

RECENT DISCOVERIES OF BONE ARTEFACTS AT HISTRIA, “BASILICA EXTRA MUROS” SECTOR

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Abstract. The paper presents the results of the analysis of recent data regarding an assemblage composed of 19 artefacts retrieved during the 2010 and 2012 archaeological excavations in the *Basilica extra muros* Sector of the ancient city of Histria (today Istria, Constanța County, Romania). The objects represent completed and used pieces (tools, adornments, tube) and raw material (cattle metapodials and radius). The 5 artefacts discovered in 2010 represent (probably) raw materials for anvils manufacturing (cattle metapodials, radius); other 9 pieces discovered in 2012 were used as anvils for manufacturing the toothed iron sickles and were dated back to the 2nd century AD. The assemblage contains also 4 bone hair pins and a bone tube (for preserving needles? or used as whistle?). In the past six decades, the bone (and antler) anvils have arisen numerous controversial debates related to their origins, diffusion and especially to their functional role. They were discovered in two large geographical areas including the Western Basin of the Mediterranean Sea and the Western and North-Western regions around the Black Sea and are dated between the 5th century BC and the 18th century AD. The methodology of research includes the analysis of various parameters such as: data relative to the context of their discovery, type, state of conservation, raw material, dimensions, manufacture, traces of use, reshaping, and traces of reuse. The traces of manufacture and use were currently analysed using an optical microscope. Apart from the relative rarity of these pieces we can mention the fact that the study of antique bone (as well as antler) anvils from Romania has the advantage of an extended and unitary research and brings an important documentary contribution to the presence of these controversial artefacts in some Central-Eastern regions of Europe. The artefacts in question illustrate complex interconnections between traditions extended over a long period of time, ancient crafts and an agrarian economy at the contact between the iron technology (iron smelting, manufacture of iron tools), the bone and antler processing, the use/reuse of the artefacts resulted, and the cultivation of cereals in Antiquity in the regions around the Black Sea.

Keywords: bone anvil; bone hair pin; bone industry; bone tube; Histria.

Rezumat. Lucrarea prezintă rezultatele analizei datelor recente privind o categorie specială reprezentată de 19 piese, recuperate în campaniile arheologice 2010 și 2012 de la Histria, Sectorul *Basilica extra muros*. Pieseile reprezintă materie primă neprelucrată (patru metapodii și un radius de vită), piese finite și utilizate, cum sunt suporturile pentru dințarea secerilor de fier (9), acele de păr (4) și un tub de os. Artefactele sunt datate în secolul al II-lea p. Chr. În ultimii 60 de ani suporturile pentru dințarea secerilor de fier au generat numeroase controverse, legate de origine, difuziune și, mai ales, rolul lor funcțional. Ele au fost descoperite în două mari arii geografice incluzând bazinul occidental al Mediteranei și zonele de vest și nord-vest din jurul Mării Negre și sunt datate între secolele al V-lea a. Chr. și al XVIII-lea p. Chr. Metodologia de studiu include analiza unor parametri variați ca: datele relative la contextul descoperirii, tipul, starea de conservare, materia primă, dimensiunile, modul de fabricare, urmele de folosire, reamenajarea, urmele de reutilizare. Urmele de fabricare și utilizare au fost analizate sistematic în microscopie optică. În afară de relativa raritate a acestor piese, putem

menționa faptul că studiul suporturilor antice de os (și corn de cerb) pentru dințarea secerilor de fier descoperite în România are avantajul unui demers extins și unitar, furnizând o importantă contribuție documentară asupra prezenței acestor controversate artefacte în regiunile central-estice ale Europei. Obiectele în discuție ilustrează interfața complexă a unor tradiții de lungă durată, vechi meșteșuguri și economie agrară la contactul între tehnologia reducerii și prelucrării fierului, procesarea osului și a cornului și utilizarea/reutilizarea artefactelor rezultate și cultivarea cerealelor în antichitate în regiunile din jurul Mării Negre. Studiul nicovalelor antice de os și corn din România și în primul rând cele descoperite la Histria oferă, astfel, o importantă contribuție la cunoașterea tehnologiei și economiei în Europa antică.

Cuvinte cheie: suport de os; ac de păr de os; industria osului; tub de os; Histria.

1. Context

The archaeological researches of the past decade (2001–2012) at Histria (Istria, Constanța County), ancient city placed on the western slope of the Black Sea led by Alexandru Suceveanu and Mircea Victor Angelescu (“Vasile Pârvan” Institute of Archaeology of the Romanian Academy, Bucharest)¹; in the Basilica extra muros Sector researches led by Alexandru Suceveanu and Viorica Rusu-Bolindeț (National History Museum of Transylvania, Cluj-Napoca)², while in the Basilica with Crypt-“Florescu” Sector, researches led by Irina Adriana Achim (“Vasile Pârvan” Institute of Archaeology of the Romanian Academy, Bucharest)³.

Bone and antler industry coming and analysed from the both sectors is represented so far by 118 pieces: 6 (2001); 28 (2002); 13 (2003); 31 (2004); 20 (2006); 1 (2008); 10 (2010); 9 (2012): tools (bone “anvils” used for serrated iron sickles, two bone pins with a proximal perforation which might be used like needles); adornments (bone pins without proximal perforation considered hair pins); bone bands probably used like elements of marquetry; a bone tube; a bone handle; blanks, different partially shaped raw materials, waste products etc. Two pieces coming from Basilica with Crypt (“Florescu”) and 116 have been discovered in the *Basilica extra muros* Sector⁴

Archaeological excavations led by PhD Viorica Rusu-Bolindeț at Histria in the *Basilica extra muros* Sector made in 2010 and 2012 have revealed another important assemblage of bone artefacts. The artefacts are preserved in the collections of National Museum History of Transylvania, Cluj-Napoca. They were discovered abandoned in

¹ Suceveanu 2002; Suceveanu 2003; Suceveanu 2004; Suceveanu 2005; Suceveanu 2006; Suceveanu 2007. For other results of archaeological research at Histria see: Suceveanu 2008, Suceveanu 2009, Suceveanu 2010; Angelescu 2011; Angelescu 2012; Angelescu 2013.

² Suceveanu et alii 2002; Suceveanu et alii 2003a; Suceveanu et alii 2004; Rusu-Bolindeț, Bădescu 2006; Rusu-Bolindeț et alii 2005; Rusu-Bolindeț et alii 2006; Rusu-Bolindeț et alii 2007; Rusu-Bolindeț et alii 2008; Rusu-Bolindeț et alii 2009; Rusu-Bolindeț et alii 2010; Rusu-Bolindeț et alii 2011.

³ Suceveanu et alii 2003b; Achim et alii 2004; Achim et alii 2005; Achim et alii 2006; Achim et alii 2007; Achim, Bădescu, Munteanu 2008; Achim, Beldiman, Munteanu 2009; Achim et alii 2010; Achim et alii 2011.

⁴ Beldiman 2013; Beldiman et alii 2007; Beldiman et alii 2008a; Beldiman et alii 2008b; Beldiman et alii 2009b; Beldiman et alii 2009c; Beldiman et alii 2010a; Beldiman et alii 2010c; Beldiman et alii 2011a; Beldiman et alii 2011b; Beldiman et alii 2011c; Beldiman, Sztancs 2007; Beldiman, Sztancs 2009a; Beldiman, Sztancs 2009b; Beldiman, Sztancs 2009c; Beldiman, Sztancs 2010a; Beldiman, Sztancs 2010b; Beldiman, Sztancs 2011.

secondary contexts and come from structures, pits and from the vicinity of some complexes used for reducing the iron ore, connected to the crafting area from Section I dated to the Early Roman period (probably, 1st–7th decades of the 2nd century AD)⁵.

During the 2010 campaign, ten bone pieces were discovered (Pls. I – XXIII). Among them, five were long bones (metapodials, radius) which were probably chosen as raw materials for tools used in order to dent the iron sickles (in our articles we called them “anvils” as in international literature), four bone hair pins and a bone tube⁶. During the 2012 campaign, nine pieces were discovered (Pls. XXIV–LV). All of them are anvils⁷.

The typological structure of the assemblage comprises: adornments and accessories: bone hair pins; tubes; technical pieces; raw materials.

These types of artefacts have been the subject of several articles published during the last years⁸.

2. Bone anvils

The cattle long bones (metapodials, radius) were selected in order to be used as raw materials for anvils used in order to dent the iron sickles. In Romania the most anvils were discovered at Histria – *Basilica extra muros* Sector. They have presented a high interest and have developed a very complex and actual issues regarding the iron metallurgy and function of workshops for manufacturing farming tools (sickles, among them) and the processing of skeletal animal materials⁹.

On this occasion, we present data regarding the special category of discoveries made of bone and antler: anvils. These were pointed out recently in Romanian archaeological literature for the first time on the western shore of the Black Sea in the ancient fortress city, Histria, and they illustrate in a unique way some technologic and economic aspects of those times.

Among the discoveries of bone and antler artefacts at Histria a special attention was drawn by the bone (and exceptionally) antler anvils. This group of artefacts has an important documentary potential because it illustrates, in a unique way, the economic activities that seem very different and complex, but in reality they were interconnected (farming, agricultural activities, iron craft, bone and antler industry craft, woodcraft etc.).

The systematic and detailed study of these materials began in 2007 when artefacts discovered in 2004 in the *Basilica extra muros* Sector were analysed. In 2008 the systematic study of bone and antler industry discovered during 2001–2003 was finished.

⁵ Rusu-Bolindeț, Bădescu 2006; Rusu-Bolindeț et alii 2007; Rusu-Bolindeț et alii 2008; Rusu-Bolindeț et alii 2009; Rusu-Bolindeț et alii 2010; Rusu-Bolindeț et alii 2011.

⁶ Rusu-Bolindeț et alii 2011.

⁷ Unpublished field research report.

⁸ Beldiman 2013; Beldiman et alii 2007; Beldiman et alii 2008a; Beldiman et alii 2008b; Beldiman et alii 2009a; Beldiman et alii 2009b; Beldiman et alii 2009c; Beldiman et alii 2010a; Beldiman et alii 2010b; Beldiman et alii 2010c; Beldiman et alii 2010d; Beldiman et alii 2011a; Beldiman et alii 2011b; Beldiman et alii 2011c; Beldiman, Sztancs 2007; Beldiman, Sztancs 2009a; Beldiman, Sztancs 2009b; Beldiman, Sztancs 2009c; Beldiman, Sztancs 2010a; Beldiman, Sztancs 2010b; Beldiman, Sztancs 2011.

⁹ Beldiman et alii 2011a; Beldiman 2013 – with bibliography.

Other studies were related to artefacts discovered in 2006 in the *Basilica extra muros* Sector and to artefacts retrieved in the Basilica with Crypt-“Florescu” Sector¹⁰.

Pieces from *Basilica extra muros* Sector are preserved in the collections belonging to the National History Museum of Transylvania, Cluj-Napoca, while the artefacts from Basilica with Crypt-“Florescu” Sector are part of the collection of the “Vasile Pârvan” Institute of Archaeology, Bucharest.

The artefacts from *Basilica extra muros* Sector called “bone anvils” were discovered abandoned in secondary contexts. They come from structures, pits and from the vicinity of some complexes used for reducing the iron ore, connected to the crafting area from Section I belonging to the Early Roman period (probably, 1st-7th decades of the 2nd century AD)¹¹.

The artefacts from Basilica with Crypt-“Florescu” Sector were discovered in secondary contexts, probably abandoned. They don't have a certain date because of the former interventions related to Grigore Florescu's excavations. There are some clues that indicate chronological data during *grosso modo* the 2nd century AD¹². From this sector two pieces have been analysed: a piece which was discovered in 2002 and another one found in 2008¹³.

2.1. Methodology. Typology

The methodology of analysis takes into account the registration and the analysis of all essential data regarding: artefacts' identification using a code (which is made of the site's code, the discovery year, the sector's code and a serial number for example: HST/2001-BEM 3); the realisation of the catalogue (which lays out the dataset regarding the code of the piece, discovery context, raw material, conservation status, subtype, description), dimensions (the total length/the preserved length; width/diameter of the edges and of the middle part; the length of active part on each side; maximal/minimal width of active part on each side dimensions are given in millimetres). In this study, we used the systematic comprehensive data analysis including those issued from microscopic (optical and digital) analysis (zoom 4x-40x; zoom 25x-200x). With this occasion, we created a database and a bank of digital images which includes more than 1000 macroscopical and microscopical pictures. This is the first database for bone and antler industry from Histria and contains all parameters that are taken into account in our studies published over the years. The aim of artefacts' analysis is to record all contextual, morphological, typological and technological data and to highlight the “manufacturing chain” or “manufacturing sequence” and use wear. In this way, we may reconstruct “the technological biography” of each artefact.

¹⁰ Beldiman 2013; Beldiman et alii 2007; Beldiman et alii 2008a; Beldiman et alii 2008b; Beldiman et alii 2009a; Beldiman et alii 2009b; Beldiman et alii 2009c; Beldiman et alii 2010a; Beldiman et alii 2010b; Beldiman et alii 2010c; Beldiman et alii 2010d; Beldiman et alii 2011a; Beldiman et alii 2011b; Beldiman et alii 2011c; Beldiman, Sztancs 2007; Beldiman, Sztancs 2009a; Beldiman, Sztancs 2009b; Beldiman, Sztancs 2009c; Beldiman, Sztancs 2010a; Beldiman, Sztancs 2010b; Beldiman, Sztancs 2011.

¹¹ Rusu-Bolindeț, Bădescu 2006; Rusu-Bolindeț et alii 2007; Rusu-Bolindeț et alii 2008; Rusu-Bolindeț et alii 2009; Rusu-Bolindeț et alii 2010; Rusu-Bolindeț et alii 2011.

¹² Achim, Beldiman, Munteanu 2009.

¹³ Beldiman et alii 2009b; Beldiman et alii 2009c; Beldiman et alii 2010a; Beldiman et alii 2010b.

Artefacts that are generically called anvils were set in a special wooden installation, on a workbench and were used at the shaping of iron sickles (striking the serrated edges using the technique of indirect percussion with a triangular section chisel/*poinçon*). This operation is applied at the initial shaping of the sickles’ blades, but also at the sickles’ repair¹⁴.

The typological classification adopts conventional criteria which reflect the usage stage at the moment that the artefacts were abandoned. Taking into consideration the number of anvils’ shaped anatomical faces/sides (which become active/smoothed parts) we may conventionally distinguish the next subtypes: simple anvils (with one active side), double anvils (with two active sides), triple anvils (with three active sides), quadruple anvils (with four active sides), undetermined subtype (fragments) and raw material. As we already mentioned, the subtypes reflect the stage of shaping and usage of the artefacts¹⁵.

The typological structure of the whole collection consists of: simple anvils, double anvils, triple anvils, quadruple anvils, undetermined subtypes (fragments) and raw materials.

Generally the raw materials used for this kind of anvils in different parts of Europe and North Africa have been various: most of them are skeletal elements from large domestic mammals (cattle horse, camel etc.): long bones (metapodials, tibia), mandibles, coxal bone. We also have some special cases when segments of red deer antler beams and tines were used¹⁶.

Finished anvils from *Basilica extra muros* Sector are made only of cattle metapodials (metacarpal and metatarsal bones). As raw materials we can notice metapodials and exceptionally a radius segment discovered in 2010 (Pls. XI-XII). There is one exception at Basilica with Crypt-“Florescu” Sector where an artefact is made of cattle metapodial and another of a red deer antler¹⁷.

2.2. Manufacture and use

Bone and antler anvils are made of cattle metapodials (*Bos taurus*) and a segment of antler beam.

Firstly, we take into consideration the analysis of different traces of manufacture and use, so that we may propose the reconstitution of the phases of the standard “manufacturing chain/sequence” of the anvils from cattle metapodials: no débitage; façonnage/shaping in two moments: intensive chopping and abrasion/intense scraping using a metallic blade (a knife?) for obtaining a flat and smooth surface. This smooth surface was made on one-two-three or four bone’s anatomical faces.

Wear traces are quite uniform as origin, morphology and dimensions; the aim of using such pieces (anvils) was to shape (sawing-toothed) the iron sickle’s active part (blade) or to reshape it. After all active parts/faces of the anvils were used and entirely

¹⁴ Aguirre et alii 2004.

¹⁵ Beldiman et alii 2008b; Beldiman et alii 2010a.

¹⁶ Briois et alii 1997; Esteban Nadal, Carbonell Roure 2004; Moreno-Garcia et alii 2007; Moreno-Garcia et alii 2005; Poplin 2007a; Poplin 2007b; Rodet-Belarbi et alii 2007 - with bibliography.

¹⁷ Beldiman et alii 2011a; Beldiman et alii 2011c; Beldiman 2013 - with bibliography.

covered by small triangular dents/hollows there are often situations when the smooth surfaces are reshaped including the fragments of pieces fractured on the middle part.

Wear traces were produced while the “sickle’s teeth” were shaped. The dents produced have a length of 2–3 mm and were obtained by indirect striking with a hammer with narrow active part the cutting edge of the sickle’s blade with using an iron chisel/poinçon, probably having a triangular section. The rows of around 5–10 dents each are parallel, divergent, convergent or even crossed.

Covering the whole anvil’s surface with rows of dents supposed: a) the preparation and the usage of another active part of anvil; there are cases when a single piece had four active parts which corresponded to the four anatomical bone’s faces; those were prepared and used successively; b) unique or double reshaping of used surface by chopping, abrasion or scraping using a metal tool, like in the first stage of shaping. All these conclusions are based on observations of microscopic traces preserved on surfaces’ anvils.

Because of the renewed shaping of the anvils, the compact tissue of metapodial got thinner and very often, the artefacts broke in the middle part. This break was due to the high pressure that was applied during the using. In this case, the artefact was abandoned or, if the preserved length was sufficient, it was reused/reshaped.

We should refer also to the unique artefact HST/2002-BFL 6, the biggest one until now (yoke? reused as anvil) which, so far, doesn’t have analogies in the archaeological literature consulted. Red deer antler artefacts were initially manufactured and used like anvils and are also (but rarely) published in Romanian literature (a piece made of a segment of an antler’s beam at Durostorum)¹⁸ and in the archaeological literature from the Republic of Moldavia (a piece made of a segment of antler tine from Saharna Nouă)¹⁹.

The “technological biographies” of the anvils are various and generally implies several stages: 1. the preparation of the active part on an anatomical face/side of the bone; 2. using and covering it entirely with dents/hollows; 3. reshaping the side; 4. reusing and covering it entirely with dents/hollows; 5. preparation of the active part on the second side; 6. using and covering it entirely with dents/hollows; 7. the preparation of the active part on the third side; 8. using and covering it entirely with dents/hollows; 9. establishing the active part on the fourth side; 10. using and covering it entirely with dents/hollows; 11. the reshaping of the side; 12. reusing; 13. discard/abandon.

There are situations when probably at least two active sides were prepared from the first stage of shaping; but this hypothesis, ethnographically supported, is difficult to argue²⁰.

2.3. Pieces discovered in 2010 and 2012

The pieces discovered in 2010 campaign at Histria (Pls. I–XXIII) are probable raw materials for manufacturing anvils. There are four cattle metapodials, two of

¹⁸ Elefterescu 2009, 54, no. 488, Pl. XXVII, 488; Beldiman et alii 2009, 118, Pl. 4 (piece DRS 4); Beldiman et alii 2010d, Pl. 4 (piece DRS 4).

¹⁹ Arnăut 2007, 302, Pls. 1, 3.

²⁰ Esteban Nadal, Carbonell Roure 2004, 640–644; Moreno-Garcia et alii 2005, 623–624; Rodet-Belarbi et alii 2007, 160.

them entire, two fragmentary and a fragmentary cattle radius. Some of them preserve traces of skinning and butchering.

Nine artefacts were discovered during the 2012 campaign (Pls. XXIV-LV). Eight of them are anvils made from cattle metapodials and a fragmentary metapodial which probably was preserved in order to be used as raw material for an anvil. Three anvils were entire and five of them, fragmentary.

From a typological point of view, there are: simple anvils (with a side which was prepared for use or used) – 3; double anvils (with two sides prepared for use or used) – 4; a triple anvil (with three sides prepared for using or used). With one exception, all the pieces were abandoned after a cycle of usage on each side. Some of them are re-shaped, but un-used. The piece HST/2012-BEM 2 (Pls. XXIX-XXXII) was manufactured as a double anvil, but un-used. It is a rare artefact which completes the date that we have had since now regarding the manufacturing sequences of the bone anvils from cattle metapodials.

2.4. Analogies

Anvils made of cattle or horse metapodials, tibias, mandibles, coxal bone etc. as well as those made of Red deer antler were also discovered in other sites from Romania: Ostrov-Durostorum, Constanța County (4 artefacts)²¹, Chitila, Ilfov County (13 artefacts)²². These discoveries represent the analogies from Romania for the artefacts retrieved at Histria which are presented on this occasion.

For other European regions and for Northern Africa, the archaeological literature mentions many such artefacts dated from the Greek, the Hellenistic and the Roman periods (5th century BC – 5th century AD) on the actual territory of Republic of Moldova and Ukraine. These artefacts were discovered in Greek cities from the Black Sea Basin (Olbia, Neapolis, Thanagoria etc.), as well as in Schythian-Greek and Getic settlements²³. Others are dated between the 7th and 18th centuries and were retrieved in settlements from the Western Mediterranean Basin (France, Spain, Portugal, Italy, Austria, Hungary, some countries from Northern Africa)²⁴.

In the context of new research interest manifested for the topic of bone anvils at the 5th and 7th WBRG some archaeologists and archeozoologists started to pay more attention to this kind of artefacts²⁵. Consequently we can observe increasing of the list of publications dealing with this topic for Central and Western Europe, including Southern Italy (a piece dated in 2nd century BC – 1st century AD) and Austria (a piece that seems to be medieval)²⁶.

Very recently were published some pieces coming from Hungarian Medieval sites (10th-13th centuries AD). So, at Felgyő – “*Kettőshalmi dűlő*” are mentioned bone anvils

²¹ Elefterescu 2008; Elefterescu 2009; Beldiman et alii 2009; Beldiman, Sztancs 2009; Beldiman, Sztancs 2009c; Beldiman et alii 2009; Beldiman et alii 2010d.

²² Boroneanț 2003; Bălășescu, Radu, Nicolae 2003; Boroneanț 2005; Beldiman et alii 2009; Beldiman, Sztancs 2009c.

²³ Semenov 1970; Peters 1986; Arnăut 2007 – with bibliography.

²⁴ Briois et alii 1997; Esteban Nadal, Carbonell Roure 2004; Moreno-Garcia et alii 2005; Moreno-Garcia et alii 2007; Poplin 2007a; Poplin 2007b; Rodet-Belarbi et alii 2007 – with bibliography.

²⁵ Moreno-Garcia et alii 2005; Poplin 2007a; Poplin 2007b.

²⁶ José Gonçalves et alii 2008; Gál 2010; Gőmőri, Szulovszky 2010; Gál, Bartosiewicz 2012.

made of cattle femur coming from Avar context²⁷. From the rural site of Cegléd – “*Fertály-földek IP*”, there are mentioned 32 bone anvils made of horse and cattle long bones. Other artefacts were discovered in an assemblage of a blacksmith *Vicus* in Budapest, in an oven at the site of Hajdúnánás – “*Fürjhalom-dűlő*”²⁸ and in the manorial settlement of Baj – “*Öreg-Kovács-hegy*” (anvil made of a cattle radius)²⁹. They are also mentioned in the medieval village of Kolon, dated from Árpád period. Bone anvils made of cattle and horse long bones (radius, tibia, metapodials, humerus) were discovered in a pit where had been thrown the debris from a smithy³⁰.

Actually, we may distinguish the area of diffusion of these artefacts (which had been considered “enigmatic” for decades) around the Mediterranean Basin having its origins, probably, in East Mediterranean and Northern Black Sea regions. The presence of bone anvils in Early Medieval Central Europe is still a problem to solve.

Over the years, those artefacts were considered by specialists to be polishing tools used for finishing textiles, hides, stone or wood (for the situation of the pieces that had been discovered in the Northern part of the Black Sea or in some Western European regions)³¹. There is a special case when the dents/hollows made during the usage were interpreted as “an unknown type of Getic writing” (the case of the artefacts from Chitila)³². Recently, “the riddle was solved”: the functional role of those artefacts benefited from the observations of technological behaviour in the Iberian ethnography. In this way, by also using experimental studies, the “manufacturing chain/sequence” of anvils and the way of using them were established³³.

Wear traces that are preserved on these artefacts are identical or very similar to the ones that were observed on the pieces from Histria because of their use as anvils for shaping the sawing-toothed sickles.

2.5. Aspects of economy

The bone and antler artefacts, discovered at *Basilica extra muros* Sector and *Basilica with Crypt-“Florescu”* Sector are very important to complete the discoveries catalogue with sites from Central-Eastern Europe. Also, they are important to establish precise data of craft activities during the 2nd-3rd centuries AD. The “Histrian anvils” assert the existence of some bone and antler workshops in the area of the sectors mentioned in the city, but at the same time, they assert the existence of iron processing workshops where sickles (tools very used in the harvesting of cereals in many regions of the Western Pontic shore) were produced and repaired.

The bone and antler anvils’ analysis (pieces relatively rare, and for the Romanian territory unstudied systematically until recently) not only reach a unique and complex problem regarding the antique economy and technology in the region of the Lower

²⁷ Kőrösi 2010, 112, Pls. 7–8.

²⁸ Gál et alii 2010, 117.

²⁹ Bartosiewicz 2010, 338, Pl. 16; Gál et alii 2010, 117.

³⁰ Kvassay, Vörös 2010, 127.

³¹ Semenov 1970; Peters 1986; Arnăut 2007; Beldiman et alii 2011a – with bibliography.

³² Boroneanț 2005; Beldiman et alii 2011a – with bibliography.

³³ Aguirre et alii 2004; Esteban Nadal, Carbonell Roure 2004, 640–644; Moreno-Garcia et alii 2005, 623–624; Rodet-Belarbi et alii 2007, 160; Beldiman et alii 2011a – with bibliography.

Danube³⁴, but they also show the connections between different activities (in our case, iron smelting and manufacturing of agrarian tools, bone and antler industry and harvesting techniques).

The artefacts presented in this paper offer the opportunity to sum up some conclusions regarding the bone (and antler) industry at Histria. The study should be continued with further approaches regarding the pieces that were discovered in ancient archaeological excavations or in recent ones carried out in other sectors of the site.

3. Bone hair pins

Bone hair pins represent an important typological category for bone industry from Histria (3rd category: Adornments: hair pins). Now there are 45 pieces because the ones discovered in 2010 were added in the catalogue³⁵.

The bone pins (*acus/spina crinalis* sau *acus/spina comatoria*) were very frequently adornments in Roman period. These are adornments used for coiffure or for maintaining fixed some textile hair adornments (bonnets, ribbons, veils, hair nets) and were made of bone (domestic animals' bones like cattle), ivory, metal (bronze, silver, gold) or glass. In Roman Empire, when the “monumental coiffure” which involved complex curls and buns were very frequent, the use of hair pins is indispensable. This fact stimulated the production of these artefacts with a diverse typology. These are numerous in archaeological sites belonging to this period (in towns, but also in camps, rural settlements or necropolises)³⁶.

Bone hair pins are common in the Roman archaeological sites dated in the 1st-3rd centuries from Dacia and Moesia Inferior/Scythia Minor. In Roman Dacia bone pins were found in the cities (Apulum, Porolissum, Potaissa, Romula, Ulpia Traiana Sarmizegetusa)³⁷, military camps (Buciumi, Gilău, Gherla, Inlăceni, Râșnov)³⁸ and *villae rusticae* (Cetea, Mediaș, Micăsasa, Răhău, Valea Chintăului)³⁹. For Dobrogea, we may mention the discoveries from Callatis, Capidava, Fântânele, Niculițel, Ostrov-Durostorum, Telița, Tropaeum Traiani⁴⁰. The bone hair pins discoveries are also mentioned at Histria - *Thermae* Sector⁴¹.

The typology of bone hair pins and needles take into consideration the international standards. We applied the criteria proposed by J.-C. Béal, K. Biró, E. Riha,

³⁴ For general aspects regarding the antique economy in the Dobrogea region see Suceveanu 1977; Suceveanu 1998.

³⁵ Beldiman et alii 2010c; Beldiman et alii 2011b.

³⁶ Daremberg et alii 1877, 61-64; Ciugudean 1997, 17 - with bibliography; Elefterescu 2008, 221-224 - with bibliography.

³⁷ Gudea, Bajusz 1991, Pls. I-XXI; Alicu, Nemeș 1982, 345-347, Pl. I, 22; Popilian 1976, 250, Pl. 12, 10; Cociș, Alicu 1993; see Ciugudean 1997, 17; Ciugudean 1997, 17-24, 53-60, 62-75, 152-161, 165-175, Pl. II-IX, XV-XXV; Bajusz, Isac 2000.

³⁸ Gudea, Pop 1970, 59, Pl. LVIII, 1, 3; see bibliography at Ciugudean 1997, 17.

³⁹ Gudea, Bajusz 1991, 83, note 17; see bibliography at Ciugudean 1997, 17.

⁴⁰ Barnea, Barnea, Bogdan-Cătănicu 1979, Pl. 155, 10.11, Pl. 163, 10.1; Preda 1980, Pl. LVII, 10; Baumann 1983, Pl. XLIII, 3-4; see Ciugudean 1997, 18; Suceveanu 1998, Pl. V, 7, 9-10; Beldiman, Sztancs 2007b, 110-111; Elefterescu 2008, 221-255.

⁴¹ Suceveanu 1982, 123-124, Pl. 22, 1 B-C, 3; I C; II A, 2; see Ciugudean 1997, 18.

H. Mikler and the typological considerations which were included in the catalogue published by A. Schenk⁴². The artefacts of *Basilica extra muros* Sector were typological classified according to the criteria proposed by N. Gudea, I. Bajusz (1991) and D. Ciugudean (1997)⁴³.

3.1. Pieces discovered in 2010

The bone hair pins discovered at *Basilica extra muros* Sector in 2010 (Pls. XIII-XX) belong to the following types: • with convex proximal end (N = 1); • with globular proximal end (probable, due to the fragmentary preservation, without proximal end) (N = 2); • indeterminable type pieces (due to the fragmentary preservation, without proximal part) (N = 2).

The typological aspects of the *Basilica extra muros* Sector 2010 bone hair pins do not present any special aspect. We are talking about common types with dimensions and morphology quasi-standardized which were discovered in many archaeological sites from Romania and Europe. The most suitable analogies are established between these pieces and the ones discovered at Histria *Thermae* Sector⁴⁴.

The most of the artefacts from our repertory are fragmentary or fragments. This fact could explain their abandon.

The artefacts from *Basilica extra muros* Sector including those from 2010 were made of fragments of cattle long bones (*Bos taurus*) using chopping, sawing, intense axial scraping with a metallic tool (knife), whole shaping and finishing using polishing (probably with a piece of leather). Some clues (like frequent broken or unfinished pieces, probably during the manufacturing chain) allow us to conclude that the bone hair pins were realised in a local workshop that functions in the handicraft of *Basilica extra muros* Sector⁴⁵. This conclusion is sustained by the discoveries of raw materials, blanks and waste products discovered besides bone pins in complexes like pits from *Basilica extra muros* Sector.

4. Bone tube

The bone tube (Pls. XXI-XXIII) has a total length of 53.70. It is made from a tibia diaphysis of a small mammal; it is fragmentary piece, one of the extremities has a sector missing (cca 1/2 of the circumference); old fractures; reshaped; the edges were abraded; intense bluntness and polish of the broken edges; débitage by transversal cutting with a blade knife on the circumference and detaching by direct percussion/fracture; specific traces of cutting are preserved at the ends; blunted and polished ends; superficial traces of transversal cutting are observed at the base of the broken sector; superficial axial scraping on the diaphysis; the broken end was reshaped by abrasion; possible use: tube for needles, whistle.

⁴² Béal 1983; Béal 1984; Riha 1990; Biró 1994; Mikler 1997; Schenk 2008.

⁴³ Gudea, Bajusz 1991, 81-126; Ciugudean 1997, 17-24, 53-75; Elefterescu 2008, 221-224 - with bibliography.

⁴⁴ For analogies and discussions as well as bibliography see *above*, papers cited in notes 30-31.

⁴⁵ Beldiman et alii 2010c.

5. Conclusions

The bone and antler anvils' analysis (pieces relatively rare, and for the Romanian territory unstudied systematically until now) not only reach a unique and complex problem regarding the antique economy and technology in the region of the Lower Danube⁴⁶, but they also show the connections between different activities (in our case, iron smelting and manufacturing of agrarian tools, bone and antler industry and harvesting techniques).

Roman bone hair pins discovered at *Basilica extra muros* Sector and analysed on this occasion represent the second assemblage from Histria that has been published in a detailed way⁴⁷. The extensive data regarding the discovery context contribute to the complete of catalogue of discoveries and data regarding the complex activities specific to the West side of Black Sea during the 2nd century AD because it reveals the existence of one or more workshops for manufacturing artefacts of skeletal materials.

In the same time, the category of bone pins fills the lot of skeletal materials artefacts from Histria, studied in a detailed manner. This approach should be continued and developed in the other sectors of the archaeological site.

The bone tube enriches the typological repertory of artefacts discovered at Histria - *Basilica extra muros*.

The artefacts presented in this paper have offered the opportunity to sum up some conclusions regarding the bone and antler industry at Histria. The study should be continued with further approaches regarding the pieces that were discovered in ancient archaeological excavations or in recent ones carried out in other sectors of the site.

6. Catalogue

Hereinafter, we insert the detailed files of bone hair pins, bone anvils, bone tube and raw materials discovered at *Basilica extra muros* Sector in 2010 and 2012. The catalogue presents the data (archaeological context, detailed description, morphology); the codes are established taking into account the year of the discovery (HST/2010-BEM 1-10; HST/2012-BEM 1-9). The artefacts' numbers which appear in the illustration are the same with the ones from the catalogue.

6.1. Histria-*Basilica extra muros* 2010

HST/2010-BEM 1 • Pls. I-II. Section IA. Square 3, -0.83 m. At about 0.10 m East of Western profile and 5.94 m South of Northern profile. No. 6/2010. • Whole cattle metapodial; without traces of manufacture; probably raw material used for an anvil; dimensions (mm): total length 212; proximal end 66.42/45.04; medial part 37.54/26.20; distal end 72.44/35.69.

HST/2010-BEM 2 • Pls. III-V. Section IA. Square 1, -1.14 m. G1/2010. At 0.05 m South of the Northern profile and at 0.10 m West of the Eastern profile.

⁴⁶ For general aspects regarding the antique economy in the Dobrogea region see Suceveanu 1977; Suceveanu 1998.

⁴⁷ Beldiman et alii 2010c.

• Whole cattle metapodial; on the left edge of the medial part there are short, fine, overlapped cut marks which probably were produced during the skinning; its presence in the complex suggests its possible use as raw material for an anvil; dimensions (mm): total length 232; proximal end 69.90/44.68; medial part 77.97/26.68; distal end 73.74/39.62; length max. cut marks 9.

HST/2010-BEM 3 • Pls. VI-VII. Section IA. Square 7, -0.80 m. At 3.70 m North of the Southern profile of the SIA and at 0.10 m West of the Eastern profile. No. 4/2010. • Whole cattle metapodial; it does not preserve traces of manufacture; probably raw material used for an anvil; dimensions (mm): total length 197; proximal end 51.48/31.20; medial part 31.41/21.84; distal end 56.54/28.82.

HST/2010-BEM 4 • Pls. VIII-X. Section IA. Square 1, -1.14 m. G1/2010. At about 0.10 m South of the Northern profile and at 0.15 m West of the Eastern profile. • Cattle fragmentary metapodial (distal); splitted for marrow extraction?; fine skinning cutmarks are preserved on the lateral sides of the epiphyseal condyles; traces of cutting and chopping with an axe are preserved on the anterior and posterior sides of the condyles; without traces of shaping the active part; its presence in the complex suggests its use as raw material for an anvil; dimensions (mm): length 120.35; medial part 27.42/26.23; length cut marks 4.50-5.90.

HST/2010-BEM 5 • Pls. XI-XII. Section IA. Square 2, -1.95 m. M6. At 1.19 m East of the Western limit of the M6 and 0.14 m South of North limit of M6. No. 3/2010. • Cattle distal radius; splitted for marrow extraction?; detached epiphysis; traces of dog chews preserved at the medial part; without traces of shaping the active part; its presence in the complex suggests its use as raw material; probably raw material used for an anvil; dimensions (mm): length 130.38; distal end 55.68/41.10; medial part (diaphysis) 38.99/28.42.

HST/2010-BEM 6 • Pls. XIII-XIV. Section IA. Square 3, -0.98 m. G2/2010. At 0.74 m East of the Western profile and at 4.80 m South of the Northern profile. No. 10/2010. • Bone hair pin with convex proximal end; fragmentary, the distal end has been recently fractured; broadened proximal part, asymmetric oval sections, a side of the proximal part is flat, the other convex; the sections of the medial and distal parts are circular; surfaces well preserved; shaping by abrasion and axial scraping with a knife blade; traces preserved on the inferior side of the proximal part; entirely shaped - eliminated the traces of scraping and abrasion; use-wear traces: bluntness, polish; dimensions (mm): total length 126/113; proximal end 5.70/2.89; medial part 4.36/4.04; distal part 2.72/2.32; distal end about 1.

HST/2010-BEM 7 • Pls. XV-XVI. Section IA. Square 6, -1.00 m. CXT 14. At 0.97 m West of the Eastern profile and at 0.82 m North of the Southern profile. No. 9/2010. • Bone hair pin; fragmentary, mesio-proximal segment, old fractures; the proximal end is detached; possible spherical end?; proximal part - thickened and bevelled, with unfinished traces of transversal and oblique abrasion; the medial part is bevelled, finished; circular and asymmetric polygonal sections; dimensions (mm): length 53.20; proximal end (actual) 3.47/3.36; proximal part max 4.70/4.55; medial part 3.58/3.55.

HST/2010-BEM 8 • Pls. XVII-XVIII. Section IA. Square 7, -0.82 m. CXT 6. At 0.10 m West of the Eastern profile and at 2.07 m North of the Southern profile.

No. 5/2010. • Bone hair pin: fragmentary, mesio-proximal segment, old fractures; the proximal end is detached; possible spherical end?; the proximal part is thickened, bevelled, with unshaped traces of abrasion; the medial part is bevelled, finished; circular and asymmetric polygonal sections; dimensions (mm): length 52.20; proximal end (actual) 4.37/4.04; proximal part max 4.62/4.31; medial part 4.21/3.89.

HST/2010-BEM 9 • Pls. XIX-XX. Section IA. Square 1, -1.07 m. G1/2010. At 0.84 m South of the Northern profile and at 0.10 m East of the Western profile. • Bone pin; fragmentary, distal segment, old fractures; the distal part is bevelled and finished; distal end is entirely preserved, bevelled; use-wear traces of bluntness and polish; the morphology of the distal end suggests the reshaping after fracture; circular and polygonal sections; dimensions (mm): length 48.14; distal part 4.30/3.96; distal end 2.42/2.31.

HST/2010-BEM 10 • Pls. XXI-XXIII. Section IA. Square 7, -0.95 m. Loose, yellowish sand layer with shells, pottery from the No. 2 room, bounded at South by the 2/2010. • Bone tube made from a tibia diaphysis of a small mammal; fragmentary piece, one of the extremities has a sector missing (cca 1/2 of the circumference), old fractures; reshaped; the edges were abraded; intense bluntness and polish of the broken edges; débitage by transversal cutting with a blade knife on the circumference and detaching by direct percussion/fracture; specific traces of cutting are preserved at the ends; blunted and polished ends; superficial traces of transversal cutting are observed and at the base of the broken sector; superficial axial scraping on the diaphysis; the broken end was reshaped by abrasion; possible use: tube for needles, whistle; dimensions (mm): total length 53.70; proximal end (entire, conventionally established) 10.63/10.09; medial part 10.31/10.14; distal end 10.41/9.79.

6.2. Histria-Basilica extra muros 2012

HST/2012-BEM 1 • Pls. XXIV-XXVIII. Section I. Squares 2-3. From the soil fallen from Northern profile, from the disused pits of the furnaces. • Double anvil made from metapodial; whole piece (entire anatomic support); the active part was shaped on the main anatomic sides (anterior and posterior); raw material: cattle metapodial (*Bos taurus*); shaping: direct percussion/chopping applied on both sides; shaping of the distal part/anterior side by chopping in order to reduce the thickness (for an optimal fit in the wooden bank?); traces of dents with intact morphology are preserved on the anterior side which indicates a single use cycle of piece; on the opposite side (the posterior one) - possible reshaping by axial scraping after the first cycle of use; use-wear traces: traces of dents of approx. 1-2 mm; these are triangular, elongated made by indirect percussion using a metallic tool and they are placed in linear, slightly curved, lines which are transversal and oblique; dimensions (mm): total length 235; proximal end 49.74/44.75; medial part 29.82/19.98; distal end 54.77/30.74; length shaped of the anterior side 145; width of the shaped anterior side 22.36; length of the shaped posterior side 155; width of the shaped posterior side 28.08; length area with use-wear traces anterior side 75; length area with use-wear traces posterior side 25 + 67.

HST/2012-BEM 2 • Pls. XXIX-XXXII. Section I. Square 5, -2.10 m. No. 9/2012. At 2.10 m West of the Eastern profile. From the 2nd level of the workshop. At the

flattening of the profile. • Double anvil made from metapodial; whole piece (entire anatomic support); the active part was shaped on the main anatomic sides (anterior and posterior); raw material: cattle metapodial (*Bos taurus*); shaping: intense axial scraping applied on both sides, more obvious on the posterior side; the distal epiphysis was entirely removed; the ends were chopped on sides and edges – specific overlapped traces; chopping applied in order to reduce the thickness (for optimal fit in the wooden bank?); both sides do not preserve any specific use-wear traces; anvil prepared for using; dimensions (mm): total length 192; proximal end 38.75/19.13; medial part 30.75/19.63; distal end 21.09/18.14; length area shaped by direct percussion/chopping max 55–60, min 25; length shaped anterior side 110; min. 25; max. width shaped on anterior side 12.69; length shaped on posterior side 120; width shaped on posterior side 27.90.

HST/2012-BEM 3 • Pls. XXXIII–XXXV. Section I. Squares 2–3. From the earth fallen from the Northern profile, from the disused pits of the furnaces. • Simple anvil made from metapodial; cattle metapodial without diaphysis; dog chews; recent fractures at the distal end/posterior side; exfoliations; active part shaped on the posterior side (anatomic); raw material: cattle metapodial (*Bos taurus*); shaping: intense axial scraping; use-wear traces: dents of approx. 1–2 mm, triangular and elongated-shaped, made by indirect percussion using a metallic tool, placed in linear and slightly curved lines transversally and oblique arranged; used as a percussion support for shaping the dents of the active part of a sickle; a single use cycle; the active part is covered on approx. 2/3 of the length with traces of dents which are oblique placed, preserving unchanged the morphology of dents – this indicates a single use cycle; dimensions (mm): total length 158; proximal end 41.90/41.87; medial part 23.50/24.33; distal end 25.82/37.80; length of the shaped part 80; max. width of the shaped part 14.88; length of the part with use-wear traces 47.

HST/2012-BEM 4 • Pls. XXXVI–XXXVIII. Section I. Squares 2–3. From the earth fallen from the Northern profile, from the disused pits of the furnaces. • Double anvil made of a metapodial; fragmentary piece; old oblique fracture at the level of medial part; approx. 1/3 of initial length (distal part) is preserved; the fracture of support was due to the attenuation of the diaphysis during the reshaping and during the use of the piece as a support for percussion; the right edge preserves traces of chopping at the level of epiphyseal condyle on a length of approx. 50 mm; the active part was shaped on the main anatomic sides (anterior and posterior); raw material: cattle metapodial (*Bos taurus*); shaping: axial/oblique abrasion; after the first use cycle, possible reshaping of the posterior side by scraping and abrasion; use-wear traces: traces of dents of approx. 1–2 mm, triangular and elongated-shaped, made by indirect percussion using a metallic tool, placed in linear, slightly curved, lines, arranged transversally and oblique; dimensions (mm): length 145; distal end 70.92/36.32; medial part 41.60/17.64; length shaped on anterior side 110; shaped width anterior side (preserved) 26.90; length shaped posterior side 111; shaped width posterior side 44.58; length area with use-wear traces anterior side 50; length area with use-wear traces posterior side 61.

HST/2012-BEM 5 • Pls. XXXIX–XL. Section I. Squares 2–3. From the earth fallen from the Northern profile, from the disused pits of the furnaces. • Raw material for shaping an anvil; cattle distal metapodial; old fractures at the proximal/medial

level (marrow extraction?); exfoliations; traces of skinning are preserved on the anterior side, as well as on the right edge (cut marks); dimensions (mm): length 140; distal end 56.40/29.69; medial part 27.45/26.17.

HST/2012-BEM 6 • Pls. XLI-XLII. Section I. Squares 2-3. From the earth fallen from the Northern profile, from the disused pits of the furnaces. • Simple anvil made from metapodial; fragmentary piece; old oblique fracture at the medial part; approx. 1/3 from the initial length (distal part) is preserved; fracture was probably produced during the use of the piece as anvil; corroded and exfoliated surfaces; the active part was shaped on the posterior side; raw material: cattle metapodial (*Bos taurus*); shaping: by intense axial scraping; it is entirely covered with lines of dent traces produced by percussion; the epiphyseal condyles were chopped on the posterior side revealing the spongy tissue; the posterior side was probably reshaped by scraping and abrasion after the first use; use-wear traces: dents of approx. 1-2 mm, triangular and elongated-shaped, made by indirect percussion using a metallic tool, placed in linear, slightly curved, lines, arranged transversally and oblique; dimensions (mm): length 112; distal end 54.62/29.41; medial part 27.44/23.84; length of the shaped area 71; width of the shaped area 30; length of the active part 60.

HST/2012-BEM 7 • Pls. XLIII-XLV. Section I. Squares 1-2. At section cleaning. Passim No. 4/2012. • Simple anvil made from metapodial; fragmentary piece; exfoliations, corroded; about 2/3 from the initial length (proximal and medial parts); old oblique fracture during the use at the level of medial part; its fracture was determined by the attenuation of the diaphysis produced during the reshaping or during its use as an anvil; the active part was shaped on the posterior side; raw material: cattle metapodial (*Bos taurus*); shaping: by intense axial scraping; reshaping of the active side after the first use cycle by scraping and abrasion then it was abandoned; lines of un-scraped dents are preserved at the medial part; their aspect might be compared with the one from the rest of the active part; use-wear traces: dents of approx. 1-2 mm, triangular and elongated-shaped, made by indirect percussion using a metallic tool, placed in linear, slightly curved, lines, arranged transversally and oblique; dimensions (mm): length 165; proximal end 57/52.63; medial part 32.72/26.94; length shaped posterior side 111; max. width shaped posterior side 29.13.

HST/2012-BEM 8 • Pls. XLVI-LI. Section I. Squares 2-3. From the earth fallen from the Northern profile, from the disused pits of the furnaces. • Triple anvil made from metapodial; fragmentary piece; exfoliations, corrosion; about 1/3 from the initial length (proximal part) is preserved; at the level of medial part - oblique fracture produced during the use of the piece; the active part was shaped on the posterior side; raw material: cattle left metapodial (*Bos taurus*); shaping: by intense axial scraping; the anterior side was not technically modified; the slightly convex lateral sides could have been used as an anvil, without being previously prepared in this respect; at the proximal end/right edge and on the posterior side/left edge traces of impact and cutting for skinning are preserved; use-wear traces: triangular and elongated-shaped marks of 1-2 mm made by indirect percussion using a metallic tool, placed in linear, slightly curved, lines, arranged transversally and oblique; the active side (the posterior one) is almost entirely covered with lines of dents; on both lateral sides, use-wear traces are

preserved: on the medial side there are six lines of dents and on the lateral one, three lines of dents; dimensions (mm): length 160; proximal end 49.68/44.76; medial part 27.32/26.76; length shaped posterior side 62; max width shaped posterior side 20.88; length area with use-wear traces posterior side 53.28; length area with use-wear traces medial side 29; length area with use-wear traces lateral side 10.30.

HST/2012-BEM 9 • Pls. LII-LV. Section I. Squares 2-3. From the earth fallen from Northern profile, from the disused pits of the furnaces. • Double anvil made of a metapodial; fragment proximal; the epiphysis is not preserved; multiple axial and oblique fractures which were produced during the use of the piece as an anvil; about 1/2 of the initial width is preserved; the active part was shaped on the main sides (anterior and posterior); raw material: cattle metapodial (*Bos taurus*); shaping: by intense axial scrapping; re-shaping of the active part after the first cycle of use by axial scraping; the piece was abandoned before a new cycle of utilisation; use-wear traces: triangular and elongated-shaped marks of about 1-2 mm made by indirect percussion using a metallic tool, placed in linear, slightly curved lines, arranged transversally and oblique; dimensions (mm): length 123; distal end 22.46/20.73; medial part 20.40/17.17; proximal end 12.14/9; length shaped (preserved) posterior side 54.57; length shaped anterior side 123; length area with use-wear traces posterior side 66.

Note. All photos of the plates have been taken by Corneliu Beldiman.

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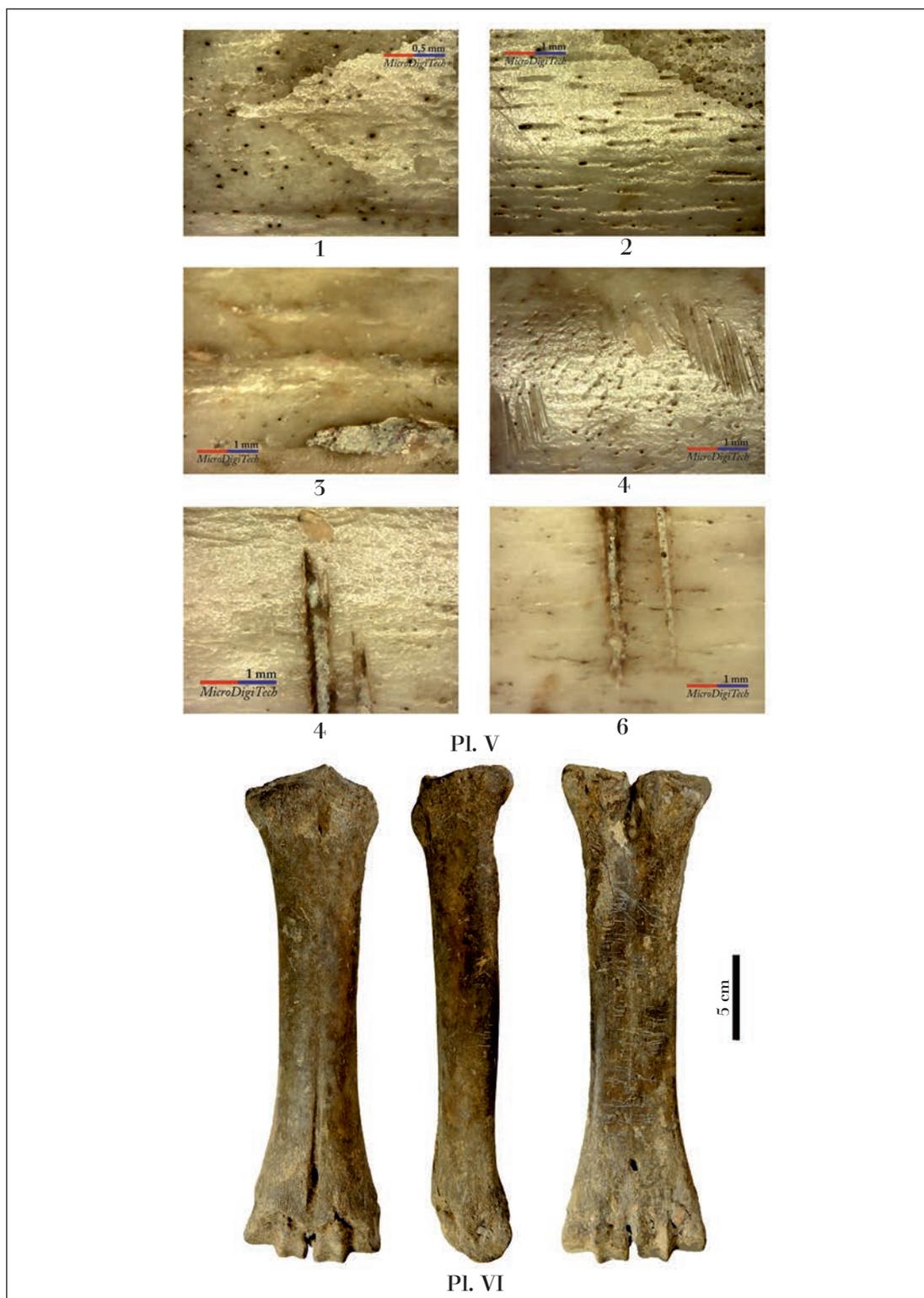
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Pl. I-II. Histria, *Basilica extra muros* Sector. Raw material (cattle metapodial) for anvil: HST/2010-BEM 1; HST/2010-BEM 1 - details.



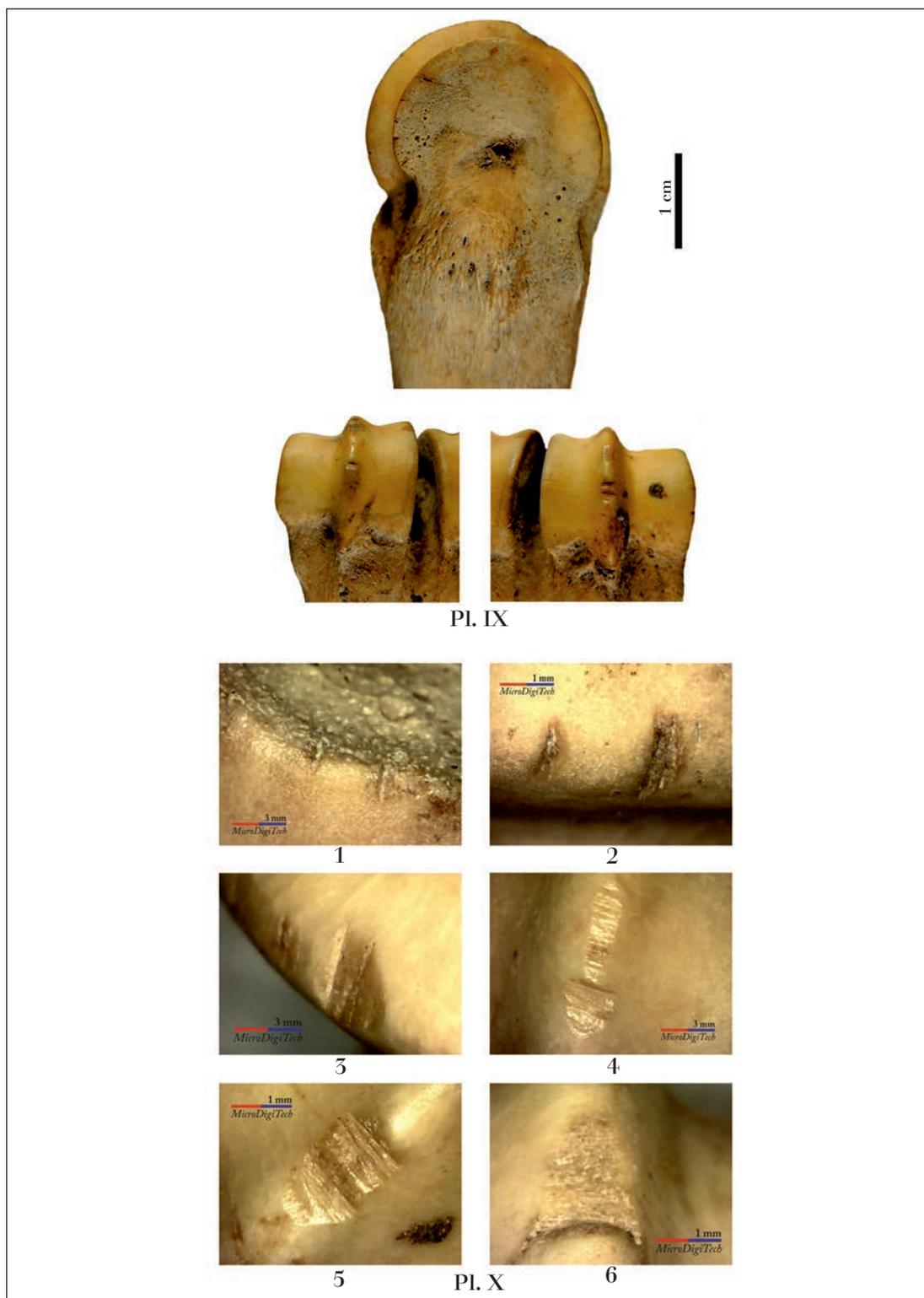
PL. III-IV. Histria *Basilica extra muros* Sector. Raw material (cattle metapodial) for anvil: HST/2010-BEM 2; HST/2010-BEM 2 - details.



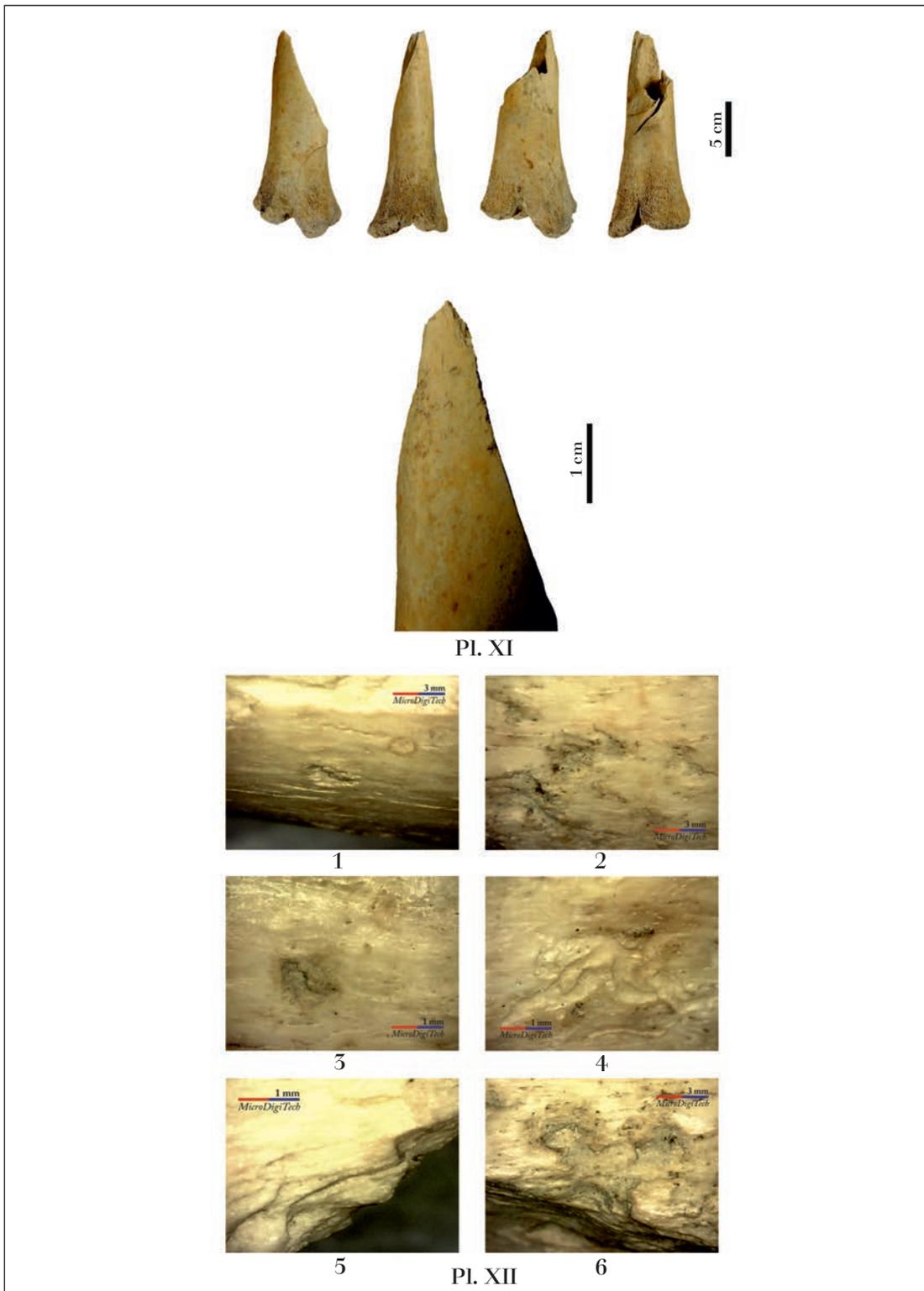
Pl. V-VI. Histria *Basilica extra muros* Sector. Raw material (cattle metapodial) for anvil: HST/2010-BEM 2 - details; HST/2010-BEM 3.



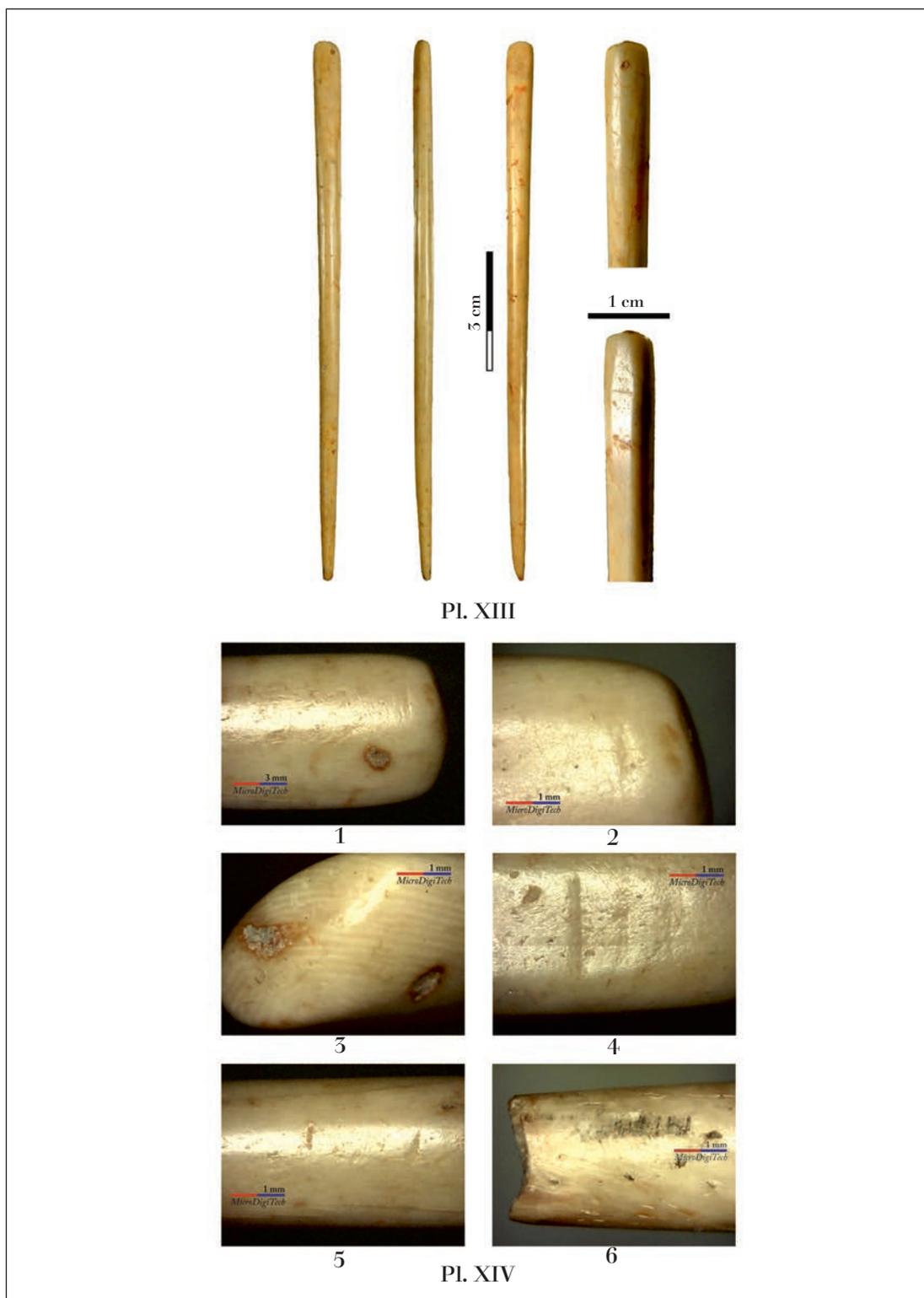
PL. VII-VIII. Histria *Basilica extra muros* Sector. Raw material (cattle metapodial) for anvil: HST/2010-BEM 3 - details; HST/2010-BEM 4.



Pl. IX-X. Histria *Basilica extra muros* Sector. Raw material (cattle metapodial) for anvil: HST/2010-BEM 4; HST/2010-BEM 4 - details.



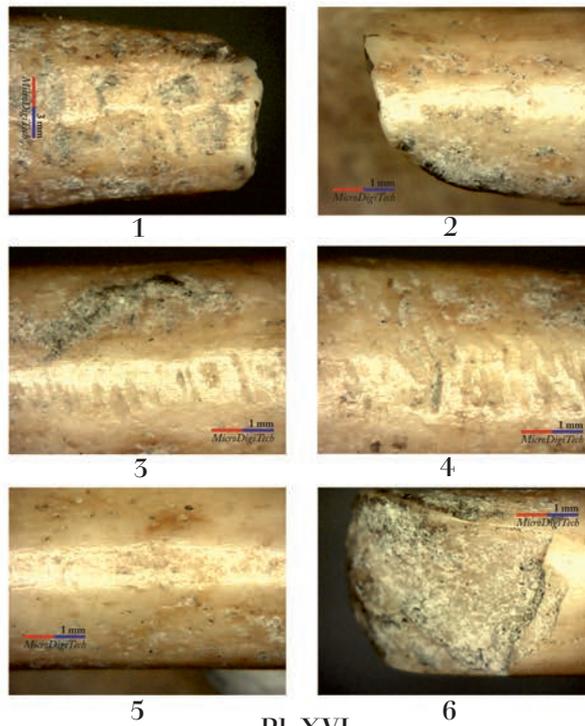
PL. XI-XII. *Histria Basilica extra muros* Sector. Raw material (radius) for anvil: HST/2010-BEM 5; HST/2010-BEM 5 - details.



PL. XIII-XIV. Histria *Basilica extra muros* Sector. Bone hair pin: HST/2010-BEM 6; HST/2010-BEM 6 - details.

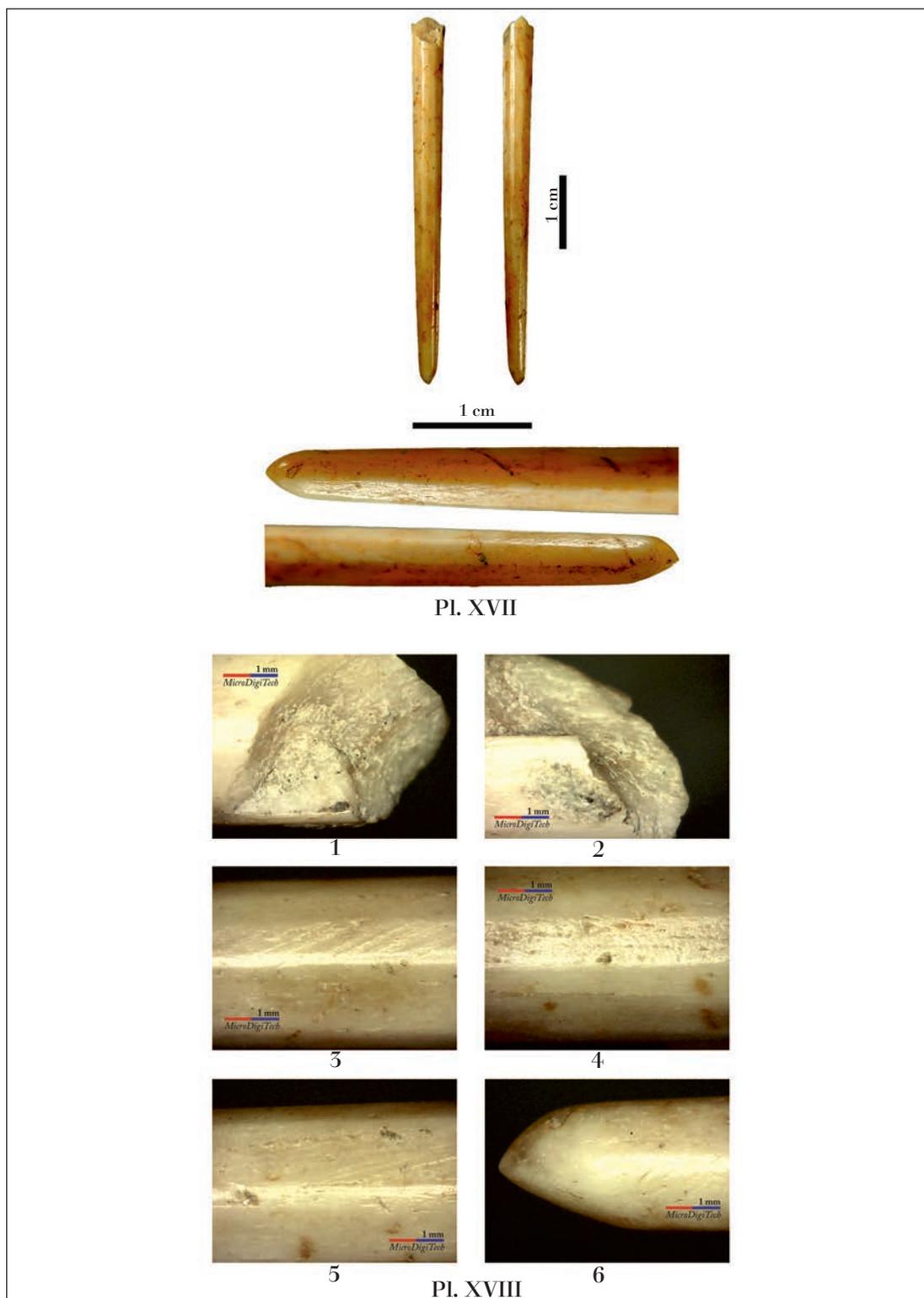


PL. XV

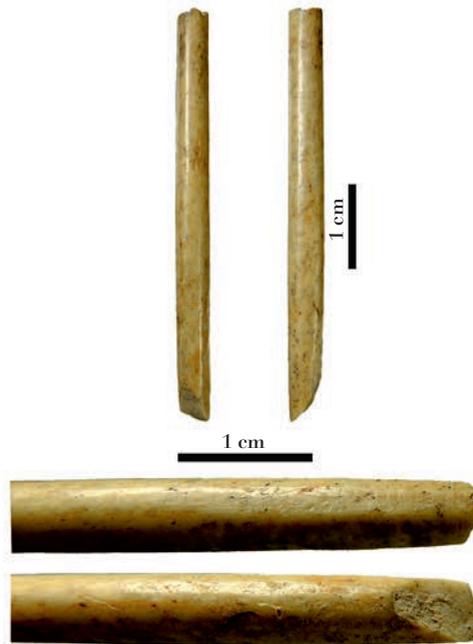


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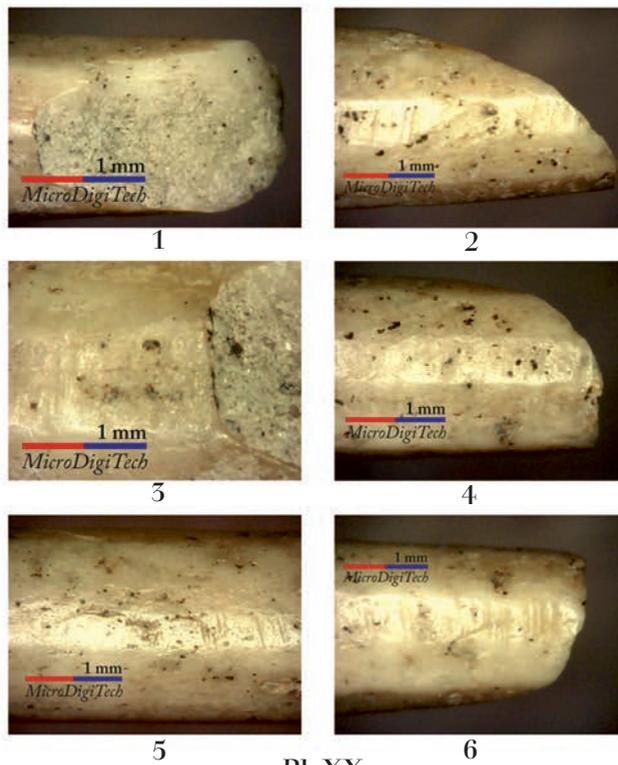
PL. XV-XVI. Histria *Basilica extra muros* Sector. Bone hair pin: HST/2010-BEM 7; HST/2010-BEM 7 - details.



Pl. XVII-XVIII. Histria *Basilica extra muros* Sector. Bone hair pin: HST/2010-BEM 8; HST/2010-BEM 8 - details.



Pl. XIX

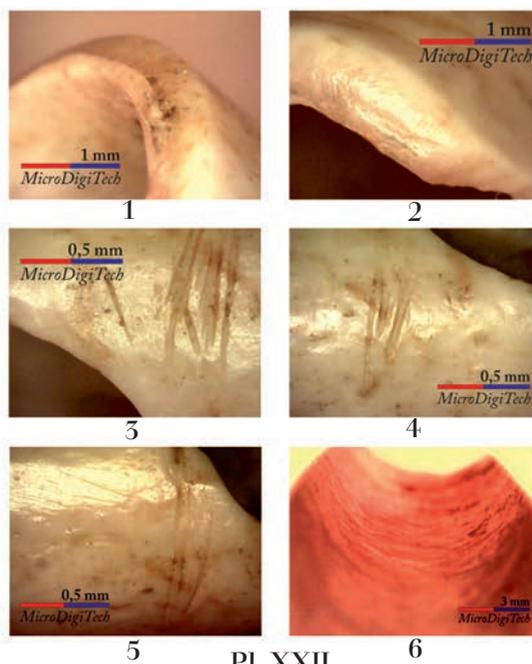


Pl. XX

Pl. XIX-XX. Histria *Basilica extra muros* Sector. Bone hair pin: HST/2010-BEM 9; HST/2010-BEM 9 - details.

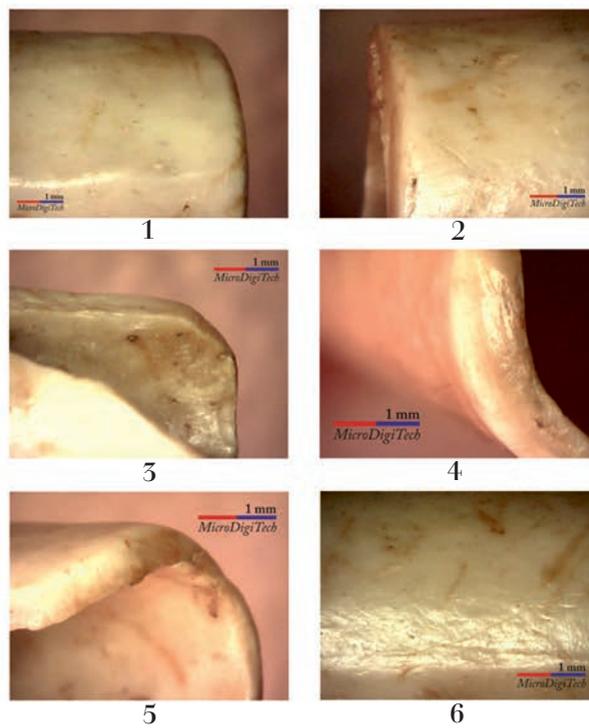


Pl. XXI



Pl. XXII

Pl. XXI-XXII. Histria *Basilica extra muros* Sector. Bone tube: HST/2010-BEM 10; HST/2010-BEM 10 - details.



Pl. XXIII

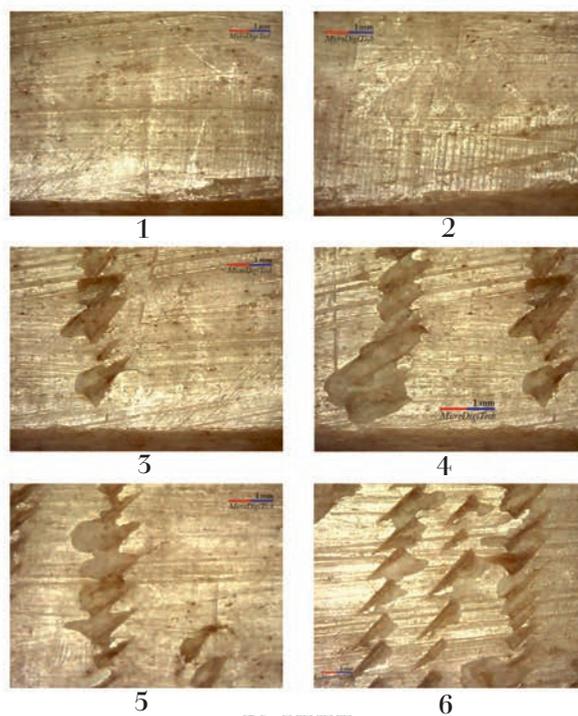


Pl. XXIV

Pl. XXIII-XXIV. Histria *Basilica extra muros* Sector. Bone tube: HST/2010-BEM 10 - details; Bone anvil from cattle metapodial: HST/2012-BEM 1.

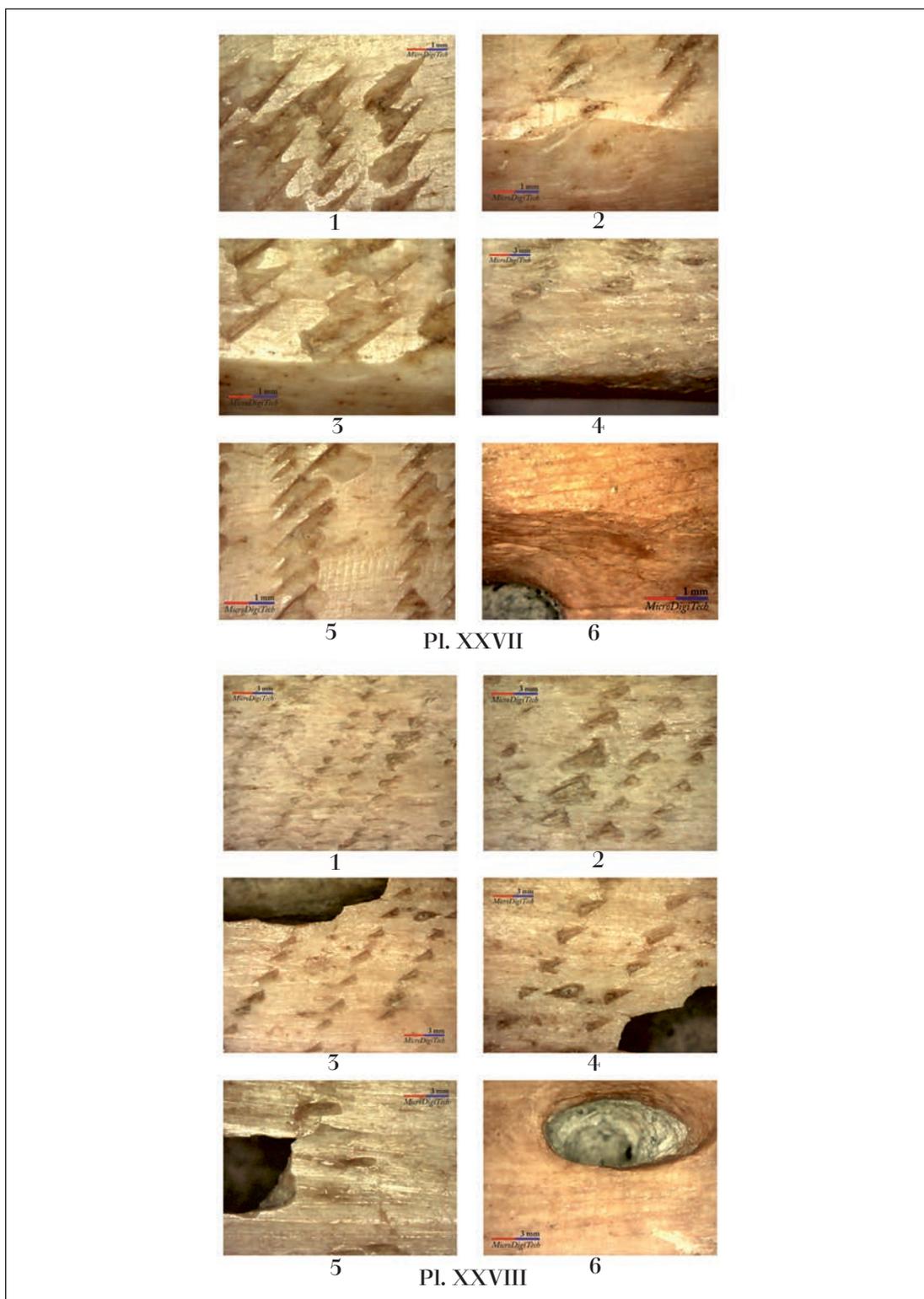


Pl. XXV



Pl. XXVI

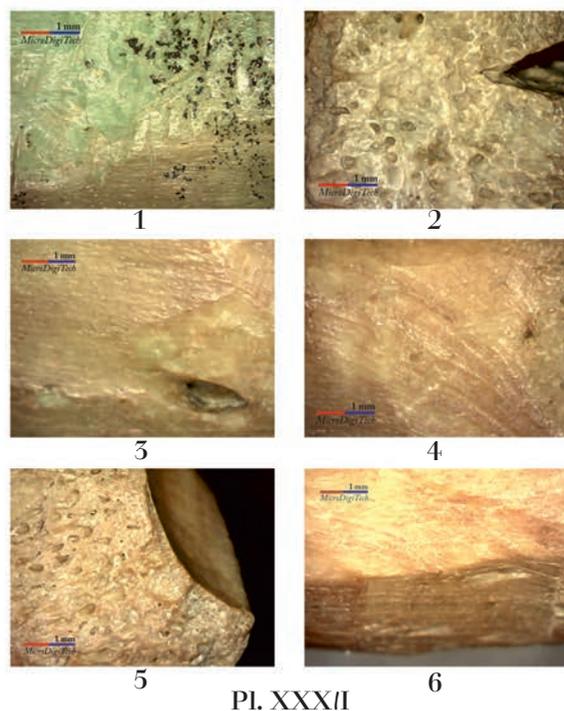
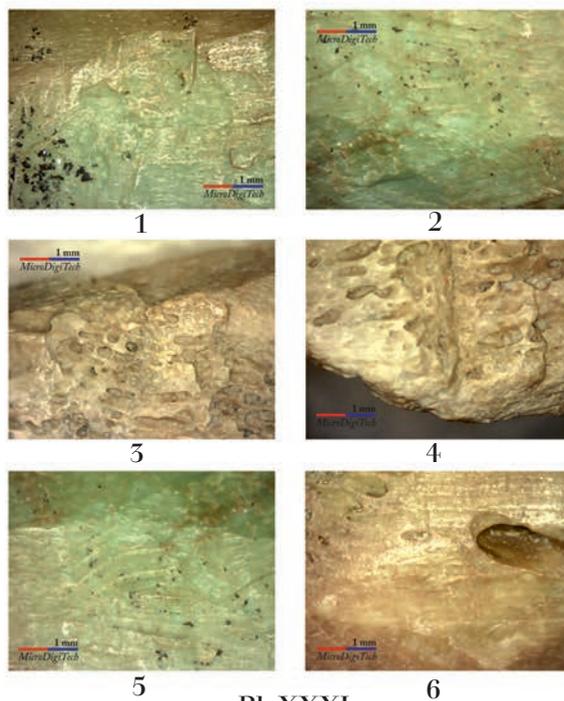
Pl. XXV-XXVI. Histria *Basilica extra muros* Sector. Bone anvil from cattle metapodial: HST/2012-BEM 1 - details; HST/2012-BEM 1 - details.



PL. XXVII-XXVIII. Histria *Basilica extra muros* Sector. Bone anvil from cattle metapodial: HST/2012-BEM 1 - details; HST/2012-BEM 1 - details.



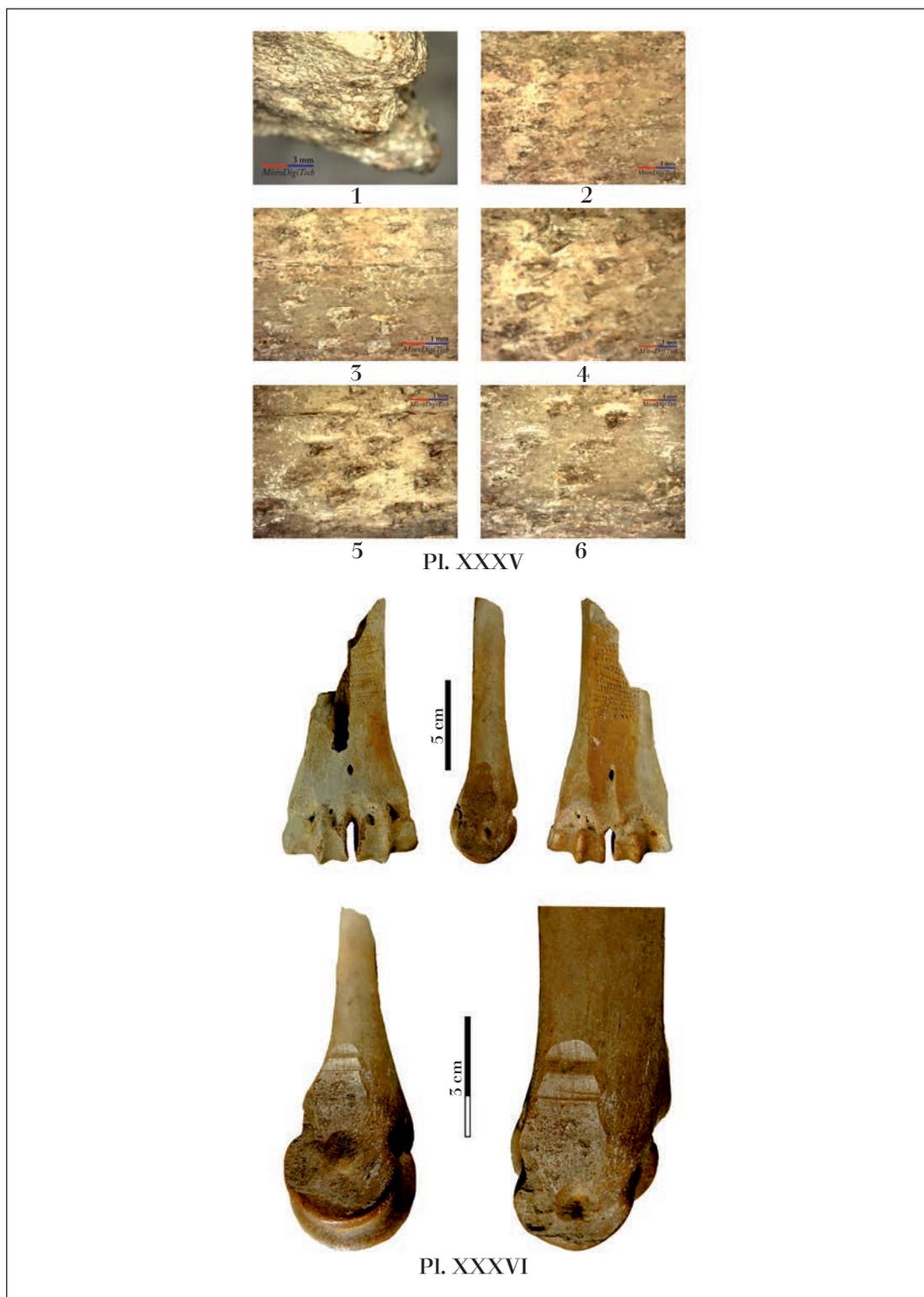
Pl. XXIX-XXX. Histria *Basilica extra muros* Sector. Bone anvil from cattle metapodial: HST/2012-BEM 2; HST/2012-BEM 2 - details.



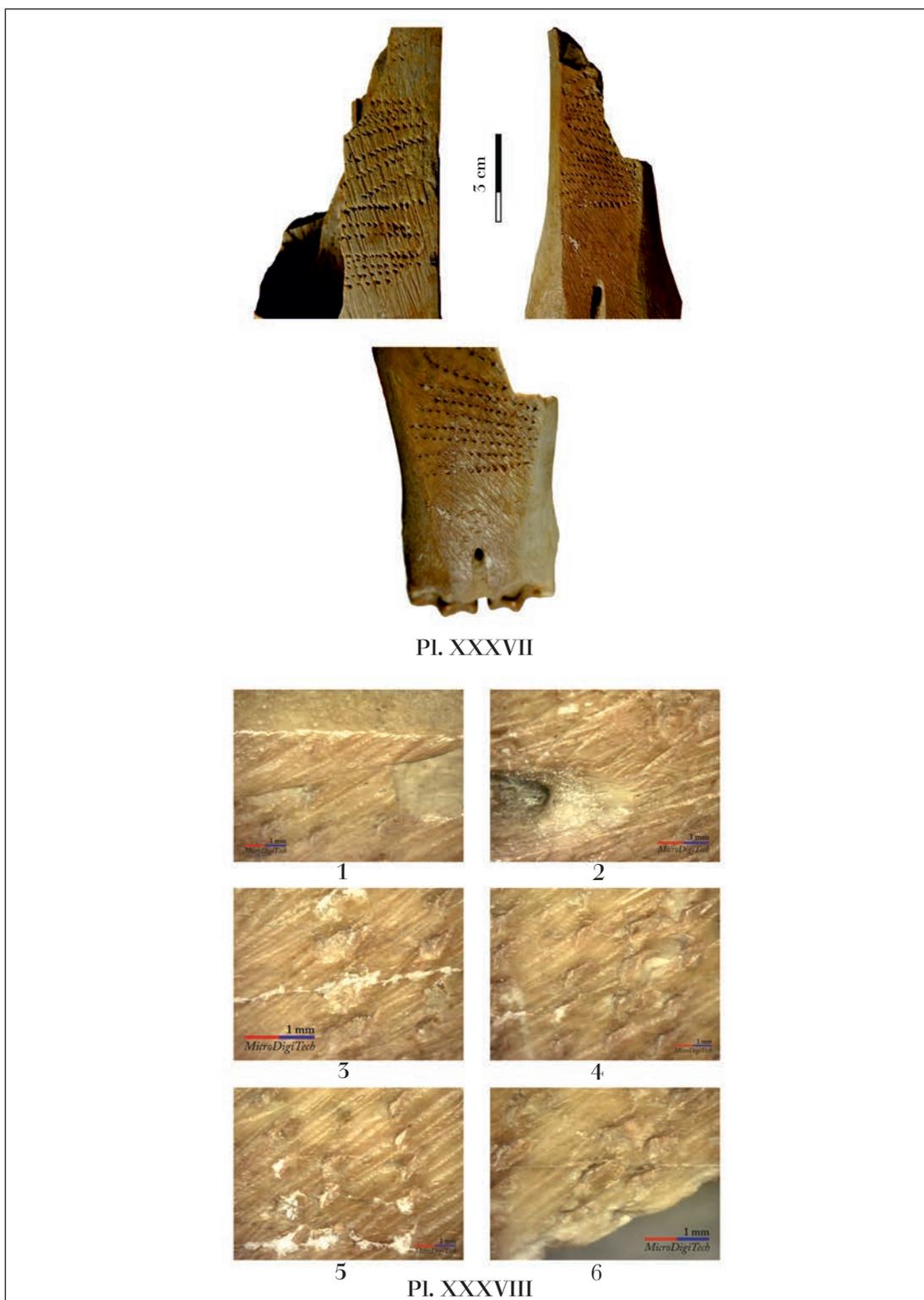
PL. XXXI-XXXII. Histria *Basilica extra muros* Sector. Bone anvil from cattle metapodial: HST/2012-BEM 2 - details; HST/2012-BEM 2 - details.



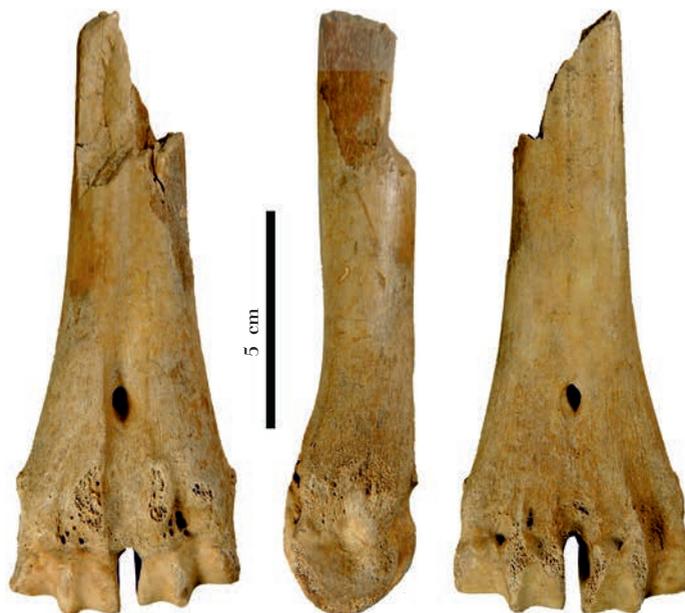
PL. XXXIII-XXXIV. Histria *Basilica extra muros* Sector. Bone anvil from cattle metapodial: HST/2012-BEM 3; HST/2012-BEM 3 - details.



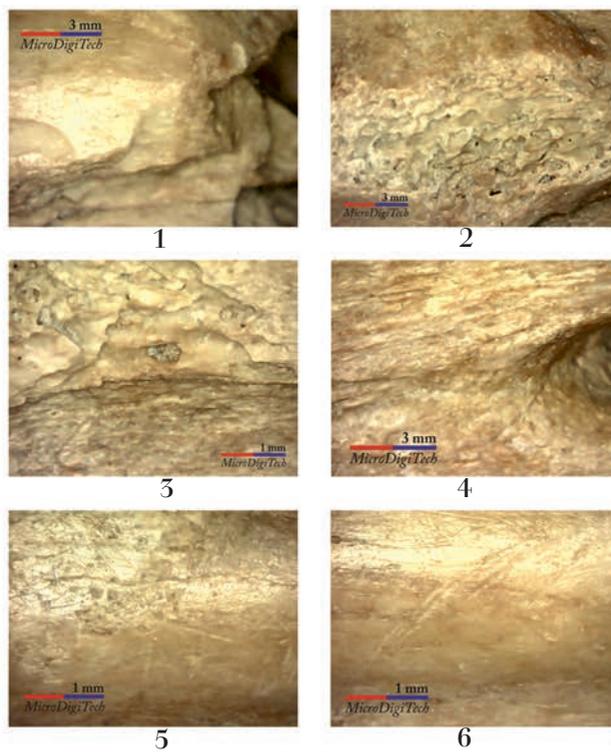
PL. XXXV-XXXVI. Histria *Basilica extra muros* Sector. Bone anvil from cattle metapodial: HST/2012-BEM 3 - details; HST/2012-BEM 4.



PL. XXXVII-XXXVIII. Histria *Basilica extra muros* Sector. Bone anvil from cattle metapodial: HST/2012-BEM 4; HST/2012-BEM 4 - details.



Pl. XXXIX

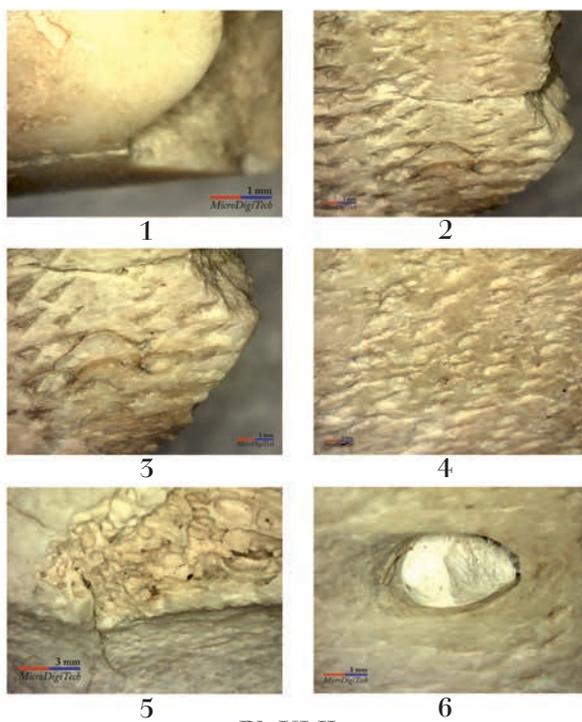


Pl. XL

Pl. XXXIX-XL. Histria *Basilica extra muros* Sector. Bone anvil from cattle metapodial: HST/2012-BEM 5; HST/2012-BEM 5 - details.



Pl. XLI

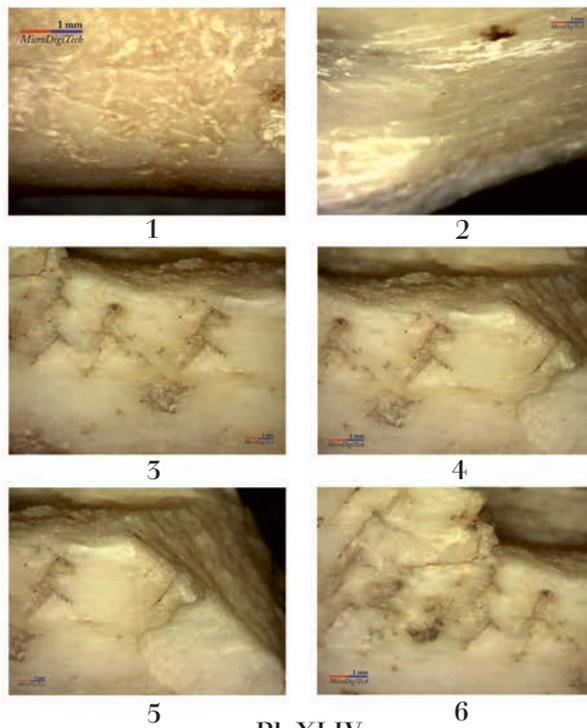


Pl. XLII

Pl. XLI-XLII. Histria *Basilica extra muros* Sector. Bone anvil from cattle metapodial: HST/2012-BEM 6; HST/2012-BEM 6 - details.

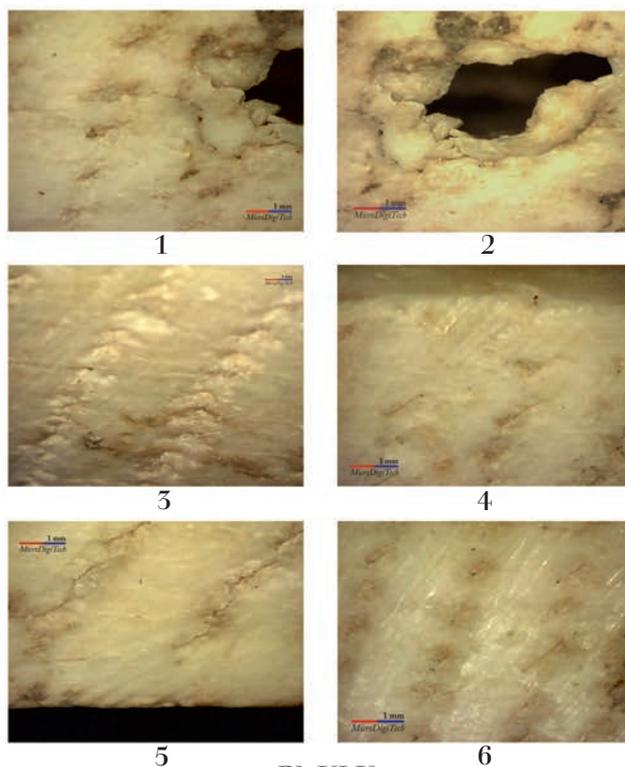


Pl. XLIII



Pl. XLIV

Pl. XLIII-XLIV. Histria *Basilica extra muros* Sector. Bone anvil from cattle metapodial: HST/2012-BEM 7; HST/2012-BEM 7 - details.



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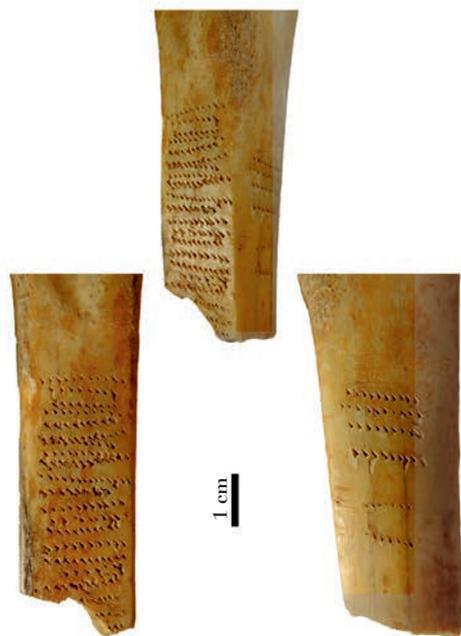
6

Pl. XLV

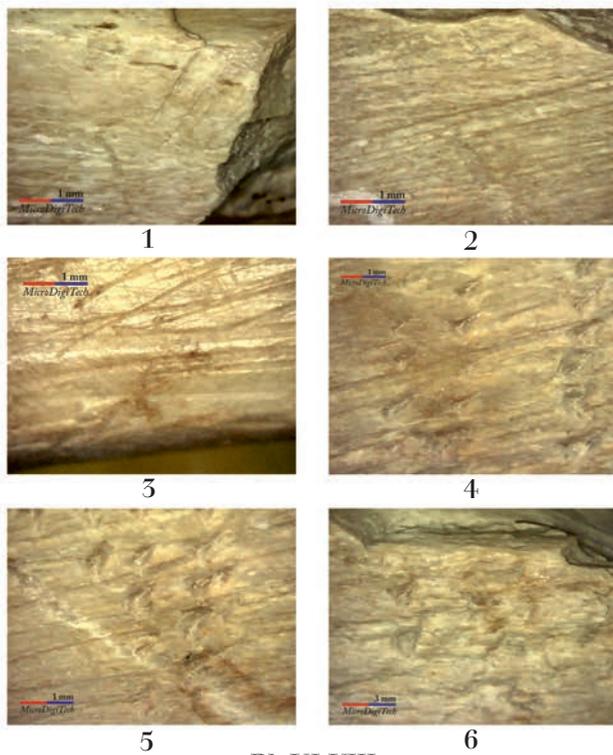


Pl. XLVI

Pl. XLV-XLVI. Histria *Basilica extra muros* Sector. Bone anvil from cattle metapodial: HST/2012-BEM 7 - details; HST/2012-BEM 8.

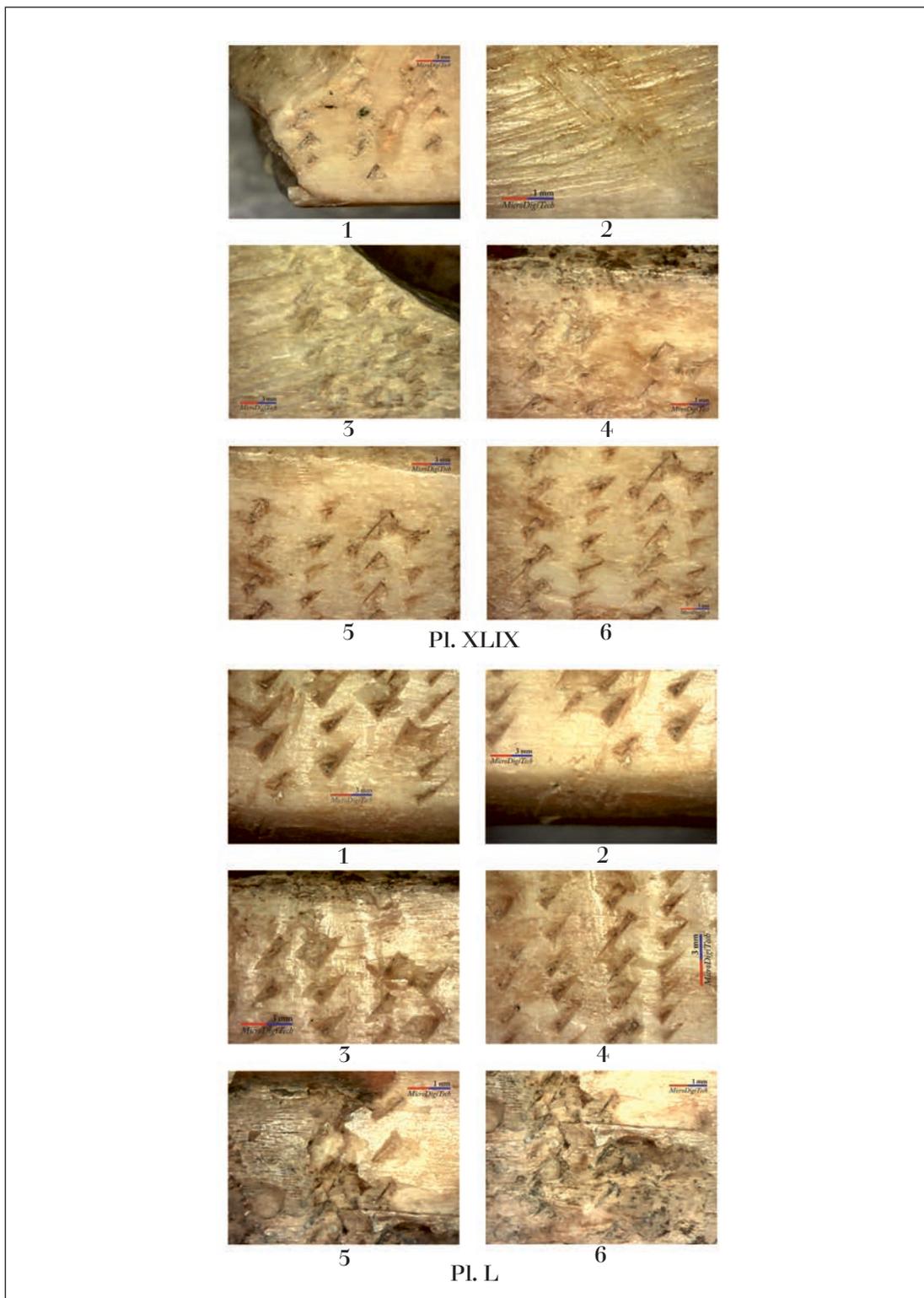


Pl. XLVII

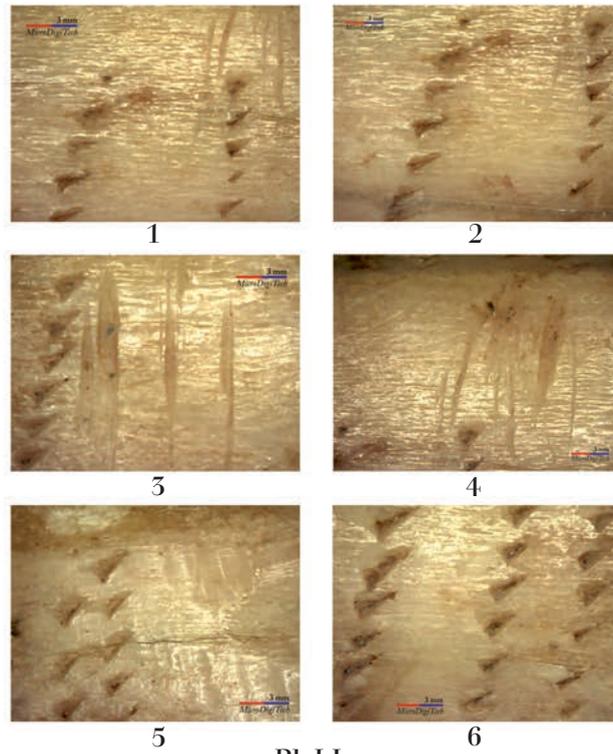


Pl. XLVIII

Pl. XLVII-XLVIII. Histria *Basilica extra muros* Sector. Bone anvil from cattle metapodial: HST/2012-BEM 8; HST/2012-BEM 8 - details.



Pl. XLIX-L. Histria *Basilica extra muros* Sector. Bone anvil from cattle metapodial: HST/2012-BEM 8 - details; HST/2012-BEM 8 - details.



Pl. LI

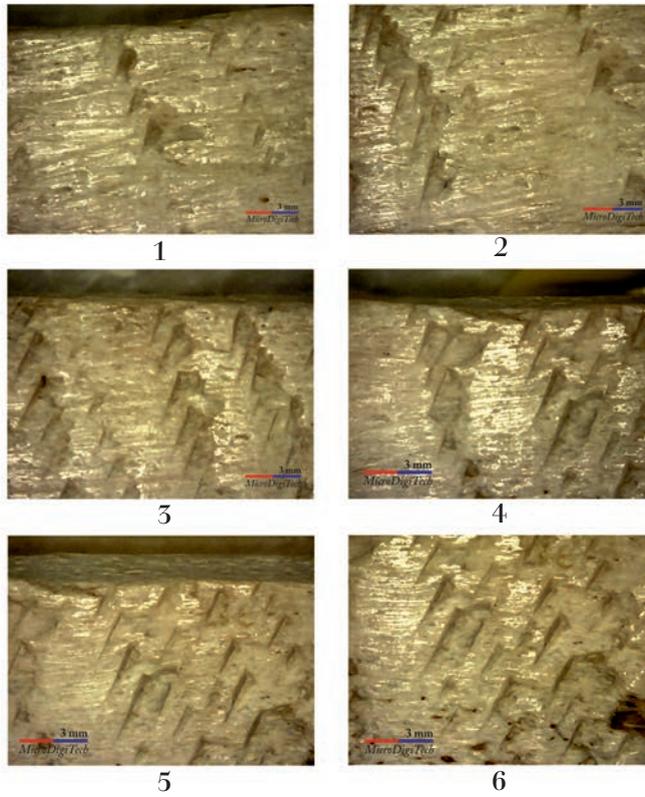


Pl. LII

Pl. LI-LII. Histria *Basilica extra muros* Sector. Bone anvil from cattle metapodial: HST/2012-BEM 8 - details; HST/2012-BEM 9.



Pl. LIII-LIV. Histria *Basilica extra muros* Sector. Bone anvil from cattle metapodial: HST/2012-BEM 9 - details; HST/2012-BEM 9 - details.



Pl. LV

Pl. LV. Histria *Basilica extra muros* Sector. Bone anvil from cattle metapodial: HST/2012-BEM 9 - details.