Abhandlung

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Pits, houses and rondels: New results on the Lengyel habitation in the Žitava Valley, Southwestern Slovakia

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Abstract: As an intensely debated period, the transition from the LBK to post-LBK societies remains in the centre of attention of researchers dealing with the Early Neolithic in Central Europe. The partly drastic change of the settlement systems, regarding both the patterns and organisation, is indeed an interesting subject and raises questions about the social and economic processes and changes that may have accompanied this development. With this contribution, we present new results from extensive survey activities and excavations of Lengyel sites in the Žitava Valley, Southwestern Slovakia. Most notably, the excavation at the previously unknown circular enclosure of Podhájska, built around 4800 calBCE, yielded new data on various aspects of life in Lengyel contexts. Supplemented by geophysical prospections of other rondel and settlement sites, we now begin to understand the transition process from the Early Neolithic to later periods in this regional context. Varying settlement patterns within this small regional context, as well as new forms to express and maintain communality for the dispersed hamlets during the Lengyel period are remarkable signs for societal reorganisation and an adaption to altered needs of the communities involved.

Keywords: Settlement structures, decentralisation, communality, circular enclosures

Zusammenfassung: Der Übergang von LBK- zu post-LBK-Gesellschaften steht als intensiv diskutierte Periode nach wie vor im Zentrum des Interesses von Forschern und Forscherinnen, die sich mit dem Frühneolithikum in Mitteleuropa beschäftigen. Der teilweise drastische Wandel der Siedlungssysteme, sowohl hinsichtlich der Muster als auch der Organisation, ist in der Tat ein faszinierendes Thema und wirft Fragen nach den sozialen und wirtschaftlichen Prozessen und Veränderungen auf, die diese Entwicklung begleitet haben könnten. In diesem Beitrag werden neue Ergebnisse umfangreicher Survey-Aktivitäten und Ausgrabungen von Lengyel-Fundstellen im Žitava-Tal, Südwestslowakei, vorgestellt. Vor allem die Ausgrabung in der bisher unbekannten Kreisgrabenanlage von Podhájska, die um 4800 calBCE errichtet wurde, lieferte neue Daten zu verschiedenen Aspekten bezüglich lengyelzeitlicher Gemein-

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schaften. Ergänzt durch geophysikalische Prospektionen an unterschiedlichen Rondellen und Siedlungsplätzen beginnen wir nun, den Übergangsprozess vom Frühneolithikum zu späteren Perioden in diesem regionalen Kontext zu verstehen. Unterschiedliche Siedlungsmuster innerhalb dieses kleinen regionalen Kontextes sowie neue Formen des Ausdrucks und der Aufrechterhaltung der kommunalen Strukturen für die verstreut liegenden Weiler der Lengyel-Periode sind Anzeichen für eine gesellschaftliche Umstrukturierung und eine Anpassung an die veränderten Bedürfnisse der beteiligten Gemeinschaften.

Schlüsselworte: Siedlungsstrukturen, Dezentralisierung, Kommunalität, Kreisgrabenanlagen

Abstrakt: V poslednom období sa čoraz častejšie do pozornosti bádateľov, zaoberajúcich sa včasným neolitom v strednej Európe, dostáva otázka prechodu od Lnk k post-Lnk spoločnosti. Čiastočne dramatická zmena systému osídlenia, pokiaľ ide o jeho štruktúru i organizáciu, je diskutovanou témou, ktorá nastoľuje otázky spojené so sociálnymi a ekonomickými procesmi a s nimi súvisiacimi zmenami, ktoré mohli tento vývoj sprevádzať. V príspevku prezentujeme nové výsledky z rozsiahlych výskumných aktivít a vykopávok na lokalitách lengyelskej kultúry v povodí Žitavy. Predovšetkým výskum doteraz neznámej kruhovej stavby, rondelu v Podhájskej, vybudovanej okolo roku 4800 calBCE, priniesol nové poznatky o viacerých aspektoch života v kontexte vývoja lengyelskej kultúry. Terénna prospekcia doplnená o geofyzikálne merania ďalších rondelov a sídlisk postupne prispieva k pochopeniu procesu prechodu od mladého neolitu k neskorším obdobiam aj na území Požitavia. Odlišné spôsoby osídlenia v sledovanom geografickom regióne, ako aj nové formy prejavu a zachovania pospolitosti rozptýlených osád v období lengyelskej kultúry sú pozoruhodnými znakmi reorganizácie spoločnosti a prispôsobenia sa zmeneným potrebám vtedajších komunít.

Kľúčové slová: Sídelné štruktúry, decentralizácia, komunita, kruhové areály

Kivonat: A közép-európai kora neolitikummal foglalkozó kutatók figyelmének középpontjában továbbra is hevesen vitatott témát jelent a vonaldíszes (LBK) és a vonaldíszes közösségek utáni (post-LBK) időszak átmenete. A településrendszerek részben drasztikus változása mind szerkezeti, mind szervezeti szempontból valóban érdekes és további kérdéseket vet fel a fejlődést kísérő társadalmi és gazdasági folyamatokkal, változásokkal kapcsolatban. Ebben a tanulmányban a délnyugat-szlovákiai Žitava/Zsitva-völgyben található lengyeli korú lelőhelyeken végzett átfogó terepi felmérések és ásatások új eredményeit mutatjuk be. Ezek közül a legjelentősebb a korábban ismeretlen, i. e. 4800 körül épült podhájskai körárok, amelynek régészeti feltárása új adatokat szolgáltat a lengyeli közösség életének különböző aspektusairól. További rondellák és települések geofizikai kutatásával kiegészítve most már kezdjük megérteni a kora neolitikum és a későbbi időszakok átmeneti folyamatát ebben a regionális kontextusban.

A változó települési minták ebben a kistérségi környezetben, valamint a közösség kifejezésére és fenntartására szolgáló új formák a szétszórt falvak számára a lengyeli időszakban figyelemre méltó jelei a társadalmi átrendeződésnek és az érintett közösségek megváltozott igényeihez való alkalmazkodásnak.

Kulcsszavak: Településszerkezet, decentralizáció, közösségtudat, körárok

Introduction

During the last years, a German-Slovak team carried out intensive surveys and excavations at several sites that belong to the Lengyel horizon in the Žitava Valley in Southwestern Slovakia. The results of this work provide new insights into an important transitional period; namely the transition from LBK and Želiezovce to Lengyel communities, which exhibit profound changes in the organisation of settlement as well as the organisation of communal structures.

The work presented here took place within the framework of the DFG-funded CRC 1266 "Transformation Dimensions – Human-Environment Interactions in Prehistoric and Archaic Societies" at Kiel University in cooperation with the Archaeological Institute of the Academy of Sciences Nitra. The contribution was developed in the framework of the VEGA-project 2/0075/21 "Settlement agglomeration of the Linear Pottery Culture in the Žitava river area" and the work was supported by the Slovak Research and Development Agency under the contact no. APVV-20-0521. This cooperation has been ongoing since 2012 and has already been able to collect diverse data and results on the development of the Early Neolithic settlement landscape in this area through extensive excavation and survey work[1]. The research project is particularly dedicated to the study of transformation processes between the phases of the EN (LBK and Želiezovce contexts) and the MN (Lengyel contexts), with settlement patterns and structures playing a central role. A consideration of the social, economic and

1 Cf. Furholt *et al.* 2020a.

political structures is an important part of the project work and could already yield new insights into the phase of the EN, represented by Linear Pottery and Želiezovce contexts and especially by the site of Vráble-Veľké Lehemby[2]. In addition, the role and nature of trans-regional exchange and mobility networks and the construction and use of communal buildings are focal points of the considerations.

The aim of the prospection and excavation campaigns of 2022 was the development and examination of further settlement sites from the Middle and Late Neolithic phases to the Eneolithic in the Žitava Valley, in order to integrate them into the context of the sites already prospected since 2012 and to expand the picture of the settlement structure of the region at this time. In this contribution, a brief description of the known settlement sites of Lengyel contexts will precede the description of the findings of the circular enclosures of Podhájska and Žitavce, as well as the Lengyel house features at the site of Čifáre.

Circular enclosures in Lengyel contexts

The features of the circular enclosures of Podhájska and Žitavce stand in the broader context of the Middle to Late Neolithic construction phase of so-called rondels. These monumental enclosures were built between 4900 and 4500 BCE in an area that includes parts of present-day Hungary, Slovakia, the Czech Republic, Poland, Austria and Germany, and thus covers large areas of Central Europe[3]. Rondels are attributed to the archaeological contexts of the Lengyel and MBK, as well as the SBK and adjacent groups[4]. The rondels are characterised by some uniform and unifying features, but above all by a considerable degree of variability concerning the forms and construction features[5]. The dimensions of the structures also vary considerably, with diameters ranging from 60 m[6] to 213 m[7]. Of central importance are certainly the partly massive ditch systems, which can reach depths of up to 6.5 m[8] in excavation situations. However, smaller ditch and palisade structures are also frequently found in varying positions and numbers[9]. As usually missing or not preserved features, potential wall structures made of the soil taken from the ditches are discussed. These structures are discussed both for the central and outer areas of the rondels[10]. Sedimentological and micromorphological analyses have in some cases provided evidence for such structures[11], but in other cases this scenario has been ruled out[12]. The central area of the usually symmetrically designed circular enclosures is often completely free of features[13], while the immediate surroundings of the monuments often show traces of settlement activities such as pits or house features[14]. This makes it clear that the rondels, unlike other monumental complexes of earlier or later periods, have a spatially very close connection to settlement structures. It should be emphasised in this context that with regard to the Middle to Late Neolithic settlement organisation, a shift to a dispersed settlement pattern can be observed after the end of the LBK[15]. The interpretative approaches about the function and meaning of the rondels are diverse and range from astronomical installations[16] and defensive structures to ritual places and places of assembly[17]. An indirect indication of the collective significance of rondels can be the presumed amount of work involved in the construction of these monuments. The immense amount of wood required for the palisade structures[18], as well as digging and transport efforts, is decisive and presumably requires, at least when assuming relatively short construction times of a few years, the cooperation of entire village communities[19].

Lengyel rondels and settlement patterns in the Upper Žitava Valley

In the wider area of today's Slovakia, there are 16 known and discernible Lengyel circular enclosures[20], of which only Svodín[21] and Bučany[22] can be classified as compre-

2 Cf. Furholt *et al.* 2020b; Wunderlich *et al.* 2020.
3 Cf. Řídký *et al.* 2014, 580.
4 Cf. Vondrovský *et al.* 2022, 1106.
5 Cf. Páztor *et al.* 2008, 910.
6 For example, Svodín I; Němejcová-Pavúková 1995.
7 For example, Belvárdgyula; Gáti/Bertók 2008.
8 Řídký *et al.* 2019, 133.
9 Cf. Petrasch 2012.
10 Řídký *et al.* 2019, 159.
11 Cf. Lisá *et al.* 2013, 145; Trnka 1991, 308–310.
12 Cf. Loishandl-Wisz/Peticzka 2011, 159.
13 Pásztor *et al.* 2008, 910; but also Bučany; Pažinová 2012, 124–125.
14 Petrasch 2012; e. g. Těšetice-Kyjovice; Kaňáková *et al.* 2020.
15 Cf. Milo *et al.* 2004.
16 Cf. Pavúk/Karlovský 2004.
17 For example, Barna 2007; Bertemes/Northe 2012; Pásztor *et al.* 2008; cf. Petrasch 2012.
18 Cf. Petrasch 1990, 498–99.
19 Cf. Řídký *et al.* 2019.
20 Cf. Kuzma/Tirpák 2012.
21 Němejcová-Pavúková 1995.
22 Bujna/Romsauer 1986; Pažinová 2012.

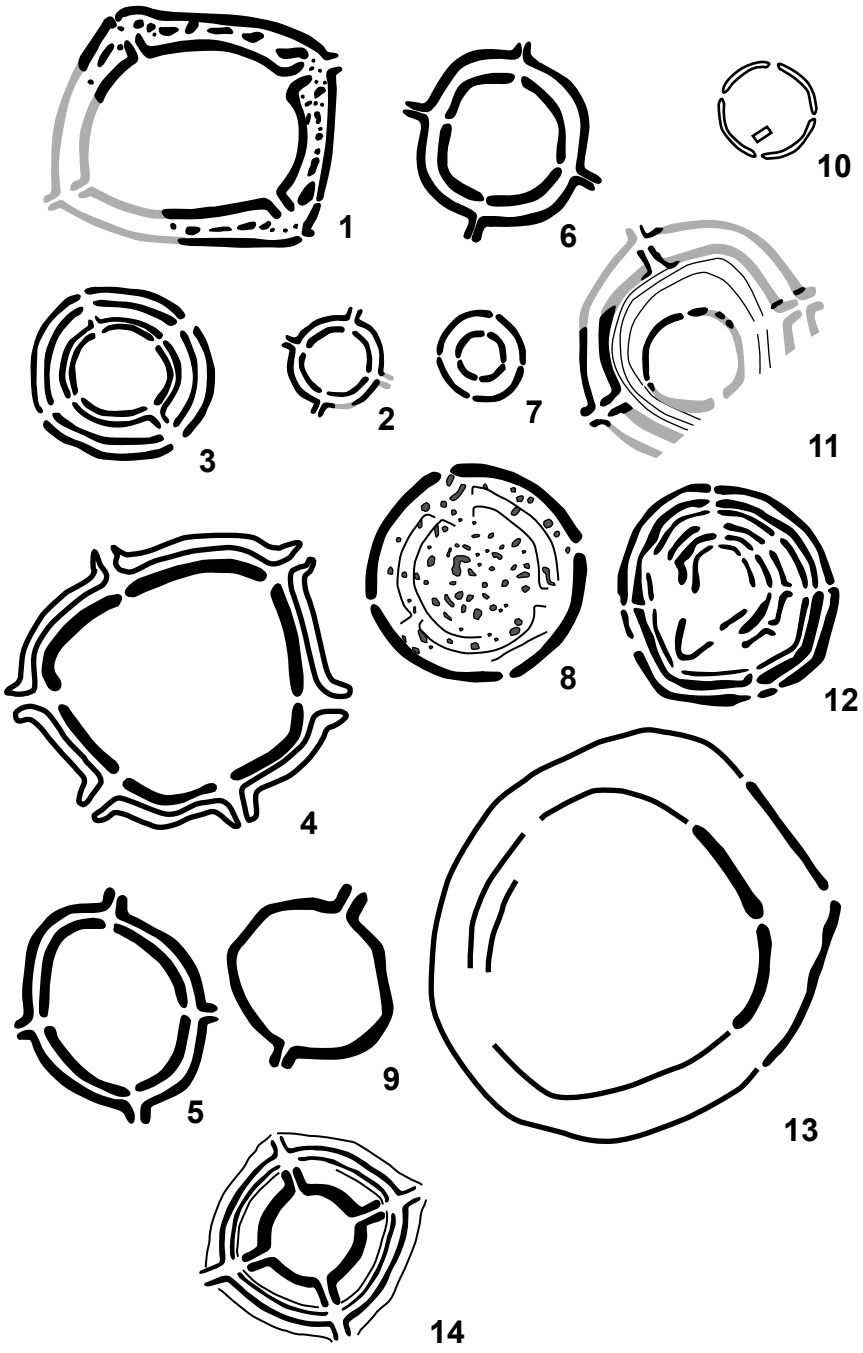

Fig. 1: Known circular enclosures in Slovakia. 1. Bajtava; 2. Bučany; 3. Cífer; 4. Golianovo; 5. Horné Otrokovce; 6. Podhorany; 7. Kľačany; 8. Prašník; 9. Ružindol-Borová; 10. Šurany-Nitriansky Hrádok; 11. Svodín I and II; 12. Žitavce; 13. Hosťovce; 14. Podhájska (altered after Kuzma/Tirpák 2012, Fig. 13).

hensively investigated sites. Svodín, in particular, stands out due to the variety of known features. In addition to two circular ditch complexes (Svodín I and II), the surrounding features include pits, graves, and 35–40 house features, many of which contain Lengyel pottery. Material culture and datings nevertheless also indicated an occupation in other Eneolithic periods, the Late Bronze Age, and the Middle Ages[23]. The fillings of the ditch structures in Svodín I and II consisted of layer sequences of varying thickness, especially in the lower areas, although there are clear differences between the different ditches. From the findings, a rapid refilling of at least the lower parts of the ditches can be concluded[24]. The excavations and subsequent evaluations in Svodín have shown that the rondels did not stand on their own, but only are part of a complex of features that extends over a total of seven occupation

23 Cf. Demján 2016.

24 Řídký *et al.* 2019.

phases and, according to the house and grave features, covers different aspects of life. The second comprehensively researched rondel, the site of Bučany, is essentially comprised of the excavated remains of the rondel itself, although in this case, too, further Lengyel period features were discovered in the immediate vicinity of the site[25]. In the central area of the site, postholes of a building were identified, which the excavators consider to be contemporary with the construction of the rondel. The shape of the rondel itself is similar to that of Podhájska and is comprised of two ditches with four entrances and a maximum diameter of 50 m[26].

However, most of the rondel sites are only known from aerial photography and geophysical surveys. These surveys already provide a great deal of information on the appearance and structure of the sites, but absolute dates from rondels in Slovakia are indeed rare[27]. In terms of relative chronology, the Proto-Lengyel follows the Early Neolithic Želiezovce group and then transitions into Lengyel[28], traditionally assuming a clear influence by Vinča groups[29]. A comparison of the structure and shape of the rondels in Slovakia clearly shows their variety (cf. Fig. 1); those with four entrances, as is also the case in Podhájska, can be described as the most common form. The closest rondels to Podhájska are the rondel of Žitavce[30], which was surveyed multiple times (cf. Fig. 1.12), and Golianovo[31] (cf. Fig. 1.4). The sites are about 9 and 20 km away from Podhájska, respectively, and are structurally dissimilar to it. Both sites have not been investigated by excavations, but only by geophysical surveys and fieldwalking. An evaluation of the lithic material from such surveys in Golianovo showed that, in addition to local materials, raw materials from present-day Hungary and Poland, which must have made their way to the site via exchange networks, appear to have been used. The finds (including core fragments) also indicate that radiolarite and obsidian were processed on site[32].

For the Žitava Valley, there is a comprehensive database, especially for Neolithic to Bronze Age sites, which has been expanded through excavations, but also through extensive survey work and international cooperation[33]. There are also quite extensive data sets for the Lengyel period sites, which illustrate the local settlement patterns (Fig. 2). The most recent, diachronic compilation of prehistoric and early historic settlement sites in the Upper Žitava Valley was presented by M. Gabulová[34]. The data situation clearly shows that after the quite dense settlement patterns during the LBK, as well as the Želiezovce phases, the situation quite strongly decreases with the beginning of the Lengyel (stages I and II; Late Neolithic). Only four settlement sites are known from this period, one of which is a pure Lengyel period site, while the second is a site that was used over several phases. These include the preceding Neolithic phases, but also the subsequent Bronze Age, Iron Age and Medieval periods. Problematic for the understanding of the clearly changed and very dispersed settlement system is the lack of well-studied sites. Apart from a few surveys, there are no excavated settlement sites from Lengyel contexts in the Upper Žitava Valley. For the Epilengyel (ludanická skupina), considerably more sites are given; thus M. Gabulová lists a total of 75 sites described as potential or certain settlement sites. Of these, 21 sites are attributed only to the Epilengyel, while the majority of the sites are multi-phase and generally show both earlier use (LBK and Želiezovce, Lengyel I and II) and the later phases already mentioned (Bronze Age, Iron Age, Middle Ages). A problem is that most of the settlements were not investigated by excavations and thus the exact character of settlement use remains unclear[35].

Throughout all the phases mentioned here, however, the basic spatial use of the Upper Žitava Valley does not change. The settlement sites are oriented along the main course and the tributaries of the Žitava and thus in the low-lying areas between 100 and 300 m above sea level[36].

Investigated Lengyel period sites in the Upper Žitava Valley

The surveys were carried out with a dGPS-supported, 8-probe magnetic device of the type MX V3 from the company SENSYS, in the hand-pushed version[37]. From the data obtained during the geophysical documentation, large-scale feature plans of the site could be created.

25 Pažinová 2012.
26 Cf. Bujna/Romsauer 1986; Pažinová 2012.
27 For example, Svodín; Němejcová-Pavúková 1995, 217.
28 Cf. Pavúk 1991.
29 Cf. Nevizánsky *et al.* 2017.
30 Kuzma/Tirpák 2003.
31 Tirpák 1993; Březinová *et al.* 2002.
32 Kuzma/Cheben 2012.
33 Cf. Bátora *et al.* 2012; 2015; Furholt *et al.* 2020.
34 Gabulová 2015.
35 Cf. Gabulová 2015, 149–164.
36 Cf. Gabulová 2015, 112–116.
37 The site of Podhájska was first proposed as possible rondel by N. Müller-Scheeßel in 2018 (pers. comm.), after systematically surveying the aerial satellite imagery of the Upper Žitava Valley.

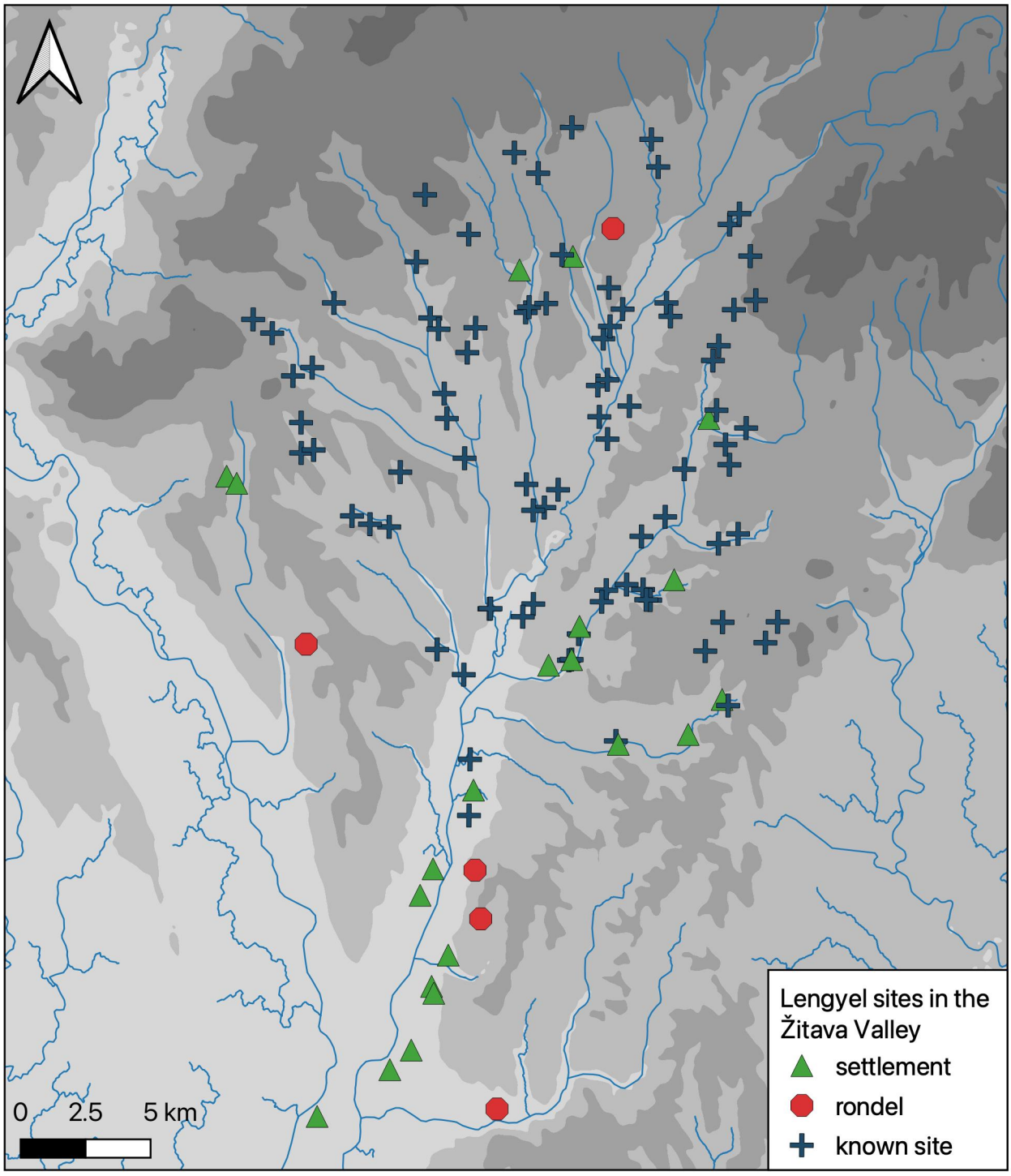

Fig. 2: Map of the Lengyel sites in the Žitava Valley (location of "known sites" after Gabulová 2015; please note that the area studied by Gabulová did not include the southern part of the Žitava Valley).

During the site visits, transects were selected on the basis of the geomagnetic findings, which suggested a particular occurrence of finds. These transects were then surveyed. The documentation of the finds made here was carried out by means of dGPS-supported measurement of the diagnostic individual finds. In order to get a picture of the total amount of finds, non-diagnostic finds were measured with the help of hand-held GPS devices, which have a much lower accuracy than dGPS, but are much quicker to learn to use. In addition to finding new features with the help of

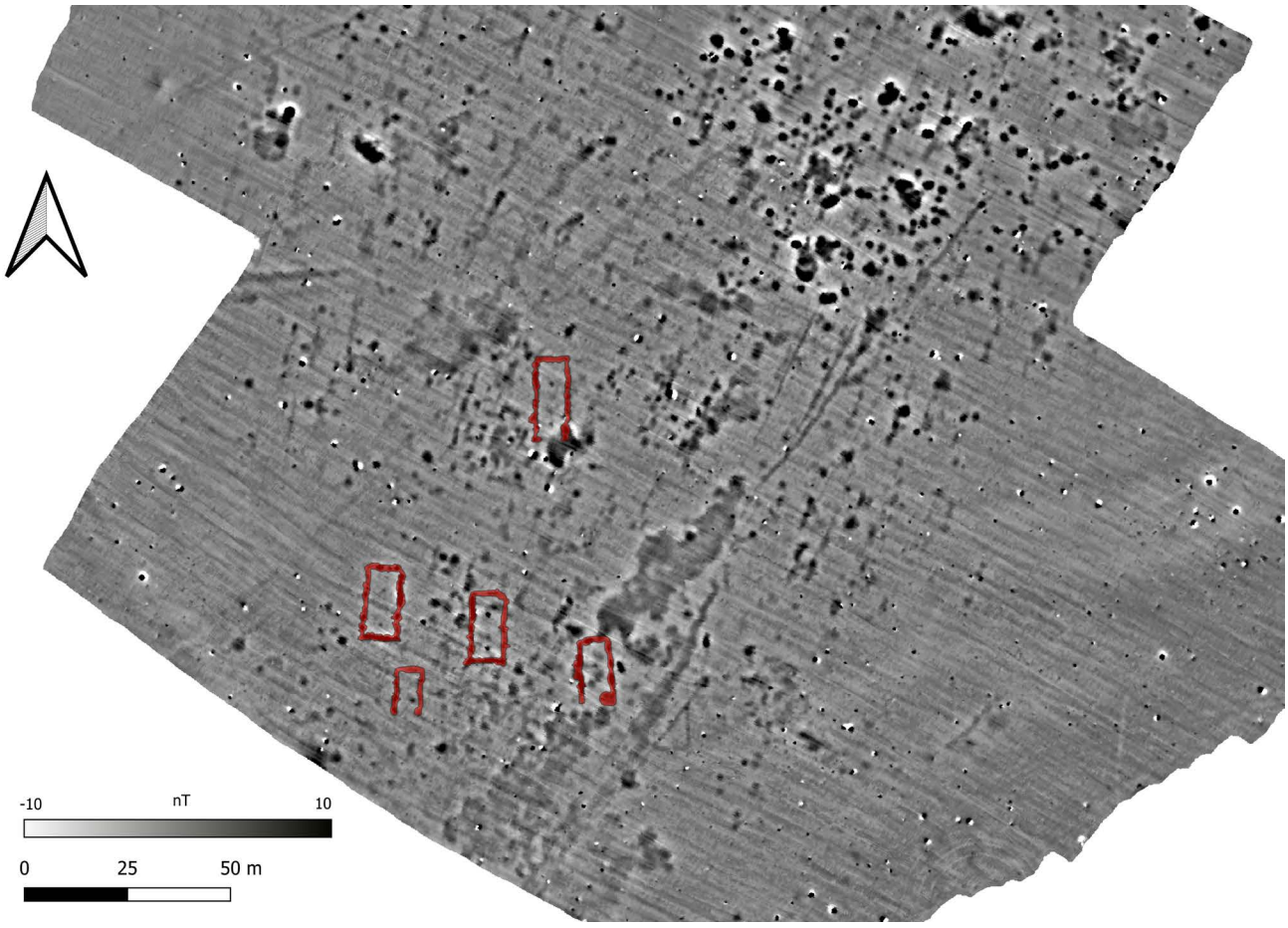

Fig. 3: Section of the geomagnetic plan of the site Čifáre, where LBK and Lengyel period houses were documented (Fig.: J. Schönebaum).

geomagnetics, the aim was to determine the total amount of find material specific to each site and to delimit possible activity zones. The mapped density of the find material was used as a preliminary indicator for determining such zones.

The Lengyel settlement of Čifáre

The site of Čifáre is geographically located in the north-easternmost foothills of the Danubian Hills in the transition to the lower Tatras and is situated between several ridges on a slope that descends from north to south.

The geophysical surveys (cf. Fig. 3) reveal several overlapping house plans which are largely undisturbed. Individual high-frequency values in the northeast of the measured section are the exception. These are possibly larger pieces of iron or accumulations of bricks. In total, at least ten house plans can be identified from the geomagnetic survey. These can be dated to the EN (LBK) and MN (Lengyel context) on the basis of their outline and shape. However, their exact number is difficult to determine, as some of the outlines are only faintly recognisable in the feature image and also overlap in many places. The four easily recognisable Lengyel period houses are aligned N-S and measure between 16–18 m×7.5–8 m. In addition to the geophysical investigations, fieldwalking was carried out in Čifáre, just as at the other sites. During these, various material was recovered, such as pottery sherds, an obsidian blade and various flint blades. The material mainly dates to the Lengyel period, although other periods, such as LBK and Baden, were also discernible.

The Lengyel circular enclosure of Žitavce

The site near Žitavce is located on a hillside sloping from SSW to NNE, east of the Žitava between the villages of Žitavce to the north and Maňa to the south next to the II/511 in the Danubian Hills.

The rondel is comprised of a ditch system extending across two present-day fields and cut by an intervening farm track. The geomagnetic plan is disturbed in the SW

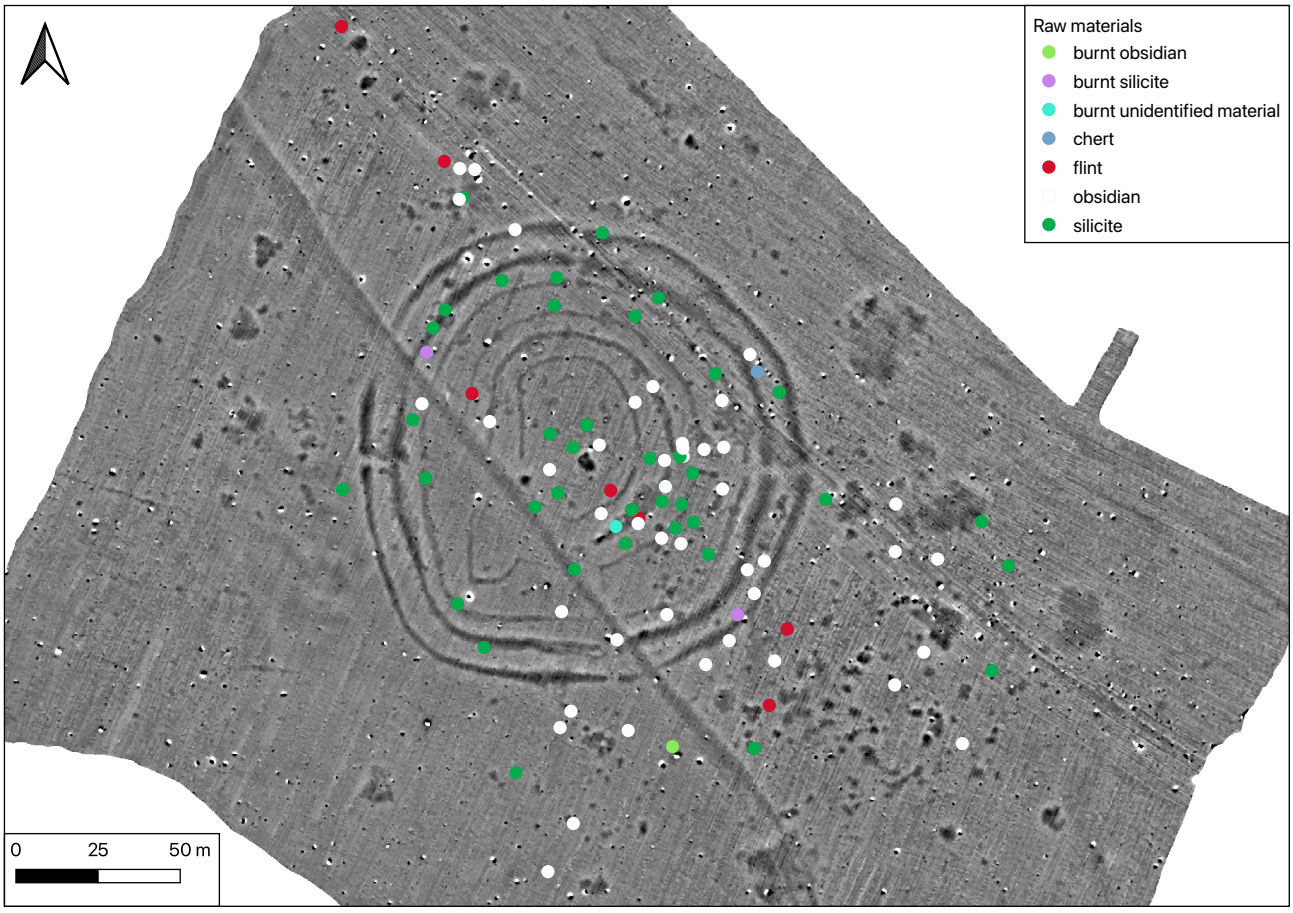

Fig. 4: Spatial distribution of the chipped stone artefacts by raw materials in Žitavce (Fig.: K. Furholt).

area, making it difficult to clearly identify the Lengyel ditch systems. The outer two of the at least six ditches each have four openings aligned N-S and E-W, thus facing each other. These two ditches, with maximum widths of 4.5–5 m, are the most massive of the entire site, which reaches a diameter of up to 140 m. The four inner ditches are more disturbed, but for the third ditch from the outside, a course following the outer ditches can be assumed, although it is much narrower with a maximum width of 2.2 m. For the innermost three ditches, a significant deviation from the approximately symmetrical circular shape can be observed, which is particularly pronounced in the most disturbed SW area. There, a ditch fragment, possibly attributable to the fourth ditch from the outside, has a bulge about 12 m wide in a southerly direction. The openings with an easterly orientation also continue in the inner three ditches, while these appear to run through to the north. In the south and west, no statement can be made on the basis of the geomagnetic plan. Entrance situations with outward running wings, as they occur in other rondels, are less clearly recognisable and are not symmetrical, but rather irregular. The distances between the ditches are also slightly irregular and vary for the most part between 3–6 m. Only the distance between the third and fourth ditch from the outside is clearly larger, reaching a maximum of 18 m in the southeast. The area within the circular enclosure complex is largely free of features; no house ground plans are present either within the ditches or in the investigated area of the surroundings.

In addition to the geophysical investigations, a systematic collection of surface finds was carried out in Žitavce, which yielded a considerable amount of lithic and ceramic find material in the area of the circular enclosure and its immediate surroundings (Figs. 4 and 5). Of the 394 spatially documented finds, 160 were collected and evaluated. These ceramic and lithic finds are diagnostic pieces (Plates 1–8). The concentration of finds was particularly high within the complex in the east and southeast between the innermost and outermost ditches. The area surrounding the enclosure had a somewhat lower find density, which, however, appears to be highest in the south and southeast. The collected pottery is comprised of only 38 sherds, as the majority was only measured in the field as an undiagnostic find

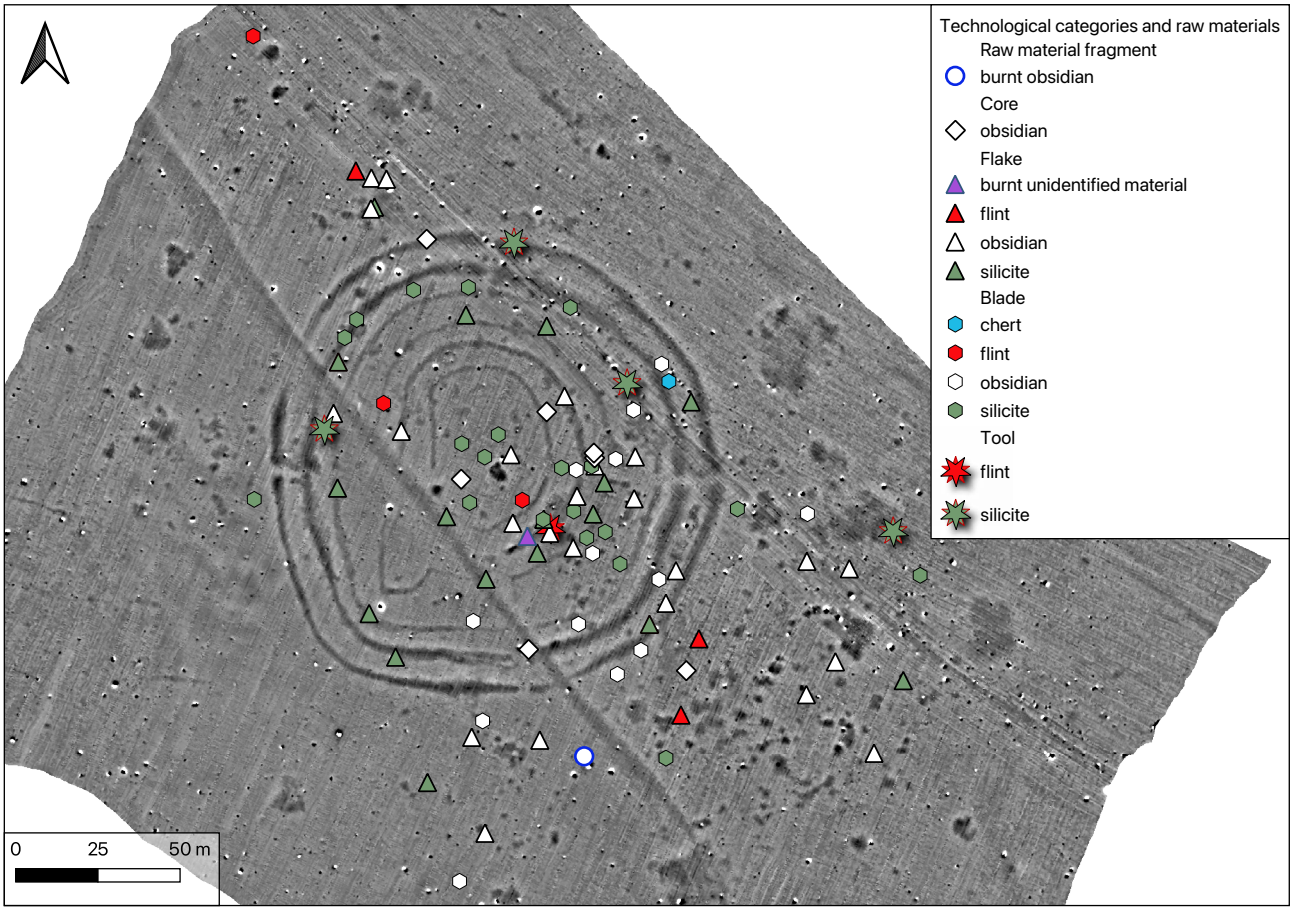

Fig. 5: Spatial distribution of the chipped stone artefacts by raw materials and technological categories in Žitavce (Fig.: K. Furholt).

with the dGPS. To be mentioned are seven sherds with discernible rims, eight base fragments and five handles that fit the broader Lengyel context. Various knob shapes and red painting form the bulk of the decoration.

In total, 117 pieces of chipped and polished stone artefacts were collected on the surface. One of the polished stones is a shaft-hole axe fragment, which is broken cross along the shaft-hole, which was made from a hard, greenish-grey (Munsell code: 5G/6/1), non-translucent material (probably hornfels). The axe is relatively big-sized, and smoothly polished. On the original surface, there is no use-wear trace, just the broken part. The butt part has a roundish form, and the edges widen towards the mesial part. The cross-section shows the difference in the thickness between the two longitudinal sides of the axe (EF 070, Pl. 7, shaft-hole axe fragment). The second break cut the axe in half, so we can consider that making it into two pieces was an original purpose. The other polished stone item is a butt fragment, which probably functioned lastly as a chisel and was made from basalt (non-translucent, black colour, homogeneous material) (EF127, Pl. 8, polished stone fragment).

The chipped stones (115 pieces) were made from mostly obsidian and limnic silicite, which represent high-quality, well-knappable raw materials (Table 1). The vast majority of the obsidian belongs to the C1 (Slovakian) type (52 pieces), eight pieces are C2 (Hungarian) type, and one is burnt. The original source of the obsidian is located in Zemplín Mountain (Tokaj-Eperjes), which is 200–250 kilometres to the east as the crow flies[38]. The nine microblade cores, 29 flakes and 21 blades of obsidian indicate the local (on-site) knapping activity (Table 2). Only one C1 obsidian core (EF023) does not have any cortex. Otherwise, every core is partially covered with the original cortex, which proves that the first stage of the entire chaîne opératoire started with obsidian nodules. The majority of the microblade cores have only one striking platform (EF016, EF017, EF010, EF0141, EF123; Pl. 6 and 8), which is heavily facetted to create a proper striking platform (EF010, EF016, EF017, Pl. 6). In many cases, the Neolithic knapper used the natural morphology of the

38 Biró 1981; 2004; 2018; Szepesi *et al.* 2018.

obsidian nodule and started with a sharp angle to prepare the blade-debitage surface. From the obsidian flakes, ten are decortication and six are rejuvenation flakes, which correlate with the nicely prepared microblade cores. Thus, we can assume a well-experienced knapper(s), who was/were aware of removing as many blades as possible from a core. This suggestion is also strengthened by the number of arrises. Only one or two arrises appeared on the dorsal side of the blades, showing that the knapper(s) avoided the accumulation of arrises. The butts are plain, facetted or punctiform. All the technological signs indicate the usage of the indirect percussion technique besides direct percussion with a soft hammer, but the small dimension of cores and blades and the consistent blade removals display the dominance of the indirect percussion technique. Five obsidian blades are retouched, which is typical for volcanic glass, since there is no need to use further retouching because of the naturally sharp edges.

Tab. 1: Raw material distribution of the surface collection at Žitavce.

Raw material	n	%
Obsidian	61	52,14
Flint	7	5,98
Silicite	45	38,46
Chert	1	0,85
Unidentifiable	3	2,56
Total	117	100

Tab. 2: Technological categories distribution of the surface collection at Žitavce.

Technological categories	n	%
Core	9	7,69
Raw material fragment	2	1,71
Flake	53	45,3
Blade	46	39,32
Tool	5	4,27
Polished stones	2	1,71
Total	117	100

The silicite raw material group is well recognisable by its translucent light brown colour, 30 of them are patinated. There is a local geological source for silicite – limnic silicite – in the Žiarska Dolina Basin in Central Slovakia, which means 40–80 kilometres as the crow flies[39]. There is no core or raw material fragment of silicite, but rather 20 flakes, 21 unretouched blades and four tools (one trapeze, two end-scrapers on flake and one end-scraper on blade) made from this raw material. The technological characteristics are very similar to the obsidian concerning the matter of removals and the number of arrises. There are two retouched silicite flakes, but no blades have any final retouch. Besides the four silicite tools, one flint borer belongs to the tool category, which is a grey unsourced flint with white spots.

The spatial distribution of the stone artefacts by their raw materials and technological categories does not show any specific pattern. The vast majority of the artefacts appeared close to the centre of the ditch system and in the south and southeast part from the external ditch in a 100-meter zone. Based on this, a moderate stone item accumulation is visible in the eastern part of the ditch system between the first and the third ditches (counted from the centre). In the middle of the rondel, flint and silicite blades, obsidian flake and core appeared. Except for one, all of the obsidian cores were discovered inside the rondel. The west and southwest area from the rondel is void from lithics.

The Lengyel circular enclosure of Podhájska

The site is located on a gentle slope near the Liska stream between the villages of Podhájska to the east and Radava to the southwest on present-day road II/580 in the Danubian Hills, the northeastern part of the Danube Lowlands. The morphologically most represented landforms in the Danube Hills are plains, hills and low uplands. The site is located on a slight elevation in an otherwise flat area, which is bordered by a ridge of hills in the south, beyond the river, and extends north as a slightly hilly plain to Trávnica. The most common soil types of the Danube hill country, which were also found in Podhájska, are Fluvisole, Chernozem or loess and Luvisole[40]. The immediate surroundings of Podhájska have not yet been fully geophysically investigated. However, particularly in the context of road construction in the second half of the 21st century, serious interventions have taken place in the area, which suggest that the area under investigation is highly disturbed in smaller parts. The geophysical plan (Fig. 6) indicated a very well-preserved ditch system, which is not disturbed even by the very near road. The enclosure has a maximum diameter of 158 m and has a total of four openings aligned ENE-WSW and NNW-SSE, respectively. In addition to the initial geophysical investigations, systematic fieldwalking was carried out on the site and in the immedi-

39 Cheben/Illášová 2002; Cheben/Cheben 2021.

40 Fehér 2018, 3.

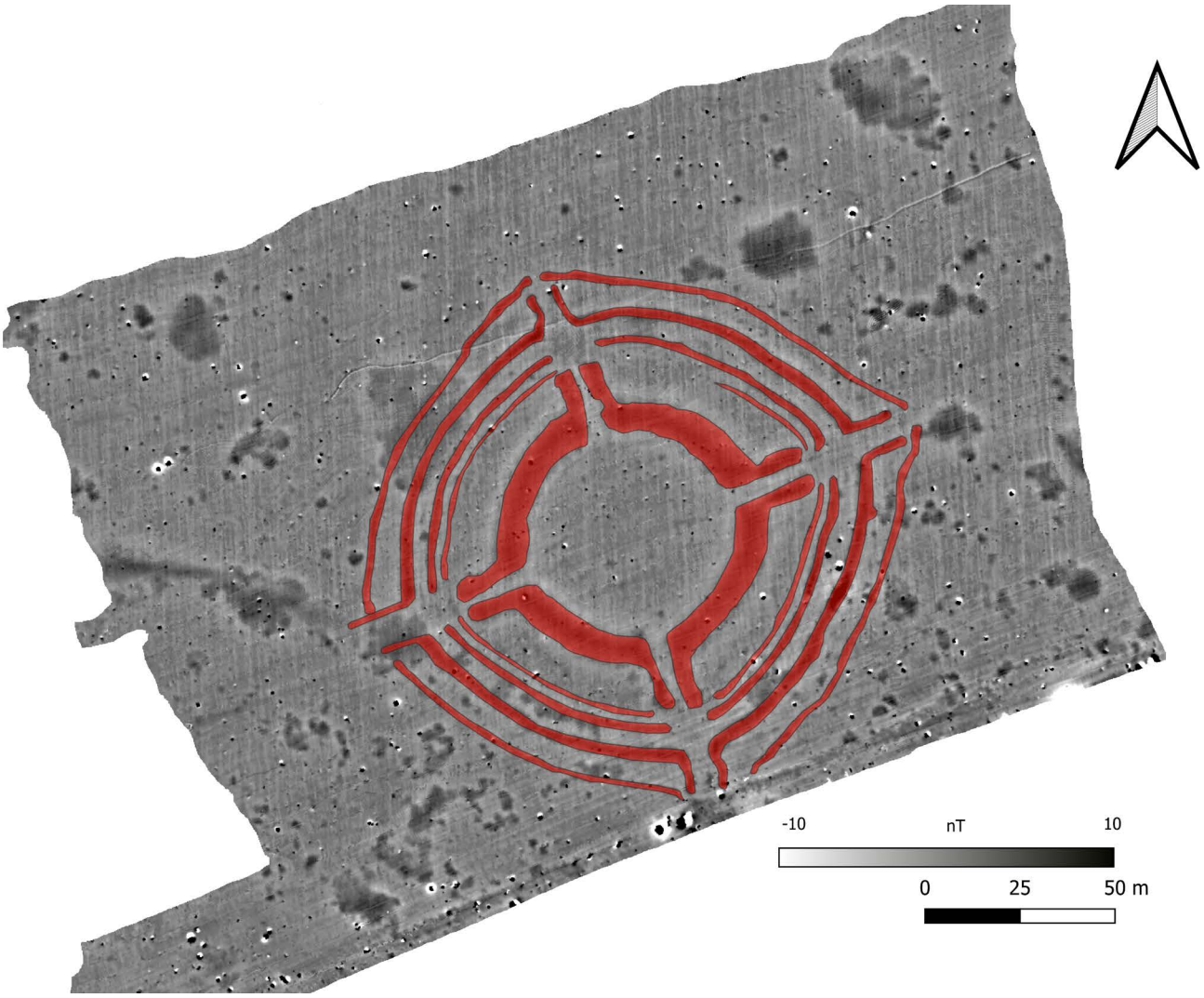

Fig. 6: The geomagnetic plan of the circular enclosure of Podhájska (Fig.: J. Schönebaum).

ate vicinity of the circular enclosure. However, almost no material was recovered; only 28 sherds of unclear dating and five stone artefacts were found in the course of the survey.

Three pieces of flint (two of them are non-translucent, yellow-colour probably Bakony radiolarite, and one is a translucent, light grey unsourced flint), one limnic silicite (translucent, light brown) and one obsidian (C1 type/Slovakian, transparent, light grey) represent the raw materials. The two flints are blade fragments, one is an intact flint blade. The talon (butt) of none of the blades could be determined because all of them are mesial fragments, one blade is truncated on the proximal end. The limnic silicite and the obsidian raw material are represented in flake forms. The obsidian is a decortication flake, which is heavily worn. The flakes have plain and punctiform butt types.

The ditch features

Altogether, the geomagnetic survey, as well as the subsequent excavation, made it possible to identify three prominent ditch systems, all of which were investigated during the excavation (cf. Fig. 7).

Absolute Dating

A total of 16 animal bone samples from the ditches and pits in Podhájska were selected for C14 dating at the Leibniz laboratory in Kiel. The results are shown in tables 3 and 4. These are five samples from the innermost large ditch, one sample from the narrower ditch outside of the inner one, two samples from the middle ditch, five from the outer ditch or its entrance area and three from the settlement pit object 9 in front of the entrance. One sample from the

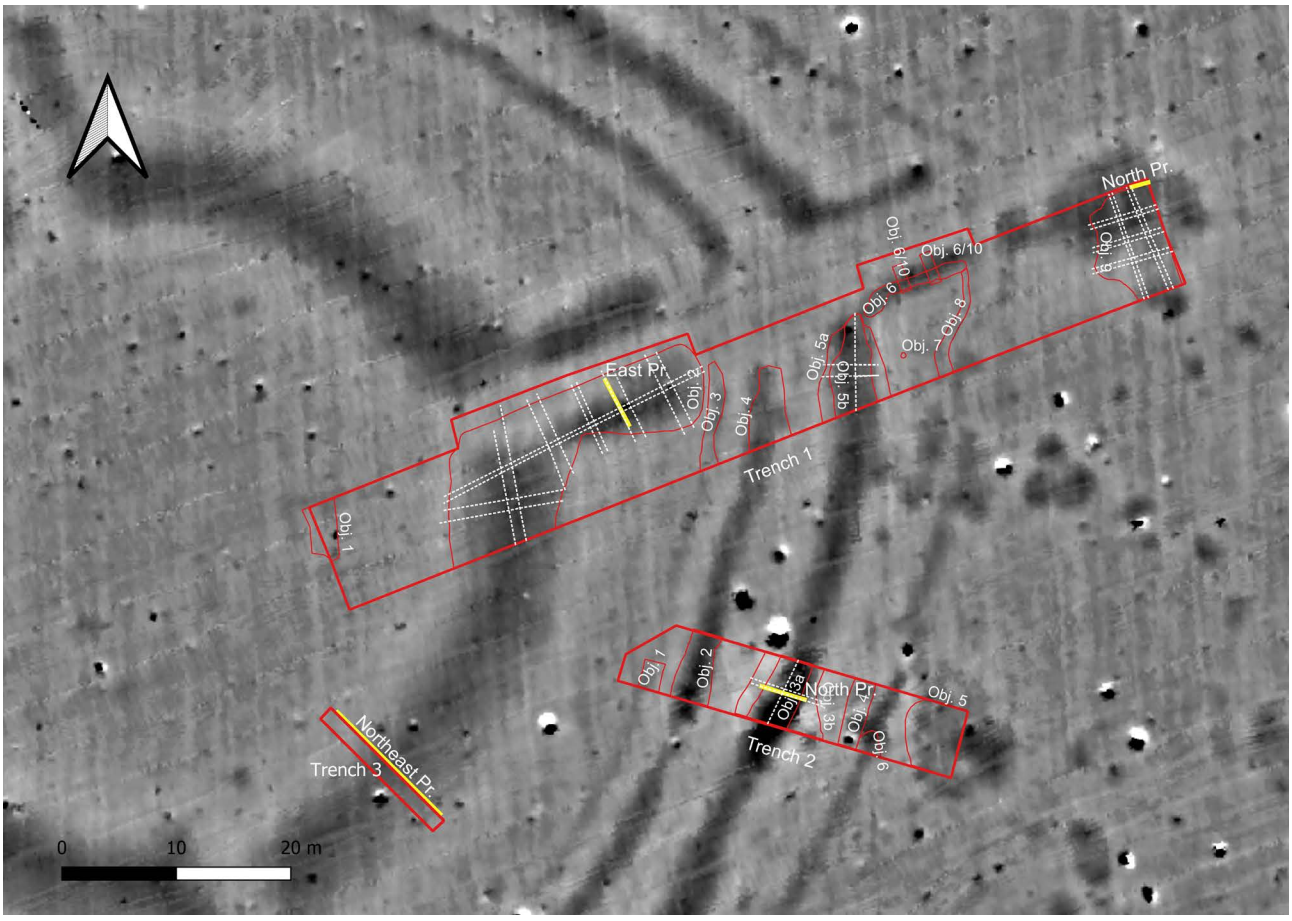

Fig. 7: Trenches 1, 2 and 3 of the excavations in summer 2022 and 2023 in the eastern area of the circular enclosure of Podhájska (Fig.: J. Schönebaum).

innermost ditch, KIA-57687, yielded a date about 1000 years too young and was thus omitted. To explore the chronology of the site, we calibrated the remaining 15 dates, using a bounded phase model in Oxcal ver. 4.4.4. The first run of this model yielded a relatively low overall agreement value of 67.4 %, which was due to two outlier dates (KIA-57693 and KIA-57686). Here, the function of "span", to calculate the most likely duration of the whole group of dated events, lay at 99,5 % between 71 and 356 years, and fell most likely between 4922 BCE and 4474 BCE. After omitting the two outliers, a new model (Fig. 8) showed a satisfying 100.4 % overall agreement, and indicated a calculated span of 0 to 175 years of duration. This span is very likely to date between 4847 and 4608 BCE (Fig. 8). Here, it is important to note that the settlement pit object 9 is well placed within that span, while the outliers stemmed from the enclosure ditches.

A model assuming a sequence of events, the inner ditch being the oldest, followed by the middle one and finally the outer ditch yielded only 25.5 % of overall model agreement. After removing the two outliers already identified above, the model still had an overall agreement of 43,7 %. Thus, the idea of successive construction events is largely rejected by our dates, at least as long as we are talking about strict boundaries between the construction events. However, if we would assume a situation in which the inner ditch would have been constructed first, then was abandoned and partly filled as a process ongoing while the next ditch is dug and starts to be filled, then a model with fuzzy boundaries would be most appropriate. However, for such more complex models, we would probably need a larger number of dates.

Therefore, we conclude that the activities at and around the rondel of Podhájska most likely took place within a relatively short period of time, ranging from less than one year to 185 years, and that the rondel was planned, erected and filled within one contingent series of events – without excluding the possibility of a succession of ditch construction events with overlap in their subsequent refill. This series of events most likely took place between 4800 and 4650 BCE.

Tab. 3: The ^{14}C datings from Podhájska.

2024_PodhajskaPhase									
Name	**Unmodelled (BC/AD)**		**Modelled (BC/AD)**		**Indices Amodel 104.4 Aoverall 100.4**				
	from_95_4	**to_95_4**	**from_95_4**	**to_95_4**	**Acomb**	**A**	**L**	**P**	**C**
Sequence									
Boundary StartPod			-4847	-4723					97.6
Phase PodPhase									
R_Date KIA-57680	-4932	-4714	-4816	-4707		94.5			99.2
R_Date KIA-57684	-4782	-4550	-4785	-4659		97.6			98.7
R_Date KIA-57690	-4896	-4711	-4808	-4706		105.7			99.4
R_Date KIA-57695	-4896	-4711	-4806	-4706		105.7			99.5
R_Date KIA-57683	-4834	-4556	-4791	-4676		122.5			99.2
R_Date KIA-57688	-4893	-4682	-4799	-4692		115.3			99.4
R_Date KIA-57692	-4902	-4702	-4809	-4701		107.8			99.1
R_Date KIA-57682	-4834	-4556	-4791	-4676		122.5			99.1
R_Date KIA-57679	-4829	-4555	-4791	-4673		121.3			99.1
R_Date KIA-57681	-4893	-4682	-4800	-4692		115.5			99.3
R_Date KIA-57694	-4783	-4547	-4786	-4656		92.5			98.7
R_Date KIA-57685	-4700	-4461	-4782	-4637		35			98.3
R_Date KIA-57691	-4889	-4622	-4797	-4692		116.4			99.3
Span DurationPod			0	175					97.7
Boundary EndPod			-4771	-4608					96.6

Tab. 4: List of all ^{14}C datings and their respective feature context in Podhájska.

Lab sample KIA	**Trench**	**Object**	**Quadrant**	**bone**	**note**	**sample ID – for DB and Lab**	**season**	**spit**	**weight in g**	**C14-Dating**
KIA-57680	1	2	d	astragalus	sus	POD22_011314-1	2022	12	23,2	5930 ± 40 BP
KIA-57684	1	2	d	femur	bos?	POD22_011018	2022	6	18,2	5815 ± 35 BP
KIA-57687	1	2	m	metatarsus	bos	POD22_011177-1	2022	10	33,5	4905 ± 35 BP
KIA-57690	1	2	m	metacarpus	bos	POD22_010790	2022	3	7,2	5915 ± 35 BP
KIA-57695	1	2	n	cranium	bos	POD22_011367-1	2022	below 12	8,7	5915 ± 35 BP
KIA-57683	1	3	g	metatarsus	ovis/capra	POD22_010016-1	2022	1	33,6	5850 ± 40 BP
KIA-57686	2	3	a	rib	medium mammal	POD22_020113	2022	8	17,8	6000 ± 40 BP
KIA-57688	2	3	a	tibia	bos	POD22_020040-1	2022	3	10,2	5895 ± 40 BP
KIA-57689	2	3	d	tooth	bos	POD22_020093	2022	1	10	nicht datierbar!
KIA-57692	2	3	a	ph1	bos	POD22_020071	2022	5	13,4	5915 ± 40 BP
KIA-57682	1	4	c	mandible	sus	POD22_010260-1	2022	3	48,8	5850 ± 40 BP
KIA-57693	1	6	f	cervical vertebra	bos	POD22_010139-1	2022	2	7,6	5665 ± 35 BP
KIA-57679	1	9	a	tibia	bos	POD22_011253	2022	4	44,9	5845 ± 40 BP
KIA-57681	1	9	a	calcaneum	bos	POD22_011069	2022	9	92,6	5895 ± 40 BP
KIA-57694	1	9	a	metatarsus	bos	POD22_010747	2022	6	49,2	5810 ± 40 BP
KIA-57685	1	6/10		ph1	bos	POD22_011137	2022	1	11,2	5740 ± 40 BP
KIA-57691	1	6/10		femur?	medium mammal	POD22_011277	2022	4	11,2	5890 +40/-35 BP

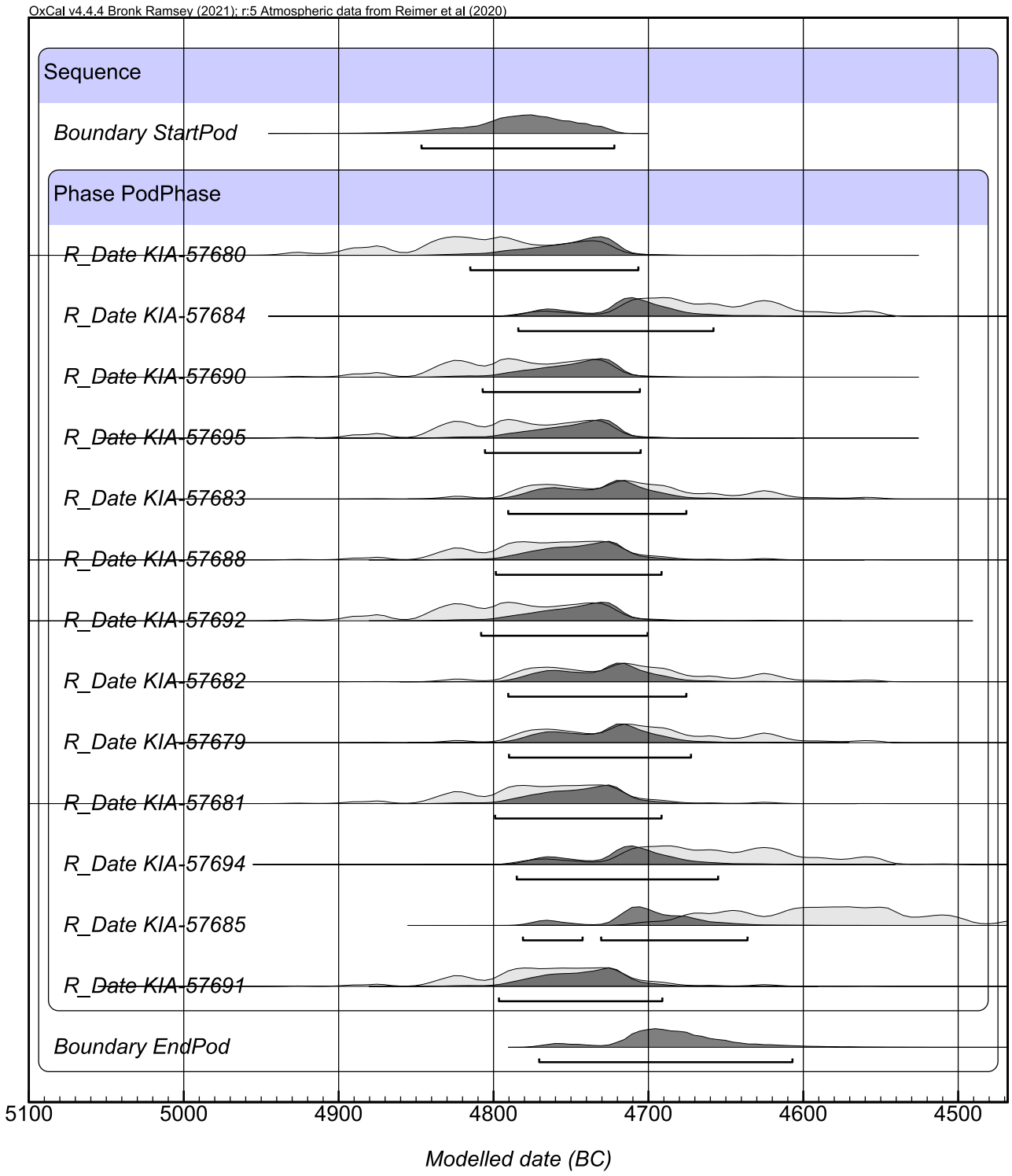

Fig. 8: Model of the ^{14}C-dates from Podhájska (Fig.: M. Furholt).

The innermost ditch

The innermost and most massive ditch (Trench01, Object 2 and Trench03, Object 1, respectively; Figs. 9 and 10) measures ca. 13 m in width and has the type of winged entrance situation that is typical for Lengyel rondels. In profile, the ditch is 5.2 m deep, V-shaped and consists of several layers.

Excavations in July and August 2023 identified at least seven layers, which in turn consisted of nine undisturbed sub-areas and two water influenced sub-areas. The youngest backfill (Layer 1) has a thickness of 5–50cm, is homogeneous dark grey-brown coloured loess loam and extends over the entire profile. The thickness is greatest in the middle of the profile, but the layer can still be described as relatively regular band-shaped. Layer 2 represents the next older backfill. The layer is between 20 and 50 cm thick, of a relatively homogeneous mid-brown colour with some yellowish inclusions, also consisting of loess clay and does not extend over the entire width of the profile. In contrast to Layer 1, this layer can be described as an irregular band. Layer 3 consists of four subsections with a dark grey main colour and a transitional horizon to Layer 5 in the lower part. The layer is homogeneously coloured but delineable in consistency. The outer sections are only moderately compact compared to the centre of this layer, which also consists of loess clay. Whether Layer 4 is a separate backfill layer or only a part of Layer 3 whose colour has changed due to soil processes remains to be clarified. At least this area has a greyish-medium brown colour, which can be clearly distinguished from the adjacent layer areas of Layer 3. Layer 5 is the third backfill layer since the original digging of the ditch. It is trough-shaped and thus the first of the described layers to reproduce the V-shape of the trench. The grey-yellow homogeneously coloured loess loam layer has a thickness of 5 cm–1.5 m and contains some calcareous conglomerations, as well as charcoal flakes. The sixth layer (Layer 6) is the second oldest backfill and is preserved as a relatively inhomogeneous, yellow-grey coloured loess loam layer with grey sand and clay patches in profile. It is about 50 cm thick and both calcium and stones are found in it in moderate distribution and of medium size (1–10 cm). It is also delineated towards the trench walls with an orange-red sandy layer that is waterlogged. Finally, Layer 7 represents the oldest backfill phase of the trench. The homogeneous medium brown-dark grey filled, extremely loamy loess layer, with a thickness of about 70 cm, represents the bottom of the ditch and is bounded downwards by a firm layer of limestone about 2 cm thick. The layer contains a few stones as well as wood charcoal remains, burnt loam and calcareous conglomerations in moderate frequency and of medium size (1–10 cm).

The ditch close to the entrance situation, which was excavated in the summer of 2022 (TR 01, Obj. 2, profile east), reached a depth of 2.3 m at a width of ~6 m and has a different sequence of layers than the outermost ditch. As can be seen from the figure, the profile of the ditch close to the entrance situation, although steeply sloping in the upper part, has a rounded bottom. The typical V-shape, which is also found in the rest of the site, is clearly broken here. Three backfill layers have also been documented in this ditch section. The oldest layer (Layer 3), with a thickness of 1.3 m, has a yellowish-brown colour, is rather sandy-loamy in consistency and could be recorded in the documented part on the side of the trench facing the outside of the roundabout as being strongly influenced by water.

The middle layer (Layer 2) is a relatively thin band of about 20 cm thickness and medium brown-greyish colour, and of rather clayey-loam consistency. The youngest backfill (Layer 1), with a thickness of ~ 0.5–0.8 m forms a dark grey-brown layer of strongly clayey loam consistency, which is deepened trough-like into the underlying layers.

The middle and outer ditches and other structures

The middle ditch (Trench01, Object 4; Trench02, Object 2) is only 1.8–2.5 m wide, as well as 40 cm deep, and shows no specific layers or features. The backfill layer has a thickness of 40 cm, corresponding to the depth, and runs irregularly in places.

Finally, the outermost ditch (Trench01, Object 5; Trench 02, Object 3), which is 5 m wide, again shows a distinct entrance situation. It is also V-shaped in profile, with a depth of 2.4 m, and has four backfill layers (Fig. 11). In this ditch, increased fire activity in the form of daub concentrations could be detected at one point during the most recent phases of use. These concentrations of daub also explain the relatively strong signal of the geomagnetic survey at this location.

The oldest backfill layer is 0.2–0.7 m thick (Layer 4), is of a medium brown-grey colour and consists of a loess-clay substrate with a high clay content. The overlying layer (Layer 2) is approx. 1.2 m thick, medium brown in colour and clay loamy. The youngest phase of the backfill (Layer 1) has a thickness of 0.5 m, is dark brown-grey in colour and also clayey-loamy. On the eastern side of the profile an alluvial layer is visible. This (Layer 3) seems to represent a break-off event of the edge of the ditch after a weather event or otherwise induced break-off. This seems to be the most likely scenario as this layer is free of burnt clay concentrations. The oldest layer (Layer 4) filled the ditch vertically (see Fig. 11) and changed the profile from V-shaped to

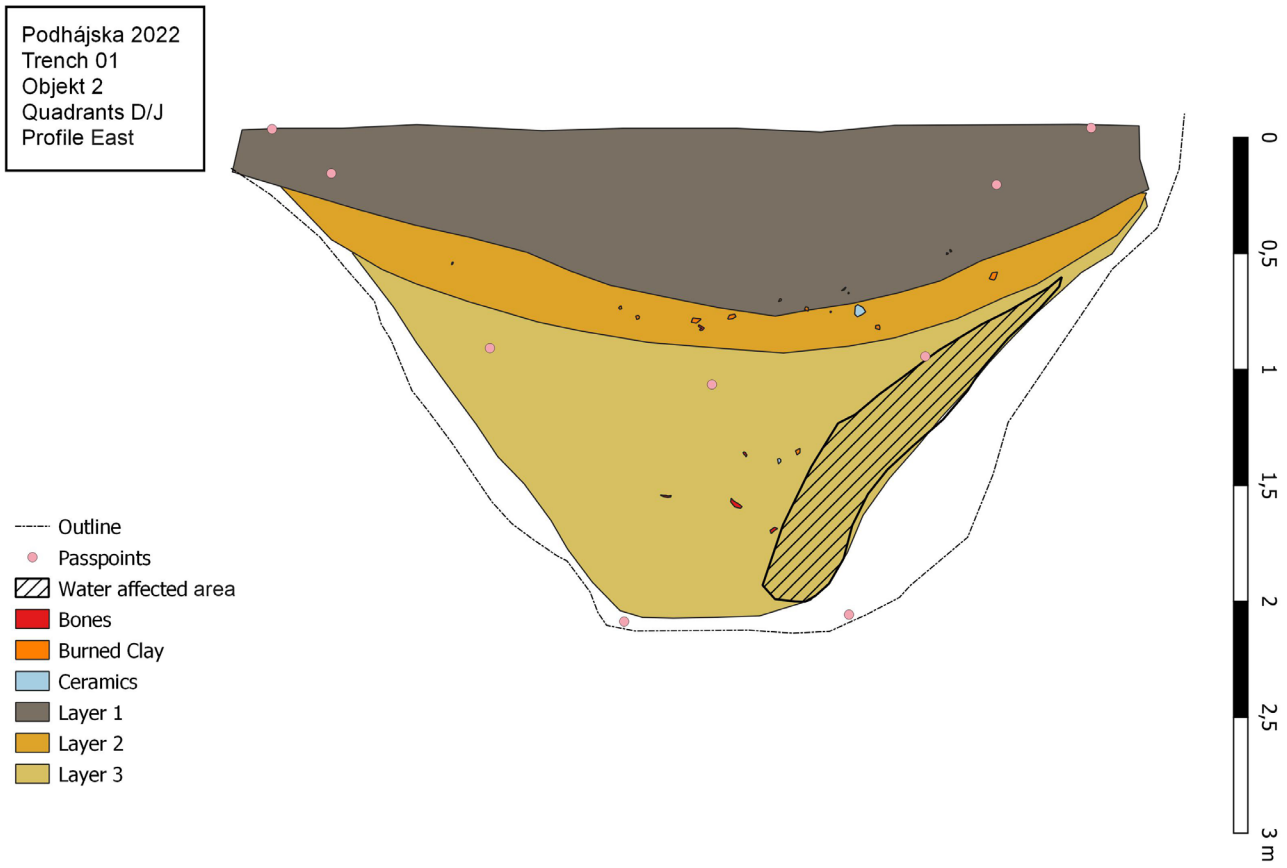

Fig. 9: The east profile of the innermost ditch to the south of the entrance situation (Fig.: T. Kühl).

trough-shaped. The youngest layer (Layer 1) has a trough-like shape, again changing the ditch profile.

This structure is complemented by two fainter features, which are either small ditches or palisade structures. The first of these structures is located between the innermost and the middle ditch and is almost directly adjacent to the entrance situation of the inner ditch. The second structure is located on the outside of the site behind the outermost ditch and the corresponding entrance area. No definite statements can yet be made about the exact sequence of the backfills, nor about the temporal depth of their use.

Based on the geomagnetic survey and the excavated areas, the inner surface of the ditch seems to have been free of features.

The settlement pit

The areas around the ditch system, on the other hand, show a large number of features, some of which are probably pit complexes up to 13×7 m in size. At least one of them, in the north-eastern entrance area of the rondel, could be partially excavated. At a depth of 1.75 m, it shows three clearly distinguishable phases of use (Fig. 12).

The oldest backfill layer (Layer 3) consists of medium brown loess clay and has a thickness of 0.75 m. Above this layer, there is a thinner (Layer 2) grey-brown layer, with a thickness of approx. 0.25 m, which consists of clayey loess. Finally, there is the dark grey-brown and youngest layer (Layer 1), which consists of loess clay. It also has a thickness of 0.75 m.

The features suggest that there were several pits next to each other and partly adjoining each other. The older part is clear and strongly interspersed with daub concentrations, which are missing in the youngest layer. However, clear house features, as is the case with other Lengyel circular enclosures (cf. Svodín[41]), are not present in Podhájska.

The find spectrum

The main finds from Podhájska are pottery and animal bones. However, flint and obsidian artefacts, daub, two figurines, isolated charcoal and presumably human bones

41 Demján 2016.

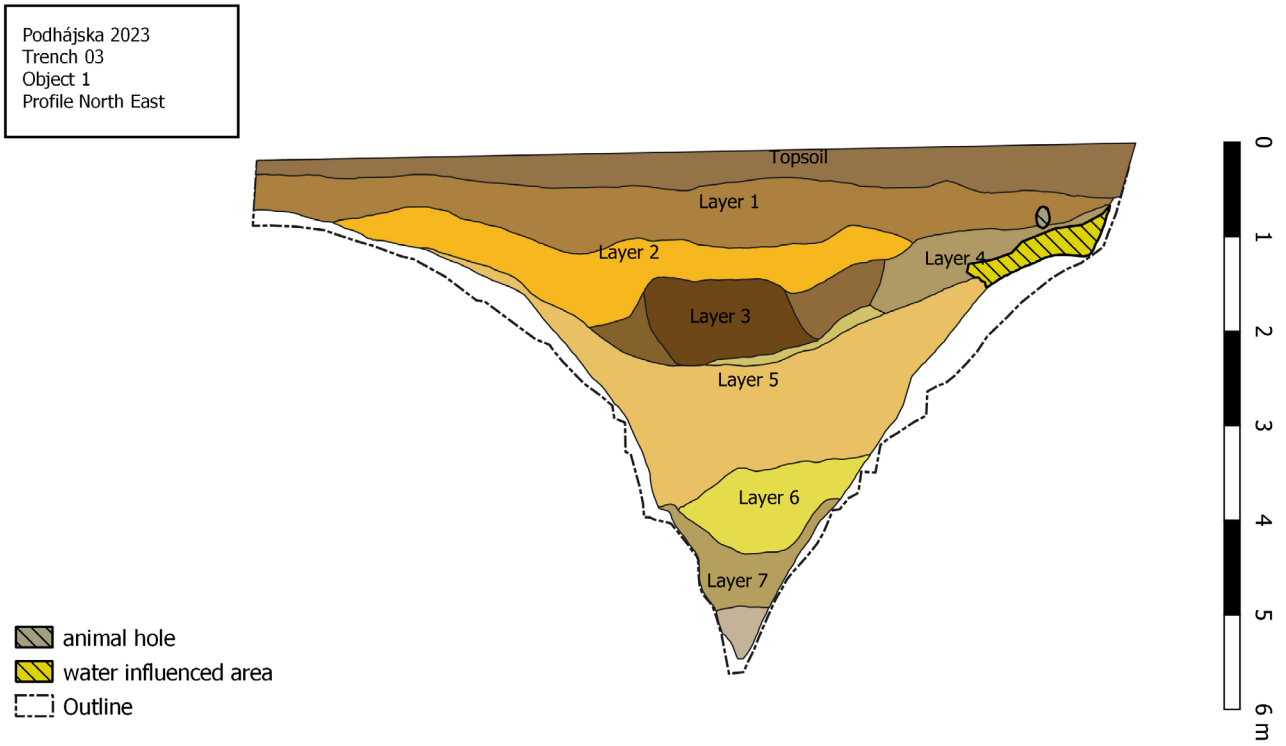

Fig. 10: The north-east profile of the innermost ditch (Fig.: T. Kühl).

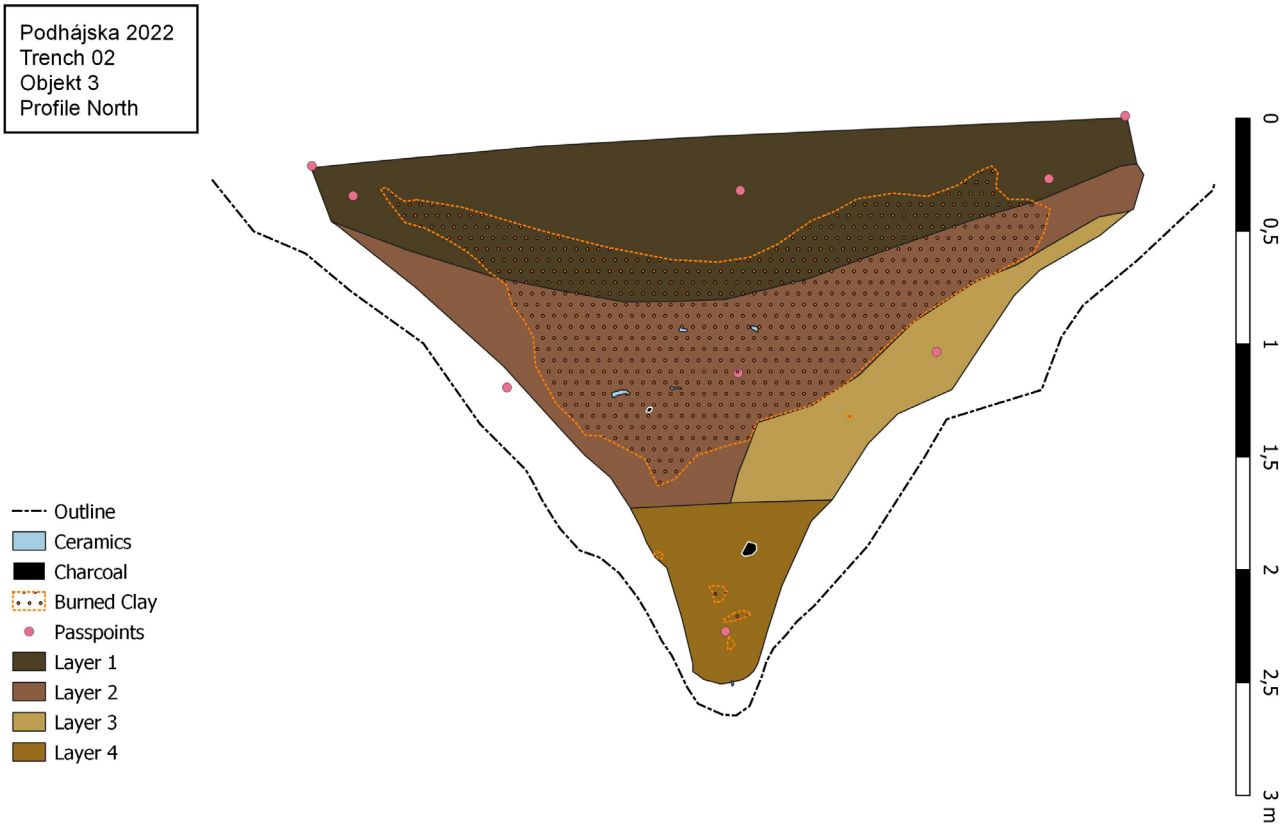

Fig. 11: The north profile of the outermost ditch (Fig.: T. Kühl).

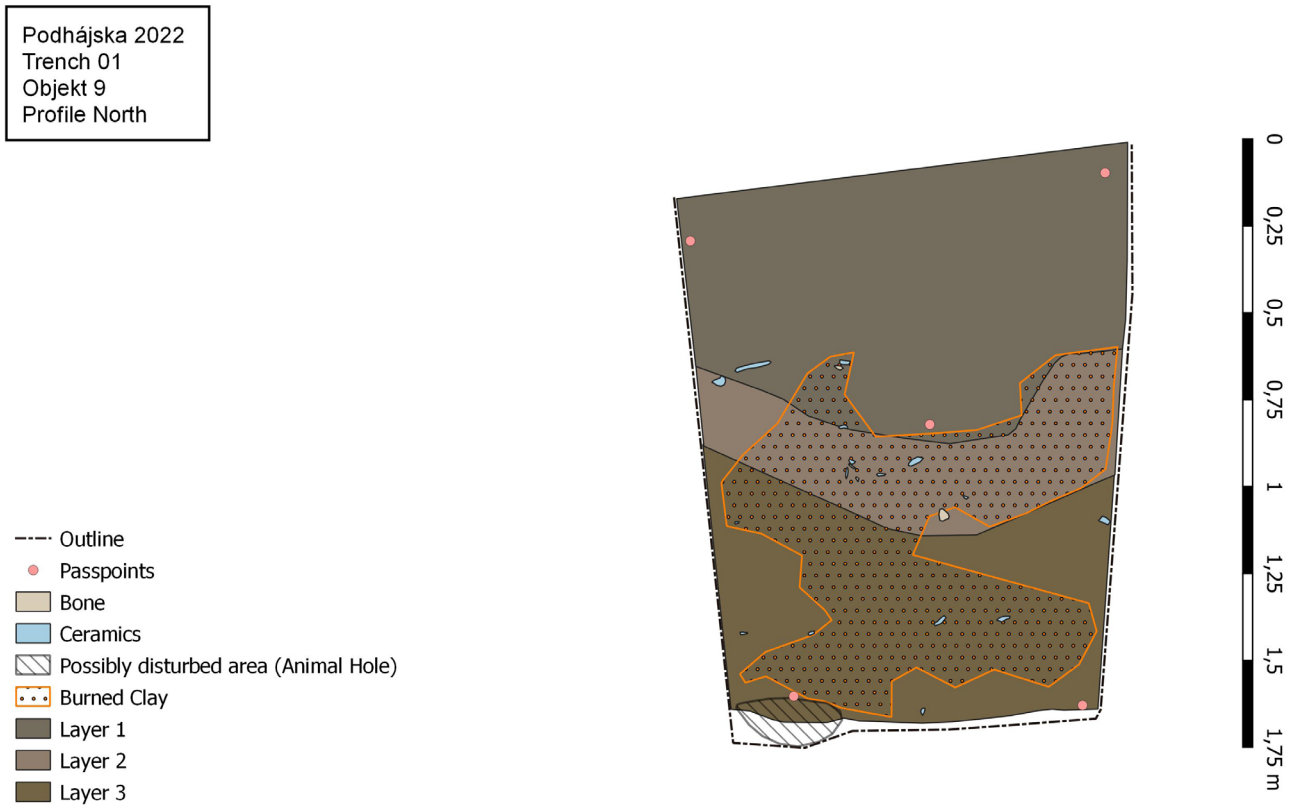

Fig. 12: Profile of the Lengyel settlement pit at the entrance to the rondel (Fig.: T. Kühl).

were also found. In total, 1099 finds were found, of which 771 were individual finds and 328 were collective finds. The collective finds include undecorated, mostly coarse-ware pottery, small bone fragments, and daub. All bone fragments potentially suitable for ^{14}C dating, diagnostic sherds, lithic finds, as well as charcoal and special finds, such as figurines, were measured as individual finds.

The bone finds determined so far can mainly be assigned to cattle (*bos*), although bones from sheep/goat (*ovis/capra*) and pig (*sus*) are also represented in the spectrum. Occasional wild animal bones, such as deer (*cervus*), are also found. However, a not insignificant part of the animal bone inventory is not clearly identifiable.

An examination of the number of individual finds and assemblage units per layer and feature reveals a very uniform picture for the ditches (Table 5). In all ditches, the highest number of individual and collective finds was found in the top backfill layer, both in terms of the absolute number and the number of spits and finds. However, there are minor differences between the individual types of finds and features. Within the entrance area of the innermost trench, both pottery and animal bone finds (as individual finds and as part of find assemblages) are found in relatively larger quantities in the middle and lowest layers of the ditch, even though the greatest concentration is also found in the uppermost layer. With regard to flint and obsidian, in contrast, there is a very strong gradient; while quite a lot of these artefacts were found in the uppermost layer, the number drops drastically in the middle and lowest fill layers. In the outer ditch, as well as the entrance area of the same, on the other hand, the difference in all types of finds is extremely clear. Here, almost all of the single and collective finds were recovered in the uppermost, last fill of the ditch, while the middle and lowermost layers were almost empty of finds in each case. The situation within the segment of the outermost ditch recorded in section 2 is again different. Due to the aforementioned concentration of daub, especially in the central area of the feature, the number of finds collected here is particularly high, even though the concentration of all types of finds is also highest here in the uppermost layer.

The settlement pit (object 9, section 1), in contrast, shows a completely different picture of finds (Table 5). Here, in absolute numbers, the highest quantity of finds is found in all find categories with the exception of the lithic finds in the lowest pit filling. Measured by the thickness of the layers, however, there is a very clear concentration of finds in the central area of the feature.

Tab. 5: The absolute number of collective finds (SF) in total, with reference to pottery (SF_Pot), lithics (SF_Lit) and animal bones (SF_Bo) and single finds (F_All). Included are the inner ditch (object 2), the outer ditch (object 5), the entrance area of the outer ditch (object 6), the settlement pit (object 9) and the outer ditch section that was excavated in trench 2 (object 3).

Trench	Object	Phase	Spits (n)	SF_All	SF_Pot	SF_Lit	SF_Bo	F_All	F_Pot	F_Lit	F_Bo
1	2	III	4	73	31	33	55	59	28	6	12
1	2	II	2	23	14	5	30	23	7	0	7
1	2	I	7	49	31	3	52	40	19	1	15
1	5	III	4	35	21	6	76	37	21	6	3
1	5	II	1	5	2	0	5	7	3	0	2
1	5	I	3	0	0	0	3	6	3	0	1
1	6	III	2	15	2	8	8	17	8	1	5
1	6	II	1	2	0	1	1	3	1	1	1
1	6	I	4	1	1	0	1	0	0	0	0
1	9	III	3	32	11	18	8	14	8	0	1
1	9	II	2	98	51	44	62	33	8	7	7
1	9	I	5	108	68	19	65	32	11	3	8
2	3	III	3	26	1	5	5	31	10	1	8
2	3	II	4	15	3	1	15	22	9	0	3
2	3	I	1	2	1	0	1	4	3	1	0

In the horizontal distribution, there is no differentiation according to find types, regardless of the different ditches or ditch segments. Depending on the mostly v-shaped ditches, there are naturally only slight concentrations in the inner ditch areas.

Figurines

The most outstanding finds include two figurines found in the entrance area of the outer ditch (object 6) and in the entrance area of the inner ditch (object 2) (Fig. 13). The piece from the entrance area of the innermost ditch is a fragment about 4 cm high and max. 3 cm wide, which comprises the middle or lower part of a figurine. The buttocks and a small part of the abdomen and legs are preserved. This find shows a high degree of similarity to some of the eight figurines from Těšetice-Kyjovice, some of which also come from the ditches of a rondel, but which can also be attributed to the surrounding settlement pits[42]. The second figurine, on the other hand, is completely preserved in the upper area, while the lower area is also broken off in this case. The head itself is shaped like a comb and has a clearly carved face on one narrow side. The end of the other narrow side is less clearly designed; however, as on the other narrow side, there are two elements which we interpret as arms. Accordingly, it is a double-sided figurine with a preserved height of about 6.5 cm and a maximum width of about 5 cm. Both figurines show a very fine or fine tempering and carefully smoothed surfaces.

Ceramics

The part of the pottery inventory consisting of coarse pottery as well as undecorated fine to medium-fine wares was collected as undiagnostic material during the excavation. A few outstanding pieces will be briefly described here, as well as finds that provide a good overview of the diagnostic part of the find material. These include above all rim sherds, knobs and handles or fragments thereof, as well as some painted sherds and sherds with incised decoration. The material includes both coarse ceramic vessel fragments and fine ceramics.

The painted fragments of the vessel are a wall and rim sherd with red painting and incised decoration. A knob is attached to the carination itself, which marks the transition between the rim and the belly of the vessel. The incised decoration is a three-row spiral pattern; the areas in between are painted red. A very similar design is found on find 11262 (Plate 15), as well as find 10176 (Plate 9). This is also a wall sherd with the carination between the rim and the belly area, or a wall sherd that cannot be further identified. In this case, the carination is rounded, while the other vessel fragment has a sharper carination. Both sherds are painted red and have three rows of incised spiral patterns. Find 10758 (Plate 12), on the other hand, is a rim sherd, which is painted red over its entire surface and has two black stripes just below the rim as well as black painting on the rim itself. The rim is rounded and the shape of the sherd is funnel-shaped. All the painted vessel fragments consist of very finely tempered and thin-walled (wall thickness: 3–5 mm) pottery, most of which come from the oldest backfill layer of the settlement pit.

42 Cf. Kaňáková *et al.* 2020, 384–385.

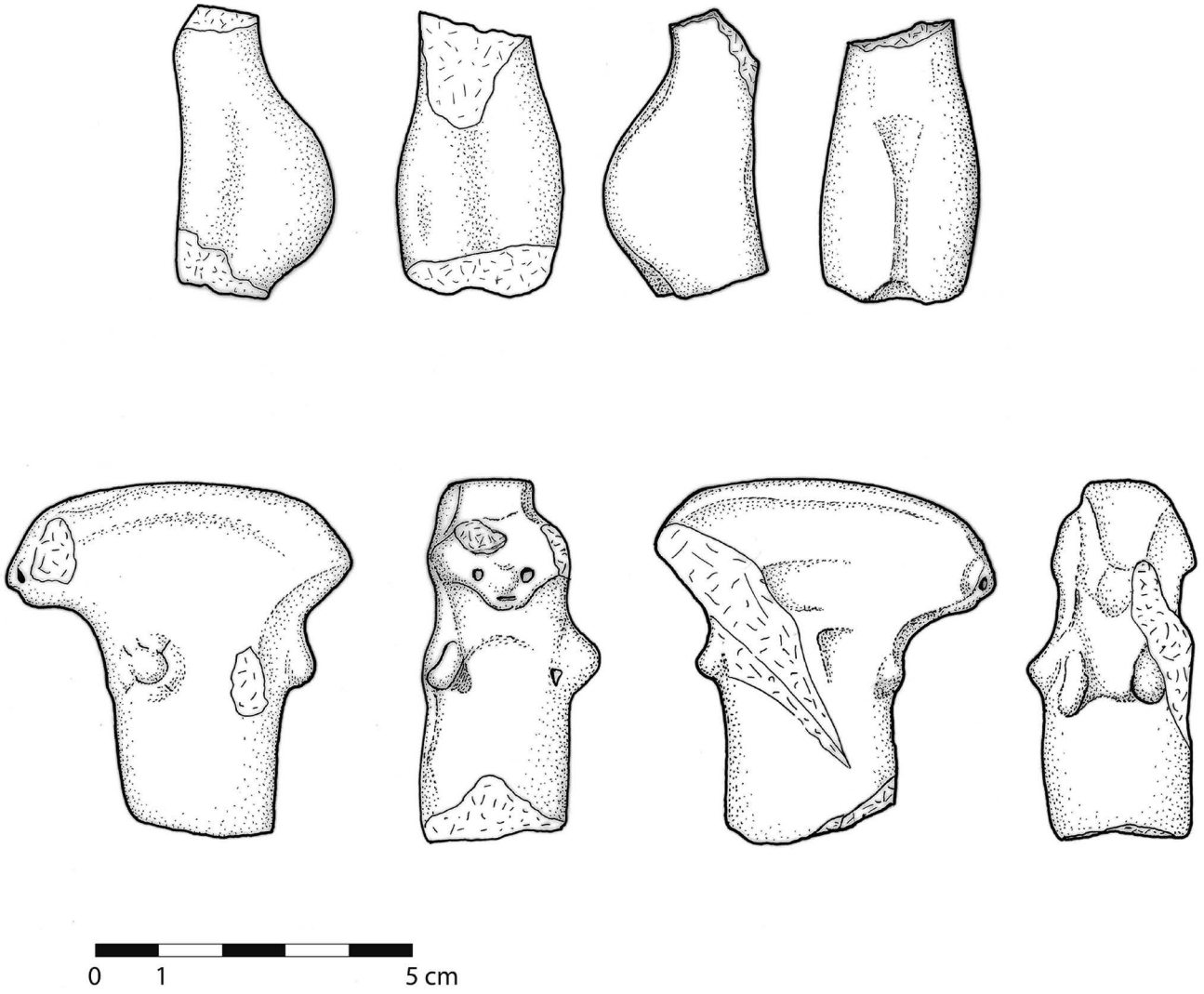

Fig. 13: The figurine from the entrance area of the outer ditch (above) and from the entrance area of the innermost ditch (below).

Incised decoration is also found on other sherds in the find inventory, but in these cases without preserved painting. A distinction is made between spiral decorations, rhombus patterns, zigzag patterns, line bundles and a band decoration. In most cases, the patterns are executed in triple incised lines, but in the case of a rim sherd, a design in stab-and-drag technique is also recorded (find 10458; Plate 9). The spiral patterns described above also occur in unpainted form, or not preserved in paint, whereby here too the decoration is applied over a large area in the belly and neck area of the vessel beyond the carination, which is provided with a round knob (find 11017; Plate 13). The sherds with incised rhombus patterns applied over a large area (e. g. find 10311; Plate 9) show a similar position on the vessel. Find 11025 is a fragment of a three-part vessel with the pattern applied to the rim, shoulder and belly (Plate 14). The zigzag decorations are applied on straight-walled and rounded rim sherds (e. g. find 10777; Plate 12). The last group to be mentioned is represented by the horizontally running, mostly three-rowed line bundles (e. g. find 10714; Plate 11). A total of 22 vessel units with incised decorations are documented, most of which come from the settlement pit. All sherds are very finely tempered, have a wall or rim thickness of between 2–5 mm and a medium to dark grey colour.

The find material mainly consists of straight, rounded rim ends, although in some cases (e. g. find 10264; Plate 9) knobs or perforated knobs are attached directly below the rim. Another type of rim is represented by find 11033 (Plate 17). This is a sherd with a strongly outwardly curving rim. This type of rim, however, occurs only very rarely in the find material. There is also a rim with a finger-notch decoration underneath. This runs horizontally on the coarse ceramic vessel fragment (find 10372; Plate 10). Finally, the

material contains an example of a rim sherd with a perforation directly below the rim (find 11196; Plate 14). With regard to carinations, mainly rounded exemplars are represented, but few sherds exhibit a sharp-edged carination between the belly and the shoulder.

Some of the vessels have knobs or handles, whereby the knobs are either oval (e. g. find 10396; Plate 10; find 10511; Plate 11) or round (e. g. find 11110; Plate 14). In addition to imperforated knobs, perforated specimens are also regularly found in the material, although most of them are quite small (e. g. find 10549; Plate 17; find 10808; Plate 12). In one case, a vertically attached knob has a rim that is pointed upwards (find 10981; Plate 13). Handles, in contrast, are relatively rare in the find material, and in all cases vertically perforated with a pointed upper rim (e. g. find 11326; Plate 15). These handles are only found on coarse ceramic vessels and are quite large, measuring 52–58×43–45 mm. Thus, plastic applications occur in a quite diverse spectrum in the find material. We can distinguish between different positions of the knobs on the vessel (rim, shoulder, carination), vertical and horizontal perforations and orientation of knobs, as well as different sizes (between 14 and 37 mm in diameter or length).

Complete vessel profiles can be found in the case of two shallow bowls (e. g. find 10641; Plate 11), one of which has a horizontally oriented oval knob under the rim. Both vessels are thick-walled (10–18 mm), finely tempered and have a straight profile with a flat base. Another almost complete profile can be reconstructed on the basis of a multi-part bowl with a slightly outwardly curving rim, even though the base of the vessel is missing here (find 10608; Plate 11). This vessel, too, is finely tempered and has a wall thickness of between 5 and 12 mm. Lastly, the fragment of a vessel foot should be mentioned, which is quite massive with a preserved lower diameter of 85 mm (find 11338; Plate 16).

With regard to the spatial distribution of the pottery finds, it is striking that the majority of the diagnostic finds, as well as the fine pottery, come from the settlement pit (object 9; cf. Table 5). These include a range of undecorated rim sherds, sherds with plastic applications in the form of knobs and handles, and the fragment of a vessel foot. The material ranges from fine pottery (wall thickness between 3 and 5 mm), medium fine ware (wall thickness between 5–10 mm) and coarse ware (wall thickness between 10 and 15 mm). The different types have in common that the temper is often fine and the ceramic is medium to dark grey. This characterisation can also be applied to the finds from the entrance to the innermost ditch (object 2), although the number of individual ceramic finds is lower here. Only a few individual finds come from the middle ditch, but here too, the type spectrum corresponds to what has already been presented. There are very clear differences with regard to the painted pottery and the fragments of vessels with incised decoration. Most of these come from the settlement pit, while some fragments come from the inner ditch.

Lithics

Numerous lithics were discovered during the excavation campaign in 2022, including 327 pieces of chipped stones and 110 pieces of polished and grinding stones which appeared from the features of the rondel. The non-chipped stone category consists of polished stones (11 pieces), pebbles (14 pieces), stone tool fragments (three pieces, can be hammerstone or handstone), raw material fragments (50 pieces) and grinding stones (45 pieces). In the primary lithic analysis, every potential grinding stone was labelled as a grinding stone which will be clarified for the further lithic study process. The chipped stone material was processed like in Žitavce, thus the basic technological categories were used as comparable units. In this article, only the chipped stones are presented in detail (Plate 18 and 19).

The obsidian is the dominant raw material besides flint and limnic silicite (Table 6). The vast majority of the obsidian is the glass clear C1 (Slovakian) obsidian, located approximately 200–250 kilometres distant as the crow flies between the rondel and the geological source of the obsidian. The origin of the flint and the limnic silicite are 40–50 kilometres away from the site. Around 5–6 % is the ratio of chert, which includes unsourced and Bakony radiolarite, mostly mustard-yellow Úrkút-Eplény type, but four pieces of reddish-brown Szentgál type are also in the material. The unsourced radiolarites are mostly yellowish-brown or brown in colour with a white dotted pattern. Based on these features, they could be Carpathian radiolarites[43], but not the White Carpathian version, whose mining place was excavated at Sedmerovec[44]. Two blade cores and two blades are made from Cracow Jurassic flint, whose geological source region is 200–250 kilometres to the north in the Kraków-Częstochowa Upland in Poland. The number of Cracow Jurassic flint finds is significantly lower than in comparison to the LBK and the Želiezovce period of Vráble-Veľke Lehemby, Michal nad Žitavou, Dolné Žemberovce and Čierne Kľačany[45].

43 Szilágyi *et al.* 2020, 7; 23.

44 Cheben/Cheben 2014; Cheben *et al.* 2017.

45 Cheben *et al.* 2020, 363–377, Cheben/Cheben 2021, 189 fig. 9.

Tab. 6: Distribution of raw material of the Podhájska excavation material.

Raw material	n	%
Obsidian	122	37,31
Flint	67	20,49
Limnic silicite	67	20,49
Chert	22	6,73
Bakony radiolarite	23	7,03
Unsourced radiolarite	12	3,67
Metamorphite	5	1,53
Craccow Jurassic flint	4	1,22
Quartzite	1	0,31
Unidentifiable	2	0,61
Cortex	1	0,31
Total	327	100

The vast majority of the lithics are flakes and blades, which constitute 81 % of the entire stone assemblage together (Table 7 and Table 8). Only five flakes are retouched. Otherwise, decortication and unretouched flakes are recorded, many of these are also rejuvenation flakes and five hinged flakes demonstrate a knapping accident in the material. The blades are mostly made from obsidian, flint and limnic silicite, thus the transparent/translucent or partly translucent material dominates visually. Only 13 blades are retouched, which can correlate with naturally sharp obsidian use, but also the technological habit of the community. The number of arrises also amounts to one or two samples, and the butt types are dominantly plain, in addition to the cortical, facetted and punctiform types. Knapping accidents are visible in eight cases, which are represented by plunging blades and tongue breaks. Thus, the knapper(s) probably had enough experience to use the raw materials properly. Half of the cores were made from obsidian and the Úrkút-Eplény type of Bakony radiolarite, which in a way is interesting that in the entire material scale, it is not a very dominant raw material. From the first overview, it is visible that the cores from these two materials demonstrate different blade-debitage concepts. The obsidian cores or pre-cores are small-sized (not longer than 30 mm) pieces, with the majority of the cases partly covered by cortex and there is no real striking platform. Most probably, the knapper(s) try to use the natural form of the obsidian nodules for blade removals. The Bakony radiolarite cores are larger (between 30 and 40 mm long) and many of them are unipolar or atypical blade cores with a definite striking platform and blade-debitage surfaces. In the tool category, the different end-scrapers dominate. Most of them were created on blade support, which is typical for the LBK and the Lengyel communities as well. Similar raw material use and tool making activity is known from the Lengyel circular enclosure of Golianovo (Kuzma/Cheben 2012, 70–91).

Tab. 7: Lithic technological categories of the Podhájska excavation material.

Technological categories	n	%
Core	26	7,95
Raw material fragment	19	5,81
Flake	136	41,59
Blade	129	39,45
Tool	17	5,2
Total	327	100

Tab. 8: Types of tools in the Podhájska excavation material.

Technological categories (Tool types)	n	%
End-scraper on flake	2	11,76
End-scraper on blade	8	47,06
End-scraper fragment	2	11,76
Scraper-fragment	1	5,88
Core fragment, retouched flake	1	5,88
Borer	3	17,65
Total	17	100

Discussion and interpretation

The example of the Žitava Valley, as well as the site of Podhájska, allows us to trace the developments typical of the transition from the Early to the Middle and Late Neolithic, which are also detectable in other regions of Central Europe. The settlement structures that developed in the course of the Linear Pottery and Želiezovce phases include both small clusters of farmsteads, hamlets, and agglomerated settlements, of which we can also grasp an impressive example in the Upper Žitava Valley with Vráble-Veľké Lehemby. The coexistence in three distinct neighbourhoods finds a spatial separation with the construction of a ditch around one of the three neighbourhoods, in which we find irregular burials, individual bone depositions, as well as a mass grave at the end of the settlement history around 5000 BCE[46]. The coexistence in this agglomerated settlement thus comes to an end in the context of the much-discussed end of the LBK in Central Europe, perhaps marked by crises[47]. Subsequently, and in the course of the developing Lengyel, we find a dispersed settlement pattern in which only individual farmsteads and hamlets are to be found. On the one hand, these can be found in continuous habitation at sites where

46 Cf. Furholt *et al.* 2020b.

47 For example, Zeeb-Lanz 2017; Link 2014.

there were already LBK settlements before (cf. Čifáre). On the other hand, they can be found in the context of a stronger break at new and previously uninhabited locations. Regardless of the question of continuity in the use of individual settlement sites, new forms of sites with a central communal function, maybe similar to that of villages, are already detectable around 4800 BCE; the circular enclosures. Podhájska is an impressive example of such a monumental site. As explained above, the circular enclosures are characterised by a high degree of diversity and seem to completely defy a uniform or standardised description. The size of the enclosures, the number of ditches, the design, number and orientation of the entrances and also the design of the interior differ. Thus, although the impulse and the idea of the need to build these enclosures is obviously shared across larger spaces, and also within the context of the Žitava Valley, the execution is highly individual and certainly shaped by the wishes and needs of the communities concerned. Podhájska itself is by no means the largest of the known enclosures, but it has a very elaborate design and, over 5 m in the case of the innermost ditch, also very deep ditches.

The fine pottery can be assigned to the find spectrum that was also found in other sites of the Lengyel I phase and in the contexts of rondels. Typical here are the bowl fragments with spiral decoration in combined three-row incised decoration and red painting. Comparable finds can be found in the circular enclosures and settlement features of Bučany-Kopanice and Svodín, which N. Pažinová[48] and V. Němejcová-Pavúková[49] attribute to the Lengyel Ib (or Svodín II and Nitriansky Hrádok[50]) stage. This type of decoration is also attributed in Moravia to the phase of MBK Ia, which is contemporary with the later phase of Lengyel I[51]. The figurines also fit well into the spectrum of finds known from rondels[52]. The finds, as well as the distribution of finds, suggest differentiated activities at or around the rondel. While the painted pottery could primarily be assigned to the settlement pit at the entrance to the rondel, the figurines were recovered from the ditches themselves. Apparently, a variety of activities took place at the enclosure itself, which, on the one hand, left behind a material record, which is to be expected in the usual settlement contexts, but, on the other hand, also places emphasis on possible ritual activities.

The high number of pit finds around Podhájska certainly reflects the social and political importance of the rondel. This includes the presumed importance of the site both in the context of everyday activities and as a gathering place in the context of ritual or social occasions. The circular enclosure seems to replace the social and political fixed point that was lost with the end of the agglomerated settlement of Vráble. The subsequent dispersed small settlements of the Lengyel phases seem to have expressed their communal structures and needs in material terms as the circle enclosures emerged quite quickly. Even if the LBK came to a crisis-ridden end, the continuities in material culture and partial use of the same settlement sites should not be forgotten. The collapse of the old settlement system finds its new beginning, among other things, in consideration of the places and spaces formerly used. Thus, it is obvious that the essential parameters, i. e. the use of the altitudes between 100 and 300 m above sea level and the use of the tributaries of the Žitava, do not change. Nevertheless, collective needs find their completely new expression with the rondels, which separate the materialisation of communality from individual settlements and form quasi small centres for the scattered small settlement communities. This, of course, also results in a completely new pattern of space use, at least in part, in which the individualised expression of the shared idea of the rondels has great significance.

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48 Pažinová 2007, 305–306.

49 Němejcová-Pavúková 1995, 168.

50 Pavúk 2004, 153.

51 Cf. Pavúk 2004, 153; Kazdová 1980, 22–23.

52 Cf. Kaňáková *et al.* 2020, 384–385.

– *et al.* 2015: –/C.-M. Hüssen/R. Ölvecky/J. Rajtár/K. Rassmann/P. Tóth/K. Winkelmann, Výsledky archeologického výskumu a prieskumu vo Vrábľoch. Archeologické výskumy a nálezy na Slovensku v roku 2010, 2015, 26–29.

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Appendix

Site ID.	Municipality	Field/Location	District	Site type	Discovered through	Period	Literature
1	Beladice	1,5 km south of municipality	ZM	Known site	Surface finds	Eneolithic (Lg); *et al.*	Gabulová 2015, 116
3	Beladice	East of municipality, right bank of Drevenica	ZM	Known site	Surface finds	Eneolithic (Lg); *et al.*	Gabulová 2015, 116
4	Beladice	Pustatina	ZM	Known site	Surface finds	Eneolithic (Lg); *et al.*	Gabulová 2015, 116
5	Beladice	50-150 m north-west from municipality	ZM	Known site	Surface finds	Eneolithic (Lg); *et al.*	Gabulová 2015, 116
7	Neverice	Čakýň	ZM	Known site	Surface finds	Eneolithic (Lg); *et al.*	Gabulová 2015, 116
8	Neverice	1,5 km north of municipality	ZM	Known site	Surface finds	Eneolithic (Lg); *et al.*	Gabulová 2015, 116
9	Čeľadice	Berín	NR	Known site	Surface finds	Eneolithic (Lg); *et al.*	Gabulová 2015, 116
10	Čeľadice	Hanisovo	NR	Known site	Surface finds	Eneolithic (Lg)	Gabulová 2015, 116
11	Nevidzany	Farské role	ZM	Known site	Surface finds	NE. lk, EN. lg, EN. ba	Gabulová 2015, 116
12	Čierne Kľačany	Mlynské diely	ZM	Settlement	Excavation	Eneolithic (Lg); *et al.*	Gabulová 2015, 116
13	Čierne Kľačany	Hrnčiarka	ZM	Known site	Surface finds	Neolithic (LBk-Lg); Lengyel I-II	Gabulová 2015, 116
14	Čifáre	Koveg	NR	Known site	Surface finds	Eneolithic (Lg)	Gabulová 2015, 116
15	Dolné Obdokovce	Zakázaný háj	NR	Known site	Surface finds	Eneolithic (Lg)	Gabulová 2015, 116
18	Hosťová	Hanisov	NR	Known site	Surface finds	Eneolithic (Lg); *et al.*	Gabulová 2015, 116
19	Hosťová	Stredný hon	NR	Known site	Surface finds	Eneolithic (Lg)	Gabulová 2015, 116
20	Hosťová	Líščia diera	NR	Known site	Surface finds	Eneolithic (Lg)	Gabulová 2015, 116
21	Hosťovce	Sekaniny	NR	Rondel	Aerial photography / geomagnetic survey	Eneolithic (Lg)	Gabulová 2015, 116
22	Kolíňany	200 m south-east of municipality	NR	Known site	Surface finds	Eneolithic (Lg); *et al.*	Gabulová 2015, 116
24	Kolíňany	Dlhé	NR	Known site	Surface finds	Eneolithic (Lg); *et al.*	Gabulová 2015, 116
25	Kolíňany		NR	Known site	Surface finds	Eneolithic (Lg)	Gabulová 2015, 116
26	Kostoľany pod Tríbečom	Veľký Lysec		Known site	Surface finds		Gabulová 2015, 116
27	Ladice	Pod rúbaniskom	ZM	Known site	Surface finds	Eneolithic (Lg)	Gabulová 2015, 116
28	Machulince	Horné lužie	ZM	Known site	Surface finds	Eneolithic (Lg); *et al.*	Gabulová 2015, 116
29	Machulince	north of munipality, football field	ZM	Known site	Surface finds	Eneolithic (Lg); *et al.*	Gabulová 2015, 116
30	Mochovce	Sikár	LV	Known site	Surface finds	Eneolithic (Lg); *et al.*	Gabulová 2015, 116

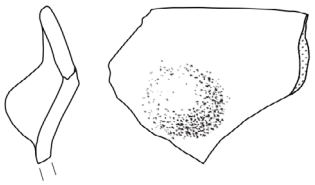
Site ID.	Municipality	Field/Location	District	Site type	Discovered through	Period	Literature
31	Mochovce	Irtások	LV	Known site	Surface finds	Eneolithic (Lg); *et al.*	Gabulová 2015, 116
32	Nemčiňany	Cemetery	ZM	Known site	Surface finds	Eneolithic (Lg)	Gabulová 2015, 116
33	Nemčiňany	Dolné lúky	ZM	Known site	Surface finds	Eneolithic (Lg)	Gabulová 2015, 116
34	Neverice	Pri mlyne	ZM	Known site	Surface finds	Eneolithic (Lg)	Gabulová 2015, 116
35	Neverice	1 km east of municipality	ZM	Known site	Surface finds	Eneolithic (Lg); *et al.*	Gabulová 2015, 116
36	Nevidzany	Konopiská	ZM	Known site	Surface finds	Eneolithic (Lg); *et al.*	Gabulová 2015, 116
37	Nevidzany	Dolné Šelerovo	ZM	Known site	Surface finds	Neolithic (Lg)	Gabulová 2015, 116
38	Nevidzany	Intravilan	ZM	Known site	Surface finds	Eneolithic (Lg); *et al.*	Gabulová 2015, 116
41	Nová Ves nad Žitavou	1,5 km south-east of municipality	ZM	Known site	Surface finds	Eneolithic (Lg); *et al.*	Gabulová 2015, 116
42	Nová Ves nad Žitavou	Želiarske	ZM	Known site	Surface finds	Neolithic-Eneolithic (Lg); *et al.*	Gabulová 2015, 116
43	Sľažany	Pri Stránke	ZM	Known site	Surface finds	Eneolithic (Lg)	Gabulová 2015, 116
44	Sľažany	Pri lúčnom potoku	ZM	Known site	Surface finds	Eneolithic (Lg); *et al.*	Gabulová 2015, 116
46	Sľažany	Na domovine	ZM	Settlement	ExcavationEneolithic (Lg); *et al.*	Eneolithic (Lg); *et al.*	Gabulová 2015, 116
47	Slepčany	Intravilan	ZM	Known site	Surface finds	Eneolithic (Lg); *et al.*	Gabulová 2015, 116
48	Slepčany	Kameniny	ZM	Known site	Surface finds	Eneolithic (Lg); *et al.*	Gabulová 2015, 116
49	Slepčany	Hríby	ZM	Known site	Surface finds	Eneolithic (Lg)	Gabulová 2015, 116
50	Tajná	Brickyard	NR	Known site	Surface finds	Eneolithic (Lg); *et al.*	Gabulová 2015, 116
51	Tajná	Nad lúkami	NR	Known site	Surface finds	Eneolithic (Lg); *et al.*	Gabulová 2015, 116
52	Tesárske Mlyňany	Gočol	ZM	Known site	Surface finds	Eneolithic (Lg); *et al.*	Gabulová 2015, 116
53	Tesárske Mlyňany	Nadáš	ZM	Known site	Surface finds	Eneolithic (Lg); *et al.*	Gabulová 2015, 116
54	Tesárske Mlyňany		ZM	Known site	Surface finds	Eneolithic (Lg)	Gabulová 2015, 116
55	Tesárske Mlyňany	Konopiská	ZM	Known site	Surface finds	Eneolithic (Lg); *et al.*	Gabulová 2015, 116
56	Tesárske Mlyňany	Za krížom, Pláne	ZM	Known site	Surface finds	Eneolithic (Lg); *et al.*	Gabulová 2015, 116
57	Velčice	Pod Lyscom	ZM	Known site	Surface finds	Eneolithic (Lg); *et al.*	Gabulová 2015, 116
58	Veľké Vozokany	Bočovka	ZM	Known site	Surface finds	Eneolithic (Lg)	Gabulová 2015, 116

Site ID.	Municipality	Field/Location	District	Site type	Discovered through	Period	Literature
61	Vieska nad Žitavou	North of municipality	ZM	Known site	Surface finds	Eneolithic (Lg); *et al.*	Gabulová 2015, 116
62	Volkovce	Zvandolina	ZM	Known site	Surface finds	Eneolithic (Lg)	Gabulová 2015, 116
63	Vráble	Tri lipky	NR	Known site	Surface finds	Neolithic (Lg), Lengyel I-II, et. al.	Gabulová 2015, 116
64	Vráble	Fidvár	NR	Known site	Surface finds	Eneolithic (Lg); *et al.*	Gabulová 2015, 116
65	Vráble		NR	Known site	Surface finds	Eneolithic (Lg)	Gabulová 2015, 116
66	Vráble	PAL (Factory area)	NR	Known site	Surface finds		Gabulová 2015, 116
67	Zlaté Moravce	Zungov	ZM	Known site	Surface finds	Eneolithic (Lg); *et al.*	Gabulová 2015, 116
68	Zlaté Moravce	Solnie lúky, Pelušky	ZM	Known site	Surface finds	Eneolithic (Lg); *et al.*	Gabulová 2015, 116
70	Zlaté Moravce	Čierny potok	ZM	Known site	Surface finds	Eneolithic (Lg); *et al.*	Gabulová 2015, 116
71	Zlaté Moravce	Kopanice za Gočolom	ZM	Known site	Surface finds	Eneolithic (Lg); *et al.*	Gabulová 2015, 116
72	Zlaté Moravce	Za potokom	ZM	Known site	Surface finds	Neolithic (Lg); *et al.*	Gabulová 2015, 116
73	Zlaté Moravce	Intravilan	ZM	Known site	Surface finds	Eneolithic (Lg); *et al.*	Gabulová 2015, 116
76	Zlaté Moravce	Námestie A. Hlinku	ZM	Known site	Surface finds	Neolithic (Lg), Lengyel I-II	Gabulová 2015, 116
77	Žikava	Žikavka	ZM	Known site	Surface finds	Eneolithic (Lg); *et al.*	Gabulová 2015, 116
78	Žikava	South of municipality	ZM	Known site	Surface finds	Eneolithic (Lg); *et al.*	Gabulová 2015, 116
79	Žirany	500 m north of municipality Kolíňany	NR	Known site	Surface finds	Eneolithic (Lg)	Gabulová 2015, 116
80	Žitavany	Pod vinicami	ZM	Known site	Surface finds	Eneolithic (Lg); *et al.*	Gabulová 2015, 116
81	Žitavany	Zdochlinec, Suličin svah	ZM	Known site	Surface finds	Eneolithic (Lg); *et al.*	Gabulová 2015, 116
82	Žitavany	Vŕšky, Potôčky	ZM	Known site	Surface finds	Eneolithic (Lg)	Gabulová 2015, 116
84	Lovce	South of municipality		Known site	Surface finds	Eneolithic (Lg)	Pavúk/Bátora 1995, 123
85	Malé Vozokany	Briežky	ZM	Known site	Surface finds	Eneolithic (Lg)	Pavúk/Bátora 1995, 123
86	Malé Vozokany	Diely	ZM	Known site	Surface finds	Eneolithic (Lg)	Pavúk/Bátora 1995, 123
87	Mochovce	Árok mellék	LV	Known site	Surface finds	Eneolithic (Lg)	Pavúk/Bátora 1995, 123
88	Mochovce	Kordos	LV	Known site	Surface finds	Eneolithic (Lg)	Pavúk/Bátora 1995, 123

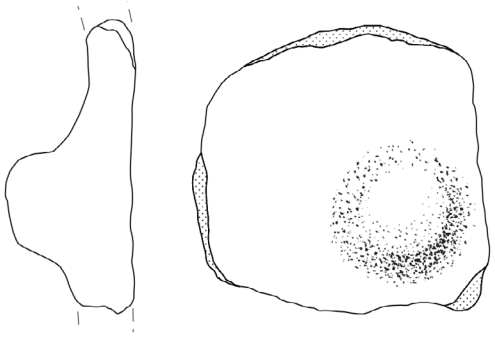
Site ID.	Municipality	Field/Location	District	Site type	Discovered through	Period	Literature
94	Sľažany	Pri cintoríne	ZM	Known site	Surface finds	Eneolithic (Lg)	Pavúk/Bátora 1995, 123
104	Mankovce	Intravillan, next to a school		Known site	Single finds / surface finds	Eneolithic (Lg)	Ruttkayová/Ruttkay 1991
105	Mankovce/Zlatno	Sobotište, north-west of municipality	ZM	Known site	Surface finds	Eneolithic (Lg)	Ruttkayová/Ruttkay 1991
108	Nemčiňany	Bočovka	ZM	Known site	Surface finds	Eneolithic (Lg)	Ruttkayová/Ruttkay 1991
110	Nevidzany	Lúčne zeme	ZM	Known site	Surface finds	Eneolithic (Lg)	Ruttkayová/Ruttkay 1991
111	Nevidzany	Hradisko	ZM	Known site	Surface finds	Eneolithic (Lg)	Ruttkayová/Ruttkay 1991
113	Nová Ves nad Žitavou	1 km south-west of municipality		Known site	Surface finds	Neolithic-Eneolithic (Lg); *et al.*	Ruttkayová/Ruttkay 1991
115	Prílepy	North of municipality	ZM	Known site	Surface finds	Eneolithic (Lg)	Ruttkayová/Ruttkay 1991
117	Dolné Sľažany	South of municipality		Known site	Surface finds	Eneolithic (Lg)	Ruttkayová/Ruttkay 1991
124	Ružindol-Borová			Rondel	Aerial photography / geomagnetic survey	Eneolithic (Lg)	Tóth 2019, 17
125	Podhájska			Rondel	Excavation	Eneolithic (Lg)	
126	Žitavce			Rondel	Aerial photography / geomagnetic survey	Eneolithic (Lg)	
127	Čifare			Settlement	Geomagnetic survey	Eneolithic (Lg)	
128	Svodín I+II			Rondel	Excavation	Eneolithic (Lg)	Němejcová-Pavúková 1995
129	Bučany			Rondel	Excavation	Eneolithic (Lg)	Pažinová 2012
130	Golianovo			Rondel	Aerial photography / geomagnetic survey	Eneolithic (Lg)	
131	Melek			Settlement	Excavation	Eneolithic (Lg)	
132	Maňa			Settlement	Excavation	Eneolithic (Lg)	
133	Telince			Settlement	Excavation	Eneolithic (Lg)	
134	Čifare			Settlement	Excavation	Eneolithic (Lg)	
135	Čierne Kľačany			Settlement	Excavation	Eneolithic (Lg)	
136	Martin nad Žitavou	Vinice, residential area	ZM	Settlement	Excavation	Eneolithic (Lg); *et al.*	Nemergut/Milová 2023
138	Pohranice	Pod Janíkovskou cestou	NR	Settlement	Excavation	Eneolithic (Lg); *et al.*	Ruttkay *et al.* 2013, 212-14; Bistáková *et al.* 2023, 59-75
139	Pohranice	Lefantovské úhory	NR	Settlement	Excavation	Eneolithic (Lg); *et al.*	Ruttkay *et al.* 2013
140	Žitavce	Sand pit	NR	Known site	Surface finds	Neolithic (Lg), Lengyel I-II, *et al.*	Sedlák 1956; Novotný 1957

Site ID.	Municipality	Field/Location	District	Site type	Discovered through	Period	Literature
141	Červený Hrádok	Kopanice	ZM	Settlement	Excavation	Neolithic-Eneolithic (Lg), Lengyel I-II, *et al.*	Pavúková 1974
142	Veľké Vozokany	North of municipality	ZM	Known site	Surface finds	Neolithic (Lg), Lengyel I-II	Bátora / Bednár 1982, 34
143	Jelenec	Bodi garden	NR	Known site	Surface finds	Neolithic (Lg), Lengyel I-II	Rizman 1961
144	Telince		NR	Known site	Surface finds	Neolithic (Lg), Lengyel I-II, *et al.*	Habovštiak 1960; Kolník 1960
145	Tajná	Klisovnice	NR	Known site	Surface finds	Neolithic (Lg), Lengyel I-II, *et al.*	Bátora 1977, 41, 42
146	Vráble-Horný Ohaj	Satmarka	NR	Settlement	Surface finds	Eneolithic (Lg)	
147	Tajná	Klisovnice	NR	Settlement	Surface finds	Eneolithic (Lg)	Bátora 1977, 41, 42
148	Tajná	Nad lúkami	NR	Settlement	Surface finds	Eneolithic (Lg)	Bátora 1977, 42
149	Michal nad Žitavou	Piesočník	NZ	Settlement	Surface finds	Eneolithic (Lg)	Točík 1952
150	Michal nad Žitavou	Parcel 119/70	NZ	Settlement	Excavation	Eneolithic (Lg)	Molota 2021
151	Maňa	Dlhá 48	NZ	Settlement	Surface finds	Eneolithic (Lg)	Samuel 2001, 171, 172
152	Maňa	Obecný hliník	NZ	Settlement	Surface finds	Eneolithic (Lg)	Točík 1981, 300
153	Maňa		NZ	Rondel		Eneolithic (Lg)	
154	Vlkas	Do hulského chotára	NZ	Settlement	Surface finds	Eneolithic (Lg)	Točík 1952
155	Hul	Kratiny	NZ	Settlement	Surface finds	Neolithic-Eneolithic (Lg)	Loubal 1953
156	Úľany nad Žitavou	Dolné Rakytiny	NZ	Settlement	Surface finds	Eneolithic (Lg)	Samuel 1996, 161; Steiner/Steiner 2001, 194

Plate 1



EF 002



EF 011

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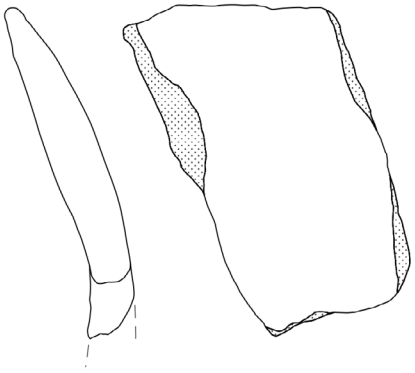

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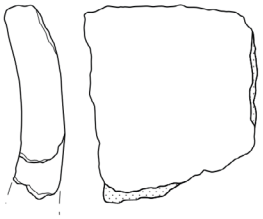
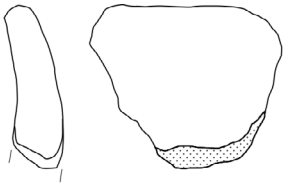


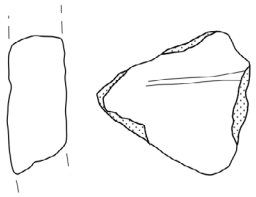
EF 022B



EF 041

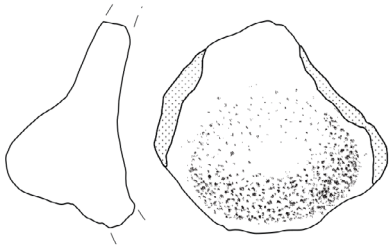
Žitavce Survey 2022
Drawings: Ruby Winter
Scale 1:1

Plate 2

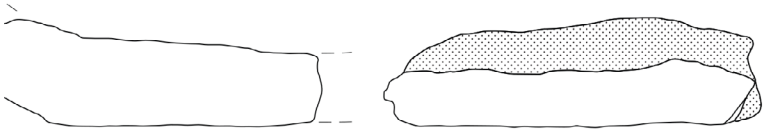


EF 043 A

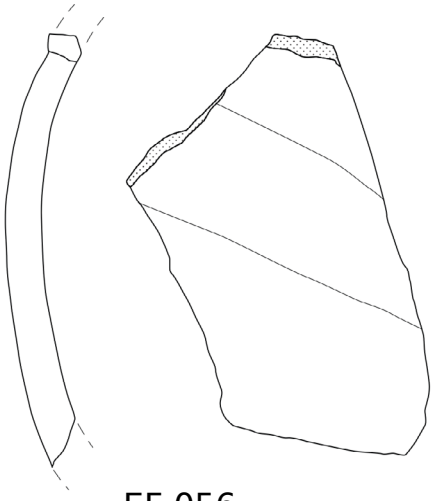
EF 043 B



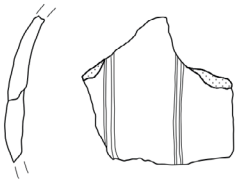
EF 050 A



EF 050 B



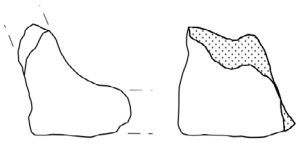
EF 056



EF 058

Žitavce Survey 2022
Drawings: Ruby Winter
Scale 1:1

Plate 3



EF 060

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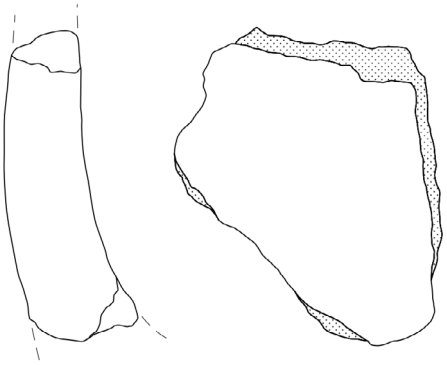

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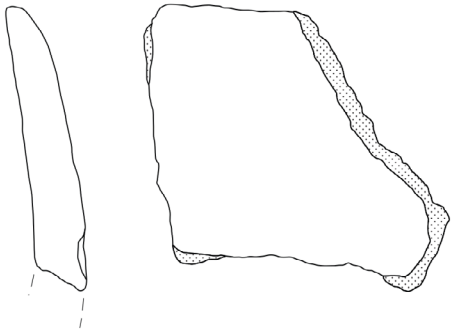

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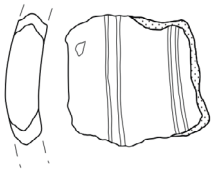
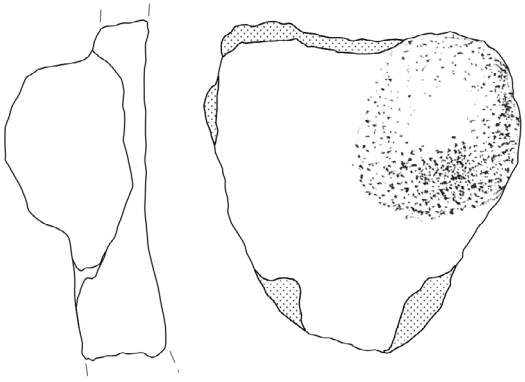


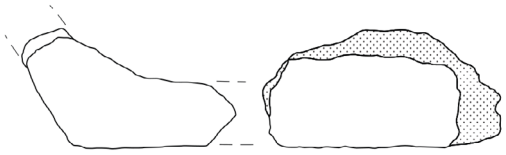
EF 107



EF 108

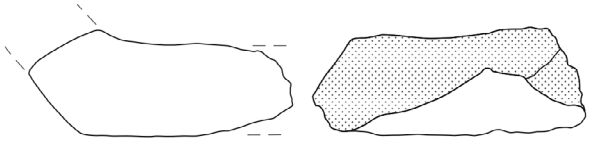
Žitavce Survey 2022
Drawings: Ruby Winter
Scale 1:1

Plate 4

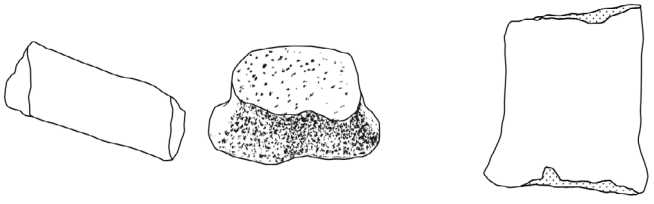


EF 110

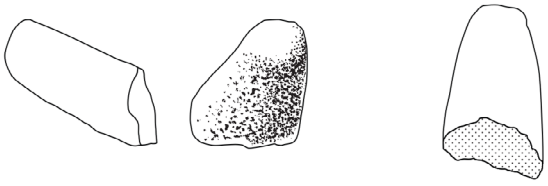
EF 121



EF 122



EF 133



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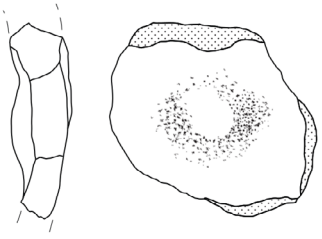


EF 147

Žitavce Survey 2022
Drawings: Ruby Winter
Scale 1:1

Plate 5

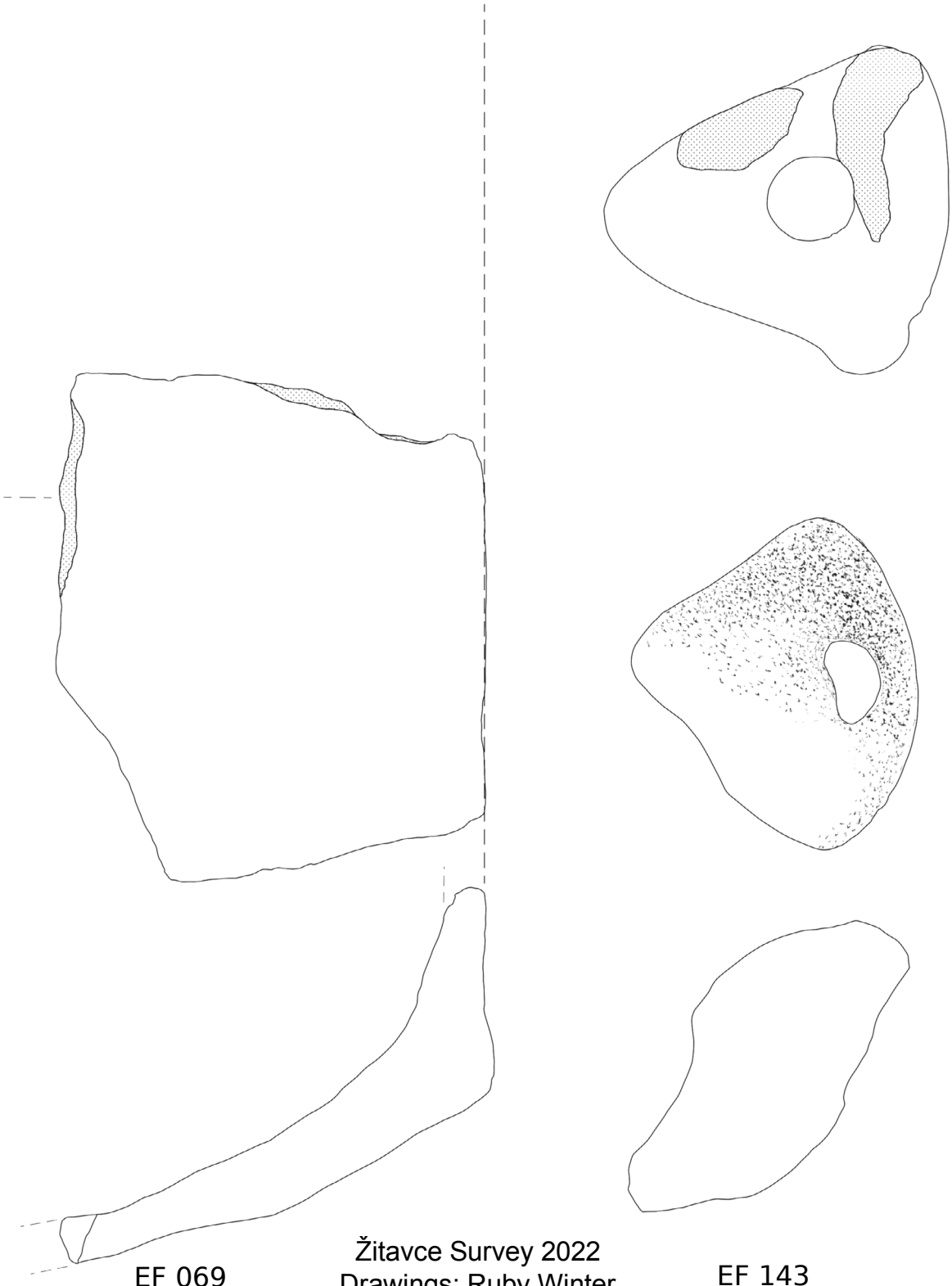
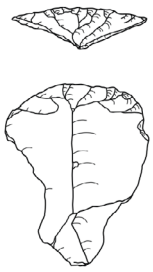

EF 069
Žitavce Survey 2022
Drawings: Ruby Winter
Scale 1:1
EF 143

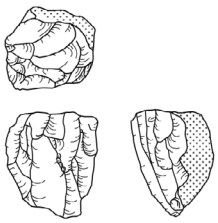
Plate 6



EF 001

EF 003

EF 007



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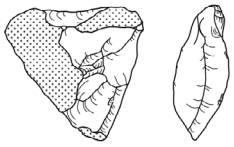

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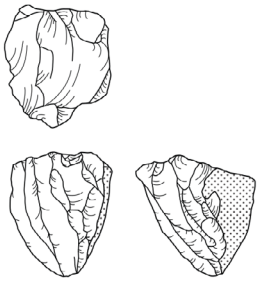

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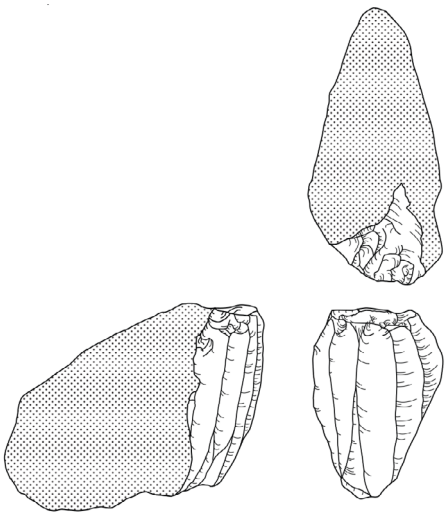

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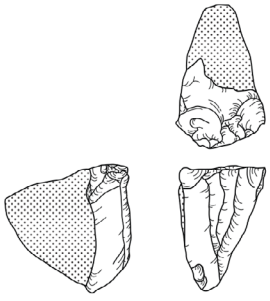
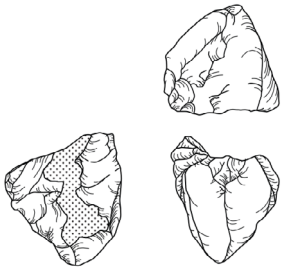


EF 021

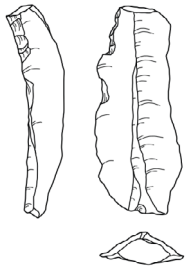


EF 023

EF 029

Žitavce Survey 2022
Drawings: Ruby Winter
Scale 1:1

Plate 7



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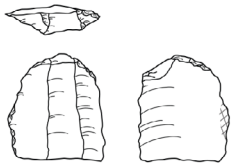

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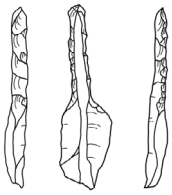

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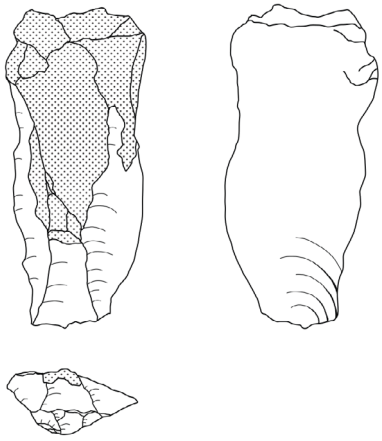

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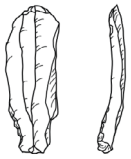

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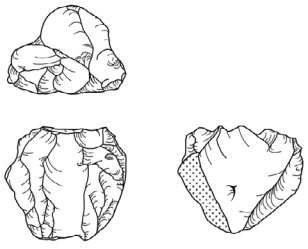

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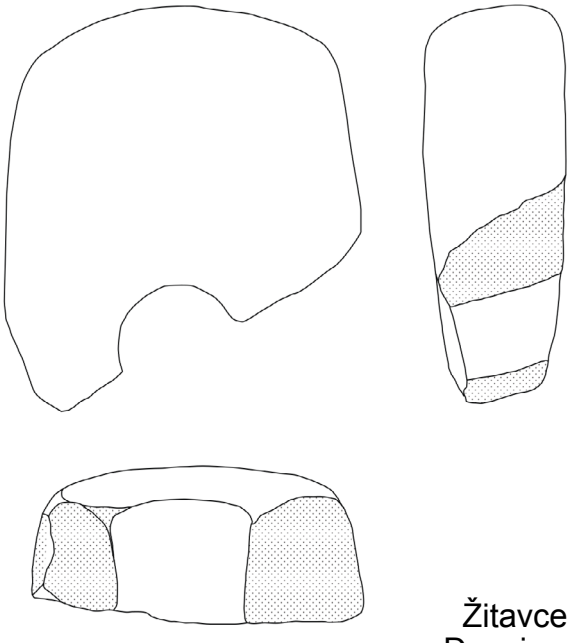

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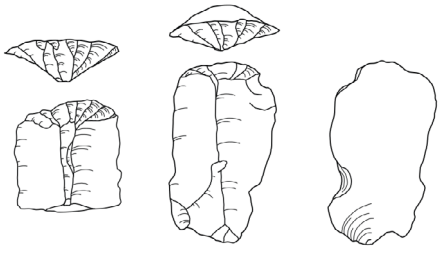
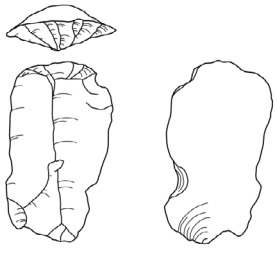


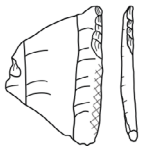
EF 094 (2)



EF 098

Žitavce Survey 2022
Drawings: Ruby Winter
Scale 1:1

Plate 8



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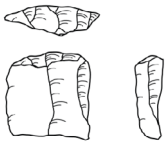
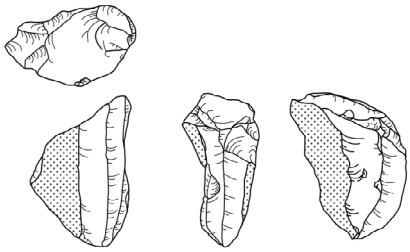
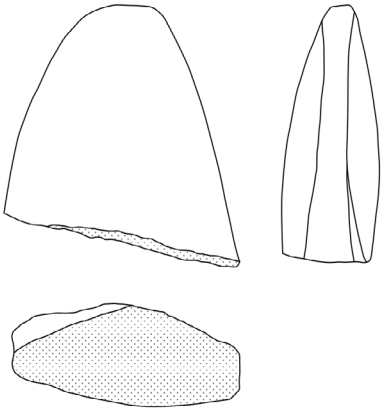


EF 103

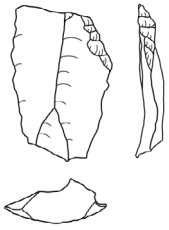
EF 109



EF 123



EF 127

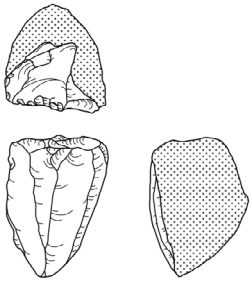


EF 135

EF 139

EF 152

EF 140

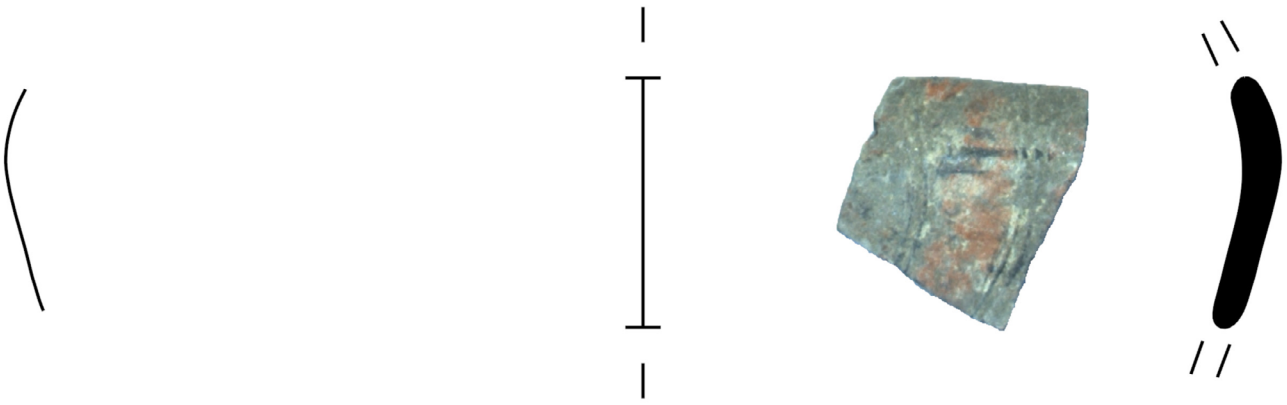


EF 141

EF 156

Žitavce Survey 2022
Drawings: Ruby Winter
Scale 1:1

Plate 9



EF010176

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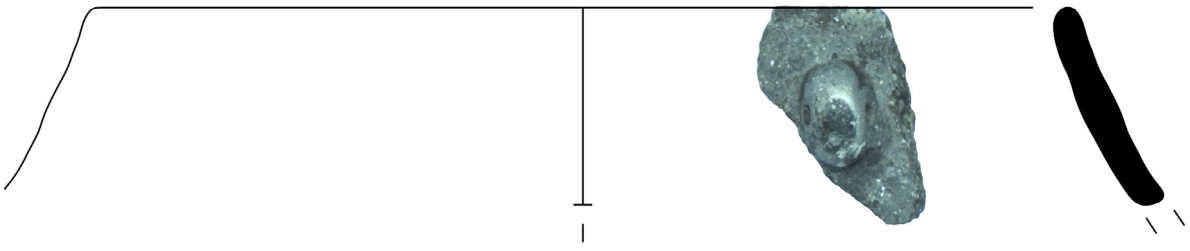

EF010264

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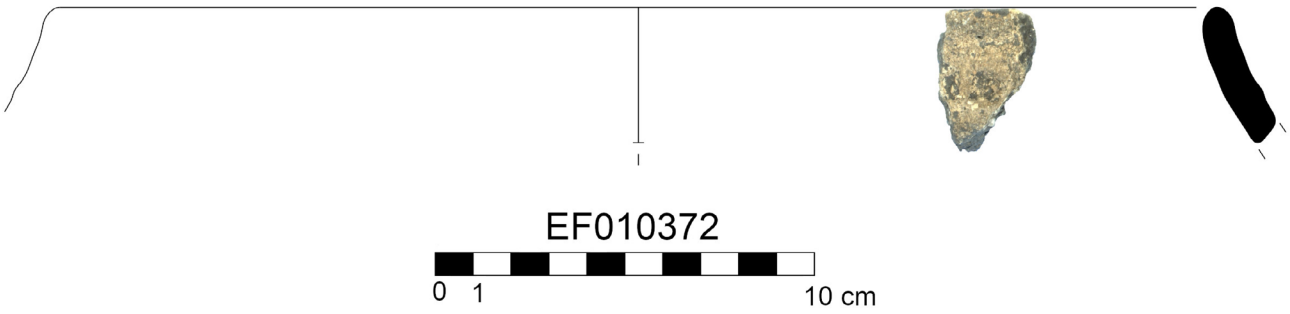
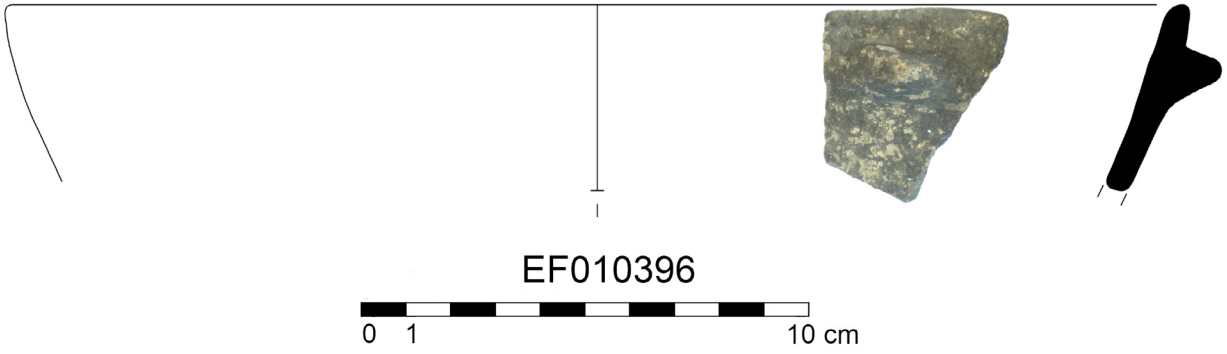
EF010311

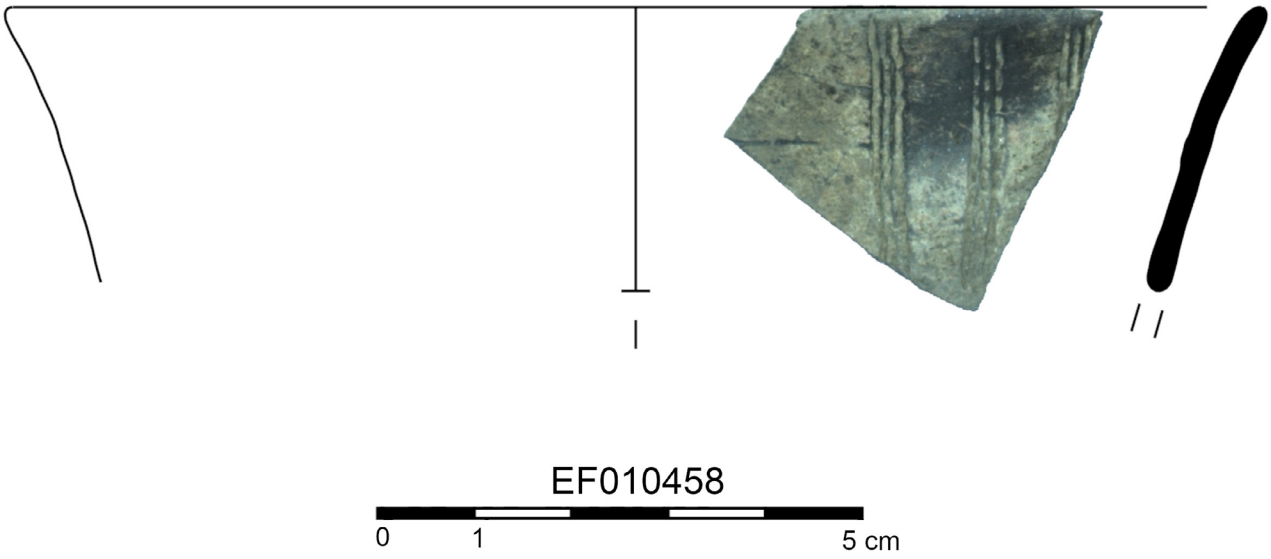
0 1 5 cm

Podhájska Excavation 2022

Plate 10

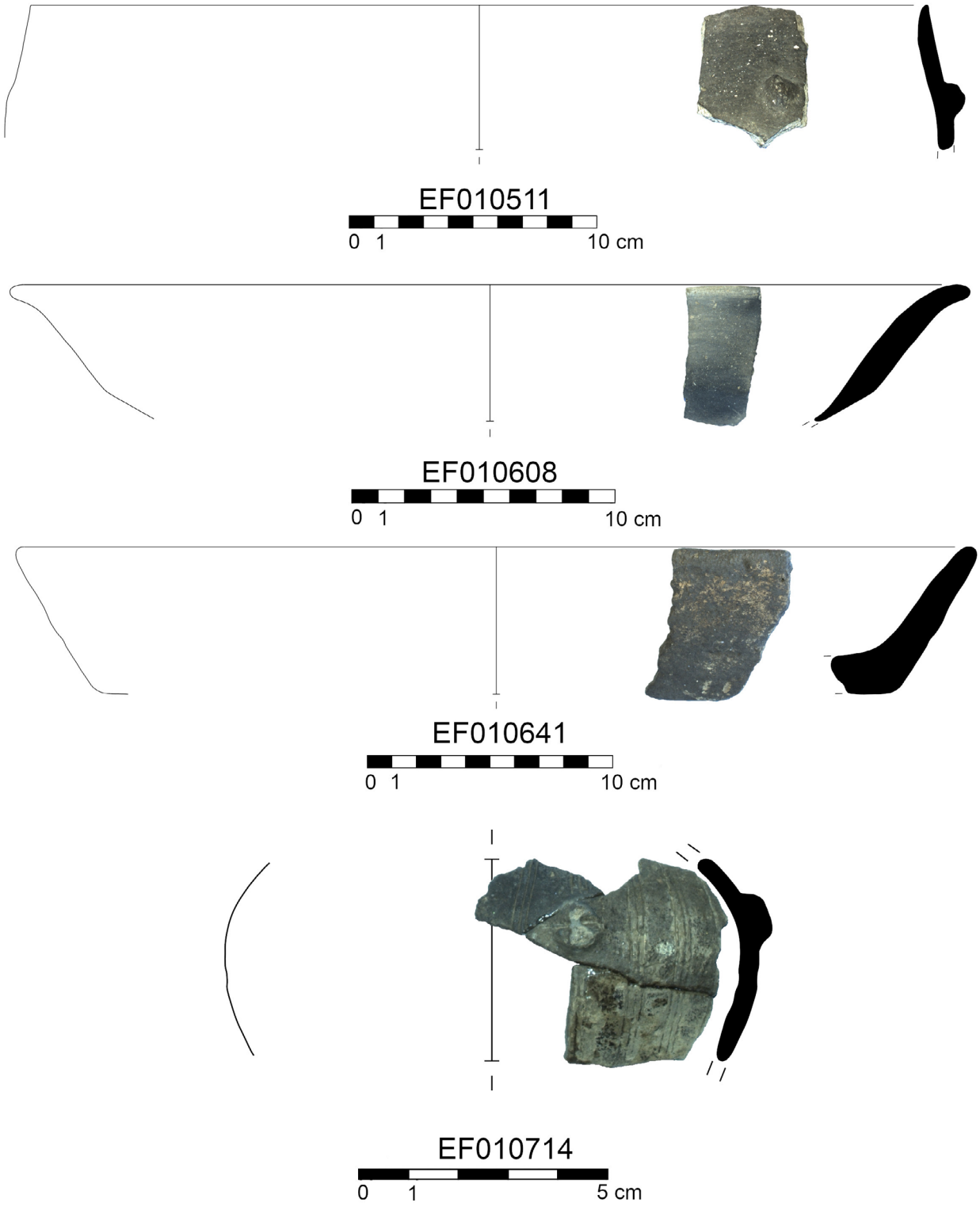






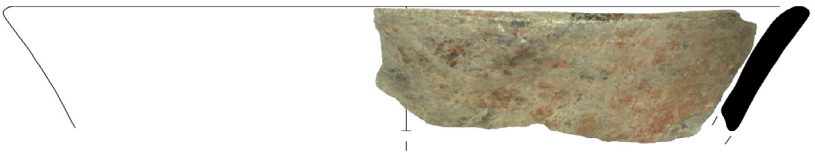
Podhájska Excavation 2022

Plate 11



Podhájska Excavation 2022

Plate 12



EF010758

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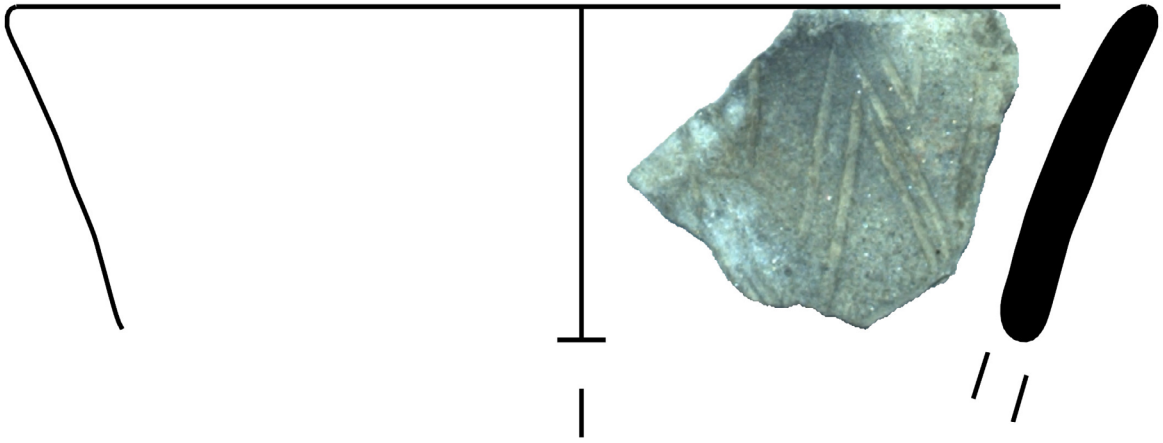


EF010777

0 1 2 cm

EF010808

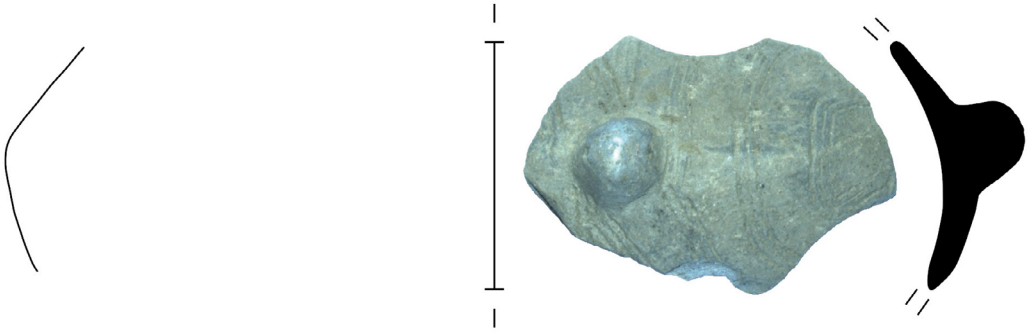
0 1 10 cm

Podhájska Excavation 2022

Plate 13

EF010981

0 1 5 cm



EF011017

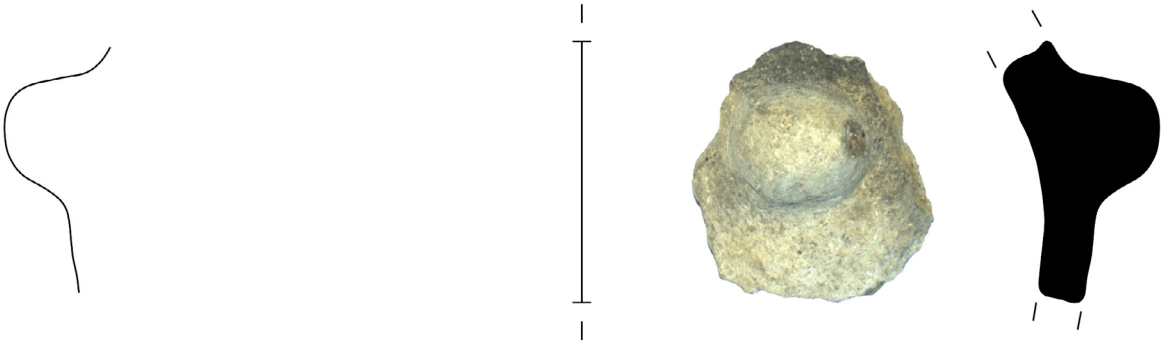
0 1 5 cm

Podhájska Excavation 2022

Plate 14

EF011025

0 1 5 cm



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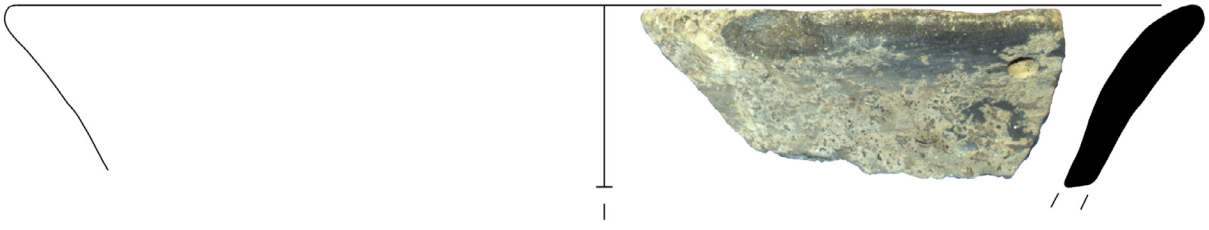

EF011196

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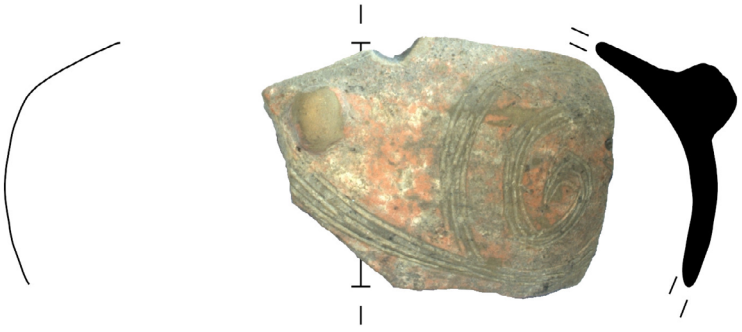
Podhájska Excavation 2022

Plate 15



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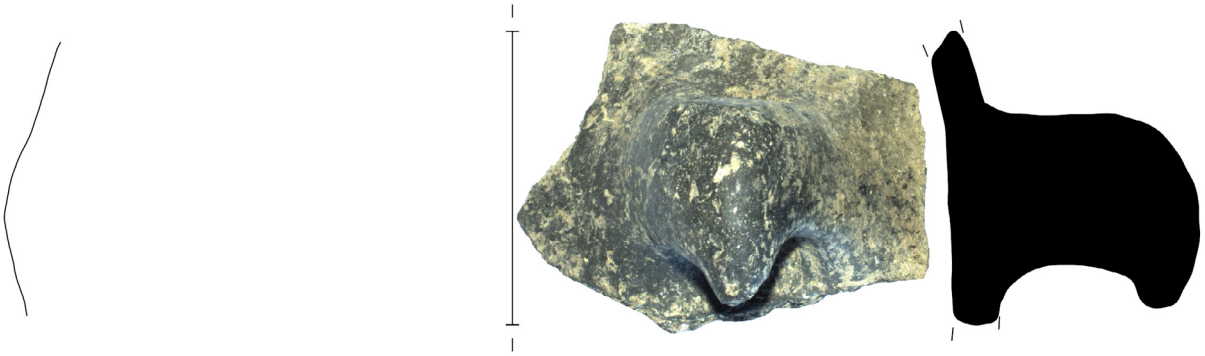

EF011326A

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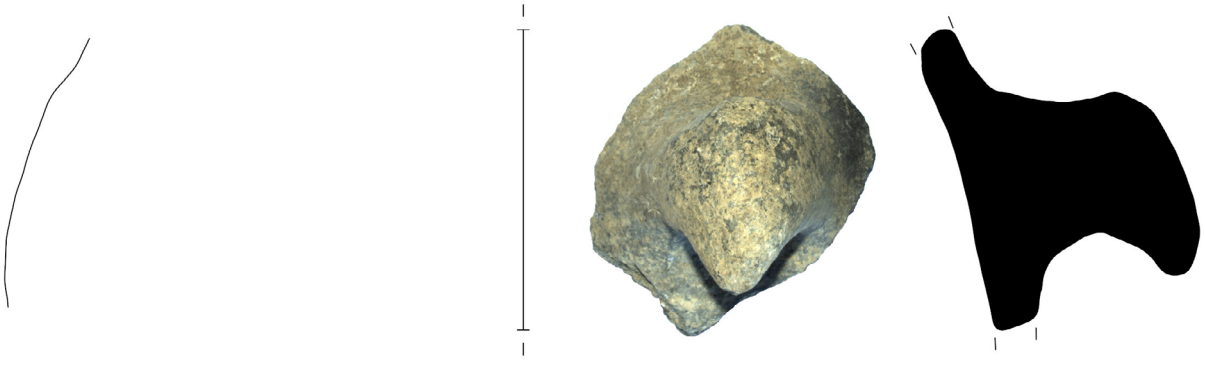
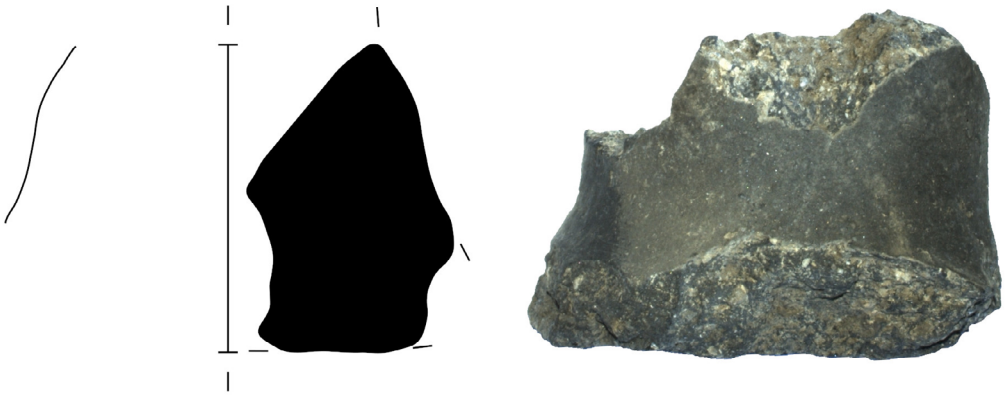


EF011326B

0 1 10 cm

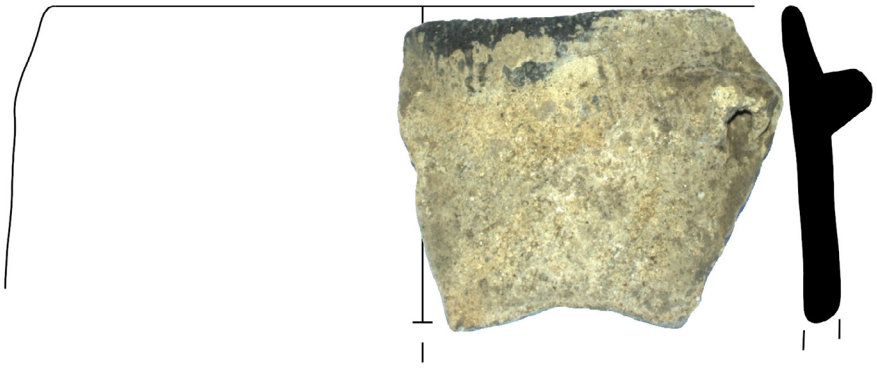
Podhájska Excavation 2022

Plate 16



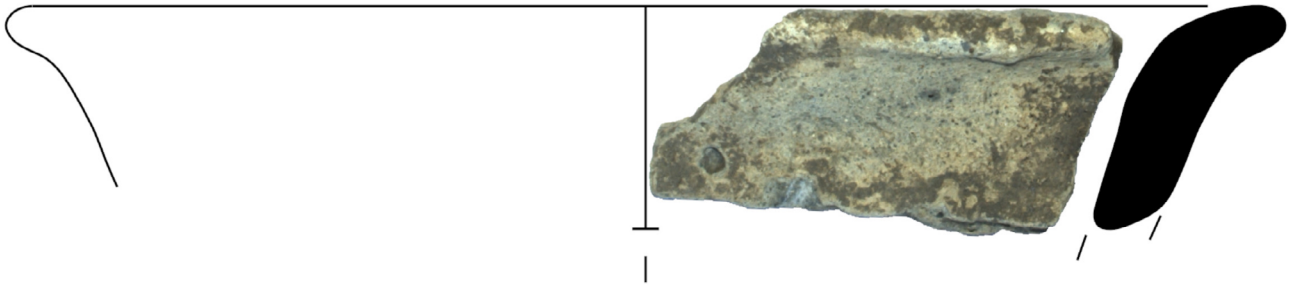
Podhájska Excavation 2022

Plate 17



F010549

0 1 5 cm

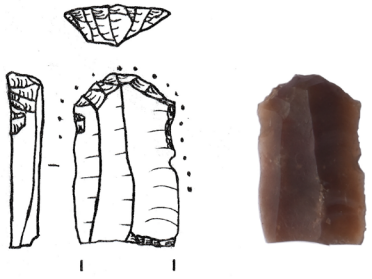


F011033

0 1 5 cm

Podhájska Excavation 2022

Plate 18



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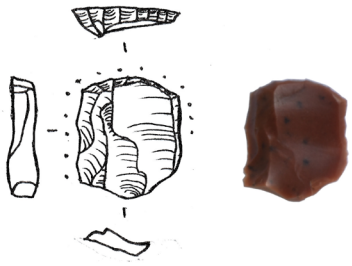
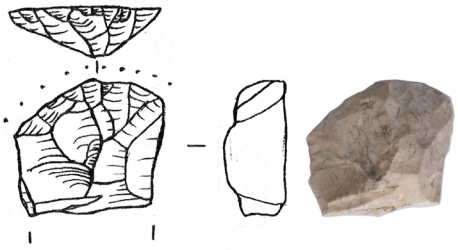
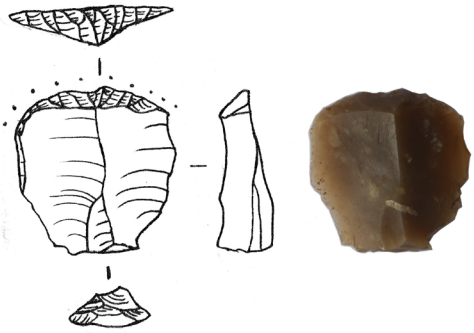


F010053



EF020008



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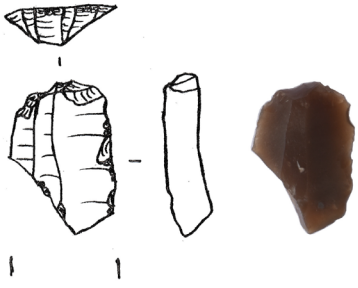

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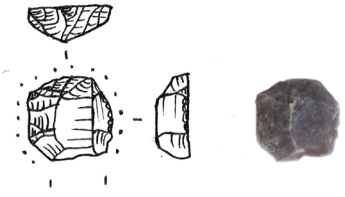

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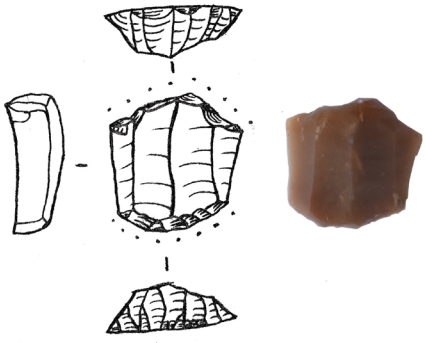

F020152

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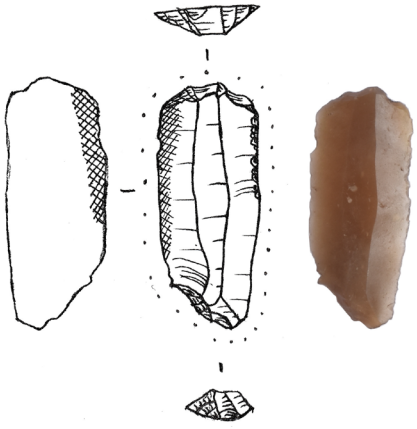
Plate 19

EF020056

EF020046



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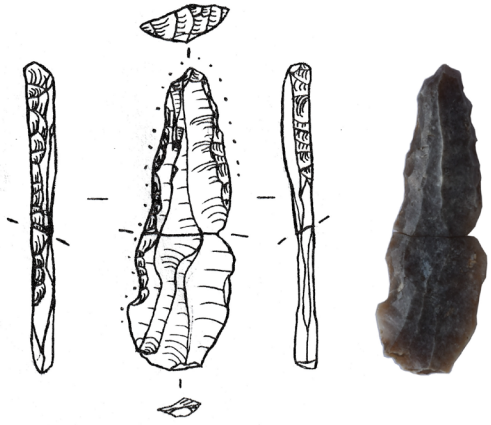

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