ANGVSTIA 28, 2024

ANGVSTIA
28

Revista
Muzeului Național al Carpaților Răsăriteni

Editura ANGVSTIA
Sf. Gheorghe
2024

Orice corespondenţă se va trimite pe adresa:
Please send any mail to the following address:

MUZEUL NAŢIONAL AL CARPAŢILOR RĂSĂRITENI
Sfântu Gheorghe, Str. Gábor Áron nr. 16
520008, jud. Covasna
Telefon/fax: +40 267 314139

e-mail: secretariat@mncr.ro
web: angvstia.mncr.ro

ISSN 2602 – 0653

ISSN-L 1454 – 8275

Cuprins – Table of Contents

STUDII ŞI CERCETĂRI DE ARHEOLOGIE *(Archaeological studies and researches)*

Valerii KAVRUK, Dan-Lucian BUZEA, PUSKAS József, Dan ŞTEFAN, Maria-Magdalena ŞTEFAN, Radu ZĂGREANU, Raport de cercetare arheologică preventivă în situl arheologic Băile Figa, oraș Beclean, județul Bistrița-Năsăud *(Report on rescue archaeological researches in the archaeological site of Băile Figa, Beclean city, Bistrița-Năsăud county)* 9

József PUSKÁS, Dan-Lucian BUZEA, Florentina MĂRCUȚI, Marius-Mihai CIUTĂ, Iuliana-Elisabeta BARTOK, Cercetările arheologice efectuate în anul 2024 în situl de la Sfântu Gheorghe–Hosszú, județul Covasna. Raport preliminar *(Archaeological research made in 2024 at the Sfântu Gheorghe–Hosszú site, Covasna County. Preliminary report)* 55

Corneliu BELDIMAN, József PUSKÁS, Dan-Lucian BUZEA, Bow and arrow use in the bronze age of the Eastern Transylvania, Romania. A recent discovery from Sântimbru, Harghita county *(Utilizarea arcului și a săgeții în epoca bronzului în estul Transilvaniei, România. O descoperire recentă de la Sântimbru, județul Harghita)* 95

Zsolt VISY, The archaeological excavation in the castellum of Inlăceni/Énlaka in 2024 *(Cercetări arheologice din castrul roman de la Énlaka/Inlăceni în 2024)* 119

STUDII DE ETNOGRAFIE, ISTORIE ŞI MUZEOLOGIE *(Studies in Ethnography, History and Museology)*

Florentina TEACĂ, Oieri covăsneni. Ipostaze fotografice, publicistice, literare *(Shepherds from Covasna. Photographic, publicistic and literary aspects)* 131

Cosmina-Marcela OLTEAN, Patrimoniu imobil periclitat. Case tradiționale din nordul județului Harghita *(Endangered immovable heritage. Traditional houses from the north of Harghita county)* 155

Florina BĂNICĂ, Țesăturile de interior în colecția Muzeului Național al Carpaților Răsăriteni *(The interior fabrics in the collection of the National Museum of the Eastern Carpathians)* 165

Lucian DAVID, Ionuţ SEMUC, Aspecte privind alimentaţia ciobanilor loviștеni *(Some Dietary Customs of the Shepherds from Țara Loviștei)* 179

Florin HERȚEG, Portret de dascăl din a doua jumătate a secolul al XIX-lea: Ioan Bozoceanu (1846-1897) *(Portrait of a teacher from the second half of the 19th century: Ioan Bozoceanu, 1846-1897)* 193

Ovidiu-Constantin SAVU, Gabriela BULARCA, Livia DOBRESCU, Educație muzeală incluzivă și sprijin social *(Inclusive museum education and social support)* 209

Ioan OPRIȘ, Priorități românești în muzeografia asimetriilor contemporane *(Romanian priorities in the museography of contemporary asymmetries)* 217

CRONICA ACTIVITĂȚILOR MUZEULUI *(Activity report of the museum)*

Cosmina-Marcela OLTEAN, Cronica activității Muzeului Național al Carpaților Răsăriteni pentru anul 2023 *(The National Museum of Eastern Carpathians Activity Report on 2023)* 225

DOI: 10.36935/ang.v28.3 *ANGVSTIA 28, 2024, pag. 95–118*

Bow and arrow use in the bronze age of the Eastern Transylvania, Romania. A recent discovery from Sântimbru, Harghita county

Utilizarea arcului și a săgeții în epoca bronzului în estul Transilvaniei, România. O descoperire recentă de la Sântimbru, județul Harghita

Corneliu BELDIMAN[1]
PUSKAS József[2]
Dan-Lucian BUZEA[3]

Keywords: *arrowhead, bone, bow, Harghita County, prehistoric technology, Sântimbru, use-wear analysis, Wietenberg Culture*
Cuvinte cheie: arc, armătură, Harghita (județul), os, paleotehnologie, Sântimbru, traseologie, vârf de săgeată, cultura Wietenberg

REZUMAT

Utilizarea arcului și a săgeții în epoca bronzului în estul Transilvaniei, România. O descoperire recentă de la Sântimbru, județul Harghita. Lucrarea de față oferă date privind descoperirea, în urma unor cercetări arheologice sistematice, a unui vârf de săgeată din os, conservat în condiții excepționale, datând din epoca bronzului, perioada mijlocie – cultura Wietenberg. Artefactul provine din inventarul unei gropi (Cx 18) și este o piesă rar semnalată în aria culturii mai sus menționate. Importanța majoră a analizei noastre este legată de prezența acestui tip relativ rar de vârf de săgeată într-o zonă (estul Transilvaniei) cu așezări din epoca bronzului care abia acum devine mai bine cunoscută. Artefactul a făcut obiectul unei analize tehnologice exhaustive, recurgând la microscopia optică, utilizând identificarea datelor paleotehnologice, inclusiv analiza uzurii (materie primă, fabricare, utilizare-reutilizare), însoțită de o ilustrație care surprinde în detaliu toate aspectele discutate; întregul demers a urmărit identificarea etapelor de fabricare, a urmelor de utilizare și formularea ipotezelor legate de prezența sa în inventarul unui complex, generând astfel un set de date utile și oferind un exemplu de abordare care poate fi extins și la alte descoperiri similare.

Introduction

The village of Sântimbru/Csikszentimre belongs to the commune of Sâncrăieni, Harghita County, and it is situated in the Olt valley, in the eastern part of the South Harghita Mountains, 11 km south from Miercurea-Ciuc, on the DJ/CR (County Road) 123 A.

The archaeological site located at the place named *Dealul Mic/Kis-hegy* was reported in 1967 after surface research (Pál János, Kovács Demeter), remaining not excavated for over half a century. In the

[1] National Museum of the Eastern Carpathians, Sfântu Gheorghe; cbeldiman58@yahoo.com
[2] National Museum of the Eastern Carpathians, Sfântu Gheorghe; joskal987@yahoo.com
[3] National Museum of the Eastern Carpathians, Sfântu Gheorghe; buzealuci@yahoo.com

2000s, a livestock farm was established on the site.[4]

The interest in this prehistoric settlement was revived in 2010, when it was delimited on an area of 14.5 hectares by the Harghita County Department for Culture (Kosza Antal). A decade later, in 2020, within the HiLands project (Alexandru Popa, Dan-Lucian Buzea)[5] non-invasive prospections were carried out here to detect possible anomalies indicating the existence of structures or settlements dating back to prehistoric times (or later).

An investment extension project launched in 2021 at the livestock farm required preventive archaeological excavations to be carried out by Puskás József and Dan-Lucian Buzea. Two areas were investigated, namely S.1/2021 of 2621 square meters and S.2/2021 of 81 square meters. In S.l, 32 complexes were discovered, and in S.2 5 complexes (various pits), some of them attributed to the Wietenberg and Noua cultures (Figs. 1-3).[6]

Where they exist, the inventory of the complexes is not rich and consists of ceramic fragments, animal bones, small finds such as 14 ceramic tokens, a bone arrowhead, a bone tool and a bronze needle, as well as a (ritual?) deposition of a (sacrificed?) goat, the skeleton being partially preserved. In this respect, the complexes Cx 18 (Wietenberg); Cx 14 (Noua); Cx 25 (Noua); Cx 28 (Noua) are worth noting (Figs. 4-7).[7]

The site in question proves to be a reference for the knowledge of the Middle (Wietenberg culture) and Late (Noua culture) Bronze Age cultures in the Ciuc Depression, as research in the region that targets this period is still rare (Figs. 8-12).[8]

In this article we propose to analyse in detail the bone point discovered in Cx 18. It was signalled and made available to the first author by Dan-Lucian Buzea. The rarity of such (published) artifacts in the Wietenberg culture, and even more so of those recovered under controlled conditions, should be emphasized, which increases the interest in a detailed approach. A report on the piece was made by the authors of the discovery[9], and a paper on the subject was presented at the XIXth Scientific Session of the National Museum of the Eastern Carpathians, Sfântu Gheorghe, December 14-15, 2022.10 The Romanian version of the article was recently published.[11]

Arrowhead analysis

Name. Owner. Context. Arrowhead of bone. Owner – Place of preservation: National Museum of Eastern Carpathians, Sfântu Gheorghe, Covasna County, inv. no. 24707. Cx 18 -70 cm, discovered on 20.04.2021.[12]

Description of the Cx 18: circular, asymmetric hemispherical pit, slightly irregular on the eastern side, where it was disturbed by animals. It was delineated at about -45 cm from the present level of the treading. The pit was deepened in the yellow sterile. The content consisted of yellowish-brown sandy silt. The archaeological material consisted of a few pottery fragments (Fig. 13), animal bones and a bone arrowhead, preserved intact. Dimensions: diameter 190 x 200 cm: depth 40 cm. The relationship between Cx 17 and Cx 18 could not be seen in profile. Cx 19 overlapped Cx 18. Bronze Age culture:

[4] The Romanian version of this paper was published recently – Beldiman, Puskás, Buzea 2022. More figures were added to the present English version.
[5] https://hilands.net4u.ro/.
[6] Puskás, Buzea 2021, 23-25; Buzea 2021.
[7] Buzea 2021; Puskás, Buzea 2021, 25-29, 37, pl. 3; 39, pl. 5; Kelemen 2021; Kelemen 2021.
[8] Puskás, Buzea 2021, 28-29.
[9] Puskás, Buzea 2021, 26.
[10] Beldiman *et alii* 2022.
[11] *Supra*, note 4.
[12] For all aspects discussed below see details and bibliography in Beldiman 2002b; Dietrich, 2013; Beldiman *et alii* 2021.

Wietenberg culture (Figs. 8-12).[13]

Type, raw material, state of preservation. The artifact was recuperated from the content of the pit without observed microstratigraphic connexions; the object is in a very good state of preservation, being entire and with surfaces unaffected by corrosion or mineral deposits.

The description uses morphological references as: upper side, lower side, distal end (ED), distal part (PD), mesial part (PM), proximal part (PP), proximal end (EP), left side (margin), right side (margin) (Fig. 15).

The piece is a bone point slightly curved axially to the right (viewed from the upper face, with the distal end oriented upwards), respecting the anatomical morphology of the raw material, which is a bone fragment (from a long bone, nasal bone, rib) of a large herbivore, cow or horse. It has a long, slender silhouette; the distal (active) part is pyramidal with slightly convex convergent margins (Figs. 14-15).

The raw material is difficult to specify (long bone fragment, rib fragment, nasal bone? – all from a large herbivore, cow or horse), given that the piece has been completely shaped, and the anatomical details have been almost entirely removed. It exhibits marked mechanical properties of hardness and elasticity, optimal for a light projectile point, and the bone fragment meets these mechanical parameters. On the proximal part on the lower side, small sectors of the anatomical surfaces are preserved and microscopically observed with discontinuous preservation of the spongiosa tissue alveoli, modified/flattened by shaping.

Examination of the surfaces was performed under low power optical microscopy (x5 – x80) (Figs. 16-18).

The sides (upper side, lower side and the lateral sides) are conventionally defined for needs of precise description – the peduncle (medial and proximal part with proximal end) and the tip (distal part with distal end); the medial and proximal parts have been conventionally defined by dividing the length of the respective segment equally (Fig. 15).

The upper side has a flat or slightly convex proximal part, shaped by abrasion, and the lower side has two planes oriented axially/longitudinally, one of which is convex, broad towards the left edge, and the other concave, broad towards the right edge, partially preserving the anatomical surface and being shaped by abrasion towards the proximal end.

The distal end is faceted, rectangular in cross-section, with short steep convex margins, the body (medial and proximal part) with rectangular cross-sections and slightly convex divergent margins (Figs. 14, 18).

The distal part is elongated pyramidal (with a rectangular base), and is delimited from the medial part by cross-cutting. The distal end has a facetted shape obtained by fine abrasion, the traces of which differ from those of abrasion on a coarse backing applied to the rest of the distal part; this detail, together with the short converging steep short edges, indicates reworking (re-sharpening) of the distal end after fracturing, probably during use. The underside preserves small sections of the distal and medial-proximal parts with anatomical surfaces unaltered by shaping (Figs. 14, 17).

The proximal end is obliquely sheared by cutting abrasion on both sides. It has on both sides oblique, asymmetric rectangular oblique planes of different lengths, obtained by abrasion, a morphological/technical detail made to facilitate the fit in the shaft/arrow shaft (Figs. 14, 16).

Technological aspects. Manufacture

Debitage. The traces of this first processing phase (operation) have not conserved, and the processes applied are de-

[13] Buzea 2021, 42.

duced on the basis of known analogies; the aim of this operation was to extract a long fragment of bone – compact tissue (long bone, nasal bone, rib), asymmetrical, or quasi-rectangular; this technological stage involved the application of several processes combined in two variants:

1. in case of long bone (femur, humerus, tibia, metapodia) or short (nasal) bone – debitage by direct percussion fracture, transverse cutting and axial splitting or for detaching the ends (diaphysis) of the bone and extracting a segment with a length close to that of the finished product (about 85-90 mm);
2. in the case of the rib body – direct percussion applied on the edges to access the spongy tissue, then debitage by direct percussion in order to obtain a rib half-body; transverse cutting at both ends to obtain a rectangular fragment with a length close to that of the finished product (about 85-90 mm); the segment of the extracted rib body could be axially fractured (split) to obtain two or more long and narrow strips, which would allow a faster and precise shaping with less effort to obtain the final product.

Shaping. It was applied by abrasion on a fixed support – sandstone slab in a wet environment with the addition of fine sand or mud. The traces of the operation consist of a series of well-marked, relatively coarse striations arranged obliquely and transversely on the distal, medial and proximal sides, as well as at the extremities.

The shaping was aimed at:

1. modelling the regular morphology of the wand, with rectilinear edges and ends parallel two by two;
2. modelling the pyramidal morphology of the distal part; the sections are rectangular and asymmetrical polygonal with slightly convex margins (Figs 14, 18);
3. shaping the morphology of the junction area at the bottom of the distal part / top of the mesial part by cross-cutting; the aim was to delimit the two main parts of the piece; the base of the distal part has convex margins rounded by cutting (Figs. 14, 17);
4. after this demarcation was made, the shaping of the medial and proximal parts continued, resulting in the creation of four surfaces, two wider (upper/lower sides) and two narrower (lateral sides), the sides being placed in planes distinct from the surfaces of the distal part; the sections are rectangular and asymmetrically polygonal, with slightly convex edges (on the medial side) and rectangular with three slightly convex edges and one concave edge (corresponding to the lower side); the shaping of the proximal end was done on both faces by forming two small abrasion planes that give it a bevelled appearance (Figs. 14, 16);
5. resharpening – fracture of the distal end over an approximate length of 5 mm and resharpening by transverse and oblique axial abrasion on a fine surface, which has produced series of fine, parallel, specific striations, different in morphology from those produced by the application of the initial abrasion. The distal end has a facetted appearance and short steep straight edges, a morphology similar to the reworked active part of the tips used as piercers, perforators, etc., common in the Wietenberg and Noua cultures (Fig. 18).[14]

There is no evidence of heat treatment, which increased the hardness-impact resistance of the artifact.

[14] For the Noua culture artifacts of animal hard (or skeletal) materials from the Zoltan-*Nisipărie* settlement see Beldiman 2002a.

Traces of use. Functional role

The bone point was fixed to the distal end of the wooden rod (arrow body) or to the distal end of a harder cylindrical segment of wood fitted to the distal end of the arrow body (rod). The mounting probably covered almost the entire length of the proximal and mesial part up to near the recessed junction area (at 3-4 mm?); this provided a higher impact resistance of the reinforcement.

The diameter of the rod (body) of the arrow at the distal end probably measured about 6-7 mm, having in this sector a cylindrical or truncated cone-shaped morphology, adapted to the morphology of the proximal part of the point; the length of the axial perforation was about 40-45 mm.

Fixing to the axially perforated or split wooden elements was frequently done with organic mineral hot-applied glue (but not necessarily) and vegetal or animal fibre ligatures (thin leather, tendon threads from herbivores), possibly stiffened by the addition of hot-applied glue. The analysed piece shows no traces of the use of adhesives.

The traces of use are materialized by the fracture of the active part (distal) probably as a result of impact with the hard surface of an accidental target or with the skeletal elements of the target (game). After recovery of the arrow; the point (fixed in the shaft) was re-fitted by resharpening – abrasion. No other traces of use were observed.

The presence of the arrowhead in the Cx 18 complex can be explained hypothetically by the following variants, not excluding other possibilities:

1. the artifact, still in perfect usable condition even today, does not appear to have been accidentally abandoned in the complex: it could easily have been recovered for reuse from a target (hunted) – given both its preservation in optimal conditions after use and the relatively large amount of technical effort consumed in its production; thus, it could have been deposited mounted in a rod (as a projectile shot) as a personalized offering;
2. the projectile was kept fixed in an offering of game meat deposited in the pit (only soft tissues), the point being a personalized offering; extending the range of hypotheses, we can think, in this case, of a ritual to ensure success in the hunt?;
3. the point (without the arrow body – rod) could have remained fixed, deep in a game offering (only soft tissues), deposited in the pit – here the objection can be raised, and rightly so, that the recovery of this precious bone point would not have posed any problems:
4. finally, despite observations made at #1 the arrowhead was simply abandoned in the pit.

Table 1. Sântimbru-Dealul Mic / Csíkszentimre-Kishegy, Harghita County. Bone arrowhead - Dimensions.

Parameters	**Value (mm)**
Initial total length	approx. 84
Preserved total length	79.05
Length of proximal part + middle/mesial part	46.29
Length of mesial part	23.15
Length of proximal part	23.14
Length of mesial part/junction area (under distal part)	2.15
Length of distal part	30.61
Distal part width at 10 mm from distal end	4.06

Discussions. Analogies

Arrowheads made of hard animal materials (deer bone and antler) are present among the Bronze Age finds in Romania, although they have rarely been systematically catalogued and studied according to a unitary methodology; the cited bibliography also offers some analogies – more or less comparable – for the piece we are analysing.[15]

So far, for the Wietenberg cultural environment, we have not found any reports of similar bone or antler arrowheads in the specialized literature consulted. Bone and antler arrowheads are rarely mentioned in works dedicated to the industry of animal hard materials belonging to that culture. We can refer, on this occasion, to the finds from Uioara de Jos, Mureș County[16], Rotbav, Brașov County[17], Hălchiu, Brașov County[18], but there are other reports.[19]

Deer antler arrowheads, on the other hand, are common within the Noua culture (Noua-Sabatinovka-Coslogeni cultural group/complex), with long-stalked pieces with a pyramidal distal part being a well-known cultural marker.[20]

According to Laura Dietrich's classification of arrow weapons for the Bronze Age cultural environment of Eastern Europe (the Noua-Sabatinovka-Coslogeni complex), the piece found at Sântimbru belongs to the type 4A (Fig. 19).[21]

Conclusion

This paper offers details of a discovery made through systematic research, which resulted in the collection of valuable archaeological material from a site that had never been excavated before. In addition, the artifact comes from a complex, which increases its documentary value.

The major importance of this paper is to report the presence of this relatively rare type of arrowhead, in a very good state of preservation, in an area with Bronze Age habitation that is only now beginning to be known in more details; future research may probably contribute to better knowledge of the prehistoric archaeology of eastern Transylvania.

An exhaustive technological analysis of the artifact has been carried out, using the identification of raw material, definition and interpretation of ancient technology data, including use-wear analysis (raw material, manufacture, use-reuse), accompanied by an illustration that captures in detail all the aspects discussed; the whole approach aimed at identifying the stages of manufacture, traces of use and hypothesizing its presence in the inventory of a complex, thus generating a set of useful data and providing an example of an approach that can be extended to other similar finds.[22]

[15] See Chidioșan 1980, 63 (Wietenberg culture); Florescu 1991 (Noua culture); Beldiman 2002a (Zoltan, Covasna County, Noua culture); Beldiman et alii 2012, 104 (Păuleni-Ciuc, Harghita County, Jigodin culture); Dietrich 2013 (Noua culture); recently Beldiman et alii 2021 – all publications with bibliography. For older, relatively recent and recent data on the Wietenberg culture see some papers and books, all with bibliography: Andrițoiu 1992; Andrițoiu, Rustoiu 1992; Bălan 2015; Bălan et alii 2016; Bălan alii 2015; Berecki 2016; Boroffka 1994; Ciugudean et alii 2015; Ciută et alii 2021; Dietrich 2013; Fântâneanu et alii 2017; Palincaș et alii 2019; Puskás 2020; Quinn et alii 2020; Rișcuța 1995; Puskás, Buzea 2021.

[16] Borofika 1994, 224.

[17] Dietrich 2014, 140; artifact dated to Wietenberg phase III/C.

[18] Beldiman et alii 2021; the piece is made of deer antler and has different typological parameters from those of the piece from Sântimbru, in that it is close to the typology of arrowheads specific to the Noua culture, although the association with ceramic material at the point of discovery – where Noua pottery is missing – indicates a probable origin from the Wietenberg cultural environment.

[19] Chidioșan 1980, 63, pl. 39/22, 38; Rișcuța 1995, 54.

[20] Florescu 1991; Beldiman 2002a; Dietrich 2013.

[21] Dietrich 2013, 156, fig. 3.

[22] The composition of the figures, as well as the photographs and diagrams without author's specifications, were made by Corneliu Beldiman.

Bibliografie / *Bibliography*

Andrițoiu I. 1992. *Civilizaţia tracilor din sud-vestul Transilvaniei în epoca bronzului.*, Bibliotheca Thracologica II. București: Institutul Român de Tracologie.

Andrițoiu I., Rustoiu A. 1992. *Sighișoara Wietenberg. Descoperiri preistorice și așezarea dacică.* Institutul Român de Tracologie, Bibliotheca Thracologica XXIII. București: Institutul Român de Tracologie.

Bălan G., Quinn C.P., Hamilton G. 2016. The Wietenberg Culture. Periodization and Chronology. *Dacia*, Nouvélle Série, Institutul de Arheologie „Vasile Pârvan", București 60: 67-92.

Bălan G., Quinn C.P., Hodgins G. 2018. The cultural and chronological context of the Bronze Age cemetery from Sebeș- Între Răstoace. În: R.E. Németh, R. Botond (eds.), *Bronze Age Connectivity in the Carpathian Basin. Proceedings of the International Colloquium from Târgu Mureș 13-15 October 2016*, Mureș County Museum, Târgu-Mureș. Cluj-Napoca: Editura Mega: 183-252.

Bălan G. 2015. Așezarea Wietenberg de la Micești. În: *Terra Sebus. Acta Musei Sabesiensis*, Muzeul Municipal „Ioan Raica" Sebeș 6: 25-86.

Beldiman C. 2002a. Zoltan. Industria materiilor dure animale în așezarea culturii Noua: privire generală. În: I. Oberländer-Târnoveanu, M.-V. Angelescu, C. Borș (ed.), *Cronica Cercetărilor Arheologice din Romania. A XXXVI-a Sesiune Naţională de Rapoarte Arheologice, Buziaș 28 mai – 1 iunie 2002*, București: CIMEC: 345-349.

Beldiman C. 2002b. Vârfuri de săgeţi din materii dure animale în așezarea culturii Noua de la Zoltan, jud. Covasna. *Angvstia*, Arheologie, Muzeul Carpaților Răsăriteni, Sfântu Gheorghe 7: 15-152.

Beldiman C., Gridan S., Beldiman D.-M. 2021. Date noi privind locuirile preistorice în sud-estul Transilvaniei. Un vârf de săgeată din corn de cerb descoperit pe teritoriul com. Hălchiu, jud. Brașov. În: S. Forțiu (ed.), *Arheovest X1 – In Honorem Valeriu Sîrbu. Interdisciplinaritate în Arheologie și Istorie*, Asociaţia ArheoVest, Timișoara, noiembrie 2021, vol. I. Cluj-Napoca: Editura Mega: 261-281.

Beldiman C., Puskás J., Buzea D. L. 2022. Utilizarea arcului și a săgeții în epoca bronzului din Estul Transilvaniei. O descoperire recentă de la Sântimbru, jud. Harghita. În: *Corviniana. Acta Musei Corvinensis*, II (XV), Serie nouă, Consiliul Județean Hunedoara, Muzeul Castelul Corvinilor, Hunedoara 2022: 19-35.

Beldiman C., Valerii Kavruk V., Dan-Lucian Buzea D.L., Puskás J. 2022. Date privind industria preistorică a materiilor dure animale din colecția Muzeului Național al Carpaților Răsăriteni, Sfântu Gheorghe: vârfuri de săgeți, comunicare prezentată la *A XIX-a Sesiune de comunicări științifice a Muzeului Național al Carpaților Răsăriteni,* Sfântu Gheorghe, 14-15 decembrie 2022; https://www.facebook.com/photo/?fbid=579149187553272&set=pcb.579151444219713.

Beldiman C., Sztancs D.-M., Buzea D.-L. 2012. *Animale, tehnologie și artefacte preistorice din materii dure animale descoperite la Păuleni-Ciuc, jud. Harghita. Catalog*, Muzeul Naţional al Carpaţilor Răsăriteni. Sfântu Gheorghe: Editura Angvstia.

Berecki S. 2016. *The Bronze Age site from Luduș*, Bibliotheca Mvsei Marisiensis, Seria Archaeologica, X, Mureș County Museum, Târgu Mureș. Cluj-Napoca: Editura Mega.

Boroffka N.G. 1994. *Die Wietenberg-Kultur: Ein Beitrag zur Erforschung der Bronzezeit in Südosteuropa*, Teil 1-2. Bonn: Rudolph Habelt Verlag.

Buzea D.L. 2021. *Raport de cercetare arheologică preventivă Sântimbru/Csíkszentimre-Dealul Mic/Kis-hegy, județul Harghita* (ms., iulie 2021; arhiva MNCR).

Chidioșan N. 1980. *Contribuții la istoria tracilor din nord-vestul României. Așezarea Wietenberg de la Derșida*. Oradea: Muzeul Țării Crișurilor.

Ciugudean H., Quinn C.P. 2015. The End of the Wietenberg Culture in the Light of New 14 C Dates and its Chronological Relation Towards the Noua Culture. În: R.E. Németh, R. Botond (eds.), *Bronze Age Chronology in the Carpathian Basin. Proceedings of the International Colloquium from Târgu Mureș, 2-4 October 2014*,

Mureș County Museum, Târgu Mureș. Cluj-Napoca: Editura Mega.

Ciută M.M., Quinn C.P., Totoianu R.V. 2021. Radiocarbon Data of Funerary Discoveries from Middle Bronze Age in the Mureș Valley. The Wietenberg Cemetery from Limba-Oarda De Jos (Alba County, Romania). În: *Journal of Ancient History and Archaeology*, Institute of Archaeology and Art History of Romanian Academy Cluj-Napoca, Technical University of Cluj-Napoca 8, 2: 75-83.

Dietrich L. 2014. *Die mittlere und späte Bronzezeit und die ältere Eisenzeit in Südostsiebenbürgen aufgrund der Siedlung von Rotbav*, Universitätforschungen zur Prähistorischen Archäologie, 248, Bonn: Habelt.

Dietrich L. 2013. Projectile weapons of the Late Bronze Age in Eastern Europe. The case of the Noua-Sabatinovka-Coslogeni cultural complex, În: *Satu Mare – Studii și Comunicări, Studii în onoarea lui Tiberiu Bader la 75 de ani*, Muzeul Județean Satu Mare 29/1: 181-197.

Fântâneanu F., Bălan G., Popa S., Tentiș D. 2017. *Necropola din epoca bronzului de la Sebeș*, Bibliotheca Mvsei Apvlensis XXVIII. Brăila-Alba Iulia: Editura Istros a Muzeului Brăilei „Carol I".

Florescu A.C. 1991. *Repertoriul culturii Noua-Coslogeni din România. Așezări și necropole*, Muzeul Dunării de Jos, Institutul de Tracologie, Cultură și Civilizație la Dunărea de Jos, vol. 9, Bibliotheca Thracologica I. Călărași: Muzeul Dunării de Jos.

Kelemen I. 2021. Descoperiri faunistice din epoca bronzului târziu la Sântimbru/Csíkszentimre-*Dealul Mic/Kis-hegy*, jud. Harghita. *Angvstia*, Muzeul Național al Carpaților Răsăriteni, Sfântu Gheorghe 25: 43-58.

Palincaș N., Rotea M., Sava T.B., Sava G.O., Gâza O., Bodea M., David C. 2019. Revisiting the Radiocarbon-Based Chronology of the Wietenberg Culture (Middle Bronze Age Transylvania): A Debate of Supra-Regional Relevance. În: N. Palincaș, C.C. Ponta (eds.), *Bridging Science and Heritage in the Balkans: Studies in archaeometry, cultural heritage restoration and conservation*, Oxford: Archaeopress.

Puskás J., Buzea D.L. 2021. Raport preliminar asupra cercetărilor sitului din epoca bronzului de la Sântimbru/Csíkszentimre-Dealul Mic/Kis-hegy, județul Harghita. *Angvstia*, Muzeul Național al Carpaților Răsăriteni, Sfântu Gheorghe 25: 23-42.

Puskás J. 2020. The Middle Bronze Age Cemetery at Țufalău / Cófalva-Alámenő I (Covasna County, Romania). În: *Marisia. Archaeologia. Historia. Patrimonium*, Muzeul Județean de Istorie, Târgu Mureș 2: 51-66.

Quinn C.P., Ciugudean H., Bălan G., Hodgins G. 2020. Rethinking time, culture, and socioeconomic organization in Bronze Age Transylvania. *Antiquity*, *Department of Archaeology Durham University* 84 (373): 44-61.

Rișcuța N.C. 1995. Obiectele din os și corn în cultura Wietenberg. *Buletinul Cercurilor Științifice Studențești, Arheologie-Istorie*, Universitatea „1 Decembrie 1918", Facultatea de Științe, Alba Iulia 1: 53-60.

Fig. 1 Sântimbru-Dealul Mic / Csíkszentimre-Kishegy, Harghita County. General aerial view of the site (after Buzea 2021)
Fig. 1 *Sântimbru-Dealul Mic / Csíkszentimre*-Kishegy, *jud. Harghita. Vedere generală aeriană a sitului (după Buzea 2021).*

Fig. 2 Sântimbru-Dealul Mic / Csíkszentimre-Kishegy, Harghita County. General view of the site (after Buzea 2021)
Fig. 2 *Sântimbru-Dealul Mic / Csíkszentimre*-Kishegy, *jud. Harghita. Vedere generală a sitului (după Buzea 2021).*

Fig. 3 Sântimbru-Dealul Mic / Csíkszentimre-Kishegy, Harghita County. General view of S.1-2/2021 (after Buzea 2021)
Fig. 3 *Sântimbru-Dealul Mic / Csíkszentimre-*Kishegy, *jud. Harghita. Vedere generală a S.1-2/2021 – vedere aeriană (după Buzea 2021).*

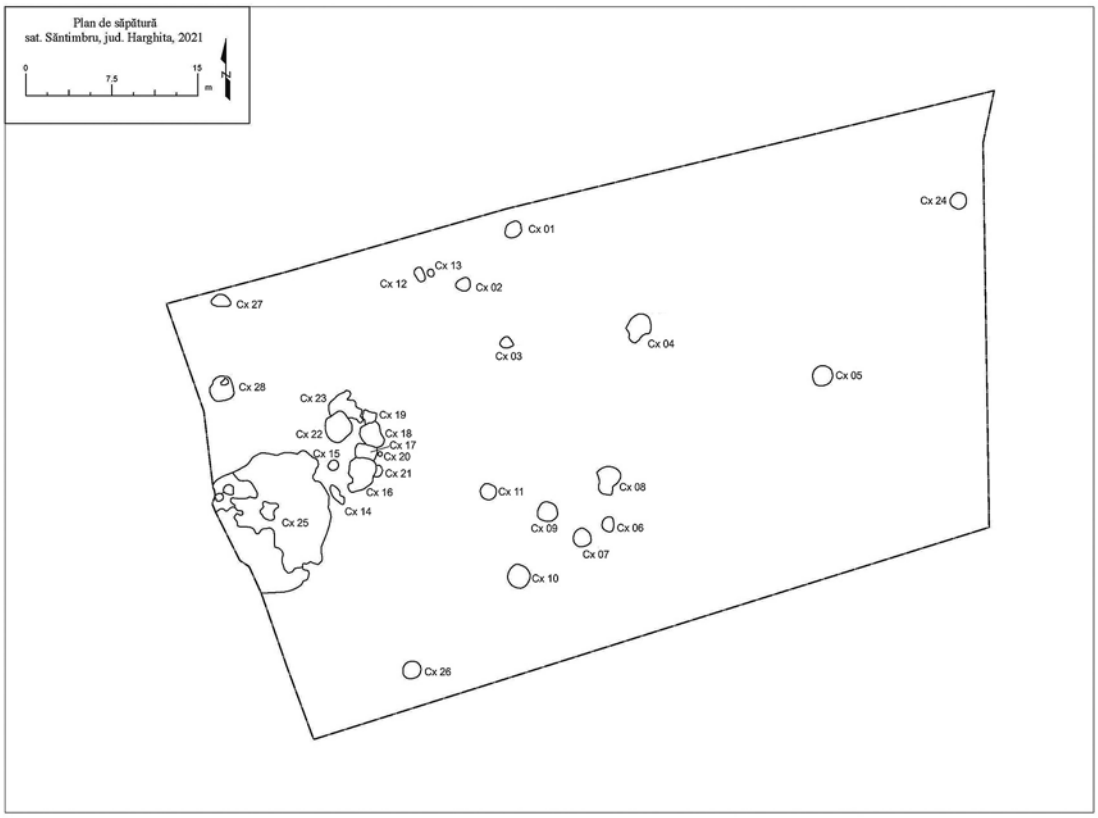

Fig. 4 Sântimbru-Dealul Mic / Csíkszentimre-Kishegy, Harghita County. S.1/2021 - location and plan of the complexes (after Buzea 2021)
Fig. 4 *Sântimbru-Dealul Mic / Csíkszentimre*-Kishegy, *jud. Harghita. Vedere generală a S.1-2/2021 – plan (după Buzea 2021).*

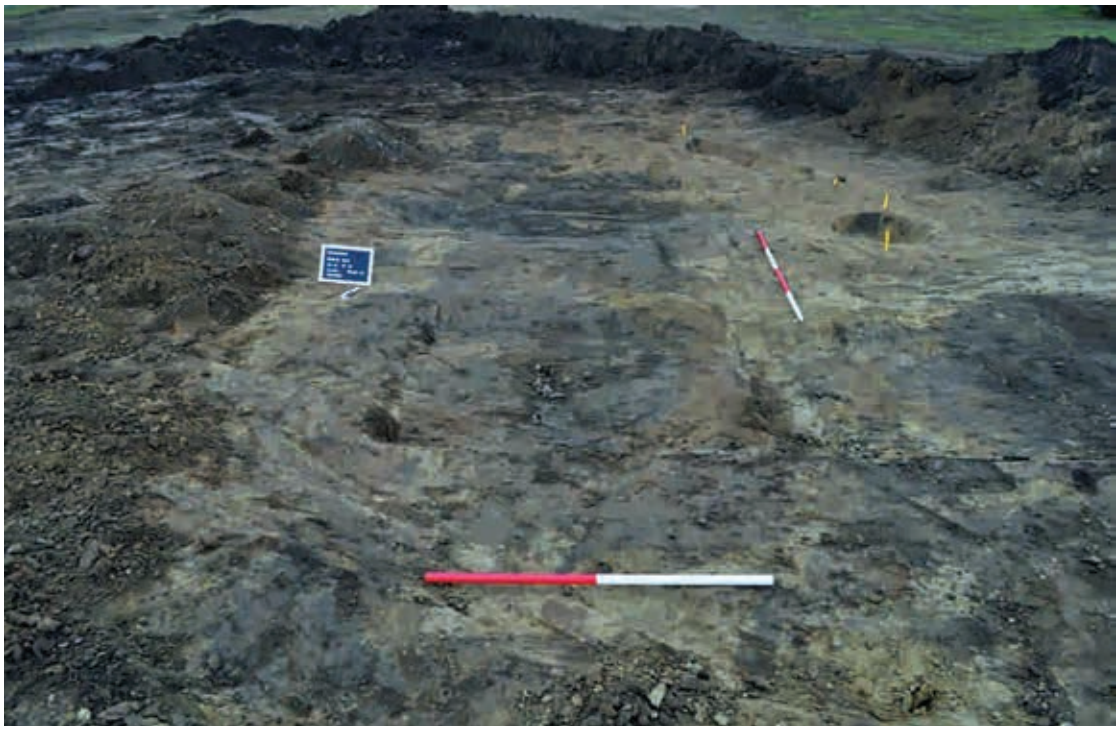

Fig. 5 Sântimbru-Dealul Mic / Csíkszentimre-Kishegy, Harghita County. General view of S.1-2/2021 (after Buzea 2021)
Fig. 5 Sântimbru-Dealul Mic / Csíkszentimre-*Kishegy*, jud. Harghita. Vedere generală a S.1-2/2021 (după Buzea 2021).

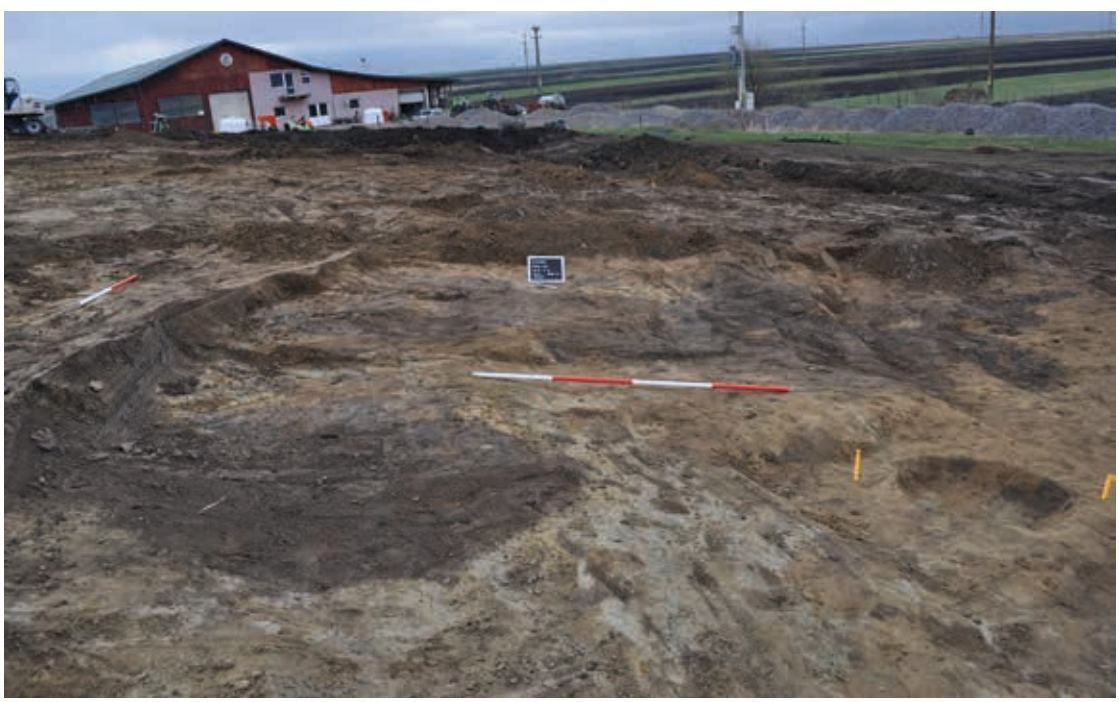

Fig. 6 Sântimbru-Dealul Mic / Csíkszentimre-Kishegy, Harghita County. General view of S.1-2/2021 (after Buzea 2021)
Fig. 6 Sântimbru-Dealul Mic / Csíkszentimre-*Kishegy*, jud. Harghita. Vedere generală a S.1-2/2021 (după Buzea 2021).

Fig. 7 Sântimbru-Dealul Mic / Csíkszentimre-Kishegy, Harghita County. General aerial view of S.1-2/2021 (after Buzea 2021)
Fig. 7 *Sântimbru-Dealul Mic / Csíkszentimre-*Kishegy, *jud. Harghita. Vedere generală aeriană a S.1-2/2021 – complexe (după Buzea 2021).*

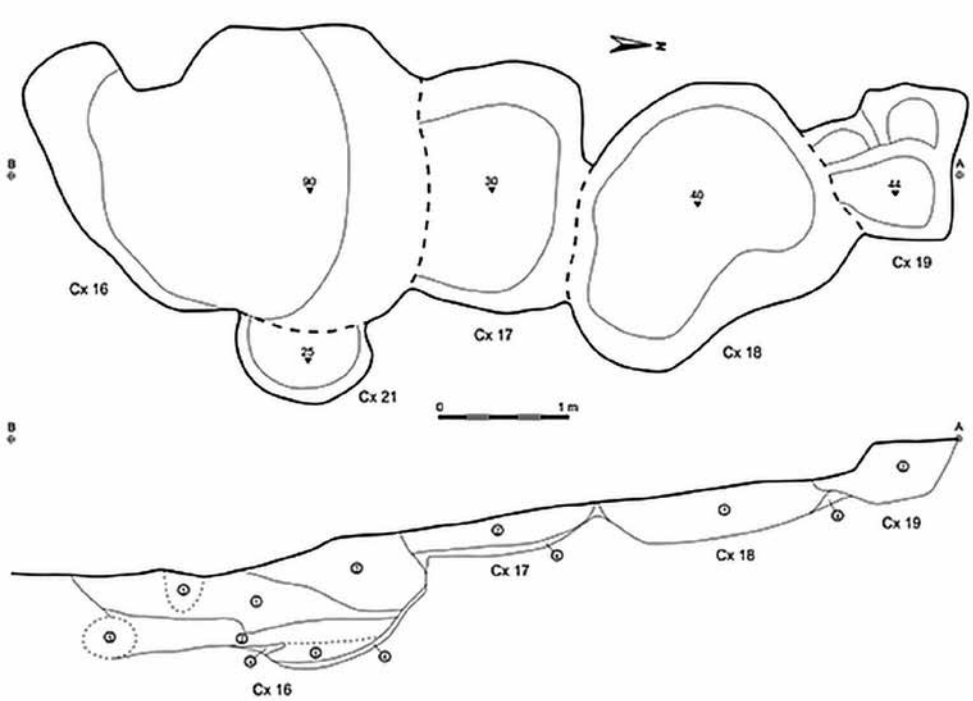

Fig. 8 Sântimbru-Dealul Mic / Csíkszentimre-Kishegy, Harghita County. S.1/2021 - location, plan and profile of Cx 18 (after Buzea 2021)
Fig. 8 *Sântimbru-Dealul Mic / Csíkszentimre-*Kishegy, *jud. Harghita. S.1/2021 – amplasarea, planul și profilul Cx 18 (după Buzea 2021).*

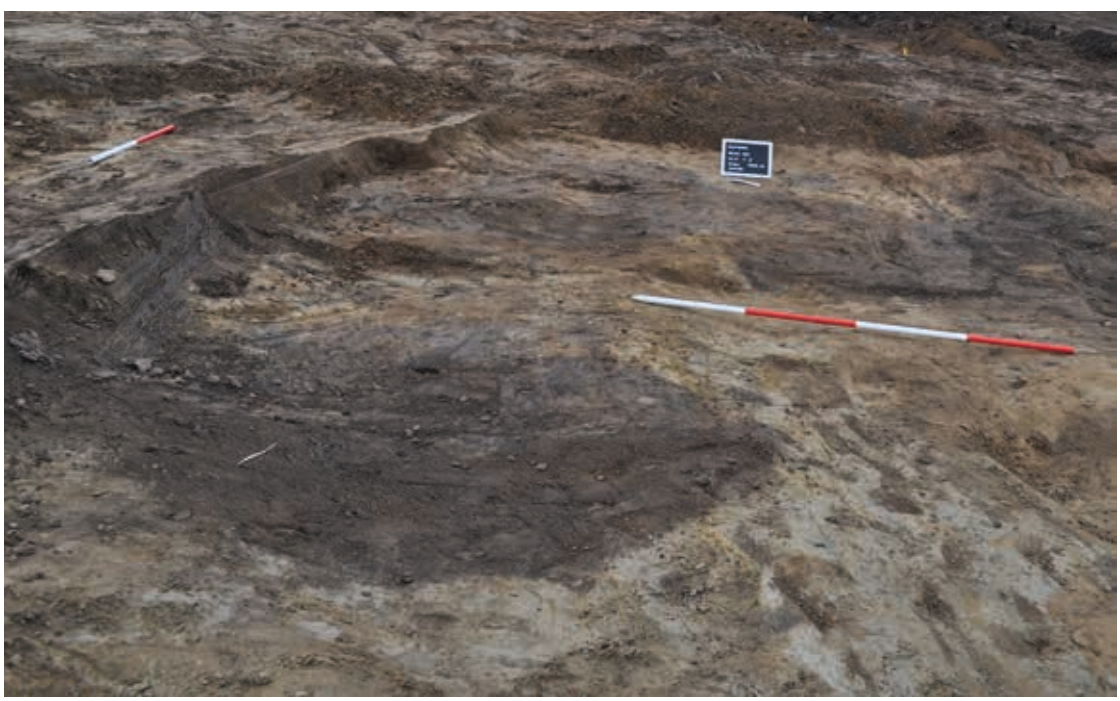

Fig. 9 Sântimbru-Dealul Mic / Csíkszentimre-Kishegy, Harghita County. S.1/2021 - stages of the Cx 18 excavation (after Buzea 2021)
Fig. 9 *Sântimbru-Dealul Mic / Csíkszentimre-*Kishegy, *jud. Harghita. S.1/2021 – etape ale decopertării Cx 18 (după Buzea 2021).*

Fig. 10 Sântimbru-Dealul Mic / Csíkszentimre-Kishegy, Harghita County. S.1/2021 - stages of the Cx 18 excavation (after Buzea 2021)
Fig. 10 *Sântimbru-Dealul Mic / Csíkszentimre-*Kishegy, *jud. Harghita. S.1/2021 – etape ale decopertării Cx 18 (după Buzea 2021).*

Fig. 11 Sântimbru-Dealul Mic / Csíkszentimre-Kishegy, Harghita County. S.1/2021 - stages of the Cx 18 excavation (after Buzea 2021)
Fig. 11 *Sântimbru-Dealul Mic / Csíkszentimre-*Kishegy, *jud. Harghita. S.1/2021 – etape ale decopertării Cx 18 (după Buzea 2021).*

Fig. 12 Sântimbru-Dealul Mic / Csíkszentimre-Kishegy, Harghita County. S.1/2021 - stages of the Cx 18 excavation (after Buzea 2021)
Fig. 12 *Sântimbru-Dealul Mic / Csíkszentimre-*Kishegy, *jud. Harghita. S.1/2021 – etape ale decopertării Cx 18 (după Buzea 2021).*

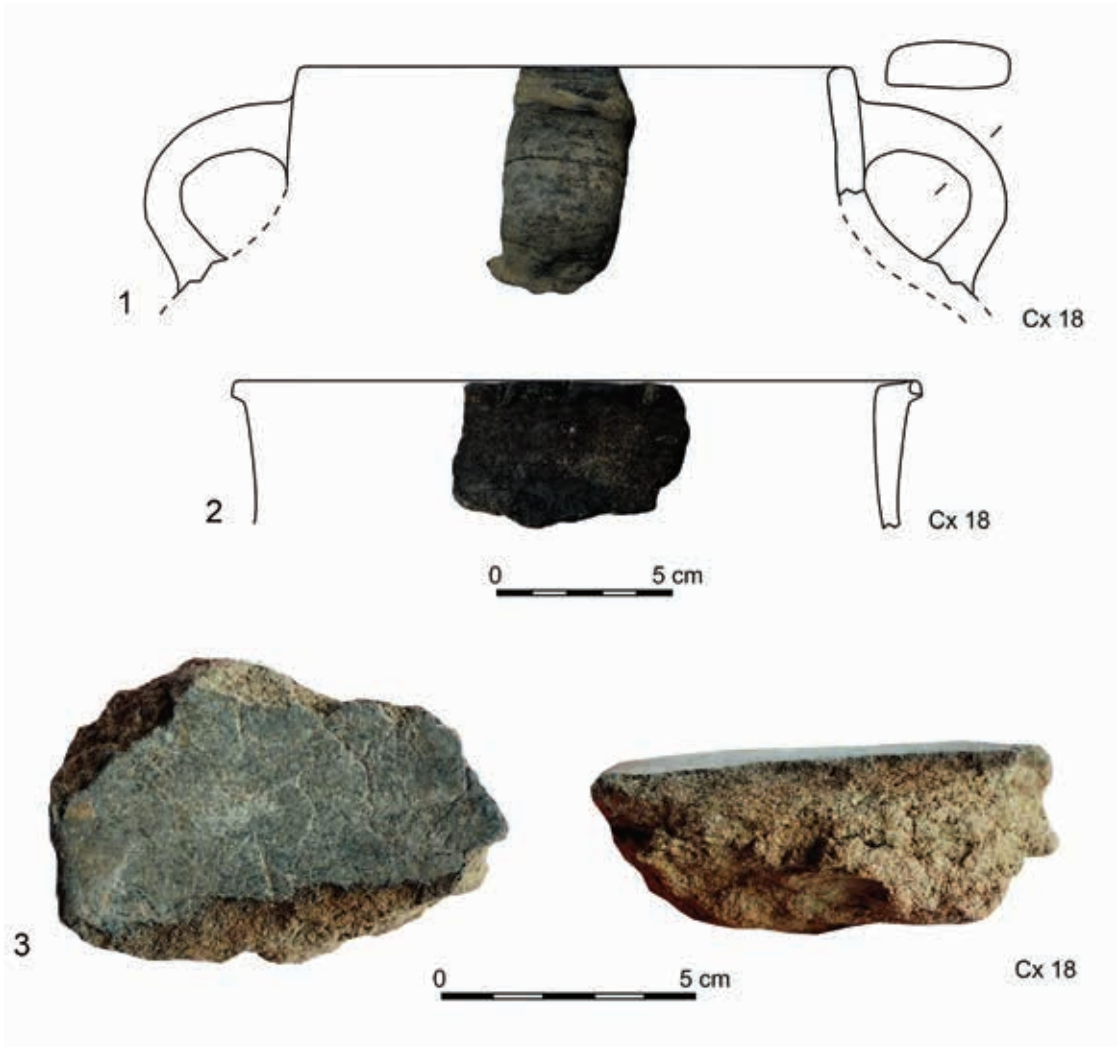

Fig. 13 Sântimbru-Dealul Mic / Csíkszentimre-Kishegy, Harghita County.
1-2 Fragments of ceramic pots discovered in Cx 18. 3 Fragments of clay (hearth) discovered in Cx 18 (after Buzea 2021)
Fig. 13 *Sântimbru-Dealul Mic / Csíkszentimre-*Kishegy, *jud. Harghita.*
Material ceramic din Cx 18: 1-2 fragmente de vase.
3 Fragmente de crustă de vatră (după Buzea 2021).

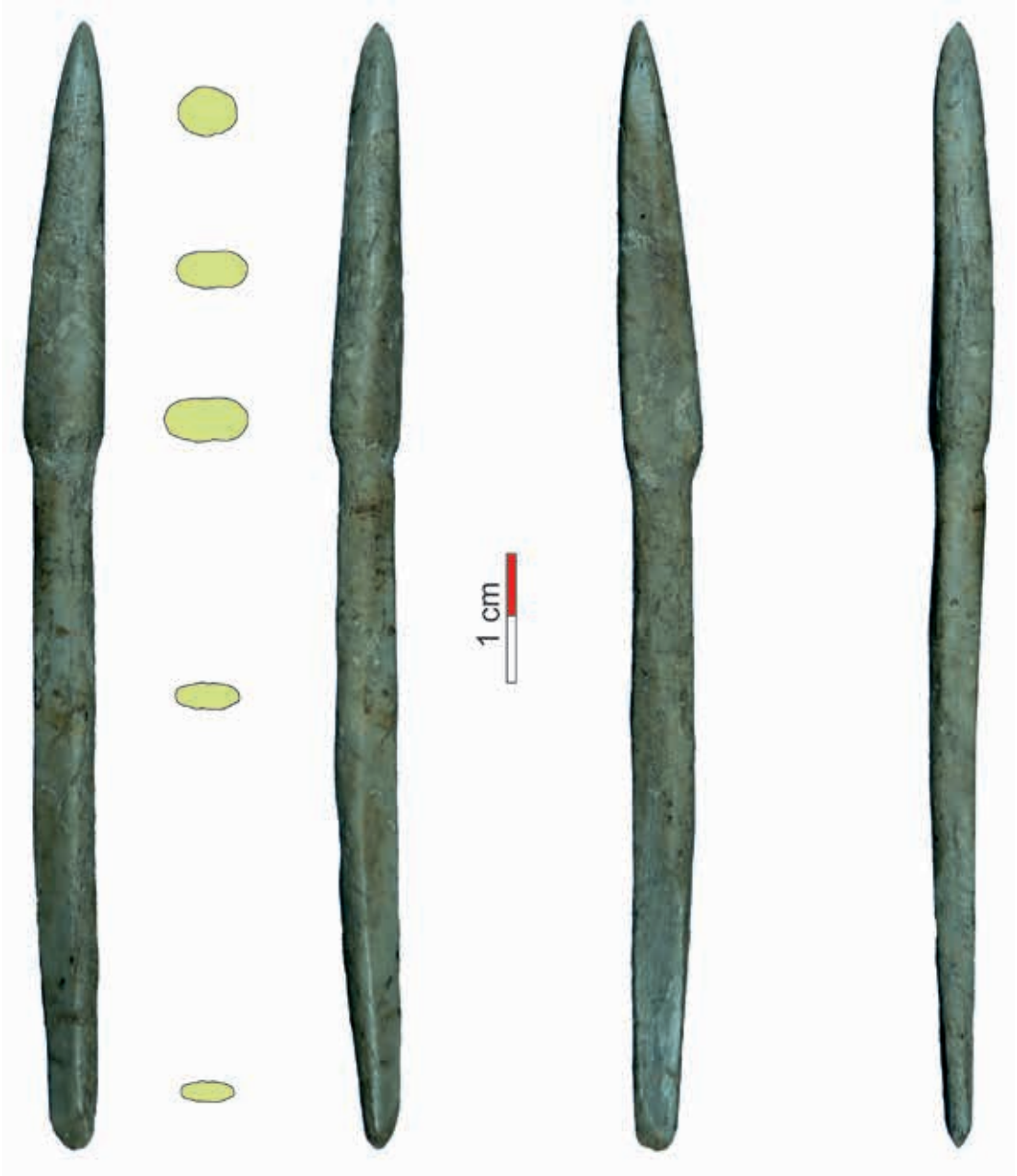

Fig. 14 Sântimbru-Dealul Mic / Csíkszentimre-Kishegy, Harghita County.
Bone arrowhead - general views
Fig. 14 *Sântimbru-Dealul Mic / Csíkszentimre*-Kishegy, *jud. Harghita.*
Vârf de săgeată de os – vederi generale.

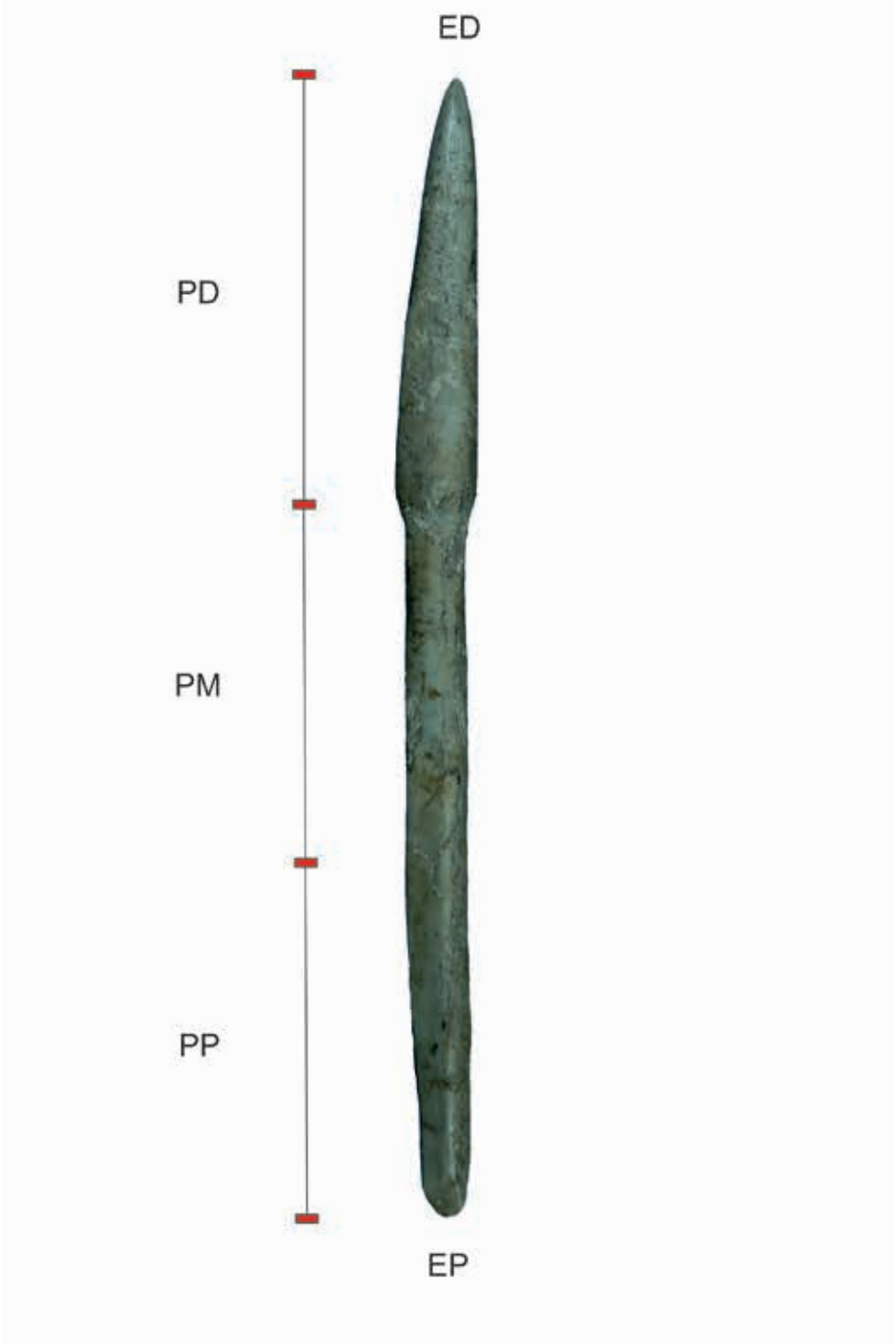

Fig. 15 Sântimbru-Dealul Mic / Csíkszentimre-Kishegy, Harghita County.
Bone arrowhead - conventions of description.
Fig. 15 *Sântimbru-Dealul Mic / Csíkszentimre-*Kishegy, *jud. Harghita.*
Vârf de săgeată de os – convențiile descrierii (fața superioară). Pentru abrevieri vezi în text.

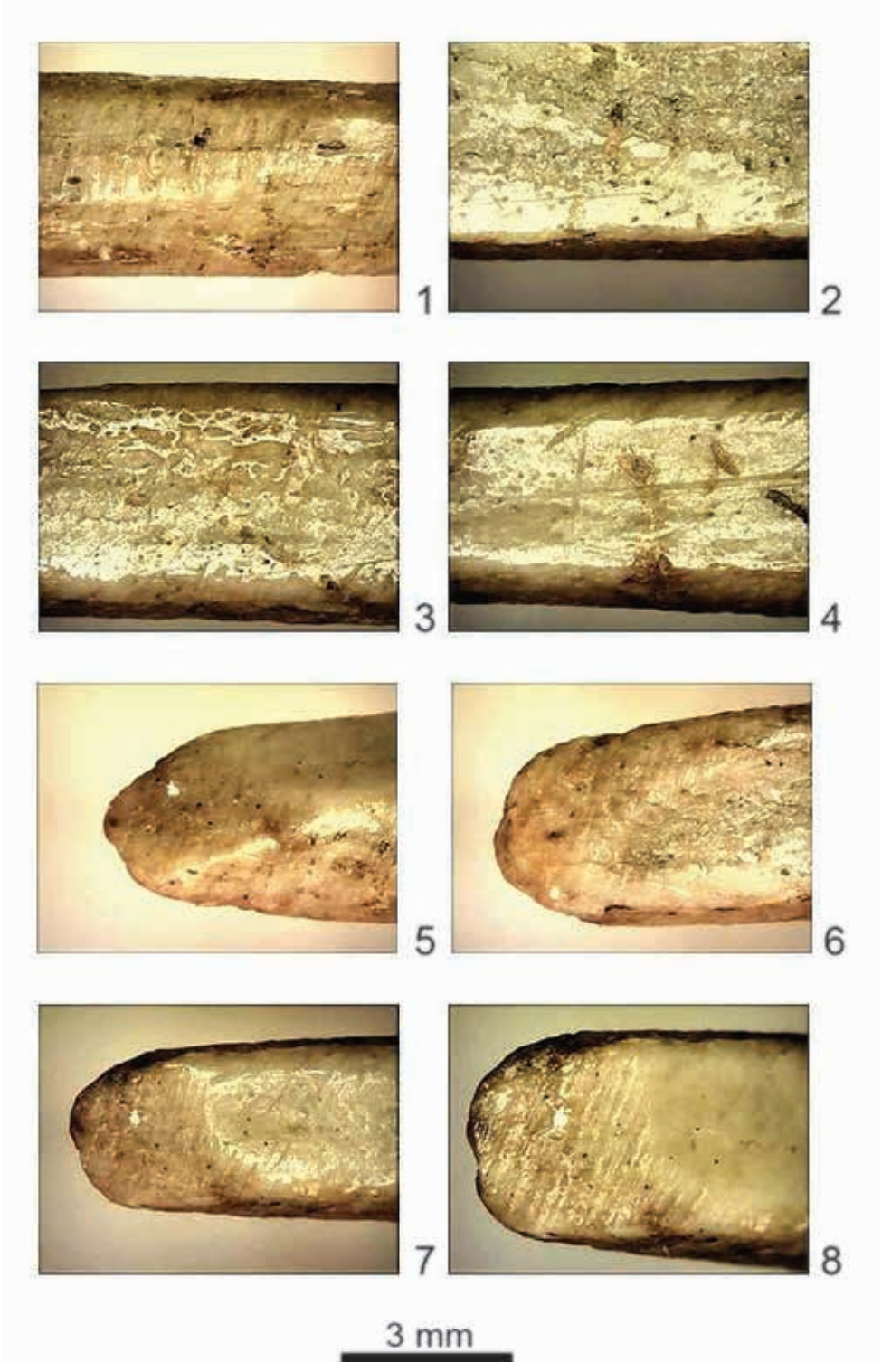

Fig. 16 Sântimbru-Dealul Mic / Csíkszentimre-Kishegy, Harghita County. Bone arrowhead, proximal part and proximal end - microscopic views.
Fig. 16 *Sântimbru-Dealul Mic / Csíkszentimre-*Kishegy, *jud. Harghita. Vârf de săgeată de os, partea proximală și extremitatea proximală – vederi microscopice.*

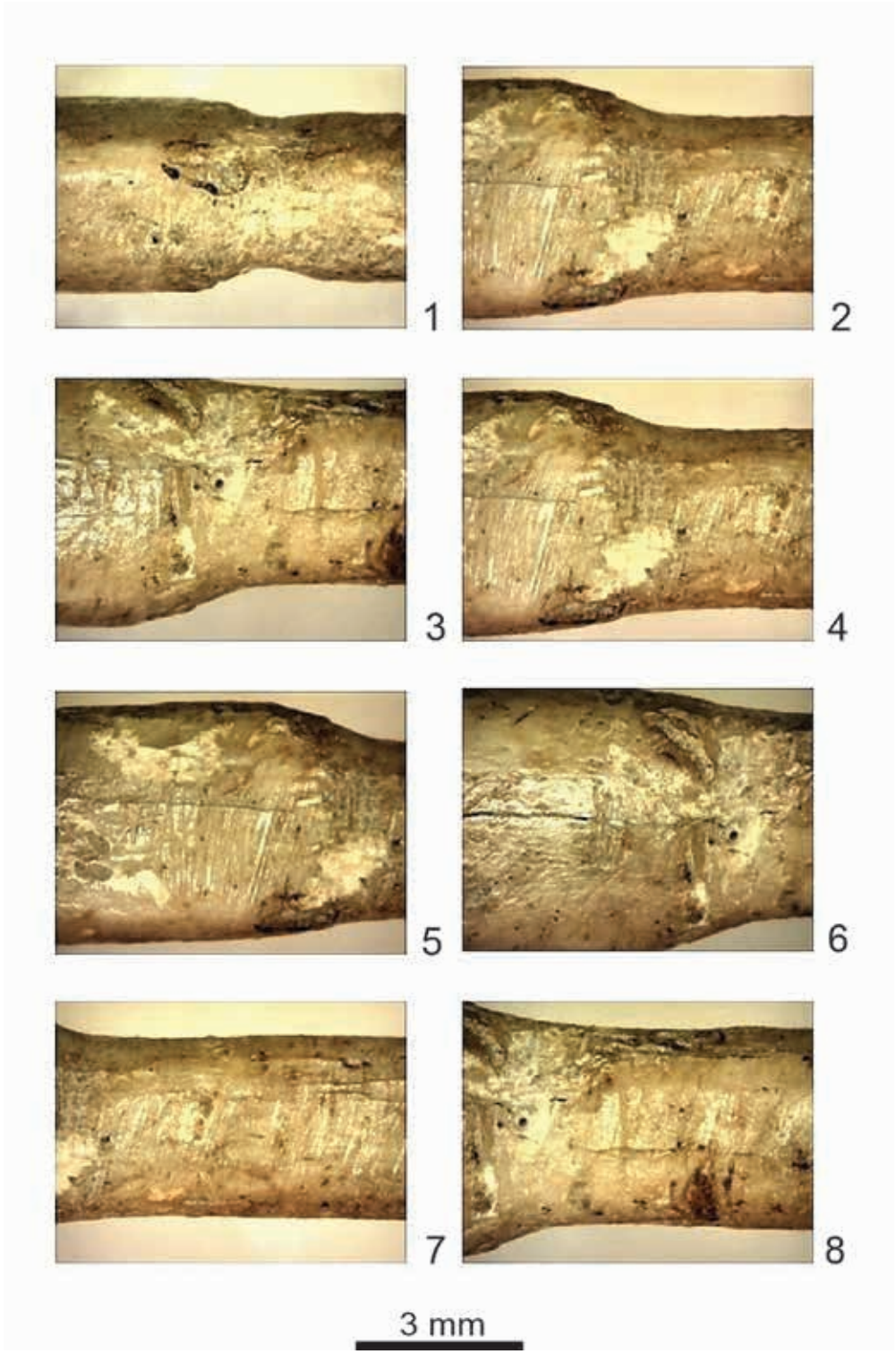

Fig. 17 Sântimbru-Dealul Mic / Csíkszentimre-Kishegy, Harghita County.
Bone arrowhead, mesio-distal part - microscopic views.
Fig. 17 *Sântimbru-Dealul Mic / Csíkszentimre-*Kishegy, *jud. Harghita. Vârf de săgeată de os, partea mezio-distală – vederi microscopice.*

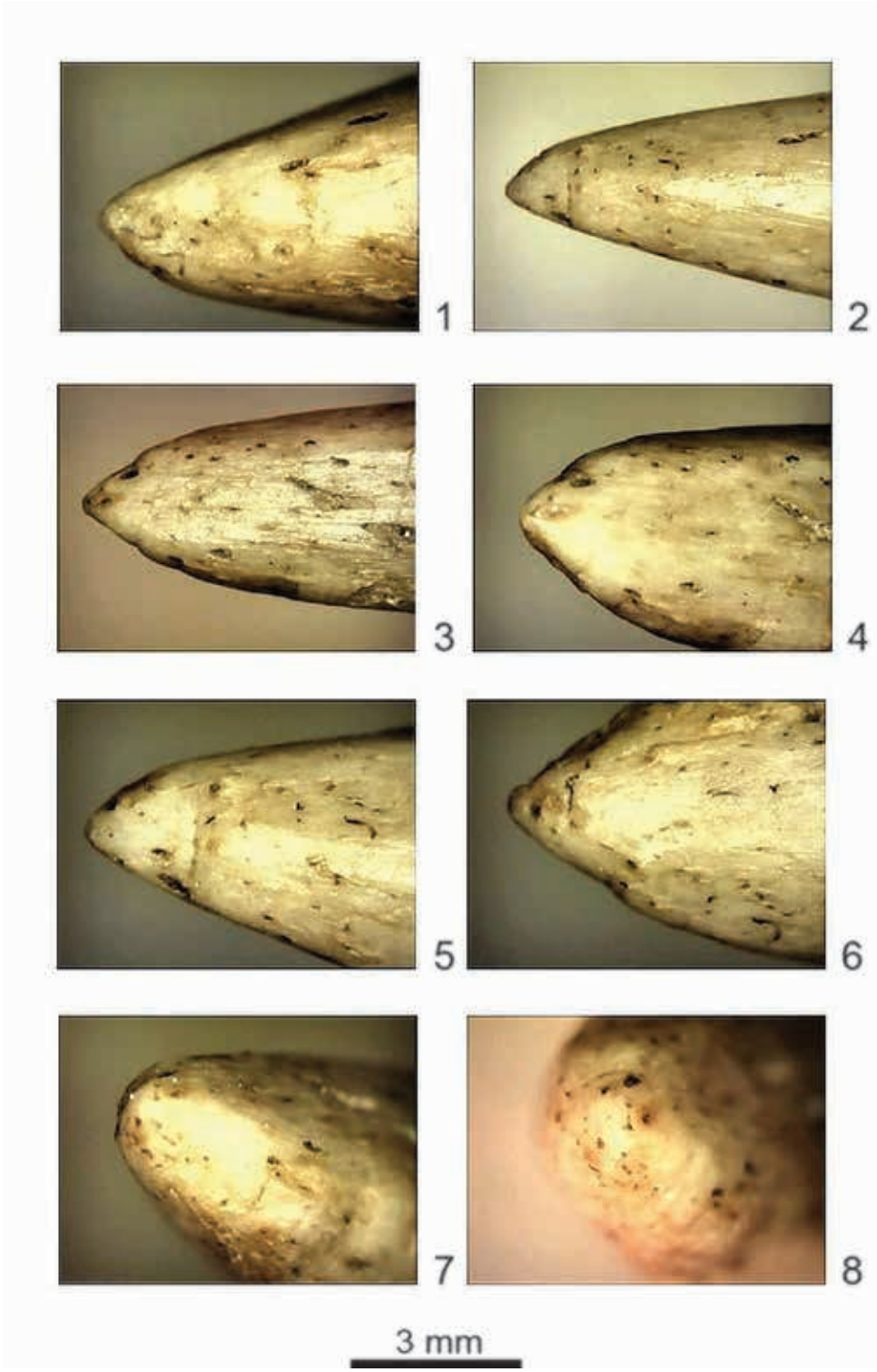

Fig. 18 Sântimbru-Dealul Mic / Csíkszentimre-Kishegy, Harghita County. Bone arrowhead, distal part and distal end - microscopic views
Fig. 18 *Sântimbru-Dealul Mic / Csíkszentimre-*Kishegy, *jud. Harghita.*
Vârf de săgeată de os, partea distală și extremitatea distală – vederi microscopice.

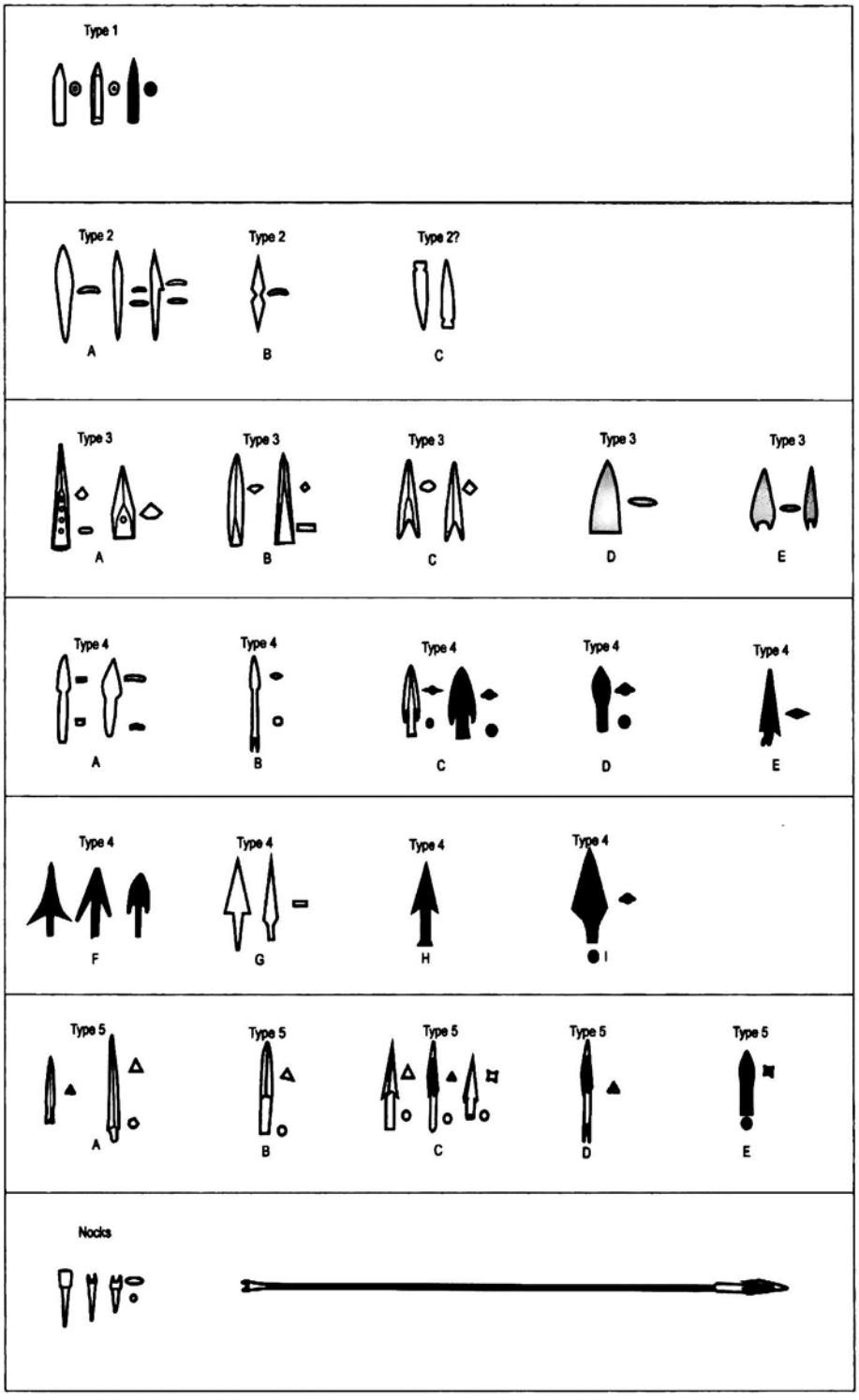

Fig. 19 Typology of arrowheads discovered in the Noua-Sabatinovka-Coslogeni cultural complex (after Dietrich 2013, 186, fig. 3).
Fig. 19 *Tipologia vârfurilor de săgeți din cadrul complexului Noua-Sabatinovka-Coslogeni (după Dietrich 2013, 186, fig. 3).*