HUMAN OCCUPATION OF THE BORSUKA CAVE (SOUTHERN POLAND) – FROM UPPER PALEOLITHIC TO THE POST-MEDIAEVAL PERIOD

Jarosław Wilczyński¹, Michał Wojenka², Piotr Wojtal¹, Anita Szczepanek³ and Dobrawa Sobieraj

¹ Institute of Systematics and Evolution of Animals, Polish Academy of Sciences, Sławkowska 17, 31-016 Kraków, Poland; wilczynski@isez.pan.krakow.pl; wojtal@isez.pan.krakow.pl
² Institute of Archaeology, Jagiellonian University, Golębia 3, 31-007 Kraków, Poland; michal.wojenka@uj.edu.pl
³ Institute of Zoology, Jagiellonian University, Gronostajowa 9, 30-387 Kraków, Poland; anita.szczepanek@uj.edu.pl

Abstract

The paper presents the results of excavations carried out in the recently discovered Borsuka Cave site (southern Poland). The cave sediments have yielded a significant number of artefacts, diversified in their chronology and typology. Apart from Medieval, Eneolithic/Early Bronze Age and Mesolithic materials, the site produced an Upper Paleolithic inventory which is of extraordinary value for studies of settlement in the region. This unique assemblage, consisting of human remains accompanied by numerous pendants made of teeth of large ungulates, appears to be the relic of an intentional burial of a child, although no traces of a burial pit were encountered. It would be the oldest human burial known from the territory of Poland.

Key words: Aurignacian, Pavlovian, human remains, Mesolithic

INTRODUCTION

The Borsuka Cave is located in the Szklarka River valley, one of the hydrographic axes of the Olkusz Upland, constituting the southern part of the Kraków–Częstochowa Upland (Kondracki, 1998: 254–255). Geographically the area in question is included in the belt of so-called sub-Cracovian valleys, which – apart from the Szklarka River valley – comprises the valleys of Raclawka, Eliaszówka, Kobylańska, Będkowska and Bolechowicka valleys as well. The Borsuka Cave is situated on the northern slope of the Szklarka valley which spreads along the SW–NE axis. The valley itself is nearly 9 km long, forming a narrow gorge at the bottom of which there are a number of rock formations. The cave lies in the lower course of the Szklarka River, on a siliceous outlier, merely 100 metres from the place where the stream flows into the Raclawka River (Fig. 1). In front of the cave entrance, in a NE angle, there is a well preserved cave terrace, cut from the north and east by the Szklarka River and its nameless tributary. The cave was discovered during the exploration and cataloguing of the Szklarka Valley caves project (2004 and 2007), conducted by Jakub Nowak (Nowak, 2007: 28). A direct reason for launching the research in the Borsuka Cave was the accidental discovery of mammoth remains (Mammuthus primigenius): a fragment of mandible with a tooth, a part of a humerus bone and a fragment of rib. The mandible fragment provided a non-calibrated date of 24 850±200 (Poz-26124) (Nadachowski et al., 2011).

Excavations were carried out between 2008 and 2010, with the participation of the authors of the present paper. During the field works, the Holocene and Pleistocene age sediments (reaching a
depth of 2.5 m) were explored over an area of 12 sq. metres.

The trench, 4 × 3 metres in size was located next to the cave entrance and oriented with its longer side along the north-south axis (Fig. 2). The size and location of the trench were adjusted according to the terrace sedimentations as well as the degree of its destruction. It enclosed a ditch from modern times, of an irregular outline, ca. 120 × 120 cm in size and ca. 80 cm in depth.

Before the regular exploration began, a layer of secondarily deposited red-brown clay had been removed from the terraces in front of the cave. This clay most probably originates from the cave interior. Apart from numerous remains of fauna, a single flint flake was found within this material. The following systematic exploration was conducted through mechanical removal of 10 cm thick layers. All of the collected artefacts were recorded three-dimensionally.

**STRATIGRAPHY**

The stratigraphic sequence of the trench are as follows (Fig. 3):

**Layer I**: sediment of secondarily deposited clay, most probably originating from the interior of the cave.
Layer II: a black-dark brown colour humus, 20 cm thick. In this layer numerous fragments pottery vessels were found.

Layer III: At the depth of 20 centimetres, a red-dark brown, clayish sediment emerged, within which numerous strongly weathered, siliceous chunks occurred, sporadically measuring up to 50 cm in diameter. In the western part of the trench this layer was more than 1 meter deep. Layer III yielded a large series of flint artefacts, numerous bone remains (often burnt), as well as several fragments of pottery.

Layer IV: A colluvial loess sediment of grey-yellow colour at the depth of 60–70 cm, in the NE corner; it was particularly loose and, unlike layer III, was devoid of siliceous chunks. In this layer, in addition to flint artefacts, there were also some bones deriving from animal burrows,
disrupting the layers sediment deposits. The layer is 50 cm in thickness, and reaches the maximum depth of 100–120 cm.

Layer V: A strongly compact bright-yellow loess sediment, lying in situ at the depth of ca. 120 cm, slightly descending northward, towards the cave terrace. No archaeological or paleontological material has been found within this layer. However, as the depth increased, more siliceous, tiny, sharp-edged rubble appeared, which at the depth of ca. 150 cm comprise the following layer. This layer corresponds with a significant cooling event dating to the period of the Last Glacial Maximum.

Layer VI: From the depth of 150 cm to the bedrock (180–250 cm) there was a layer containing sharp-edged unweathered limestone rubble and clay material of greyish-yellow colour. This layer yielded artefacts and numerous Pleistocene animal remains.

Layer VII: in the cavity of the rock, filled with a layer of dark brown clay in which the remains of small fauna were discovered (including amphibians). No archaeological material was found.

MATERIALS

The trench, covering an area of 12 sq. metres, yielded a significant number of artefacts, diversified both in their chronology and typology. The archaeological material, including fragments of pottery, flint and osseous artefacts, was obtained from all of the layers except layers V and VII. Thanks to the sieving of the entire sediment and wet sieving of layers VI and VII, a large number of small animals remains (mainly rodents but also birds and fish) were recovered.

Prehistoric period, Middle Ages and modern times – short term occupation

During the excavations carried out in the Bor- suka Cave in the seasons 2008–2010 a total number of 123 pottery shards were obtained. The majority of pottery finds come from a loose, humus layer, ca 20 cm thick on average. The co-occurrence of materials representing a wide chronological range (from prehistory till modern times) in a single humus sediment is not an isolated case. Similar occurrences were observed in many of the smaller caves and rock-shelters of Kraków–Częstochowa Upland, where the recent humus is often the only layer of Holocene chronology (see: Kowalski 1951: 33; Chmielewski, 1988: 7). Only in few cases vessel fragments were found in layer III recorded in the southern part of the explored area. It is worth mentioning that some fragments of pottery were found in animal burrows, as well as within a loose heap, formed due to speleological explorations conducted in 2006, and within a loess layer of colluvial character, containing – apart from other flint artefacts – the microliths of the Komornica culture. It seems that the occurrence of the above-mentioned pottery material (prehistoric, early mediaeval and post-mediaeval) in the loess layer resulted from the redeposition of artefacts from the upper layers due to numerous animal burrows. The authors believe that the material in question cannot be considered as a dating marker for the loess sediments – it refers only to the post-depositional processes, probably caused by animals.

The oldest remains of clay vessels recorded in 2008 are represented by merely three fragments found in the humus sediment (2 sherds) and colluvial loess layer (1 pottery fragment). In two cases, these are tiny, non-specific fragments of two vessels made of ferriferous clay with an admixture of sand and chamotte, clearly visible in one of the fragments. Unfortunately, the sherds in question cannot be precisely dated due to the high degree of their fragmentation (surfaces of both specimens do not exceed 3 sq. cm). However, it cannot be excluded that they indicate the exploitation of the cave in the Early Bronze Age, confirmed by characteristic flint material and 14C dates. The third fragment, from the bottom part of the vessel, should be dated rather to the times of the Migration Period (375–568 AD).

Pottery material dated to the Middle Ages consists of 28 middle and low fragments (undoubtedly a pot) (Fig. 4: 1–3). Unfortunately, no rim was discovered. The lack of rim fragments renders the precise dating of mediaeval pottery difficult. On the other hand, certain technological features, particularly firing quality, mixing degree of the mass, non-plastic components as well as hardness of the fragments, allow us to assume that the vessels represent rather younger phases of the Early Middle Ages and the beginnings of the late
mediaeval period (11\textsuperscript{th} – 1\textsuperscript{st} half of 14\textsuperscript{th} cent.).

Fragments of vessels dated to the post-mediaeval and modern times are obviously predominant in the collection in question (92 pieces). Taking into account the relatively high degree of fragmentation, in many cases the separation of post-medieval fragments from modern period shards seems to be impossible. Vessels that could be referred to the 17\textsuperscript{th}–18\textsuperscript{th} century are represented by merely 5 fragments (Fig. 4: 4–6).

Indeed, specimens dated to the Late Modern Times, optionally of present-days, significantly prevail. The date of their manufacture may be established as the 19\textsuperscript{th} or even the first decades of the 20\textsuperscript{th} century (a total of 87 fragments of vessels). All in all the pottery recovered represents remains of merely 5 vessels (Fig. 4: 7, 8).

The pottery of the 19\textsuperscript{th}–20\textsuperscript{th} century is distinguished by its high quality of firing and high hardness. It also shows clear traces of throwing on swiftly rotating potter’s wheel.
Eneolithic/Early Bronze Age – flint exploitation

The Eneolithic or Early Bronze Age inventory was deposited in layer III, which do not constitute a homogenous inventory. The collection includes a distinctive component of Mesolithic specimens, which is proved beyond any doubt by the occurrence of the microliths. Technological and typological differences between the assemblages are significant; they also differ in type of raw material as well as in the state of their preservation. This allowed us to distinguish between the Mesolithic and Eneolithic/Early Bronze Age inventories. With this stage of occupation we could linked 152 flint artefacts discovered in layer III or in numerous animal burrows sometimes reaching the depth of 150 cm.

The material in question is characterized by a significant vertical dispersion – the specimens occurred within a range of depths between 60 and 115 cm. Unfortunately, lack of characteristic pottery material in the layer forced us to determine its chronology on the basis of flint processing technique exclusively. Radiocarbon dates obtained from animal remains found in this layer may offer an additional premise. Nevertheless, the authors are aware that prehistoric settlement did not necessarily overlap with the penetration of wild animals.

The inventory in question comprises: 7 cores and 2 thermal fragments of a core, 86 flakes, 10 blades, 17 chips and 30 burnt chunks with a few blow scars. Most of the artefacts were made of local Jurassic flint of milky brown or grey-brown colour. Moreover, in this layer were discovered dozens of natural flint fragments of up to several centimetres which were excluded from further analysis.

Among the cores, there occurred one specimen of a pre-core, 4 single platform cores (3 for flakes, 1 blade-flakes) (Fig. 5: 3) and a single sub-discoid core for flakes (Fig. 5: 1).

Flakes are represented mostly by complete specimens (61 pcs). As many as 53 flakes are totally or in the most part covered with cortex or have natural, thermal surfaces. Among them 26 are completely cortical/thermal specimens. The vast majority of flakes reveal scars on their dorsal faces, parallel to the direction of their detachment (55 pcs). Butts of the flakes are most frequently formed with a single blow (30 pcs).

The inventory contains merely 10 blades – 5 complete ones, 4 distal and one proximal fragment. They are mostly accidental, stocky specimens, only two of them being proper, slender blades. Their average dimensions are 52 x 18,6 x 9,8 mm. All of them originate from exploitation of single platform cores.

This layer yielded the remains of mammals such as hare, badger, wildcat and red fox. Their presence in the sediment is due to natural processes, rather than human activity. There were also bone fragments bearing traces of fire on their surfaces. They are small, their lengths do not exceed 5 cm. The degree of burning varies: from those slightly touched by the fire (characterized by brown colour), through more strongly burnt pieces (bone turns black as collagen is carbonized), ending with grey and white specimens, where all the organic components were burnt, leaving merely minerals constituting the bone. A fragment of mandible of a wildcat (Felis silvestris) and a fragment of humerus bone of a badger (Meles meles), obtained from layer III, were radiocarbon dated. They provided a non-calibrated dates of 3920±35 BP (Poz-27235) and 4175±35 BP (Poz-27281) respectively.

The inventory lacks any tools or characteristic waste material resulting from their production; therefore, it is difficult to determine the cultural attribution of the assemblage. The occurrence of a single pre-core initially excludes the possibility of relating the collection to the flint gunlock workshop known from the surroundings of Zelków, Morawica and Mników (Ginter and Kowalski, 1964). The manner of raw material processing, as well as the predominance of cores for flakes, including discoid ones, and finally, the radiocarbon dates (though they may correspond to later or earlier periods, and have no connection with the assemblage) may altogether indicate that the inventory should be referred to the Eneolithic or Early Bronze Age. The character of elaboration and exploitation of mainly natural chunks of high quality, gathered from the closest area, may indicate certain planning in exploitation of the region (connected with obtaining flint resources), which was typical for the Early Bronze Age groups in the Carpathian region (Kopac, 2001: 99). The only radiocarbon date obtained for the site that can be undoubtedly related to the use of the cave
by humans, is a date received from a human phalanx pointing to 3375±35 BP (Poz-27280). However, the bone was found by local inhabitants exploring the cave, in mixed sediments; therefore, it is not certain if the date corresponds with the formation of layer III.

Fig. 5. Borsuka Cave. Flint artefacts from Layer III (1, 3), Layer IV (2, 4–7). Cores (1, 3, 5), single-blow burin (2), blade (4), microburins (6, 7)
Flint inventory of the Mesolithic – a hunting camp

The mesolithic inventory, the major part of which lay within the layer of colluvial loess (Layer IV) and in layer III (as a secondary deposit), consists of 105 flint artefacts as a homogeneous, 10–20 cm thick horizon, within the loess. The vertical alignment of the artefacts prompts the assumption that the material was found in situ – except the material redeposited in the layer III and the animal burrows frequently disrupting this layer. As it seems, the deposition of flint artefacts in the colluvial layer coincided in time with a strong flow of the loess from the upper part of the slope, which very swiftly covered the artefacts left on the cave terrace.

The assemblage in question comprises 3 cores and 2 thermal fragments of cores, 31 flakes, 26 blades and 5 chips. There are also 33 micro liths, 2 burins, 2 microburins and 2 burin spalls. Such a high share of tools (mainly microliths) indicates that the material is related to hunting activity carried out in the surroundings of the cave.

The entire collection, most probably representing the Komornica culture, was made of local Jurassic flint of very high quality and dark brown colour, referring to type A. Its outcrops can be found in almost the entire area of Polish Jura, excluding the Sowiniecki Hump (Kaczanowska and Kozlowski, 1976). The cortex on the surfaces of the artefacts, shows no traces of transportation, which suggests that the raw material was obtained from local, secondary outcrops.

More than half of the Mesolithic artefacts reveal traces of patina on their surfaces. Most common is a faint, white (15 pcs) or blue tarnish (15 pcs), while 22 specimens show traces of a strong, white patina.

The 2 cores are single platform specimens. One is an initial core for blades (Fig. 5: 5) made of a small, oval, entirely cortical nodule. The second one is a single blade-flake core in advanced stage of exploitation. The height of both cores does not exceed 4 cm. The only trace of preparation is visible on the striking platforms as a single scar left by a blow from one side.

Among the flakes, complete specimens are predominant (24 pcs). Fifteen specimens are insignificantly covered with cortex or natural, thermal surfaces, and only 5 are completely or mostly cortical or natural. Specimens with scars on their dorsal surfaces parallel to the direction of detachment are predominant – 21 specimens. Four specimens were identified as waste resulting from the preparation (3 trimming flakes and 1 flake with remaining traces of pre-flaking surface). The butts of flakes were usually formed by a single blow (18 pcs).

Among the 26 blades, there were 13 complete specimens (Fig. 5: 4), 8 proximal, 4 distal and 1 medial fragments. Most of the blades have traces of natural surface on their dorsal faces. Twelve specimens are covered with cortex only on a small part, mainly on one side of the blade, while 5 specimens retained cortex or natural surfaces on most part of their surface. Scars of one direction according to the direction of detachment were most frequently recorded on the dorsal surfaces (20 pcs). There is also one trimming blade. Butts of blades were usually formed with a single blow (10 pcs). The blades are small and slender, of triangular or less often, trapezoid section. The average dimensions of a complete specimen are 39×13×4 mm.

The assemblage comprised quite a collection of tools, which constituted one-third of the entire inventory (Fig. 6). There were 33 microliths, including 8 entirely preserved specimens identified as truncations of the Komornica type (Fig. 6: 1–3). Furthermore, the group of microliths comprised one fragment and one complete Maglemosian backed piece (Fig. 6: 4) and a single example of a lanceolated, backed bladelet (Fig. 6: 5). The inventory also included 19 backed pieces of the Stawinoga type – among which 11 were preserved completely (Fig. 6: 6–14). Truncations of the Komornica type as well as some of the backed bladelets of the Stawinoga type have a back/truncation formed in a very specific manner, i.e. they were retouched on the proximal part of the bladelet, obliquely to the axis of a blank. Some of the backed pieces and truncations were formed with double-sided, steep retouch. Apart from the above-mentioned microliths, the inventory also comprised 3 specimens of obtuse-angled, scalene triangle (Fig. 6: 15) and 2 burins (1 burin on truncation, 1 single-blow burin made on a thermal chunk), 1 burin spall and 2 microburins (Fig. 5: 2, 6, 7). The composition of tools inventory (occurrence of backed pieces of the Stawinoga type and...
truncations of the Komornica type, as well as burins) indicates that the collection in question should be attributed to the Komornica culture (Kozłowski 1965, 1967) and the Narvian cycle (Więckowska and Marczak, 1967: 16) developing in Europe since the Boreal Period. Such an early chronology is supported by the lack of trapezes in the assemblage. Furthermore, the presence of merely one

Fig. 6. Borsuka Cave. Flint artefacts from layer IV. Truncations of the Komornica type (1–3), fragment of a backed piece of the Maglemosian culture (4), lanceolated, backed bladelet (5), backed pieces of the Stawinoga type (6–14), obtuse-angled, scalene triangle (15)
type of raw material – local Jurassic flint – corresponds with the manner of resources provision typical of this cultural unit, mainly focused on the exploitation of local flint (Cyrek, 1983). Small cores, tiny blades and microlithic points are characteristic traits of the culture in question, which manufactured miniaturized products even in areas abundant with large blocks of high-quality raw material (Kozłowski, 1972: 70). Additionally, the character of preparation and processing of the only core found in this assemblage strongly refers to the exploitation manner carried out in other sites of the Komornica culture known from the territory of Lesser Poland (Dryja, 2000).

The assemblage is an evidence of a short-term occupation. It was connected with hunting activity in the closest vicinity of the cave. The cave location near the area where the Szkłarka River flows into the Racławka stream, might have been a decisive factor in choosing the spot for a short-term camp.

Unfortunately, layer IV, where the Mesolithic assemblage was found, did not contain any organic remains, which would enable obtaining radiocarbon dates corresponding with the settlement in question.

**Upper Palaeolithic material from layer VI – a deposit**

The most interesting material has been obtained from Layer VI. This layer contained sharp-edged unweathered limestone rubble and loess material. Within it, at the depth of 160–220 cm, 112 pendants were discovered. Among them 74 specimens made of the incisors and canines of steppe wisent or aurochs (*Bison priscus*/*Bos bison*) (Figs 7, 9), 34 made of the incisors and canines of European elk (*Alces alces*) (Fig. 8) and 4 objects made of the incisors of large ungulates (probably of wisent/aurochs or European elk). It may be assumed that they are the remains of a necklace. They formed a small concentration by the southern wall of the trench, and a few specimens occurred in the central and northern part of the trench as well. Although the entire sediment had been sieved, only one distal part of a massive blade was found. Apart from the pendants and the blade fragment there were no other artefacts discovered (not even chips).

Two fragments of the pendants yielded AMS
radiocarbon dates of 25 150 ± 160 (Poz-38236) and 27 350 ± 450 BP (Poz-32394). This allows us to connect the assemblage with the Pavlovian or late Aurignacian settlement from Central Europe. Unfortunately, due to the lack of stone material, the attribution of the assemblage to one of the Upper Palaeolithic cultures relies solely on stylistic analysis of the pendants. From Pavlovian inventories we know numerous pendants made of animal teeth, most frequently discovered in burials (Klima, 1987). They also occur in graves of small children, as in the burial from Krems-Wachtberg (Händel et al., 2009). Pendants made from the teeth of other species, such as reindeer or bear, are rarely found. Aurignacian pendants made of animal teeth show great diversity. As with Pavlovian sites, the teeth of predatory species – bears, wolves and foxes were used in the production of this type of decoration (Conard and Bolus, 2006; Hahn, 1972). From sites undoubtedly linked to Aurignacian – especially in Central Europe – pendants made from the teeth of large ungulates – elk and bison/aurochs are also known. A few specimens of this type of artefact are known from the Mladeč Caves (Czech Republic) (Oliva, 2006; Szombathy, 1925). In those inventories pendants

Fig. 8. Borsuka Cave, pendant made from the incisor of an European elk (*Alces alces*)

Fig. 9. Borsuka Cave, pendant made from the incisor of a steppe wisent or aurochs *Bison piscus/Bos bison* with visible red dye in cut marks of the roots
such as those discovered in the Borsuka Cave, are accompanied with the Mladeč-type points, which are typical for the Aurignacian (Djindjian et al., 1999). That is why we believe that the material discovered in the Borsuka Cave can be associated with an Aurignacian settlement. The discovered assemblage is the largest collection of pendants made of teeth of large ungulates associated with a settlement of the Upper Palaeolithic period in Europe. According to recent investigations of Aurignacian personal ornaments (Vanhaeren and d’Errico, 2006), the materials in question may reflect the systematic relationships that existed at an ethno-linguistic level between different population clusters. Together with the above-mentioned sites, these materials mark an isolated zone embracing Moravia and southern Poland, characterized by the occurrence of pendants made exclusively of teeth of aurochs or steppe bison and European elk (the Borsuka Cave), or with the addition of pendants made of teeth of beaver and horse (Mladeč Cave).

During the excavations, 6 human deciduous teeth were discovered (Fig. 10). These are: a right first upper incisor (udi1), a left second upper incisor (udi2), right and left maxillary first molars (udm1), a left mandibular first molar (ldm1) and a part of cusp of deciduous molar. They occurred west of the concentration of the pendants, within metres C7 and D7. They are the only human remains discovered in the site. The teeth are of an child aged as infans I (1–1.5 years old) at the moment of death (AlQahtani et al., 2010); the sex cannot be determined. The teeth do not exhibit attrition, and this can be easily explained by the young age of the individual. Diagnostic features and the same phase of dentition indicate that the teeth could have belonged to one individual. They are of importance since deciduous teeth from Upper Palaeolithic sites are a rare phenomenon (Legoux, 1975; Frayer, 1978; Sládek et al., 2000; Hillson and Trinkaus, 2002; Teschler-Nicola et al., 2004).

Within the layer in question, a considerable amount of palaeontological material was discovered (Table 1). It consists of several hundred animal remains belonging to a dozen species, including: a horse (Equus sp.), reindeer (Rangifer tarandus), hare (Lepus sp.), woolly rhinoceros (Coelodonta antiquitatis) and fox (Vulpes lagopus/Vulpes vulpes). In addition to this fauna of the tundra and taiga, there also occurred a few remains of fauna associated with the warmer environment of a mixed forest (Wilczyński et al., 2012). One should mention here the remains of lynx (Lynx lynx), European elk (Alces alces) and beaver (Castor fiber). Within Layer VI, apart from the teeth modified into pendants, other remains of European elk were found as well. The remains of fish, birds, and small mammals (mostly rodents) are also present. All of the animal remains are most probably a result of natural accumulation, connected mainly with carnivores activity. It is confirmed by the composition of fauna, the presence of carnivore marks on some of the faunal remains and the lack of traces of human activity on the animal remains (cut marks, burnt bones, etc.).

Table 1
Presence of different class of animals in the layers from the Borsuka cave

<table>
<thead>
<tr>
<th>Class</th>
<th>Layer</th>
<th>I</th>
<th>II</th>
<th>III</th>
<th>IV</th>
<th>V</th>
<th>VI</th>
<th>VII</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gastropoda</td>
<td></td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>-</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Pisces</td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Amphibia</td>
<td></td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Reptilia</td>
<td></td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Aves</td>
<td></td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Mammalia</td>
<td></td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
</tbody>
</table>

+ means presence of class in layer.
FINAL CONCLUSIONS

In terms of chronology, the finds represent pottery vessels dated to the Prehistoric Period, Early Middle Ages and modern times. The quantity of chronologically determined pottery fragments varies in particular periods, which is probably due to uneven rhythm of the cave’s exploitation in the past. The shards dated to post-medieval (16th–18th cent.) and modern periods (19th–20th cent.) were undoubtedly most common, while the fragments of prehistoric and middle age pottery were represented only by several artefacts.

The flint inventory from the Borsuka Cave deposited in layer III should be tied in with the exploitation of local Jurassic flint outcrops in the Eneolithic or Early Bronze Age. The goal of flint processing was to obtain flakes through the exploitation of mostly natural chunks of raw material, usually of high quality, occurring in the closest surroundings.

The discovery of numerous findings linked with the Mesolithic (the Komornica culture) was surprising. It is an excellent example of human penetration into this part of Polish Jura by communities of the Early Holocene, traces of which are not so commonly (as compared with neighbouring regions) revealed herein (Zając, 2006). The Komornica culture is a component of the Duveneese complex occupying a vast part of Central European Lowlands from the beginning of the Preboreal till the end of the Atlantic Period (Galiński, 2002). The site – which is worth emphasising – is, apart from several known assemblages, the most abundant cave collection encountered in the Polish Jura. Among some of the cave sites where artefacts referring to the Mesolithic were discovered one should mention the Duża Cave in Mączna Skala, which yielded two trapezes (Dagnan-Ginter et al., 1992), materials from the Jasna Cave obtained during the survey conducted by L. Sawicki and a collection originating from site 27 in Ojców (Bramka shelter) (Chmielewski, 1988). Other cave sites which contained Mesolithic materials are Dr Majer’s Cave, com. Czulów (Kozłówski, 1960) and Ruska Skala located in the district of Zawiercie (Chmielewska and Pierzchałko, 1956).

The excavations of the Borsuka Cave yielded finds of great importance for studies on the Upper Palaeolithic settlement in the region. The most interesting discovery made in the Borsuka Cave is a unique assemblage, consisting of human remains accompanied by numerous personal ornaments made of teeth of large ungulates. Although no traces of a burial pit were encountered, the character of the discovered assemblage suggests that we are dealing with an intentional burial of a child. This is indicated by the discovery of human remains together with numerous ornaments, the lack of lithic industry as well as by palaeontological and taphonomical data. Discoveries of assemblages of this type are extremely rare in the Aurignacian and Upper Palaeolithic sites in general. In light of recent absolute dating, a series of human remains previously connected with the Aurignacian settlement in Central Europe, such as: Koneprusy-Zlatý kůň (Czech Republic) (Svoboda et al., 2002), Paderborn-Sande, Emsdetten (Terberger and Street, 2003), Hahnöfersand (Terberger et al., 2001), Vogelherd (Conard et al., 2004) (Germany) or other remains of anatomically modern humans without clear context known from German sites (Street et al., 2006), should be regarded as much younger and linked with the Magdalenian, Mesolithic or even Neolithic settlement. In our region, the remains from the Mladeč Cave are safely dated to the Aurignacian, as well as the remains from Peștera cu Oase, Peștera Muierii and Peștera Cioclovina uscata in the southern Carpathians (Wild et al., 2005; Trinkaus et al., 2003; Soficaru et al., 2006, 2007).

Much more human remains are discovered in Pavlovian sites in Central Europe. Sites like Pavlov I, Dolní Vestonice or Předmosti yielded complete human skeletons or isolated bones or teeth (Trinkaus et al., 2000, 2010; Trinkaus and Svoboda, 2006; Svoboda, 2008). Taking this into account, the Borsuka Cave human data are a unique find. At the same time, it is the oldest human burial known from the territory of Poland. Apparently, even infants were considered as important and rightful members of the Upper Palaeolithic hunter-gatherer communities (Einwögerer et al., 2006; Irish et al., 2008; Teschler-Nicola et al., 2004).

Acknowledgements

We would like to thank Prof. Adam Nadachowski for making available the results of the radiocarbon
analyses of animal remains. Radiocarbon dating was financed by the research project No 303 078 32/2589 of Ministry of Science and Higher Education of Poland (A. Nadachowski). We would also like to express our gratitude to Mirosław Zając and Damian Staefański from the Archaeological Museum in Kraków for the consultation and help they offered us during the excavations.

REFERENCES


CHMIELEWSKA M., PIERZCHAŁKO M. 1956. Stanowisko wczesnemizolityczne w schronisku skalnym koło Podlesic w pow. zawierciańskim. Prace i Materiały Muzeum Archeologicznego i Etnologicznego w Łodzi, Seria Archeologiczna 1, 29–40. [French Summary]


