Southern Belarus, the bank of the River Styr. The site was discovered in 1964 by Vladimir Isaenko in exposure, where a few small quarries had disturbed a cultural layer. Remains of two pit-houses were discovered at the site, but a bulldozer soon destroyed them. Therefore, the cultural attribution of the pit-houses was and has remained undefined. The finds from the site date from the Pottery Stone Age.

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91. Vuscie 2 Stone – Bronze Age settlement site

Eastern Belarus, the bank of the River Sozh. The site was discovered in 1969 by Uladzimir Budzko and was excavated in 2005–2007 under the leadership of Alexander Kolosov. In total, an area of ca. 170 m² has been excavated. Pits, hearths, and a coloured spot in soil with a concentration of finds interpreted as remains of a Stone Age dwelling, as well as the remains of a Bronze Age pit-house were discovered at the site. The finds from the site date from the Pre-Pottery Stone Age to the Bronze Age.

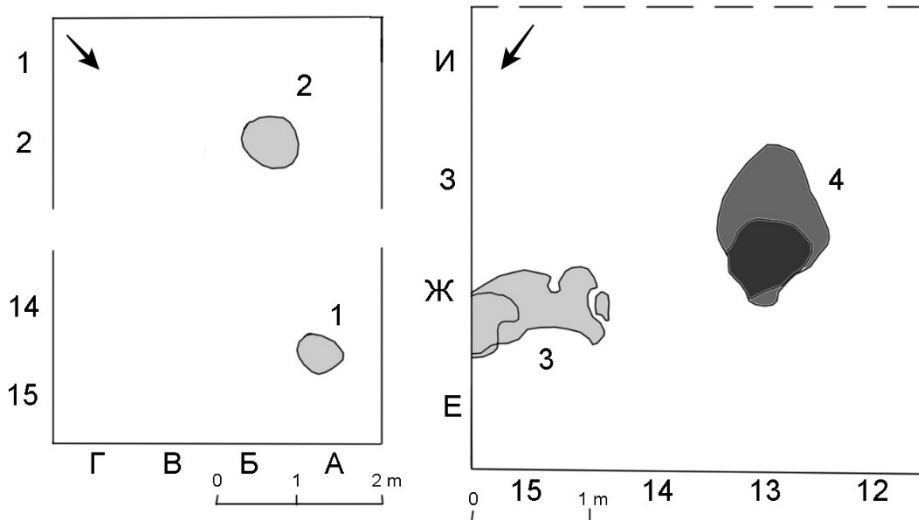


Illustration 67. Plan of the site with pits (light grey) and a hearth (dark grey). After Колосов 2009, fig. 24.

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92. Zavalje Stone and Bronze Age settlement site

Eastern Belarus, the bank of the River Dnieper. The site was discovered in 1928 by Alexander Kovalenya and was excavated in 1956–1957 under the leadership of Ivan Artemenko. In total, an area of 310 m² has been excavated. A concentration of charcoal pieces, burnt wooden fragments and ash around a hearth, and remains of stakes found at the site were interpreted as the remains of above-ground dwellings of the Middle-Dnieper culture. The finds from the site date from the late Pottery Stone Age to the Bronze Age.

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DISSERTATIONES ARCHAEOLOGIAE UNIVERSITATIS TARTUENSIS

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