

ARCHEOLOGICKÝ ÚSTAV AKADEMIE VĚD ČESKÉ REPUBLIKY V BRNĚ

PŘEHLED VÝZKUMŮ

60-1



Brno 2019

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100 Státní archeologický ústav 100 let moderní archeologie v českých zemích

BRNO 2019

PŘEHLED VÝZKUMŮ

Recenzovaný časopis
Peer-reviewed journal

Ročník 60
Volume 60

Číslo 1
Issue 1

Předseda redakční rady
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Fotografie na obálce

Mušov, „Na pískách“. Fragment lučkovité spony s pravoúhlou destičkou
a knoflíky (obr. 3, str. 146).

Cover Photography

Mušov, “Na pískách”. Fragment of the square-headed bow brooch decorated
with knobs (Fig. 3, Pg. 146).

Adresa redakce
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Čechyňská 363/19
602 00 Brno
IČ: 68081758
E-mail: pv@arub.cz
Internet: <http://www.arub.cz/prehled-vyzkumu.html>

Tisk
Print

Azu design, s. r. o.
Bayerova 805/40
602 00 Brno

ISSN 1211-7250 (Print)
ISSN 2571-0605 (Online)
MK ČR E 18648
Vychází dvakrát ročně
Vydáno v Brně roku 2019
Náklad 400 ks

Časopis je uveden v citační databázi SCOPUS a na seznamu vědeckých časopisů ERIH PLUS.
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Editorial

Vážení přispěvatelé a čtenáři,

letošní ročník Přehledu výzkumů je v pořadí šedesátý. Je to dobrá příležitost k zamyšlení nad historií, zaměřením a další perspektivou časopisu, nad jeho obsahovou i formální stránkou. V současné době probíhá v rámci redakce Přehledu výzkumů a celého brněnského Archeologického ústavu diskuse o budoucím směřování periodika. Výsledky této diskuse se promítnou do podoby 61. ročníku a následujících čísel časopisu. Tuto proměnu již v předstihu – během roku 2018 – uvodily dvě inovace: indexace časopisu v citační databázi SCOPUS a zprovoznění kompletního databázového rejstříku všech ročníků a čísel. V roce 2020 bude spuštěna další novinka: webově založená aplikace pro odevzdávání hlášení o výzkumech. Recenzované studie a články vycházejí stále častěji cizojazyčně a jsou dostupné v elektronické podobě na adrese <http://prehled-vyzkumu.arub.avcr.cz/prehled-cisel-a-clanku/>. Postupně je doplňován online přístup ke starším ročníkům.

Co určitě zůstane i v budoucnu základním atributem časopisu, je členění každého čísla do dvou částí, z nichž první tvoří recenzované „Studie a krátké články“ a druhou reprezentuje každoroční „Přehled výzkumů na Moravě a ve Slezsku“. Obsahem první části budou nadále vědecké studie a články zaměřené na pravěkou a historickou archeologii se vztahem ke geografickému území Moravy a českého Slezska a s metodickým přesahem do příbuzných disciplín. Druhá část přináší průběžně – ve všech 60ti ročnicích – přehled terénních aktivit za daný rok na území Moravy a Slezska. To bylo také původním posláním Přehledu výzkumů: informovat o nových terénních výzkumech – badatelských i záchranných. V zájmu dostupnosti těchto informací pro zahraničí byla značná část zpráv překládána do němčiny. Ačkoliv „přehledu výzkumů“ dnes stále více doplňují webové aplikace (např. Archeologická mapa ČR), jeho informační potenciál zůstává zásadní. Bez něj by řada terénních aktivit nebo archeologických nálezů „zmizela“ z povědomí odborné i laické veřejnosti.

Připomeňme si pár údajů z historie. Přehled výzkumů vydává brněnský Archeologický ústav Akademie věd od roku 1958; tehdy vyšly dva „ročníky“, a to za rok 1957 a 1958, a v roce 1959 vyšel zpětně

svazek za rok 1956. Poté následovalo již vydávání v chronologickém sledu, i když řada svazků vyšla s jedno- nebo víceletým odstupem. Zpočátku šlo o ročenku, počínaje ročníkem 46 jde o recenzovaný časopis nejdříve s jedním číslem a od ročníku 52 se dvěma čísly: první číslo je zaměřeno rámcově na pravěk, druhé na středověk a novověk. Zejména v 90. letech prodělal Přehled výzkumů období hledání s řadou změn obsahových i formálních. K těm pozitivním inovacím patřilo zajisté rozšíření obsahu o „Studie a články“ počínaje ročníkem 35 za rok 1990 (do té doby tvořil obsahovou náplň každého svazku v podstatě jen „Přehled výzkumů na Moravě a ve Slezsku“). Za méně pozitivní jev lze s odstupem času označit několikeré změny v titulu a formě Přehledu výzkumů v průběhu 90. let (pro přehled připojujeme na konci tohoto čísla přehlednou tabulku všech ročníků a čísel).

Hovoříme-li o historii Přehledu výzkumů, nemůžeme nezmínit několik osobností s ním úzce spojených. Vedle zakladatele Josefa Poulika jmenujme z prvotního období alespoň Annu Medunovou-Benešovou jako hlavní redaktorku, Rudolfa Tichého jako překladatele cizojazyčných příspěvků a resumé nebo Bělu Ludikovskou jako autorku kresebné dokumentace. Svůj zásadní podíl na kontinuitě vydávání titulu v době hledání nové formy a nakonec i v celém posledním období má dlouholetý hlavní redaktor Petr Škrdla.

Co je důležité, posledních 8 ročníků Přehledu výzkumů se vyznačuje jednotnou podobou nejen z hlediska svého číslování, resp. názvu, ale i formátu, vazby a grafického zpracování jednotlivých svazků. To je jistě závazek i pro další roky. Změny avizované počínaje ročníkem 61 se tak dotknou zejména formální stránky časopisu. Můžeme jen doufat, že tyto úpravy budou „trvalého“ rázu a přispějí k renomé a celkové stabilitě periodika v dalších letech.

Za redakci

Lumír Poláček

V Brně 15. května 2019

Dear contributors and readers,

This year's edition of *Přehled výzkumů* is now the sixtieth. This is a good opportunity to ponder the history, focus, and further prospects of this journal, as well as its content and formal aspects. The editors of *Přehled výzkumů* and the entire Brno Institute of Archaeology are currently involved in discussions concerning the future direction of this journal. The results of this discussion will be reflected in the 61st edition and subsequent issues of the journal. This transformation was brought on – back in 2018 – by two innovations: the indexing of the journal in the SCOPUS citation database and the launch of a complete database index of all yearly editions and issues. In 2020 another new feature will be launched: a web-based application for submitting research reports. Reviewed studies and articles are increasingly being published in foreign languages and are available in on-line at <http://prehled-vyzkumu.arub.avcr.cz/prehled-cisel-a-clanku/>. Online access to older yearly volumes is gradually being added.

What will certainly remain a fundamental attribute of the journal in the future is that each issue will be divided into two parts, the first of which comprising reviewed “Studies and Short Articles” and the other being the annual “Overview of Research in Moravia and Silesia”. The first part will continue to contain Research studies and articles focused on prehistoric archaeology, archaeology of Roman Period, Medieval and Postmedieval archaeology, with relationship to the Moravia and the adjacent part of Silesia and with methodology overlapping into related disciplines. The other part will provide a continual – in all 60 editions – annual review of field activities for the given year carried out in Moravia and adjacent Silesia. This was also the original aim of *Přehled výzkumů*: report about new field excavations – including both research oriented and salvage ones. In order to make this information accessible abroad, a considerable number of the articles were translated into German. Although “*Přehled výzkumů*” is now complemented from web applications (such as the Archaeological Map of the Czech Republic), its information potential remains of crucial importance. Without it, many field activities or archaeological finds would be “forgotten” by the professional community and the lay public.

Let's look back at a few events from the journal's history. *Přehled výzkumů* has been published by the Brno Institute of Archaeology of the Academy of Sciences since 1958; back then two “yearly volumes”

were published, for 1957 and 1958, and in 1959 a retrospective volume was published for 1956. After this the journal was published in chronological order, even though a number of volumes came out one or more years later. It was initially a yearbook; since volume 46 it has been a reviewed journal first with one issue and, since volume 52, with two issues: the first issue is generally focused on prehistory, the second on Mediaeval and Modern times. During 1990s in particular *Přehled výzkumů* went through a period of searching for a new style. One from positive innovation was certainly the expansion of the content to include “Studies and Short Articles”, commencing with volume 35 for 1990 (until the content of each volume was essentially just “Overview of Research in Moravia and Silesia”). In retrospect, one less positive factor was that fact that several changes were made to the title and form of *Přehled výzkumů* during the 1990s (as a summary we present a table of all volumes and issues at the end of this issue).

If we are reviewing about the history of *Přehled výzkumů*, we cannot miss several of the people closely associated with it. In addition to the founder Josef Poulík, we should at least mention editors from its early days such as Anna Medunová-Benešová as editor in chief, Rudolf Tichý as the translator of foreign-language contributions and résumés, and Běla Ludíková as the artist behind the drawing documentation. A fundamental role in ensuring the continuity of the publication at a time when a new form was being sought and eventually throughout the whole of the recent years has been played by the long-standing editor in chief Petr Škrdla.

What is important is that the last 8 volumes of *Přehled výzkumů* have been consistent not only in terms of their numbering or title, but also as regards their format, binding and the graphic design of the individual issues. This is definitely an expected commitment for future years. The changes announced starting with volume 61 will thus particularly affect the formal aspects of the journal. We must hope that these alterations will be permanent and will boost the renown and overall stability of the periodical in the years to come.

On behalf of the editors,

Lumír Poláček
Brno, May 15, 2019

STUDIE A KRÁTKÉ ČLÁNKY
CASE STUDIES AND SHORT ARTICLES
STUDIEN UND KURZE ARTIKEL

Recenzovaná část

Peer-reviewed part

Rezensierter Teil

IN BETWEEN GRAVETTIAN AND EPIGRAVETTIAN IN CENTRAL AND EASTERN EUROPE: A PECULIAR LGM EARLY LATE UPPER PALEOLITHIC INDUSTRY

STŘEDNÍ A VÝCHODNÍ EVROPA MEZI GRAVETTIENEM A EPIGRAVETTIENEM: OSOBITÁ INDUSTRIE POČÁTKU POZDNÍ FÁZE MLADÉHO PALEOLITU Z OBDOBÍ POSLEDNÍHO GLACIÁLNÍHO MAXIMA

YURI E. DEMIDENKO, PETR ŠKRDLA, JOSEBA RIOS-GARAIZAR

Abstract

The proposed article aims to present data on Last Glacial Maximum (LGM) Early Late Upper Paleolithic assemblages from 9 sites in Eastern and Central Europe that compose the same specific Epi-Aurignacian industry with Sagaidak-Muralovka-type microliths (EASMM), and which are dated to ca. 25,500–23,000 cal BP. Initially identified in the south of Eastern Europe, where the first 7 such sites were found, later on it was also recognized in Central Europe, more precisely at the Mohelno-Plevovce (Czech Republic) and Rosenberg (Austria) sites.

We will present data on those 9 sites, discussing their topographic positions, field research data, analyses of recovered artifacts, including some use-wear information, absolute dates, pollen and/or fauna data. Then we will summarize all this information to get insights into the human subsistence strategies, including technological adaptations, practiced by the groups that inhabited the cold steppe environment of these parts of Europe during the harsh climatic conditions of the LGM.

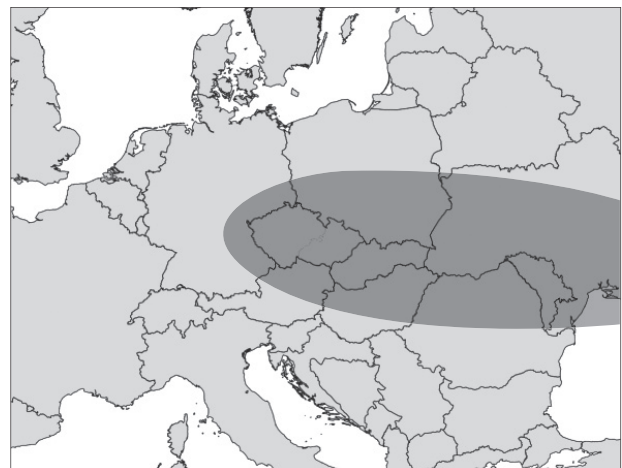
Finally, we will deal with the origins of the EASMM from a Pan-European perspective, discussing its origins and possible scenarios of migration, cultural contact, etc., taking into account the different chronological, archaeological, climatic and paleoenvironmental data.

Keywords

Last Glacial Maximum – Late Upper Paleolithic – Epi-Aurignacian with Sagaidak-Muralovka-type microliths (EASMM) – Pan-European analysis

Introduction

The Last Glacial Maximum (LGM) is a short termed time period in between ca. 26,500 and 19,000 cal BP (22,000–21,000 and 18,000–17,000 uncal BP) (Clark *et al.* 2009) characterized by harsh climatic conditions and by the maximum extent of global ice-shields and a significant sea-level fall of ca. 120–130 m (e.g. Becker *et al.* 2015, Maier *et al.* 2016, see also articles in: Soffer ed. 1987, Soffer, Gamble eds. 1990). From the archaeological point of view, the LMG in Europe has mostly been considered as a period of depopulation of northern Europe and high altitude territories, resulting in the displacement of human groups to “refuge areas” in southern Europe. However, understanding the relevance of this topic and also working on it (e.g. Demidenko 2008, 105–111), it should be



Location of the study area on the map of Europe.
Poloha studované oblasti na mapě Evropy.

noted that less attention has, however, been paid to the great industrial variability of Upper Paleolithic (UP) techno-complexes during the LGM period. After the Early UP is when we observe in the LGM greater industrial variability in Europe (Late Gravettian, Aurignacian V / Epi-Aurignacian / Terminal Gravettian / Proto-Solutrean, Solutrean, Badegoulian, and Early Epigravettian), taking place in quite a short time (ca. 6,000 years).

The present article aims to present data in Eastern and Central Europe on one of the LGM UP techno-complexes that was first identified more than 80 years ago in Western Europe as “Aurignacian V” (Peyrony 1933, 1936, see also Sonnevile-Bordes 1960, 1982), and named in the regions to the east of France as “Epi-Aurignacian”. This Epi-Aurignacian techno-complex is composed of different industry types with their own technological and typological features. This is the case of the particular LGM industry type formerly named by one of us as the “North Black Sea Epi-Aurignacian industry of the Krems–Dufour type” (since Demidenko 1999), which, after removing the regional aspect from the name and highlighting its microlithic character, we propose to be known as

“Epi-Aurignacian with Sagaidak-Muralovka-type microliths” (EASMM). This specific Early Late UP industry is present in Eastern and Central Europe and shows correlations with some contemporaneous Western European industries.

The study and systematization of the East European Paleolithic record started in the 1910s, and from the very beginning several particularities and differences from the rest of Europe were acknowledged (Spitsyn 1915, Gorodtsov 1923). Accordingly, names of Western European UP industries, such as Aurignacian, Solutrean and Magdalenian, were used for the Eastern European materials in the 1930s–1950s, just as an indication of the different UP periods and/or developmental stages, not as markers of particular industrial features (except for very few “*fossiles directeurs*”) (e.g. Efimenko 1953, Boriskovskii 1953, Chernysh 1959). Then, after the investigations by A. A. Rogachev in the Kostenki area (Rogachev 1955, 1957), the so-called “cultural paradigm” with many industrially unclear UP cultures defined became predominant in Soviet UP studies. As a result, the overwhelming majority of archaeologists from the former Soviet Union did not see any genuine Aurignacian



Fig. 1. Map of Central and Eastern Europe with EASMM sites. Created in Google Earth.

Obr. 1. Mapa střední a východní Evropy s EASMM lokalitami. Vytvořeno v Google Earth.

complexes in the east of Europe. Instead, since the late 1960s–early 1970s the term «Aurignacoid» was established for local UP industries for the time span ca. 37,000–35,000 – 20,000–15,000 uncal BP (see Grigoriev 1968, 1972, Anikovich 1992), ignoring the fact that these industries were well separated in time, have distinct techno-typological features, having at best, but not necessarily, no more than a couple of Aurignacian-like core and/or tool types. This caused many difficulties when comparing the Eastern European Aurignacoid data with the Aurignacian *sensu lato* records in Western and Central Europe. Accordingly, an uncertain “industrial fog” was characteristic for the Eastern European UP and particularly Aurignacian investigations (see also Demidenko 2004, 2008).

In such situation, a new UP industry was identified in the 1960s and 70s by Soviet Paleolithic archaeologists for assemblages from a series of sites in Moldova and southern territories of Russia and Ukraine (Fig. 1). The first discovered site was Rașcov VII (Transnistria, Northern Moldova), found in 1958 by N.A. Chetaru (Chișinău). It was excavated until the mid-1980s. Due to the unusual nature of the lithic assemblage of Rașcov VII it was not attributed to any specific “culture” until the discovery and excavations of the Muralovka site (southern Russia) in 1963–1967, and the subsequent artifact analyses by N.D. Praslov, who defined a sort of Aurignacoid-character industry with “core-like endscrapers” and “diminutive bladelets with lateral retouch and diminutive retouched points” (Praslov 1972, Praslov, Filippov 1967). After this recognition, more similar sites were excavated and identified during the 1960s and 70s. These sites were Sagaidak I and Anetovka I in southern Ukraine, Rașcov VIII (Moldova), and Zolotovka I in southern Russia. One more site, Mikhailovskaya Balka, was found in the late 1990s in the same area of southern Russia where Muralovka and Zolotovka I were discovered. All these sites are distributed along the southern belt of Eastern Europe, the so-called Great North Black Sea region. The obtained 14C dates helped to situate this complex in the LGM and Late Glacial periods.

Sites and artifact assemblages

Muralovka

The site was discovered in 1963 by V.E. Shchelinsky during a special search for new Paleolithic sites in the north-eastern part of the Sea of Azov and the Lower Don river area in southern Russia (Praslov 1964, 1967, 1972, Praslov, Filippov 1967). It is located on one of the promontories of the right bank of the Mius river’s armlet in the outskirts of Muralovka hamlet in Rostov province. Due to the probable changes in the Mius armlet’s shoreline over the last almost

20,000 years, it is hard to know the topographical position of the site at the time of its LGM human occupation(s). In 1964 and 1967, Praslov conducted systematic excavations at the site. V.E. Shchelinsky also participated in the 1964 excavation, while A.R. Filippov and A.E. Matyukhin assisted Praslov during the 1967 excavation. An UP archaeological layer, mainly 5–10 cm thick in a rather horizontal position, was recognized within a light-brown loess-like loamy sediment at a depth ca. 0.5–2.5 m below the modern surface. This level was excavated over an area of ca. 140 sq. m. The archaeological layer was partially disturbed, which caused some mixing of material. Mainly, these alterations were caused by recent pits made for clay extraction. Also, in one of its edges, the level was cut by a Holocene ravine containing ceramics and some other pieces from the Bronze Age. And finally, it was altered by Holocene rodent burrows (“*krotovinas*”). These disturbances produced some mixing of material. Despite the alteration, a stony paved structure laid out from local Sarmatian limestone éboulis and separated in two parts, as well as an ashy dump area, were identified (Fig. 2).

Pollen analysis showed a vegetal environment dominated by woodland, with a predominance of pine that allowed a “*pine forest existence*” to be spoken of during human occupation(s) at the Muralovka site (Spiridonova 1991, 129, 131).

Two 14C dates on ungulate bone samples were made in the 1980s at the 14C lab of the Leningrad Branch of the Institute of Archaeology of the Academy of Sciences of the USSR – LE-1601: 19,630±200 uncal BP and LE-1438: 18,780±300 uncal BP.

A well-preserved but not very numerous fauna collection which was never properly analyzed and published was also found at the Muralovka site. The represented species identified by I.M. Gromov, presented in the unpublished field reports, are bison, horse, red deer, saiga, corsac fox and spermophiles that maybe were also included in the Muralovka humans’ diet (Praslov 1964, 1967). Among the recovered bone and antler remains, there are three peculiar artifacts on red deer antler fragments: an engraved (with a human or fish image?) polisher–retoucher (ca. 6.5 cm long), a strangely engraved piece (ca. 4 cm long) and a large-sized (ca. 12 cm long) antler fragment having three parallel cut grooves and additionally probably serving as an anvil. Also, a single heavily fragmented steppe corsac fox (*Vulpes corsac*) canine pendant was found (Praslov, Filippov, 1967, 24–27, Fig. 9; Filippov 1983, 36–38, Fig. 8). The two engraved antler pieces and the pendant also bear some traces of red ochre. All these finds were spatially related to the living space area, whereas the stone paved structure contained very few finds and actually no flint tools at all. It allowed Praslov to suggest a strictly utilitarian purpose for the

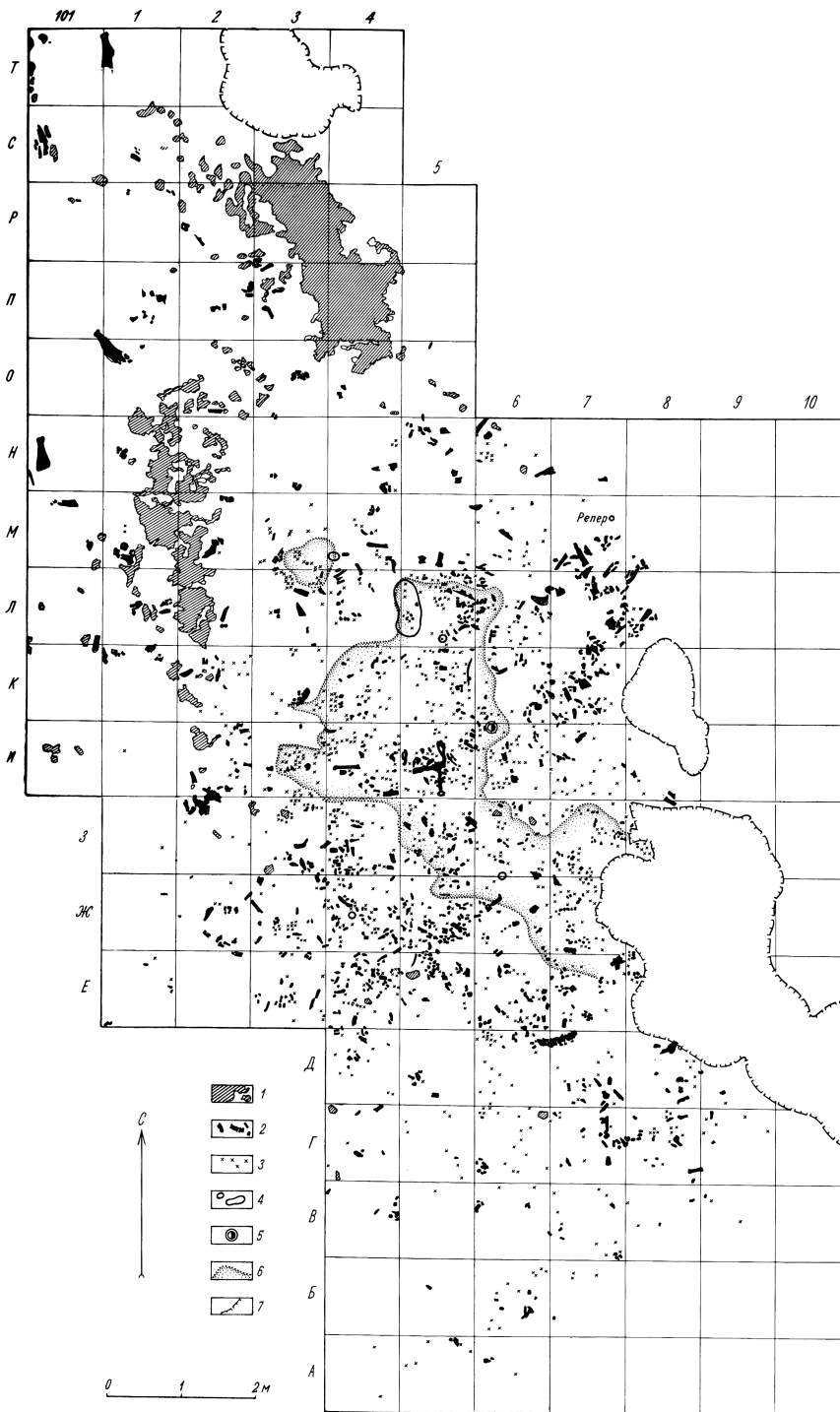


Fig. 2. Muralovka site 1967 excavation plan. 1 – stony paved two parted structure; 2 – animal bones; 3 – lithic artifacts; 4 – ochre pieces; 5 – engraved red deer antler pieces; 6 – ashy dump area; 7 – Holocene ravine and modern pits (N.D. Praslov's Muralovka site 1967 excavation unpublished field report data from Archive of Institute for the History of Material Culture RAS, St.-Petersburg, Russia).

Obr. 2. Muralovka, plán výzkumu v roce 1967. 1 – dlážděné kamenné struktury; 2 – zvířecí kosti; 3 – kamenné artefakty; 4 – hrušky barvíva; 5 – zlomky rytých jeleních parohů; 6 – popeliště; 7 – holocénní strž a recentní jámy. (Nepublikovaná terénní zpráva N.D. Praslova o výzkumu Muralovky v roce 1967, Archiv of Institutu historie a materiální kultury RAS, Petrohrad, Rusko).

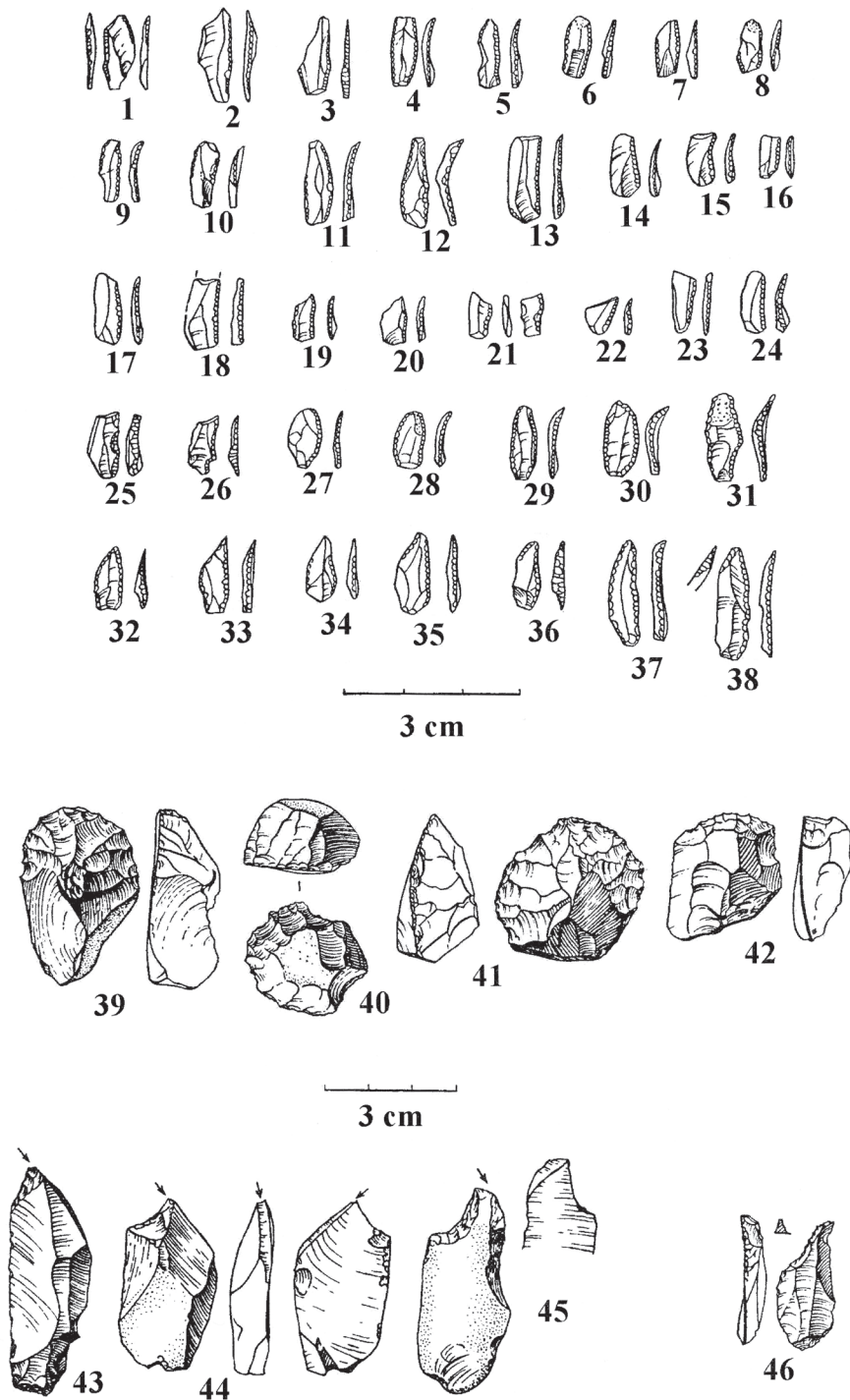


Fig. 3. Muralovka site lithic artifacts. 1–38 – microliths, 39–42 – carinated atypical endscraper-cores; 43–45 – transversal burins on lateral retouch; 46 – truncated piece (modified after Praslov, Filippov, 1967, Praslov 1972).

Obr. 3. Muralovka, kamenné artefakty. 1–38 – mikrolity, 39–42 – kareoidální atypická škrabadla-jádra; 43–45 – příčné rydlo na laterální retuši; 46 – příčná retuš (modifikováno podle Praslov, Filippov 1967; Praslov, 1972).

stone structure construction by Muralovka site human visitors through “hydrology–topography circumstances” for protecting the site’s living space area from ground water infiltration (Praslov 1964, 15–16). If this was the case, then the site was high likely very close to the Mius armlet’s shoreline and the human occupational layer was also close to the armlet’s water level.

Regarding the lithic assemblage, the site’s data were only published in two short articles. Therefore, in spite of the personal observation of Muralovka finds by one of us (Yu. D.) in 1999 in St. Petersburg, it is only possible to offer a general description of the site’s lithic assemblage with no numerical data or details for most of the artifact classes and types. According to Praslov’s published data, the assemblage (ca. 6260 flint pieces) was represented by ca. 20 cores and ca. 350 tools. Praslov noted that most of the cores, none of them ever illustrated, were small (2–3 cm long), very exhausted, and showed multiple platforms, which he interpreted as “similar to heavily reduced discoidal Mousterian cores” (Praslov 1972, 71). Posterior analysis of these cores from Muralovka and later for the Zolotovka I site show that these are in fact pyramidal bladelet and microblade single-platform small-sized cores (Praslov *et al.* 1980, Fig. 2: 16, 18). The small size of the cores suggests that non-local flint was used, although Praslov didn’t mention anything about raw material provenance. More than 40% of the tools (158 items) are microliths (0.8–1.6 cm long and 0.5 cm

wide – Praslov, Filippov 1967, 71) with a fine marginal retouch (Praslov, Filippov 1967, Fig. 10, 1–14; Praslov 1972, Fig. 20, 1–46), 31 of them pointed and 127 laterally and/or bilaterally retouched (Fig. 3: 1–38). The debitage and waste products were formed of chips, tiny bladelets/microblades, flakes and a few blades. The presence of 20 thick (Fig. 3: 39–42) and 2 nosed endscrapers (Praslov, Filippov 1967, Fig. 10, 23, 26–30; Praslov 1972, Fig. 21, 2–9) suggested a production sequence for these microliths. There were also simple endscrapers, mostly on flake (Praslov, Filippov 1967, Fig. 10, 24–25), some burins (Praslov, Filippov 1967, Fig. 10, 15–22; Praslov 1972, Fig. 21, 10), including transversal burins on lateral retouch (Fig. 3: 43–45). The rest of the tools are represented by a few truncated items (Praslov 1972, Fig. 21, 1) (Fig. 3: 46) and some various retouched pieces. Praslov paid special attention to a sub-leaf partially-bifacial point manufactured on a thin flake (Praslov 1972, Fig. 21, 11), although such piece was unique in the assemblage.

Use-wear analysis made on this assemblage by A.K. Filippov helped to divide the endscrapers into “endscraper-like cores” and various endscrapers and notched tools used for working different soft and hard materials (Filippov 1977, 170–173, Fig. 2.). Some “endscraper-like cores”, although they were mainly used “for the production of diminutive bladelets”, bore “work traces on wood, bone or of true endscrapers”. The analysis of the retouched microliths

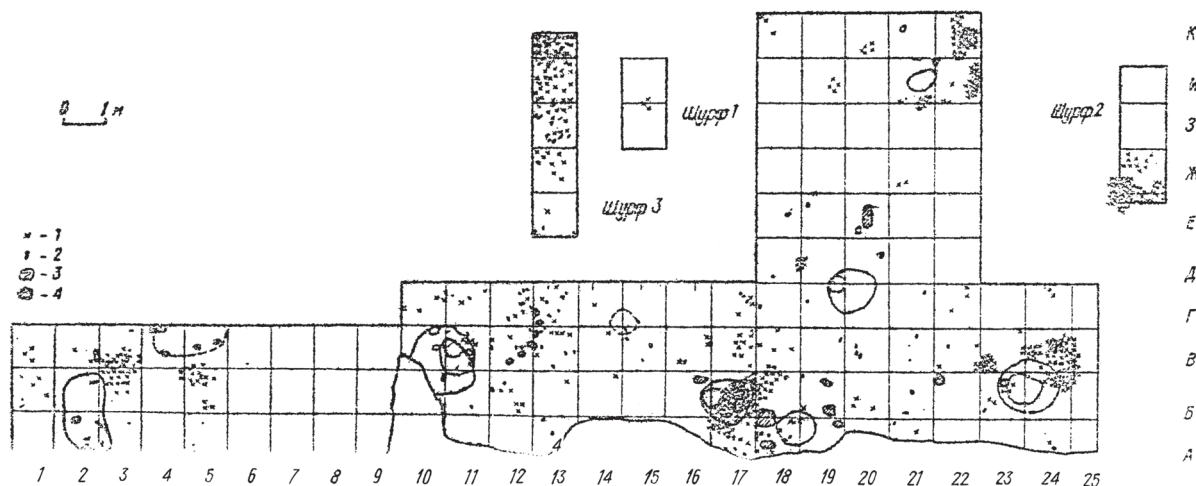


Fig. 4. Sagaidak I site excavation plan. 1 – flint artifacts; 2 – animal bones; 3 – fireplaces and ashy spots; 4 – rocks (modified after Stanko, Grigorieva 1977).

Obr. 4. Sagaidak I, plán výzkumu. 1 – kamenné artefakty; 2 – zvířecí kosti; 3 – ohniště a popelovitá místa; 4 – kameny (modifikováno podle Stanko, Grigorieva 1977).

allowed Filippov to subdivide them into 4 groups: 1) with core reduction traces; 2) with specially made micro-notches; 3) with various scraping use traces on coloring matters (ochre?); 4) with puncturing–piercing use traces (Filippov 1977, 167–170, Fig. 2), which he interpreted as exclusively “domestic” functions. This is not surprising as these studies were made in the 1st half of the 1970s, when projectile function had not yet been established by traceological analysis for UP microliths. Also, Filippov identified polisher–retoucher and anvil and some technical remains made on antler (Praslov, Filippov 1967, Filippov, 1977, 1983).

Sagaidak I

The site was found by V.N. Stanko and G.V. Grigorieva in the western part of the Ukrainian North Black Sea region. More precisely, it was located at the 1st lower terrace of the Ingul river’s left bank. Since the 2nd half of 1967 the site has been below the water level of the Sofievka water-storage reservoir and, unfortunately, is not available for any further investigations. In 1967, ca. 116 sq. m in total was excavated with three *in situ* archaeological layers in a well preserved alluvial sequence (Stanko, Grigorieva 1977). The two upper

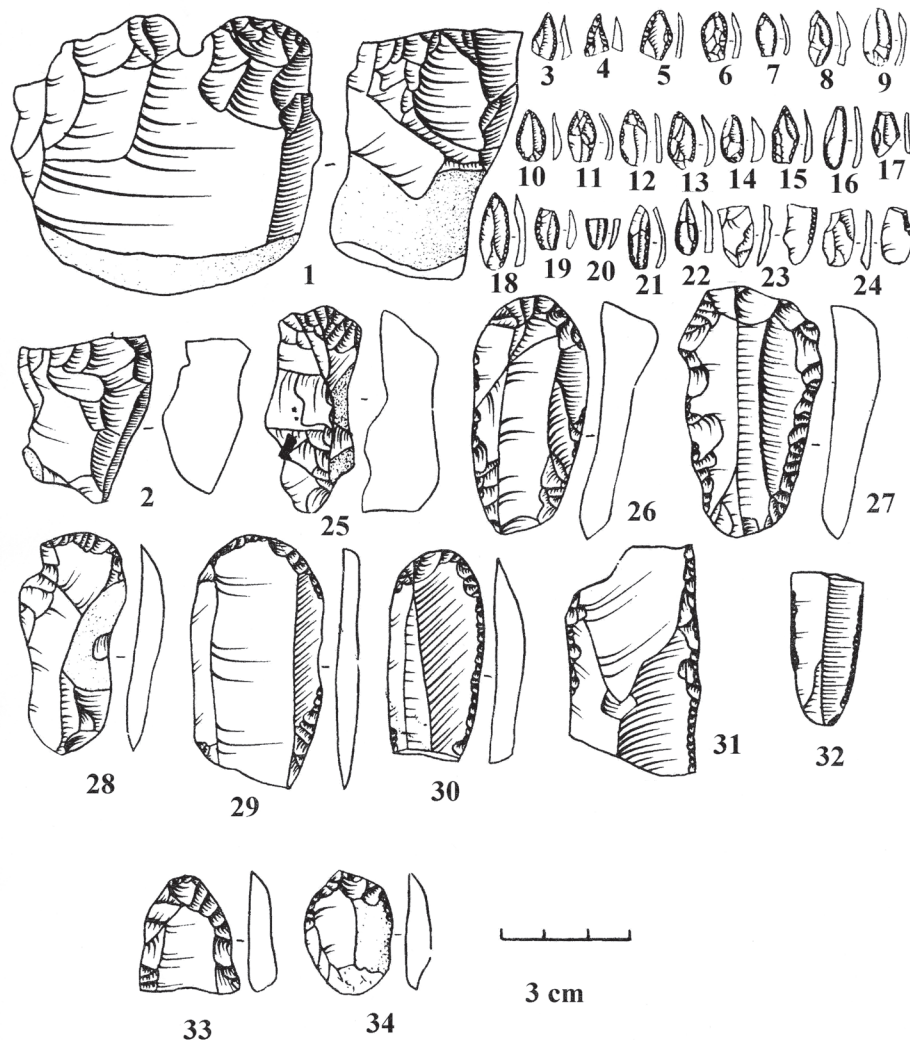


Fig. 5. Sagaidak I site lithic artifacts. 1 – core; 2 – core fragment; 3–24 – microliths; 25–30, 33–34 – various endscrapers; 31–32 – retouched blades (modified after Smolyaninova 1990).

Obr. 5. Sagaidak I, kamenné artefakty. 1 – jádro; 2 – fragment jádra; 3–24 – mikrolity; 25–30, 33–34 – různá škrabadla; 31–32 – retušované čepele (modifikováno podle Smolyaninova 1990).

layers correspond respectively to the Mesolithic–Neolithic “Kukrek culture” and undefined UP. The lower layer, found at a depth of 2.55–2.60 m, produced ca. 1500 flint items and ca. 120 animal bones distributed throughout the whole excavation area. These remains were concentrated around 6 fireplaces, suggesting that the level was a “real” archaeological layer (Fig. 4). Unspecified organic materials from the site were dated in the 1980s yielding the following results: LE-1602a: 21,240±200 uncal BP and LE-1602b: 20,300±200 uncal BP. Some fauna materials were also recovered during Sagaidak I site excavations and then analyzed by V.N. Bibikova. The fauna list is composed of *Coeledonta antiquitatis* (NR: 1, MNI: 1); *Bison priscus* (NR: 3, MNI: 1); *Bos-bison* (NR: 11, MNI: 1); *Equus caballus* (NR: 4, MNI: 1), plus ca. 100 unidentifiable large-sized bone fragments.

The recovered lithic assemblage was first analyzed by the site’s excavators (Stanko, Grigorieva 1977) and then by a pupil of Stanko, S.P. Smolyaninova, in the 1980s for her PhD (Smolyaninova, 1990). Nowadays, the collection is no longer accessible. We will base our observations mainly on the more detailed 1970s work (Stanko, Grigorieva 1977). As a whole, the lithic artifacts accounted for 1492 items and can be classified as: 1 core (Fig. 5: 1) and 2 core fragments (Fig. 5: 2), 5 core maintenance products, 290 flakes, 166 blades, 246 bladelets and microblades, 69 tools, 708 chips, 3 chunks, and 2 pebble fragments. All the data suggest that most of the flint was imported to the site from a distant outcrop, while some rather poor quality lilac colored “boulder-flint” pieces were very likely from a local source. Evidence of core primary reduction at the site is scarce, but some cores seem to have been intensively exploited, explaining the high ratio between cores and large-sized debitage pieces (1:152), which may also reflect the transport of cores outside the site. Chips are between 0.2–0.5 cm long and appear spatially concentrated around fireplaces. Flakes are c. 3–5 cm long and a few of them are clearly burnt, while larger flakes are very rare in the assemblage. Blades are metrically very variable: between 2–9 cm long and 1.5–3.5 cm wide and mostly with slightly curved profiles. Microblades also have curved profiles and around 30 of them (ca. 12%) are elongated ones, 1.5–2.5 cm long and 0.5–0.8 cm wide. These microblades are characterized as “*being mostly represented by examples of sub-triangular shape with both edges convex or having one edge convex and another straight*” (Stanko, Grigorieva 1977, 43). The retouched tool assemblage is formed of 69 pieces: 22 microliths, 12 endscrapers, 32 retouched blades and 3 retouched flakes. The microliths have a fine marginal retouch (31.9%) with a dominance of pointed elements over laterally and/or bilaterally retouched pieces (Smolyaninova 1990). These microliths are tiny, “*0.8–1.5 cm long and 0.3–0.6 cm wide*” (Stanko, Grigorieva 1977, 45) (Fig. 5: 3–24). 12 endscrapers are made on blades

(7 examples – Fig. 5: 26–30) and on flakes (5 examples – Fig. 5: 33–34). From this set it is difficult to assess, looking at the illustrations, how many of them are carinated atypical endscrapers–cores, but 3 of them have thick (>1 cm) endscrapper edges and could correspond to such kind of cores (Fig. 5: 25–27). Most of the 35 blades and flakes with retouch bear a fine marginal and/or irregular retouch (Fig. 5: 32), while well-retouched pieces are rare (Fig. 5: 31). Again, as with the endscrapers, the preponderance of blades among the retouched pieces is remarkable. Moreover, the blade–blanks width data (2–3 cm) for both endscrapers and retouched blades indicate the usage of large-sized blades for tools, although *in situ* blade primary production is doubtful. This suggests that some of the Sagaidak I site flint items were actually brought to the site already prepared, at least partially. The presence of probable carinated atypical endscrapers–cores suggests that some microlith production took place *in situ*, maybe for repairing projectile weapons.

Zolotovka I

The site was found by V.Ya. Kiyashko in 1969 near the Starozolotovskiy hamlet in Rostov province, Southern Russia. It was excavated the same year by Kiyashko and A.E. Matyukhin, who opened an 8 × 3 m trench, finding an *in situ* UP layer there. Then, Praslov took all Zolotovka I recovered materials and data for further investigations of the site, and even made new excavations at the site in 1976 and 1978 (Praslov *et al.* 1980). Later, the site was excavated one more time by V.E. Shchelinsky in 1996 (Praslov, Shchelinsky 1996). Topographically, the site is particularly located ca. 250 m from Don river, in the lower part of the fifth terrace of the Don river, 15–18 m above the bottom of the Markina ravine and 32–37 m above the Don river’s present day water level. The site was excavated initially over 80 sq. m, then several test pits were dug in the 1970s and in 1996. The archeological level was around 7–10 cm thick, and showed good preservation, in part due to its position 2 m below the modern surface. In this layer several concentrations with ashy spots and/or fireplaces containing numerous lithic artifacts and animal bones were excavated. Faunal assemblage has not been properly analyzed, but reports indicate very high fragmentation, with the only identified species being *Bison priscus* (Praslov, Shchelinsky 1996).

Pollen samples were taken in the course of the 1970s Zolotovka I excavations by E.S. Malyasova (Praslov *et al.* 1980, 173–175). The analysis indicated the existence of mostly steppe landscape (herbaceous plants making up between 60–80%) with a significant role of *Chenopodiaceae* and *Asteraceae*, while *Pinus* (80%) dominates among tree species.

Two ^{14}C dates were obtained from the site; the first from a sample of burnt bone gave a result of $17,400 \pm 700$ uncal BP (GIN-1938) (Praslov *et al.* 1980, 171), the second was made on a bison bone and gave a result of $13,600 \pm 1000$ uncal BP (GIN-8002), which we don't consider reliable due to its large standard error.

The lithic assemblage from the first excavations was briefly described by Praslov (Praslov *et al.* 1980). He noted some basic techno-typological features without numeric data on the assemblage size and composition. He noted the presence of "high core-like endscrapers, some diminutive retouched bladelets of the Muralovka

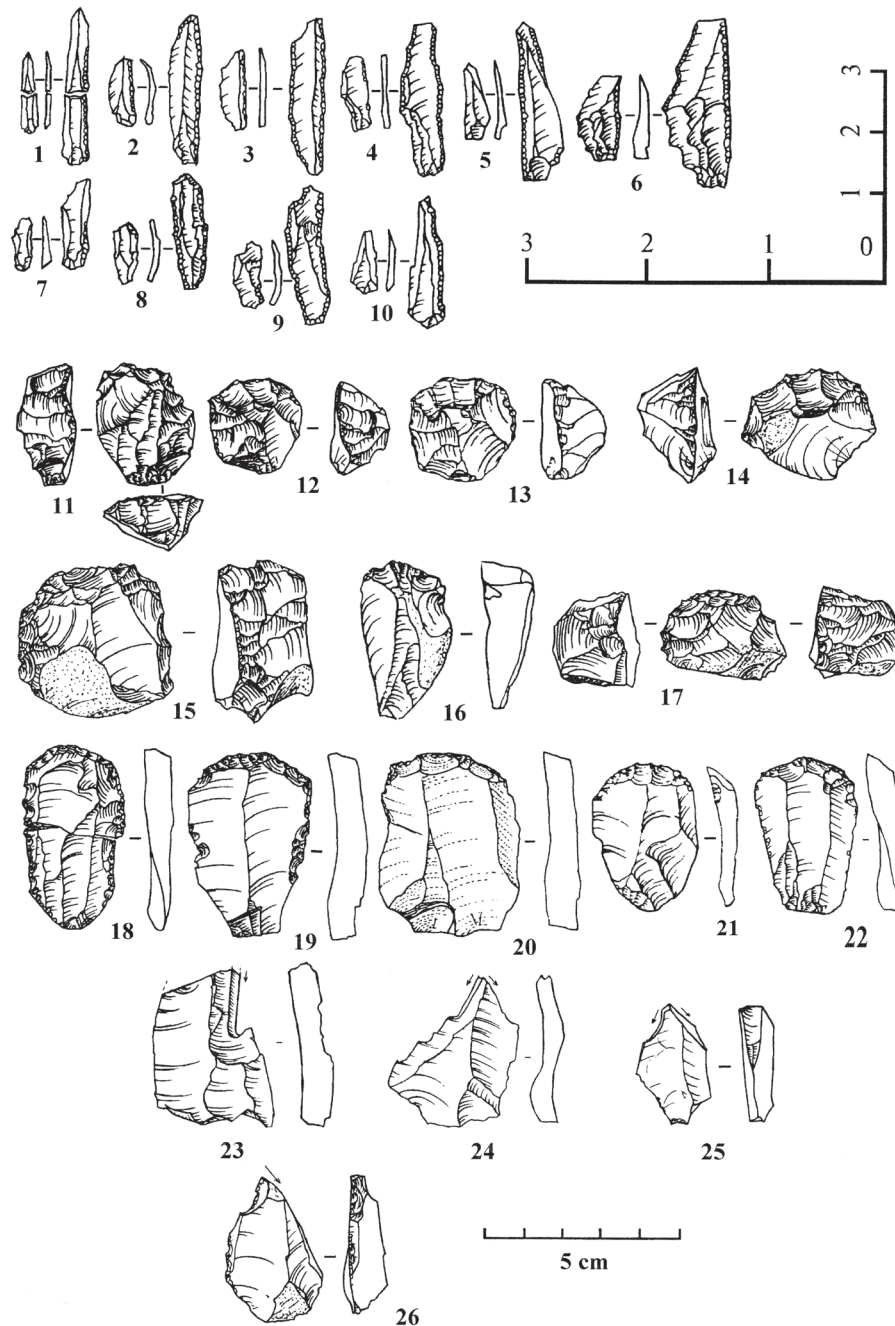


Fig. 6. Zolotovka I site lithic artifacts. 1-10 – microliths; 11-17 – carinated atypical endscrapers-cores; 18-22 – simple endscrapers; 23 – angle burin; 24-25 – dihedral burins; 26 – transversal burin on lateral retouch (modified after Praslov, Shchelinsky 1996).

Obr. 6. Zolotovka I, kamenné artefakty. 1-10 – mikrolity; 11-17 – kareoidální atypická škrabadla-jádra; 18-22 – jednoduchá škrabadla; 23 – hranové rydlo; 24-25 – klínová rydla; 26 – příčné rydlo na laterální retuši (modifikováno podle Praslov, Shchelinsky 1996).

type, along with usual types of burins and endscrapers on blades and flakes”, which has many similarities with the Muralovka assemblage (Praslov *et al.* 1980, 171, Fig. 2). He also noted the presence of blade and bladelet cores for producing regular and parallel-sided blanks that were absent at Muralovka (Praslov *et al.* 1980, 172). He also interpreted the thick endscrapers as cores for microblades that were transformed into tiny points (Praslov *et al.* 1980, 172). These features reinforced the impression that both sites, Muralovka and Zolotovka I, belonged to the same culture (Praslov *et al.* 1980, 173).

After the 1996 field work at the Zolotovka I site, Shchelinsky presented not only his own new data, but also tried to evaluate and describe the whole site assemblage (Praslov, Shchelinsky 1996). Although this analysis didn't incorporate quantitative data, he certainly described it in more detail. He mentioned, alongside the presence of flint, the presence of some quartzite items, both of them available in the “*alluvium of the Don river terraces right near the site*” (Praslov, Shchelinsky 1996, 55). The assemblage is characterized by a great variety of core-like pieces, including pre-cores, flake cores and

blade/bladelet cores, most of them with a single platform. This suggests that the whole lithic production cycle was carried out at the site (Praslov, Shchelinsky 1996, 56). Also, the assemblage is dominated by flakes, which could be an indication of the relevance of initial core preparation and reduction processes. Retouched tool-kit is dominated by endscrapers and “*tiny bladelets with retouch*”. Endscrapers, with few nosed pieces, are basically made on flakes (Fig. 6: 18–22), some of them being “*massive high core-like items*” (Fig. 6: 11–17). Microliths (Fig. 6: 1–10) are described as “*diminutive bladelet or flakey pieces with thin vertical lateral / bilateral retouch*” being 1–2 cm long and curved in profile. On the other hand, burins are scarce, not multifaceted (Fig. 6: 23–25), the presence of transversal burins on lateral retouch being notable (Fig. 6: 26). Shchelinsky concluded that “*the presence in the Zolotovka I collection of both diminutive retouched bladelets of the Muralovka type and high core-like endscrapers, like at the Muralovka site, represent a “conjugated group” of these tools, and they are the characteristic element of a special archaeological culture or cultural group*” (Praslov, Shchelinsky 1996, 64).

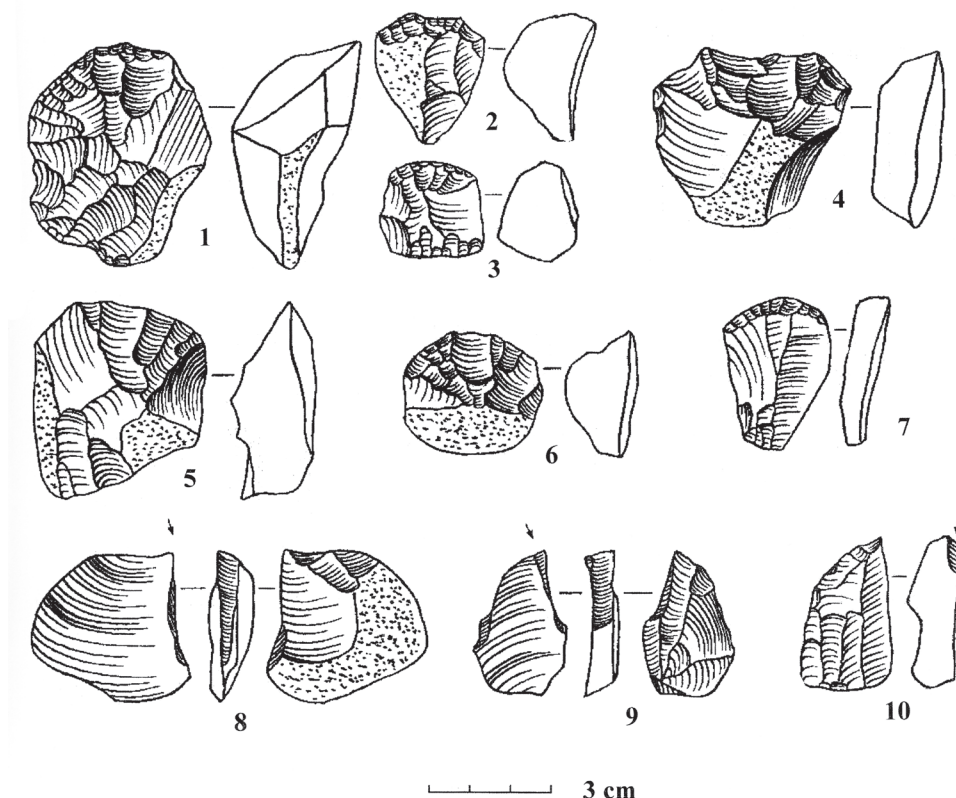


Fig. 7. Mikhailovskaya Balka site lithics. 1–6 – carinated endscrapper-cores; 7 – simple endscrapper; 8 – angle burin; 9–10 – burins on truncation / lateral retouch (modified after Matyukhin 2002).

Obr. 7. Mikhailovskaya Balka, kamenné artefakty. 1–6 – karenoidální škrabadla-jádra; 7 – jednoduché škrabadlo; 8 – hranové rydlo; 9–10 – rydlo na příčné retuši / laterální retuš (modifikováno podle Matyukhin 2002).

Mikhailovskaya Balka

This is the most recently found site and has only been very initially explored. It was discovered by A.E. Matyukhin in 1997 less than 10 km to the north of the Zolotovka I site. The site is actually situated close to the confluence of the Severskiy Donets river with the Don river. Like Zolotovka I, the site is located on the left side of a ravine, 8–10 m above its bottom (Matyukhin 1996). The site was excavated over ca. 8 sq. m and the profile of the ravine was also cleared. A single *in situ* 6–10 cm thick archaeological layer was identified. It was deposited less than 1 m below the modern surface, in loam-like sediment where lithic pieces and poorly preserved animal bones were evenly distributed. The faunal assemblage was analyzed by A.K. Kasparov. The bones were heavily fragmented, some of them burnt, and the few identifiable items were attributed to bison.

The lithic assemblage (396 excavated pieces and 35 surface finds) was preliminarily described by A.E. Matyukhin (Matyukhin 1996). Used raw materials are flint and quartzite, which could have been obtained in the surroundings of the site, although actual sources have not been identified. In total, 12 core-like pieces and 13 tools, including 2 from surface finds, have been recovered. Core-like pieces and debitage, with a lot of flakes bearing primary cortex, reveal that the whole reduction process was carried out at the site. The debitage is composed of flakes, and the proportion between blades, bladelets and microblades is unclear but the latter tiny pieces are the least numerous. Tools are made on flakes. Eight of them are endscrapers, seven of them carinated endscraper-cores (Fig. 7: 1–6), and one a simple endscraper (Fig. 7: 7). There are also 2 burins on truncation / lateral retouch (Fig. 7: 9–10) and an angle burin (Fig. 7: 8), as well as 2 retouched pieces.

Despite the absence of retouched microliths, which could be due to the absence of dry / wet screening, microlith blank production has been identified at the site. Taking this into consideration, the preliminary data suggest that the Mikhailovskaya Balka assemblage is similar to the Zolotovka I and Muralovka assemblages, fitting into the southern Russia “branch” of the Epi-Aurignacian.

Anetovka I

The site was discovered by V.N. Stanko and S.P. Smolyaninova in 1978 during a systematical survey. Anetovka I was found on the 2nd terrace of the Bakshala river’s right bank (17 m above the river’s modern water level) at the south-western edge of Anetovka village (north-west of the Nikolaev province in southern Ukraine). Then, the site was immediately excavated af-

ter finding in a surface of ca. 100 × 50 m a cluster of ca. 3,000 lithic artifacts (Stanko *et al.* 1981). First, a test pit of 2 × 1 m was dug, then the 35 sq. m surface of an excavation block. Lithic materials and animal bones were found throughout the whole excavated sequence in a 1.5 m thick layer, including 3 Upper Pleistocene sediment horizons and the uppermost Holocene humus. The finds were vertically concentrated within two clusters, suggesting a two-layer or even multi-layer archaeological composition of the site. The found animal bones were only preliminary studied by V.I. Bibikova, who identified the presence of bison, horse and reindeer.

The lithic assemblage recovered in this excavation is dominated by local mediocre-quality flint from the banks of the Bakshala river. Also, some non-local high-quality flint (erratic flints?) is represented. 292 core-like pieces and 432 tools were identified within the lithic assemblage. Due to primary flaking of the abundant and not high-quality flint nodules, the core-like pieces are composed of many pre-forms, initial cores and core fragments. Flakes heavily numerically dominate among debitage pieces and tool-blanks. The most characteristic tools are various “thick endscrapers”, although just a single nosed endscraper was recognized among them, and 64 microliths with fine retouch (10 micro-points and 54 laterally retouched items).

In 2005–2006, one of us (Yu.D.) thanks to the great help in the field by V. N. Stanko and his pupil I.V. Pistruil, conducted new fieldwork at the site. A trench of 4 × 1 m was opened at the edge of the 1978 excavation block to check the site stratigraphy. The faunal and lithic remains appear throughout the excavated sediment thickness down to c. 2.40 m, but the great majority were recovered in the modern turf and in the two Holocene lithological horizons. Below the two Upper Pleistocene horizons (a common Upper Pleniglacial & Late Glacial / Prichernomorsk & Bug loess-like loam, ca. 27,000–10,000 uncal BP; MIS 3–2 and a Vitachiv (vtb3) paleosol; ca. 30,000–27,000 uncal BP; MIS 3 – geological observations made by N.P. Gerasimenko in the 2006 field season) some materials appeared inside the very numerous rodent burrows (“*krotovinas*”) going down into the Pleistocene sediments from the Holocene sediments. Also, the bone remains presented a heavily altered aspect produced by weathering and abrasion. Taking this into consideration, it was not possible to certify the presence of an *in situ* UP archaeological layer. Moreover, the stratigraphy and distribution of the finds indicate the complete re-deposition of any Epi-Aurignacian *in situ* cultural bearing sediments at the site’s excavated area.

This impression was confirmed in 2006 after opening a test pit (4 sq. m) 74 m. away from the 1978 excavation (Fig. 8). The excavation here went 1.50 m deep and again showed the same situation, with Ho-

locene burrows cutting down the Pleistocene deposits and re-working the possible Epi-Aurignacian layers. The fact that the possible Epi-Aurignacian materials are only preserved in the Holocene deposits (Holocene horizons and burrows) is difficult to explain, but may be an erosional episode at the beginning of the Holo-

cene is responsible for exposing the Epi-Aurignacian layers, which were reworked and then covered again by sediments. Due to such particular taphonomic history, the Anetovka I site and assemblages should be treated with caution in the study of the Epi-Aurignacian phenomenon.

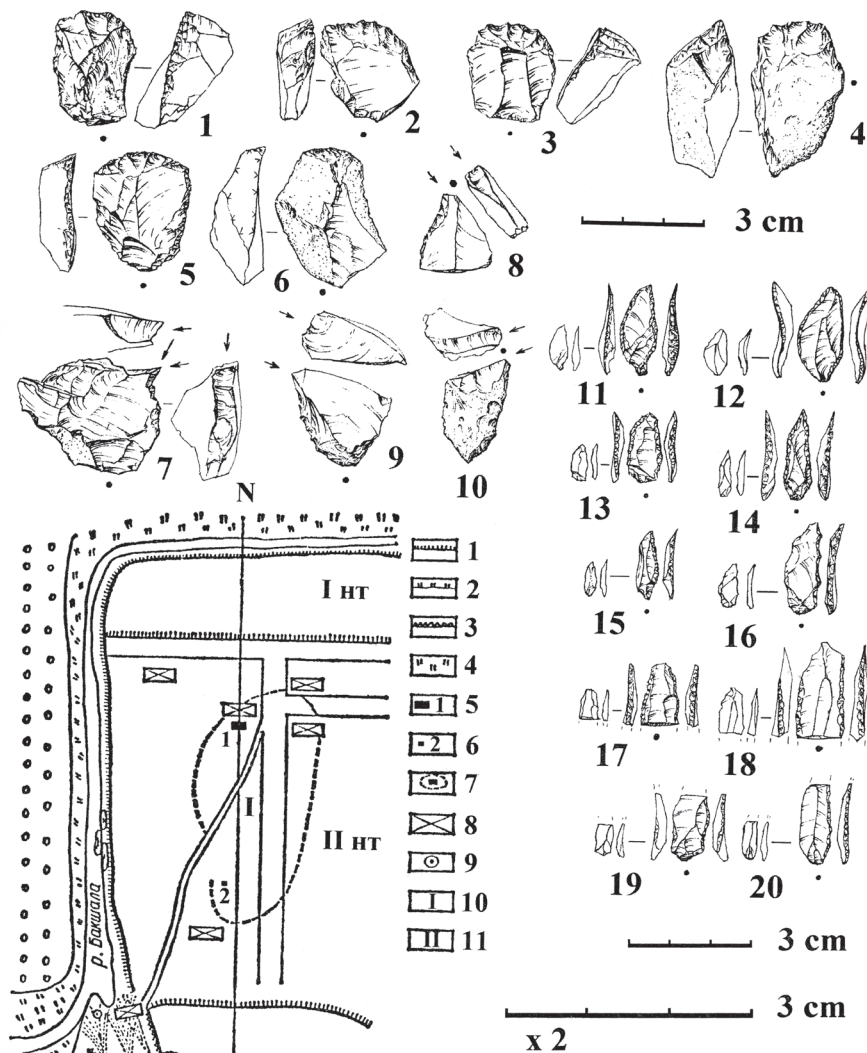


Fig. 8. Anetovka I site 2005 excavation lithic artifacts. 1-4 – carinated atypical endscrapers; 5-6 – simple endscrapers; 7 – dihedral angle burin; 8-10 – transversal burins on lateral retouch; 11-20 – microliths. Anetovka I and II site topographic plan (modified after Stanko *et al.* 1981): 1 – Pleistocene terrace edges; 2 – Pliocene terrace edges; 3 – ravines; 4 – Bakshala River floodplain; 5 – 1978 excavation block and 2005 trench; 6 – 2006 sondage; 7 – find distribution limits for Anetovka I and II sites; 8 – village houses; 9 – a village well; 10-11 – Anetovka I and II sites.

Obr. 8. Anetovka I, artefakty z výzkumu v roce 2005. 1-4 – karenoidální atypická škrabadla-jádra; 5-6 – jednoduchá škrabadla; 7 – klínové rydlo; 8-10 – příčné rydlo na laterální retuši; 11-20 – mikrolity. Anetovka I a II, topografická mapa (modifikováno podle Stanko, Smolyaninova, Ivanov 1981): 1 – okraje pleistocénních teras; 2 – okraje pliocénních teras; 3 – strže; 4 – niva řeky Bakshaly; 5 – výzkum v roce 1978 a výkop v roce 2005; 6 – sondáž v roce 2006; 7 – rozsah nálezů pro Anetovka I a II; 8 – domy ve vesnici; 9 – vesnická studna; 10-11 – lokality Anetovka I a II.

However and quite surprisingly, the lithic assemblage is quite homogeneous and displays many features that link it with the Epi-Aurignacian industry.

The 2005 4 sq. m trench provided a total of 1681 flint pieces and 1354 pieces of fauna remains. This sample comes from exactly the same area as the 1978 excavation block. Lithic assemblage coming from this area is mainly composed of core-like pieces (47); core maintenance products (36); flakes (355); blades and bladelets (135), some of them being microblades (54) less than 7 mm in width; chips (957); and some chunks (73), burin spalls (9) and burnt flints (15). Retouched tools are not very numerous (54), with 7 carinated atypical endscrapers (Fig. 8: 1–4); 2 simple endscrapers (Fig. 8: 5–6); 12 burins (4 on truncation, 4 transversal on lateral retouch – Fig. 8: 8–10 and 4 dihedral – Fig. 8: 7); 1 carinated atypical endscrapers + burin on truncation; 11 retouched flakes; 1 retouched chip; and 20 microliths (Fig. 8: 11–20) (9 pointed and 11 laterally / bilaterally retouched).

Interestingly, most of the small lithics are present (double dry screening has been realized during the 2000s excavations), suggesting that the horizontal transport of materials was not very important, but the site is definitively too altered to prevent further interpretation of its function. Nevertheless, the assemblage composition suggests that lithic production took place on the site.

Rașcov VII and VIII

The Rașcov VII site was discovered in 1958 by N.A. Chetaru (Chișinău, Moldova). The sites are situated on the northern outskirts of Rașcov village, in the Dniestr river valley in Transnistria, Northern Moldova. Topographically, they are located close to one other on the 30 m high 2nd terrace of a small left tributary of the Dniestr river and the terrace, still being the 3rd one for the basic Dniestr river valley terrace system, is leaned to a steep and wide Sarmatian limestone cliff. Accord-

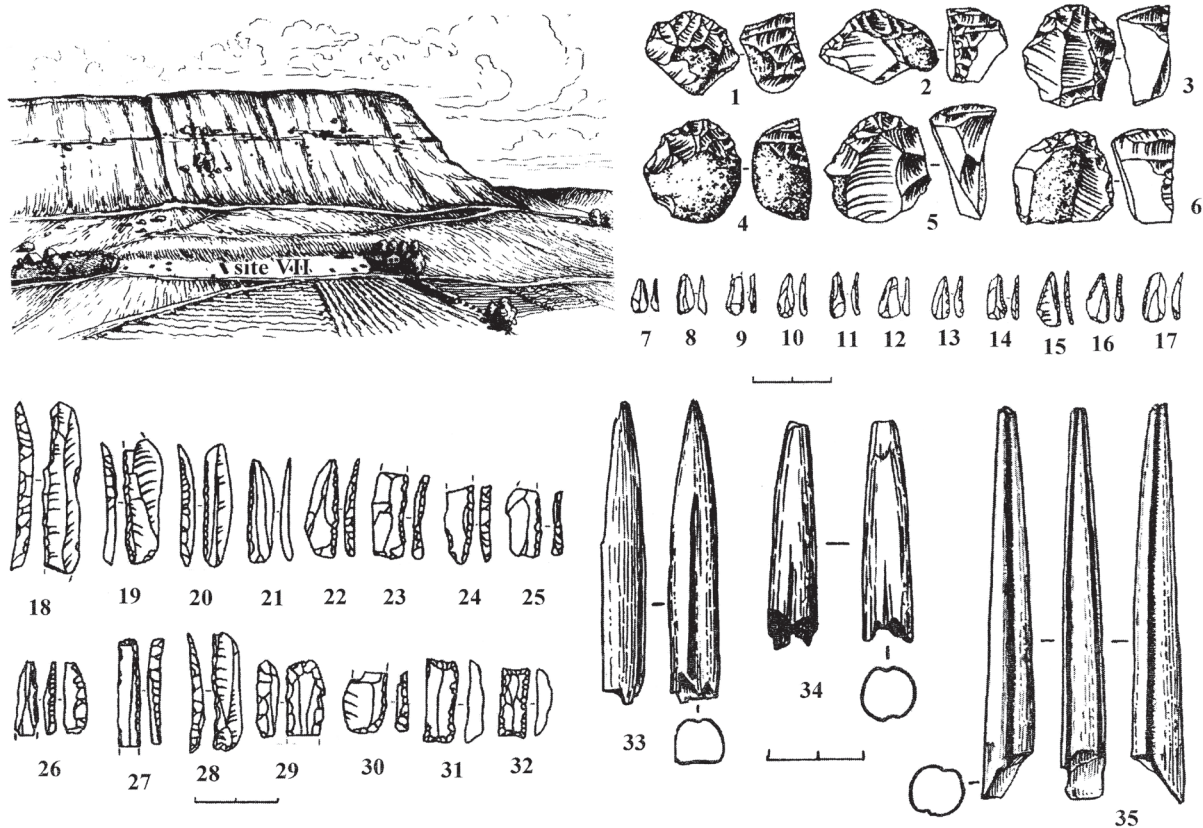


Fig. 9. Rașcov VII site lithic artifacts. 1–6 – carinated atypical endscrapers; 7–17 – EASMM microliths; 18–32 – Early Epigravettian backed bladelets; 33–35 – mammoth ivory and reindeer antler slotted point fragments. Rașcov VII site topographical plan (modified after Chetaru *et al.* 2007).

Obr. 9. Rașcov VII, kamenné artefakty. 1–6 – karenoidální atypická škrabadla-jádra; 7–17 – EASMM mikrolity; 18–32 – časně epigravettské čepelky s otvřeným bokem; 33–35 – zlomky hrotů s drážkou z mamutoviny a sobích parohů. Topografický plán lokality Rașcov VII (modifikováno podle Chetaru, Grigorieva, Covalenco 2007).

ingly, the cliff has protected the sites' human visitors from easterly and north-easterly winds (Fig. 9). N.A. Chetraru was a leader of the field investigations of the Raşcov sites and G.V. Grigorieva (Leningrad) and later S.I. Covalenco (Chişinău), a pupil of Chetraru, also worked with him and/or independently of him there (e.g. Chetraru, Grigorieva, Covalenco 2007; Grigorieva, Chetraru 1973; Grigor'eva 1974; Covalenco, 1996, 2009, see also Noiret 2009). The Raşcov VII site was subjected to systematical field investigations from its discovery in 1958 until 1972 with then some additional sondage digging in 1986 being realized. In total 20 sondages, 3 trenches and 5 excavation blocks were excavated over an area of ca. 380 sq. m at the Raşcov VII site. The Raşcov VIII site was only known for its surface finds for a long time until Grigorieva dug 7 sondages at the site in 1972. Since 2005 some new Raşcov VIII excavations have been conducted by S. Covalenco over an area of ca. 50 sq. m (Covalenco 2009).

Raşcov VII has been dated at $12,220 \pm 500$ uncal BP (LE-1061) on a charcoal sample from a "*charcoal lens deposited in some reddish deluvial sediments ca. 1–1.5 m below a cultural layer*" (Grigorieva 1974, 148). Considering this date, the site was originally considered Late Glacial by Grigorieva and Chetraru, and this interpretation was widely accepted in Soviet Paleolithic archeology (e.g. Rogachev, Anikovich 1984, 218–219). However, new analyses and data suggest that an LGM chronology would be more accurate, and according to this, coeval to other sites like Muralovka which has been dated to ca. 20–18,000 uncal BP (Chetraru *et al.* 2007, 13–15).

Rich fauna assemblage of more than 16,000 animal bones was well studied by the well-known Moldovan fauna specialist A.I. David (Chetraru *et al.* 2007, 42–50; David 2007, 163–170). The dominant ungulate species was reindeer with more than 70% (6109) of all identifiable (ca. 8500 examples) animal bones and more than 50% (53) of all possible animal individuals. It was then followed by the horse (*Equus latipes*) with almost 25% (2023) of all identifiable animal bones from 24 individuals. Aside from the mammoth (88 bones / 3 individuals) and woolly rhinoceros (101 bones / 4 individuals), there were also enough representative ungulates such as bison (28 bones / 3 individuals) and red deer (81 bones / 4 individuals). The presence of the latter ungulate species does not look convincing enough for the LGM or Late Glacial paleoenvironment, although the Raşcov VII fauna list also includes a few bones of roe deer (*Capreolus capreolus*), brown bear (*Ursus arctos*) and elk (*Alces alces*). Pollen analysis realized by A.A. Popova (Chişinău) in 1972 did reveal a "*periglacial forest–steppe landscape*" with "*a dominance of xerophilous herbage*" and "*some limited presence of pine–birch light forested areas added by alder in river valleys*" (Chetraru *et*

al. 2007, 34–39; Popova 2007, 158–162). The mollusk shell assemblage was analyzed by V.M. Motuz, which showed rather "*severe and sharply continental climate characteristics of a periglacial environment during human occupation at the site*" (Chetraru *et al.* 2007, 39–42). Indeed, the above-represented fauna, pollen and malacofauna data are much more indicative for the LGM than for the Late Glacial time period.

However, it has not been so clear with the found Raşcov VII artifacts. The site's archaeologists had a rather huge number of finds (Chetraru *et al.* 2007, 51–108). Aside from a good sample of surface lithic pieces collected in 1958–1968 (ca. 3,000 items), excavated lithics approach ca. 45,000 examples. Also, the numbers of excavated core-like pieces and tools are impressive – 3,125 and 3,477 items, respectively. The certain great quantity of lithic artifacts is explained by the easy access for the Raşcov VII and VIII sites' humans to the nearby flint outcrops – Dniestr river alluvial deposits and, even closer to the sites, a flint source in chalky sediments. Since the site discovery and excavations, its artifacts have had a special status, often being called the "Raşcov culture". First, because of the C¹⁴ date, it was considered a Late Glacial assemblage and, second, due to the presence of both Aurignacian-like and Gravettian-like artifacts, it was thought, as Chetraru had always thought, to represent a peculiar "*Aurignacian–Gravettian symbiosis ... characteristic for Aurignacian industries' development, having prolonged traditions in the region and influenced by humans bearing Gravettian traditions*" (Covalenco 2009, 143, see also Rogachev, Anikovich 1984, 218–219). On the other hand, one of us (Yu. D.) together with D. Yu. Nuzhnyi, raised serious doubts about the integrity of the Raşcov VII & VIII assemblages, proposing that they were affected by "*mechanical find mixture of both Epi-Aurignacian industry of the Krems-Dufour type and an Epigravettian industry*" resulting in the co-occurrence of "*Sagaidak–Muralovka microliths on chips and shortened microblades* (Fig. 9: 7–17), and *Gravettian / Epigravettian backed bladelets* (Fig. 9: 18–32)", as well as the finding of "*a series of slotted point fragments produced on reindeer antlers and mammoth ivory*" (Fig. 9: 33–35), this being an organic point type "*absolutely unknown in any Aurignacian or Epi-Aurignacian find complexes in Europe*" (Demidenko, Nuzhnyi 2003–2004, 519). Here it is also worth mentioning the presence of numerous "*high / thick endscrapers*" (carinated atypical endscrapers–cores, in our terminology) in the Raşcov VII & VIII tool-kits (Fig. 9: 1–6). Such admixture can be explained by the transported and altered nature of the sediments bearing the cultural artifacts. It was always well known that "*finds were deposited in an uneven vertical condition at the Raşcov VII site, in some areas even in contact with modern soil, not creating any clear occupation floor there*" (Rogachev, Anikovich 1984, 218). Later, much more information

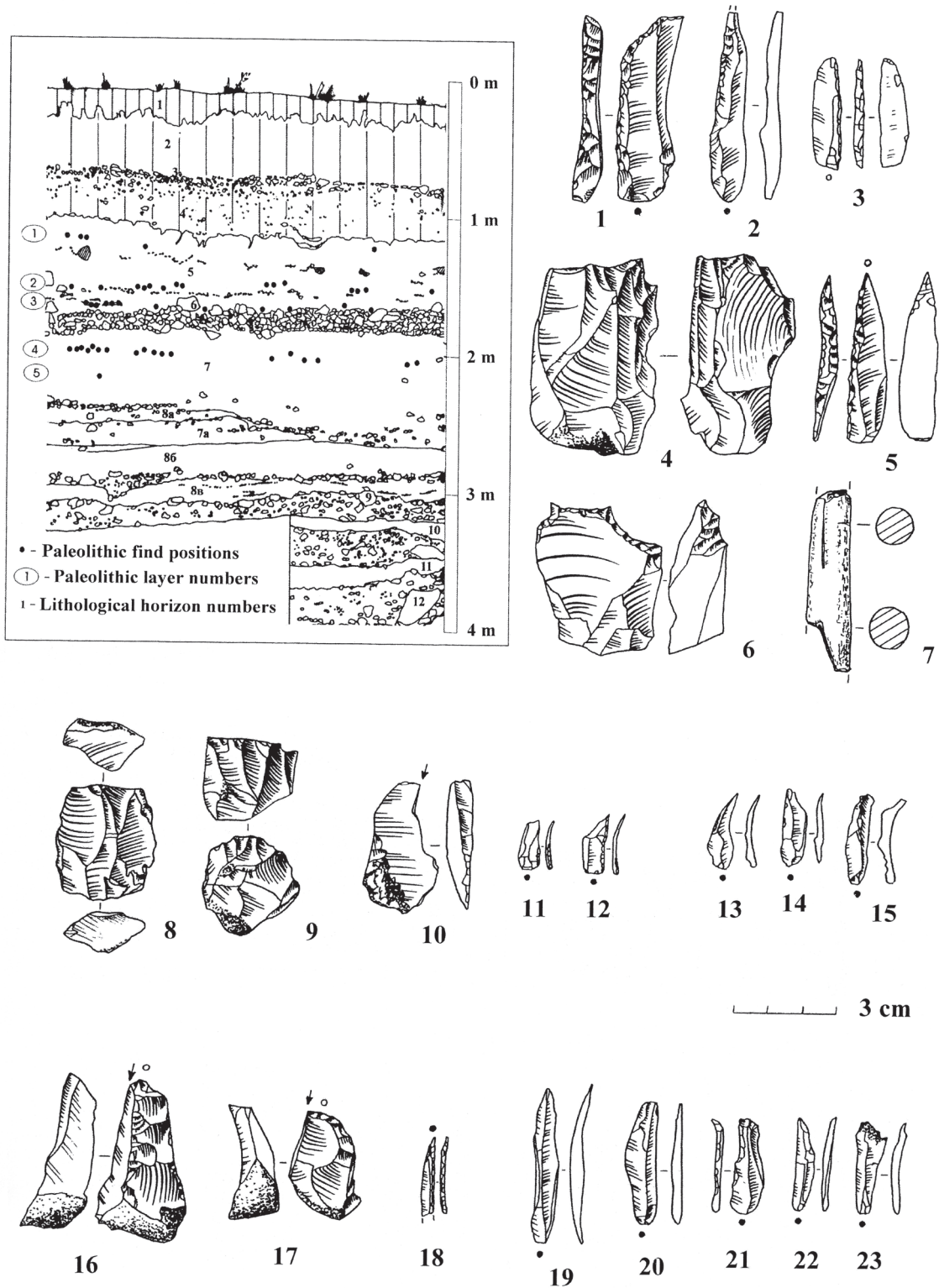


Fig. 10. Rašcov VIII site lithic artifacts. 1–7 – pieces from uppermost Early Epigravettian levels 1 and 2; 8–15 – pieces from EASMM level 3; 16–23 – pieces from Early Epigravettian level 4. Rašcov VIII site excavation profile (modified after Covalenco 2009).

Obr. 10. Rašcov VIII site lithic artifacts. 1–7 – artefakty z nejsvrchnějších epigravettských vrstev 1 a 2; 8–15 – artefakty z EASMM vrstvy 3; 16–23 – artefakty z časné epigravettské vrstvy 4. Plán profilu výzkumu na lokalitě Rašcov VIII (modifikováno podle Covalenco 2009).

on the stratigraphy problems at the Raşcov VII site was described in detail by the site's archaeologists themselves (Chettraru *et al.* 2007, 15–24) where, for example, the presence of UP lithic artifacts and animal bones in the Holocene humus sediments was mentioned, mixed with some Chalcolithic, Ancient Greek and Early Medieval pottery pieces. Despite the doubts about the homogeneous character of the Raşcov finds (Demidenko, Nuzhnyi 2003–2004), the site's archaeologists continued to argue about the presence of an Epi-Aurignacian–Gravettian/Epigravettian homogeneous industry there (Chettraru *et al.* 2007, 137–141). New dates on two horse bones recovered in the 1962 excavation from Raşcov VII (Ki–11853: 19,100±300 uncal BP and Ki–11854: 19,450±220 uncal BP – Sapozhnikov *et al.* 2007, 172), have been used as chronological markers for the so-called “Raşcov culture”, but in our opinion they can simply reflect the human presence during the LGM Epi-Aurignacian and Early Epigravettian occupations.

The described Raşcov situation, however, changed with the start in 2005 of new excavations at Raşcov VIII directed by Covalenco. Before that, after the 1972 excavation of 7 sondages, the presence of two archaeological levels separated by a sterile lens was suggested, although all the site finds (ca. 900 lithics originated from the dug sondages and ca. 8000 more lithics coming from the surface finds) were treated as a single assemblage (see Grigorieva, Chettraru 1973; Grigorieva, 1974). Covalenco excavations extended 50 m² (Covalenco 2009). In a 5.30 m deep sequence Covalenco identified five UP levels with lithic artifacts and animal bones within lithological horizons 5–7 at depth marks between ca. 1.20 and 2.20 m (Fig. 10). Regarding the lithic industry he recognized “*the presence of two Gravettian levels and one Epi-Aurignacian level, while the two lowermost levels are culturally unidentifiable yet*” (Covalenco 2009, 147). Considering the published information, the two uppermost levels can be confidently attributed to the Epigravettian, taking into account their deposition above the Epi-Aurignacian level 3 and the occurrence of serial backed bladelets, including a micro-Gravette point (Fig. 10: 1–3, 5) and a medial fragment of an ivory point (Fig. 10: 7). Regarding level 4, situated ca. 15–20 cm below Epi-Aurignacian level 3 in a loess-like loamy horizon, Covalenco is not sure about its industrial attribution (Fig. 10: 16–23), but the presence of a micro-Gravette point and burins on truncation (Fig. 10: 16–18) could serve as good indicators for the Epigravettian. Thus, new excavations at Raşcov VIII present an Epi-Aurignacian level embedded between Early Epigravettian levels in about 1 m deep deposits, which would explain the admixed character of the Raşcov VIII 1972 industrial assemblage. The Epi-Aurignacian level 3 assemblage (Covalenco 2009) contains a few exhausted cores, many core maintenance products, a carinated atypical endscrap-

er-core, a series of elongated chips with two of them having fine marginal abrasion dorsal retouch and, at the same time, not one true backed piece (Fig. 10: 8–15). These characteristics fit well with the EASMM features. This also has forced the former supporters of the “Raşcov culture” to accept the admixed nature of artifacts from the previous excavations at Raşcov (Covalenco 2009, 143).

According to A.L. Chepalyga (Covalenco 2009, 143), the site's cultural bearing sediments were formed at the bank of a pond / stagnant reservoir, thus in a topographic position similar to the Muralovka and Sagaidak I sites. Regarding the fauna material (Croitor, Covalenco 2011), there were only mentioned reindeer and mammoth for each of the UP levels, not one of the “temperate species” (red deer, roe deer, elk and brown bear) listed for Raşcov VII and the 1972 Raşcov VIII faunal data, allowing us to suggest that these ‘temperate species’ were mixed from more recent (Holocene) sediments.

As a result, the new Raşcov VIII Covalenco data certify the presence of the separate Epi-Aurignacian level at the site that most probably was also present at Raşcov VII. Although there are no secure dates for these occupations, available evidence such as faunal record, previous dating, etc., points to an LGM chronology.

A summary of the Eastern European sites with EASMM assemblages

The basic position of Russian, Moldovan and Ukrainian archaeologists during the 1960s–1990s was the identification of a specific Eastern European Late UP industry, defined by the presence of some Aurignacian-like tool types (so-called “thick/high endscrapers” and tiny microliths) interpreted as “Aurignacoid” elements. Some archaeologist even recognized the particularity of the tiny microliths characteristic of this industry and started to use the term “*Sagaidak–Muralovka micro-points*” for them (e.g. Smolyaninova 1990). This denomination was well accepted and it is still valid (see, for example Chettraru *et al.* 2007), and has been incorporated by us as part of the denomination of this particular industry. Given the apparent dispersion of the available dates, which were never critically assessed, most Soviet and post-Soviet archaeologists have considered the “Aurignacoid industry” as a rather long-lasting Late UP industrial phenomenon in the east of Europe. Moreover, the aforementioned admixture of Raşcov VII–VIII assemblages has also served as an argument to speak about an Aurignacoid tradition progressively influenced by Gravettian/Epigravettian industrial features. This, alongside erroneous interpretation of other admixed assemblages, has been derived in the proposition

by Sapozhnikov (2003), defending the existence of “Gravettoid Epi-Aurignacian” and “Aurignacoid Epi-gravettian” industries in the south of Eastern Europe (see already published critics – Demidenko, Nuzhnyi 2003–2004, Demidenko, 2012a).

From the late 1990s one of us (Demidenko 1999, 2007, 2008) started to work on the “Aurignacoid” subject within a wider revision of the Eastern European Aurignacian. Lithic assemblages from Anetovka I, Muralovka and Zolotovka I were directly analyzed by Demidenko in St. Petersburg and Odessa in 1999 and 2000, and then new field work was conducted at the Anetovka I site in 2005–2006. As a result of these new investigations into the subject, these LGM “Aurignacoid” industries were grouped and renamed as “North Black Sea Epi-Aurignacian industry of the Krems-Dufour type” (Demidenko 2003, 2004). Two major techno-typological features, the presence of carinated atypical endscraper–cores and tiny dorsally retouched microliths, and the late chronology (LGM or even early post LGM – Zolotovka I) were the basic arguments for this classification. Also, the industry’s name “Krems-Dufour type” was intentionally proposed due to its general industrial similarity to the LGM Aurignacian V in Western Europe and a possible generic connection to some Evolved Aurignacian industries with “pseudo-Dufour” microliths.

Now the specific features of this LGM industry from Eastern Europe can be briefly summarized as follows. Technologically, it is characterized by mainly flake production, blade production being less relevant (except in the Sagaidak I assemblage). The basic flake character of the industry was noted by Praslov in the 1970s during his analysis of the Muralovka site lithic assemblage. “*True blades are absent. Just a few examples can be regarded as prismatic blades. But even the latter pieces are mainly fragmented. According to the morphological data, the best tool-blanks were bladey flakes. Most of the tools were produced on such flakes*” (Praslov 1972, 71). Aside from the production of regular flakes, the systematic flake reduction was also oriented towards the production of thick flakes (> 1 cm thick), which served as blanks for carinated atypical endscraper–cores and rather large-sized retouched tools. These carinated atypical endscraper–cores were exploited for the serial production of chips and shortened microblades. Additionally, there is also some production of elongated chip and microblade cores from bladelet/microblade *sensu stricto* cores (e.g., Anetovka I). This “micro-debitage” was intensively used for the manufacture of tiny, with usually a little incurvate profile, but not really twisted, “pseudo-Dufour” / “Sagaidak–Muralovka–type” microliths bearing a fine marginal abrasion dorsal retouch. The so-called “trivial” UP tool types are mainly represented by simple flat endscrapers and rare burins, usually single-faceted, with the occurrence of a char-

acteristic type, a transversal burin on lateral retouch, first noted by Yu.E. Demidenko (Demidenko 2008).

Regarding subsistence practices, the North Black Sea “Aurignacoid” Late UP humans were considered as specialized bison hunters (e.g. Stanko *et al.* 1989). This is true for Zolotovka I and Mikhailovskaya Balka, where only bison bones have been identified among the ungulate remains, but at other sites has been noted the hunting of horses and occasionally rhino (Sagaidak I); red deer and saiga (Muralovka); bison, horse and reindeer (Anetovka I); and reindeer, mammoth but no bison (Raşcov VIII). Thus, it is possible to say that the Epi-Aurignacian humans hunted a wide range of LGM steppe environment ungulate species (bison, reindeer and horse), with occasional access to rhino and mammoth.

Interestingly, all these sites lack bone or antler industry, with the exception of Muralovka, which contains a series of red deer bones and antlers, and also three engraved / grooved red deer antler fragments when one of them with the suggested human / fish image also served as a polisher–retoucher. Red deer bones have only been recovered from two other EASMM sites, Raşcov VII and VIII, and probably are the result of admixture with Holocene deposits (see above). Also, the Muralovka red deer remains should be considered cautiously, as well as the engraved/grooved items. These objects are unique in the LGM record of Eastern and Central Europe. During the excavation of Muralovka in the 1960s, some post-Paleolithic objects were also found, more specifically ceramic fragments belonging to the Bronze Age Catacomb culture. In personal communication, Praslov said that these later finds were found well above the “Aurignacoid” layer. In 2016, during the message correspondence with Demidenko, Shchelinsky, who participated in the site’s 1964 excavations, wrote that the Bronze Age ceramics originated from a Holocene ravine cutting one of the site’s edges and these later items were not found within the proper Late UP layer where, on the other hand, the engraved / grooved objects were found. There is another extemporaneous object in the Muralovka assemblage, the above-described partially-bifacial sub-leaf point made on flint. The morphology (very thin basal part) and the dimensions of this piece (ca. 5 cm long), fits perfectly into the variability of Catacomb culture flint arrowheads (e.g. Bratchenko 2012, Fig. 61, 12). This culture, well represented in the same Lower Don River area, is also known for its use of bone polishers (e.g. Bratchenko 2012, Fig. 79). Summing up, there are enough elements to consider the association of these engraved items to the LGM Muralovka assemblage as dubious, at least until direct dating or new secure findings are made. In any case, if we consider this association valid, they would be an anomaly in the very homogeneous EASMM cultural and industrial repertoire.

What is new in Central Europe?

A possible Central European origin for the Eastern European North Black Sea Epi-Aurignacian industry of the Krems-Dufour type.

While the presence of relevant Epi-Aurignacian sites in Eastern Europe has been clearly demonstrated and allows us to speak about a new Early Late UP industry type, the Central European UP record lacked such sites until the mid-2010s. On the other hand, since the late 1960s Central Europe has still been involved in the Eastern European industry discussion, namely its origin subject. That was because of the hypotheses and observations of Polish archaeologists. First, W. Chmielewski proposed the influence of periglacial environments on Paleolithic human groups, forcing them to leave the high latitude territories of modern Poland in favor of territories in south-western, southern and south-eastern Europe (Chmielewski 1969, 360–361). He called attention, in his discussions with Russian colleagues, to the links between the Polish Góra Puławska II site and the Muralovka site (Gvozdover, Ivanova 1969, 604). Also, Góra Puławska II site materials were mentioned in the discussion on this subject after the observations made by J.K. Kozłowski on the Muralovka lithic assemblage in Leninograd in the late 1960s, when he discussed with Praslov the similarity between the Muralovka microliths and Góra Puławska II Aurignacian site microliths (Praslov 1972, 73–74). These discussions alimented the idea, among Soviet archeologists, of a Central European origin for the “Aurignacoid” industries of the south of Eastern Europe. In this theoretical framework, sites like Góra Puławska II would be one of the possible source areas for these UP humans moving into more temperate latitudes in the south of Eastern Europe (e.g. Stanko 1982, Stanko *et al.* 1989).

From the techno-typological point of view, the Góra Puławska II lithic collection excavated in the 1920s in South-Eastern Poland (Krukowski 1939–1948, Sachse-Kozłowska 1978) is, first of all, characterized by carinated but typical and wide-fronted endscraper-cores and “pseudo-Dufour” microblades with fine dorsal abrasion retouch. These industrial features were not the same as in the Eastern European “Aurignacoid” assemblages, but these differences were explained by the older age of Góra Puławska II (Praslov 1972).

Recently, one of us (Yu.D.) developed a paleoenvironmental explanation for the “Aurignacian–Epi-Aurignacian generic migration hypothesis”, proposing the following scenario (Demidenko, 2008). First, the populations bearing Evolved Aurignacian industries with carinated typical endscraper-cores and usually dorsally retouched microblades (e.g. Góra Puławska

II in Poland and Kostenki I, layer 3 in Central Russia), occupied, until ca. 27,000 uncal BP, the periglacial fringe in Central and Eastern Europe situated around latitude 52°N. Then, these populations, at the beginning of the coolest peak of LGM, moved into almost unpopulated territories in the south of Eastern Europe below latitude 48°N. This depopulation has been inferred from the virtual absence of any Gravettian sites in this area, in fact “*the palaeodemographic development in the Great North Black Sea region occurs in reverse order: the region is depopulated during the first half of the Würmian Upper Pleniglacial (ca. 27,000/26,000 – 22,000/21,000 BP) but becomes repopulated by humans during the LGM (ca. 22,000/21,000 – 18,000/17,000 BP). In this scenario, the Great North Black Sea region received the “second wave” of immigration in the guise of the Epi-Aurignacian. Seen against the background of the significant movement of human communities into various southern European territories at the beginning of the LGM (ca. 22,000 BP), the vast depopulated southern territories of Eastern Europe and the Great North Black Sea region appear to have provided an “uninhabited oasis” necessary for the immigration of specific Upper Paleolithic human groups*” (Demidenko 2008, 111).

Thus, the central part of the European Continent has only been discussed in the origin context for the EASMM industry. But after ca. 50 years of Epi-Aurignacian research in Eastern Europe the situation radically changed in Central Europe with the discovery of a new site in the Czech Republic in 2013 and our 2015 re-interpretation of the already known site in Austria (Demidenko *et al.* 2016, 2018). The data on the two Central European sites are summarized below.

New sites of the EASMM industry in Central Europe.

Mohelno-Plevovce

In the Mohelno microregion in Southern Moravia, one of us (P.Š.) has discovered numerous surface finds, including some loci with Initial UP Bohunian and Szeletian lithics (Škrdla *et al.* 2012). One of these sites is Mohelno-Plevovce. It is situated along the middle course of the Jihlava River in the Bohemian–Moravian Highlands and particularly below the water line of the Mohelno water reservoir, a part of the Dalešice pumped–storage hydroelectric power station, ca. 30 km in direct line to the east of the city of Brno. There several concentrations were identified in 2013 and excavated between 2013 and 2016. Areas 1 and 2 yielded Epigravettian-like artifacts, similar to those from Vídeňská Street at Brno-Štýřice (Nerudová *et al.* 2012). Unfortunately, no datable material was

found there. Area 3 is topographically lower than areas 1 and 2 and floods rapidly each day, usually being under the water level. Accordingly, very short-term salvage excavations of area 3 were done on a “wet beach” when the hydroelectric power plant was doing scheduled maintenance and the water level was at its minimum for just a very few days.

Area 3 yielded two paved stony structures (*kameněné struktury* – in Czech) labeled as A & B (KSA and KSB from here on) composed of artificially placed flat stones at the same level presumably to create a floor surface. The two structures were carefully excavated, the position of the artifact and structures was recorded, and all the sediments were wet sieved (2 mm mesh). The distribution of recovered lithic artifacts strongly correlates with the paved stony areas. The absence of other structures like post-holes or fireplaces can be explained by the post depositional alteration of the site. In the absence of fireplaces some charcoal and burnt lithics have been recovered, presumably reflecting the presence of fireplaces. From these charcoal lenses small-sized (2–3 mm) charcoal pieces have been recovered. Four plant species have been identified for the charcoal. The dominant species was birch (*Betula* sp.) approaching 60% and also juniper (*Juniperus* sp.) features in the medium importance index at 30%. At the same time, a rare occurrence is recognized for willow (*Salix* sp., 1.7%) and Vacciniaceae (8.3%).

It is also worth noting the finding of some red and yellow colored ochre lamps at Mohelno-Plevovce KSA & KSB (Škrdla *et al.* 2016). The lamps were found within and around charcoal lenses that could indicate the association of ochre with fire. The chemical analysis of the ochre, as well as that of local rocks and sediments, also demonstrated the “import” of the ochre from unknown sources to the site.

Faunal remains at Mohelno-Plevovce KSA & KSB structures are heavily fragmented and altered, but despite this some remains, mostly teeth fragments, have been identified as horse (*Equus caballus*; NMI: 1) and reindeer (*Rangifer tarandus*; NMI: 1) (Škrdla *et al.* 2016).

Two secure dates on charcoal samples are available from the Mohelno-Plevovce site, Poz-76196: 19,100±110 BP for KSB and Poz-76195: 18,970±110 BP for KSA. These two dates are statistically identical, c. 23,000 cal BP, and suggest that both structures were coeval. The charcoal sample from KSA was previously dated and yielded a much later result, 16,280±80 BP (Poz-57891), revealing some kind of contamination or partial alteration of the sample.

Regarding the topography of the site, it must be noted that during the Epi-Aurignacian occupations it was located almost at the bottom of the deeply incised

Jihlava River valley at a 15–20m high platform. Moreover, the steep stony slopes of the river’s valley have protected the site from the north-east, north and west, forming a sort of natural semi-amphitheatre with the site only open to the south. Accordingly, the site topography probably created a “micro-climatic oasis” for Epi-Aurignacian humans during the harsh LGM environment.

The KSA and KSB lithic assemblages from area 3 are industrially very different from the Epigravettian from areas 1 and 2 (Škrdla *et al.* 2016). Except for a single technological feature (the use of bipolar anvil core technology) the KSA & KSB assemblages are virtually indistinguishable from the above-described Eastern European LGM find complexes of EASMM industry.

The KSA lithic assemblage is composed of almost 1000 items, while ca. 4000 items constitute the KSB lithic assemblage. The two assemblages are mainly made up of artifacts produced on both imported (mostly erratic flint) and local (basically quartz and rock crystal) raw materials. The ratios of the imported vs. local raw materials are the inverse – ca. 70:30 for KSA and ca. 10:90 for KSB. Despite such difference in the raw material composition, the assemblages are quite similar. The most important difference is the relevance of bipolar anvil core technology, which is most likely linked to quartz and rock crystal being more frequently used in KSB and therefore more relevant in this locus. Remarkably, bipolar anvil core technology was even used for the manufacture of Sagaidak-Muralovka-type microliths. In KSA bipolar anvil core technology is less represented, and therefore the assemblage looks almost identical to the Eastern European EASMM. In this assemblage the most common types are the carinated atypical endscrapers–cores (6 pieces, Fig. 11: 1–4, 11–12), the Sagaidak-Muralovka-type microliths (49 pieces, Fig. 12: 1–36), among which Caminade-like endscrapers are also notable (2 pieces, Fig. 12: 12, 19), transversal burins on lateral retouch (2 pieces, Fig. 11: 6, 13), and a simple unprepared transversal burin for the whole burin assemblage. In addition, it can be noted that a few erratic flint items and nearly all the quartz and rock crystal pieces are connected to bipolar anvil core technology (Fig. 11: 7–10) at KSA as well. At the same time, refitting of microliths (e.g. Demidenko *et al.* 2016, Fig. 1) onto three carinated atypical endscrapers–cores for the KSA assemblage (Fig. 11: 1, 4, 12) testifies to both on-site endscrapers–core reduction processes and microlith fabrication.

Our recent work with the Mohelno-Plevovce lithics, including the refitting data, has allowed us to precisely define the basic blank type for Sagaidak-Muralovka-type microliths, as it was not clearly determined before for the related Eastern European assemblages.

From the beginning of the 1970s Praslov had already considered the Muralovka site microliths as “diminutive bladelets with retouched lateral edges”, but raised some caution as to considering them true bladelets due to their morphological features: “they are very tiny, amorphous, with no parallel edges and not well developed dorsal scar patterns” (Praslov 1972, 71). According to this, he proposed defining the microliths’ blank type as “chips”, and linked their pro-

duction to the so-called “high endscrapers” because “a great majority of blanks for the diminutive pieces have been received during the treatment of namely such endscrapers” (Praslov 1972, 71, 75). However, most researchers continued to call the Sagaidak-Muralovka-type microliths’ blanks “microblades” or “diminutive bladelets”, even correcting the observations made by Praslov in Muralovka: “Muralovka site micro-points were manufactured on elongated

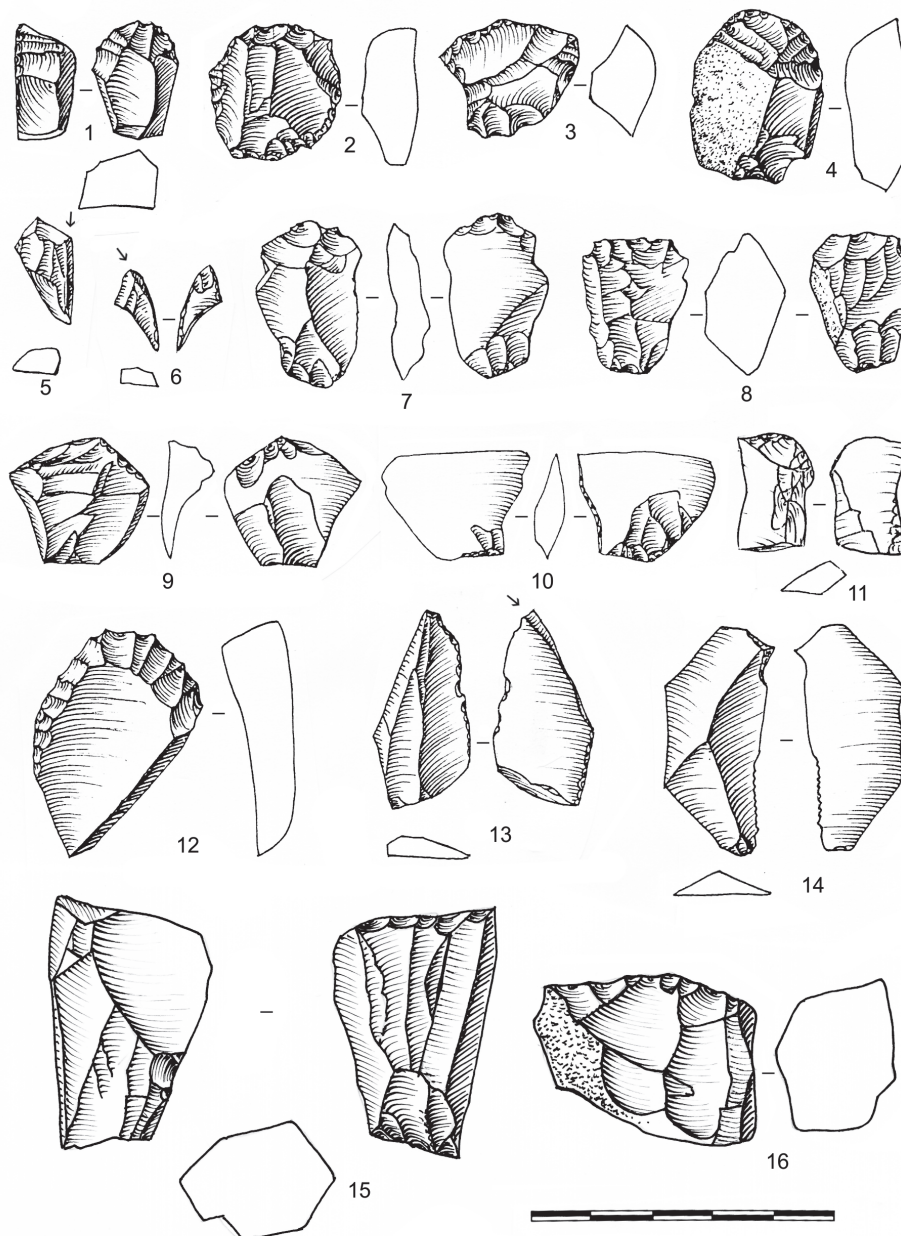


Fig. 11. Mohelno-Plevovce site KSA lithic artifacts. 1-4, 11-12 – carinated atypical endscrapers-cores; 5-6, 13 – burins; 7-10 – splintered pieces / bipolar anvil cores; 14 – borer; 15-16 – cores.

Obr. 11. Mohelno-Plevovce, artefakty z KSA. 1-4, 11-12 – kareoidální atypická škrabadla-jádra; 5-6, 13 – burins; 7-10 – odštěpovače / bipolárně sbíjená jádra; 14 – vrták; 15-16 – jádra.

diminutive sub-triangular bladelets” and not on chips (Stanko, Grigorieva 1977, 43, 45–47). Moreover, later Praslov himself virtually abandoned the term “chip” when he described the Zolotovka I assemblage: “*high endscrapers of the so-called Aurignacian type are actually often specific cores for microblade production and then the microblades were transformed by secondary treatment into tiny micro-points*” (Praslov *et al.* 1980, 172). This definition was adopted later by Shchelinsky when he published the Zolotovka I 1996 excavation materials, and referred to “*diminutive retouched bladelets of the Muralovka type*” (Praslov, Shchelinsky 1996, 64). This lack of agreement on the terminology for the Sagaidak-Muralovka-type microliths’ blanks in the Eastern European assemblages continued later on, although most researchers agree on the subdivision of the microliths into two basic groups – micro-points (usually called Sagaidak-Muralovka-type micro-points produced on “*thin, incurvate, with sub-triangular shape endscrapers’ chips*” – Smolyaninova 1990, 89); and microblades/bladelets. One of us (Y.D.), aware of the common morpholog-

ical, metrical and retouch features for both pointed pieces (micro-points) and simple bilaterally / laterally retouched pieces, started defining all these microliths as “*Sagaidak-Muralovka-type microliths with a fine dorsal marginal abrasion bilateral and lateral retouch on chips and metrically shortened microblades*” (Demidenko 2007, 69). Nevertheless, the problem of the absence of a common definition for these pieces has not been resolved, and surely the absence of wet sieving during the excavations of all “Soviet sites” in the 1960s–1990s and/or the admixed nature of some assemblages (Rašcov VII & VIII) have prevented a more precise technological and typological definition of these important pieces.

The circumstances of Mohelno-Plevovce have helped in this definition. Up to now, the KSA microlith sample accounts for 49 pieces and they are technologically connected to the reduction of five carinated atypical endscrapers–cores. Complete microliths (26 items) have the following mean metrical parameters: 0.82 cm long, 0.42 cm wide, 0.10 cm thick.

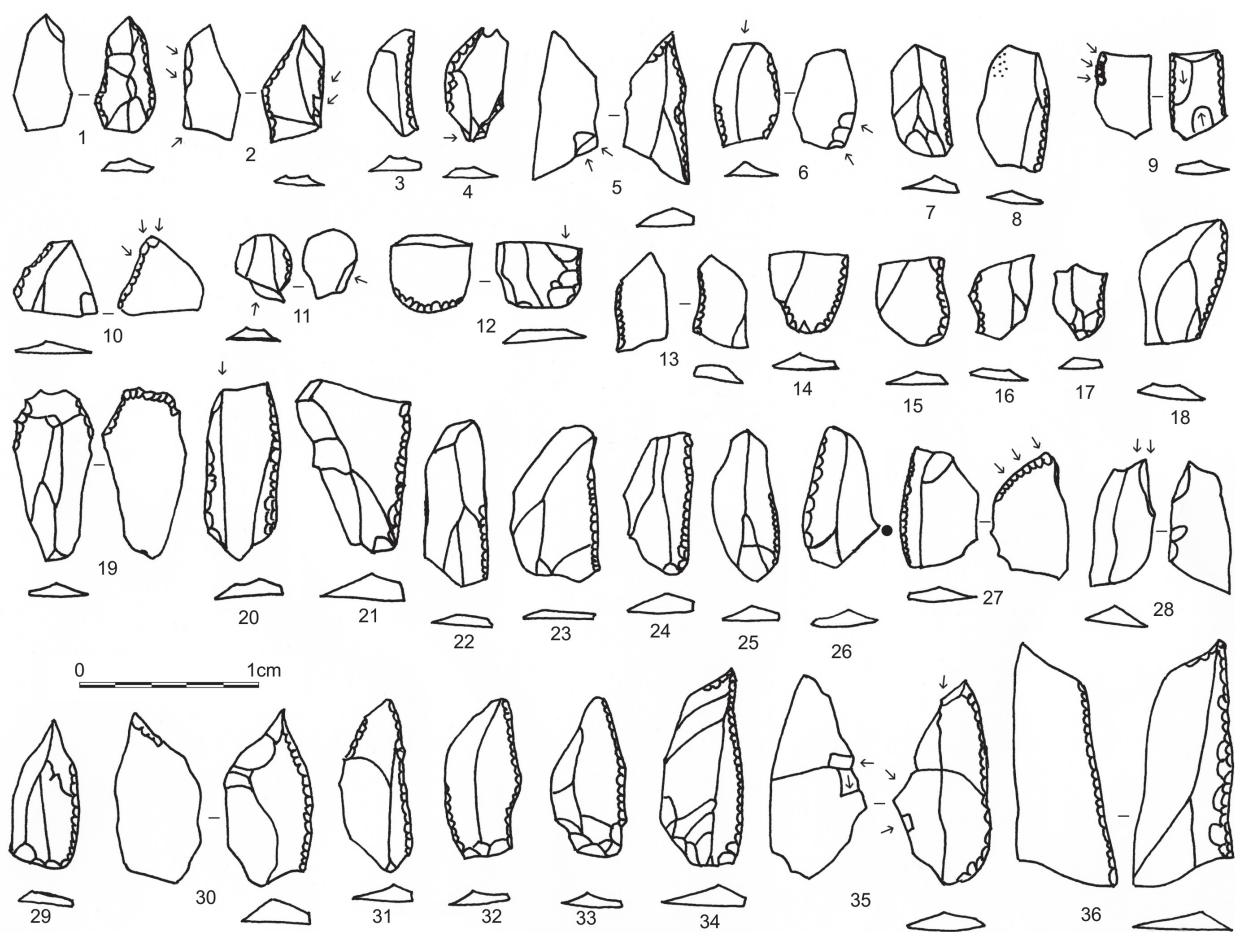


Fig. 12. Mohelno-Plevovce site KSA lithic artifacts. 1–36 – EASMM microliths.

Obr. 12. Mohelno-Plevovce, artefakty z KSA. 1–36 – EASMM mikrolity.

Metrically, the fragmented microliths (23 items) are very similar to the complete examples. They have these mean indices: 0.63 cm long (fragmented length), 0.41 cm wide, 0.10 cm thick. Only two fragmented pieces have a greater width and thickness of 0.2 cm for one of them. (Fig. 12: 21, 36), while the remaining 47 microliths are only 0.1 cm thick. Taking into consideration the metrics of the great majority of the microliths, it is proposed here to name them “elongated chips”. All of them are less than 1.5 cm long and this is the usual size limit for chips in UP assemblages (e.g. Demidenko 2012b, 104), while their rather small width (0.3–0.5 cm) gives them a somewhat elongated character. This elongation caused them to be named microblades and bladelets. Also, the above-noted Mohelno-Plevovce fragmented retouched bladelet and microblade were very probably selected for retouching in the already fragmented condition because in this way they correspond well to the elongated chips’ “ideal metrical standards”. The already published Eastern European data on such microliths seem to correspond well to the Mohelno-Plevovce microliths’ blanks. Indeed, numerically, a few more elongated and wider microliths on formally bladelets and microblades are present (e.g. Demidenko 2012b, 96), and most of them are chosen already fragmented. Thus, we consider the term “elongated chips” to fit perfectly for most of the Sagaidak-Muralovka-type microliths. At the same time, it can be proposed that these “elongated chips” were the basic product of carinated atypical endscrapers–cores, although they also include bladelets and microblades obtained from prismatic cores. We speculate on the possible link between the availability of high quality raw material sources and the greater use of bladelets and microblades obtained from prismatic cores for microlith production, but further research on this subject is needed.

An extensive sample (KSA: 38, KSB: 34) of these microliths has been analyzed for the identification of characteristic use-wear traces. Since their appearance, microlithic assemblages in Europe have been linked with their use as projectile barbs and points (Porráz *et al.* 2010, Rios-Garaizar, 2006). Most of the analyzed microliths from Mohelno-Plevovce (7 from KSA and 10 from KSB), present diagnostic impact fractures related to projectile use (Rios-Garaizar *et al.* 2019). This contrasts with the interpretation made by Filippov (1977), who suggested that the Sagaidak-Muralovka-type microliths were used in multi-composite ‘domestic knives’.

Rosenburg site

The Rosenburg site is situated only ca. 50 km to the south-west of Mohelno-Plevovce in Lower Austria. An archaeological Late UP layer at Rosenburg was discovered and partially excavated over an area of

c. 32 sq. m by G. Trnka in 1988 in the course of Neolithic large-sized settlement field investigations. Initially it was attributed to the Epigravettian (Ott 1996).

The faunal assemblage, analyzed by F. Fladerer and K. Kunst, is very small and the only identified species are the horse (*Equus* sp.) and the wholly rhinoceros *Coelodonta antiquitatis* (Ott 1996, 88).

Regarding the site chronology, there is a single C¹⁴ date on a sample of burnt animal bone with a result of 20,120±480 uncal BP (Lv-1756D, 25–24,000 cal BP) (Ott 1996, 88, 95).

Finally, by topographical situation, the Rosenburg site is also notable and similar to the Mohelno-Plevovce situation. It is located on a low loess plateau right by the Kamp River. Like the Jihlava River in the Czech-Moravian Highland, the Kamp River in Gföhler Wald flows through a deeply cut valley. Rosenburg is located near the confluence with a small stream (Stranzlbach), where the valley widens, and like in Mohelno-Plevovce, over a plateau situated 7–8 m above the current river level. The plateau is shielded from the west, north and east by rocky slopes, creating like at Mohelno-Plevovce a sheltered environment.

The recovered lithic assemblage (ca. 1,200 items), was studied and published by I. Ott (Ott 1996). She industrially attributed the Rosenburg lithics to the Epigravettian and compared them to some other Central European Epigravettian assemblages. In this publication two of us (Yu.D. and P.Š.) observed some similarities to the Epi-Aurignacian assemblages and in 2015, the actual collection was studied. Thanks to this study we observed clear similarities with the EASMM assemblages, with the only recognized lithic difference between the Mohelno-Plevovce and Rosenburg assemblages being the presence of some more on-site “regular” core reduction at the Austrian site. The presence of bipolar anvil core flaking is less frequent than in Mohelno-Plevovce, in Rosenburg being applied to the rock crystal and to a lesser extent to some other rock types.

Carinated atypical endscrapers–cores and Sagaidak-Muralovka-type microliths are well represented at Rosenburg. During our revision, nine more retouched microliths were identified, making a total of 27 Sagaidak-Muralovka-type microliths (Fig. 13: 1–9, 11–24). These microliths are made on elongated chips (0.7–1.2 cm long, 0.3–0.5 cm wide, 0.1–0.2 cm thick), technologically connected to fewer than 10 pieces of “micro-cores” (Fig. 13: 25–27) and endscrapers–cores (Fig. 13: 29–30) bearing serial elongated chip removal negatives. At the same time, there are no true backed pieces or cores for systematical bladelet / microblade reduction.

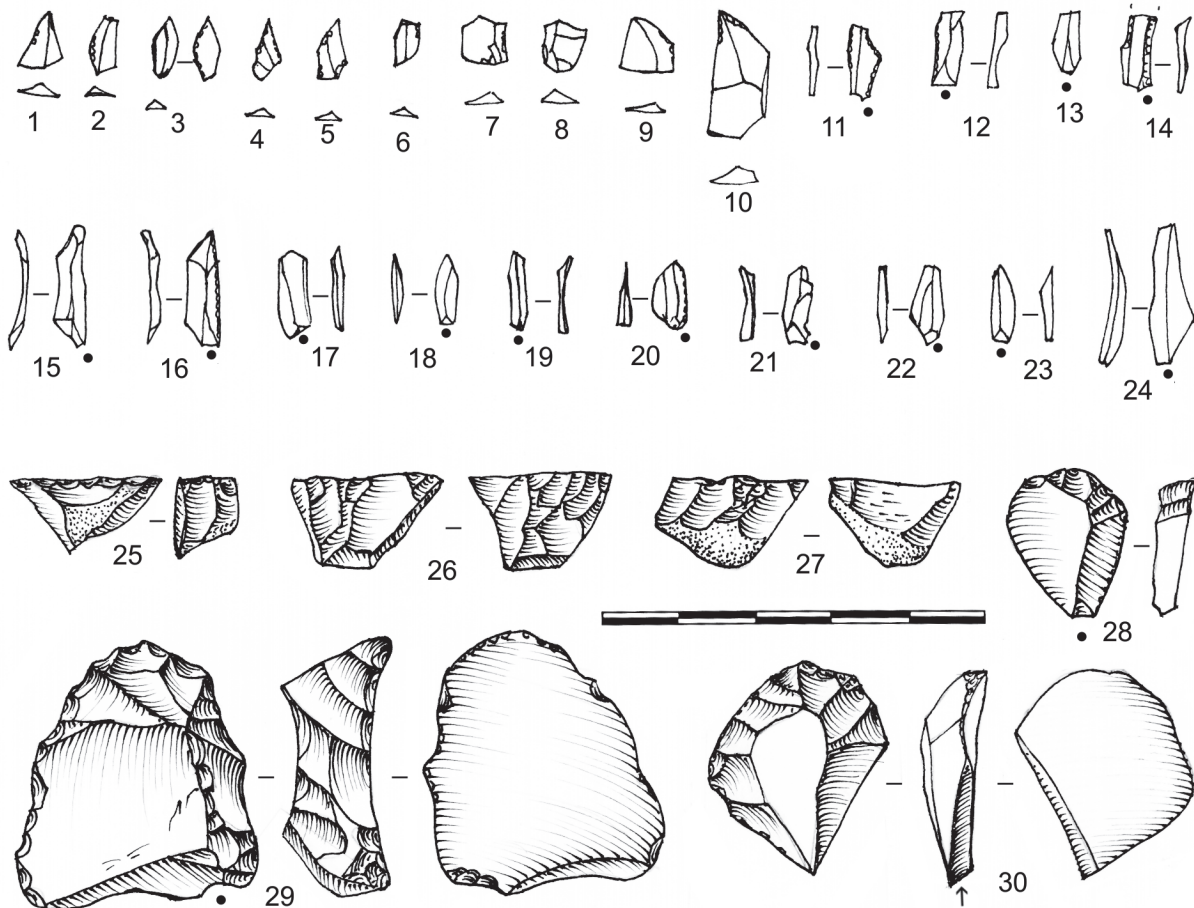


Fig. 13. Rosenberg site lithic artifacts. 1-9, 11-24 – EASMM microliths; 9 – borer; 25-27 – elongated chip and microblade cores; 28 – endscraper; 29 – carinated atypical endscraper-core; 30 – carinated atypical endscraper-core + angle burin; (11-30 – modified after Ott 1996).

Obr. 13. Rosenberg, kamenné artefakty. 1-9, 11-24 – EASMM mikrolity; 9 – vrták; 25-27 – mikrojádra na těžbu prodláhlých úštěpů a mikročepelí; 28 – škrabadlo; 29 – karenoidální atypické škrabadlo-jádro; 30 – karenoidální atypické škrabadlo-jádro + hranové rydlo; (11-30 – modifikováno podle Ott 1996).

Evaluating the presence of EASMM occupations in Central Europe and their relationship with the Evolved Aurignacian and the Aurignacian V from Western Europe

The presence of EASMM sites in Central Europe remained unnoticed until recently. The logical explanation for this is that knowledge of this kind of industry remained confined to Eastern European academics and was not taken into account when trying to characterize 'bizarre' assemblages such as those from Rosenberg. Aside from the historiographic explanation, there are other factors that could explain the rarity of EASMM sites in Central Europe. Firstly, and given the actual site distribution, we can still be-

lieve that the core of this techno-cultural entity is located in Eastern Europe, Central Europe being a more marginal area of its diffusion. Also, we should note that up to now no such assemblages have been documented in the southern margins of the Alps (Italian Peninsula), and that at the time this techno-cultural entity developed, the LGM, the lands above parallel 50, were heavily influenced by the Scandinavian ice sheets. This constrained the potential Central European expansions for the industry's sites to the Danube Basin *sensu lato*.

The only two sites with EASMM industry type in Central Europe surprisingly show a similar location pattern, at lower elevations beside small rivers, in topographically hidden places that naturally protected

humans during the harsh LGM time period. Such geomorphological “hidden site location characteristics” at lower positions of small rivers in “sheltered valleys” for “territorial B2 type” settlements were already noted more than 20 years ago for LGM Early Epigravettian sites in Moravia (Svoboda 1995). This particular positioning in the landscape might also explain the rarity of these sites in Central Europe. On the one hand, Paleolithic archaeologists often do not include such lower elevations in their survey projects in the search for new sites. On the other hand, the factor of rivers meandering during the last 20,000 years has probably caused significant erosion of lower terraces leading to a natural destruction of other possible localities. Also, the Epi-Aurignacian site position at lower “Neolithic” river terraces, later often occupied by New Stone Age humans, could also lead to a mixing of Late UP finds with more numerous Neolithic artifacts there that might not be noted by Neolithic archaeologists. All these data suggest the probable existence of other Epi-Aurignacian sites in Central Europe, which can also be inferred from the presence of some allochthonous lithic raw materials (e.g. erratic flint from outcrops in Southern Poland and radiolarites from sources in Danube river gravel terraces in Austria and Balaton Lake in North-Western Hungary) at the Mohelno-Plevovce and/or Rosenberg sites. Accordingly, these two LGM sites with Sagaidak-Muralovka-type microliths in the Czech Republic and Austria represent only a tiny fragment of the Epi-Aurignacian settlement structure in Central Europe. It could also be true remembering the related Eastern European site location data when some sites like Muralovka and Sagaidak I are situated at low topographical positions, while, for example, Zolotovka I site is located at a high terrace by a high quality raw material outcrop. Considering this, the possible occurrence of some more sites of the Epi-Aurignacian industry type surely cannot be excluded at different and probably higher topographical locations in Central Europe.

Finally, it is worth noting the Mohelno-Plevovce and Rosenberg fauna data in comparison to the related information from the Eastern European sites. The Eastern European sites usually indicate the significant role of bison hunting, although, as was already noted by us, some other “LGM ungulates” (horse and reindeer) were also hunted and it is not really possible to argue that the LGM Epi-Aurignacian humans were just specialized bison hunters. Curiously enough, the identified ungulate species for Mohelno-Plevovce and Rosenberg (horse and reindeer) do not include bison. Accordingly, the Central European data indeed indicate hunting of not just one ungulate species but several ungulate species, although still of the “LGM character”.

It must also be noted here the differences between these assemblages and the true Evolved Aurignacian sites in Central Europe. These have been identified

in the above-mentioned site of Góra Puławska II in Poland; at several sites (Stránská skála IIa, layer 3; Stránská skála II; Stránská skála IIIa; Stránská skála IIIb; Líšeň-Čtvrtě; Líšeň-Nad výhonem) from an area of primary and secondary chert outcrops at Stránská skála and Líšeň in the Brno basin (Southern Moravia); in Alberndorf I (Lower Austria); Breitenbach (Eastern Germany) (Svoboda 1991, Svoboda, Bar-Yosef eds. 2003, Škrdla *et al.* 2010, 2011, Trnka 2005, Steguweit 2007–2008, 2010, Richter 1987, Moreau 2012); and at several sites in Eastern Europe, Kostenki 14, “volcanic ash layer” and Kostenki 1, layer III in the center of European Russia (Zwyns, Demidenko in preparation), and Kulychivka, layers III and II from the 1982–1983 excavations in Western Ukraine (Sytnyk *et al.*, 2012, Sytnyk, Koropetskyi 2012, 2014). Industrially, according to the lithic artifact data, Evolved Aurignacian assemblages are characterized by a techno-typological interrelation of serial carinated typical and wide-fronted endscraper–cores with lamellar removal negatives, while carinated burin–cores are either absent or represented by only a few atypical examples, and the presence of pseudo-Dufour microliths on microblades (not elongated chips) with a fine marginal abrasion dorsal lateral and/or bilateral retouch usually having no pointed pieces. The Evolved Aurignacian micro-lith retouch is virtually undistinguished from the one known for Sagaidak–Muralovka-type elongated chips and has created some confusion when some colleagues do not even see any actual differences between the Evolved Aurignacian and Epi-Aurignacian assemblages (Steguweit 2010). That’s why here it should be emphasized once again that from a technological point of view the way the small blanks of the two microlith types were produced differently during the Evolved Aurignacian (carinated typical endscraper–cores) and the Epi-Aurignacian (carinated atypical endscraper–cores). Aside from the above-noted carinated typical endscraper–cores and dorsally retouched microblades, the Evolved Aurignacian find complexes are also interestingly characterized by the presence of blades bearing lateral and/or bilateral dorsal scalar retouch with large-sized facet removal negatives, even including some examples with concave lateral / bilateral retouched edges. These retouched blades often look a bit similar even to retouched blades from Western and Central European Aurignacian I / Early Aurignacian assemblages, but no endscrapers on such blades have been noted. Thus, taking into consideration all the given characteristics, it is reasonable to speak about a particular Evolved Aurignacian industry type that should not be confused with the EASMM industries. It is located mostly in Central and Eastern Europe, and is characterized by a distinct Góra Puławska II dorsally retouched microlith type on non-twisted microblades, which would date no later than 30–28,000 uncal BP and is apparently absent from Western European records (Demidenko *et al.* 2016, Demidenko *et al.* 2017).

Going further west, the Eastern European EASMM has already been compared to the Western European former Aurignacian V (Demidenko 2004), but a closer look at LGM sites from South-Western Europe in France (Laugerie-Haute, Casserole) and Portugal (e.g. Lapa do Anecrial, Gato Preto, Abrigo do Lagar Velho, Abrigo do Alecrim, Cabeço de Porto Marinho) demonstrates some different chronological and techno-typological features as well (see overview:

Almeida 2000, 2006). Geochronologically, the former Aurignacian V is dated to the very beginning of the LGM, c. 22–21,000 uncal BP. Technologically, it is characterized by intensive primary flaking of blade, blade/bladelet and bladelet/microblade cores, as well as by systematic use as cores of carinated endscrapers-cores (both typical and atypical) and thick nosed endscrapers-cores (Fig. 14: 1–9) for the production of bladelets, microblades and elongated chips. Typolog-

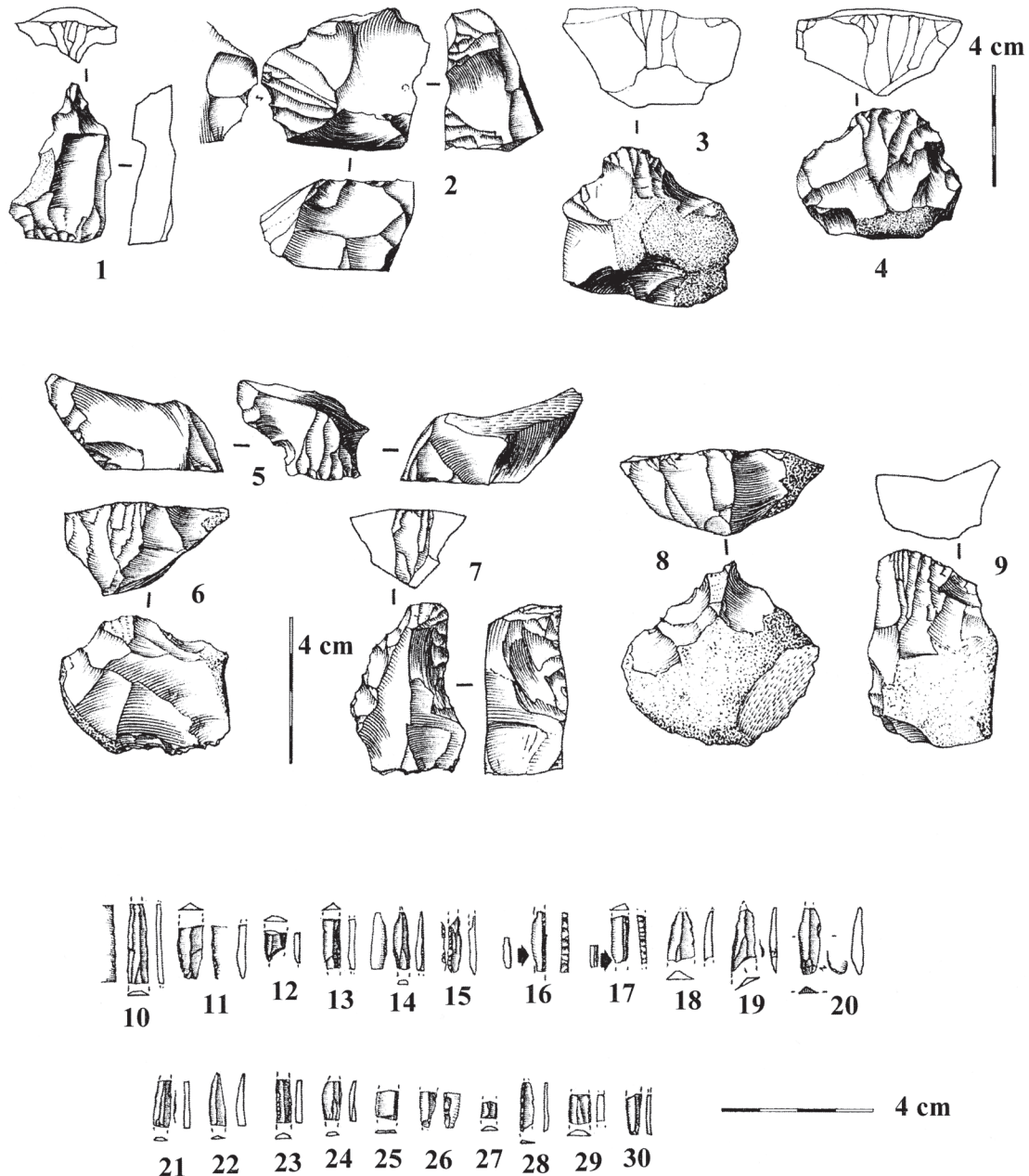


Fig. 14. Casserole, level 10 lithic artifacts. 1–9 – thick nosed endscrapers-cores; 10–30 – microliths with a thin marginal abrasion retouch and sometimes with a backed retouch (modified after Aubry *et al.* 1995).

Obr. 14. Casserole, kamenné artefakty z vrstvy 10. 1–9 – vysoká vyčnělá škrabadla-jádra; 10–30 – mikrolity s tenkou okrajovou abrazivní retuší a někdy s otupující retuší (modifikováno podle Aubry, Detrain, Kervazo 1995).

ically, “micro-debitage” from cores and endscrapers—cores was used for the production of microliths bearing a fine marginal abrasion and sometimes backed lateral / bilateral retouch (Fig. 14: 10–30). The latter microliths could be formed and/or re-prepared / rejuvenated several times by a fine marginal retouch that makes them look like backed ones, although they are not really backed. The Aurignacian V sites and their material studies / re-studies during the last 20 years have pointed out the probability of its not having an “independent industrial status” but rather a transitional one between the chronologically preceding (Final Gravettian) and succeeding (Lower Solutrean) UP industries. That’s why the Aurignacian V is now usually named either Proto-Solutrean or Terminal Gravettian (see in: Aubry *et al.* 1995, Almeida 2000, 2006). Now all the data in hand indicate that the former Aurignacian V industry in Western Europe does chronologically slightly pre-date the Eastern and Central European EASMM discussed here and industrially also shows some techno-typological differences from it.

Concluding remarks

The represented in the article overview with some basic and particular data on the nine sites in Eastern and Central Europe related to the LGM EASMM industry allow us to make the following concluding remarks.

The find complexes from the LGM EASMM sites in Eastern and Central Europe described here seem to represent one and the same non-Gravettian / non-Epigravettian Early Late UP industry. Previously interpreted as very late Aurignacian industries, one of us was aware of some possible connections between these Aurignacian *sensu lato* industries and the Aurignacian *sensu stricto*, promoting the definition of these industries as “North Black Sea Epi-Aurignacian industry of the Krems–Dufour type” of the LGM time period (since Demidenko 1999).

From the archaeological data point of view, now it can be said that this industry presents a homogeneous set of techno-typological features, such as the presence of carinated atypical endscrapers, which mainly served as cores for the serial production of elongated chips, which are the blanks for the most characteristic tool type of this industrial complex, the tiny Sagaidak-Muralovka-type microliths made on elongated chips or bladelet fragments secondary treated by a fine marginal abrasion dorsal lateral and/or bilateral retouch. There is only one more tool type that could be considered as being specific for the industry’s toolkits, the transversal burin on lateral retouch.

According to the C^{14} dates for two Eastern European sites (Sagaidak I, Muralovka) and two Central European sites (Rosenburg, Mohelno-Plevovce), the

industry does not chronologically envelop the whole LGM time period but something like its middle part, c. 21–19,000 uncal BP or c. 25,5–23,000 cal BP. The analysis of the available C^{14} dates does not allow us to unambiguously propose a migration direction for the industry’s human groups during the LGM time period from one to another part of the European Continent. In other words, it is not possible to claim for a putative origin region and diffusion from it that it explains the presence of such industries in both regions. That’s why it is suggested that the presence of basically contemporaneous EASMM industry sites in these parts of Europe can be understood so far (!) as the result of multiple mutual and alternate human groups moving across both regions. Also, the Sagaidak I and Rosenberg sites with dates of ca. 21–20,000 uncal BP might represent the first such migrations of an older episode and Muralovka and Mohelno-Plevovce (ca. 19,000 uncal BP) might indicate subsequent migrations of a later episode of the industry in both Eastern and Central Europe. Nevertheless, the chronological basis is rather weak and further investigation into this subject is necessary.

Also, the available dates underline the huge chronological gap between the above-mentioned Evolved / Late Aurignacian industries, which date in Central Europe to ca. 32–28,000 uncal BP, raising some doubts about the connection between these two industrial complexes. The more than 40-year-old hypothesis on a generic connection between the EASMM industry and the Evolved Aurignacian complexes, like Góra Puławska II, should now be rejected. The gap is too great to claim any generic connections between these two complexes, even more so considering that during this hiatus the whole Gravettian techno-complex developed in this part of Europe.

Accordingly, we must also be aware that no other “generic possibilities” for a local origin of the EASMM industry in Central and/or Eastern Europe can be claimed according to the current state of art of the LGM archeological record in the regions. This drives us to consider other possible, “external impulses” for the origin of the EASMM. Probably it is necessary to pay more attention to the former Western European Aurignacian V. Indeed, former Aurignacian V / Terminal Gravettian / Proto-Solutrean sites are chronologically a little earlier than the sites in Central and Eastern Europe, and therefore this techno-cultural entity could have been involved in the origin and spreading of EASMM industries through Central and Eastern Europe at the beginning of the LGM. Such a Pan-European migration hypothesis from the west, however, cannot yet be proposed firmly. First, there is no known “Aurignacian V / Epi-Aurignacian” site in the 1200 km separating Aquitaine (South-Western France) and the Bohemian Massif (Austria and Czech Republic). Second, the discussed Eastern and Central European EASMM industry does not have a “transitional character” as has been argu-

ably suggested for the Western former Aurignacian V. Third, the presence of numerous thick-nosed endscraper–cores in Western Europe and their absence or rarity in Eastern and Central Europe suppose some definite technological differences in “micro-debitage” production between the two industries. Therefore, it is too early to draw the respective “human migration arrow” from the West to the East on the map of Europe. At the same time, it is still possible to hypothesize such a migration but it needs more substantiation and explanation due to the above-enumerated problems. For now there is already one raw material and techno-typological argument in favor of a more feasible similarity between the Western and Central European former Aurignacian V and EASMM assemblages. That is the use of quartz and rock crystal for bipolar anvil cores and, to a lesser extent, carinated endscraper–core reductions and some microlith manufacture for the two assemblage sets, although the subject needs some more special studies.

On the other hand, it is also possible to consider a “trans-cultural diffusion” / “stimulus diffusion” process (for the terms and lithic technology innovations for the Early UP record in Central Europe, see – Kroeber 1940, Tostevin 2000, 2012, Nigst 2012). In such scenario, some human groups would receive culture elements / technologies from another group (the former Aurignacians V) but develop them into a new and unique form (the EASMM), although the nature of the industry of this enigmatic “initial receiving” human group in Central Europe still remains unclear.

Thus, going further in the understanding of an origin of the EASMM industry in Eastern and Central Europe requires a real Pan-European approach and some non-standard methods of analysis.

Finally, the Epi-Aurignacian subject also demonstrates the significant industrial variability of Late UP assemblages in Central Europe (not only Epigravettian and Magdalenian) and in Eastern Europe (not just Epigravettian). We believe that it is also worth bringing up the discussion on the Epi-Aurignacian “historical fate”, considering that this Central European EASMM maybe also played a role in the development of Western European Badegoulian / Magdalenian 0-I origin.

All in all, nowadays a great amount of data on the EASMM industry not only in Eastern but also in Central Europe has already been accumulated. Information on the former Aurignacian V is additionally involved in the study for a Pan-European understanding of the specific LGM Early Late UP industry known to the east from Western Europe. But although it might look strange, a list of topics needed for further studies has not become shorter, however, and now more in-depth and integrated analyses need to be done, adding also here some other European Late UP industries for a wider look at the problems. However, this is the next stage of our research.

Acknowledgements

A number of colleagues helped us in our Epi-Aurignacian studies but only a few of them will be mentioned below. Regarding the Eastern European data, Demidenko is very grateful to A.K. Ocherednoi (St. Petersburg) for making available N.D. Praslov’s unpublished Muralovka site 1964 and 1967 excavation field report data from the Archive of the Institute for the History of Material Culture RAS, to V.E. Shchelinisky (St. Petersburg) for some unpublished Muralovka site 1964 excavation data from his personal participation there, to Ya.P. Gershkovich (Kyiv) for his consultations on Lower Don area Bronze Age data and providing us S.N. Bratchenko’s 2012 book “Leventsovka fortress”. Regarding the Central European data, we are very grateful to Gerhard Trnka (Vienna) for his all-round assistance in our understanding of the Rosenberg site and its materials. The present article has been prepared within the framework of a 2015–2020 scientific research project entitled “Initial Upper Paleolithic through Early Late Upper Paleolithic in Central & Eastern Europe” between the Institute of Archaeology of NUAS (Kyiv) and the Institute of Archaeology of the ASCR (Brno, Czech Republic). We also thank L. Dvořáková for redrawing the Mohelno and Rosemburg lithics as well as L. Zahradníková for improving all the other illustrations.

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Resumé

Příspěvek shrnuje údaje o 9 středo- a východoevropských lokalitách časného období pozdní fáze mladého paleolitu, které vykazují stejnou epi-aurignackou industrii s charakteristickými mikrolity typu Sagaidak -Muralovka (Epi-Aurignacian industry with Sagaidak-Muralovka-type microliths – EASMM). Chronologicky tyto lokality spadají do období posledního glaciálního maxima (LGM), rozpětí získaných dat je 25,500–23,000 cal BP. Tyto industrie byly nejdříve rozpoznány a definovány na základě 7 východoevropských (Moldavsko, Ukrajina, Rusko) lokalit, později byly do této skupiny zahrnuty i dvě středoevropské lokality – Mohelno-Plevovce (Morava) a Rosenberg (Dolní Rakousy).

Prezentováno je všech 9 EASMM lokalit. Analyzovány jsou dostupné údaje o jejich topografických pozicích, dále pak terénní data získaná během výzkumů, chronologie a archeologický materiál (včetně dostupných traseologických analýz, pylových či osteologických analýz). Poté jsou sumarizovány dostupné informace s cílem porozumění subsistenčním strategiím včetně technologických adaptací, které praktikovaly skupiny lidí v prostředí chladných stepí v průběhu drsného klimatu posledního glaciálního maxima.

Na závěr diskutujeme počátky EASMM komplexu z panevropské perspektivy a zabýváme se možnými migračními scénáři, kulturními kontakty, atd. při zohlednění odlišností v chronologii, archeologickém materiálu a paleo-environmentálním záznamu daných prostředí.

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