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FUNNEL BEAKER CULTURE SETTLEMENT IN JASIENICA SUFCZYŃSKA SITE 5 AS AN EXAMPLE OF THE ENEOLITHIC COLONISATION OF THE PRZEMYŚL FOOTHILLS (WESTERN CARPATHIANS, SE POLAND)

ABSTRACT

Król D., Sobkowiak-Tabaka I., Verteletskyi D., Głowacz M. 2024. Funnel Beaker Culture settlement in Jasienica Sufczyńska Site 5 as an example of the eneolithic colonisation of the Przemyśl Foothills (Western Carpathians, SE Poland). *Sprawozdania Archeologiczne* 76/2, 197-226.

Until now, the question of the Eneolithic settlement of the Funnel Beaker Culture in the 4th millennium BC in the area of the Przemyśl Foothills (Western Carpathians, SE Poland) has not been studied in detail. This was due to the relatively limited state of the sources, which were mainly collected during field surveys. These investigations resulted in the discovery of a relevant settlement in Jasienica Sufczyńska Site 5. The various artefacts collected from its surface have been used to formulate puzzling hypotheses concerning the chronology and the relations of its inhabitants with outer territories. It has been, for instance, suggested that it may have developed earlier than 3700/3650 BC (or even about 3800-3700 BC). These intriguing opinions were the main reason for the excavations carried out in 2017. This invasive research has provided new data about the nature of the settlement. They revealed pottery and stone materials, and the remains of several features. In this paper, we present the results of macro- and microscopic analyses of these materials and discuss them in the context of the current state of research on the Funnel Beaker Culture in the Przemyśl Foothills and adjacent areas. Based on newly collected data, it is debatable whether to date this settlement can be dated as early as previously thought.

Keywords: Eneolithic, Funnel Beaker Culture, pottery, lithic artefacts, phytoliths
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INTRODUCTION

The question of the Eneolithic colonisation of the Przemyśl Foothills in the Western Carpathians by populations of the Funnel Beaker Culture (FBC) in the 4th millennium BC has not yet been discussed in detail. It has usually been commented on as a marginal element of broader studies of this culture in southeastern Poland – south of the Vistula and San confluence (*e.g.*, Pelisiak 2005; 2018; Zych 2008; Nowak 2009, 343; Rybicka 2015; 2016; 2017; 2020; Rybicka *et al.* 2018). This is due to the extremely modest amount of source data, mainly collected during the field survey carried out as part of the Polish Archaeological Record Project (AZP), or accidental discoveries (*e.g.*, Valde-Nowak 1988; Poradyło 2003; Dobrzyński *et al.* 2014). In this area, with a few exceptions (*e.g.*, Jabłonica Ruska Site 1; Sznajdrowska-Pondel 2020), no sites with FBC materials have been invasively investigated. However, field surveys have revealed several FBC sites of varying sizes and functions (?), of which the settlement of Jasienica Sufczyńska Site 5 seems particularly noteworthy. On the surface of this site, M. Parczewski identified sparse but interesting artefacts belonging to two groups: a) made of clay (pottery) and b) made of lithic raw materials. They were scattered over a relatively small area, strongly restricted by modern residential and farm buildings (Dobrzyński *et al.* 2014). This collection, consisting of poorly decorated pottery sherds and lithic artefacts (made exclusively from Volhynian raw materials), became the basis for a discussion (*e.g.*, Rybicka 2016; 2017; 2020; Rybicka *et al.* 2018; *cf.*, Pelisiak 2018) on the chronology of the settlement and the contacts of its inhabitants with the easternmost 'world' of the FBC and indirectly with Trypillian Culture (TC). The main characteristics of these materials led to the following research hypotheses:

a) Jasienica Sufczyńska Site 5 could represent the early stage (*i.e.*, before 3700/3650 BC) of colonisation of the Przemyśl Foothills by representatives of the FBC,

b) the significantly high frequency of Volhynian flints could be evidence of their adaptation at an early stage of the local FBC, *ergo* the existence of some kind of Eneolithic distribution chains between west and east at that time (Rybicka 2016; 2017, 117-125; 2020; Rybicka *et al.* 2018).

Such considerations, while undoubtedly intriguing, were expressed based on observations of a very limited dataset, in particular heavily damaged pottery sherds (Dobrzyński *et al.* 2014). With this in mind, and aware of the accelerating erosion of the site, it was decided to carry out a more extensive rescue excavation in 2017, covering an area of 350 m^2. These investigations provided important data on the issues highlighted. They revealed more artefacts in different stratigraphic contexts (humus and eroded accumulation layer), as well as the remains of several settlement features. In this article, we would like to present the results of various macro- and microscopic analyses of the identified materials and then discuss them in the background of the current state of research on the FBC in the Przemyśl Foothills and neighbouring areas in the Middle and Lower San River basin. In particular,

we would like to discuss the question of whether the settlement in Jasienica Sufczyńska Site 5 can indeed be considered an example of the colonisation of these territories by FBC populations already before 3700/3650 BC.

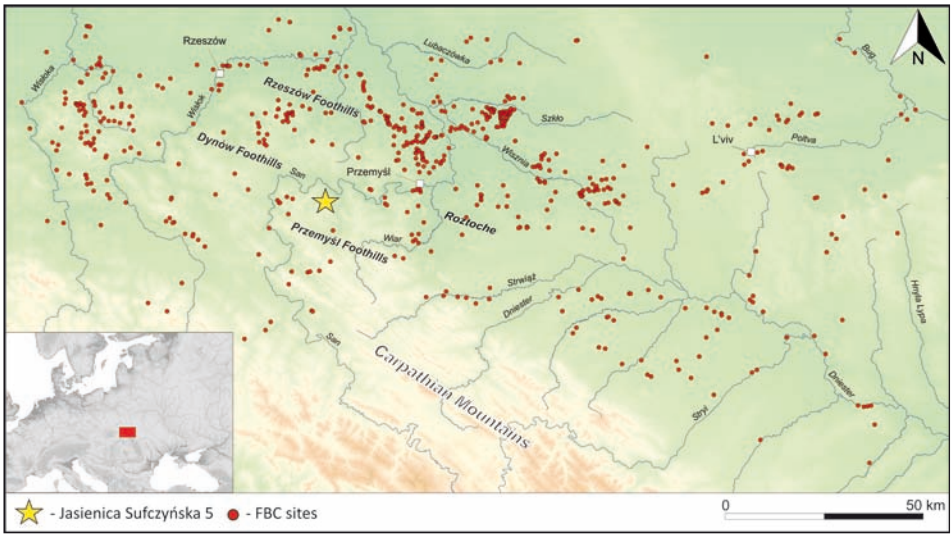

Fig. 1. The Jasienica Sufczyńska Site 5 in the context of the southeastern zone of the FBC (Southeastern Poland and Western Ukraine) (created by D. Król)

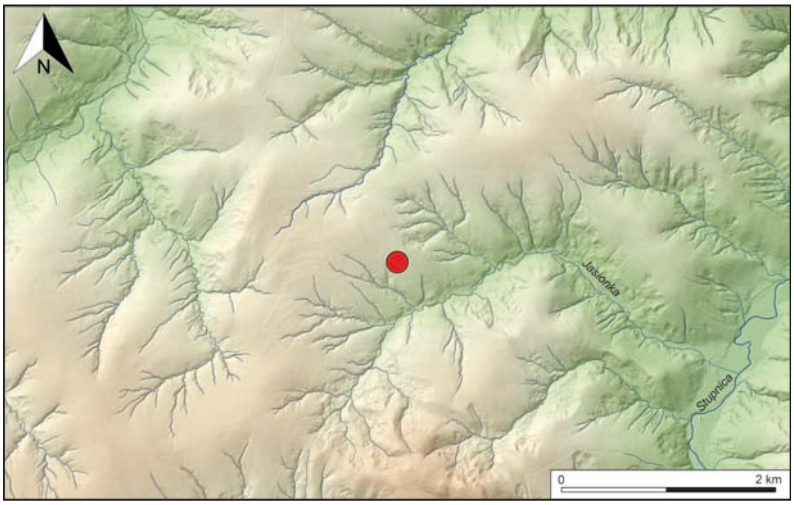

Fig. 2. Jasienica Sufczyńska Site 5 in the Przemyśl Foothills (created by D. Król)

SITE LOCATION

The FBC settlement in Jasienica Sufczyńska Site 5 is located in the northern area of the Przemyśl Foothills, part of the Western Carpathians (Kondracki 2002; Solon *et al.* 2018), about 40 km southeast of Rzeszów (Fig. 1). It is situated on the left bank of the Stupnica River watershed (a right tributary of the San River) on a gentle slope of a large, unnamed hill (437 m asl) facing southeast, at a distance of about 400 m from the local stream Jasionka and about 50 m above its bottom (Fig. 2). The highest points of the settlement rise to 376 m asl, but they are located in a part that is inaccessible for archaeological research (due to modern buildings). The parts of the site available for invasive field activities are situated at altitudes of 375-376 m asl. Broadly speaking, the settlement of Jasienica Sufczyńska Site 5 is located in a region consisting of Carpathian flysch covered by carbonate-free loess sediments, usually referred to as loess-like dust or the Carpathian variety of loess. Such sediments are the basis for the different types of Luvisols (Skiba and Drewnik 2003).

SETTLEMENT RELICS

The excavations covered an area of 350 m^2. Due to the inaccessibility of the cultivated field, it was not possible to focus on the potentially most prospective zone of the site, characterised by the highest density of artefacts on the surface (as documented by M. Parczewski). However, moving the trenches a few metres to the southeast did not adversely affect the results. The survey revealed six morphologically distinct features (Fig. 3: A) and a large (cultural) accumulation layer containing numerous sherds of pottery and other artefacts (Fig. 3: B). Most of these features were poorly preserved common pits, mainly located in the northeastern sector of the surveyed area (Fig. 3: A). Interestingly, a distinct feature (No. 3) was also discovered between Pits 2 and 4, which could cautiously be interpreted as part of a dwelling (Fig. 3: A). It was a relatively small (less than 15 m^2) and shallow (about 15 cm) structure with a trough-shaped cross-section, within which a posthole (No. 6) was identified (Fig. 3: A). In total, almost one thousand pottery sherds and 40 stone artefacts were recovered during the excavation. Regarding the main group of materials (pottery), they were identified in different stratigraphic contexts: a) humus – 135 (14.7%), b) (cultural) accumulation layer – 769 (83.9%), and c) the fills of features – 12 (1.3%). Artefacts made of lithic raw materials were found in two layers: a) humus – 10 (25.0%) and b) cultural layer – 30 (75.0%).

As noted above, relatively few pottery sherds were identified within the features. The second stratigraphic context of pottery sherd distribution – the yellow-orange cultural layer – appears to be more valuable due to the density of these finds (Fig. 3: B). This thin (up to 10 cm) anthropogenic substance, recorded practically throughout the trench, was characterised by the presence of a large amount of FBC pottery material, concentrated (like features) mainly in the northeastern part of the excavated area (Fig. 3: A). Using the kernel density estimation (KDE) technique in GIS software (QGIS Desktop 3.18.1), we can

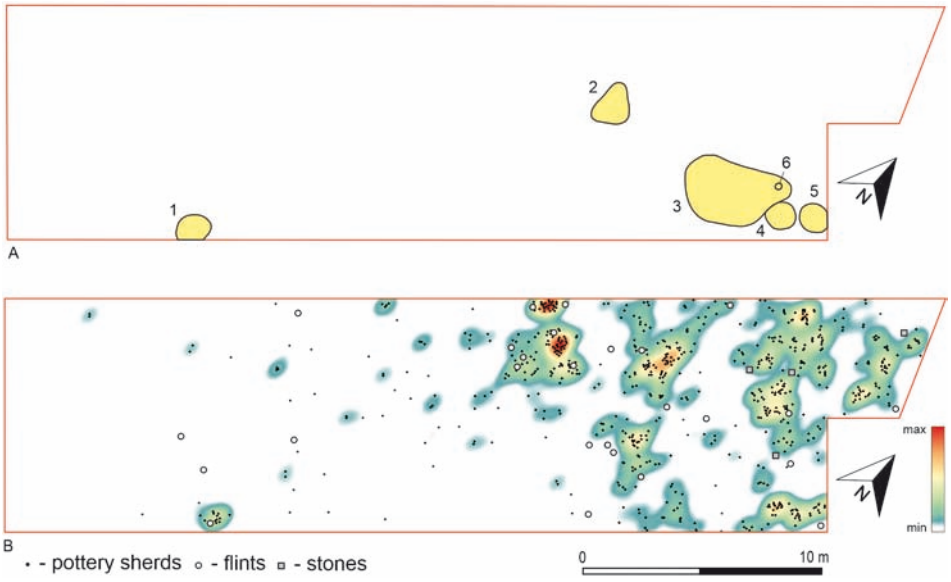

Fig. 3. Jasienica Sufczyńska Site 5. A – features; B – results from the KDE analysis of the pottery sherds (created by D. Król)

observe some characteristic clusters of such artefacts (Fig. 3: B). Significantly, their distribution fits well with at least the area of the putative dwelling (Feature 3) and the functionally related (?) two pits (Feature 4 and 5). Larger assemblages of pottery sherds were recorded clearly outside the former structure, or more precisely, outside an area of just over 25 m², which itself was poor in such materials (Fig. 3: B). This is a crucial fact, as it may roughly indicate the original size of the presumed house structure. Relying on this type of observation when attempting to estimate the size of unpreserved dwellings is reasonable in the light of research experience from FBC settlements in the Central European Plain (*e.g.*, Pelisiak 1985; Papiernik and Rybicka 2002). Last but not least is a set of pottery sherds identified in the humus (about 20 cm depth). Their horizontal dispersion can be compared with the position of pottery in the cultural layer. Importantly, we can observe a quite similar spatial distribution in the case of artefacts made of lithic raw material. Leaving aside the features in which no such materials were discovered, their presence right next to the pottery clusters in the cultural layer is noticeable (Fig 3: B).

POTTERY

Nearly a thousand pottery sherds were recorded in three stratigraphic contexts at Jasienica Sufczyńska Site 5. As a whole, they can be described as a homogeneous data set. Most of these pottery artefacts, regardless of the context of deposition, were characterised

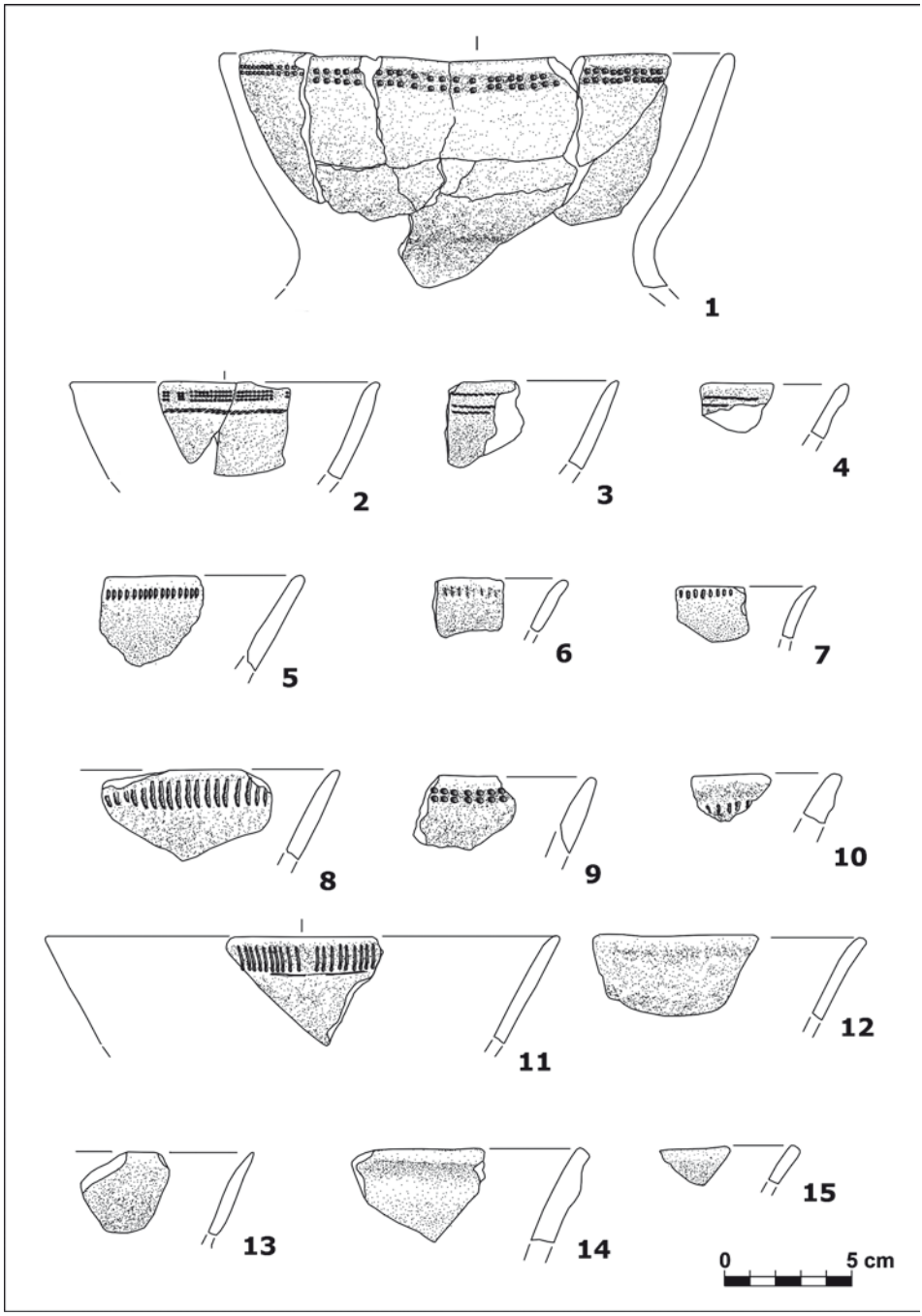

Fig. 4. Jasienica Sufczyńska Site 5. Pottery sherds identified in the cultural layer (drawn by D. Verteletskyi)

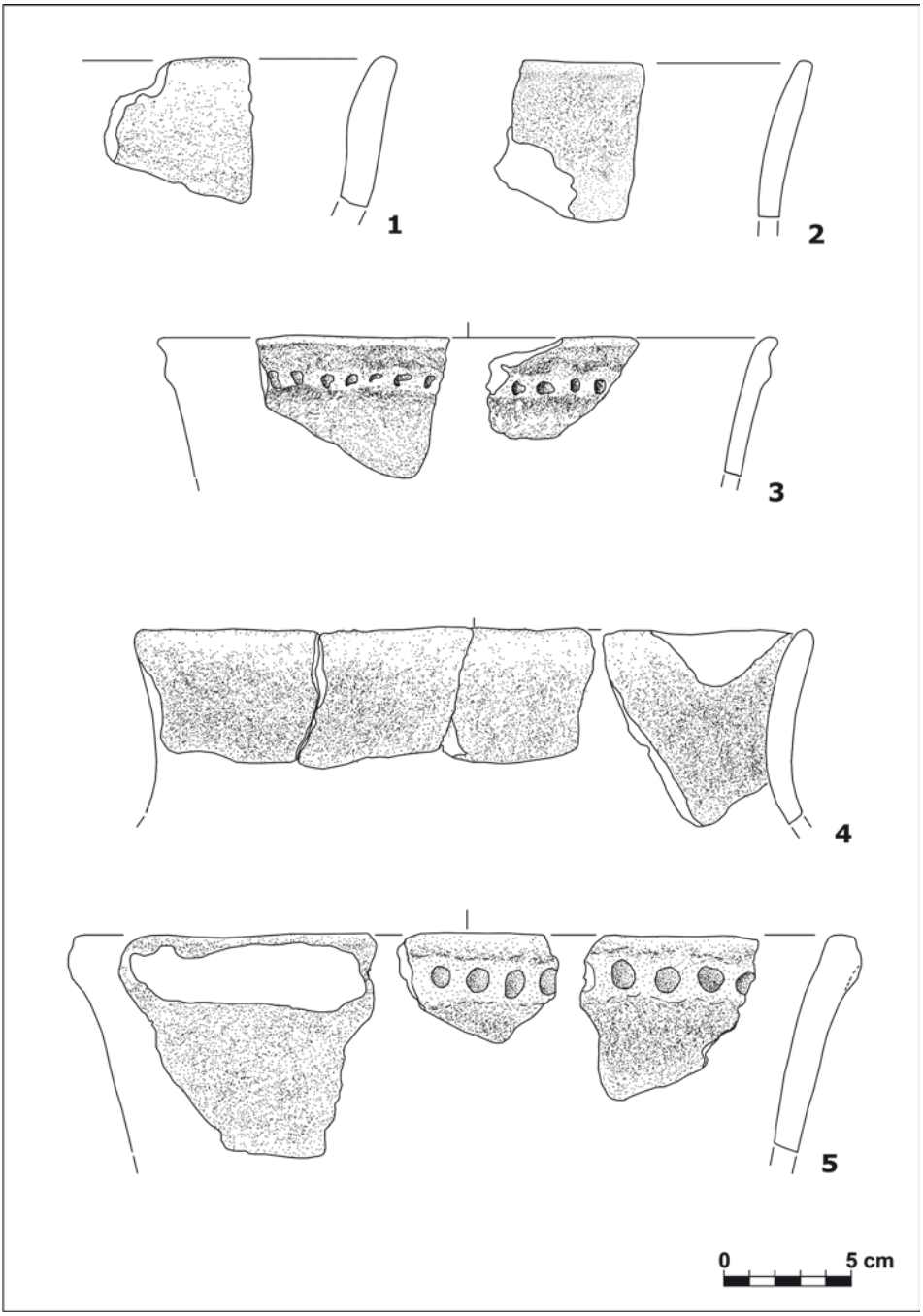

Fig. 5. Jasienica Sufczyńska Site 5. Pottery sherds identified in the cultural layer (drawn by D. Verteletskyi)

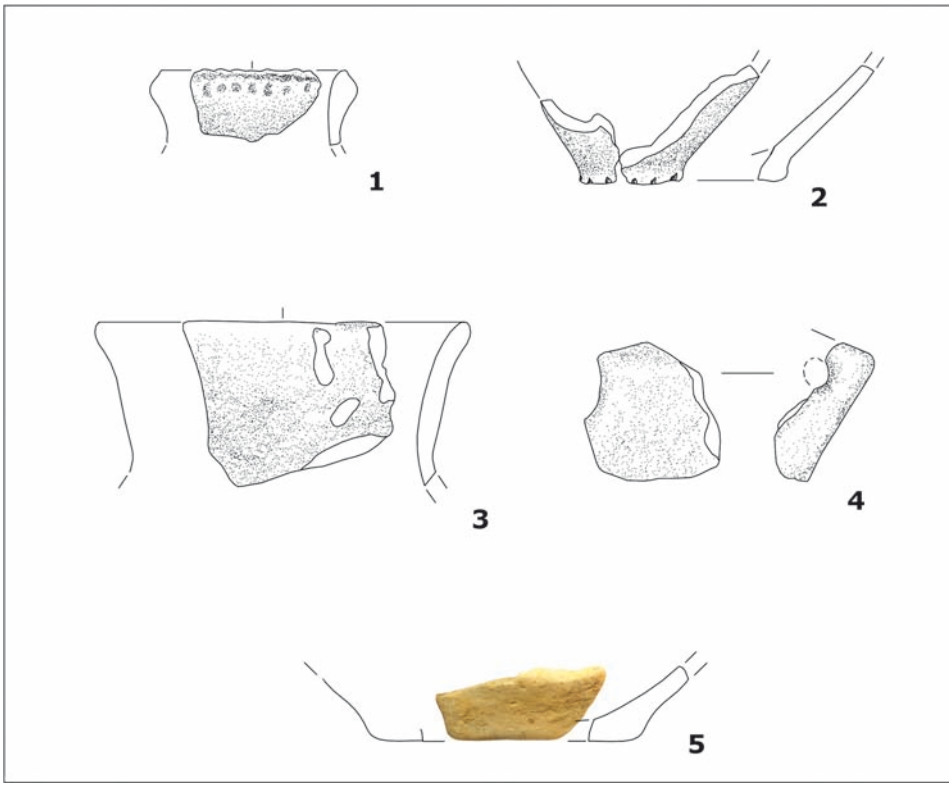

Fig. 6. Jasienica Sufczyńska Site 5. Pottery sherds identified in the cultural layer (drawn by D. Verteletskyi)

by a high degree of fragmentation and severe damage to their internal and external surfaces. This has probably resulted in the complete obliteration of the decorations originally visible on the surface in some cases and their distortion in others. Moreover, the state of preservation of these artefacts often makes it difficult to determine which vessel forms the individual sherds come from. Of the total number of materials analysed, 43 rims, 36 bases, one handle, and 22 decorated sherds can be distinguished (Figs 4-7). Except for one case (a handle fragment from the humus layer), the distinctive artefacts were recorded within the thin cultural material. All the sherds identified in the different contexts were analysed in the following areas: technological, morphological, and stylistic.

ANALYSIS OF THE TECHNOLOGY

The most practical schemes (Czerniak and Kośko 1980; Czebreszuk *et al.* 2006; Kukawka 2012) were used to characterise the technological properties of the vessels. The following elements of the pottery sherds were considered in the analyses: temper (type,

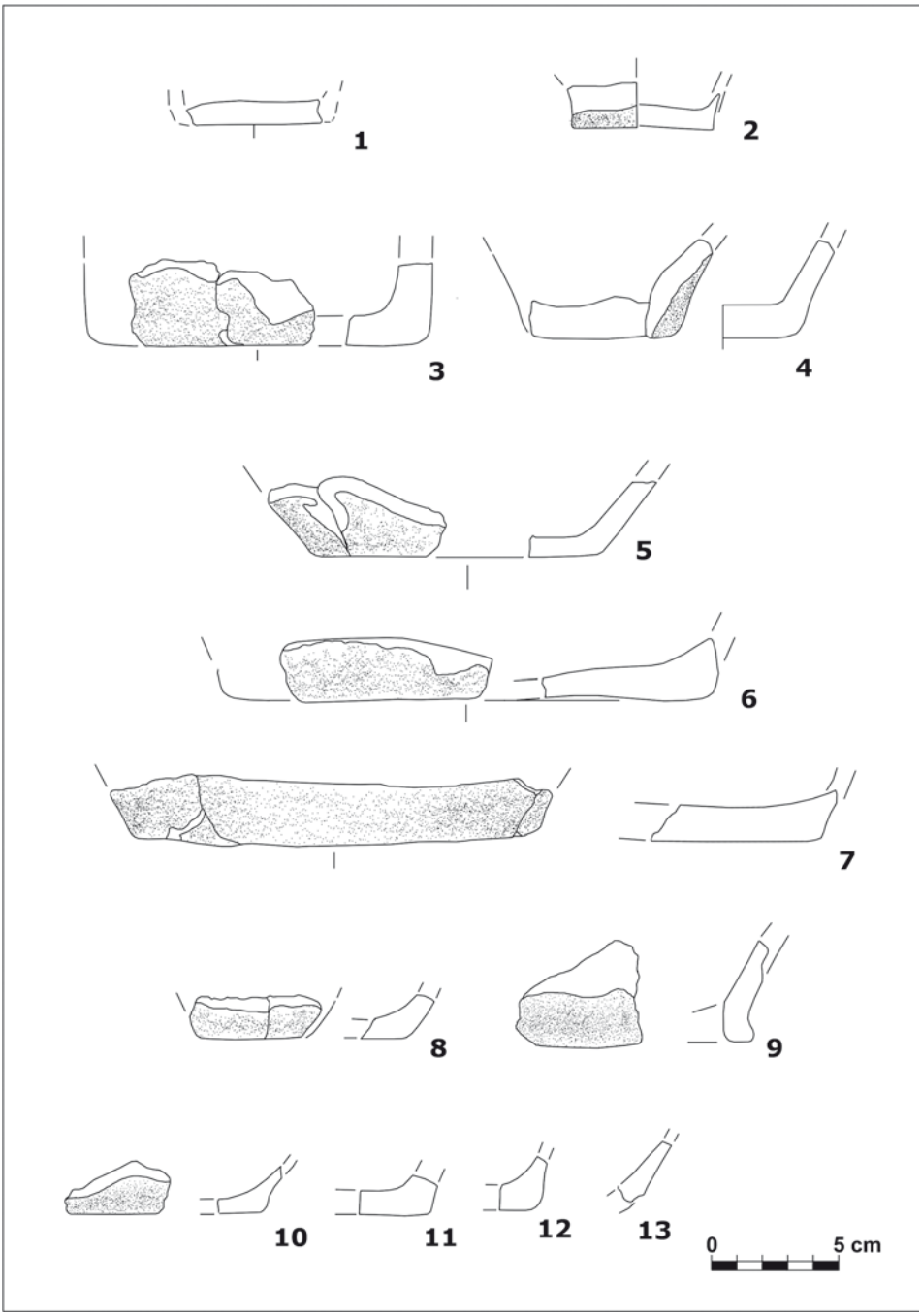

Fig. 7. Jasienica Sufczyńska Site 5. Pottery sherds identified in the cultural layer (drawn by D. Verteletskyi)

size, and density), surfaces (colour, texture), cross-sections (colour, layering), and wall thicknesses.

Based on basic observations, we should emphasise the extreme technological standardisation of the composition of the pottery fabrics from the Jasienica Sufczyńska Site 5. Almost all of the analysed pottery samples contained crushed pottery, *i.e.* grog (95.7%), which improved the mechanical and thermal properties of the vessels. Two categories can be highlighted: a) 0-4 mm (85.0%) and b) 5-9 mm (25.0%). Smaller grains of grog were identified in both thinner and thicker sherds, while larger ones were only visible in sherds of medium and thick walls. Other types of mineral inclusions occurred by chance and cannot be clearly described as intentional (*cf.*, Rzepecki 2014, 164). They always occur together with grog, resulting in the following assemblages: a) grog-sand (2.3%) and b) grog-stone (1.6%). The presence of one thick-walled, indistinct pottery sherd with a grog-mineral-shell admixture was also recorded. The last and least represented group consists of materials without any macroscopically defined compounds – the so-called 'fat clay'.

Given the poor state of preservation of the pottery, it is difficult to determine exactly how their surfaces were treated. Only three categories of external surfaces can be identified by careful observation: a) powdery (49.0%), b) smooth (34.1%), and c) rough (16.0%). Concerning the firing atmosphere, three types were observed based on the colour of the sherd cross-section: a) reduction (grey-black colour), b) oxidation (yellow-orange-red colour), and c) variable (mixed colour). Materials characterised by greyish cross sections with a thin oxidised outer layer are the most numerous in the analysed assemblage (83.3%).

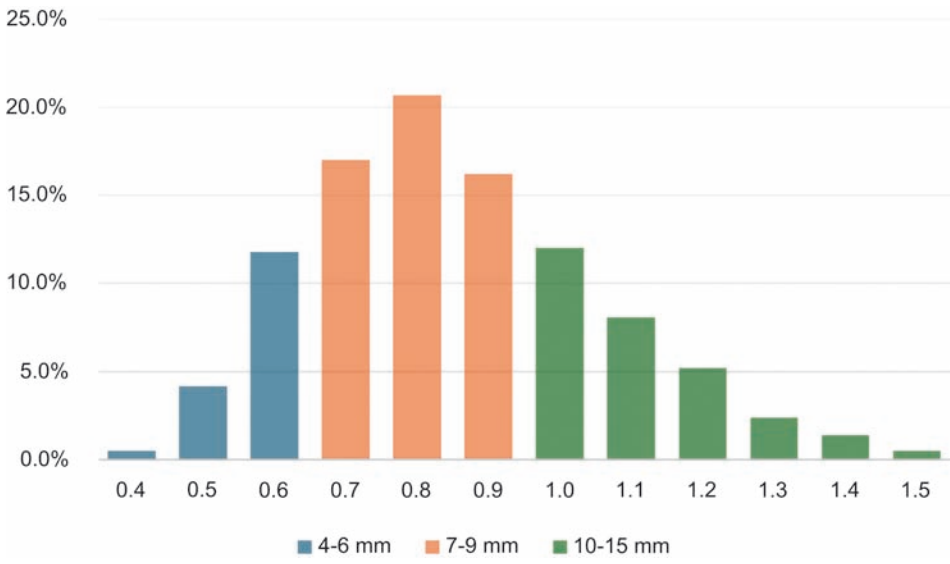

Fig. 8. Jasienica Sufczyńska Site 5. The thickness of pottery sherds (not including bases)

This peculiarity can be explained, for example, by the fact that the vessels were turned upside down during firing. This resulted in cutting off the access of oxygen to their interior (Glushkov 1996; *cf*., Chmielewski 2015, 63; Starkova and Zakościelna 2018). It is also worth noting the presence of fully oxidised pottery sherds with minimal or no grog temper. An example of this is a fragment of the base of a vessel identified in the northeastern part of the excavated area (Fig. 7: 5).

The largest group of pottery sherds analysed were those 7-9 mm thick (53.9%), followed by those thicker than 10 mm (29.6%). The smallest, but not the least, category of sherds corresponds to the most fragile pottery up to 6 mm wall thickness (16.5%). Specifically, the most common sherds were 8 mm (20.7%), and the extremely rare were 4 mm and 15 mm (both 0.25%) (Fig. 8).

ANALYSIS OF THE MORPHOLOGY AND DECORATION

The lack of matching fragments from different parts of vessels complicates the optimal reconstruction of their morphology (*cf*., Rzepecki 2014). Despite the objective inconveniences caused by the high fragmentation of the pottery, an attempt was made to minimise this problem by cross-analyzing the shapes of the rims with the types of decoration on their external surfaces. The scheme developed by A. Kośko (1981) with its modification (Czebreszuk *et al*. 2006) was used to describe/identify the vessel shapes. The assemblage analysed contains such fragments that could be assigned to specific forms, such as funnel beakers (Fig. 4: 1-15), pots (Fig. 5: 1-5), collared flasks (Fig. 6: 1, 2), amphorae (Fig. 6: 3, 4), and (with extreme caution) bowls (Fig. 6: 5).

The funnel beakers fulfilling the general criteria for the type B forms were characterised by various types of necks, including, for example, arch-shaped (Fig. 4: 1-3) or turned inside out (Fig. 4: 6, 7, 12). The exact diameters were determined only for the two funnel beakers, *i.e*., 20 cm (Fig. 4: 1) and 12 cm (Fig. 4: 2), respectively. The diameters of the others seem to vary between 15 and 20 cm. Most of these vessels were decorated but only on the outer surface of the upper part of the neck (Fig. 4: 1-12). The simplest and most widespread patterns in the FBC 'world', such as a continuous row of stamps under the rims of the vessel (Fig. 4: 5-8, 10), sometimes segmented and underlined by a narrow incision (Fig. 4: 11), were observed. There are also sherds decorated with two (Fig. 4: 4) and three horizontal cord imprints (Fig. 4: 3), as well as a single cord imprint underlining the segmented stamps made with a comb-like instrument (Fig. 4: 2). The last-mentioned technique was also used on the arch-shaped neck, however with a constant pattern (Fig. 4: 1).

A smaller group of vessels identified in the Jasienica Sufczyńska 5 Site was represented by more massive thick-walled pots (Fig. 5) that were widely used in FBC communities. They were larger in shape than the funnel beakers, with diameters of up to 30 cm (Fig. 5: 3-5). Two of the sherds were decorated with finger impressions on a thickened rim (Fig. 5: 3, 5).

Analysing the pottery, single sherds were also identified that can be carefully interpreted as belonging to collared flasks, although they do not have the characteristic underrim collar (Fig. 7: 1, 2). Despite the absence of this basic diagnostic element, it seems that the other characteristics of these sherds may support such an interpretation. The reconstructed diameter of the rim of one of these sherds was 7 cm, a value that does not exclude it as a possible collared vessel (*cf.*, Kulczycka-Leciejewiczowa 2002). In addition, this sherd was decorated by irregular impressions on the rim and 'plastic' elements underneath (Fig. 7: 1). The small surface area of the base of a second sherd does not rule out the possibility that it represents such a pottery form (Fig. 7: 2).

It is difficult to conclude much about the amphorae. Only two undecorated artefacts like parts of the neck and the knee-like handle, were identified during the excavation (Fig. 7: 3, 4). These are banal forms that are common in FBC circles.

LITHIC ARTEFACTS

The collection of lithic artefacts from surface survey and excavations conducted at the Jasienica Sufczyńska 5 Site comprises 40 artefacts, including a whetstone made of slate with cut marks on its edges. Due to the questionable relationship of the latter to the FBC materials, this item was excluded from further analysis. The artefacts occurred mainly in the central and southern parts of the study area (Fig. 3: B).

The technological characterisation of the artefacts was made using the assumptions of the so-called dynamic typology by R. Schild *et al.* (1975, 12, 13), adapting them to the specificities of Neolithic and later materials (Domańska 1995, table 1; Domańska and Kabaciński 2000, 379, 380).

Three tools exhibiting traces of 'sickle gloss' were selected for phytolith analysis (Samples W25, W26, and W51 – Figs 9: 2, 11: 3, and 11: 2). The extraction was carried out according to the procedure described by Polcyn *et al.* (2005), using a heavy liquid, lithium metatungstate (LTM), with a specific gravity of 2.35. After removal from the sediment matrix, the phytoliths were mounted on slides, viewed, counted, and photographed at 400× magnification. Identification of phytoliths was undertaken, when possible, with the use of reference material at the Royal Belgian Institute of Natural Sciences, as well as published documents (*e.g.*, Pearsall 2000; Piperno 2006; ICPN 2.0).

ANALYSIS OF THE LITHIC MATERIAL

There were six items belonging to the group of finds related to core preparation, initial core trimming, and the early stage of core processing: three cortical flakes and three trimming flakes. In the first group, there are two flakes measuring 48 × 26 × 5 mm and 79 × 45 × 15 mm,

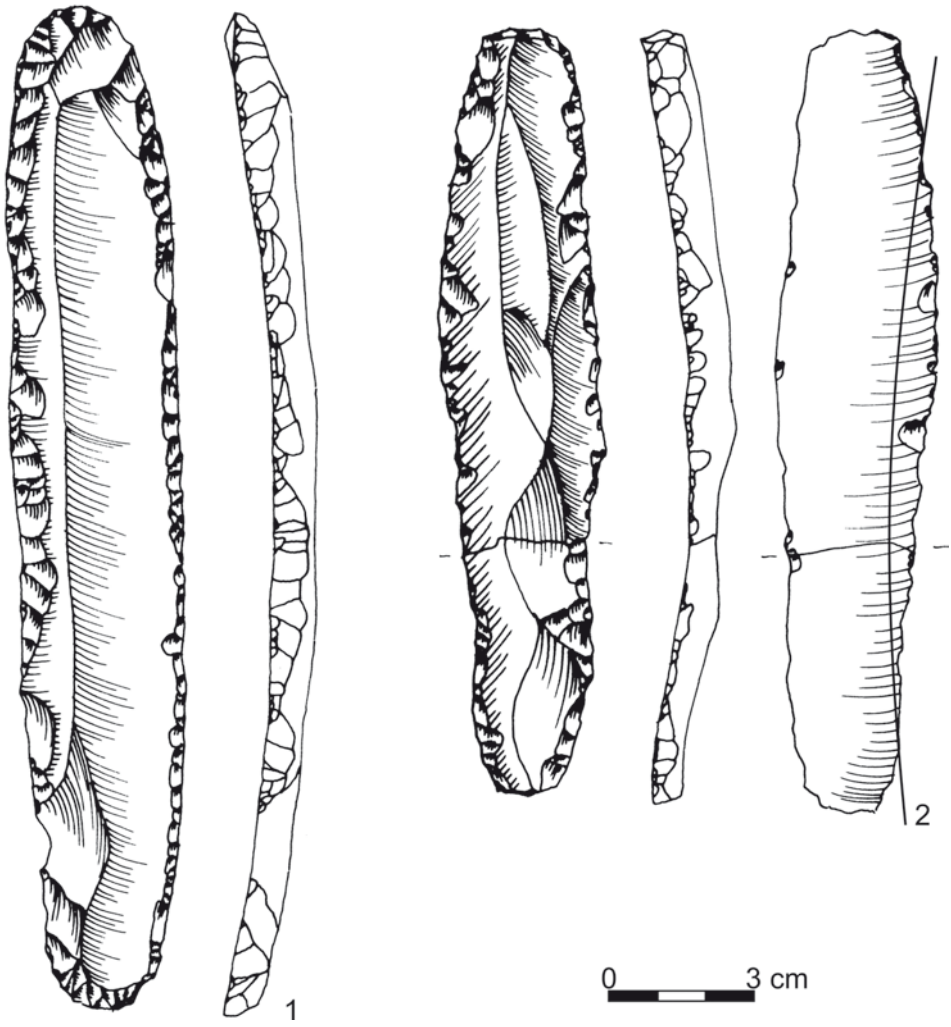

Fig. 9. Jasienica Sufczyńska Site 5. 1-2 – retouched blades (drawn by J. Mugaj)

along with one broken item. In the second group, the smallest flake measures 23 × 18 × 6 mm, and the biggest one is 79 × 45 × 15 mm. All artefacts were made of Volhynian flint.

The group related to flake exploitation consists of four flakes detached from single-platform cores. The smallest one measures 25 × 27 × 5 mm, and the biggest one measures 61 × 47 × 15 mm. Three of them were made of Volhynian flint, and the largest was made from fine-crystalline sandstone.

The blade exploitation group consists of ten items. Only one blade is whole and measures 29 × 12 × 6 mm. The rest of the items are broken (five proximal parts, two central,

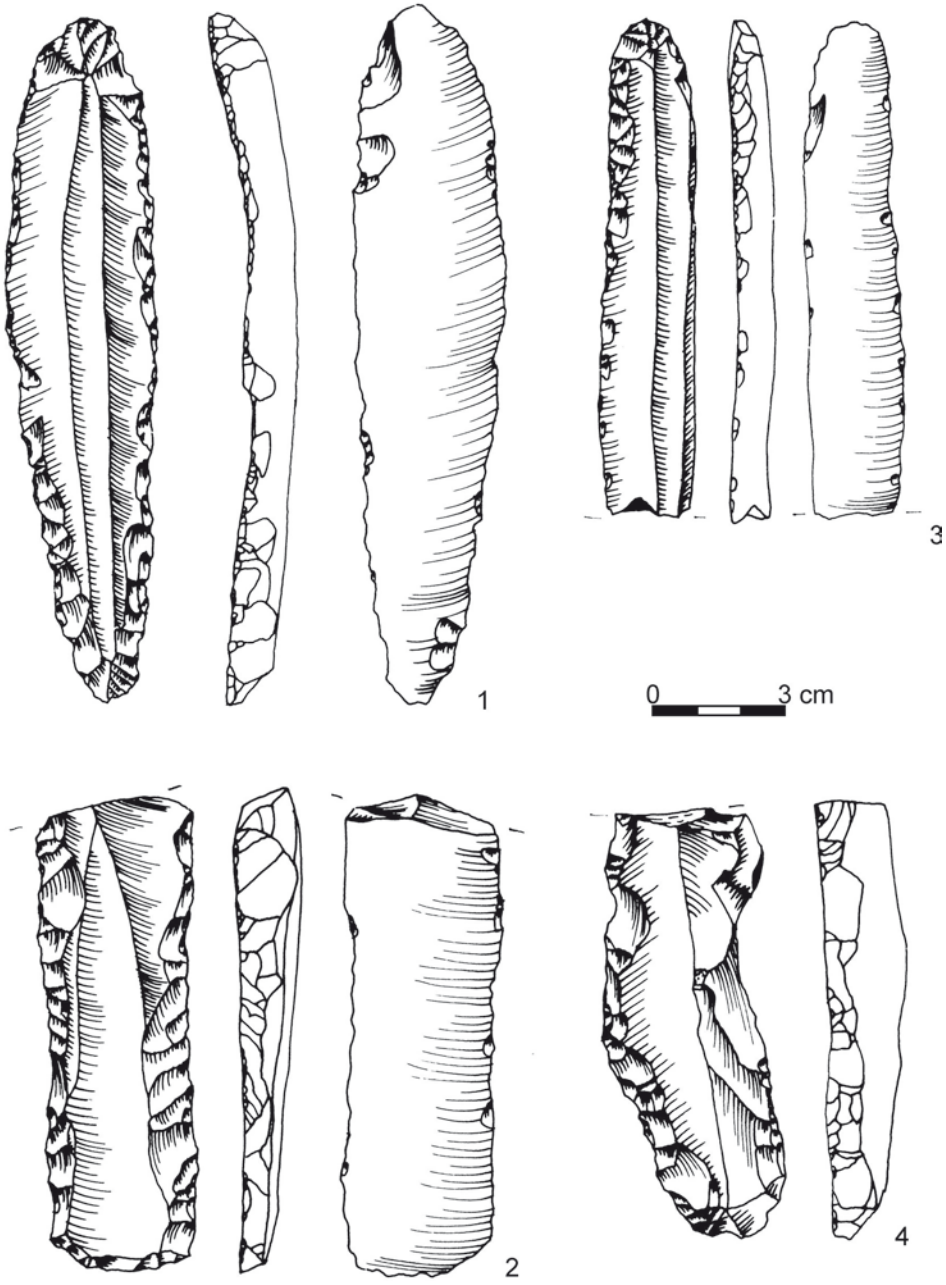

Fig. 10. Jasienica Sufczyńska Site 5. 1-4 – retouched blades
(drawn by J. Mugaj)

and two distal ones). The blades were made of Volhynian flint, chocolate flint, and erratic Baltic flint.

The collection of unclassified artefacts, including debris from knapping and retouching, comprises one unidentified burned flake, one unidentified blade made of quartzite, and three chunks (two fashioned from Volhynian flint and one burnt).

Tools

The tool category encompasses 14 items: one end scraper, seven retouched blades, five partially retouched blades, and one dagger.

End scrapers

Within the assemblage of tools one fragment of end scraper occurred. The working edge is asymmetrically rounded, high, and steep, and both edges of the tool are retouched.

Retouched blades

Among this category of tools, there are three whole items. The first of them is an item measuring 146 × 26 × 5 mm. It has a slightly curved profile and an omnidirectional steep retouch. On the right edge, the retouch overlaps the upper surface of the tool (Fig. 9: 1). The second measures 114 mm × 24 × 7 mm, and the steep retouch covers all edges of the tool. On the lower left edge, a 'sickle gloss' was observed. The tool has a slightly bent profile (Fig. 9: 2). The last was a whole blade measuring 109 × 24 × 7 mm. The steep retouch covers the distal part of the left edge and the entire right edge. On the left and right edges of the bottom side, a single chipping is visible (Figs 10: 1 and 13: 4).

Four more partially retouched blades are broken specimens. The first one has all edges retouched with a steep retouch. On its right edge, the retouch overlaps the upper surface of the tool. On the top and bottom sides of the left edge, a 'sickle gloss' is visible (Figs 11: 2 and 13: 2).

The other specimens are distal parts of the partially retouched blades. The first one has all edges retouch a semi-steep retouch, overlapping deeply on the upper surface of the tool (Figs 10: 2 and 13: 3). In the case of the second one, both edges have been refracted on the top side with a steep retouch overlapping the top surface of the tool. The last of this category of tools has all edges retouched with a steep retouch. In the case of the right edge, the retouch overlaps the top surface of the tool slightly (Figs 11: 1 and 13: 1).

Retouched blades are tools that reach a considerable size in this assemblage, up to nearly 15 cm, and are 2.4 to 2.6 cm wide. Their side edges are finely worked with continuous, steep retouch, sometimes extending onto the upper surface of the tool. In a few cases, traces of a so-called 'sickle gloss' were observed (Figs 9: 2 and 11: 2, 3). Some retouched blades are broken in the middle of their length.

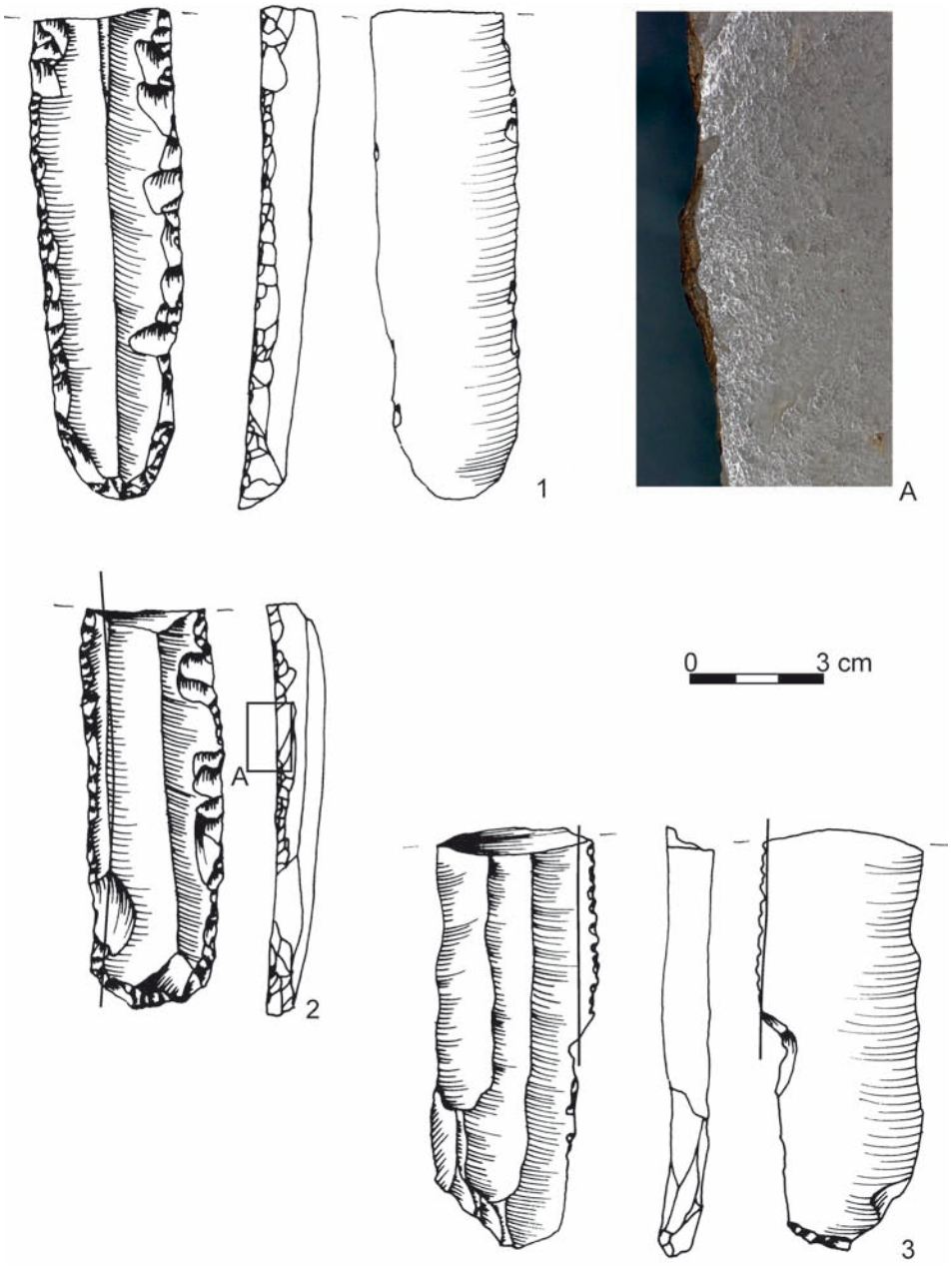

Fig. 11. Jasienica Sufczyńska Site 5. 1-2 – retouched blades 3 – partially retouched blade; A – 'sickle gloss' traces (drawn by J. Mugaj; photo by I. Sobkowiak-Tabaka, taken with the Keyence VHX 6000 digital microscope from the ArcheoMicroLab of the Faculty of Archaeology, Adam Mickiewicz University, Poznań, magnification 100×)

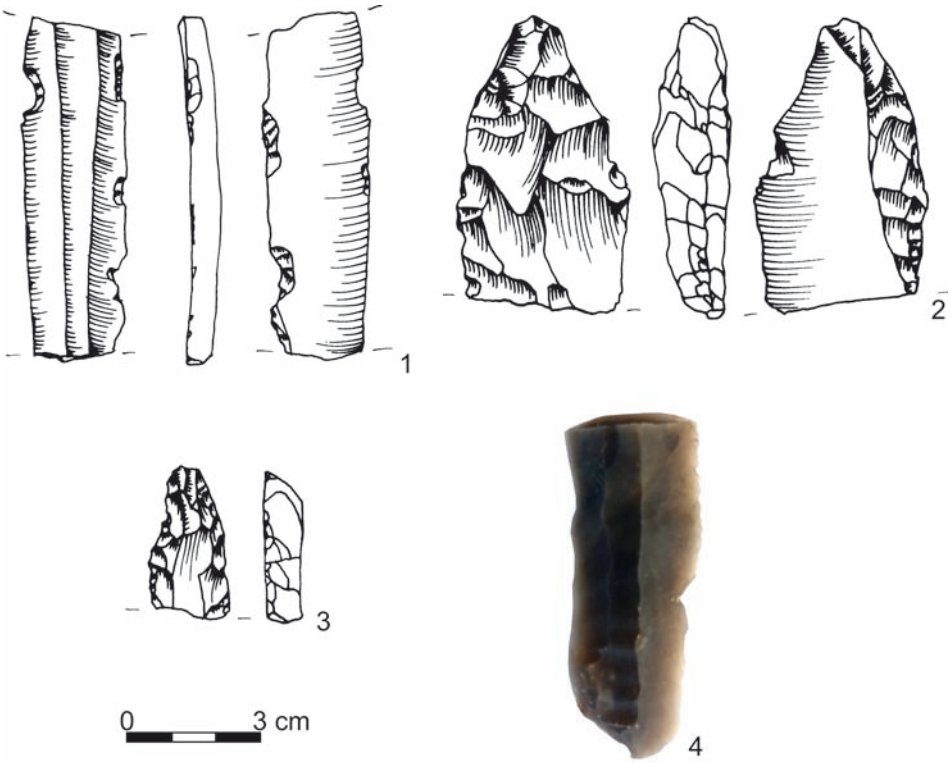

Fig. 12. Jasienica Sufczyńska Site 5. 1, 3, 4 – partially retouched blades, 2 – a fragment of a dagger (drawn by J. Mugaj; photo by I. Sobkowiak-Tabaka)

Partially retouched blades

The first is a proximal fragment of a retouched chip, made of Volhynian flint. Steep retouch is present on the proximal part of the left edge. Minor chipping is visible on both edges, on the bottom side (Fig. 10: 3). The second is also a proximal fragment, made of quartzite (Fig. 12: 3). Retouching is present on a part of the right edge on the top side. A third one is a central fragment of a retouched blade, detached from a single-platform core made of Volhynian flint. The tool has one retouched notch on the left edge on the top side and two, finer ones, on the right edge on the bottom side (Fig. 12: 1).

The last two examples of this category of tools are distal fragments. One of them was made of chocolate flint. Both edges of the blade show small chips, resembling retouch, resulting from intensive use. The 'sickle-gloss' observed on the edges may have resulted from the processing of silica-containing plants (cereals?). The second is a fragment of a retouched blade made of Volhynian flint with a retouched section of the right edge. On the top and bottom side of the right edge, a 'sickle gloss' is visible (Figs 11: 3 and 12: 4).

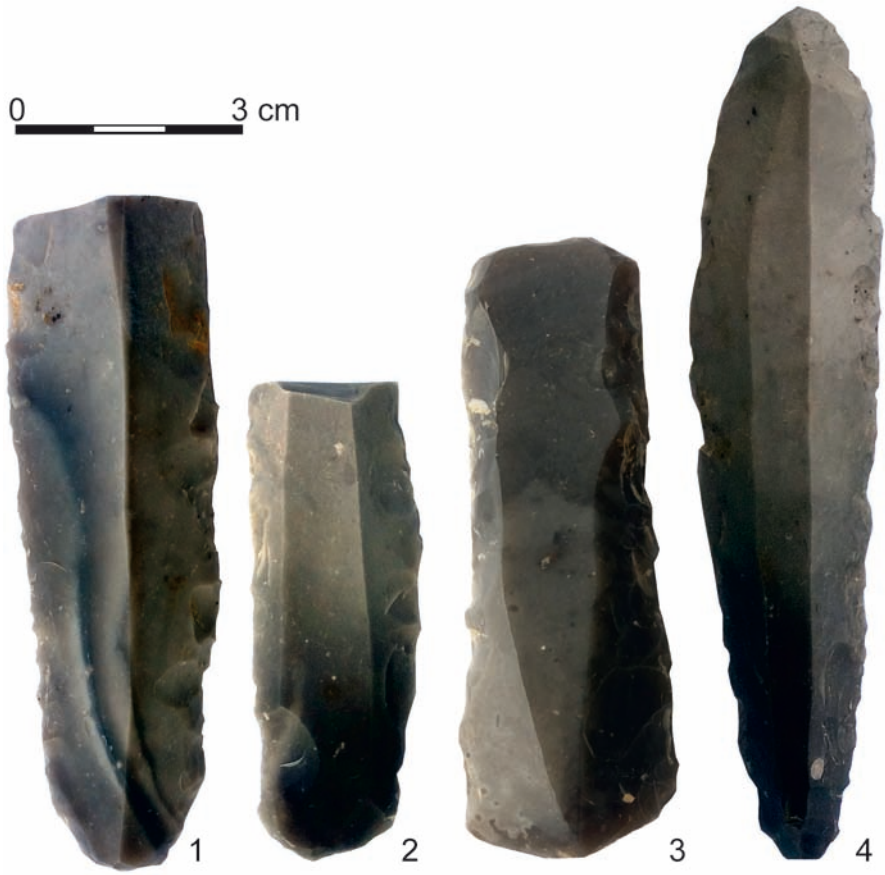

Fig. 13. Jasienica Sufczyńska Site 5. 1-3 – partially retouched blades; 4 – retouched blade (photo by I. Sobkowiak-Tabaka)

Daggers

One fragment of a dagger made of chocolate flint was registered (Fig. 12: 2).

RAW MATERIAL

The vast majority of the artefacts were made of Volhynian flint of the Turonian age, characterised by a dark grey or black colour. A thin white cortex was present on the surface of some of the objects. In the flint mass of some specimens, grey spots or stripes of various sizes could be observed. The nearest outcrops of Volhynian raw material are located in limestone formations in the area of the Bug, Styr, and Ikva rivers, which are

about 200 kilometres from the site (Konoplja 1998; Petrun 2004). However, it is important to mention the possibility of using deposits from the upper Dniester region (Rybicka 2017, 123, 124).

Three artefacts were made from chocolate flint, two more from quartzite, and one from Baltic erratic flint. The chocolate flint was most likely obtained from mines in the Holy Cross Mountains region (Schild 1976). However, outcrops of such raw materials are also known from the Kraków-Częstochowa Upland (Krajcarz *et al.* 2014), while other raw materials were available in the vicinity of the site.

In the case of two artefacts, it was not possible to identify the raw material from which they were made due to their being burned through.

The largest of the specimens made from the Volhynian flint, a retouched blade, reaches a length of about 15 cm. Additionally, several artefacts exceed 10 cm in length. Thus, it appears that the size of the exploited cores could have reached up to 20 cm. In the analyzed collection, several artefacts were covered with cortex and originated from the initial phases of core processing. This suggests that whole lumps of raw material were brought to the site.

KNAPPING TECHNIQUE

During the processing of the flint raw material at the site, the classic method of tool reduction was almost exclusively used. This technique was employed to produce all the analysed artefacts from siliceous rocks. Only one flake from scaled cores originated from field surveys conducted several years earlier (Dobrzyński *et al.* 2014).

The flint production was almost certainly geared toward the extraction of blade blanks. In both the currently analyzed collection and that from earlier studies (Dobrzyński *et al.* 2014), tools made from blades, or fragments thereof, predominate.

The second, quite numerous, group comprises partially retouched blades.

PHYTOLITHS

Phytoliths were successfully retrieved from only one tool (Fig. 11: 3 and 14). Three types of phytoliths were identified: elongate entire (Fig. 14: 1), roundel (Fig. 14: 2), and cruciform (Fig. 14: 3). Elongate entire morphotypes are the most commonly produced phytoliths among terrestrial taxa. However, the taxonomic diagnostic value is very low; nonetheless, these cylindrical cross-sections seem to be associated with fibre cells in, for example, grasses (*Poaceae*). The last two types belong to the so-called grass silica short cell phytoliths (GSSCP), which form in specialised, silica-accumulating short cells in the epidermis of members of the grass family (*Poaceae*) – ICPN 2.0.

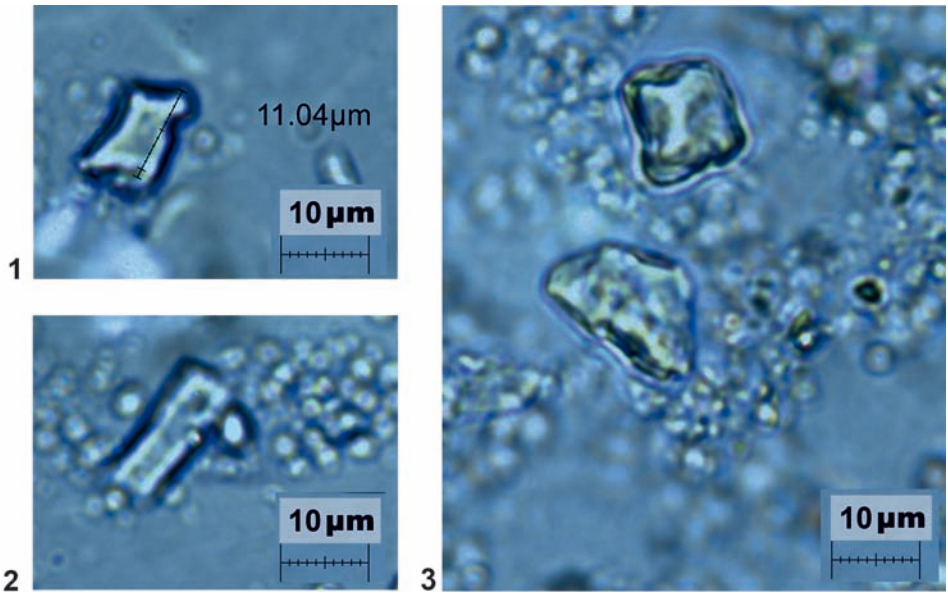

Fig. 14. Jasienica Sufczyńska Site 5. Phytolith morphotypes (acc. to ICPN 2.0) found on the partially retouched blade with 'sickle-gloss'. 1 – elongate, 2 – roundel, 3 – cruciform.
Photo by I. Sobkowiak-Tabaka with confocal microscope (Zeiss Axioplan 2) from the Royal Belgian Institute of Natural Sciences; magnification 400×

DISCUSSION

As mentioned above, the question of FBC colonisation of the Przemyśl Foothills has not been widely discussed due to the limited state of research. The artefacts found during the excavations at Jasienica Sufczyńska Site 5 are practically the only collection that we can consider more suitable for discussing the development of the FBC in this area. A much smaller amount of material was found at the Jabłonica Ruska Site 1 (Sznajdrowska-Pondel 2020), located on the terrace of the San River about 16 km southeast of Jasienica Sufczyńska Site 5. Their research value on this issue is rather limited; therefore, all the more important is what the artefacts from the investigated settlement at Jasienica Sufczyńska Site 5 can reveal.

Taking into account the pottery sherds, it is essential to comment on some facts. The results of the technological analyses generally agree with data from other FBC sites in the Western Carpathian foothills (*i.e.*, Przemyśl Foothills and Dynów Foothills), such as Jabłonica Ruska Site 1 (Sznajdrowska-Pondel 2002), Manasterz Site 7 (Zych 2003), and Tarnawka Site 9 (Zych 2004). They also correlate with observations from the following sites on the neighbouring loess plateau – the Rzeszów Foothills: Pawłosiów Site 52 (Ry-

bicka *et al.* 2014), Mirocin Site 27 (Sznajdrowska 2016), Skołoszów Site 31 (Sieradzka and Głowacz 2017), Skołoszów Site 16 (Król and Niebieszczański 2019), Orły Site 4, and Hnatkowice Site 15 (recent investigations carried out by D. Król's team in 2023-2024). Although there are some variations in the percentage of pure grog or its combination with other tempers, the general technological picture of the FBC vessels in these areas is quite consistent. The presence of relatively small differences is difficult to take as a clear chronological indication and may be due to various reasons, including soil conditions, local preferences, the number of data sets analysed, or perhaps even unavoidable limitations in macroscopic observation of pottery cross-sections.

The above comment is worthy of consideration in light of the materials from the Jasienica Sufczyńska 5 Site. The findings presented regarding the technology of pottery sherds obtained from the excavation are inconsistent with the results of previous analyses of such artefacts found during field surveys. These materials were characterised as eminently 'fatty', with a low frequency of grog in the pottery paste, *i.e.*, 10% (Dobrzyński *et al.* 2014). This remark seems to be essential, as these results of the technological analysis have become one of the key points in the discussion about the placement of the settlement in Jasienica Sufczyńska Site 5 explicitly before 3700/3650 BC on the FBC timeline (Dobrzyński *et al.* 2014; Rybicka 2016). In our view, such technological inferences on chronology are difficult to accept in light of the analyses of newly discovered larger assemblages of pottery sherds.

During excavations at Jasienica Sufczyńska Site 5, several fully oxidised fragments with minimal or no grog temper were recorded. They bear some resemblance to pottery from the areas occupied by the TC populations, but their firing does not appear to be as strong (*cf.*, Matau *et al.* 2013). These eastern features are not unexpected in the FBC sites spread across the Western Carpathian foothills and adjacent areas in the Middle and Lower San River Basin. However, they are usually imitations rather than true imports (*cf.*, Rybicka 2016; 2017), such as at the Gródek Site 1C site in the Hrubieszów Basin (Jastrzębski 1985; Gumiński 1989; Zawiślak 2013). In the nearby area of the Rzeszów Foothills, materials with TC characteristics have been discovered, *e.g.* in Jankowice Site 9 (Dębiec *et al.* 2015), Mirocin Site 27 (Sznajdrowska 2016), Pawłosiów Site 52 (Rybicka *et al.* 2014), Skołoszów Site 16 (Niebieszczański and Król 2019), Skołoszów Site 31 (Rogoziński 2014; Sieradzka and Głowacz 2017), and more recently in Hnatkowice Site 15 (investigations by D. Król's team in 2024). Given the lack of radiocarbon data for assemblages containing such pottery, the question of defining the chronological framework of their occurrence in the study area(s) is a crucial research challenge for the future (*cf.*, Rybicka 2015; Rybicka 2017). At the Pawłosiów Site 52, one of the pottery materials with 'Trypillian' characteristics was found in the context of numerous FBC sherds in Pit 1665 (Rybicka *et al.* 2014, 103). A sample of plant remains was extracted from one of these 'Funnelbeaker' clay artefacts (including cord decoration) and dated to 4780±60 BP (Rybicka *et al.* 2014, 192, Fig. 54), *i.e.*, 3638-3521 BC (1σ) and 3650-3376 BC (2σ). Leaving aside the question of the

duration of the settlement, it can be dated no earlier than about 3650-3400 BC (Rybicka *et al.* 2016; *cf.*, Król 2019; Król *et al.* 2024). This period is within the range of phases II-IIIA (about 3650-3400/3300) when the presence of TC elements is already observed in the areas of the southeastern FBC, mainly in their easternmost parts (Włodarczak 2006). Could FBC settlers have arrived in the Przemyśl Foothills earlier and organised an efficient network of contacts with the eastern neighbours at that time?

The early chronology of the settlement in Jasienica Sufczyńska Site 5 was argued by the presence of modestly ornamented pottery sherds identified during a field survey (Dobrzyński *et al.* 2014; Rybicka 2016; Rybicka *et al.* 2018). Leaving aside the question of the extremely scarce sources on which such conclusions were formulated, it should be underlined the fact of stylistic 'conservatism' recorded at several sites in the area of the so-called Rzeszów-Przemyśl loess, *e.g.*, Skołoszów 31 (Rogoziński 2014; Sieradzka and Głowacz 2017), and Mirocin 27 (Sznajdrowska 2016). These sites together with Jasienica Sufczyńska Site 5, have been interpreted as a manifestation of the colonisation of these territories by FBC populations before 3700/3650 BC, even about 3800-3700 BC (Rogoziński 2014; Rybicka 2016; 2017; 2020; Sznajdrowska 2016; Rybicka *et al.* 2018) corresponding roughly to the oldest FBC horizon in Western Lesser Poland (Nowak 2009, 347; 2017; 2019). In the case of Skołoszów 31, significant stylistic similarities with assemblages of the Podgaj-Przybranówek type (Czerniak and Kośko 1993) and the Gnojno type (Nowak 2004; 2006) have been pointed out, which would justify the relatively early dating of this settlement (Rogoziński 2014; Rybicka 2016; Sieradzka and Głowacz 2017). Such an inference, although highly interesting, does not correlate at all with the radiocarbon datings obtained from Pit 3/2013: 4745±35 BP and 4720±40 BP (Sieradzka and Głowacz 2017, 100, table 5; *cf.*, Król 2019), *i.e.*, 3629-3386 BC (1σ), 3635-3378 (2σ) and 3623-3379 (1σ), 3631-3373 (2σ) respectively. On the other hand, however, older dates came from Pit 41 at the Mirocin 27 Site: 4955±35 BP and 4920±40 BP (Sznajdrowska 2016, 55, figs 35 and 36), *i.e.*, 3768-3655 BC (1σ), 3891-3646 BC (2σ) and 3756-3644 BC (1σ), 3781-3638 BC (2σ) respectively. These slightly disputable dates (Król 2019), therefore, fit into the earlier FBC stage (Sznajdrowska 2016), but the pottery artefacts identified in this settlement are in turn more diverse than those from the Skołoszów Site 31, sharing inconsistent stylistic traits – also more 'classic' (Sznajdrowska 2016; *cf.*, Sieradzka and Głowacz 2017). How should we interpret all this? Looking at the data from the Middle and Lower San River Basin, one of the main questions to ask is whether relatively simple vessel decoration is a valuable chronological marker for local FBC sites at all (Król 2019).

These reflections are naturally relevant to the Jasienica Sufczyńska Site 5 case. During the excavations, a collection of pottery sherds was found that can be described as decoratively sparse. The vessels of this settlement were enriched by the use of almost exclusively simple motifs under the rims and in the upper parts of the necks (Figs 4 and 5). They are, therefore similar at first glance to those 'conservative' decorative schemes known from Skołoszów Site 31 (Rogoziński 2014; Sieradzka and Głowacz 2017), Mirocin Site 27 (Sznaj-

drowska 2016), or Jankowice Site 9 (Dębiec *et al.* 2015) in the nearby area of the Rzeszów Foothills and Kotoryny on the upper Dniester (Hawinskyj *et al.* 2013). However, the morphological analysis of the pottery sherds revealed the presence of funnel beakers with different types of necks, including arch-shaped ones (Fig. 4: 1-3). This fact is interesting if we consider S. Kadrow's opinion that this type of neck is a peculiar feature of the southeastern group of FBC (Kadrow 2009). Such a trait was recognised in the diverse assemblages from the Mirocin Site 27 (Sznajdrowska 2016). On the other hand, it is not present at the Skołoszów Site 31 (Sieradzka and Głowacz 2017), which is taken as an example of the early colonisation of these areas by FBC populations when key features of the southeastern group of this culture (Kadrow 2009) are not yet visible (Rogozinski 2014; Rybicka 2016; 2017; 2020; Rybicka *et al.* 2018). The question of dating the settlement in Jasienica Sufczyńska Site 5 is therefore not so obvious and still leaves room for discussion. It is worth recalling M. Nowak's opinion (2009, 343) that it is an extremely difficult task to use only pottery for typological-chronological considerations in the case of southeastern FBC. Hence, based on the doubts expressed and the lack of valuable radiocarbon datings, it is debatable to place the discussed settlement on the timeline clearly before 3700/3650 BC.

In the broad discussion on the possibility of an earlier FBC colonisation of the Western Carpathian foothills and adjacent territories such as Rzeszów Foothills, the question of the distribution of the flint products is also relevant. In addition to artefacts from previous research (Dobrzyński *et al.* 2014), the collection of flints from the Jasienica Sufczyńska Site 5 site comprises 55 specimens. Despite being surface finds, they hold significant cognitive value. The assemblage's technological and typological structure, as well as the raw material used, exhibit many characteristics typical of the southeastern group within the FBC populations.

The primary raw material utilised at the site was Volhynian flint, which also predominated in flint production at FBC sites like Gródek (Balcer 1983, table 25; Budziszewski 2000; Gumiński 1989, 115) and Kotoryny (Konoplja 2013). It maintained a significant presence in assemblages from 'Funnelbeaker' settlements in southeastern Poland, such as Mirocin Site 27 (Pelisiak 2016), Skołoszów Site 31 (Dobrzyński and Piątkowska 2014a), Pawłosiów Site 52 (Dobrzyński and Piątkowska 2014b), Przybówka Site 1 (Gancarski *et al.* 2008), and Tarnawka Site 9 (Zych 2004). The tools were predominantly crafted from macrolithic blades – retouched blades, partially retouched blades, or end scrapers – reflecting similar patterns found at FBC sites throughout the region. Examples include Drohojów Site 3, Łazy Site 3, Majdan Nowy, Małkowice Site 22, Olszynka Site 10, Orły Site 4, Orzechowce Site 39, Skołoszów Sites 15 and 33, Walawa Site 21, and Zabłotce Site 6 (Balcer 1983; Bronicki and Kadrow 1998; Gumiński 1989; Pelisiak 2017). Many of these tools display traces of heavy use, such as chipping along their edges and 'sickle gloss.'

A significantly high frequency of Volhynian flints at the sites with poorly decorated pottery vessels such as Jasienica Sufczyńska Site 5 or Skołoszów 31 was perceived as evidence of the existence of some kind of distribution chains between west and east already before

3700/3650 BC (Rybicka 2016; 2017; 2020; Rybicka *et al.* 2018). There are no grounds to exclude the idea that the Jasienica Sufczyńska Site 5 is indeed an example of the earliest colonisation of the area of the Przemyśl Foothills by representatives of the FBC. However, their appearance in this area may not have been as early as suggested. This problem also well illustrates the issue of the Skołoszów Site 31 in the nearby Rzeszów Foothills, which can hardly be considered very early in light of the dating of the Pit 3/2013 (*cf.*, Król 2019). Although the possible chronological inconsistency of this site, *i.e.* an older cultural layer containing 'conservative' pottery sherds and a later 'classical' pit, has been taken into account, these two parts are impossible to compare statistically (Sieradzka and Głowacz 2017). Firstly, they are represented by extremely quantitatively different collections of pottery artefacts, and secondly, there are no reliable radiocarbon dates for the cultural layer (*cf.*, Król 2019). Another, but no less relevant issue is the fact that the 'radiocarbon-classical' pit contained only Volhynian products, which fits perfectly with the situation observed in the context of the cultural layer (Dobrzyński and Piątkowska 2014a; Sieradzka and Głowacz 2017).

What else can be said regarding the settlement in Jasienica Sufczyńska Site 5, except that it is debatable to date it earlier than 3700/3650 BC? Based on the information obtained during the excavations and previous surface surveys, it is also challenging to formulate a clear opinion about the length of use of this site. Although it is unlikely to be interpreted as a short-lived settlement episode, there is no broader evidence for considering it to be as large and eminently stable as it has sometimes been referred to (*e.g.*, Pelisiak 2018, 77). Currently, there is insufficient information to allow putting this settlement in line with sites such as Pawłosiów Site 52 (Rybicka *et al.* 2014) or Skołoszów Site 16 (Król 2018; Król and Niebieszczański 2019), which are among the largest and most long-lasting FBC settlements of the period in the Middle and Lower San River basin. It is also worth bearing in mind, however, that the area of the Przemyśl Foothills is a sub-mountainous Western Carpathian zone with slightly different geographical conditions than the mild loess area of the Rzeszów Foothills. Hence, it may be questionable to expect identical patterns of settlement to those recognised in the nearby loess plateau (*cf.*, Król 2018). This does not change the fact that the inhabitants of the settlement in Jasienica Sufczyńska Site 5, regardless of its size and chronology, were economically active in the local territory and maintained wider contacts with the easternmost 'world' of the FBC and indirectly with TC, which is well demonstrated by the set of analysed artefacts.

CONCLUSIONS

Jasienica Sufczyńska Site 5 is certainly an intriguing Eneolithic settlement seen in the context of the remarkably little-known area of the Przemyśl Foothills in the Western Carpathians. As we believe, there is rather no reliable evidence to date it earlier than 3700/3650 BC and/or to interpret it as similar to the largest sites investigated in the loess Rzeszów Foot-

hills. This site requires further research, focusing not only on spatial-chronological questions but also on economic ones. Archaeobotanical, archaeozoological, and further phytolith analyses would also be desirable. Despite the wide application of phytoliths analyses internationally (*e.g.,* Hardy 2009; Hardy *et al.* 2001*),* such kind of methods have seen relatively limited use in Poland, with a single example of phytolith analyses conducted on tools from the Polwica-Skrzypnik site and for indicating the presence of phytoliths at *Poaceae*, *Cyperaceae*, and Panicoideae (Kufel-Diakowska *et al.* 2019). Even though the results of the analysis conducted on materials from Jasienica Sufczyńska Site 5 are more modest, as they included residues from the broad group of *Poaceae*, encompassing both grasses and cereals, it is worth applying such analyses to establish more comprehensive data records for Polish materials. Finally, it is also worth noting that several more important 'Funnelbeaker' sites in this part of the Western Carpathian foothills have yielded equally puzzling materials during field investigations such as, for example, Hołuczków Site 15, Olszany Site 5, and 7, Śliwnica Site 13, and Załazek Site 9 (*e.g.*, Poradyło 2003; Parczewski – unpublished research). The latter two may be productive for research due to the relatively large pool of artefacts identified on their surfaces – mainly pottery sherds but also Volhynian flint items. It would be interesting to compare these materials with those identified in Jasienica Sufczyńska Site 5 and to conduct some preliminary research on these sites.

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