

Križna jama: Description and History of Research

by

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Zusammenfassung

Die Križna jama ist seit dem Jahr 1832 bekannt. Eine erste Beschreibung der damals bekannten Teile der Höhle und ihrer Höhlenbären-Fundstellen erfolgte einige Jahre später und beinhaltete auch einen skizzenhaften Plan. Es war an Ferdinand von Hochstetter vom Naturhistorischen Museum Wien, dem ehemaligen k.k. Hof-Naturalienkabinett, die ersten Ausgrabungen in der Križna jama in den Jahren 1878 und 1879 durchzuführen. Es dauerte in etwa 50 weitere Jahre bis die Höhle von Mitgliedern des Höhlenforscher-Verbandes in Laibach komplett vermessen wurde. Die neusten Ergebnisse zu Geologie und den allochthonen Höhlensedimenten wurde in den Jahren 1968 bis 1971 hinzugefügt. Erst jüngst, es war im Jahre 1991, wurde von lokalen Höhlenforschern die so genannte „Križna jama 2“ nach dem Siphon entdeckt. Sie wurde bis heute nicht der Öffentlichkeit zugänglich gemacht.

Schlüsselwörter: Križna jama, Slowenien, Geographie, Topographie, Forschungsgeschichte

Summary

Križna jama is known since 1832. A first description of the surveyed parts of the cave and its cave bear sites was published several years later, along with a sketchy map. It was upon Ferdinand von Hochstetter from the Museum of Natural History in Vienna to conduct the very first excavations in Križna jama in the years 1878 and 1879. It took approximately 50 more years until the cave was completely surveyed by members of the Society for Cave Exploration (in Ljubljana) and later on – in the years from 1968 until 1971 – the latest results concerning the geology of its surroundings as well as the description of the

allochthonous sediments, their origin and distribution were added. Recently, it was in 1991, the latest part of the cave, the so called “Križna jama 2”, was discovered by local people behind the siphon, see the complete map, p. 137. It is still not open to the public.

Keywords: Križna jama, Slovenia, geography, topography, history of excavations

Izvleček

Križna jama pri Ložu je ena najlepših jam klasičnega krasa v Sloveniji. Posebnost jame je več kot 40 podzemnih jezer s sigovimi pregradami preko katerih se preliwa kristalno čista voda. Pregrade še vedno rastejo in z njimi vodna gladina. Narasla voda je zalila na tleh stoječe kapnike, kar daje vtis, da rastejo iz vode. Poleg številnih vodnih rogov, različno velikih podornih dvoran, ki jih krasijo razkošno oblikovane kapniške tvorbe, so tudi suhi rovi. Med njimi sta najpomembnejša Medvedji in Kittlov oziroma Cerarjev rov, saj so v njih odkrili bogata nahajališča kosti, zob in obrusov jamskega medveda. Križna jama je znana od leta 1832, nekaj let kasneje je izšel opis preiskanih rogov, nahajališča medvedjih kosti in približni načrt jame. V letih 1878 in 1879 je v Medvedjem rovu načrtno izkopaval Hochstetter. Skoraj pol stoletja kasneje so člani Društva za raziskovanje podzemskih jam (v Ljubljani) skoraj v celoti raziskali in opisali Križno jamo. V letih 1968 do 1971 so omenjenim raziskavam dodali še izsledke geoloških raziskav okolice jame in opis alohtonih jamskih sedimentov, njihov izvor in razširjenost. V novejšem času (1991 leta) so domačini za sifonom v Kittlovem rovu odkrili »Križno jamo 2«, ki pa je zaenkrat še zaprta za obisk.

Ključne besede: Križna jama, Slovenija, geografski in topografski podatki, zgodovina raziskav

1. Description

The Križna jama is situated in the southern part of Slovenia, in a position on the feeder side (SE) of the Cerknjško

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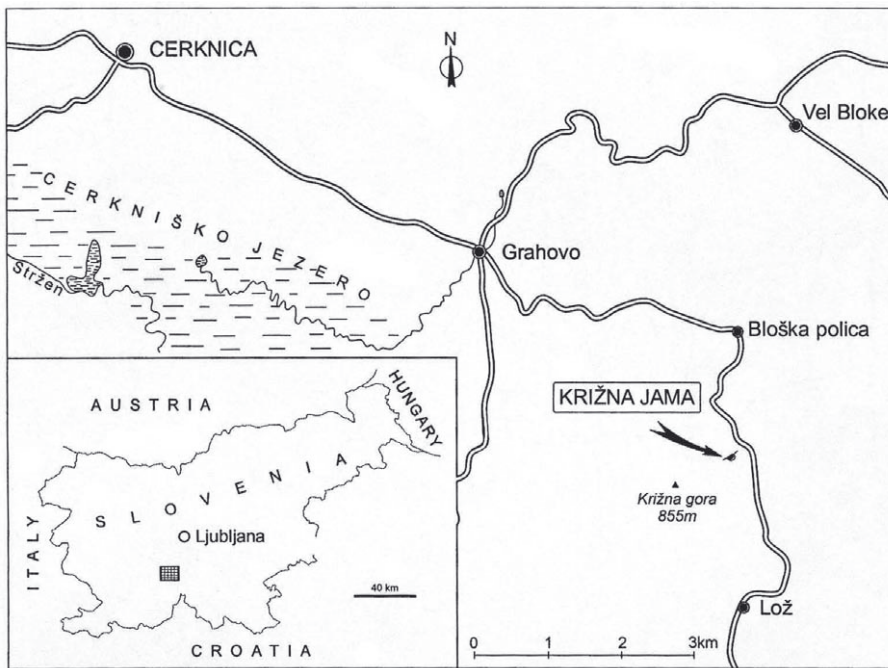


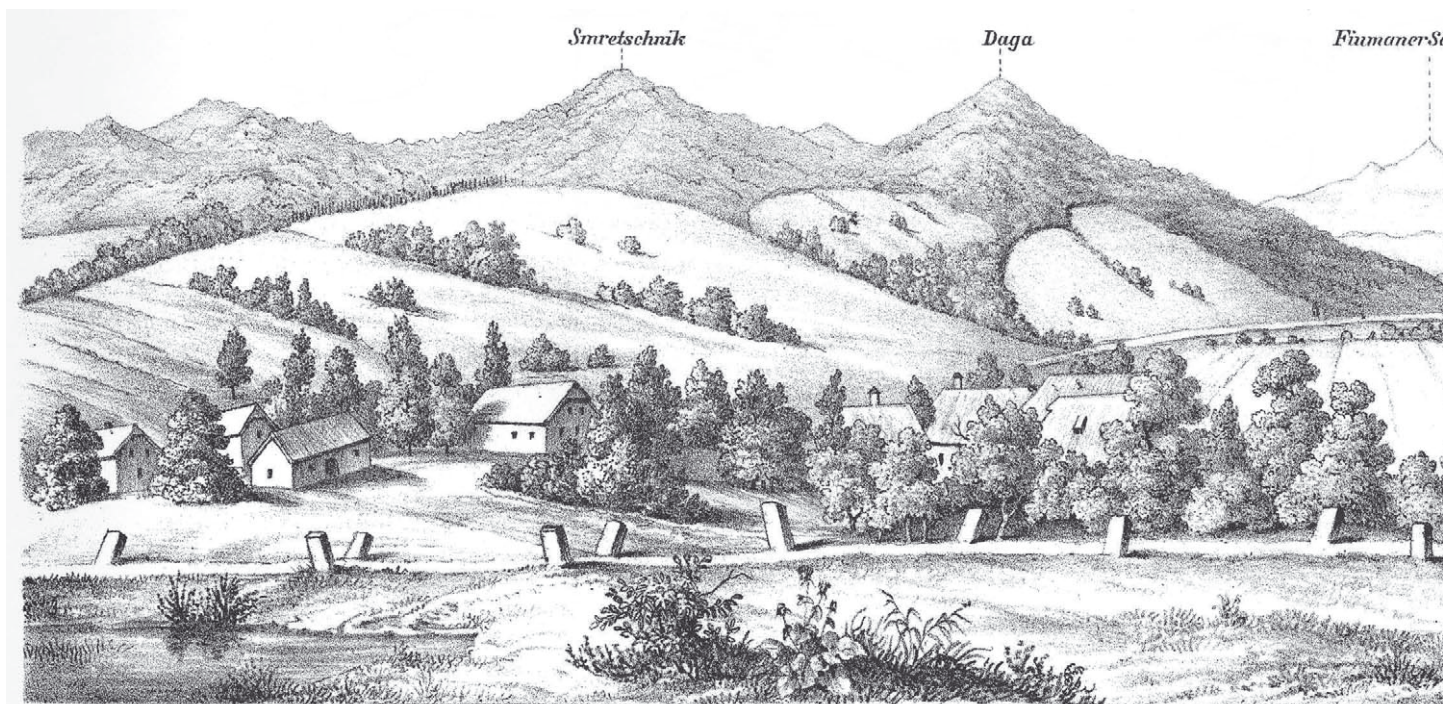
Figure 1: Geographic position of the Križna jama cave.

jezero, a temporary lake in the vicinity of the cave, and the transition from Bloke plateau to Cerknisko polje, see Fig. 1. The precipitation from Bloke plateau is collected in the cave and is flowing subsurface towards the eastern margin of Cerknisko jezero. By means of colorizing the water the cavers discovered that a part of the water from Bloke plateau does not go to Križna jama but, instead of this to a rivulet in Cerknisko dolina, called Žirovniščica, which flows into the rivulet on the Loško polje plain. Križna jama is known since the beginning of the 19th

century, amongst other reasons also for its richness in cave bear remains. Despite the huge amount of cave bear bones it was impossible for all the collectors and scientists to discover any evidence for the presence of the glacial men.

2. History of Research

It is now 160 years ago that the former forest official J. CERAR (ZÖRRER, 1838) published a first map of Križna



ANSICHT DER UMGEBUNG DES
von der Strasse gegen Oblak, oberhalb Bloškapoliza, (der letzter)

jama, a description of the cave entrance and of a part of a passage containing cave bear remains, emended by the sites where the teeth and bones were found. At first he discovered the bones close to the cave entrance and a little later he discovered the cave bear remains in the so called "Bear Cave". Only a few years after the discoveries of Cerar, it was in 1847, an article on the cave bears from Križna jama was published by A. Škofiz in no. 51 of a journal called "Illyrisches Blatt". In 1854 A. SCHMIDL described on p. 284 of his publication the already known bear cave in Križna jama more thoroughly and added several newly discovered sites with bear remains. Both of them, J. Cerar and A. Schmidl, described the Bear Cave in the dry part of Križna jama in detail. The latter part was excavated by F. von HOCHSTETTER (1881) in the years 1878 and 1879. An impression what the area around Križna jama looked like is given in Fig. 2. Hochstetter and his workers (see the upper part of Plate 5) collected approximately 4600 cave bear remains (BOHINEC, 1963) representing an MNI of more than 100 individuals. From these bones two skeletons were reconstructed which are on display in the Museum of Natural History in Vienna since that time.

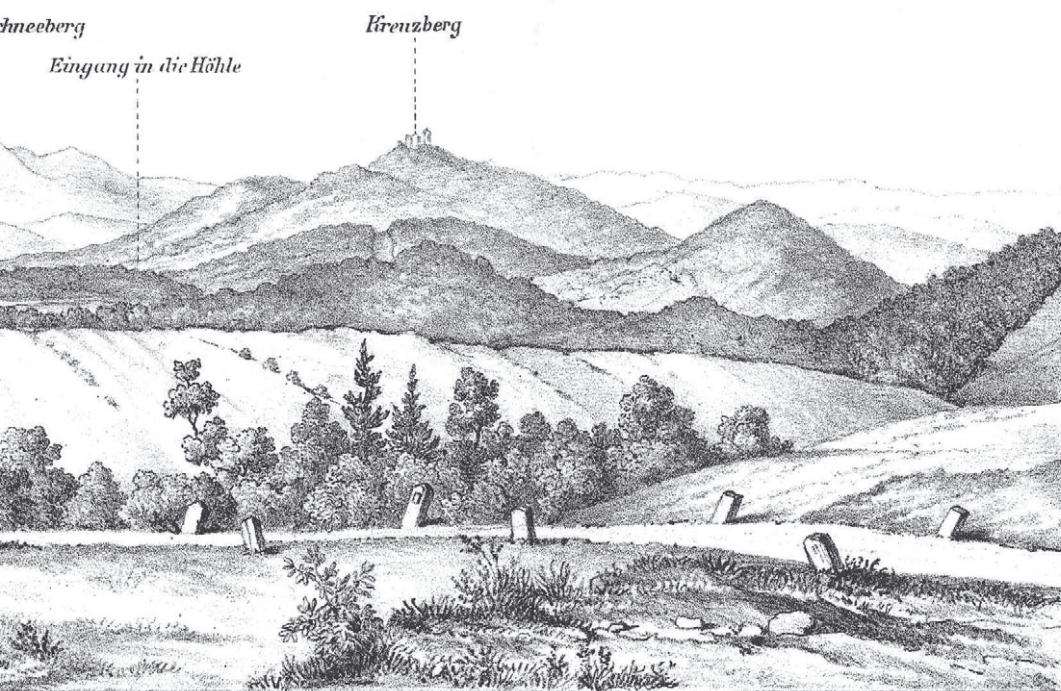
During the aforementioned excavations I. Szombáthy (1879) surveyed the entrance part and the Bear Cave, see Fig. 3. The part in NE-SW direction he named "Bärengrotte", in Slovenian "Medvedji rov", the other one, heading firstly towards W and later towards N was named "Hochstetters Schatzkammer" (Archive of the Society for Cave Exploration, Ljubljana and Karst Research Institute ZRC SAZU). Later on, in papers dedicated to the interested people, the subterranean lakes, flowstone figures, ceiling falls and newly discovered parts of the cave

were described, see MICHLER (1934), ŠERKO & MICHLER (1948) and PLANINA (1965). In 1968 and 1971 there were intensive speleological research activities in the surrounding of Cerkniško jezero and its tributaries, with Križna jama as a centre of attention. Until 1971 Križna jama was more than eight kilometres long. GOSPODARIČ (1974) was dealing with the allochthonous (fluvatile) sediments in the cave. He described their distribution, their relation to the autochthonous sediments and their positioning in the cave. Moreover, he tried to investigate which stones were transported by the subterranean river and in which way and how they were deposited in the cave during its development. The most recent map of Križna jama dates back to 2010 and is situated at the very end of this volume and a better impression of this cave is given by means of the plates (Plates I–IX) situated before this article.

3. Description of Medvedji rov (Bärengrotte)

The scientists unearthing the cave bear remains in the Slovenian sites found not only bones and teeth, but also remains documenting the presence of Pleistocene men, i.e. tools made from bone and stone, fire places and butchering remains. M. BRODAR & R. GOSPODARIČ (1973) organized an excavation camp for the youth in 1971 to find a proof for the presence of glacial men in Križna jama. They excavated in several places in Medvedji rov and collected data on its development, the origin of the depositions and cave bear remains, but they did not find any hint for the presence of glacial men.

Nowadays, Medvedji rov is accessible via the main hall, close to the first lake, compare to Fig. 3. This is the place



KREUZBERGES.

re Ort im Vordergrund des Bildes, links]

Figure 2: Panoramic view of the surroundings of Križna gora, seen from the road towards Oblak above Bloška polica, the latter village in the foreground of the picture, left. Illustration taken from HOCHSTETTER (1881:Tafel III).

Figure 3: Ground map of the “Old Part” of Križna jama showing Hochstetter’s excavation areas as well as those from the most recent excavations, map taken from HOCHSTETTER (1881).

Please note also the folded map at the end of the volume representing the actual state of research in Križna jama.

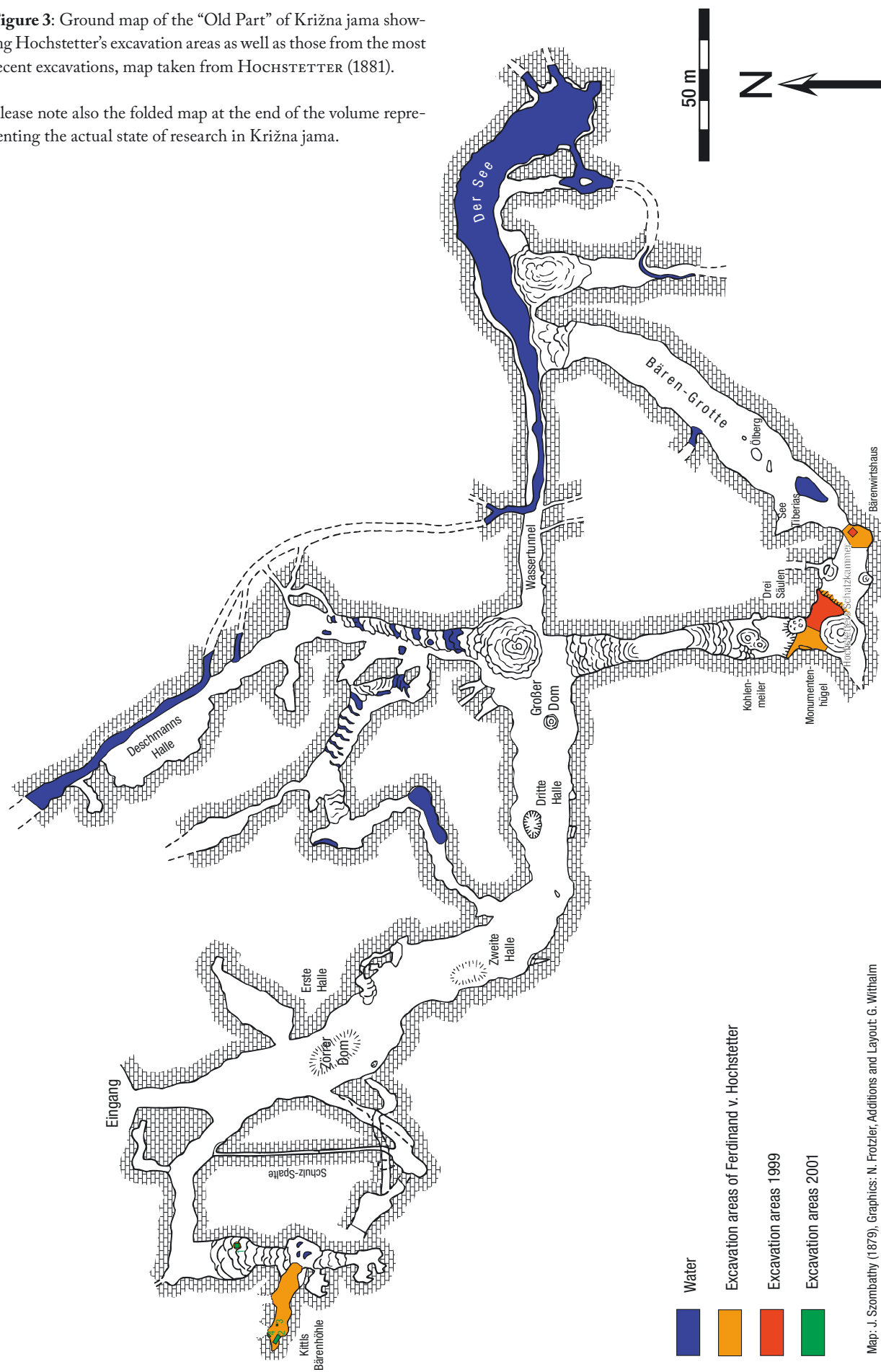
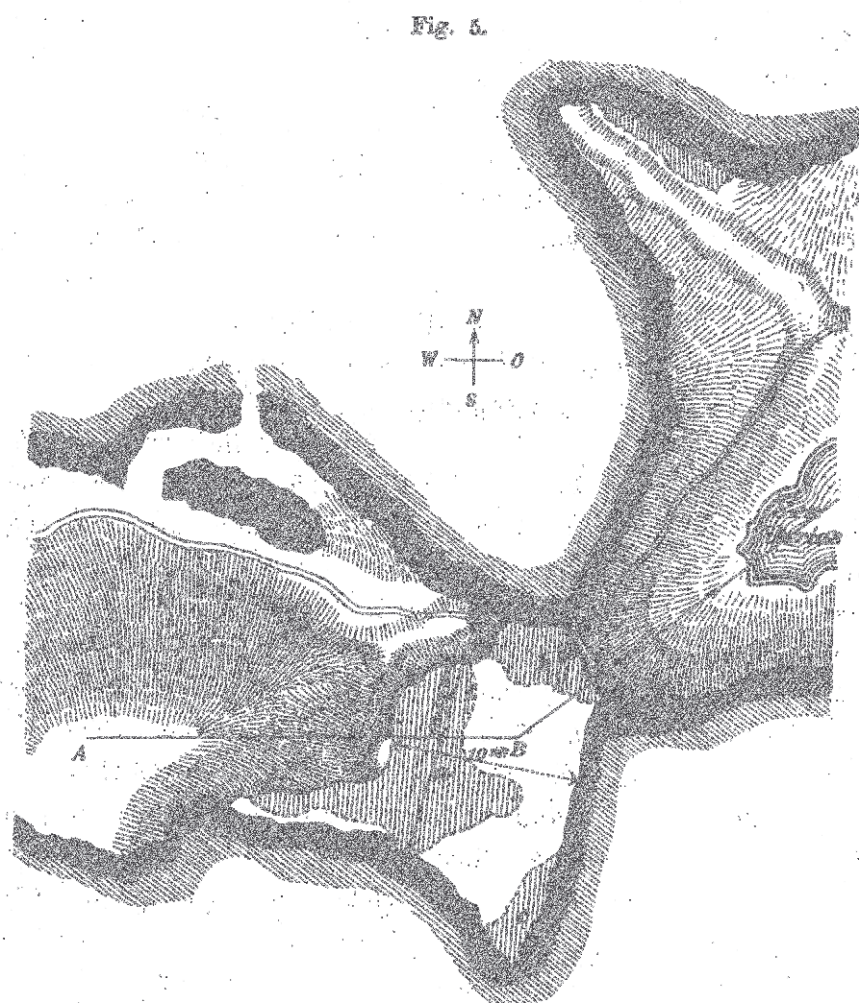


Figure 4: Ground map of the loam terrace called “Bärenwirts-
haus”, which is part of Medvedji
rov, taken from HOCHSTETTER
(1881:12). The small letters
indicate the excavation areas
from 1878 and 1879, the capitals
correspond to Fig. 5.



Grundriss der Lehmterrasse zum „Bärenwirts-
haus“.
a, b und c die 1878 und 1879 abgegrabenen Stellen.

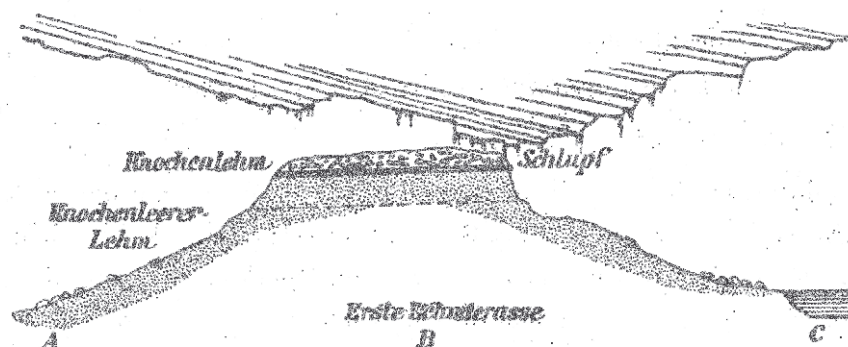
where the subterranean river disappears at an altitude of 612 m a.s.l. Medvedji rov is situated in one meter thick layers of Jurassic limestone, inclining towards S, which is partly dolomitised. It is a dry passage, filled with sediments, flowstone and blocks. The entrance of Medvedji rov is blocked by a ceiling fall, which is partly covered by flowstone, which is formed even nowadays. Behind this hill the floor consists of loam on a level, some meters lower. According to BRODAR & GOSPODARIČ (1973:33) the following hill shows the loam at its original height, equalling 620 m a.s.l., i.e. Medvedji rov was filled with loam until this altitude so that there were only two meters between the floor and the ceiling. In former times the cave bear came not along this route, but directly from the main hall close to Čimboraso, see Fig. 3. This former entrance was blocked by the formation of flowstone in the course of the following modification of the cave at a distance of 10 m. Figure 4 shows the “Bärenwirts-
haus”, which is in a position between “Medvedji rov” (Bären-
Grotte) in the East and “Hochstetters Schatzkammer” in the West; and Fig. 5 shows a section through “Bären-

wirts-
haus”. The results of the excavation camp by BRODAR & GOSPODARIČ (1973) are:

Medvedji rov is 223.5 m long and contains several generations of flowstone. The allochthonous loams were deposited by calm (standing) waters of the subterranean river. Between these flooded phases were phases of flowstone formation, these flowstones were formed by water dripping from the ceiling. Of course, the cave bears entered Medvedji rov during these dry phases, because the remains were found above and below the aforementioned flowstones. Some of these bones look polished and show holes, which very likely originate from teeth of carnivores. Excavations were performed in two places and two profiles were documented:

Profile A: Its position is pitifully unknown because it is not in the map; it is only known that the distance between the two walls equals 15 m. The height of this profile was four meters and all in all six layers consisting of loam, sand and flowstone were distinguished. In both profiles, A and B, the lowermost stratum 1 consists of loam mixed with sand, which is covered by a layer of

Fig. 4.



Durchschnitt der Lehmterrasse zum „Bärenwirthshaus“.

Figure 5: Longitudinal section through the loam terrace called “Bärenwirthshaus”, taken from HOCHSTETTER (1881:11). The capitals A to C in this figure correspond to the ones in Fig. 4.

flowstone, stratum 2. Above this flowstone there is a layer of reddish-brown loam of approximately 50 cm height (stratum 3) which bears some cave bear remains. Above this layer there is a plain horizon of light-grey flowstone consisting of big crystals which form the base for stalagmites of approximately 50 cm height. This is stratum 4. The following layer consists of reddish loam which shows the highest abundance of cave bear remains, stratum 5. Stratum 6 is a layer of flowstone which, on one hand, can reach a height of up to 60 cm, but, on the other hand is partially inexistent simply because it was not formed at all. This enabled the first visitors of Medvedji rov to find cave bear remains on the floor they were standing on.

Based on the fact that the cave bears in Slovenia got extinct after the Last Glacial Maximum (LGM), Gospodarič concludes that stratum 3 was formed during the elder Wurmian (W I), stratum 5 was formed during the first cold peak of the younger Wurmian (W II). According to $^{230}\text{Th}/^{234}\text{U}$ -datings of samples taken from strata 2 + 4, the intercalating loams, strata 3 + 5 are approximately $146,000 \pm 14,000$ a and $126,000 \pm 11,000$ a old, see FORD & GOSPODARIČ (1989:51).

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