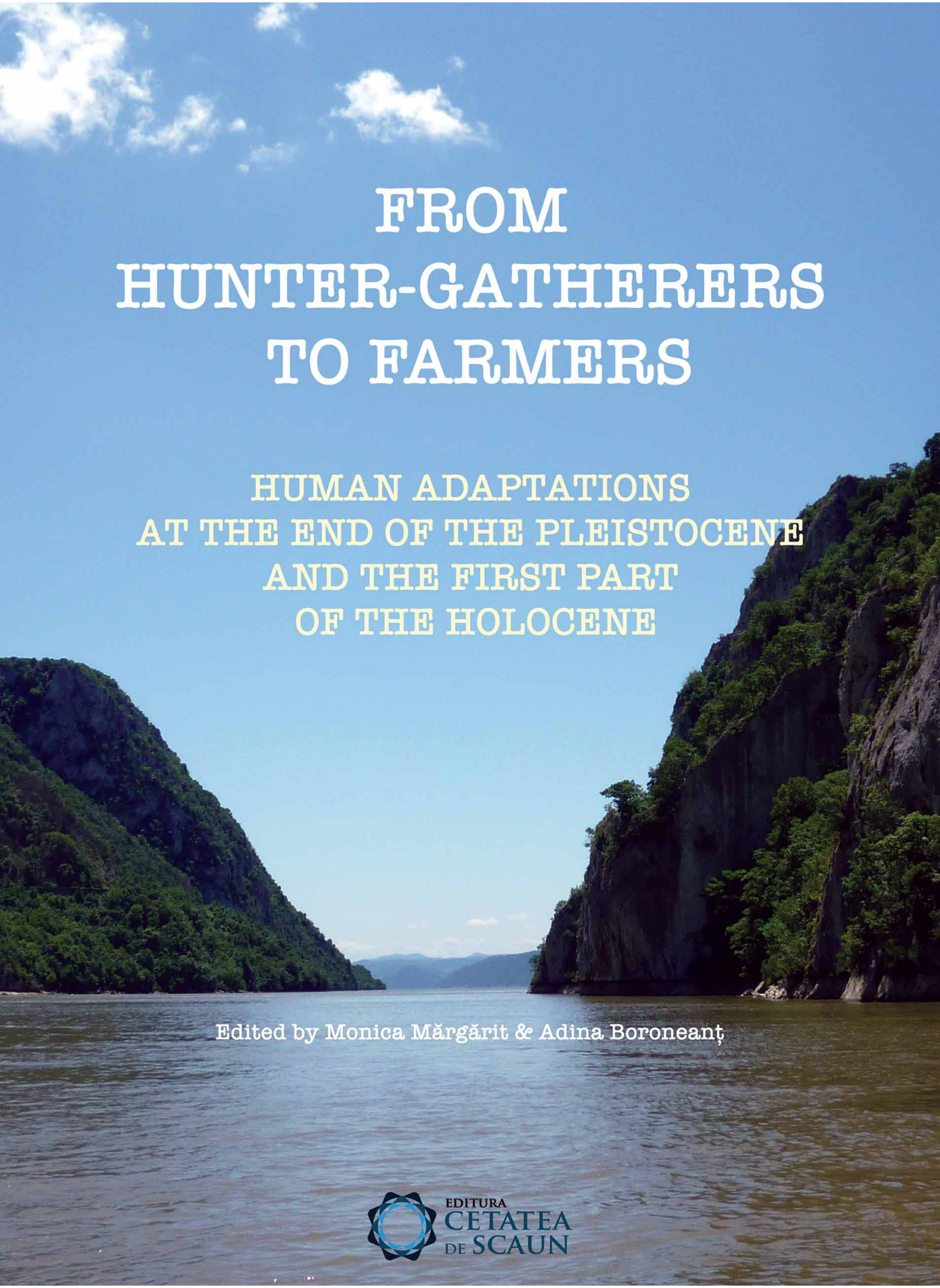

FROM HUNTER-GATHERERS TO FARMERS

HUMAN ADAPTATIONS AT THE END OF THE PLEISTOCENE AND THE FIRST PART OF THE HOLOCENE

Edited by Monica Mărgărit & Adina Boroneanț

EDITURA CETATEA DE SCAUN

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Photo cover: The Danube at Cazanele Mici (the Smaller Cauldrons) in the Iron Gates (photo Adina Boroneanț).

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PROFESSOR CLIVE BONSALL

EDITORIAL

It is difficult to capture one's life in a few words, a few photographs or even a book. The papers in the present volume will hopefully reflect a part of Clive Bonsall's scientific interests during a career that has started some 45 years ago. Their diversity is impressive: from radiocarbon dating, environmental changes, human–environment interactions, funerary behaviour, to paleogenetics and stable isotopes, reconstruction of ancient diets and obsidian sourcing, most of them in close connection to the hunter-gatherer and first farmer communities of Europe. His studies stretched over a large geographical area, focusing recently mainly around the Balkans and the neighbouring regions. He has conducted fieldwork in Britain, Scotland, Romania and Slovenia, edited 9 books and published over 160 papers, book-chapters, notes, as well as book and paper reviews. His main publications include: "The Mesolithic in Europe" (1989), "The Human Use of Caves" (1997), "The Iron Gates in Prehistory" (2008), "Submerged Prehistory" (2011) and "Not Just for Show: The Archaeology of Beads, Beadwork and Personal Ornaments" (2017).

His substantial work in southeastern Europe is reflected by his long-standing collaboration and friendship with many Romanian and Bulgarian archaeologists, and has received due recognition: Clive Bonsall is an Honorary Member of both the "Vasile Pârvan" Institute of Archaeology in Bucharest and the National Institute of Archaeology with Museum in Sofia. His contribution to the archaeology of the Iron Gates has earned him the recognition of the Serbian archaeologists working in the area. His many other research interests and personal collaborations are also reflected in the present volume.

We are grateful to all our contributors: colleagues and friends, new and old, former students and collaborators whose archaeological interests met Clive's if only briefly. We were happy to see that so many of us were able to mobilize in such a short time. We would like to thank all those who answered our call and at a time when every minute of our professional lives is carefully planned in advance, helped us put together this volume in less than a year. They have endured and complied with our constant deadline reminders and requests, checked and re-checked their manuscripts in record times, gracefully complying with the comments and suggestions from the reviewers, and were most patient with our editorial work.

Each paper was submitted to a double reviewing. We would like to also thank our colleagues from various disciplines who accepted to anonymously review the contributions. Their hard and serious work significantly improved the overall content of the volume.

The outcome has exceeded our most optimistic expectation: a volume that geographically covers almost the entire European continent, from Britain to Russia and Greece and touches on most important issues of hunter-gather adaptions through time. A volume brought together by chronological landmarks (the end of the Pleistocene and the beginning of the Holocene) and geographical areas but also by common approaches to issues such as human-animal interactions, exploitation and use of raw materials, and subsistence strategies.

We chose to organize the papers on three main sections, while within the respective theme they follow in chronological succession. The archaeology of the Iron Gates opens the volume, given Clive Bonsall's substantial contribution to the local early prehistory. The eight contributions cover a large range of subjects, from physical anthropology (Andrei Soficaru), re-interpretation of earlier excavations and the subsequent collections (Adina Boroneanț), stone artefacts (Dragana Antonović, Vidan Dimić, Andrej Starović and Dušan Borić) to the study of faunal remains and subsequent paleo-dietary issues (Adrian Bălășescu, Adina Boroneanț and Valentin Radu; Dragana Filipović, Jelena

Jovanović and Dragana Rančić; Ivana Živaljević, Vesna Dimitrijević and Sofija Stefanović), and osseous industries (Monica Mărgărit and Adina Boroneanț; Selena Vitezović). These studies illustrate the still immense research potential of the Iron Gates region despite the fact that most of the sites have been flooded many decades ago.

During the editing of the volume it became obvious that while some of the contributions focused on the evidence from a certain site, others were more of a regional synthesis. This latter section begins with a most interesting paper bringing together world history and underwater archaeology (Jonathan Benjamin and Geoff Bailey). The following nine articles deal with subjects such as social inequalities seen through the study of burial practices (Judith M. Grünberg), lifeways, adaptations and subsistence strategies of the early prehistoric communities (Agathe Reingruber; Mihael Budja; Annie Brown and Haskel Greenfield; Kenneth Ritchie), raw materials acquisition and exploitation (Tomasz Płonka, Maria Gurova, Eva David), exploitation, management and trade of „exotic" goods (Vassil Nikolov).

The nine papers focusing on individual sites present case studies that illustrate the nature of the current research, the rich opportunities offered by the growing range of scientific techniques and their applications to existing collections. This series of papers starts at Zemunica Cave on the coast of the Eastern Adriatic (Siniša Radović and Ankica Oros Sršen), explores the Mesolithic occupations at Malga Rondenetto (Paolo Biagi, Elisabetta Starnini and Renato Nisbet) and Grotta dell'Edera (Barbara Voytek) in Italy, the Mesolithic ornamented weapons of Motala in Sweden (Lars Larsson and Fredrik Molin), ending this Mesolithic journey among the shell middens on the western coast of Scotland (Catriona Pickard). The transition to the Neolithic happens among the beaver tools at Zamojste 2 in Russia (Olga Lozovskaya, Charlotte Leduc and Louis Chaix). The Neolithic Age finds us further south into Bulgaria, exploring the pitfields of Sarnevo (Krum Bacvarov and John Gorczyk) and the gold of Varna (Tanya Dzhanfezova), while during the Bronze Age roe deer hunting is resurrected at Paks–Gyapa in Hungary (László Bartosiewicz and Erika Gál).

The volume presents altogether new results in recent research and new information resulted from the study of old collections. We also hope it points out directions for future research.

It is with great joy that we present Clive Bonsall this volume, as a token of both our appreciation and friendship, for his contributions to the Early Prehistory of Europe in general, and of Southeastern Europe in special.

The Editors

CLIVE BONSALL – SOME YEARS AFTER

When Clive Bonsall came to Romania in 1991, I was taking an undergraduate degree in computers and wasn't even considering becoming an archaeologist. Together with my mother and brother, I used to accompany my father Vasile Boroneanț every year on his summer digs at Schela Cladovei. It was just over a year after the fall of the communist regime in Romania, and everybody at the site was waiting impatiently the arrival of a team of archaeologists from Great Britain, who were coming to visit the site and perhaps start a joint research project. It must have been past mid-night of the expected day when my father woke us up – because the "English" had arrived…. Four very tired people (Clive Bonsall, Kathleen McSweeney, Sue Stalibrass and Mark Macklin – and not all "English") in a Land Rover but still managing to smile… They had spent 10 hours at the border between Hungary and Romania and their first encounter with Romanian cuisine had been carp-head soup (the only thing available on the menu) in Arad…. I believe Clive still remembers the fish-heads sticking out of the large bowl (obviously a reminder of the Lepenski Vir sculpted boulders…).

The visit at the site went well and the next year the research project commenced, but not unventfully. It must have been sheer passion for archaeology and keen interest for the Iron Gates Mesolithic that made Clive come back the second year, after having (during the previous first year) the minibus tyres slashed several times by the curious and mischievous Schela Cladovei lads, bits of the flotation equipment vanishing into thin air and two pairs of his new Levis jeans (a rarity in Romania in those days) mysteriously disappearing from his room at the youth camp in Gura Văii…..Not to mention the breaking down of the minibus in a country where there were no spare parts for western cars.

Still, here he is, working in Romania, 26 years later…

And following the first four years of the Schela Cladovei project I had switched to a degree in archaeology (and Clive bears much of the blame…). And we are still excavating at Schela Cladovei…and at least Clive looks unchanged… It is his dedication to the archaeology of the area that has made this second research project possible, project going on successfully for over ten years now.

As it was with me, Clive has influenced the lives of many (older and younger) archaeologists and perhaps future archaeologists. He is an inspiration to our students from the Schela Cladovei excavation and a respected professional among Romanian archaeologists. He has always been ready to help my fellow colleagues, whether it was field work, collecting samples, editing or mere professional advice, although such work had rarely anything to do with the archaeology of the Iron Gates. But during his entire activity in this area, he acted as a "human bridge" between Romanian, Bulgarian and Serbian archaeologies, facilitating professional exchanges, easing the access to modern technologies, information and publications.

Clive Bonsall was/is equally interested in other geographical areas and research topics of European (and not only…) archaeology, and the number of people contributing to this volume testify to the impact he had on individuals and archaeologies elsewhere outside Romania.

This may not be the typical introduction to a Festschrift volume… but then, Clive is not a typical person. Rather cynical but warm hearted underneath, with a wonderful (and at times very dry) sense of humour, and great charm (when he wants it…) he makes a great project co-director and fellow-worker.

I can only but hope that our collaboration would go on for many years from now and that we'll get to see the end of the Schela Cladovei trench we started before we both retire!

Bucharest, September 2017 *Adina Boroneanț*

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THE EARLY NEOLITHIC OSSEOUS INDUSTRY IN THE IRON GATES REGION

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Abstract: The Iron Gates region represents a unique geographical and historical micro region, inhabited in the past by numerous communities. Large-scale rescue excavations carried out from the 1960s to the 1980s revealed very rich and important archaeological remains, from the Palaeolithic up to the modern times. These include the first traces from the Mesolithic period in the area, as well as finds from the transitional and Early Neolithic periods, both important for understanding the Neolithisation processes. In this paper will be presented the osseous industries from three Early Neolithic sites in the region downstream the Gorges proper, sites that were excavated during the "Đerdap II" rescue archaeological project – Ušće Kameničkog Potoka, Knjepište and Velesnica. Raw material selection, technological procedures and typological repertoire will be analysed. Osseous industry shows an interesting mixture of Mesolithic traditions and Neolithic innovations with some regionally specific traits.

Keywords: Iron Gates, Early Neolithic, Mesolithic-Neolithic transition, Starčevo-Körös-Criș cultural complex, osseous industry, osseous technology.

Introduction

The middle part of the Danube river valley includes a particular geographical region known as the Iron Gates or Đerdap: a system of gorges and lakes, with specific environmental settings. The construction of the hydroelectric power plant on the Danube River in 1960s initiated the largest rescue excavation project in the Balkan region. The first project, the so-called "Đerdap I", was carried out during the 1960s and early 1970s in the Upper Gorge region, while the building of the second power plant downstream, the so-called project "Đerdap II", in the Prahovo area, was carried out between 1980 and 1984, and was of a smaller scale (cf. Radojčić and Vasić 2003).

The finds from the Mesolithic period were among the most spectacular and at the same time attracted a lot of interest from diverse researchers (cf. Srejović 1969; Radovanović 1996; Borić 2002; Bonsall *et al.* eds. 2008, *inter al.,* and references therein). Early Neolithic settlements were discovered also and attributed to the Starčevo-Körös-Criș cultural complex (cf. chapters in Bonsall *et al.* eds. 2008). Although the Mesolithic sites were given more attention by various researchers, the Neolithic sites yielded important information about the life in the past, and in particular on the Mesolithic-Neolithic transition, the Neolithisation process and the overall lifestyle of the Starčevo communities.

In this paper I will present the analysis of the osseous industries from three Early Neolithic sites, situated in the downstream area and excavated during the "Đerdap II" project: Ušće Kameničkog Potoka, Knjepište and Velesnica (Fig. 1).

The archaeological background

Ušće Kameničkog Potoka

The site of Ušće Kameničkog Potoka is situated at the exit of Novi Mihajlovac, when heading towards the town of Negotin, in the immediate vicinity of the Mora Vagei fortress, to the north-east of it. It was discovered during a field survey in 1980 and excavated in 1981 and 1982. The excavations were initiated on the area where the surface finds were the

richest, but during the two excavation years, almost the entire available surface of the settlement was investigated - approx. 400 m^2 (Stanković 1986a).

The excavations revealed a multi-layered site, with traces from the Roman times, Bronze Age (the Žuto Brdo culture) and Early Neolithic (the Starčevo culture) (Stanković 1986a). The author of the excavations suggested there were three occupation horizons within the Starčevo settlement (Stanković 1986a. 467), although the analyses of the portable material, such as flint or osseous industry, did not indicate any separate phases (cf. Šarić 2000. 63-72; Vitezović 2011a. 210-216).

The portable finds included ceramic bowls and S-profiled pots, with impressed plastic decoration, ceramic amulets, zoomorphic figurines, stone axes, chipped stone and bone artefacts (Stanković 1986a; Šarić 1997, 2000, 2014. 45-52; Vitezović 2011a. 210-216). Also, one grave attributed to the Starčevo culture was discovered containing a skeleton in a contracted position. Sandor Bökönyi's preliminary faunal analysis indicated the predominance of wild pigs and red deer, followed by goats, cattle and a small number of birds and fish (mainly beluga and sturgeon) (Stanković 1986a).

Knjepište

The site of Knjepište was situated near the village of Mihajlovac, on an elevated plateau at the confluence of the Zamna River into Danube. This site was noted during a field survey in 1982, while the near-by site of Ušće Kameničkog Potoka was investigated. In the following year excavations were carried out in four trenches, covering approx. 80 m^2. Here also the excavator suggested the existence of three occupation horizons, but the analysed material does not show any significant variation among them (cf. Šarić 2000, Vitezović 2011a. 218-225).

One semi-dugout structure was discovered, and was interpreted as a double pit-dwelling, oriented in the E-W direction. On the north-western area of the dwelling was uncovered an open hearth constructed from stone pebbles. The pottery finds included mainly monochrome red painted vessels, rectangular altars with perforated legs, amulets and anthropomorphic and zoomorphic figurines (Stanković 1986b). Other finds included chipped stone industry (Šarić 1997, 2000, 2014. 52-62) and bone artefacts (Vitezović 2011a. 218-225).

Velesnica

The site of Velesnica-Donja Strana was situated on the periphery of the village of Velesnica, some 10 km to the south of the town of Kladovo, in the Ključ region. The site occupied a small plateau, on the right bank of the Danube, at the place where the river takes a turn towards the south (Vasić 1986, 2008. 227). The site had been known since the early 20th century as a Bronze Age and a Neolithic settlement (Fewkes 1938. 342-344).

Fourteen different trenches were excavated from 1980 to 1982 and in 1984, covering a surface of ca. 920 m^2. Very rich archaeological remains were uncovered, assigned to the Early Neolithic Starčevo culture, Bronze Age Žuto Brdo culture, as well as remains of the late La Tène period, Roman times and Middle Ages (Vasić 1986, 2008. 227). The presence of the Mesolithic layers was not confirmed with certainty, although some of the animal bones discovered below the Starčevo horizon, as well as the older skeleton in grave 2 (Bonsall e*t al.* 2015. 43-44) may belong to the Mesolithic period.

The finds of the Starčevo culture encompassed several architectural features, most likely rectangular above-ground huts, circular ovens with stone substruction, as well as three graves containing the remains of nine individuals (Vasić 1986, 2008). Rich portable remains included spherical and semi-spherical bowls, circular altars with four legs (Vasić 1986, 2008) and also ground stone, chipped stone and osseous industries (cf. Antonović 2003. 116-122; 2008; Antonović *et al.* in press;

Šarić 2000. 87-100, 2014. 62-71; Vitezović 2011a. 226-235).

Recently obtained AMS dates for the Velesnica skeletons from cover the time span from ca. 7530–7185 cal BC to ca. 6020–5845 cal BC (Bonsall *et al.* 2015. table 2). Grave 2, which contained the remains of seven individuals, is considered to represent an initial phase of the Neolithic activity at the site, predating the main Starčevo occupation phases. The probability ranges for these samples suggest the burials took place between 6100 and 6000 cal BC, and this is particularly important since it represents the strongest evidence to date for Early Neolithic settlement in the Lower Danube valley before 6000 cal BC (Bonsall *et al.* 2015. 44).

The osseous industries

These three sites yielded relatively small assemblages of osseous artefacts (see Table 1), however, they provided important information on the Starčevo osseous industry in this region. The majority of the finds were analysed by the present author (Vitezović 2011a. 210-235), although a few artefacts mentioned in the original publication from Knjepište (Stanković 1986b) were not found in the museum storage and their present location is unknown (the numbers in the table put in brackets include these artefacts). The techno-typological classification follows the principles outlined by the French scholars (cf. Camps-Fabrer 1966; see also Vitezović 2016a and references therein), adjusted and adapted to the material recovered from the prehistoric sites in the southeast Europe (Vitezović 2007, 2011, 2016a; and references therein).

Raw materials

The raw materials used were mainly long bones (predominantly metapodials) and red deer antlers, followed by ribs, roe deer antlers and boar tusks, with some variations between the sites (Fig. 2). When it was possible to determine the species, it seems that mainly sheep/goat long bones and large mammal ribs were used. Antlers were predominantly, perhaps exclusively shed. Marine mollusc shells were not discovered, except for one artefact published by S. Stanković (however, it was not found in the museum storage).

Techno-typological analysis

The main technique for the *débitage* of the long bones was longitudinal bipartition. Usually a groove was made on the bone with a flint tool and that was then split into two halves. Ribs were first broken into segments (probably by direct percussion) and then usually split into two bone plates. These stages of manufacture, however, left little trace on bones; only traces of flint tool from grooving (fine, parallel lines) may be recognized on a small number of artefacts. The *façonnage* phase is better documented and it included scraping with a retouched flint tool and sometimes also burnishing with an abrasive stone (probably at least two types were used, one with coarser and one with finer grains). Perforations were not found. The main *débitage* procedure for antlers included the cut-and-break technique for transversal sectioning; usually a groove was made either by scraping through *compacta* with a flint tool or by the use of an abrasive fibre (Fig. 9/1, 2). The *façonnage* phase also included scraping or cutting small segments of the outer surface of the antler (whittling) (Fig. 10). Only one perforation was found, irregular, cut in with a flint tool (Fig. 9/3) (cf. Vitezović 2011a. 2014).

Table 1. Techno-types discovered at Ušće Kameničkog Potoka (UKP), Knjepište (KnjP) and Velesnica (VLS)

Group	Techno-types	UKP	KNjP	VLS
I Pointed tools		1		
	Awls I 1 A	/	2 (4)*	4
	Awls I 1 B	/	/ (1)	3
	Heavy points I 2	/	/ (2)	5
	Needles I 3	/	3	4
	Projectile points I 6	/	1	3
	Harpoons I 7	/	/ (1)	/
II Cutting tools				
	II 1 Chisels	/	/	2
	II 3 Axes	/	1	/
III Burnishing tools				
	III 1 Spatulae	5	7 (8)	2
	III 2 Scrapers	/	2	5
	III 3 Spatula-awls	/	/	1
	III 4 Spatula-chisels	/	2	2
IV Punching tools	IV 1 Punches	1	1	3
	IV 3 Hammers	3	/	/
	IV 4 Picks	2	/	/
V Objects of special use		1	1	
	V 1 Handles	4	4	1
	V 3 A Spatulae-spoons	/	/	3
VI Ornaments		/	/ (2)	/
VII Incomplete objects		6	5	1
Total		23	29 (38)	39

*Numbers in brackets include both artefacts analysed by author and those published in Stankovič 1986b, which were not found in the museum storage

I. Pointed tools (Fig. 3, 4)

Medium pointed tools (awls – I 1) made from long bones and ribs were discovered at Knjepište and Velesnica. Long bone awls (I 1 A) were mainly made from small ruminant metapodial bones by longitudinal splitting. The epiphyses were preserved at the base (proximal or distal) or the bone was simply cut (probably by direct percussion) and smoothed with some abrasive tool at the base (Fig. 3/1). The traces of manufacture included traces of scraping with some finely retouched flint tool and traces of burnishing with some stone abrasive tool. Similar awls are known from numerous other Early Neolithic sites in Europe (e.g., in Early Neolithic Greece: Stratouli 1998. taf. 14/1-10), including the Starčevo-Körös-Criș complex (cf. Makkay 1990. abb. 10; Beldiman 2007. pl. 122). One awl of a small ruminant (most likely sheep/goat)

metapodial published by S. Stanković from Knjepište (Stanković 1986b. fig. 5/2) was made by abrasion only, a technique characteristic for the Early Neolithic (cf. Sidéra 2005; Vitezović 2011a, 2013, 2016b), also known from other Starčevo-Körös-Criș sites (Makkay 1990. abb. 10/8, 13; Beldiman and Stancz 2011; Vitezović 2013. fig. 2). One awl made from a sheep/goat ulna was discovered at Velesnica. Most of its surfaces were finely burnished and a sharp tip was obtained by burnishing. Awls from ulnae were not common in the Starčevo culture; only a small number was discovered at Donja Branjevina (cf. Vitezović 2011a), but few are known from Körös sites (Makkay 1990. abb. 11). Usewear traces on all long bone awls consist of highly polished, shiny surfaces with rare striations and lines, suggesting they were used on soft organic materials, such as leathers, hides, etc. (cf. Peltier 1986; Maigrot 2003).

Awls made from split ribs (I 1 B) were discovered at Velesnica (Fig. 3/2). Ribs were broken into smaller segments, probably by direct percussion, and then split, probably by indirect percussion, so just one bone plate was used (cf. Christidou 1999). All of them were finely made, carefully burnished with some fine-grained abrasive tool, and two also have preserved basal parts, finely shaped. They have sharp, but worn tips, the spongy tissue on the inner surface was smoothed or abraded, and the all surfaces became polished with use, with striations at the distal part, suggesting they were used for working on soft organic materials – leathers, hides, etc as well (cf. Peltier 1986; Maigrot 2003). Another rib awl was probably found at Knjepište (Stanković 1986b. fig. 5/1). Rib awls were also widespread in the Early Neolithic of Europe (e.g., Stratouli 1998; Zidarov 2014) and were common at other Starčevo-Körös-Criș sites, as well (cf. Beldiman and Stancz 2011; Vitezović 2011a, 2013).

Heavy points (I 2) were discovered at Velesnica, made from long bones or roe deer antler tines. One long bone point is fragmented, but has preserved the heavy, massive, worn tip, while the other was made from a longitudinally split long bone, with the epiphysis preserved at the base and a worn tip at the distal end. Points from roe deer antlers were made from minimally modified tines, just by breaking off the bases and with tips slightly sharpened or repaired by cutting and scraping. Use wear traces were not well preserved. It is interesting to note that two of such items were discovered together, below feature I/1982. Two other artefacts from Knjepište were probably heavy points also (Stanković 1986b. fig. 5/3-4).

Fine pointed tools or needles (I 3) were discovered at Knjepište and Velesnica (Fig. 3/3). They were all made from the splinters of small ruminant long bones. The basal parts were fragmented, therefore it was difficult to determine whether they had had a perforation. At the distal ends they had very fine, slender, sharp tips. The needles from Velesnica have very well preserved manufacturing traces and it is interesting to note that these represented only the scraping marks made with a retouched flint tool, while no traces of burnishing or polishing with abrasive tools were noted.

Projectile points (I 6) were found at Knjepište and Velesnica. From Knjepište originates just one fragmented item, burned, made from a large long bone segment and with a massive tip (Fig. 4). The traces of burnishing concentrated around the tip may suggest it had been repaired. Three projectile points were discovered at Velesnica. They were all made from long bones and have preserved the mesial and distal parts (the basal parts were all broken). They are characterized by fine traces of manufacture, mainly scraping with a flint tool and rarely burnishing with some fine-grained stone abrasive tool. All of them have massive, heavy pointed tips. Similar projectile points, made from large, massive long bone segments were discovered at other Starčevo sites as well (Vitezović 2012a, 2013).

One fragmented harpoon was published by the excavator (Stanković 1986a. fig. 5/ 9), but was not found in the museum storage. Judging

from the publication, it was made from red deer antler. The mesial part had been preserved, the basal part was completely damaged, and the distal portion partially preserved. It was bi-serial, at each side two symmetrical dents had been preserved. Harpoons are unknown at other sites of the Starčevo-Körös-Criș cultural complex (cf. Makkay 1990, Beldiman 2007, Vitezović 2011a), but a few examples were discovered at the Mesolithic sites in the area (Kula: Vitezović 2011b and Vlasac: Srejović and Letica 1978).

It should also be mentioned an *ad hoc* artefact, a red deer crown with two tines from Ušće Kameničkog Potoka. This artefact was only slightly modified, the natural tine tips were sharpened by scraping with a flint tool, and it probably represents some sort of pointed tool.

II. Cutting tools

Two chisels (II 1) were found at Velesnica. They were made from red deer antler beam segments. One chisel had the base damaged and the distal end was obtained by oblique cutting and scraping (Fig. 5). It was burned and the use wear traces consisted of polish, worn surfaces and striations. The other chisel had only the distal portion preserved, also obtained by oblique cutting. They had sharp working edges, slightly rounded and heavily damaged from use.

From Knjepište comes one large cutting tool, used as some sort of axe or adze. It is somewhat *ad hoc,* made from a red deer antler segment, from beam and tine segments. The beam, approximately 15 cm long, probably served as handle, while the tine stump was worked by cutting and scraping into a sharp cutting edge. We may also note the scars resulted from the removal of two other tines. Other large cutting tools, such as finely made axes, known from other Starčevo sites (cf. Vitezović 2011a, 2013), were not discovered at any of these sites.

III. Burnishing tools

Spatulae (III 1) were discovered at Knjepište and Velesnica, made from longitudinally split long bones, ribs or fragments of antler cortex (Fig. 6/1, 2). Débitage procedure is difficult to reconstruct in details; long bones were probably split by grooving, while ribs and antler cortex segments may have been obtained by direct or indirect percussion. It is possible that some of the antler segments actually represent manufacture debris or broken, repaired tools. These spatulae usually had slightly rounded working edges, intensively polished from use and displayed intense shine on the distal area. The spongy tissue on the rib spatulae is extremely worn, almost completely abraded. They were most likely used on soft organic materials, such as leathers, hides, etc. (cf. Peltier 1986; Maigrot 2003). Similar burnishing tools were reported from other Starčevo-Körös-Criș sites as well (Beldiman and Stancz 2011; Vitezović 2011a, 2013).

Scrapers (III 2) were noted at all three sites. They were mainly made from rib segments. Unlike the spatulae, these artefacts were less carefully manufactured, the ribs were just broken into segments and the lateral edges were only occasionally roughly smoothed. These ribs were not split originally, but the entire thickness of the rib was used. However, intensive use on some highly abrasive materials resulted in one of the bone plates being almost completely worn out. They differ from the spatulae by more intense traces of use, which usually covered almost the entire surface of the artefacts; not only that the spongy tissue was heavily abraded, but the working edges were chipped, damaged and worn out. Special attention should be paid to the presence of two particularly long rib scrapers, made from large rib segments (most likely from *Bos taurus*) from Velesnica, one over 17 and the other 21 cm long (Fig. 6/1). Such large scrapers were known from few other Starčevo sites, such as Donja Branjevina (Vitezović 2011a). Fragmented scrapers made from boar tusk were discovered at Velesnica and Knjepište. They had a more-less crescent shape and also displayed intense use wear,

perhaps from their use on plant materials (cf. Maigrot 2003).

At Velesnica one combined spatula-awl (III 3) tool was noted; it was made from a split rib; the basal and mesial parts were used for burnishing and the distal ends were made in sharp tips, used as awls. Two artefacts, also from Velesnica, were classified as spatula-chisels (III 4). They were made from the flat segments of the long bones, probably the tibiae (Fig. 6/3, 4). One had fine traces of cutting and scraping left by a flint tool, and traces of burnishing made with a sharp, slightly rounded working edge. The bone was worn out and thinned at the distal end. The other artefact was similar, although more fragmented it also had a slightly rounded, but sharp working edge and the bone was worn and thinned bone at the distal end.

IV. Punching tools

Smaller punches (IV 1), made from red deer antler tines, were discovered at all three sites. Tines were used with minimal modifications, with tips sharpened by cutting or scraping with a flint tool. On some of the items the cutting traces at the basal parts were preserved. The traces of use consisted of damaged areas, incisions, pits and grooves on the distal areas. However, it is not possible to determine on which material they were used, therefore, it is not possible to say if some of these artefacts were used as retouching tools. At Velesnica, two punches were discovered within the same context, below feature I/1982 (dug-out dwelling). Similar punches are also known from other Starčevo sites (cf. Vitezović 2011a, 2013).

Heavy punching tools or hammers (IV 3) were made from the basal and beam segments of shed red deer antlers. Three were discovered at Ušće Kameničkog Potoka. Unfortunately, they are damaged, so the possibility that they were used as combined tool by inserting another tool into the beam remains open. The base of the antler, the surface where it was detached from the pedicle when shed, was used as the main working surface, but the use wear traces are not well preserved. At one of them, the pearling was partially removed by cutting, and the beam was smoothed by cutting and scraping.

Two larger tines from Ušće Kameničkog Potoka were perhaps used as picks (IV 4). At their basal parts were visible traces of cutting, and their distal ends show traces of damage from use, but their preservation was not very good.

V. Objects of special use

Handles or hafts (V 1) were discovered at all three sites. Except from one cylindrical handle from Knjepište made from a long bone, all the remaining specimens were made from red deer antlers. The first subtype are cylindrical handles, made from hollowed beam segments. They usually have fine traces of sawing at both sides and irregular traces of damage from use (Fig. 7/1, 2). They may have been used for inserting smaller tools such as the small stone cutting tools, etc. For example, the dimensions of the opening at one such handle from Ušće Kameničkog Potoka were 3x2.5 cm at one side and 3.5x2 cm at the other side. The example from Velesnica is smaller, about 1.5 cm in diameter, but some of the smaller stone tools discovered at the site may fit into it (cf. Antonović 2003, 2008).

The second subtype comprises the composite hafts that were made from beam and tine segments. One fragmented haft was recovered from Ušće Kameničkog Potoka. It had fine traces of cutting, but the perforation on its central part was irregular, with ragged edges, having been cut out with a flint tool.

Especially interesting are the spatula-spoons (V 3 A), made from almost complete metapodial bones of large ungulates, most likely *Bos taurus*. These spatula-spoons have elongated cylindrical handles while the bowl-parts were triangular, oval or leaf-shaped and slightly concave. They were considered as the most characteristic osseous techno-type of the Early Neolithic in Anatolia and South-East Europe (cf. Nandris 1972; Sidéra 1998; Vitezović 2016c and references therein). One almost complete spatula-spoon and two bowl fragments were discovered at Velesnica

(Fig. 8/1, 2). The almost complete example has a complete handle with an ellipsoidal cross-section with a smoothed basal part, and a sharp V-shaped area connecting the handle to the bowl. The bowl was triangular and slightly damaged at the upper part. The entire artefact was very carefully made (for the reconstruction of the manufacturing procedure see Nandris 1972; Sidéra 2013; Vitezović 2016c), highly polished and burnished on the entire surface, probably through several stages. It was also heavily polished and worn out from intense use (Fig. 8/1a, 1b). The function of these objects is not clear: they may have served as cosmetic spoons, for applying pigments, etc., and later, when broken, as burnishing tools (cf. Vitezović 2016c and references therein). The other fragmented bowls were more-less leaf-shaped, and also nicely and carefully burnished and heavily polished from use (Fig. 8/2a, 2b).

Other objects of special use include one denticulated artefact and one working surface. The denticulated artefact is fragmented rib from Ušće Kameničkog Potoka, with incisions at both lateral side, three at one and two on the other side, made by a flint tool (fig. 8/3). The entire artefact is worn from use, but it is difficult to reconstruct its original shape (rectangular or pointed) or its function (just one active, working end vs. the entire surface was used, and its manner of use). Artefacts with dents or notches occurred occasionally in the osseous assemblages from the Starčevo culture sites; they could have been used as points or burnishing tools, with the dents/ notches serving a particular function, perhaps producing ornaments, or something similar (cf. Vitezović 2011a). They are probably of Near-Eastern origin (cf. Vitezović 2011a), but due to the scarcity of the finds it is not possible to say more about them.

One large rib segment from large mammal found at Knjepište, was used as some sort of a stand or working surface, as an anvil or something similar. It does not have any active working end, but its entire surface is covered by dense irregular random striations and lines resulted from use.

VI. Decorative items

Decorative objects are very rare; furthermore, they were published by S. Stanković but none of them was found in the museum storage. From Knjepište, S. Stanković published one perforated gastropod shell (Stanković 1986b. fig. 5/8). A fragmented L-shaped object (Stanković 1986b. fig. 5/7) may be a fragment of a long bone buckle, such as those discovered at other Starčevo-Körös-Criș sites (cf. Makkay 1990. abb.13/1-12; Vitezović 2012b, 2013. fig. 14).

VII. Incomplete objects

Several fragmented artefacts were too damaged to classify into any of the above mentioned groups. Also, at all of these sites several fragments with traces of manufacture (manufacture debris) were discovered, in particular, fragments from the cortex of red deer antlers bearing traces of scraping and whittling (Fig. 10/1, 2).

Discussion

The osseous assemblage from Ušće Kameničkog Potoka is characterized by the presence of certain techno-types only, and the absence of techno-types that are quite common on the rest of the Starčevo sites (e.g. there is a total absence of awls, which usually amount to ca. 50% of the osseous assemblages – cf. Vitezović 2011a). This may suggest that the excavated area was not the living area proper, but a peripheral part of the settlement where only specific tasks took place. The analysis of the flint industry suggests the same (cf. Šarić 2000. 45-52): either tools were only repaired in the respective area, as indicated by the presence of antler debris and the absence of flint nuclei, or only *ad hoc* tools were made. The discovered artefacts were those discarded when no longer functional (such as the broken handles). Two features yielded a somewhat larger number of bone artefacts. From feature I in trench L came a hammer, a punch, a handle and three other

fragmented artefacts. From trench I/N came two handles, a hammer and three fragmented artefacts. It is possible that these concentrations represented certain activity areas or simply areas where rubbish was discarded.

The techno-types recognized at Knjepište, such as spatulae, handles and the above mentioned working stand, suggest that some activity or mere working areas existed within the excavated portion of the site (within the excavated feature or just outside it). Both Knjepište and Ušće Kameničkog Potoka are interesting sites in terms of the reconstruction of red deer antler exploitation as raw material within the Starčevo culture (cf. Vitezović 2014). Red deer antlers are not a particularly common raw material within Starčevo-Körös-Criş cultural complex; in fact, it is quite rare at the Körös sites (cf. Tóth 2012), and at the Starčevo sites its representation varies from site to site (cf. Vitezović 2011a, 2014).

These above mentioned two sites not only have a wide range of artefacts, but the manufacture debris recovered is particularly important for the reconstruction of the technological procedures (Vitezović 2014). In particular, these include the cut-and-break procedure and the use of abrasive fibres during the *débitage* stages, and also the use of scraping off small segments (whittling) for smoothing the antler's outer surfaces. Perforations are rare, with only one (not very well curated) perforation noted.

Velesnica had the most diverse assemblage, that included tools used in various crafts (in particular there was great diversity among the burnishing tools), but also objects of special use, such as the spatulae-spoon techno-type. It has yielded several roe deer antler artefacts, otherwise not very frequent on other sites (cf. Vitezović 2014). Several artefacts were recovered within relative vicinity, in the area labelled as „below feature I/1982"; however, from the field documentation it was not possible to reconstruct what the feature might have represented (a rubbish pit, an earlier horizon in the use of the feature, etc.). The absence of the manufacture debris (conspicuous from the point of view of both ground stone assemblage and the osseous industries) might perhaps suggest that the activity area where these tools were produced was located elsewhere, perhaps outside the excavated area (cf. Antonović *et al.* in press).

Concluding remarks

The osseous assemblages sites from these three Iron Gates sites, although rather small, are very important for the study of the bone working technology and the related aspects of this technology, raw material managing, economy, but the Neolithisation process as well.

Some of the traits of these artefacts may represent Mesolithic traditions, such as the use of scraping only (and the absence of burnishing and polishing) during the final phase of the production of some of the artefacts (such as the Velesnica needles), the manufacturing techniques used for antler, or the presence of harpoons. Other traits, on the contrary, may be considered as Neolithic innovations, such as the use of abrasion only in the production of metapodial awls, the presence of the spatulae-spoons, etc.

The Starčevo culture shows regional diversity in some of its traits (e.g., the ground stone assemblages - Antonović 2002. 40), but in the osseous assemblages as well (cf. Vitezović 2011a). Typical for the right bank of the Iron Gates region is the relatively high ratio of antlers, including the presence of roe deer antlers, with some techno-types rarely encountered at other Starčevo sites (such as the cylindrical hafts, etc.).

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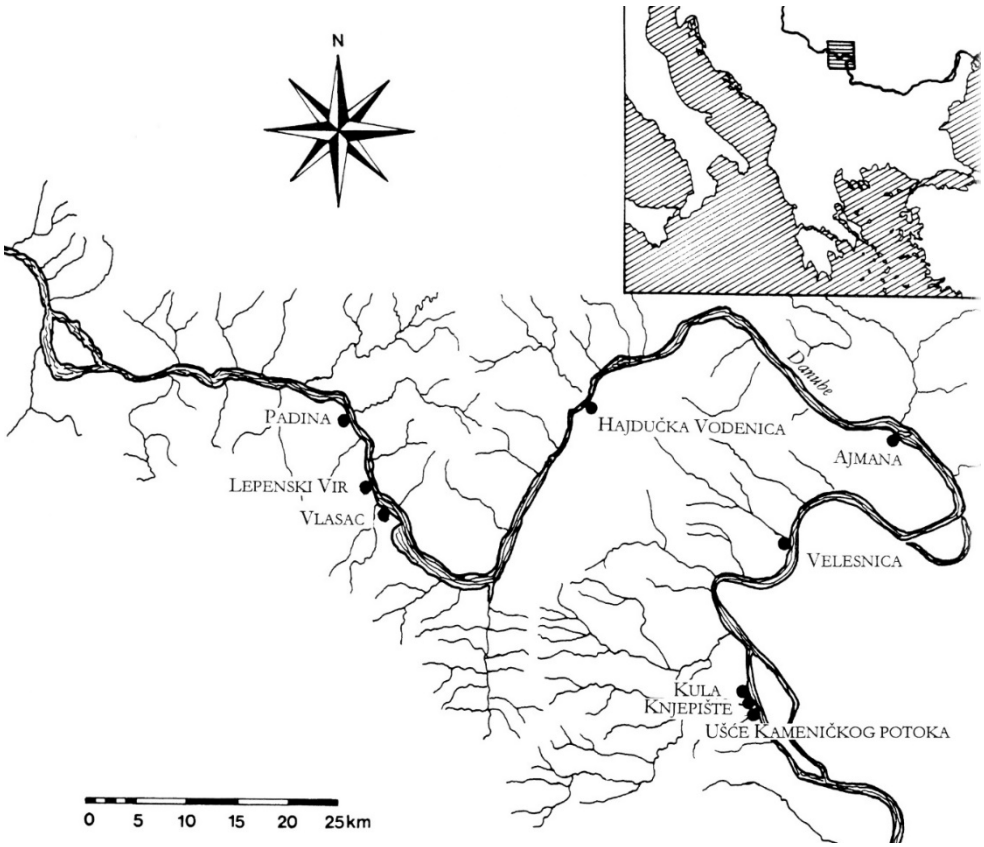

Figure 1. Map of the main prehistoric Serbian sites in the Iron Gates region (after Vasić 2008).

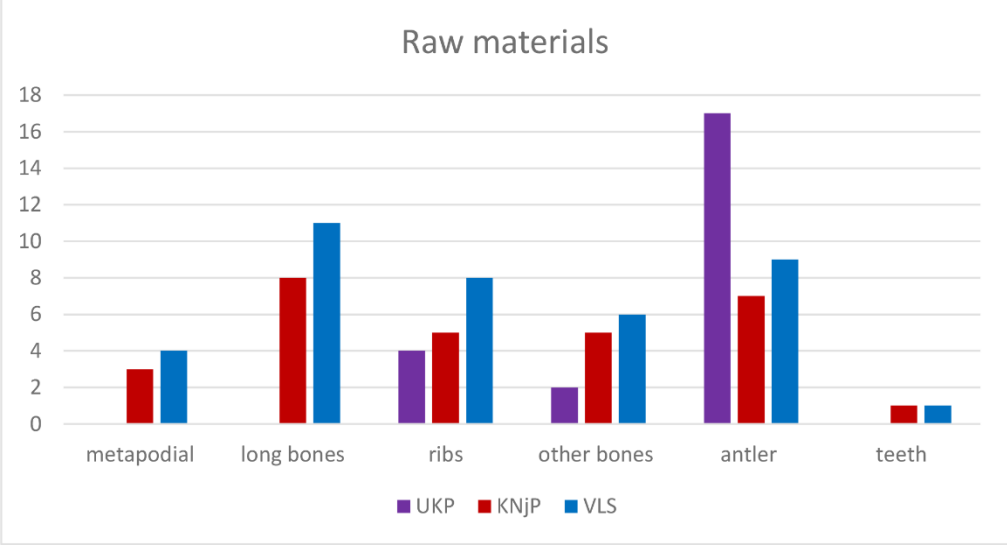

Figure 2. Raw materials used at Ušće Kameničkog Potoka, Knjepište and Velesnica.

Figure 3. Pointed tools: 1. awl made from a split long bone, 2. awl made from a split rib, 3. finely pointed tool (Velesnica).

Figure. 4. Tip of a projectile point (Knjepište).

Figure. 5. Chisel made from red deer antler (Velesnica).

Figure 6. Burnishing tools: 1. spatula from a split rib (Knjepište); 2. spatula from a split rib (Ušće Kameničkog Potoka); 3. spatula-chisel from a long bone (Velesnica); 4. spatula-chisel from a long bone (Velesnica).

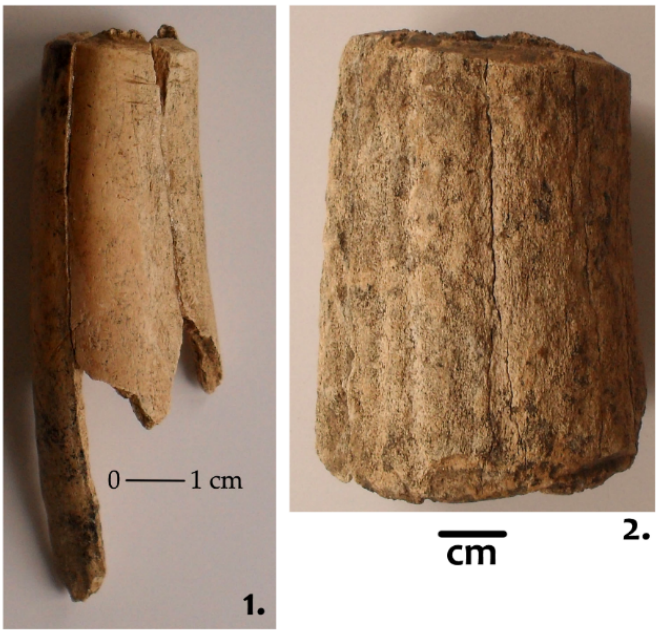

Figure 7. Cylindrical hafts from red deer antler: 1. Knjepište; 2. Ušće Kameničkog Potoka.

Figure 8. Objects of special use: 1a-b. spatula-spoon from Velesnica, ventral and dorsal sides; 2a-b. fragmented bowl of spatula-spoon from Velesnica, ventral and dorsal sides; 3. denticulated artefact (Ušće Kameničkog Potoka).

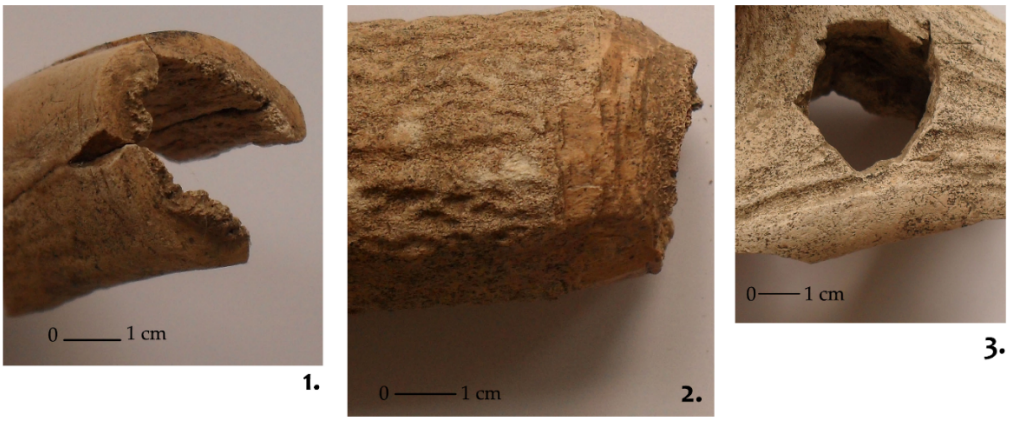

Figura 9. Details of manufacturing traces on antler: 1.cut-and-break procedure and use of abrasive fibre (Knjepište); 2. cutting and whittling with a flint tool (Knjepište); 3. irregular perforation (Ušće Kameničkog Potoka).

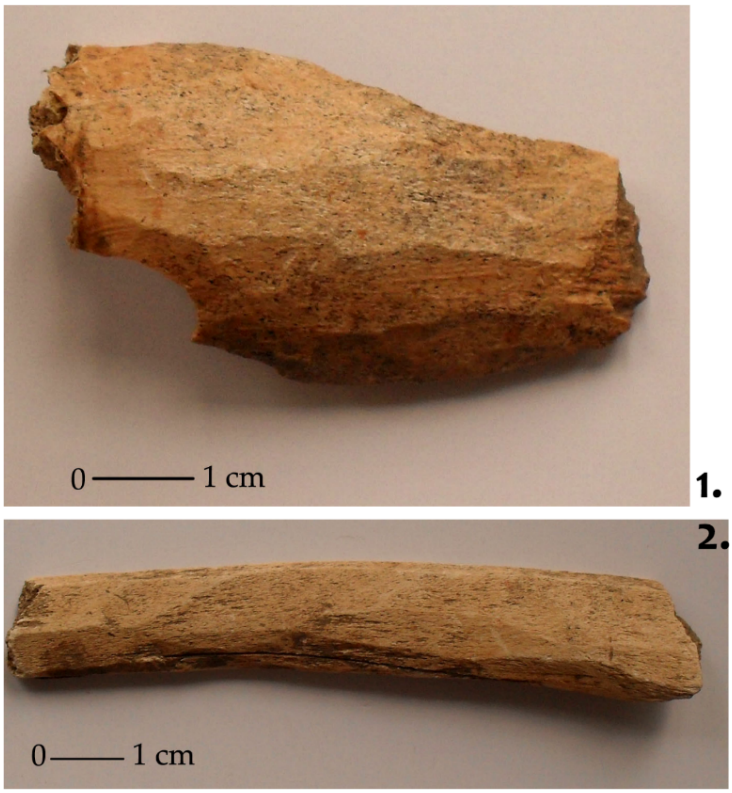

Figura 10. Manufacture debris from red deer antler, pieces with traces resulted from cutting small stripes of material and whittling: 1. Knjepište; 2. Ušće Kameničkog Potoka.