

The Re-Excavations in Križna jama in 1999 and 2001 (Slovenia)

by

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Zusammenfassung

Zwei nur einwöchige Grabungen wurden durchgeführt, um zusätzliche Informationen über die Stratigraphie der Fossil führenden Sedimente zu erlangen, aber auch um Proben für radiometrische Altersdatierungen zu entnehmen. Im ersten Jahr (1999) gelang diese im Bereich der „Bäregrotte“, obwohl hier kaum noch ungestörte Sedimente anzutreffen sind. Bei der zweiten Aktion im Jahr 2001 konnten im Grabungsbereich „Kittls Bärenhöhle“ fossilreiche Fundlagen mit mehreren Höhlenbärenschädeln ausgegraben werden. Das hier geborgene Schädel- und Gebiss-Material bildet die Grundlage für die neue paläontologische Bearbeitung der Ursidenreste.

Schlüsselwörter: Križna jama, Slowenien, Beschreibung der Nachgrabungen, 1999, 2001

Abstract

Two excavations with durations of one week each were carried out in Križna jama to obtain additional information on stratigraphy of the fossil-bearing sediments as well as to obtain material for radiometric dating. In 1999 this goal was achieved in the “Bäregrotte” despite the fact that there is almost no undisturbed sediment left. Later, in 2001, the excavation took place in “Kittl’s Bärenhöhle” and fossil-bearing layers with several crania were found.

The latter material consisted mainly of crania and other remains of dentition and forms the basis for the paleontological re-examination.

Keywords: Križna jama, Slovenia, description of re-excavations, 1999, 2001

Izvleček

Dvoje enotedenskih izkopavanj v Križni jami je bilo namenjenih zbiranju novih podatkov o stratigrafiji sedimentov bogatih s fosili in izbiri materiala za radiometrično določevanje absolutne starosti. V letu 1999 smo zastavljeni cilj dosegli tudi v Medvedjem rovu, čeprav v njem skoraj ni več ohranjenih prvotnih sedimentov. Kasneje, leta 2001, smo izkopavali v Kittlovi dvorani in našli plasti bogate s fosili, še posebej z lobanjami. Ta material, ki sestoji v glavnem iz lobanj in zob je osnova novih paleontoloških raziskav, predstavljenih v tej publikaciji.

Ključne besede: Križna jama, Slovenija, 1999, 2001

1. Preamble

In 1996 a cooperation between the University of Ljubljana, the University of Vienna as well as of the Austrian Academy of Sciences was established, which lasted for several years. Its main aim was to re-examine the results obtained several decennials before by means of “more modern” methods with a special focus on radiometric dating of fossils and artifacts, as well as on the paleobiological re-examination of the fossil remains. The cooperation was aimed at an up-to-date analysis of the material left and an update of the knowledge of cave bears in Slovenia. After the successful excavations in Potočka zijalka in the years 1997–2000, see PACHER et al. (2004) a similar project was aimed at Križna jama.

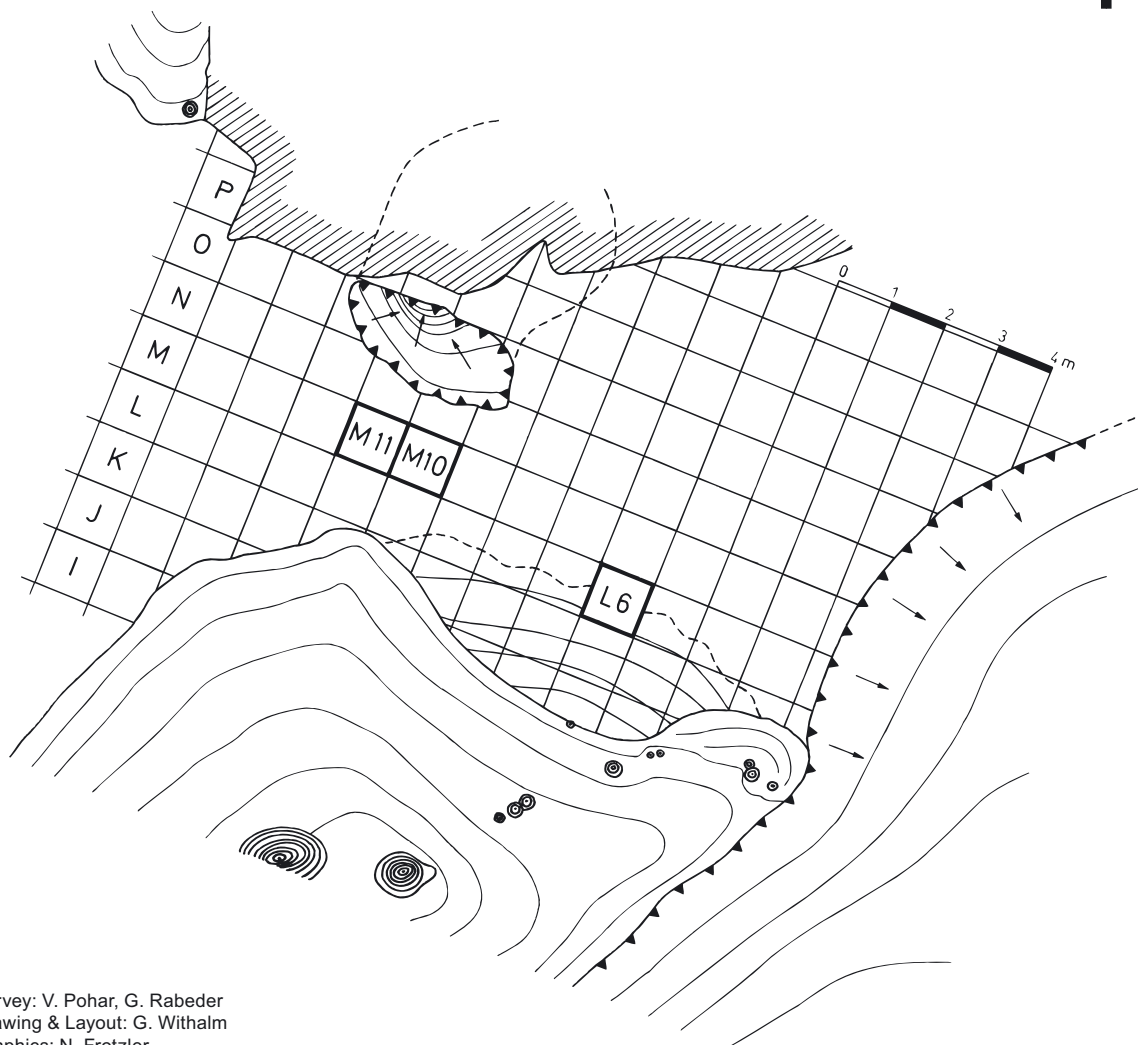
It was Ferdinand von Hochstetter to be the first who carried out excavations in Križna jama in 1878 and 1879. His excavation areas were situated in two parts of

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Križna jama

Hauers Fundplatz



Survey: V. Pohar, G. Rabeder
Drawing & Layout: G. Withalm
Graphics: N. Frotzler

Figure 1: Schematic drawing of the excavation area (»Hauers Fundplatz«) near the »Monumentenhügel« (monument hill), compare to POHAR (this volume: 4, Fig. 3) and Plate 6.

the cave which were relatively far apart from each other, see POHAR (this volume: 4, Fig. 3): in the "Bärogrotte", a corridor branching off towards SW at the "See". It contains partly steep passages, leading us to "Hochstetters Schatzkammer", a big chamber filled with lots of flowstones, which is divided into two different excavation areas: "Bärenwirthshaus" and "Monumentenhügel". According to HOCHSTETTER (1881) and the still visible traces, these old excavation areas are highlighted in POHAR (this volume: 4, Fig. 3). The second excavation area of Hochstetter was rich in fossils too. It is situated at the very end of the first chamber on the right side after the cave entrance, i.e. it branches off towards West. Due to the fact that it was mainly Erich Kittl who excavated in this place in 1879 this part is called "Kittl's Bärenhöhle".

In an excavation area of not more than 8 m² eight big skulls of cave bears were unearthed. As indicated before, the two excavation campaigns in 1999 and 2001 were aimed at a modern view on stratigraphy, to obtain sediment profiles and material for radiocarbon dating as well as for paleo-DNA-analyses.

2. The Re-Excavation in 1999

This excavation campaign took place from October 4th – 8th 1999 and was carried out under the direction of Prof. Dr. Vida Pohar (University of Ljubljana, Slovenia) and Prof. Dr. Gernot Rabeder (University of Vienna and Austrian Academy of Sciences, Austria).

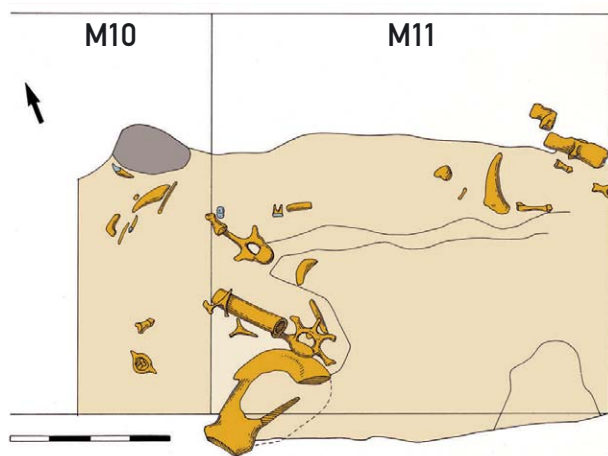


Figure 2: Finding situation near "Monumentenhügel" (monument hill).

Participants: Matej Križnar, Mladen Stefanovic, Mag. Margit Ströbitzer and Mag. Gerhard Withalm. This campaign took place in "Hochstetters Schatzkammer". In the area "Bärenwirthshaus" a profile was dug and a few fossil remains of cave bear were unearthed. This place was not rich in fossils.

The other area, "Monumentenhügel", was covered with an intact flowstone layer. Due to this fact excavation area 1 was established there, see Fig. 2. The overlying thin flowstone layer was removed in three square meters and the underlying fossils were unearthed. The squares M11 and M12

showed a layer of fossil remains of approximately 40 findings (bones, teeth and their fragments). Underneath this layer there were some more layers of flowstone and sterile loam. Due to this fact the excavation was ended. Bone samples were taken for the purpose of radiometric dating. Three of them showed ages between 44 and 45 ka BP, compare to RABEDER, WITHALM & WILD, this volume.

3. The Re-Excavation in 2001

This campaign was carried out between October, 9th–15th 2001 and was directed by Prof. Dr. Vida Pohar (University of Ljubljana, Slovenia) and Prof. Dr. Gernot Rabeder (University of Vienna and Austrian Academy of Sciences, Austria).

Participants: Eva Edelmann, Susanna Fitz, Miha Krofl, Johannes Loidl, Harald Pimminger, Agni Prijatelj, Dr. Karl Rauscher, Matija Turk, Mag. Gerhard Withalm.

The main focus of this excavation was to find fossil bearing sediments in the part called "Kittl's Bärenhöhle" which would have enabled us to carry out an excavation campaign in this part, which was named after Erich Kittl, an assistant to Ferdinand von Hochstetter. But in the time between 1999 and 2001 it became evident that the fossil material excavated in 1878 and 1879 was partly missing. The material is stored in the Museum of Natural History in Vienna and there still is a bigger number of postcranial elements, but there are no more crania and mandibles available, despite the fact that Hochstetter listed eight

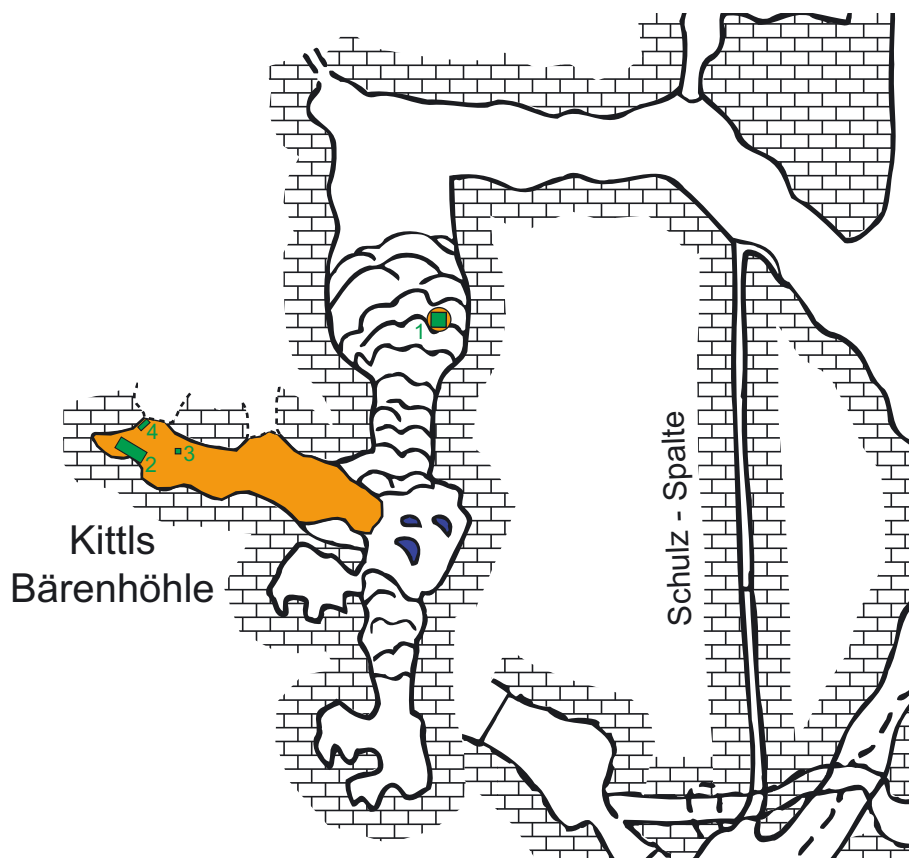


Figure 3: Enlarged detail of the ground map in POHAR, this volume: 4, Fig. 3. The area of »Kittl's Bärenhöhle« with a record of excavation areas 1 to 4, see also the upper part of Plate 4 and the lower ones of Plate 5 + 7.



Figure 4: Alignment of cave bear bones in square E4 (Kittl's Bärenhöhle, Križna jama, Slovenia).



Figure 5: Alignment of cave bear bones in square F5 (Kittl's Bärenhöhle, Križna jama, Slovenia).



Figure 6: Sedimentary profile at the border between squares H4 and I4 (Kittl's Bärenhöhle, Križna jama, Slovenia).



Figure 7: Deposition of skulls in excavation area 2:4 (Kittl's Bärenhöhle, Križna jama, Slovenia).



Figure 8: Layer full of skulls in excavation area 2:4

complete and 23 fragmented crania and not less than 90 mandibles. For a taxonomic re-examination of the cave bears from Križna jama a representative material of teeth and crania would have been necessary. Two out of four excavation areas in “Kittl’s Bärenhöhle”, no. 1 and 3, were not successful. Excavation area 1 showed a layer of loam with almost no fossils underneath a thick layer of moon-milk, in excavation area 3 the sediments were disturbed by former excavations. But in the western part of “Kittl’s Bärenhöhle” there were undisturbed sediments which were rich in fossils. Excavation area 2 was installed and 7 m² were opened for excavation, see Fig. 4: excavation area 2. The fossil bearing layer is a dark-brown loam, containing little stones aside with high numbers of bone

fragments, metapodial bones, autopodial elements and isolated teeth as well, compare to profile, Fig. 6. All in all more than 200 premolars and molars were unearthed. The position of the long bones leads to the conclusion that this sediment was transported by water, at least for a small distance. This is in accordance with the sedimentological results published by KRALJ (this volume).

Close to excavation area 2 there is a shaft, which is partly filled with water. On its western margin there was place rich in fossils, preferably long bones and crania, which were hidden by blocks of stone and gravel. This is excavation area 4, see Fig. 7–8. In this place there were three big cave bear skulls, two of them were severely damaged on the dorsal side and it is very likely that these dam-

ages are due to cavers because the skulls were covered only by a few centimeters of sediment. Moreover there were a mandible, a pelvis, several long bones and a few vertebrae. In excavation area 2 a profile was dug unto the solid rock of the cave floor, see Fig. 6. The fossil bearing layer is a greyish brown loam mixed with smaller stones and charcoal remains. Also Hochstetter saw these findings and wrote in his publication (HOCHSTETTER, 1881:307) about the presence of “Holzkohle” (charcoal) and “verkohlten Körnern von Weizen” (burned grains of wheat). The latter were found in a flowstone layer which was missing in excavation area 2. The radiocarbon dating of this charcoal resulted in an age of 460 a BP, this equals calibrated age between 1210 and 1300 AD. This shows that flooding events and transport by water are phenomena that influence the highest part of the Križna jama even in historic times. The fossil bearing layer itself has a thickness between 40 and 50 cm with an underlying layer of sterile loam of similar thickness. Its brown colour becomes lighter and lighter with increasing depth. The whole sediment pile is stacked on a more or less horizontal floor of solid rock. Both re-excavations enabled us to find answers for the most essential questions on the situation of findings, stratigraphy and chronology as well. Moreover, the excavation in “Kittl’s Bärenhöhle” brought a multitude of newly unearthed material of

teeth and crania, giving us the possibility to resolve the taxonomic position of the cave bear from Križna jama.

4. References

- HOCHSTETTER, F. von, 1881. Die Kreuzberghöhle bei Laas in Krain. — Denkschriften d. mathem.-naturw. Kl. Akad. d. Wissensch., Wien, 43:1–18, Wien.
- KRALJ, P., this volume. Sedimentary Deposits in Kittl’s Bear Gallery, in Križna Jama Cave (Slovenia). — Mitt. Komm. Quartärforsch. Österr. Akad. Wiss., 21:35–43, Wien.
- PACHER, M., POHAR, V. & RABEDER, G. (eds.), 2004. Potočka zijalka. Palaeontological and archeological results of the campaigns 1997–2000. — Mitt. Komm. Quartärforsch. Österr. Akad. Wiss., 13:1–245, Wien.
- POHAR, V., this volume. Križna jama: Description and History of Research. — Mitt. Komm. Quartärforsch. Österr. Akad. Wiss., 21:1–5, Wien.
- RABEDER, G., WITHALM, G. & WILD, E., this volume. Stratigraphy and Chronology of the Fossiliferous Layers from Križna jama (Slovenia). — Mitt. Komm. Quartärforsch. Österr. Akad. Wiss., 21:131–136, Wien.

