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Resumé

An isolated Upper (?) Paleolithic flake made from erratic flint was found at Suchohrdly near Znojmo. This artifact was found within a forested area.

VAVŘINEC (K. Ú. SUCHDOL V MORAVSKÉM KRASU, OKR. BLANSKO)

Jeskyně Pod hradem. Paleolit. Jeskyně. Systematický výzkum.

Pod Hradem cave is situated in the Moravian Karst region of southern Moravia, approximately 21 km NNE of Brno and 6 km ENE of Blansko in a straight line. The cave is located in a valley wall of the Pustý žleb canyon approximately 60 metres above the bottom of the canyon. Pod Hradem cave is a horizontal solution tube which developed along a faultline in Devonian limestone (Dvořák 1965). The Punkva River emerges from its subterranean course a few hundred metres from the cave and the world-renowned Macocha Abyss is situated 500 metres in a north-easterly direction. Blanský zámek is situated on a cliff top just above the cave. Kůlna cave with several cultural layers and yielding many thousands of stone artefacts, faunal remains, Neanderthal skeletal remains and sedimentary deposits 15 metres deep, is situated approximately 4 kilometres to the NNE of Pod Hradem cave.

History of excavation and research

Archaeological excavations have been conducted at Pod Hradem cave since the end of the 19th century. Jindřich Wankel conducted excavations at Pod hradem cave in the late 19th century and apart from cave bear bones, he also discovered a complete human skeleton in the same layer as the cave bear bones, which he claimed to be a Medieval burial (Absolon 1970:285). No further details about this find are available. Jan Knies conducted limited excavations in the cave in 1890, 1896, 1897 and 1898 and R. Trampler joined the excavation in 1897 (Trampler 1898, Knies 1901). Both of these excavators subsequently published plans and descriptions of their excavations (Trampler 1898, Knies 1901). Both excavators reported finding animal bones and Trampler also reported a 'cultural layer' at a depth of 1.3 - 1.5 metres. Neither of these authors reported finding any artefacts. Knies' interpretations concluded that most of the material (sediment and animal bones) was deposited in the cave through its chimneys.

Apparently the first archaeological find in Pod Hradem cave was in 1937 when J. Simon found a 'red Jasper point' (Skutil 1946). The raw material of this artefact was probably radiolarite. No other information is provided about this find and this specimen now appears to be lost. A major excavation of this cave in 1956-58 by Rudolf Musil and Karel Valoch uncovered an area of 90 m² (Valoch 1965). The excavation profile extended for 27 metres from the cave entrance to one of the rear walls of the cave and concentrated on the left side of the cave. The depth of the excavation varied and in one part

it reached 7 metres. A small number of artefacts were found during this excavation. Nerudová et al. (2012) lists 21 lithic artefacts and one bone flake. Of these artefacts, 5 are reported to be Gravettian, 11 Aurignacian, 2 Szeletian and the remaining 4 have no cultural classification.

In the early 1990s, Robert Gargett conducted a detailed study of bone distribution in Pod Hradem cave, concluding that many of the bear bones were scavenged predominantly by wolves, but also by hyenas. He chose a sample of bones from Stratum 17, where he found nonrandomly patterned distributions, attributing this to repetitive behaviours of carnivores that scavenged bear carcasses and also probably to the preferential use of particular parts of the cave by denning female bears (Gargett 1996).

Several radiocarbon dates of a 'black humic layer' were obtained in 1959 leading to the definition of 'Pod Hradem Interstadial'. Several more radiocarbon determinations were obtained in 2008 and 2010 on cave bear bones, however chronostratigraphic interpretations based on these age estimates are difficult (see Neruda & Nerudová 2011; Nerudová et al. 2012).

The 2011 excavation and methods used

New excavations were conducted in Pod Hradem cave in May, June and July 2011 by the Department of Anthropology, Masaryk University. These excavations were limited in scope; two 1x1 metre test pits were dug on the right side of the cave, approximately 8-10 metres from the cave entrance. The main research questions of this project concern the local palaeoenvironments and palaeoclimates during the times when the sedimentary layers in the cave were deposited.

The 2011 excavation at Pod Hradem cave combines precise excavation methods with meticulous recovery techniques, geoarchaeological studies, absolute dating and specific analyses of different types of excavated material, which are often used as proxy indicators of palaeoenvironments and/or palaeoclimates. Excavation was conducted systematically in regular excavation units (mean thickness of each excavation unit was approximately 10 cm) and wet-sieving and flotation of all excavated sediment. It was not possible to conduct the wet-sieving and flotation tasks near the site due to space constraints and terrain. Transporting the excavated sediment from the site to the place of processing proved to be a logistically very difficult task, partly due to the steep, rugged terrain surrounding the cave. A two-stage cable car was built in order to transport all excavated sediment from the site to the bottom of the canyon where the bags were loaded into a vehicle and transported to Skalní Mlýn hamlet several kilometres from the site. The wet-sieving and flotation tasks were carried out at the Skalní Mlýn base camp. The base camp in Skalní Mlýn included a house, a large barn (with ample space for all post-excavation activities including wet-sieving, drying of samples, storage space, etc.) and river access, where the flotation and wet-sieving were carried out. These facilities were made available for this project by the management of CHKO. Their kindness

and generosity greatly contributed to the success of this project.

During the 2011 excavation, five knapped stone artefacts were discovered (four of them during wet-sieving). They include a retouched blade manufactured from Moravian Jurassic chert, a spongolite leafpoint, a radiolarite leafpoint, a retouched radiolarite endscraper and a small flake fragment from erratic flint (identified by A. Přichystal). A small cylindrical bone bead with two sets of incisions made with a stone tool was also discovered. This object was most likely a decoration of some kind. Cultural classification of these objects is not available at this stage, but an attempt will be made after the results of absolute dating are available. Some of the excavated sediment has not been wet-sieved yet and it is possible that more artefacts will be found when this is completed. Several 13–14th century ceramic fragments and 19–20th century metal objects were also found in Layer 1 (identified by J. Doležel).

The two 1x1 metre test pits have so far been excavated to a depth of just over 200 centimetres. At least 12 layers have been observed in the excavated profiles. All layer numbers presented here are working labels only and it is possible that these will change after more detailed analyses are carried out. Layer 1 is a thin, dark-brown layer. Layer 2 is a thin, discontinuous layer of a grey matter resembling sinter. The next 10 layers include sediments of various hues of brown. Each of these 10 layers (currently designated as layers 3–12) contain limestone detrital pieces of various sizes. All of the layers seemed to have been laid down in a fairly regular pattern, more or less horizontally, with thicknesses ranging from approximately 13 to 26 centimetres, with a mean thickness of approximately 20 cm. In many of the layers, the detrital material is poorly sorted and ranges from highly angular, sub-rounded, to rounded. One possible interpretation is that different geological processes were acting on the detrital material and the detritic materials of different origins later became mixed in the same stratigraphic horizons. All of the sediments tend to be loose, unconsolidated and relatively easy to excavate. Black patches of (probably) manganese were observed and documented in some of the layers. Layer 10 is relatively rich in charcoal and burnt bones, which may be the remains of a dispersed hearth. Many charcoal samples were collected from Layer 10 during the excavation and more were collected during flotation. This layer was one of the thickest layers (approx. 26 cm) in the profile. Layers 3–12 are considered to be of Pleistocene age since they all contain bones of cave bear (*Ursus spelaeus*) and other locally extinct Pleistocene fauna such as reindeer, polar fox and locally extinct ungulates. Detailed analyses of the faunal material have not been completed and the results will be reported in a later publication. A comprehensive fauna list for Pod Hradem cave published in Musil (1965:85) lists almost 50 species identified at Pod Hradem cave, including large mammals, small mammals, birds and rodents. This list also includes faunal material from Trampler's and Knies' 19th century excavations.

Samples for a number of different studies and analyses were collected during and after the excavation. The proxies that will be used to reconstruct the prehistoric environments and climates include palaeobotanical analyses (identification of pollen, charcoal, phytoliths), palaeozoological analyses (microfauna, megafauna and stable isotope analyses of their bones), as well as geoarchaeological analyses (micromorphology, bulk sediment analyses and magnetic susceptibility). These empirical databases will then be compiled into reconstructions of palaeoclimates and palaeoenvironments.

Many animal bones and teeth were also recovered during the 2011 excavation. A few of these were selected for Electron Spin Resonance/U-series dating and Accelerator Mass Spectrometry (AMS) dating and are currently being analysed at the Research School of Earth Sciences, Australian National University, Canberra. These dating techniques are being applied to the same samples; one reason is to test the efficacy of these methods. In July 2011, sediment samples for Optically Stimulated Luminescence (OSL) dating were also collected by Professor Nigel Spooner and some of these samples are currently being analysed at the University of Adelaide, South Australia. Analyses of two of the OSL samples collected at Pod Hradem cave have so far shown that the quartz grain fractions typically utilized in OSL dating are not present in the samples tested, so non-standard techniques are being trialled in an attempt to date smaller grains.

Conclusion

The published information about Pod Hradem cave and the preliminary observations from the 2011 excavation are consistent with the conclusion that Pod Hradem cave can be characterised as a mixed human-carnivore site. Human visits to the cave appear to have been infrequent (except maybe for layer 10 which contains a relatively large amount of charcoal. It is possible that this charcoal represents the remains of a dispersed hearth). It is likely that this charcoal rich layer represents a different event to the hearth reported by Valoch (1965) in quadrants 38-45 at a depth of 80 cm (Valoch 1965). It is interesting to note that the raw materials of most of the recovered lithic artefacts are long-distance imports. In this sense, the human use of this cave appears very different to the nearby Kůlna cave.

It is hoped that the analyses being presently carried out, some of which are often used as proxy indicators for palaeoenvironments and palaeoclimates, will allow reconstructions of the local palaeoenvironments and palaeoclimates during the Late Pleistocene period. Three different dating techniques are being used to date the stratigraphic profile at Pod Hradem cave. This is because the key to establishing a reliable chronology at a particular site lies in the application of as many dating techniques as possible (e.g. Abeyratne et al. 1997; Thorne et al. 1999).

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Ladislav Nejman

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Resumé

Systematický výzkum jeskyně Pod hradem v Pustém žlebu v Moravském krasu odkryl stratigrafický profil s nejméně deseti vrstvami náležícími do období posledního glaciálu. Část profilu spadá do období přelomu středního a mladého paleolitu. Hlavním cílem tohoto výzkumu je zjištění životního prostředí a klimatu této oblasti v období pozdního pleistocénu. Proto byly odebrány vzorky na různé přírodní analýzy včetně pylových zrn, fytolitů, uhlíků a mikrofauny. Geoarcheologické analýzy, zejména mikromorfologie, umožní poznání geneze sedimentů. Stratigrafický profil bude datován několika metodami, konkrétně AMS (Accelerator Mass Spectrometry), OSL (Optically Stimulated Luminescence), uranium-series a ESR (electron spin resonance). Výzkumem byl získán taktéž bohatý soubor osteologického materiálu, ve většině případů ale pouze fragmentů kostí. Vykopané sedimenty byly transportovány z jeskyně do Skalního mlýna, kde byly floatovány a proplaveny přes 2 mm síta. Na vzorky pro mikrofaunu bylo použito 0,7 mm síto a na flotování 0,25 mm síto. Výzkumem byl získán menší počet kamenných artefaktů z různých surovin včetně importovaných ze vzdálených zdrojů. Taktéž byl nalezen miniaturní kostěný korálek s dvěma sériemi příčných zářezů. Předbežné výsledky potvrzují, že zatímco jeskyni poměrně intenzivně využívali jeskynní medvědi, lidé ji navštěvovali jen velmi zřídka.

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ZBOROVICE (OKR. KROMĚŘÍŽ)

„Kóta 381,0“. Mladý paleolit. Ojedinelé nálezy. Povrchový průzkum.

V roce 2008 byla prostřednictvím povrchové prospekce Z. Schenka a M. Sedláčkové objevena dosud neznámá lokalita na vrcholu táhlého zaobleného hřbetu severně od obce Zborovice, poblíž jižní hranice katastrálního území obce Věžky. Několikaletý průzkum paleolitického osídlení zaměřený na mikroregion Věžeckého potoka v prostoru Bučovické pahorkatiny (Pělučová Vitošová at al. 2008a) se postupně rozšířil do východní části členité Orlovické vrchoviny situované ve střední části Litenčické pahorkatiny. Nálezy patinované štípané kamenné industrie pocházejí zejména z okolí kóty 381,0 m n.m., která je situována 800 m západně od nejvyššího bodu Medlovské vrchoviny, kterým je zalesněná poloha Troják s nadmořskou výškou 396 m. Geologický podklad lokality je tvořen polymiktními štěrky karpátu terciárního stáří překrytými v pleistocénu sprašemi a sprašovými hlínami (Demek 1987). Geografické souřadnice nálezové polohy mají hodnotu 49°16'3.374"N, 17°17'4.270"E (WGS-84). Soubor čítá pouze 3 artefakty. I přes opakovaně realizované povrchové prospekce v následujících letech se