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OSSEOUS PROJECTILE POINTS AT THE GUMELNIȚA TELL SETTLEMENT FROM CĂSCIOARELE – OSTROVEL (ROMANIA)

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Keywords: Chalcolithic, tell settlement, projectile points, raw materials, operational scheme

Abstract: The tell settlement from Căscioarele – Ostrovel is located in the south of Romania. Three main cultural levels have been identified (c. 5000–3900 cal BC): the first is chronologically framed within the Boian culture, and the other two are contemporary with the Gumelnița culture. A total of 39 preforms of projectile points and 264 finished pieces made from antler were inventoried, compared to 16 pieces made from bone. I divided these pieces into 10 typological subcategories, the main element of discrimination was the hafting system. These pieces were predominantly found in the Gumelnița B1 level. The analytical criteria for the technological and functional interpretation of the marks were established based on comparisons with publications about projectile points over time from various areas of the world. The analysis indicates the importance of red deer antler (*Cervus elaphus*) as a raw material for their manufacturing, while bone was rarely used. The technological advantages of choosing this raw material are obvious. According to specialists, of all the osseous raw materials, antlers are the hardest and most elastic bones, making them best suited for the manufacture of weapons. In level B1, hunting constitutes the primary activity for food procurement, likely as an adaptation to environmental conditions that created difficulties for domestic animal husbandry. The economic reality is evidenced by the high proportion of wild mammal remains, among which red deer constitutes more than half of the osteological material. It cannot be ignored the cultural constraints either. Ethnographic examples point out that weapons made from certain species might have been used to hunt particular species. Thus, it may be concluded that both determinants (economical and technological) complement each other and define the predominant use of *Cervus elaphus* antler as a raw material by the Chalcolithic communities of Căscioarele (Romania).

Cuvinte-cheie: Calcolitic, tell, vârfuri de armă, materii prime, schemă operațională

Rezumat: Tell-ul de la Căscioarele – Ostrovel este situat în sudul României. Au fost identificate trei niveluri culturale principale (cca. 5000–3900 cal BC): primul este încadrat cronologic în cultura Boian, iar celelalte două sunt contemporane culturii Gumelnița. Au fost inventariate 39 de preforme de vârfuri de proiectil și 264 de piese finite confecționate din coarne de cerb, comparativ cu 16 piese confecționate din os. Am divizat aceste piese în 10 subcategorii tipologice, principalul element de discriminare fiind sistemul de prindere. Aceste piese provin preponderent din nivelul Gumelnița B1. Criteriile analitice pentru interpretarea tehnologică și funcțională a stigmatelor au fost stabilite pe baza comparațiilor cu publicații despre vârfurile de armă utilizate de-a lungul timpului, din diverse zone ale lumii. Analiza indică importanța cornului de cerb (*Cervus elaphus*) ca materie primă pentru confecționarea acestora, în timp ce osul a fost rar utilizat. Avantajele tehnologice ale alegerii acestei materii prime sunt evidente. Conform specialiștilor, dintre toate materiile prime osoase, coarnele sunt cele mai dure, dar și mai elastice, ceea ce le face cele mai potrivite pentru realizarea armelor. În nivelul B1, vânătoarea este principala activitate pentru obținerea hranei, probabil ca o adaptare la condițiile de mediu care au generat dificultăți în creșterea animalelor domestice. Realitatea economică este evidențiată de proporția mare de resturi de mamifere sălbatice, din care cele de cerb constituie mai mult de jumătate din materialul osteologic. Nu pot fi ignorate nici constrângerile culturale. Exemplele etnografice arată că armele confecționate din anumite materii prime ar fi putut fi folosite pentru vânătoarea anumitor specii. Astfel, se poate concluziona că ambele determinante (cea economică și cea tehnologică) se completează și definesc utilizarea predominantă a cornului de *Cervus elaphus*, ca materie primă, de către comunitățile calcolitice de la Căscioarele (România).

INTRODUCTION

The earliest evidence of the use of osseous points by human communities appears to date back significantly in time, to specimens from Katanda in Africa (c. 90,000 BP)¹. In Europe, bone spear points are documented for the first time in association with another human species, the Neanderthals². Beginning with the emergence of *Homo sapiens*, such artifacts appear with increasing frequency all over the world, leading to an exceptional diversification in shapes and raw materials, including ivory, bone, antler, tooth, and shell³.

In the Lower Danube region, there is evidence of activity during early prehistory. The earliest attestations date to the Aurignacian period⁴. During the Epigravettian, osseous projectiles are more prominently represented, being crafted from reindeer antler, ivory or bone⁵. This tradition continues throughout the Mesolithic, with spear points made from bone and deer antler, some of which are decorated with geometric motifs⁶. The situation changes drastically during the Early and Middle Neolithic, when the use of projectile points for hunting becomes sporadic, replaced by points with domestic utility. This shift reflects

¹ Yellen et alii 1995; Brooks et alii 2006; Langley 2016.

² Mateo-Lomba et alii 2024.

³ See Liolios 1999; Pétilion 2006; Langley 2013, 2015; Tejero 2014, 2016; Allen et alii 2016; Langley et alii 2016; Goutas, Tejero 2016; Lowery et alii 2017; Doyon 2020; Scharlotta, Daniels 2020.

⁴ Păunescu 1996; Chirica 2001; Beldiman 2005.

⁵ Brudiu 1987, 1994; Păunescu 1999; Cărciumaru et alii 2008; Mărgărit et alii 2023a.

⁶ Boroneanț V. 2000; Boroneanț A. 2012; Mărgărit 2008; Mărgărit et alii 2017a, b, 2022a.



Figure 1. Location of the Căscioarele tell settlement.

the economic reality, as the proportion of domestic taxa (primarily ovicaprids and cattle) in the faunal assemblages of the Early and Middle Neolithic exceeds 70%⁷.

After the second half of the 5th millennium BC, within the Kodjadermen-Gumelnița-Karanovo VI cultural complex, the number of finds increases significantly, both in terms of sites and artifacts. Again, this situation can be linked to a growing interest among populations in hunting, fishing, gathering, as well as the existence of a diverse wild faunal spectrum. Hunting reaches unexpectedly high frequencies in certain locations, with some sites where remains of wild animals constitute or even exceed 50% of the faunal assemblage⁸ and these are the sites in which projectile points appear. Conversely, there are tell settlements such as those at Hârșova and Bordușani (Gumelnița A2), where wild mammals account for only a quarter of the total mammal remains. However, no osseous projectile points have been identified at either sites⁹.

In this very varied picture of adaptations of hunting strategies in the different Gumelnița tell settlements, I aim to analyse, under multiple aspects (raw materials,

typology, technology, use-wear) the projectile points found at the Căscioarele tell settlement and to see if they can be correlated with intense hunting activities.

ARCHAEOLOGICAL CONTEXT

The Gumelnița tell settlement at Căscioarele – *Ostrovel* (Călărași County) (Fig. 1) was situated on an island within Cătălui Lake. It was located in a bay protected on three sides by the elevated slopes of the Danube terrace, covering an area of approximately 57 by 103 meters¹⁰. The initial archaeological excavations were conducted in 1925 by Gh. Ștefan¹¹, who identified two cultural levels. The author dated these levels to the late Neolithic and the transitional period towards the Bronze Age. Subsequent excavations were carried out by a team led by Vl. Dumitrescu between 1962 and 1968¹². The archaeologist documented three main stratigraphic layers: Layer I, ranging from 4.20 to 5 meters deep, attributed to the Spanțov phase of the Boian culture; Layer II, between

⁷ Bălășescu *et alii* 2005.

⁸ Bălășescu *et alii* 2005.

⁹ Mărgărit, Bălășescu 2025.

¹⁰ Marinescu-Bîlcu 2001.

¹¹ Ștefan 1925.

¹² Dumitrescu 1965; 1986.

2.60 and 3 meters, associated with the Gumelnița culture, phase A2; and Layer III, between 0.40 and 0.70 meters, assigned to the Gumelnița culture, phase B1.

The tell settlement at Căscioarele – Ostrovel covered an area of approximately 3,400 square meters during the later phase of the Gumelnița culture. A total of 16 dwellings and an annex were documented. S. Marinescu-Bîlcu¹³ posits that, based on the orientation of the structures, not all the constructions were contemporaneous; this view is also supported by other specialists¹⁴. Notably, according to data published by VI. Dumitrescu¹⁵, some dwellings appear to have had specialized functions, serving the needs of the community within the settlement. For instance, dwelling no. 2 seems to have functioned as a flint processing workshop, while dwelling no. 4 yielded 100 weights of clay, which could be associated with several looms.

House no. 8 appears to have had a specialized function as well, as it contained osteological remains alongside red deer antlers, some of which had been transformed into artifacts. According to the conclusions of A. Bolomey¹⁶, this house likely was used as the settlement's „abattoir.” The presence of over twenty vessels suggests they may have been used for the chopping and distribution of meat products. Alternatively, VI. Dumitrescu¹⁷ proposed that this house functioned as an antler processing workshop, based on the discovery of red deer antlers in various stages of processing, including finished pieces.

Radiocarbon data have been published for Boian contexts (5207–4909 cal BC¹⁸ and 4786–4488 cal BC¹⁹) and Gumelnița contexts (4450–4264 cal BC and 4353–4246 cal BC²⁰).

Based on the published information regarding the cultural stratigraphy, the attribution of the projectile points is extremely difficult. Many artifacts lack an indicated depth at which they were found, with this being the only reference provided by archaeologists for delineating the cultural levels. However, for the pieces for which this information is available, most are found at depths not exceeding 2 meters, which has led us to classify them within the Gumelnița B1 level. Under these circumstances, we have chosen to analyze the assemblage as a cohesive whole.

METHODOLOGY

Initially, projectile points were examined macroscopically in order to identify the technological operations involved in the processing of the items. Moreover, it was important to make an accurate characterization of the

morphology of the technological marks and of their succession, especially for the subsequent stage of the study. Artefacts were examined and photographed with a Keyence VHX-600 digital microscope with an embedded camera (magnifications from 30x to 200x). The manner in which the use-wear traces developed, including the deformation of the initial volume and the erasure of previous technological marks, was analysed using an Olympus BX53M metallographic microscope (magnifications ranging from 100x to 200x), equipped with an EOS 1200D Canon camera. The analytical criteria for the technological and functional interpretation of the marks were established based upon comparisons with publications on projectile points over time from various areas of the world²¹.

ARCHAEOLOGICAL ASSEMBLAGE

Preforms

A series of artifacts appears to represent projectile points in various stages of processing. Their dimensions and morphology correspond to finished pieces found at the site. In this context, they become extremely significant for reconstructing the sequence of technological procedures within the operational chain. The type of blank from which the points could have been made is illustrated by an item (Fig. 2/a) that represents a splinter from the compact tissue of the antler obtained through percussion. Segmentation also seems to have been performed using the same technique. It is already a preform, as the debitage edges have been regularized through cutting.

A fragment of an unfinished piece (Fig. 2/b) is a splinter whose edges were shaped by cutting but was abandoned at this stage. At the ends, segmentation was achieved through bending. The blank, being too narrow, allowed only for the transformation into a projectile point.

Following are seven preforms of rectangular shape (Fig. 2/c). They are at a more advanced stage of processing, with finishing likely to be achieved rapidly through edge sharpening. Within the studied assemblage, there are several pieces that may originate from the transformation of such preforms. For the longitudinal debitage procedures, percussion was exclusively used, while for transverse debitage, both percussion (a few parasitic marks are visible, especially on the shorter edges) and sawing (parasitic cuts on the segmentation edge) were employed (Fig. 2/d). Laterally, the shaping was performed through longitudinal scraping (Fig. 2/e), and the rounded ends were obtained by abrasion (Fig. 2/f). These represent an important stock of preforms that could quickly replace broken or lost projectile points.

A fragment of a beam (Fig. 2/g) is a splinter from the compact tissue, for which the longitudinal splitting procedure could not be identified, as the debitage edges

¹³ Marinescu-Bîlcu 2001; 2002.

¹⁴ Ilie 2016.

¹⁵ Dumitrescu 1965.

¹⁶ Marinescu-Bîlcu 2002.

¹⁷ Dumitrescu 1965.

¹⁸ Lazăr et alii 2013.

¹⁹ Bréhard, Bălăşescu 2012.

²⁰ Lazăr et alii 2018.

²¹ See Pétillon, Letourneux 2006; Pétillon 2008; Lozovski et alii 2013; Cristiani, Borić 2016; Langley et alii 2016; Langley 2019; Zhilin, Savchenko 2020; Dekker et alii 2021; David et alii 2022.

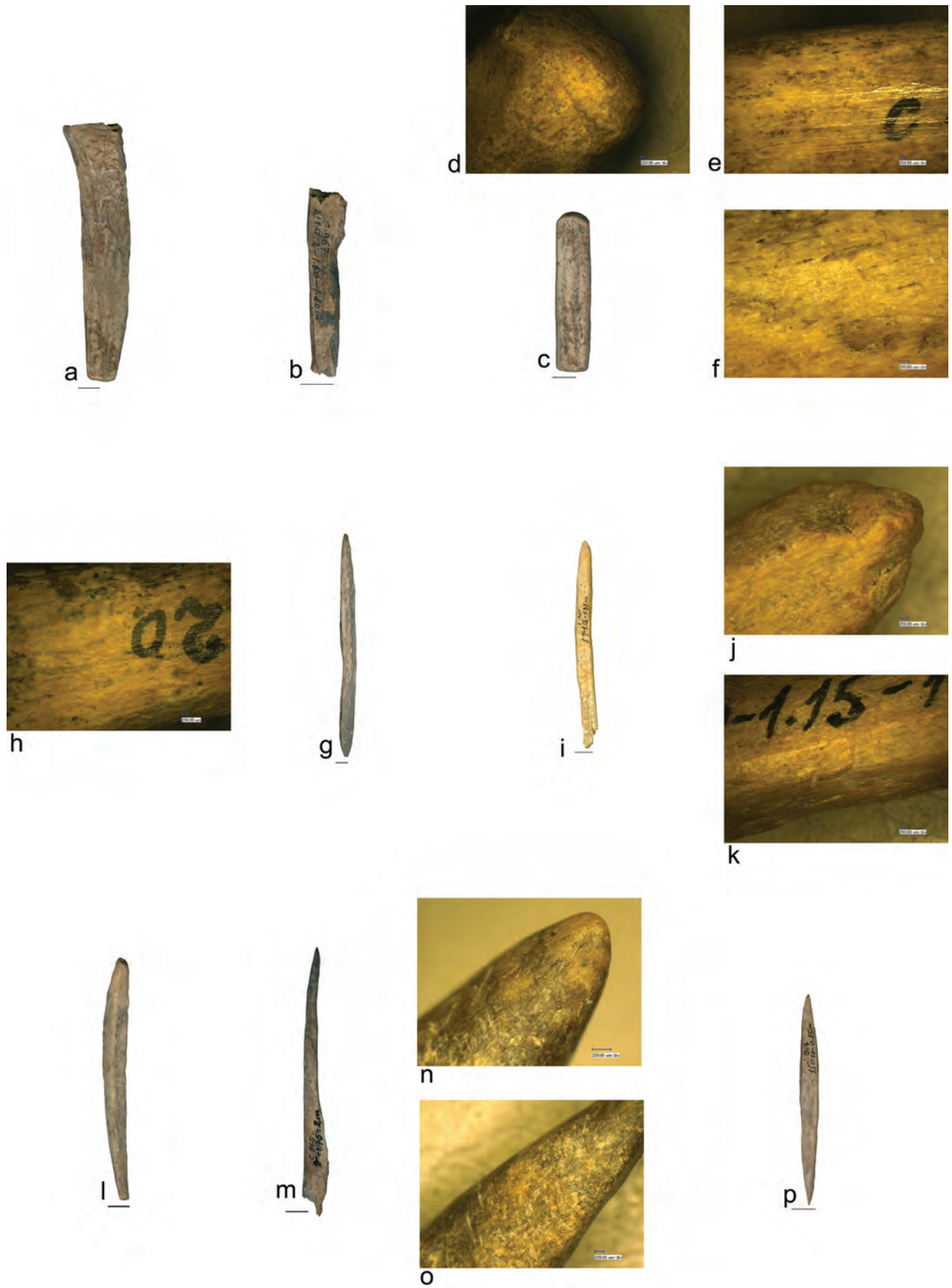


Figure 2. a, b, c, g, i, l, m, p. Antler preforms; d. Sawing marks; e, h, n. Scraping marks; f, o. Abrasion marks; j-k. Cutting marks.

have been regularized through longitudinal scraping (Fig. 2/h). Another preform (Fig. 2/i) is at the same stage of processing. The edges (Fig. 2/k) and the preserved end (Fig. 2/j) have been regularized through cutting. In addition to the previous piece, the lower side was shaped by abrasion. For another specimen (Fig. 2/l), the end's regularization was performed through longitudinal scraping applied at the distal level, around the entire circumference. Three additional fragments represent distal fragments of future points. They are in the same stage of shaping, with the distal end created through scraping.

A more advanced procedure is the shaping of the ends observed for six preforms (Fig. 2/m, p). Based on the preserved marks, it is evident that these are splinters from the compact tissue of the antler obtained through longitudinal percussion. The shaping of the edges was initiated by longitudinal scraping. At both ends, a longitudinal scraping was applied around the entire circumference (Fig. 2/n), in some cases overlapped by abrasion (Fig. 2/o). These pieces could have been transformed into double points.

The most numerous preforms are those of future stemmed arrow points (no. 14) (Fig. 3/a–e). They exhibit similar procedures for obtaining the blank, as seen in the previously described pieces, after which the splitting edges were rigorously regularized through scraping. The proximal and distal areas were individualized through procedures of delineation by sawing. According to some specimens (Fig. 3/a), the extremities were sharpened by scraping in the subsequent technological stage. The pieces were not finished, exhibiting a coarse appearance and lacking use-wear.

One of the pieces could be a preform (Fig. 3/f) for the points of the second category (see below), which is characterized by several grooves marked through sawing on the proximal end. The blank is flat, made from compact tissue, but the debitage procedures could not be identified, as a convergent longitudinal scraping was applied (Fig. 3/h). In the medial area, the shaping procedure was initiated by creating two grooves through sawing (Fig. 3/g). Another method of transforming the proximal end appears at a preform (Fig. 3/i) where, on the medial surface, two bilateral grooves were cut through sawing. The remaining technical details are similar to those of the previous pieces.

Finally, a possible preform for a point with a straight base and a hole was also identified (Fig. 3/j). It is a fragment of a *Capreolus capreolus* antler segmented through sawing applied with a flint piece around the entire circumference (Fig. 3/k), followed by bending. The entire surface of the piece was sharpened by longitudinal scraping.

Finishes projectile points

I. The most important category is that of stemmed arrow points (Fig. 3/l, 4/a, h; 5/a), comprising 232 pieces made from antler and nine from bone (Fig. 5/h), which is characterized by a thicker circular/rectangular active area and a thinner shaft. Morphological features and aspects

related to the operational chain support grouping these pieces into a single category; however, no morphometric standardization regarding the ratio between the length of the distal and proximal parts could be identified. This ratio exhibits significant variation, likely depending on how the processing was initiated (as was most accessible to the artisan). The blank is flat, made from compact tissue, and the procedures used to produce it could not be identified, as the entire surface was shaped through longitudinal scraping.

Starting from the preforms, I can suppose that percussion was used to obtain the blanks. The hafting system was created through a delineation procedure with sawing (Fig. 3/p; 4/e, l; 5/e, l), applied around the circumference, followed by further scraping (Fig. 3/m–n; 4/d, f–g, k, m–n; 5/d, f–g, k, m–n), deepened to create two sharp-ended extremities. Use-wear marks on the pieces are indicated by a rounded distal end with flattened area that eliminates scraping marks, with polish and fine striations (Fig. 3/o; 4/b–c, i–j; 5/b–c, i–j; 6/b–c).

A subvariant of this category (Fig. 6/a) involves shaping the entire surface of the piece through longitudinal scraping. To ensure the hafting system, the scraping was deeper, creating a thinner proximal area. The delineation groove disappeared.

II. Several projectile points (no=7) with morphology similar to those in the previous category, exhibit at the base of the distal area a series of grooves whose function I cannot determine, whether decorative or intended to facilitate the attachment system (Fig. 6/d, i). The blank is flat, made from compact tissue, and the procedures used for its production could not be identified, as the entire surface of the pieces was shaped through longitudinal scraping (Fig. 6/f, p).

At the medial level, three or four grooves were made through sawing at a distance of approximately 1.2 mm (Fig. 6/e, j). For two specimens (Fig. 6/m), four deep grooves were created using a different procedure: sawing followed by longitudinal cuts (Fig. 6/s–t) for carving the medial area. In all specimens, the pointed end is heavily rounded, with small flattened areas (Fig. 6/h, l, o). The proximal area shows minor signs of compaction and polishing, localized only near the end (Fig. 6/r).

III. Double points (no=11) (Fig. 7/a) represent another important category of weapons. They were made from compact tissue, but the procedures used for producing the blank could not be identified, as the entire surface was shaped through longitudinal scraping (Fig. 7/c, g). At both extremities, the scraping was deeper, resulting in both ends being thinner than the rest of the shaft. Sometimes, depending on the piece, an abrasion was also applied. Unlike the previous category, there are no differences in thickness between the proximal and distal areas. However, some pieces have the proximal part demarcated from the distal part (Fig. 7/e). The hafting system was created



Figure 3. a–e, f, i–j. Antler preforms; g, k, p. Sawing marks: h, m–n. Scraping marks; l. Antler stemmed arrow point; o. Use-wear marks at the distal end.

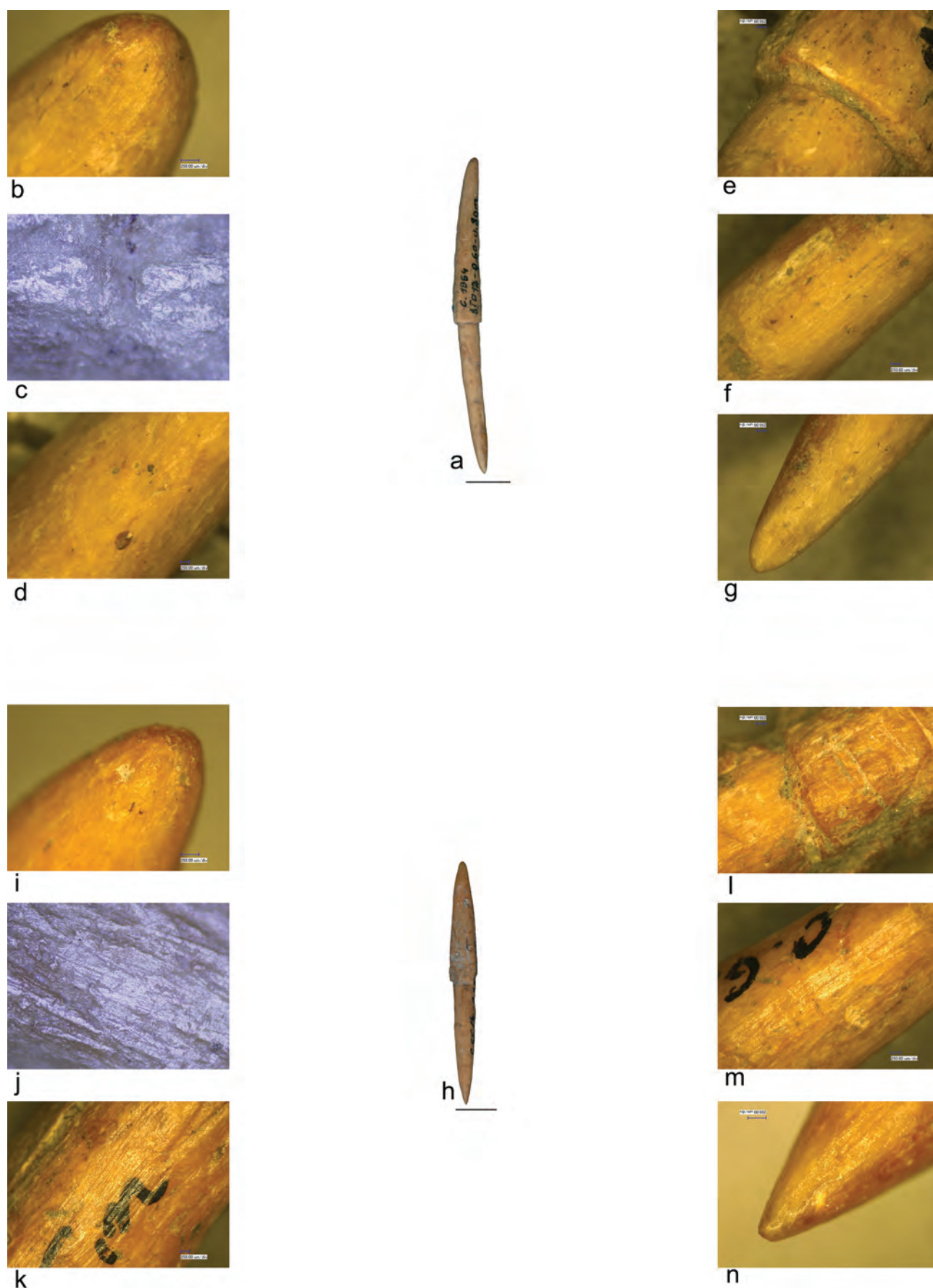


Figure 4. a, h. Antler stemmed arrow points; b, i. Details of the distal end; c, j. Use-wear marks at the distal end; d, f–g, k, m–n. Scraping marks; e, l. Sawing marks.

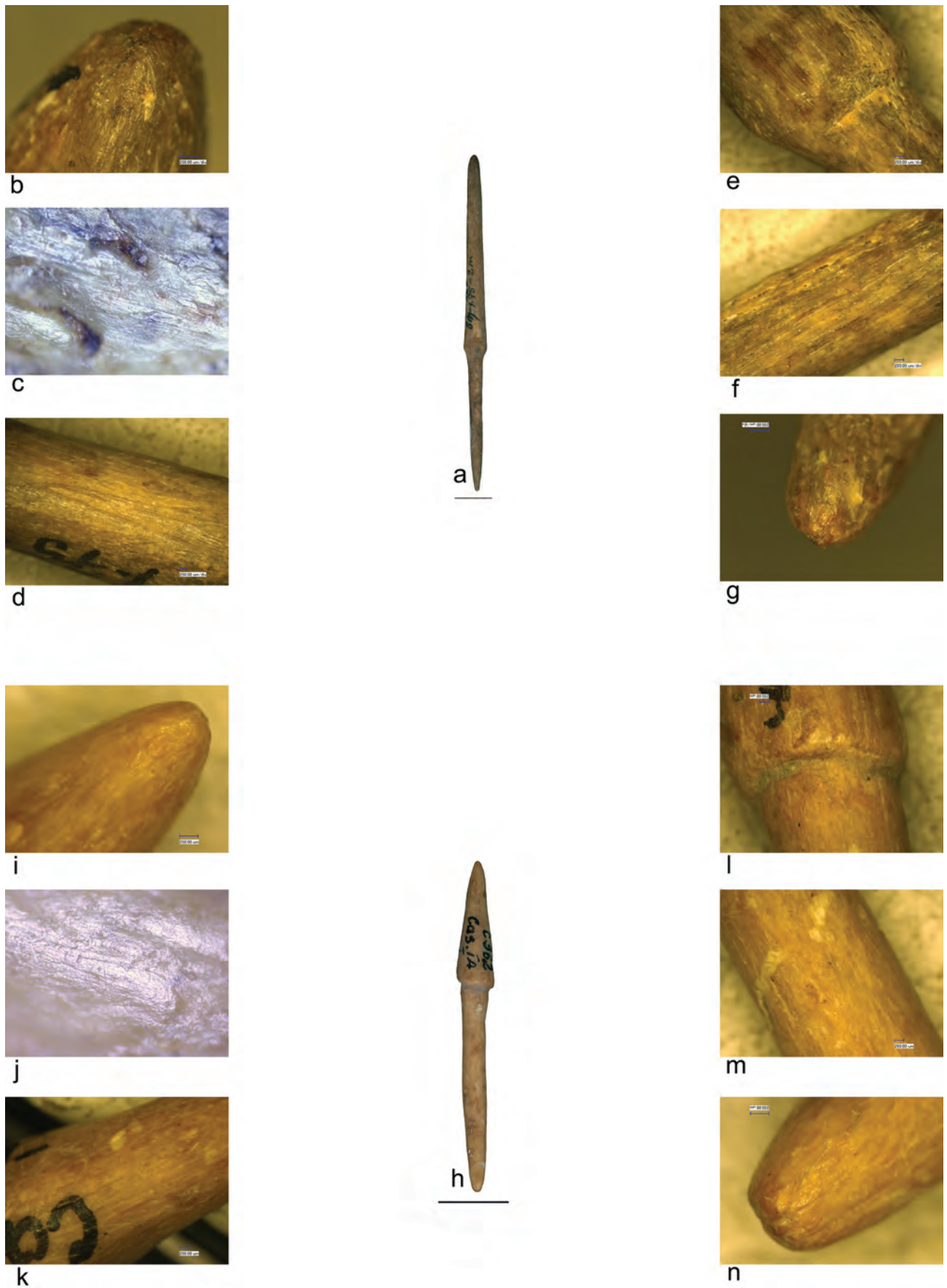


Figure 5. a. Antler stemmed arrow point; b, i. Details of the distal end; c, j. Use-wear marks at the distal end; d, f–g, k, m–n. Scraping marks; e, l. Sawing marks; h. Bone stemmed arrow point.

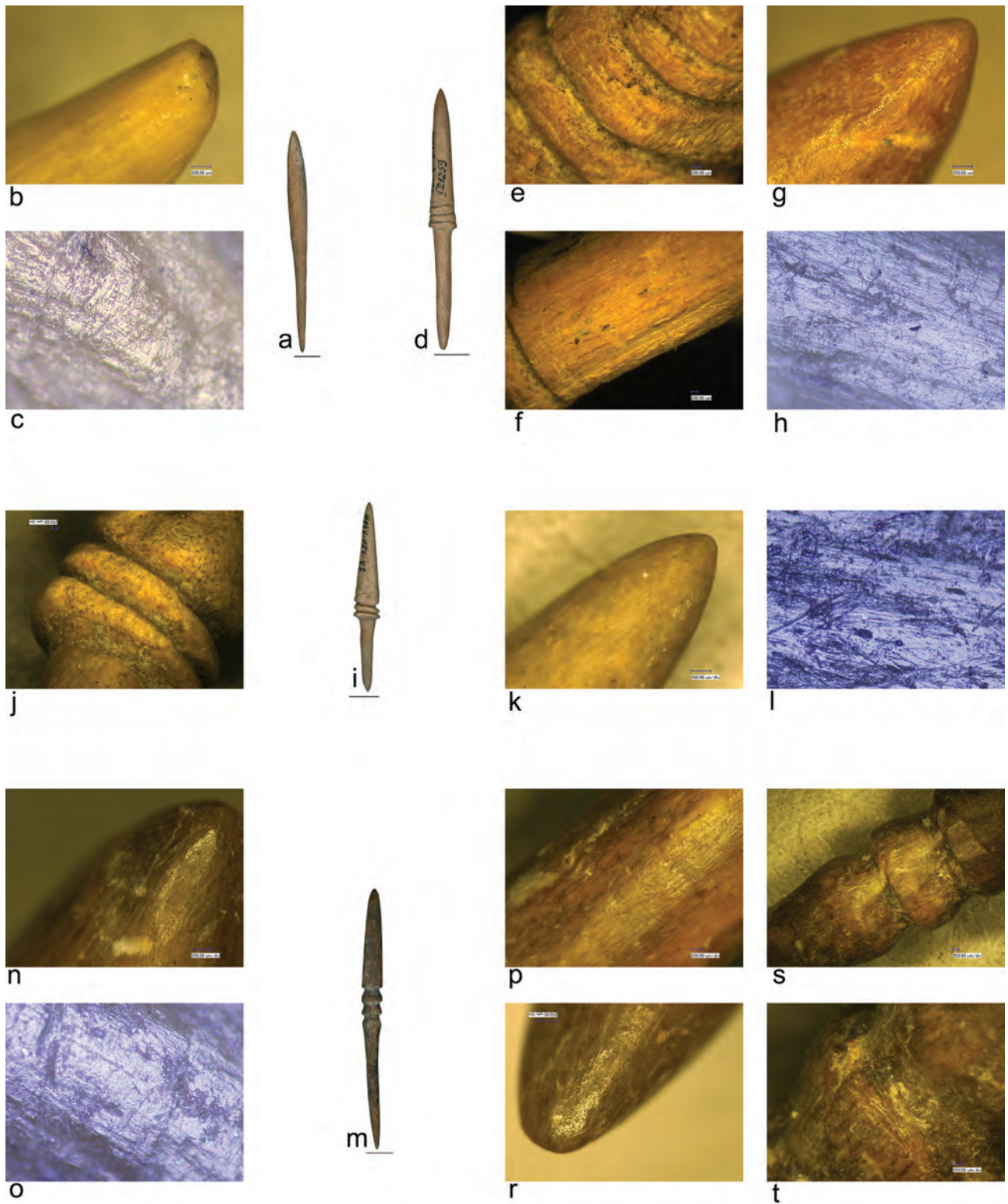


Figure 6. a, d, i, m. Antler stemmed arrow points; b, g, k, n. Details of the distal end; c, h, l, o. Use-wear marks at the distal end; e, j, s–t. Sawing marks; f, p. Scraping marks; r. Proximal end detail.

through sawing applied as two bilateral grooves (Fig. 7/h), without encompassing the entire circumference. The proximal area generally appears compressed, with a small straight surface and localized polish only at the end (Fig. 7/d). The active end is heavily rounded, with a radical change

in the initial volume, characterized by an invasive polish (Fig. 7/b, f).

Two artifacts are atypical but bear similarities to preforms. The first is a flat blank (Fig. 7/i) made from compact tissue, and the procedures used could not be

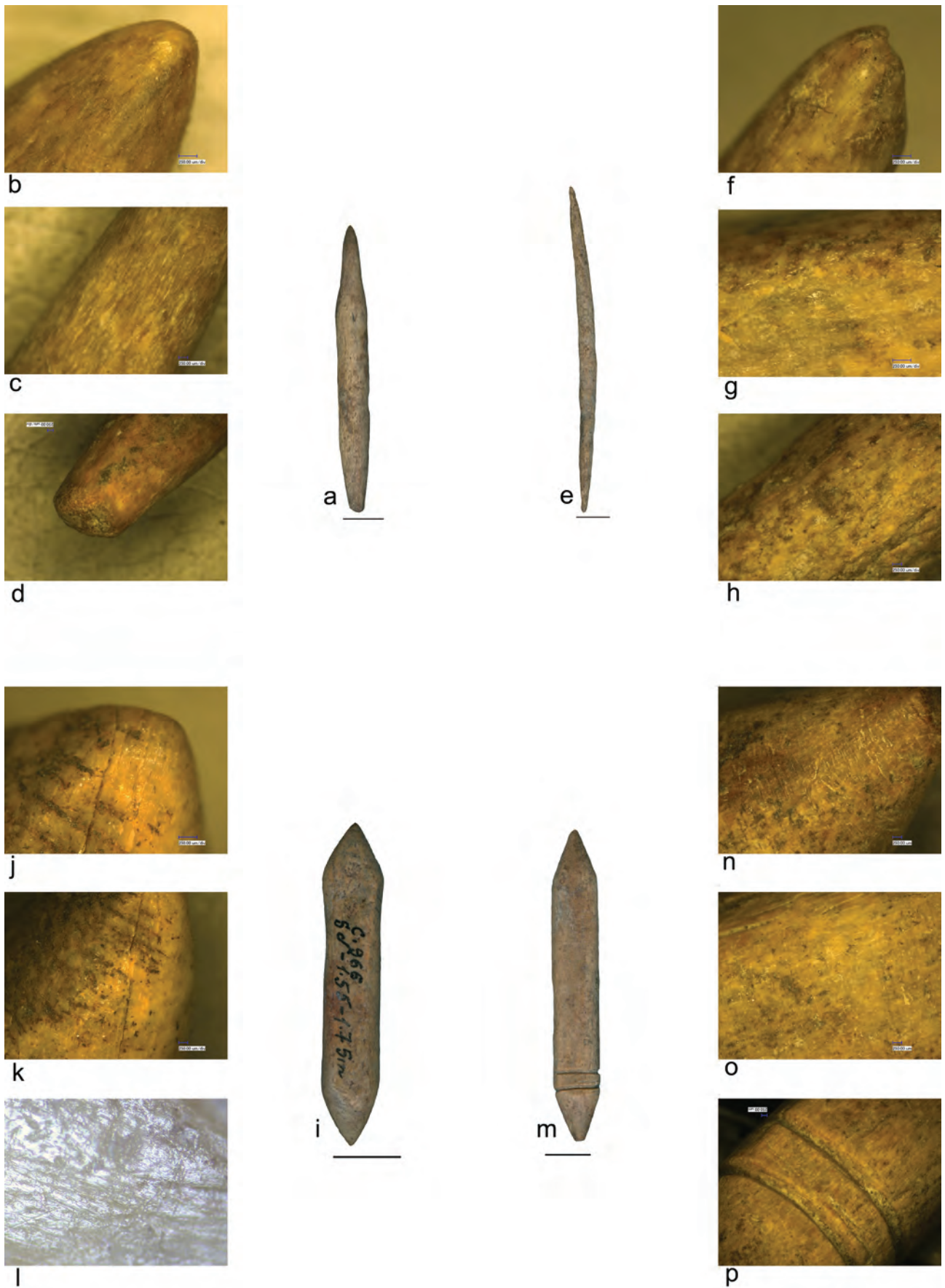


Figure 7. a, e, i, m. Antler double pointes; b, f, j. Details of the distal end; c, g. Scraping marks; d. Detail of the proximal end; h, p. Sawing marks; k, n-o. Abrasion marks; l. Use-wear marks at the distal end.

identified, as the entire surface is covered by abrasion (rectangular cross-section shaft – Fig. 7/k). The second piece (Fig. 7/m) was crafted in an identical manner (Fig. 7/n–o). At the proximal end, two grooves were marked through sawing (Fig. 7/p). Use-wear is strongly localized on the active end. It is characterized by rounding, polish, disappearance of traces of abrasion and the development of longitudinal striations (Fig. 7/j, l).

Seven such points were crafted from bone (Fig. 8/a). The blank is flat, made from the diaphyseal wall of long bones originating from large mammals, and the procedures used for its production could not be identified, as the entire surface was shaped through longitudinal scraping. In the second stage of the shaping process, the whole surface was abraded (Fig. 8/d). At one of the specimens (Fig. 8/e), the debitage operation appears to have involved grooving as well (Fig. 8/h), which is difficult to determine definitively. The entire surface was shaped through longitudinal scraping (Fig. 8/g). The pointed end was shaped by abrasion applied around the entire circumference. Grooving was also applied at another specimen (Fig. 8/i): this involved a longitudinal debitage using a *quadri*-partition procedure that included grooving (Fig. 8/l) and percussion. The debitage edges were shaped through abrasion (Fig. 8/k).

Another atypical piece in the assemblage (Fig. 8/m) features a convex proximal part, on which abrasion was applied (Fig. 8/p) to form the rounded end. As the only example of its kind, it raises the question of whether it might originate from the repair of a fractured point. The active front shows similar evolution due to usage, characterized by a rounded appearance, without significant fractures, with flattened areas bearing fine functional striations (Fig. 8/b–c, f, j, n–o).

IV. Two pieces are barbed points. The first item (Fig. 9/a) features three bilateral, biconvex barbs positioned close to the shaft. These barbs were detached through alternating bifacial cutting (Fig. 9/c). The extremities exhibit a sharp morphology, achieved by applying scraping (Fig. 9/b, g) around the entire circumference. The distal end shows a fracture that initiated longitudinally, splitting the tip into two (Fig. 9/e).

The second point (Fig. 9/h) has two bilateral, biconvex barbs near the shaft, produced by alternating bifacial cutting (Fig. 9/j). From the barbs, a scraping was used around the entire circumference, applied divergently so that, at the base of the active part, the width remains consistent with that at the level of the barbs. The distal area was ultimately shaped by abrasion (Fig. 9/i). At the beginning of the proximal area, a delineation procedure by sawing (Fig. 9/n) was applied circumferentially, from which a convergent scraping was used to create a sharp proximal end (Fig. 9/o). The proximal end is slightly fractured.

The morphology of both ends is rounded, with micro-striations caused by use-wear, running longitudinally relative to the axis of the items (Fig. 9/e–f, l–m). These are elongated and somewhat oblique in orientation. Use-wear

is evident on the barbs and is characterized by a gradual change in the surface appearance – tending to flatten – as the technological marks gradually disappear. Only a few micro-striations are visible, arranged obliquely (Fig. 9/d, k).

V. Two items are points with wings (Fig. 10/a). The hafting system was created through bilateral, alternating grooving (Fig. 10/d), a process continued until the two wings were detached (Fig. 10/f). Subsequently, the entire surface was shaped by scraping (Fig. 10/e). Use-wear was observed at the distal area, consisting of the development of long, parallel striations aligned with the major axis of the piece, along with polish and rounding of the end (Fig. 10/c). Additionally, at the level of the hafting system, there is a radical modification of volume, alternating depressions and flattened areas, with fine, sparse and oblique striations (Fig. 10/g).

VI. A single piece (Fig. 10/h) belongs to the next morphological category. The blank is also flat in this case, made from compact tissue, and the procedures used for its production could not be identified, as the entire surface was shaped through convergent longitudinal scraping, which resulted in a pointed tip. The hafting system consists of a perforation created by bifacial rotation, heavily worn, with the rotation striations no longer visible (Fig. 10/i). At this level, the piece is fractured, so the exact shape of the proximal part is unknown. The tip has undergone a radical volume change, featuring a small straight surface (Fig. 10/k), along with use-wear, small flattened areas and fine longitudinal striations (Fig. 10/l). Additionally, at the periphery of the perforation, use-wear is characterized by areas of flattening that tend to merge, with polish and fine oblique striations on the opening (Fig. 10/j).

VII. Seven projectile points were processed from blanks in volume (Fig. 11/a, f, k), featuring proximal perforations made through bifacial rotation (Fig. 11/c, g, m). The pieces are generally broken at the level of the hafting system. In cases where the proximal part was preserved, it can be seen that segmentation was performed through percussion (Fig. 11/h). The end was sharpened by longitudinal scraping (Fig. 11/b, j) applied around the entire circumference. One of the pieces (Fig. 11/n) illustrates a recycling process. All the technological details previously described remain valid, with the only difference that after fracturing the perforation, a second perforation was made using the same technique. The active end is heavily smoothed, free of fractures, with micro-depression areas and fine functional striations (Fig. 11/d–e, i, l).

VIII. A second variant of blanks in volume (Fig. 12/a, f) (no=2) differs from the previous one by the presence of a peduncle (Fig. 12/j). I question whether some of the pieces from the previous category also had this peduncle, given that they are broken at the perforation level. These are tines whose surfaces were shaped through

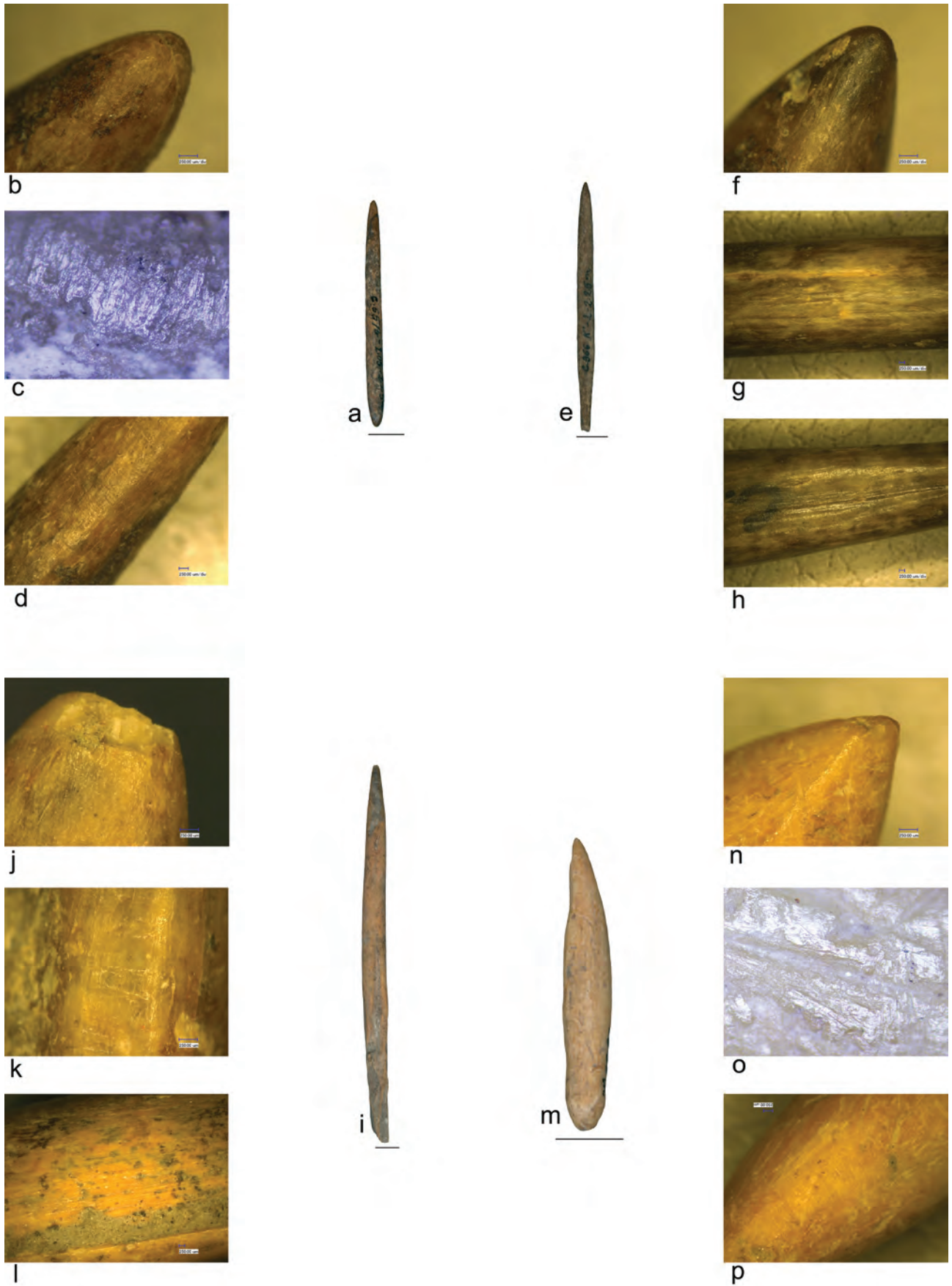


Figure 8. a, e, i, m. Bone double pointes; b, f, j, n. Details of the distal end; c, o. Use-wear marks at the distal end; d, k, p. Abrasion marks; g. Scraping marks; h, l. Grooving marks.

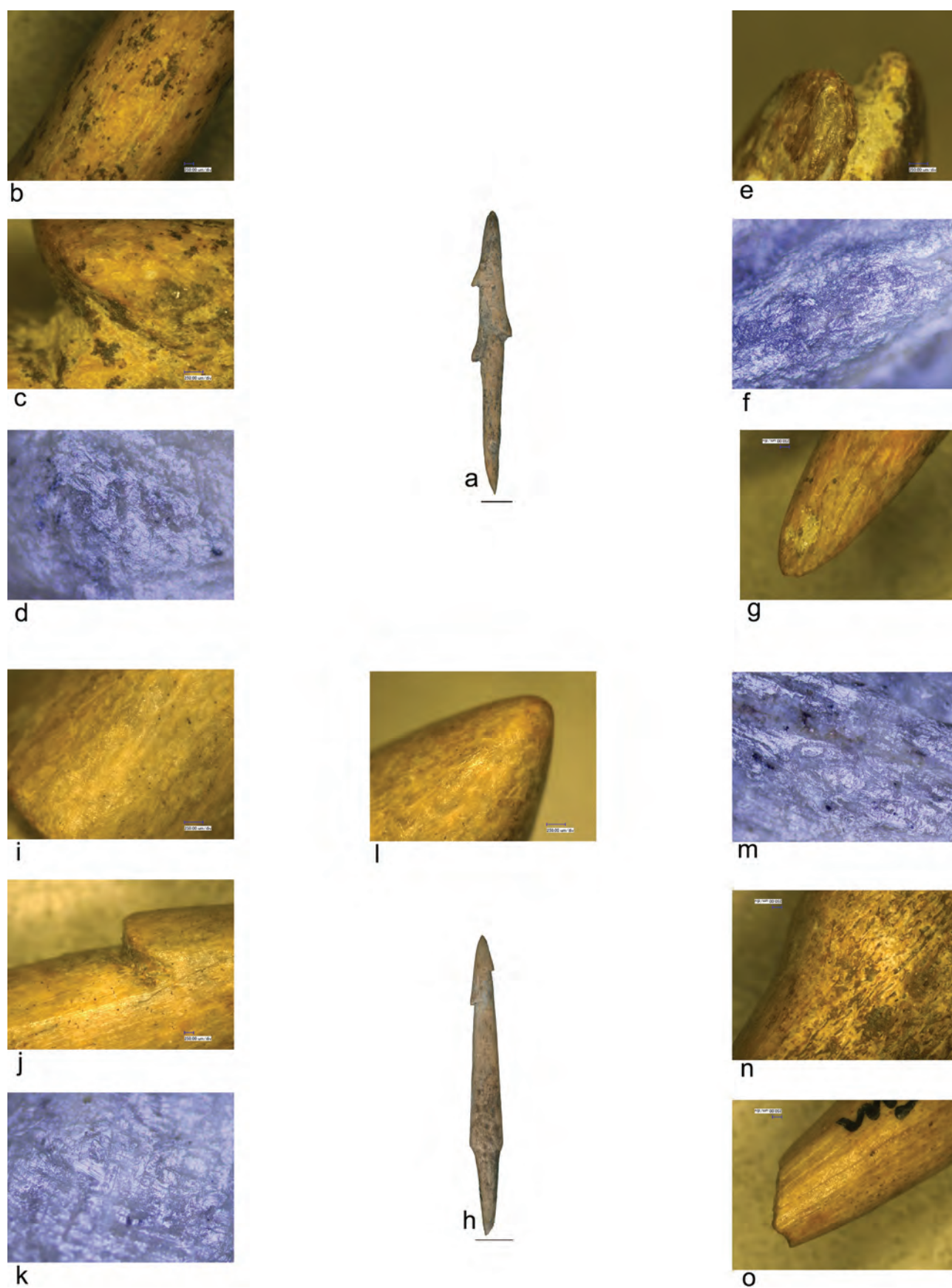


Figure 9. a, h. Antler barbed points; b. Scraping marks; c, j. Details of the barbs; d, k. Use-wear on barbs; e, l. Details of the distal ends; f, m. Use-wear at the distal end; g, o. Details of the proximal ends; i. Abrasion marks; n. Sawing marks.

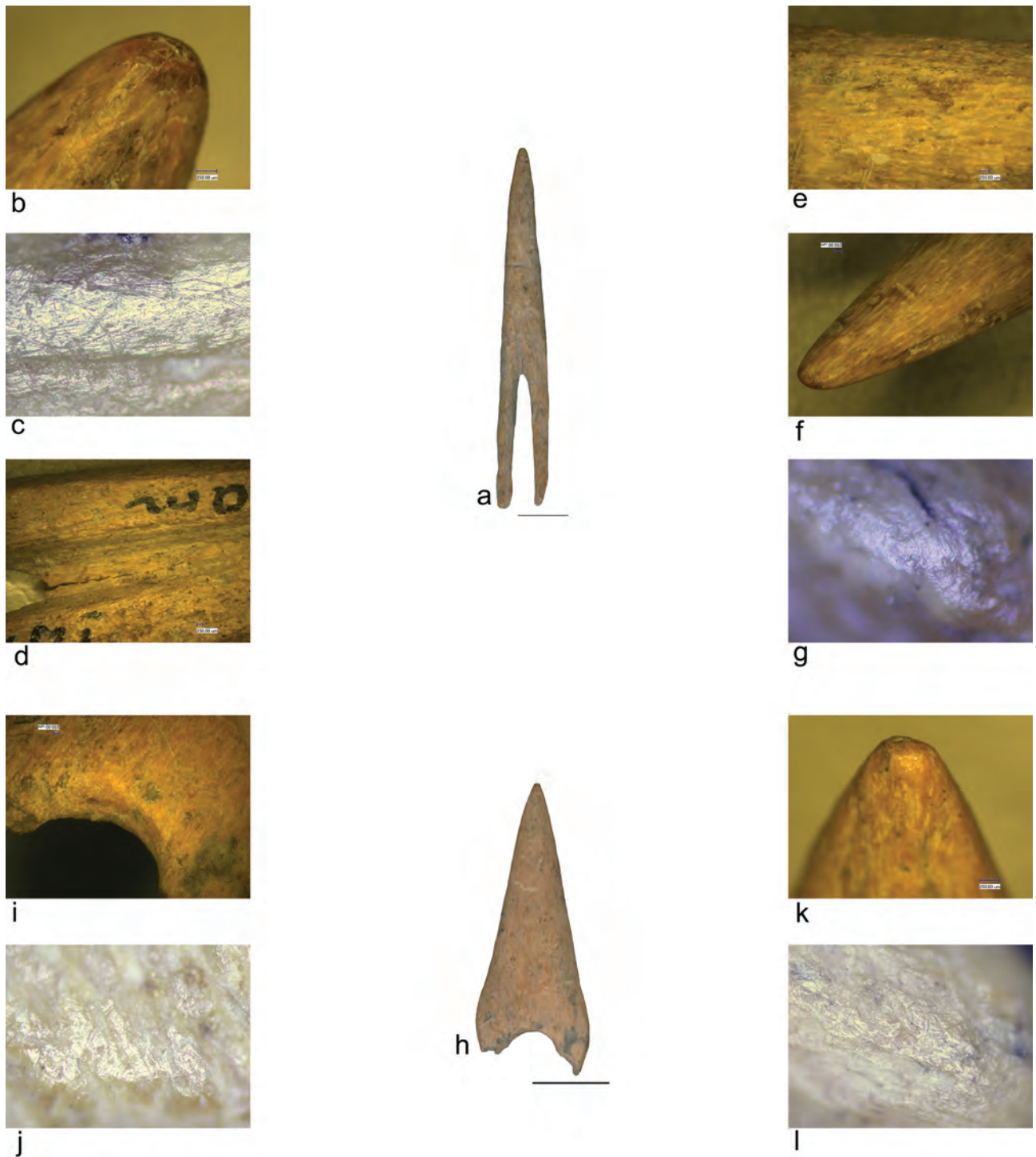


Figure 10. a, h. Antler projectile points; b, k. Details of the distal end; c, l. Use-wear marks at the distal end; d. Grooving marks; e. Scraping marks; f. Detail of the proximal end; g. Use-wear marks at the proximal end; i. Perforation detail; j. Use-wear marks at the perforation level.

longitudinal scraping (Fig. 12/b) applied around the entire circumference. Medially, a perforation was created by bifacial rotation (Fig. 12/c, h). At the proximal level, a peduncle was fashioned using a segmentation procedure through sawing (Fig. 12/d), applied on half of the diameter, after which the peduncle was shaped by cutting (Fig. 12/e).

In the second specimen, the cutting edge was regularized through scraping (Fig. 12/i). The spongy tissue was removed, ensuring a longitudinal hafting system. For the first item, the tip is recently fractured, but at the second specimen, a smoothed end is visible, with a significantly flattened area and macroscopic polish (Fig. 12/g).

IX. The next specimen is a point with a straight base and a hole (Fig. 12/k). The method used for sectioning is unknown, as the entire surface was regularized through longitudinal scraping (Fig. 12/l) around the entire circumference. A perforation was made in the spongy tissue (Fig. 12/m) for the hafting system. The end shows marked use-wear, with areas of flattening beginning to eliminate traces of scraping (Fig. 12/n-o).

X. Concerning the pieces processed from blanks in volume, the simplest shape includes a point made from a roe deer tine (Fig. 12/p). The segmentation was achieved through percussion, identifiable by several specific marks at the periphery of the segmentation edge. Abrasion applied in the next stage destroyed most of these percussion marks. The naturally sharp shape of the tine did not require any significant technological interventions.

DISCUSSION

Raw materials

Our analysis highlights the significance of red deer antler (*Cervus elaphus*) as a primary raw material for the production of projectile points, whereas bone was infrequently utilized. A total of 39 preforms and 264 finished pieces processed from antler were documented, compared to only 16 items made of bone. From a technological perspective, I can attribute this preference to the advantageous mechanical properties of antler – specifically its optimal elasticity-to-hardness ratio, which allows it to better absorb shocks and resist impact. Additionally, objects made from hard animal materials are generally easier to repair after fracturing²². R. D. Guthrie²³ concluded that antler was the best material for weapon points, as it is easily worked, shaped, or straightened when wet, resists breakage, is simple to sharpen, and is typically readily available.

However, the importance of cultural factors in raw material selection must not be overlooked. McGhee²⁴, citing various ethnographic examples, suggests that weapons crafted from specific species may have been used in hunting particular prey. Yet, especially in prehistoric contexts, there is rarely a strict dichotomy between cultural preference and technological suitability²⁵.

Cervid antler can be obtained either through collecting naturally shed specimens or as a by-product of hunting. At the site of Căscioarele, during level B1, the hunting activity is evidenced by the high proportion of wild mammal remains – accounting for 84.1% of the faunal assemblage²⁶. The red deer was the primary hunted

species²⁷. Al. Bolomey²⁸ notes that deer remains constitute more than half of the total osteological material, with 1,193 fragments recorded from the Gumelnița B1 level. In stark contrast, at the Gumelnița A2 level, domestic animals predominate, and red deer remains are scarce, comprising only 84 fragments. This shift in faunal composition between the two levels is reflected in the technological domain, as projectile points are predominantly concentrated in level B1.

Analysis of the basal areas of antlers from the B1 level – only reliable indicators of the antler type used – reveals 32 shed antlers and 8 from hunted animals. The dominance of shed antlers indicates a good knowledge of their mechanical properties. Antlers grow from April to July, reaching maximum calcification, and are naturally shed at the end of winter (around March for adults)²⁹. Once shed, they are subject to attacks by rodents, carnivores, and even red deer, followed shortly afterward by invertebrates³⁰. At Căscioarele tell settlement, the presence of shed antlers suggests that expeditions specifically aimed at collecting these antlers were organized shortly after the deer shed them. This hypothesis is supported by two lines of evidence: first, zooarchaeological studies³¹ confirm the presence of red deer (*Cervus elaphus*) in the surrounding environment; second, the recovery of antler waste from the site presents a very good state of preservation.

Technological transformation scheme

The operational chain for producing these projectile points involved a series of well-defined steps, reflecting a sophisticated understanding of material properties and tool design. The initial stage involved obtaining suitable blanks from antler or bone. For antler, the longitudinal debitage was achieved through percussion and the transverse one through percussion, sawing or bending. The specific methods for obtaining bone blanks are less clear, as subsequent shaping often obscured the initial debitage marks. However, in a few specimens, a *quadri*-partition procedure by grooving and percussion could be identified. The second stage involved shaping the blank into the desired preform or finished point. Longitudinal scraping was the dominant technique, used to regularize the edges, thin the piece, and create the overall shape. Abrasion was also employed, especially for smoothing surfaces, creating rounded ends, and refining the hafting system.

A variety of hafting systems were used, reflecting the diverse range of point types. Common procedures included: 1. sawing – used to delineate proximal and distal parts; 2. grooving – employed, particularly in the creation of wings; 3. bifacial rotation – used to create perforations for hafting; 4. a combination of sawing and cutting for peduncle creation.

²² Guthrie 1983; Grégor 1985; Averbough 2000; Currey 2002; Christensen, Valentin 2004.

²³ Guthrie 1983.

²⁴ McGhee 1977.

²⁵ Choyke, Daróczy-Szabó 2010; Margaris 2014.

²⁶ Bolomey 1964; Bălășescu et alii 2005.

²⁷ Bălășescu et alii 2005.

²⁸ Bolomey 1964, 1968.

²⁹ Provenzano 2001.

³⁰ Averbough 2000; 2005.

³¹ Bolomey 1968; Bălășescu et alii 2005.

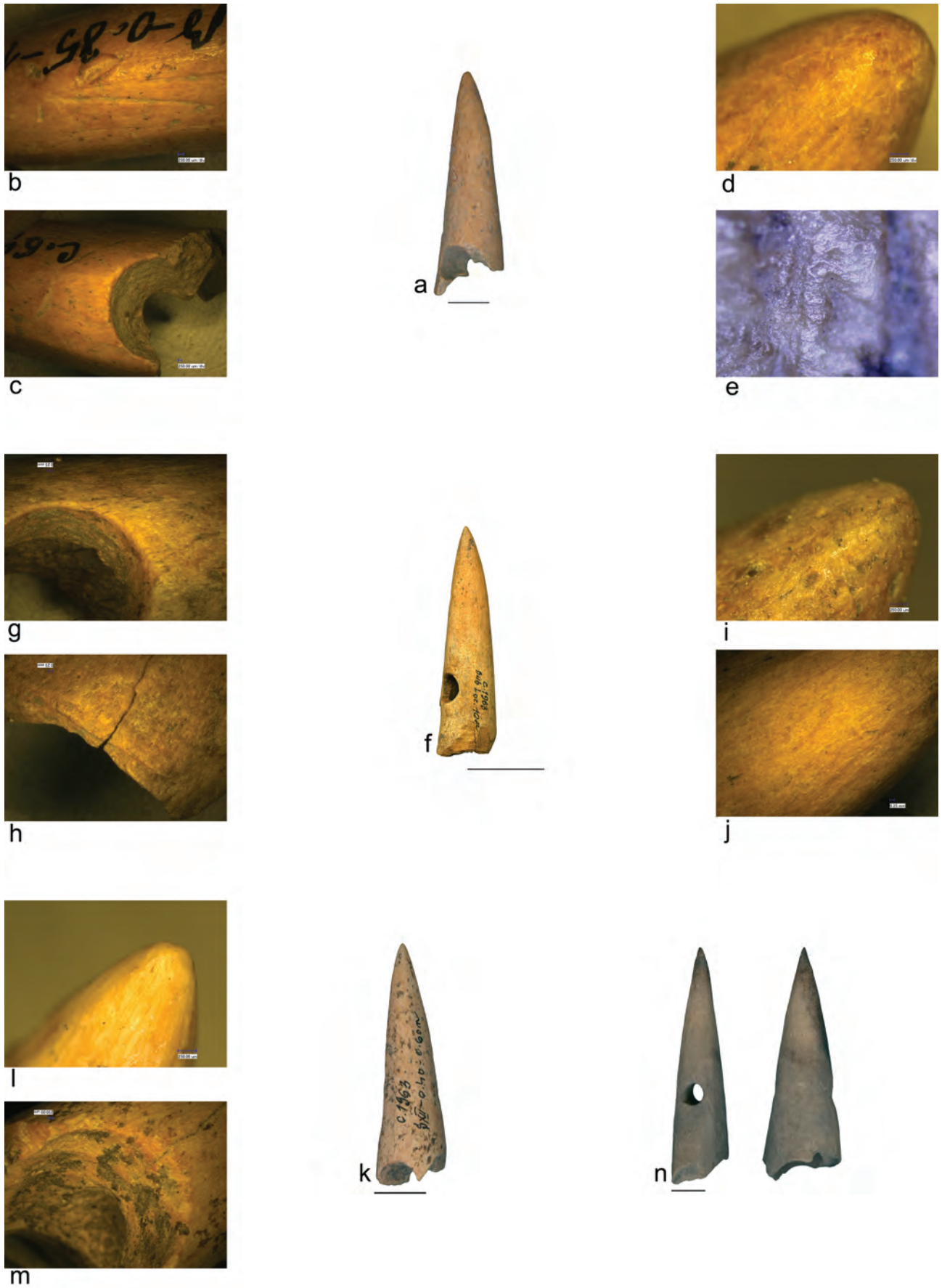


Figure 11. a, f, k, n. Antler projectile points; b, j. Scraping marks; c, g, m. Perforation details; d, i, l. Details of the distal end; e. Use-wear marks at the distal end; h. Percussion marks.

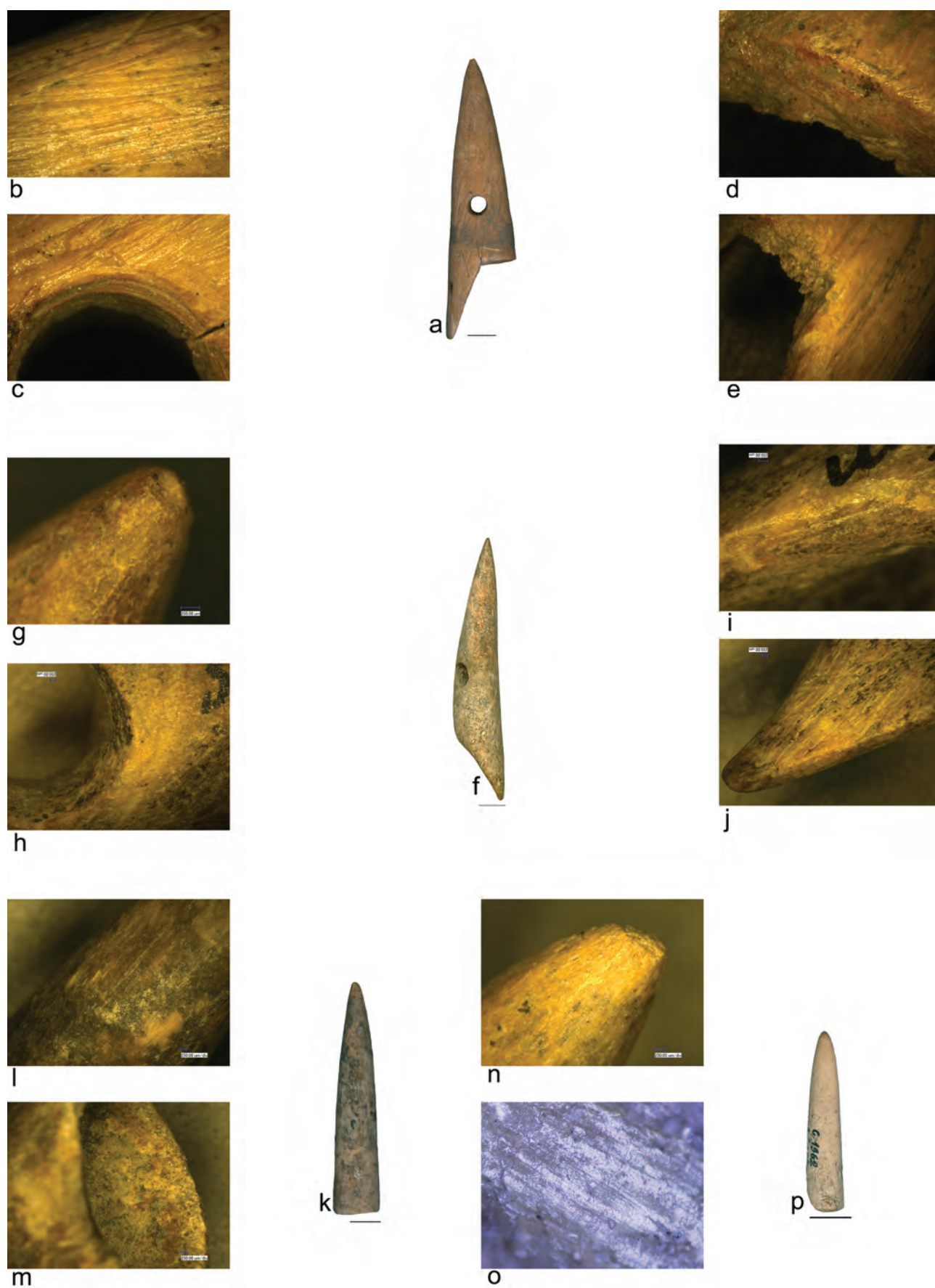


Figure 12. a, f, k, p. Antler projectile points; b, i, l. Scraping marks; c, h. Perforation details; d. Sawing marks; e. Cutting marks; g, n. Details of the distal end; j, m. Details of the proximal end; o. Use-wear marks at the distal end.

The presence of preforms at various stages of processing suggests a degree of planning and stockpiling, allowing for rapid replacement of broken or lost points. The recycling of broken points (e.g. the reworked perforated point) highlights an efficient use of resources.

Hypothetical function

Based on the morphological variations and use-wear patterns observed, several potential functions can be inferred for the projectile points. The supposed functions of various bone projectile points have been based mainly on ethnographic analogies. However, it must be taken into account that the form does not always provide indications about function, as there is a possibility of multiple or alternative uses and morphological variability within a class of weapons with the same function³². Even if these interpretations are quite speculative, it has been assumed, for example, that the stemmed arrow points, by their morphology (thicker distal end, thinner shaft) and use-wear (rounded tips, flattened areas with striations), suggest their use as arrowheads for hunting medium to small game, as well as for birds³³. Barbed points or perforated points (especially those with peduncles, known in the literature as toggle harpoons) were likely used for fishing, having a mobile grip system, in which retaining the projectile was important, preventing the prey from escaping³⁴. The careful detachment of the barbs through bifacial cutting indicates a specialized technique for creating this functionality. The function of double points is less clear, but their symmetrical design and presence of use-wear at both ends suggest they were used as transverse fish-hooks for fishing or hunting aquatic mammals³⁵.

The diverse range of projectile point types suggests a flexible hunting strategy, adapted to exploit a variety of game species and environments within the Gumelnița territory. The presence of points made from both antler and bone could reflect seasonal availability of resources, or specialization based on the intended target. Further research, including residue analysis and experimental archaeology, would be needed to refine these functional interpretations and provide a more comprehensive understanding of the role of these projectile points in the Gumelnița economy and culture.

A wider perspective about Gumelnița culture

A survey of projectile points from the Gumelnița tell sites reveals interesting information. According to the published data, similar artifacts with a significant contribution to the assemblage have been identified at the tell settlements of Vitănești and Pietrele.

At the Gumelnița levels at Pietrele, between 45–55% of the bone remains belong to wild animals, including wild boar, red deer, roe deer, aurochs, and wild horse. Fishing also played a significant role in the diet. Cyprinids appear to predominate, although large species such as pike and catfish are also present, which require the use of spears or harpoons. At Pietrele, such toggle harpoons have been documented, as well as stemmed arrows and double points, which are associated with hunting and fishing activities³⁶.

At the Vitănești tell settlement, wild mammals constitute 68.3% of the assemblage in the Gumelnița A2 layer and 48% in the Gumelnița B1 layer³⁷. The projectile points are notably abundant in layer B1, comprising morphologically diverse antler and bone projectile points, including types also identified at Căscioarele – stemmed points, winged points, and points with a straight base and a hole³⁸.

A review of some Calcolithic sites south of the Danube reveals a similar situation. An increase in the number and a typological diversification of projectile points are evidenced, closely correlated with hunting. Osseous double points and stemmed points are present in numerous tell settlements (e.g., Smyadovo, Azmashka, Nevski, Golyamo Delchevo, Salvanovo, Vinitsa)³⁹.

This analysis of osseous projectile points from Căscioarele provides valuable insights into the hunting strategies and technological capabilities of the prehistoric communities. They are part of the category of projectile points specific to the Gumelnița culture, as the same morphologies are also reproduced in other tell settlements. The study of raw materials, technical transformation schemes, and potential functions reveals a complex and adaptive approach to resource utilization and weapon production. The diverse range of point types, the sophisticated operational chain involved in their production, and the insights into raw material selection all point to a complex and adaptive society capable of efficiently exploiting its environment. This study highlights the importance of analyzing archaeological artifacts from multiple perspectives to reconstruct past human behavior and provides a foundation for future research, including comparative studies with other Gumelnița sites.

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³² Bradfield 2016.

³³ Ellis 1997.

³⁴ Park, Stenton 1996.

³⁵ Benecke *et alii* 2013.

³⁶ Benecke *et alii* 2013

³⁷ Bălășescu, Radu 2003; Bălășescu *et alii* 2005.

³⁸ Mărgărit *et alii* 2022b, 2023b; Torcică 2022.

³⁹ Boyadzhiev 2024.

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ABREVIERI / ABRÉVIATIONS / ABBREVIATIONS

- AAC – Acta Archaeologica Carpatica, Kraków
ACMI – Anuarul Comisiunii Monumentelor Istorice, București
ActaArchHung – Acta Archaeologica Academiae Scientiarum Hungaricae, Budapest
Acta Classica Univ. Scient. Debrecen – Acta Classica Universitatis Scientiarum Debreceniensis, Debrecen, Ungaria
ActaMN – Acta Musei Napocensis, Cluj
ActaMP – Acta Musei Porolissensis, Zalău
ActaPraehistA – Acta praehistorica et archaeologica
AIGR – Anuarul Institutului Geologic al României, București
AIIAC – Anuarul Institutului de Istorie „George Barițiu”, Cluj
AJA – American Journal of Archaeology, Boston
AJPA – American Journal of Physical Anthropology
Alba Regia – Alba Regia. Annales Musei Stephani regis, Székesfehérvár
Anatolia Antiqua – Anatolia Antiqua. Revue internationale d'archéologie anatolienne. Institut Français d'Etudes anatoliennes d'Istanbul
Anatolica – Anatolica. The Netherlands Institute for the Near East in Leiden
AnB – Analele Banatului, Muzeul Banatului, Timișoara
AncNearEastSt – Ancient Near Eastern Studies, Leuven, Belgia
Angustia – Angustia. Arheologie, Etnografie, Sfântu Gheorghe
Anmed – Anmed. Anadolu Akdenizi Arkeoloji Haberleri, Antalya, Turcia
AnSt – Anatolian Studies. British Institute of Ankara
AnUCraiova – Analele Universității din Craiova, Craiova (seria Istorie)
AnUVT – Annales d'Université “Valahia” Târgoviște, Section d'Archéologie et d'Histoire
Apulum – Acta Musei Apulensis. Muzeul Național al Unirii, Alba Iulia
ArchBulg – Archaeologia Bulgarica, Sofia
ArchÉrt – Archaeológiai Értesítő, Budapest
ArchHung – Archaeologia Hungarica, Acta Archaeologica Musei Nationalis Hungarici, Budapest
ArchKorr – Archäologisches Korrespondenzblatt, Mainz
ArchMűh – Archeometriai Műhely
ArchRozhledy – Archeologické Rozhledy, Praha
Argesis – Argesis. Muzeul Județean Argeș. Pitești
Arheologia Medievală. Complexul Muzeal Bistrița-Năsăud, Bistrița
ArheologijaSSSR – Arheologija SSSR. Svod Archeologičeskikh Istočnikov, Moscova
Arheološki vestnik – The Research Center of the Slovenian Academy of Sciences and Arts
ArhMold – Arheologia Moldovei, Iași
AS – Archeologica Slovaca, Bratislava
AST – Eski Eserler ve Müzeler Genel Müdürlüğü, I. Araştırma Sonuçları Toplantısı, Istanbul / General Directorate of Ancient Monuments and Museums
AȘUI – Analele științifice ale Universității Alexandru Ioan Cuza, Iași
BA – Biblioteca de Arheologie, București
BaBesch – Bulletin antieke beschaving. Annual Papers on Classical Archaeology
BAI – Bibliotheca Archaeologica lassiensis, Iași
Baltic-Pontic Studies – Adam Mickiewicz University, Poznań, Institute of Archaeology, Institute of Eastern Studies, Poland
Banatica – Banatica. Muzeul Banatului Montan, Reșița
BarBrSer – British Archaeological Reports. British Series, Oxford
BARIntSer – British Archaeological Reports. International Series, Oxford
BCMI – Buletinul Comisiunii Monumentelor Istorice
Be-Ja – Bulgarian e-Journal of Archaeology
BerRGK – Bericht der Römisch-Germanischen Kommission des Deutschen Archäologischen Instituts, Frankfurt am Main
BIAA Monograph – British Institute of Archaeology at Ankara
BiblEphemNap – Bibliotheca Ephemeris Napocensis, Cluj-Napoca
BiblMemAnt – Bibliotheca Memoriae Antiquitatis, Piatra-Neamț
BiblThrac – Bibliotheca Thracologica, București

- BMC – *Coins of the Roman Empire in the British Museum*, Londra; II, *Vespasian to Domitian*, 1930; IV, *Antoninus Pius to Commodus*, 1968; V, *Pertinax to Elagabalus*, 1950 (H. Mattingly)
- BMI – Buletinul Monumentelor Istorice, București
- BMJT – Buletinul Muzeului Județean Teleorman, Alexandria
- BMTAG – Buletinul Muzeului Județean „Teohari Antonescu”, Giurgiu
- BSA – British School at Athens, Athens
- BSNR – Buletinul Societății Numismatice Române, București
- BSPF – Bulletin de la Société Préhistorique Française, Paris
- BSSC – Buletinul Societății de Științe din Cluj
- București-MIM – București. Materiale de Istorie și Muzeografie. Muzeul Municipiului București
- BYZAS – German Archaeological Institute of Istanbul
- CA – Cercetări Arheologice. Muzeul Național de Istorie a României, București
- CAB – Cercetări arheologice în București. Muzeul Municipiului București
- Caiete ARA – Caietele ARA, Revistă de Arhitectură. Restaurare și Arheologie, Asociația ARA, București
- Carpica – Carpica. Complexul Muzeal „Iulian Antonescu” Bacău, Bacău
- CCA – Cronica Cercetărilor Arheologice din România, București
- CCDJ – Cultură și Civilizație la Dunărea de Jos, Călărași
- Cerclst – Cercetări Istorice, Muzeul de Istorie a Moldovei, Iași
- CN – Cercetări numismatice, București
- CollAn – Colloquium Anatolicum. Anadolu Sohbetleri, Institutum Turcicum Scientiae Antiquitatis, Istanbul
- Crisia – Crisia. Muzeul Țării Crișurilor, Oradea
- Cuadernos del Museo Geominero – Museo Geominero, Instituto Geológico y Minero de España, Madrid
- Current Anthropology – Current Anthropology. University of California, Merced
- Dacia – Dacia (Nouvelle Série). Revue d'archéologie et d'histoire ancienne. Académie Roumaine. Institut d'archéologie « V. Pârvan », Bucarest
- Danubius – Danubius, Revista Muzeului de Istorie Galați
- Documenta Praehistorica – Documenta Praehistorica, University of Ljubljana, Faculty of Arts, Department of Archaeology, Ljubljana
- DolgCluj – Dolgozatok az Erdélyi Nemzeti Múzeum Érem- és Régisírtárából, Kolozsvár
- DTKFD – Ankara Üniversitesi Dil ve Tarih-Coğrafya Fakültesi Dergisi
- EJA – European Journal of Archaeology
- ERAUL – Études et Recherches archéologiques de l'Université de Liège
- ÉtAlex – Études Alexandrines, Centre d'Études Alexandrines
- ÉtTrav – Etudes et travaux. Studia i prace. Travaux du Centre d'archéologie méditerranéenne de l'Académie Polonaise des Sciences
- EurAnt – Eurasia Antiqua. Deutsche Archäologisches Institut, Berlin
- FrC – Fragmenta Comica
- FolArch – Folia Archaeologica. A Magyar Nemzeti Múzeum Évkönyve. Annales Musei Nationalis Hungarici, Budapest
- FSI – Forensic Science International
- Germania – Germania. Anzeiger der Römisch-Germanischen Kommission des Deutschen Archäologischen Instituts, Frankfurt
- Geoarchaeology – Geoarchaeology. An International Journal
- Hesperia – Hesperia. Journal of the American School of Classical Studies at Athens, Cambridge
- HOMO – HOMO. Journal of Comparative Human Biology, Stuttgart
- Human Evolution – Human Evolution, International Institute for Humankind Studies and University of Florence
- Ialomița – Ialomița. Studii de cercetări de arheologie, istorie, etnografie și muzeologie, Slobozia
- IJO – International Journal of Osteoarchaeology
- Iran – Iran. Journal of the British Institute of Persian Studies
- IstMitt – Istanbul Mitteilungen, Istanbul
- Istros – Istros, Muzeul Brăilei, Brăila
- IzvestijaVarna – Izvestija na Archeologiceskii Institut, Sofia
- JAHA – Journal of Ancient History and Archaeology, Cluj-Napoca
- JAnat – Journal of Anatomy
- JAS – Journal of Archaeological Science
- JAS: Reports - Journal of Archaeological Sciences: Reports
- JDAI.AA – Jahrbuch des Deutschen Archäologischen Instituts, Archäologischer Anzeiger, Berlin
- JFS – Journal of Forensic Sciences

- JHE – Journal of Human Evolution
 JRA – Journal of Roman Archaeology
 JRGZM – Jahrbuch des Römisch-Germanischen Zentralmuseums Mainz, Mainz
 JRS – The Journal of Roman Studies
 KST – T. C. Kültür Bakanlığı, Eski Eserler ve Müzeler Genel Müdürlüğü, I. Kazı Sonuçları Toplantısı, Ankara / Republic of Turkey, General Directorate of Ancient Monuments and Museums, Ankara, Turkey
 LIMC – Lexicon Iconographicum Mythologiae Classicae, Zürich, München, Düsseldorf
 Litua – Litua, Studii și cercetări, Târgu-Jiu
 LRBC – *Late Roman Bronze Coinage A.D. 394-498*, Londra, 1965: I, *The Bronze Coinage of the House of Constantine A.D. 324-346* (P. V. Hill, J. P. C. Kent); II, *Bronze Roman Imperial Coinage of the Later Empire A.D. 346-498* (R. A. G. Carson, J. P. C. Kent).
 Macedoniae Acta Archaeologica – Macedonian Archaeological Society, Skopje, Republic of Macedonia
 MAMA – Monumenta Asiae Minoris antiqua. Publications of the American Society for Archaeological Research in Asia Minor
 Marisia – Marisia. Studii și materiale. Arheologie – Istorie – Etnografie, Târgu Mureș
 Marmatia – Muzeul Județean de Istorie și Arheologie Maramureș, Baia Mare
 MarNero – Il Mar Nero. Annali di archeologia e storia
 MCA – Materiale și Cercetări Arheologice, București
 MDOG – Mitteilungen der Deutschen Orient Gesellschaft
 MemAnt – Memoria Antiquitatis, Piatra Neamț
 MFMÉ – A Móra Ferenc Múzeum Évkönyve, Szeged
 Mousaios – Mousaios. Buletinul Științific al Muzeului Județean Buzău
 MuzNaț – Muzeul Național, București
 NAC – Numismatica e Antichità Classiche, Lugano-Pregassona
 OIP – Oriental Institute Publications, University of Chicago
 OJA – Oxford Journal of Archaeology, Oxford
 Olba – Mersin University Publications of the Research Center of Cilician Archaeology, Mersin, Turkey
 PALMA – Papers on Archaeology of the Leiden Museum of Antiquities, Leiden, Olanda
 PAS – Prähistorische Archäologie in Südosteuropa, München-Berlin
 PBF – Prähistorische Bronzefunde, Münster
 Peuce – Peuce. Studii și cercetări de istorie și arheologie, Institutul de Cercetări Eco-Muzeale, Tulcea
 Phoenix – Phoenix. The Journal of the Classical Association of Canada
 Plural – Journal of the History and Geography Department „Ion Creangă” Pedagogical State University, History, Culture. Society. Seria Archaeologica II, Chișinău
 PMMB – Publicațiile Muzeului Municipiului București
 Pontica – Pontica. Studii și materiale de istorie, arheologie și muzeografie, Muzeul de Istorie Națională și Arheologie Constanța
 PZ – Prähistorische Zeitschrift, Berlin-Mainz
 Quaternary International – Quaternary International. The Journal of the International Union for Quaternary Research
 Quaternary Science Reviews – Quaternary Science Reviews. The International Multidisciplinary Research and Review Journal
 RA – Revue Archéologique, Paris
 RAASI – Revista de Arheologie, Antropologie și Studii Interdisciplinare, Institutul de Cercetări Bioarheologice și Etnoculturale, Republica Moldova
 Radiocarbon – An International Journal of Cosmogenic Isotope Research, Cambridge
 RCAN – Revista de Cercetări Arheologice și Numismatice, Muzeul Municipiului București
 RevBistr – Revista Bistriței. Complexul Muzeal Bistrița-Năsăud, Bistrița
 RevMuz – Revista Muzeelor, București
 RGZM – Römisch-Germanisches Zentralmuseums Mainz, Mainz
 RIC – *The Roman Imperial Coinage*, Londra: I², *From 31 BC to AD 69*, 1984 (C. H. V. Sutherland); II, *Vespasian to Hadrian*, 1926 (H. Mattingly, E. A. Sydenham); II.1, *From AD 69-96. Vespasian to Domitian*, 2007 (I. A. Carradice, T.V. Buttrey); II.3, *From AD 117-138. Hadrian*, 2019 (R. A. Abdy, P. F. Mittag); III, *Antoninus Pius to Commodus*, 1930; IV.1, *Pertinax to Geta*, 1968 (H. Mattingly, E. A. Sydenham); IV.2, *Macrinus to Papien*, 1938; IV.3, *Gordian III – Uranian Antoninus*, 1949 (H. Mattingly, E. A. Sydenham, C. H. V. Sutherland); V.1, 1927 (reimprimat 1968; P. H. Webb); VII, *Constantine and Licinius A.D. 313-337*, 1966 (P. M. Bruun); VIII, *The Family of Constantine I A.D. 337-364*, 1981; X, *The Divided Empire and the Fall of the Western Parts A.D. 395-491*, 1994 (J. P. C. Kent)
 SAA – Studia Antiqua et Archaeologica, Iași
 Sargetia – Sargetia. Acta Musei Devensis. Buletinul Muzeului județean Hunedoara, Deva

SAV – Študijné zvesti Archeologicky ústav SAV, Nitra
Sci Rep – Scientific Reports
SCIV(A) – Studii și Cercetări de Istorie Veche (și Arheologie), București
SCN – Studii și Cercetări de Numismatică, București
Seleucia – Seleucia. Olban Excavations Series
SP – Studii de Preistorie, București
SprawArch – Sprawozdania Archeologiczne, Warsaw
SRMKA – Seramik Araştırmaları Dergisi, The Journal of Ceramic Research
StArchBrno – Studia Archaeologica Brunensia, Masaryk University, Brno
Starinar – Starinar. Arheološki institut Beograd
StComPitești – Studii și Comunicări, Seria Istorie, Muzeul Județean Argeș, Pitești
StudCom Satu Mare – Studii și comunicări Satu Mare
Studia Praehistorica – National Archaeological Institute with Museum of the Bulgarian Academy of Sciences
Syria – Syria. Archéologie, art et histoire. Institut Français du Proche-Orient
Terra Sebus – Terra Sebus. Acta Musei Sabesiensis, Anuarul Muzeului Municipal „Ioan Raica”, Sebeș
Th-D – Thraco-Dacica, București
Thracia – Thracia, Sofia
TIB – *Tabula Imperii Byzantini*, Wien
Transylvanian Review – Transylvanian Review. Centrul de Studii Transilvane, Cluj-Napoca
TÜBA-AR – TÜBA-AR Türkiye Bilimler Akademisi arkeoloji dergisi (TÜBA-AR Turkish Academy of Sciences Journal of Archeology)
UPA – Universitätsforschungen zur Prähistorischen Archäologie, Bonn
VAH – *Varia Archaeologica Hungarica* V. Redigit Csanád Bálint. Publicationes Instituti Archaeologici Academiae Scientiarum Hungaricae, Budapest
Varia Anatolica – *Varia Anatolica*. L'Institut Français d'Études Anatoliennes, Istanbul
Ziridava – Ziridava. Studia Archaeologica, Arad