

## PRELIMINARY RESULTS OF THE LATEST EXCAVATIONS AT THE KŐLYUK I, PARASZNYA

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*The first decades of Hungarian research on prehistory were characterised primarily by cave excavations; these archaeological-palaeontological investigations became less frequent after World War II. Since research had been rather intensive until that time, the lack of the remaining upper cave layers and the documentations incomplete to varying degrees made it rather difficult for future generations to “revisit” earlier chapters of the sites’ histories. The cave named Kőlyuk I. is located in the northern Bükk Mountains, near Parasznya. One of its caverns, its size comparable to other large prehistoric caves, provides an excellent opportunity (potentially one of the final few) to methodically unravel history from the present-day surface level.*

**Keywords:** Palaeolithic, prehistoric pottery, cavernous lake, human remains, amber bead

### SIGNIFICANCE OF THE CAVE AND PREVIOUS RESEARCH

The Kőlyuk I (Figs. 1–2) is located in the Northern Bükk Mountains, in the administrative area of Parasznya. The cave has been well-known since the beginnings of Hungarian speleology. Due to its natural and archae-

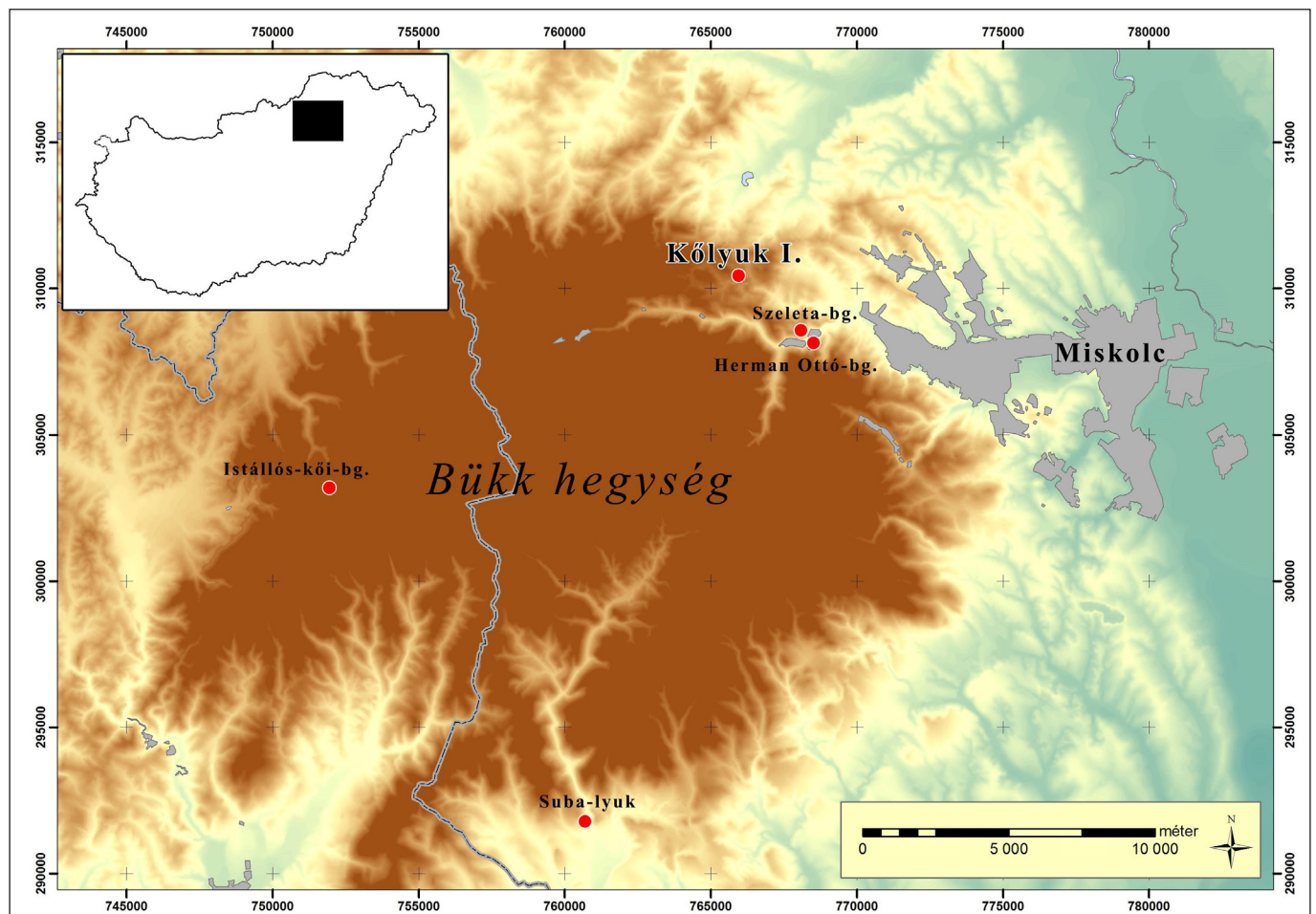


Fig. 1. Location of the Kőlyuk I at Parasznya in the north-eastern part of the Bükk Mountains

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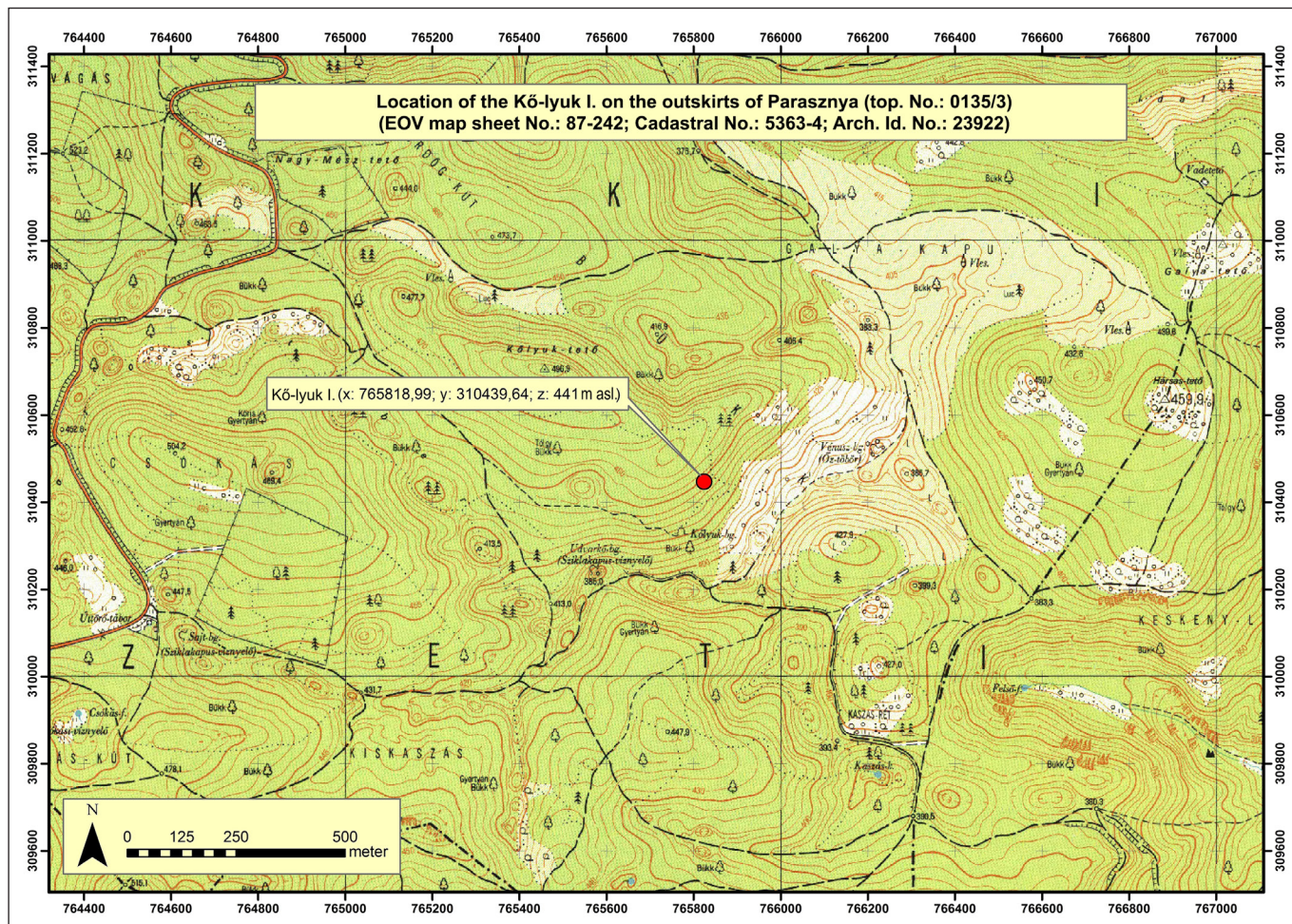


Fig. 2. Morphological conditions of Kőlyuk I and its surroundings

ological assets, it is also a specially protected area.<sup>2</sup> The caves of the Bükk Mountains served as important locations during the first fifty years of Hungarian research on prehistory and yielded multiple significant results; however, many of the sites also suffered from overly enthusiastic excavation efforts. For example, the upper cave layers of the Szeleta and Istállós-kő caves are completely missing in and the Suba-lyuk and Herman Ottó caves (among many others) were also stripped of any layers that could be researched. Currently, the Kőlyuk I is the only known archaeological site in the Bükk with a large enough area to perform a complete study on its stratigraphic sequences between present-day walking surfaces and the bedrock.

The research history of the cave goes back to 1913, when geologist Ottokár Kadić first excavated the Foreground area (*Előcsarnok* in Hungarian), which was split into two parts named the “Courtyard” (*Pitvar*) and the “Niche” (*Fülke*). The cave only consisted of a 24-metres-long and 10-metres-wide traversable section at the time. Kadić and Mária Mottl discovered the inner cave passages in 1944 (REGŐS & RINGER 2003, 173). In 1947, Andor Saád, Géza Megay, János Nemeskéri and Béla Szabadkay conducted a survey and an excavation, after which Szabadkay created a map of the cave consisting of 18 parts in May 1950 (REGŐS & RINGER 2003, 173).<sup>3</sup>

The cave has become a subject of great attention since 1950. First Géza Megay carried out a rescue- and layer-cleaning excavation in 1950, followed by the last archaeological excavation by Ottokár Kadić, carried out with the aid of József Klein (SZÉKELY 2010, 139–140). During that excavation, they discovered three facing cave bear skulls (VÉRTES 1965, 179) that were not collected immediately upon discovery and became missing from the site by the following day. The first precise map of the cave, which documented the locations of the excavations and the stratigraphic sections in great detail, was made by István Venkovits

<sup>2</sup> Land registry no.: 0135/3; Cat. no.: 5363-4; Archaeological site register ID: 23922.

<sup>3</sup> The documentations of cave research used for this article are accessible through the Archaeological Database of the Herman Ottó Museum.



in December 1950 (VENKOVITS 1951). The Ministry of Culture and Public Education passed a ministerial decision the following year, which provided archaeological protection for the site (REGÖS & RINGER 2003, 173). In 1958, upon a report by local tourist, Endre Kőfalusi, László Vértes visited the cave and found the heavily deteriorated remains of a cave bear skull, which, based on its orientation, suggested the presence of deliberate human activity (VÉRTES 1965, 179). The Kőlyuk I was added to the list of specially protected caves in 1982 (REGÖS & RINGER 2003, 173).

Despite its “under special protection” status, the cave was frequently disturbed by illegal bear bone collectors. To stop the disturbance, the entrance of the cave has been sealed in 1992 (REGÖS & RINGER 2003, 174). Speleologist József Regős surveyed the state of the cave site on a request by the Bükk National Park Directorate in 1999. In 2002, the cave was visited by András Markó and Balázs Holl, experts from the Hungarian National Museum, who identified stakeholes in several trenches. During the mid-2000s, József Regős found an iron axe, a curved back iron knife, sherds of a black bowl, and grindstone fragments within the cave, and also identified markings carved with an axe into the cave walls. Due to more recent archaeological discoveries and additional reports of plunder, the Bükk National Park Directorate decided on cleaning up the cave, a work made possible by the KEOP-3.1.2/2F/09-2010-0001 project. Between October 2010 and June 2011, a surface of over 270 m<sup>2</sup>, disturbed plunder pits, was reburied under the supervision of the Herman Ottó Museum. In addition, palaeontological and archaeological surface finds were collected and a detailed geodetic survey was carried out in the Giant Hall (*Óriás terem*; SZOLYÁK 2011). In accordance with the project guidelines, two of the fourteen plunder pits (Nos. V and XIV), their profiles featuring a fireplace and small post- (stake)holes, were left unchanged to be presented in the future.

Based on previous research and the finds that came to light, the cave seems to having been visited and occasionally inhabited since the Palaeolithic Aurignacien cultural period (approximately 39,000–35,000 BC). The cave and its forefront were definitely in use or at the least known and available for use in the time of the Neolithic Bükk culture, the Bronze and the Early Iron Age (Kyjatice culture), and the Roman Imperial Period.

### CURRENT RESEARCH IN THE CAVE

The full length of the passages of Kőlyuk I is 623 metres, with a vertical extension of 30 metres. The mouth of the cave is located 441 metres aBsl. In terms of its geological origins, it was formed in Upper Triassic limestone (the Kiszén-sík Limestone Formation) as a spring cave with diverse dripstone formations (REGÖS & RINGER 2003, 173; GYALOG 2005, 68). Its largest section is the Giant Hall with a floorspace of 35 by 30 metres, a height of 17 metres, and several interconnected side passages starting from its northeastern and northwestern sides (*Fig. 3*).

A team of the Herman Ottó Museum started a research series there in 2021; depending on results and funding, the project may be developed to be up to five-year-long. The goals of this project, in order of importance, are the following:

1. Design and excavation of a set of trenches in previously untouched cave surfaces (especially the Giant Hall) for a high-precision survey of the stratigraphic relations to a maximum depth of 3 metres.
2. Collection of large quantities of sediment samples for grain size, chemical composition and organic content analyses.
3. Collection and evaluation of palaeontological finds to identify and characterise species, aiming at improving our understanding of the climatic and ecological conditions of the Ice Age in the region. Besides, a wear mark analysis of bones focuses on the hunting characteristics of prehistoric humans and the relationship between them and cave animals. The relationship between humans and cave bears is of particular significance.
4. Excavation of archaeological and (possible) palaeoanthropological finds. Anthropological finds from the Ice Age are particularly rare in the territory of Hungary, thus the discovery of new prehistoric human remains would represent a major scientific achievement. In recent decades, the extinction of the Neanderthals and their intermingling with anatomically modern humans have been in the forefront of international research. The excavation of Kőlyuk I is expected to yield results that may contribute to the research of this particular field.



Fig. 3. The entire cavity system of Kőlyuk I. on a survey map made by József Kárpát in 1983

5. Collection of a large quantity of samples suitable for absolute dating (min. 10 samples).
6. Examination of taphonomic processes in the cave (dripping water, sediment movement, cracks and the effects of cave animals on the cave finds and their condition).

### THE 2021-2022 EXCAVATION

The research plan included four archaeological trenches (I–IV), the positions of which were determined based on a virtual 1 x 1 m grid established during reconstruction works in 2010–2011 (SZOLYÁK 2011). We decided, however, not to start working in all four in the first research phase until spring 2022, and restricted our activity only to Trenches II and III and plunder pit XIV. Due to the position of the excavated archaeological finds and features, these trenches became somewhat expanded during excavation (Fig. 4).

The squares in the trenches were numbered 1–12, and several were sub-divided into four 0.5 x 0.5 m squares marked A to D. The 11 m<sup>2</sup> surface of Trench II was excavated to a maximum depth of 30 cm, with an average depth of 15 cm (Fig. 5). Trench III was unearthed down to 100 cm in a 3 m<sup>2</sup> area and to

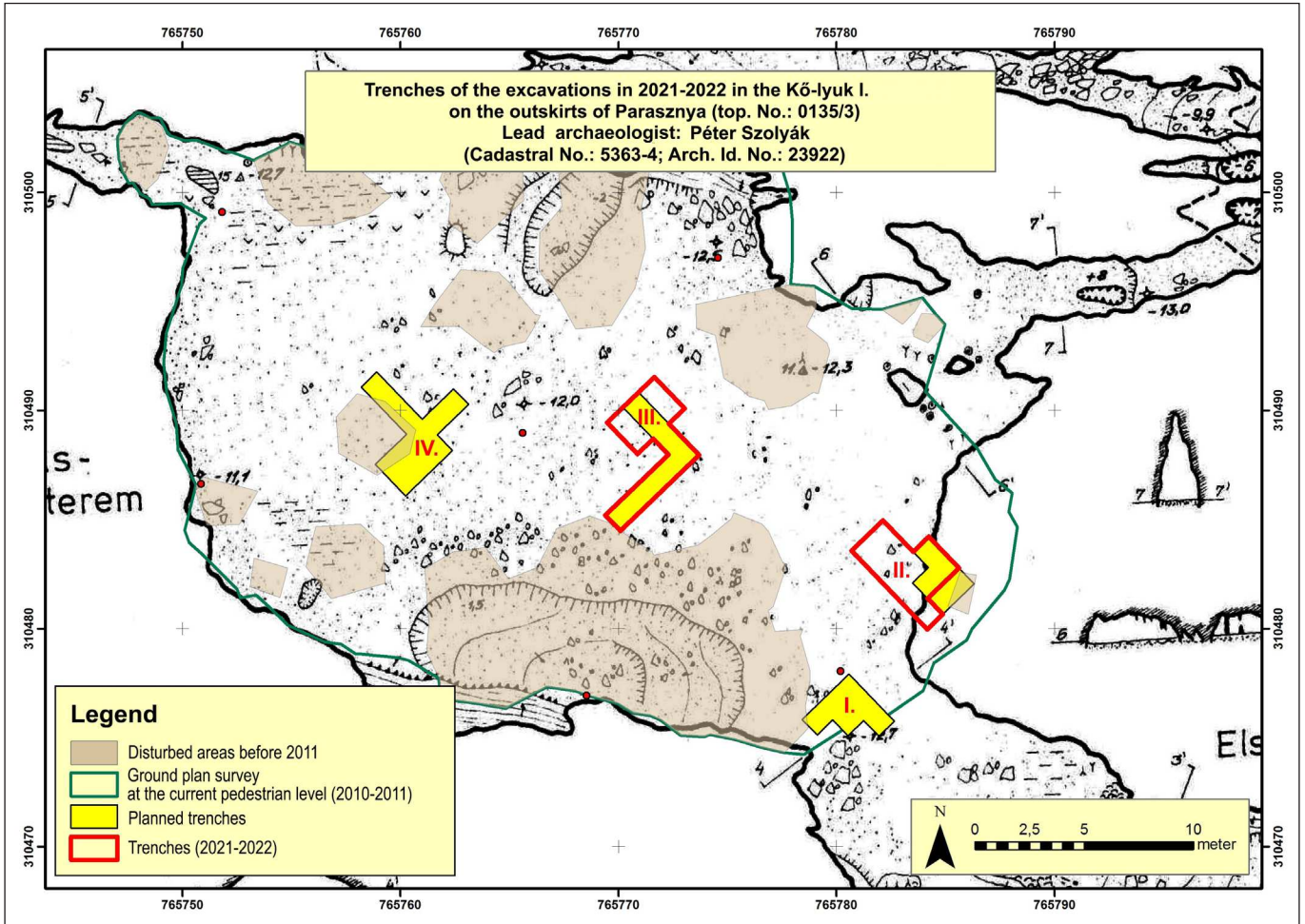


Fig. 4. Location of the trenches researched in 2021–2022 in the Giant Hall

more than 50 cm in another 8 m<sup>2</sup> (Fig. 6). To make the stratigraphic analysis more quick and efficient, the profiles of plunder pit XIV, preserved during the 2010–2011 reconstruction works, were cut flat, prepared, and recorded.

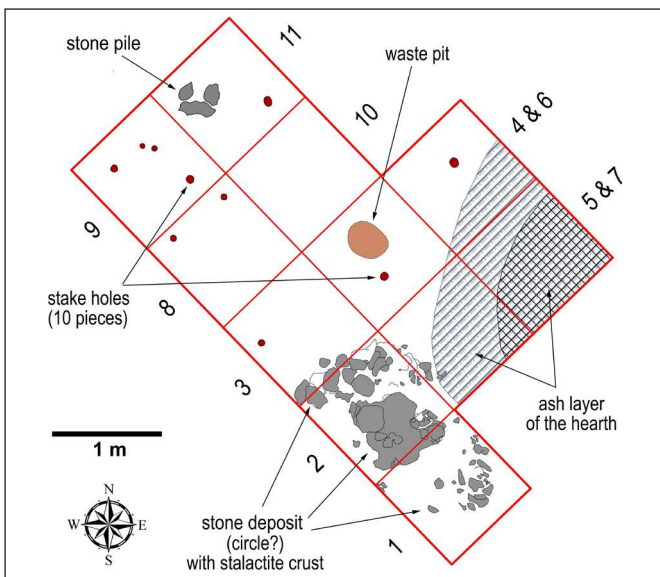


Fig. 5. Survey map of Trench II with interpretation

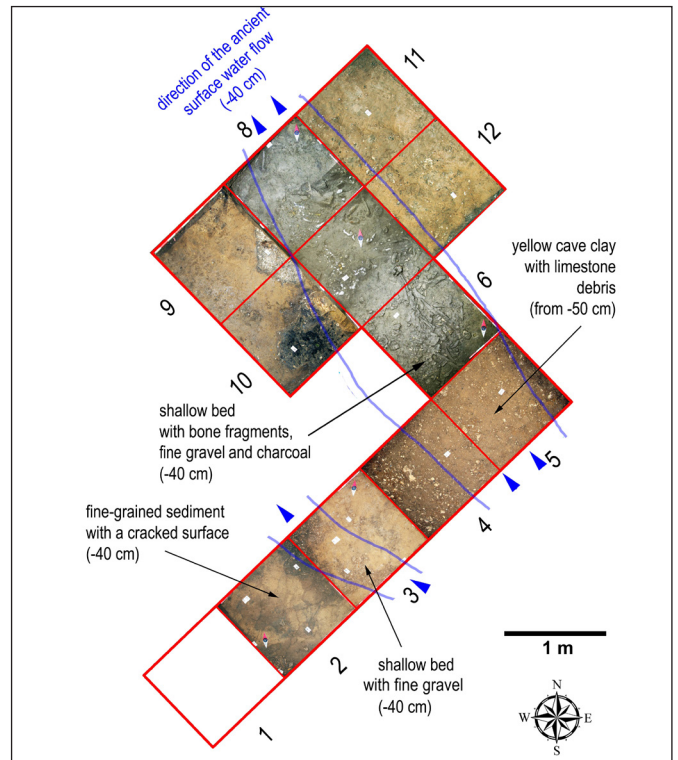


Fig. 6. Orthophoto-based survey map of Trench III with interpretation



## LAYER SEQUENCE

With only minimal differences, the layer sequences observed in the two trenches and plunder pit XIV (Fig. 7–8) roughly correspond, allowing for a general description of stratification of the Giant Hall to a depth of 100 centimetres.

1. (S1) dark grey and dark brown, moist, sticky, modern surface layer consisting of limestone and gravel (3–5 cm);
2. (S6) dark grey layer with charcoal and prehistoric (Neolithic, Late Bronze Age, Early Iron Age) finds, probably without modern disturbance (2–10 cm);
3. (S9<sub>complex</sub>) uniform, 20–30 cm thick layer complex spreading throughout the Giant Hall; most likely the result of cave lake sedimentation process. It consists of a sequence of 1–5 mm thick alternating light and dark brown sediment layers (approximately 31–43 layers, macroscopically);
4. (S10a-c) greyish-dark brown sediment layer with mud and clay, representing a transitional period (characterised by a change in climate and waterlogging), positioned between layers S9<sub>complex</sub> and S11. The bottom of this layer was uneven, disturbed by water flow, while the top has a more regular, even horizon (2–20 cm). It is a compound of three sub-layers a, b, and c: *a* is dark and poor in charcoal specs, while *b* and *c* are similar in hue, but *c* contains a significant amount of gravel, bone, and charcoal;
5. (S11a-d) light grey cave clay with limestone debris. The full thickness of the layer is unknown but surely over 40–50 cm. It is a compound of at least four macroscopic levels, a–d:

- a* – light brown cave clay with occasional fine limestone debris (10–15 cm), featuring, in Trench III, a crack web potentially representing freezing during the Pleistocene period;
- b* – red-yellow brown, thin, fine-grain cave clay (1–5 cm);
- c* – medium yellow-brown soil with a lot of limestone debris and corroded (covered in iron oxide), near-petrified fossil bones (5–25 cm);

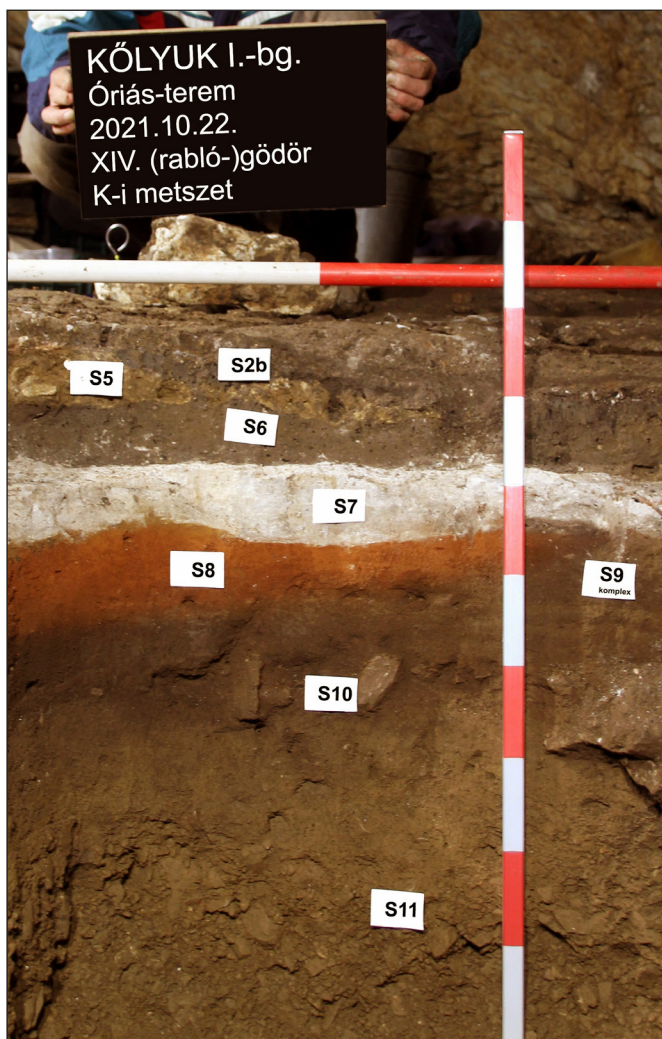


Fig. 7. North-eastern profile of plunder pit XIV (photo by the author, 2021)

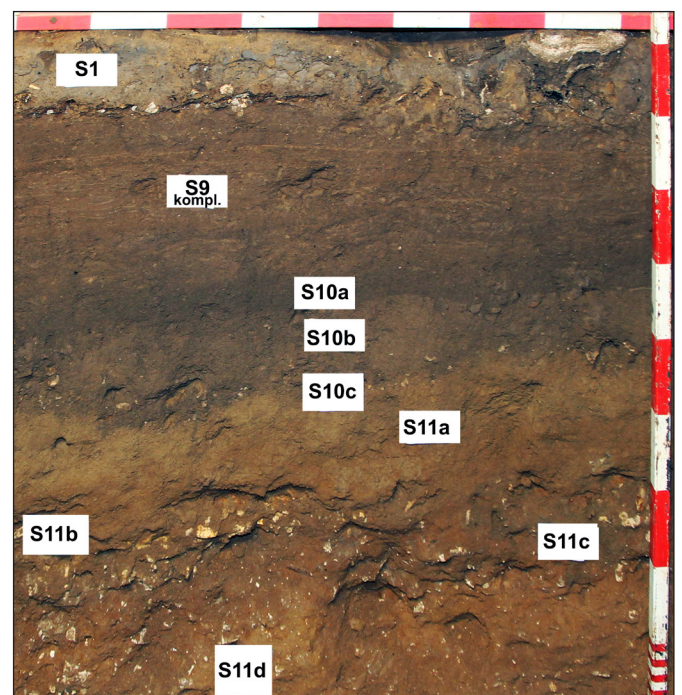


Fig. 8. South-western profile of square No. 6 in Trench III. (photo by the author, 2022)



*d* – light yellow-brown soil with a lot of limestone debris (>10 centimetres).

Considering both layer thickness and description, the layer sequence described above matches layers 2–8 recorded in Trench A in the Giant Hall in the 1950 excavation by Venkovits.

### ASSEMBLAGE AND FEATURES

The 647 recovered finds represent three archaeological periods, including currently undefined parts of the Paleolithic (based on the features and palaeontological finds it is most likely the Late Upper Paleolithic), the Middle Neolithic Bükk Culture (5200–4900 BC), and the Late Bronze/Early Iron Age Kyjatice Culture (1200–900 BC).

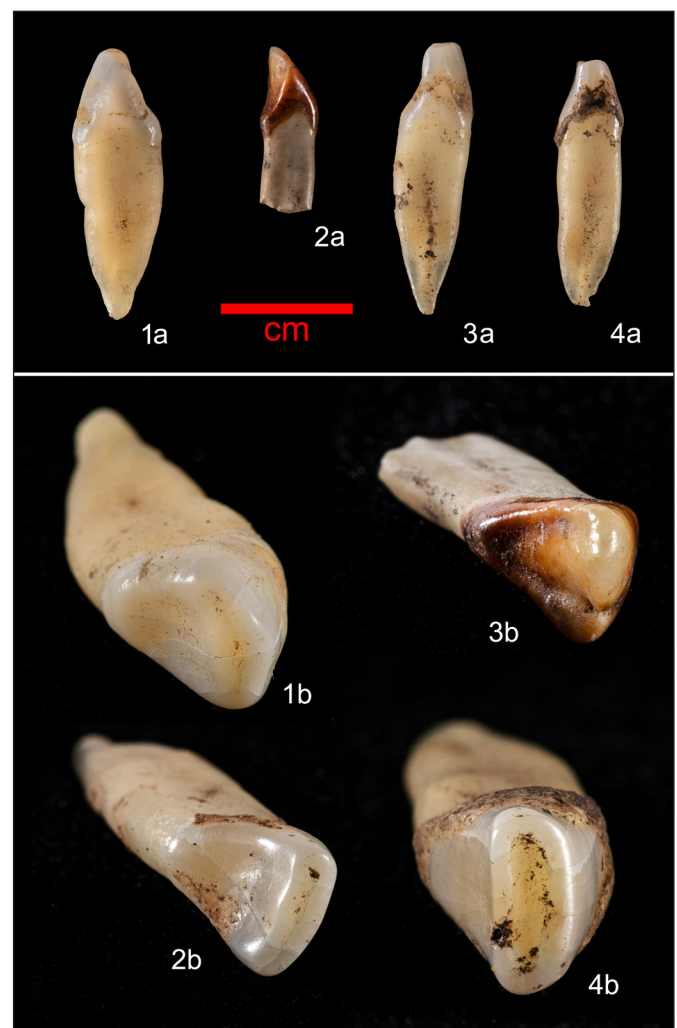
Trench II contained a total of 451 prehistoric finds (338 pottery fragments – *Fig. 9*, 102 pieces of bone and 9 teeth – *Fig. 10*, and two pierced amber beads – *Fig. 11*). Trench III could be dated to the late Palaeolithic and contained 182 finds (175 pieces of bone and 7 teeth). The cutting straight of the profiles of plunder pit XIV yielded eight pottery fragments and six pieces of bone. Neither trench contained any chipped stone tools.

A bird bone recovered from the surface of the uppermost, present-day layer is one of our most remarkable findings. This bone, presumably the radius of a large predatory bird, had both of its ends removed with even, perpendicular cuts. The cut marks are clean and the outer rims are worn, suggesting that the object had been used for something. A lack of additional holes, however, makes it difficult to determine whether it was originally a whistle or a flute (*Fig. 12*).

All three segments contained archaeological features that could be interpreted. The north-eastern (short), north-western and south-eastern (long) profiles of plunder pit XIV all feature a conspicuous ash layer of a large surface fireplace/fire pit (S7) and



*Fig. 9. Middle Neolithic (upper six) and Late Bronze Age (lower four) pottery from the 2021 and 2022 campaigns (photo by Benedek Baranczó, 2022)*



*Fig. 10. Animal and human teeth from Trench II (photo by Benedek Baranczó, 2022)*



Fig. 11. Amber bead from trench II  
(photo by Benedek Baranczó, 2022)

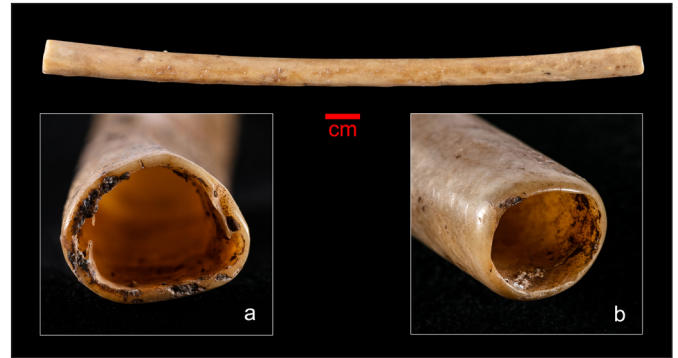


Fig. 12. Bird bone with use-wear marks  
and precisely cut ends from Trench III. Stray find  
(photo by Benedek Baranczó, 2022)

or stakeholes were positioned at equal distance (123–125 cm) in a concave curve towards northwest. Similar holes were also observed in squares 8 and 9; while the positioning of these was not as regular as of the previous ones, their presence corroborates to the hypothesis that all observed post- or stakeholes belonged to the same structure. Horizontal rodent tunnels of the same diameter, however, were observed in layer S9 of plunder pit XIV, warning us to be cautious in the future when excavating features in the site and creating structural reconstructions based on them. The shallow waste pit in square 4 (S17) included burnt and regular animal bones (including bats), Neolithic and Bronze Age pottery, as well as dripstone fragments and a currently undefined form of silt.

Besides the fire pit mentioned above, Trench II included another major feature: a circular heap of stones, partially covered in dripstone. Based on currently excavated surfaces, the fire pit is estimated to be of 3 x 2.2 m (on the north-south and east-west axes), while the pile has a diameter of 1.7 m. The function of the stone structure has remained unknown until the time of writing these lines; it is worth noting, however, that most prehistoric pottery fragments and the two amber beads were discovered in its vicinity. Inside the circular structure, a separate pile of stones was found covering prehistoric sherds and a *humerus* fragment of a cave bear.

Trench III only contained a single feature of archaeological interest (S10): a water-eroded layer containing bones of large mammals, pieces of charcoal, dripstone fragments, and small limestone gravel. Even though said layer was present in all squares of the trench, the archaeological and palaeontological finds concentrated in squares 6–8. Most animal bones were fragments – based on a preliminary macroscopic examination, most coming from deliberately shattered long bones – scattered in a northwest-southeast direction admixed with some fine (<5 mm) charcoal specs in squares 6 and 7 (Fig. 13). The colour of the sediment layer in the north-western third of square 7 and in square 8 was a lighter, and the condition of bone finds considerably poorer. Several remains became completely dissolved in the sediment, leaving only an imprint of their shape and (partial) colour. One of the most significant bone finds, the left mandible of a bear, could only be recovered after on-site stabilization and conservation (Fig. 14).

The sediment of layer S10 was greyish-dark brown, very sticky (due to a high clay content), and difficult to excavate. Groups of fine limestone gravel grains were observed at its bottom.

an accompanying feature (S8), along with a part of the underlying sediment layer (S9<sub>komplex</sub>) that became fired brick red (Fig. 7).

The grey, greyish-white and white charcoal and ash layer (S7) of plunder pit XIV was also clearly identified in squares 4–7 of Trench II (Fig. 5). Squares 3, 4 and 6 included three stakeholes (5–6 cm in diameter) and a small waste pit, all of which were already identifiable on the surface. The post-





*Fig. 13. Fragmented animal bones and charcoal remains (layers S10a–c) washed together in a shallow bed cut into the surface of layer S11 (photo by the author, 2021)*

Bones in relatively intact anatomical order came to light at a depth of 1 m in square 6 of Trench III (S11d) at the end of the excavation season. After minimal cleaning, the find was covered with geotextile and reburied. In order to unearth the complete skeleton, it is important to first remove and properly document the layers rich in findings and features above it.



*Fig. 14. On-site stabilisation and removal of a left side bear jaw in poor condition in layer S10, Trench III. Above: Edina Tóth and Előd Soós, conservators; left below: the author; right below: Edina Tóth (photos by the author and Előd Soós, 2022)*

## PRIMARY EVALUATION OF THE EXCAVATED FINDS AND FEATURES

The Neolithic and Bronze Age finds and the corresponding archaeological features discovered during the 2021–2022 campaign correspond to results of previous research, while the more thorough documentation helps to specify them and add details.

Even though layer S10 in Trench III is well-identifiable as a distinct stratigraphic unit on the 1950 profile drawings (Trench A, layer no. 3), the excavation of this horizon can be considered the most significant discovery of our current research. Previously, this layer was only described as “clay with 4–5% stone content and bear bones”, thus blending its horizontal layers, the current excavation suggests a more nuanced picture. Additional and potentially conclusive data will be provided by ongoing sedimentological and chemical analyses, the absolute dating of bone and charcoal samples, and the taphological analysis of bones. This horizon is assumed to be dated to the Late Paleolithic and contains the first clear (direct) evidence of humans inhabiting the site during the Ice Age. Arguments and evidence of human presence during the Pleistocene, stemming from previous research in Kőlyuk I, were indirect and often incomplete – just think about the three cave bear skulls arranged to face each other, a feature lacking a thorough on-site documentation (VÉRTES 1965, 179), or the single known stone tool from the site, that became dated to the Paleolithic despite its stratigraphic position being imprecise and questioned. Furthermore, the tool’s raw material, quartz-porphry (metariorite) might lead researchers to reach unfounded conclusions as finds from the same material were also used in the Neolithic and the Bronze Age.

Based on our observations, which also outline the future course of research, it is assumed that the Giant Hall of the cave was still accessible through the current entrance during the last cold period of the Ice Age (Younger Dryas, 12,900–11,700 BP; CARLSON 2013). Humans left behind fire pits and bone piles from their hunts on the floor of the cave hall (S11 a-b), which was thickly covered in limestone debris and sloped slightly (at approximately 1.7 degrees) toward north-northwest. After either the last cold period or the intense and long-term warming in the Early Holocene, or during the peak of the Holocene Climate Optimum at the latest (NIELSEN ET AL. 2018), the water level significantly increased in the karst system of the Bükk Mountains, and the cave became completely flooded for a long time.

Two phases can be distinguished in the rising of the karst water level during the Holocene warming period. In the first phase, a large body of water was present in the cave for only a short period, its level roughly matching the surface of layer S11. During this time, water coming from the deep as well as outside the cave flowed in thin, shallow in northern-north-western streams toward the deeper surfaces of the cave. The muddy, greyish-dark brown clay layer of S10, with limestone gravel grains arranged in clusters and stripes, partially arranged long bone fragments and small pieces of charcoal at the bottom can be dated to this period. The beds of these streams, often cutting into layer S11, contain finds possibly washed-together finds of several Pleistocene horizons from subsequent layers; however, as the final accumulation period of the surface of S11 cannot be older than the Last Glacial Maximum (26,500–19,000 BC; CLARK ET AL. 2009), archaeological and palaeontological finds can only be dated to the Upper instead of the Middle Paleolithic. These questions will hopefully be answered as soon as radiocarbon and palaeontological species identification analysis results become available. As for the species analysis, the identification of bear bones, particularly the jawbone from square 8 of Trench III, will be significant. Since it is known that cave bears only became extinct as late as 24,000 BC (BACA ET AL. 2016), it would provide a stable point of reference even if a data on absolute age is unavailable.

The second phase of the karst water level rising resulted in the long-term flooding of the cave, rendering it uninhabitable, as proven by the S9<sub>complex</sub> layer with a visible micro-stratification clearly marking a cyclical lake sedimentation. The alternating light and darker brown layers are merely 1–5 mm thick. If their change marks an annual cycle, the cave, based on the micro-layer sequence, had been flooded for 16–22 years. The S9<sub>complex</sub> layer did not contain any *in situ* finds or archaeological features. The presence of small mammals (skeletal remains and tunnels) can be attributed to a dry period later, akin to the appearance of prehistoric humans. Finds and features of people from ceramic periods all came to light in layers above the S9<sub>complex</sub>, or were sunken from them (e.g., the post- or stakeholes, the waste pit, and the round stone mound).

The preliminary results indicate the necessity of further research of the Kőlyuk I. at Parasznya with an international research group. If current scientific analyses prove that the Late Ice Age horizon with its bone fragments and charcoal finds can be linked to human activity, a real opportunity could open up for finding Paleolithic chipped stone tools, so far conspicuously absent from the record of the site. Being a vast spring cave that had been closed from humans for long are factors that demand a detailed examination of the local taphonomic processes as part of interpreting archaeological and palaeontological finds and features.

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## REFERENCES

- Baca, M., Popović, D., Stefaniak, K., Marciszak, A., Urbanowszki, M., Nadachowski, A. & Mackiewicz, P. (2016). Retreat and extinction of the Late Pleistocene cave bear (*Ursus spelaeus sensu lato*). *The Science of Nature* 103, 92. <https://doi.org/10.1007/s00114-016-1414-8>
- Carlson, A. E. (2013). The Younger Dryas Climate Event. In: Elias S. A. (ed.). *The Encyclopedia of Quaternary Science* 3, 126–134.
- Clark, P. Dyke, A., Shakun, J., Carlson, A., Clark, J., Wohlfarth, B., Mitrovica, J., Hostetler, S. & McCabe, A. (2009). The Last Glacial Maximum. *Science* 325:5941, 710–714. <https://doi.org/10.1126/science.1172873>
- Gyalog L. (szerk.) (2005). Magyarázó Magyarország fedett földtani térképéhez (az egységek rövid leírása). 1:100.000. A Magyar Állami Földtani Intézet Térképmagyarázói. Magyar Állami Földtani Intézet, Budapest.
- Mottl M. (1945). Jelentés az 1936/38. évi ásatások eredményéről és az Ösgerinces Osztály működéséről. *A Magyar kir. Földtani Intézet Évi Jelentései az 1936–1938. évekről* IV, 1513–1552.
- Nielsen, L., Adalgeirsdóttir, G., Gkinis, V., Nuterman, R. & Hvidberg, C. (2018). The effect of a Holocene climatic optimum on the evolution of the Greenland ice sheet during the last 10 kyr. *Journal of Glaciology* 64, 1–12. <https://doi.org/10.1017/jog.2018.40>
- Regős J. & Ringer Á. (2003): Kőlyuk. In: *Magyarország fokozottan védett barlangjai*. Mezőgazda Kiadó, Budapest. 173–174.
- Székely K. (szerk.) (2010). *Kadić Ottokár, a magyar barlangkutató atyja. Önéletrajz*. Magyar Állami Földtani Intézet, Budapest.
- Szolyák P. (2011). *Zárójelentés régészeti megfigyelésekről és geodéziai felmérésekről*. Herman Ottó Múzeum Régészeti Adattára, Miskolc.
- Venkovits I. (1951). *Jelentés a MÁFI Igazgatóságának. 1951. június 28.*
- Vértés L. (1965). *Az őskőkor és az átmeneti kőkor emlékei Magyarországon*. A Magyar Régészet Kézikönyve I. Akadémiai Kiadó, Budapest.