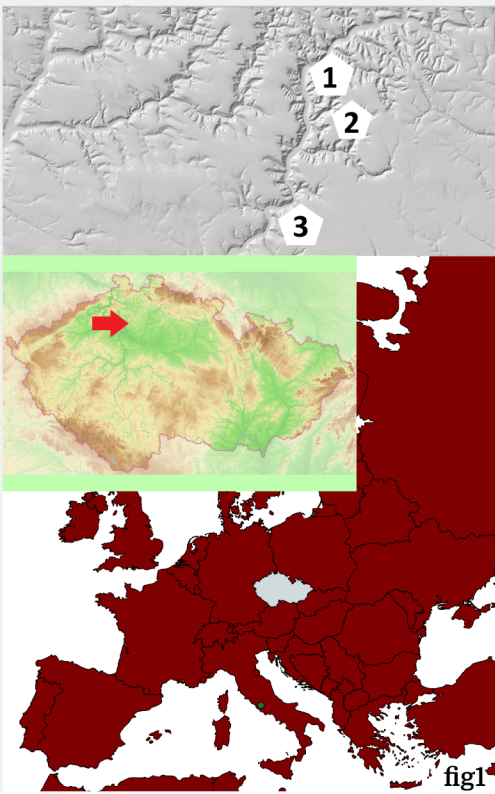


Kokořínsko: tracing hunter-gatherer creativity in plant use during the Mesolithic of Bohemia

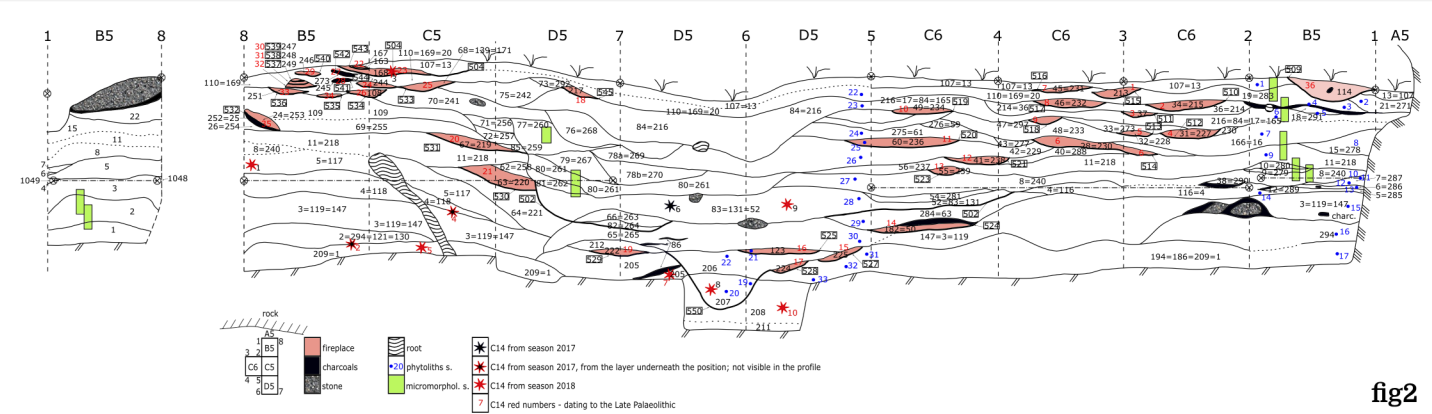
Katarína Kapustka(1) – Matthew Walls(2) – Karolína Pauknerová(3) – Přemysl Bobek(4) – Michaela Ptáková(5) – Kristýna Budilová(5) – Jaromír Kovárník(5)

1: Institute of Archaeology of the Czech Academy of Sciences, Prague, v. v. i. 2: Department of Archaeology and Anthropology, University of Calgary
3: Center for Theoretical Study – Charles University 4: Institute of Botany of the Czech Academy of Sciences 5: Laboratory of Archaeobotany and Palaeoecology

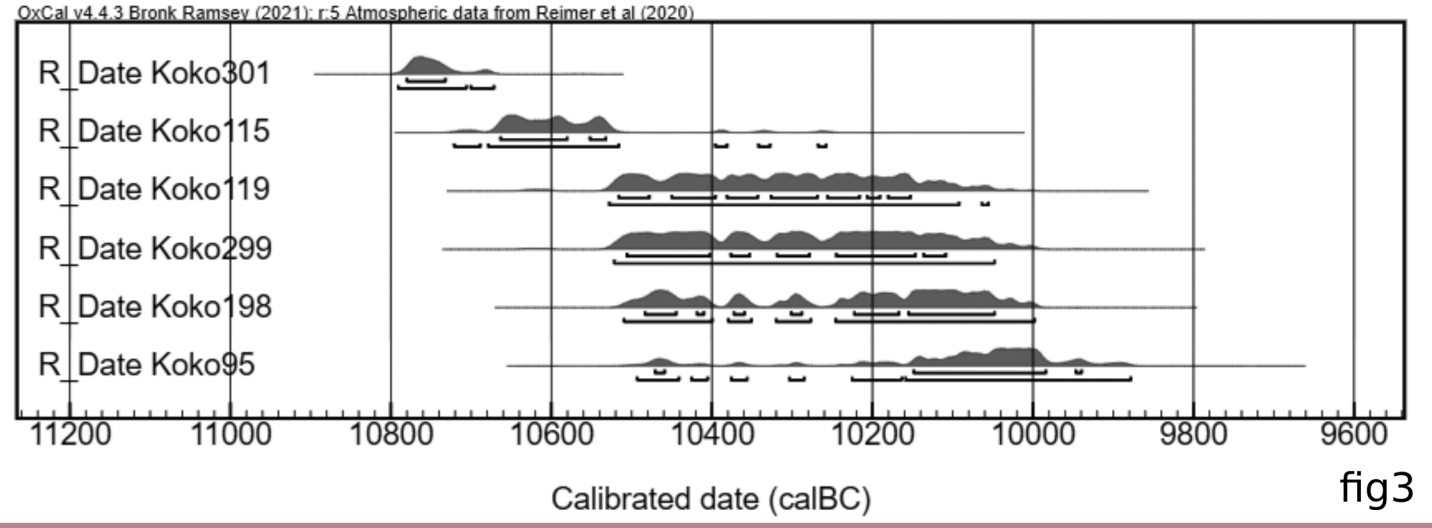
Plant use is usually quite complicated to trace when studying prehistoric foragers. Plants are not always conserved and it is always tricky to distiguish what is part of the naturally deposited sediments and what was brought to the campsite by prehistoric people. One of the environments where well stratified sites are preserved and some plant remains too are sandstone areas. Kokořínsko is a sandstone area in central Bohemia (for the location see fig. 1). There is a lot of rockshelters which were favourable places for short term hunter-gatherer communities during Late Palaeolithic and Mesolithic period. We studied six rockshelters from which were taken various samples for different analyses : macroremains, phytolith, anthracology, starch (sedimentary ancient DNA), polen. Here are presented three of them (fig. 1. n° 1: Dome rockshelter, 2: Kožený zámek, 3: Diamond rockshelter), were is hunter-gatherer settlement and its record is representative enough. Not all analyses worked at all sites. But when comparing all results we have an interesting information on which species were used and which were proceeded by lithic tools. This work is still in progress, so only partial results are presented here. Wy try to trace natural environment and its changes in time (malacozoological record, anthracological record, sedimentary ancient DNA, palynological record). Another important point is study of the direct record of plant use by people (starch and phytolith analysis from artifacts, macroremain analysis, partially anthracological analysis).



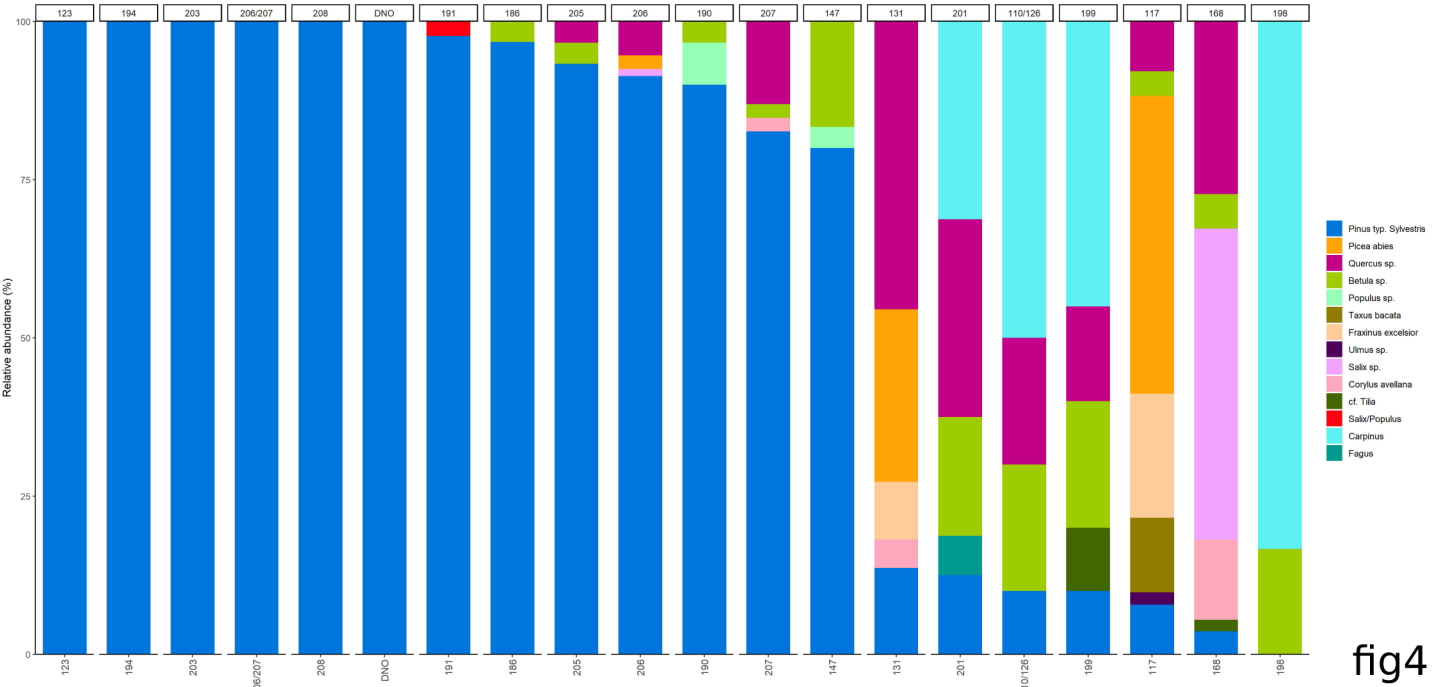
Kožený zámek



Kožený zámek is a middle size rockshelter (covered surface forms cca 16 m2 of which 4m2 were excavated) opened to the south/southeast. It is quite deep and not very high. It is situated in a side valley cca 4 m above the bottom of the valley with a view towards a crossroad of several valleys. This place could be considered as strategic point for hunting. In the valley is occasional stream. Side valley is cca 750 m far away from the main swampy valley of Pšovka stream. Pšovka stream is main watercourse in this microregion.



Kožený zámek was a site with long-term occupation, there were well preserved situations from various periods of occupation. There were layers from Modern era, Early Middle Ages, Bronze Age, Aeneolithic Period and Late Palaeolithics (fig. 02). This situation is especially important because of its Late Palaeolithic, more precisely Younger Dryas datation (fig. 03), which is extremely rare in our region, especially when accompanied with well preserved features as are fireplaces documented at presented site (fig. 05).

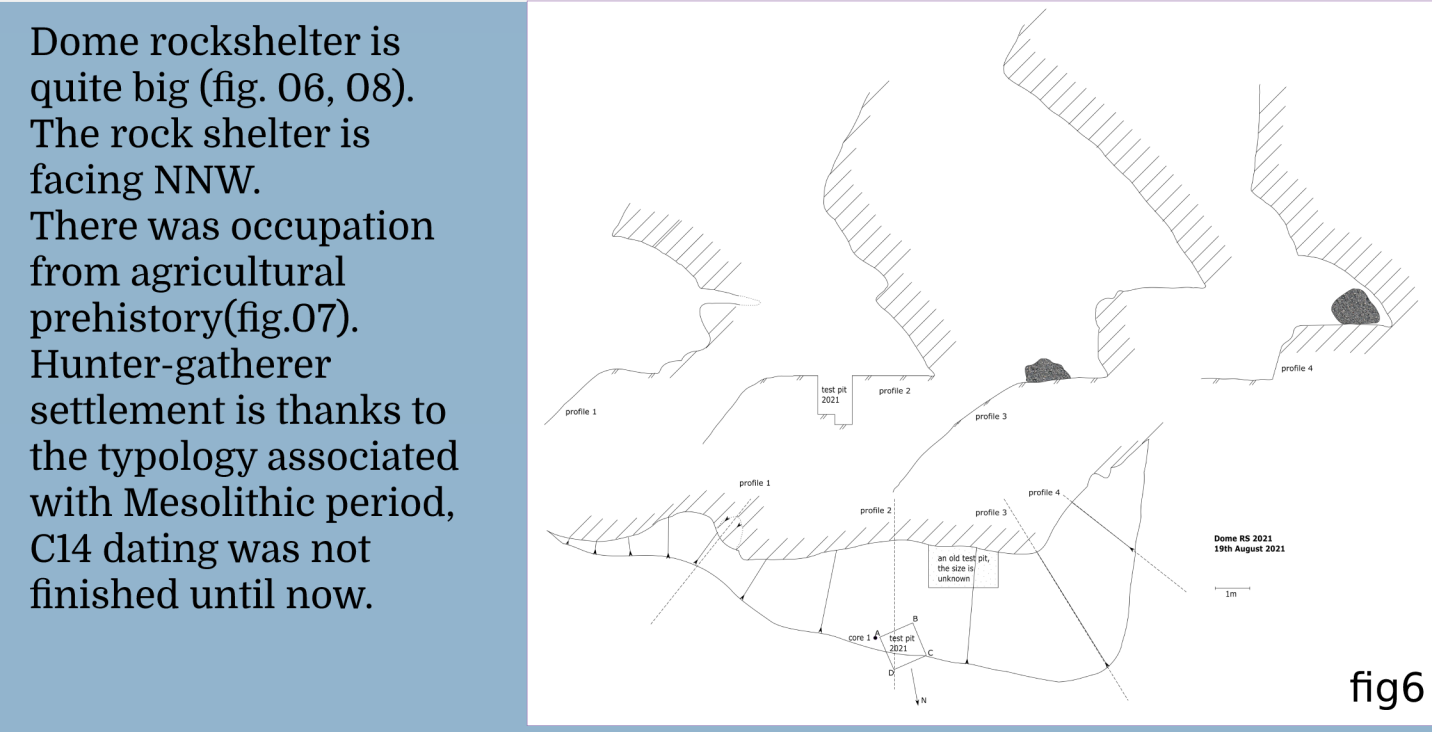


At this site were conducted anthracological, malacozoological, phytolith, micromorphological, and sedDNA analyses. Unfortunately there was a need of supplementary samples, which were taken recently, so we are waiting for its results. Until now are proceeded anthracological samples, where the record is typical for this period, high dominance of pine (fig. 04).

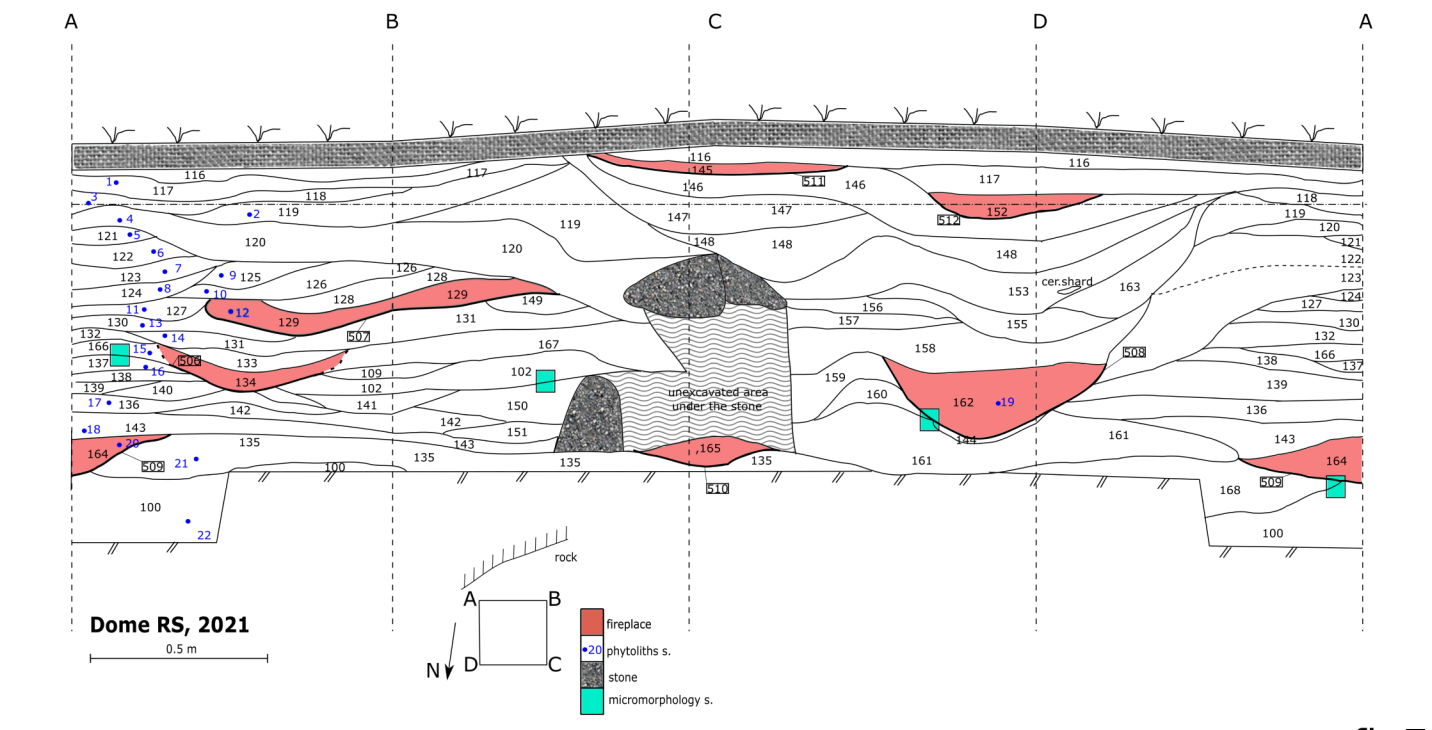


Quite interesting is old presence of the oak tree, this could indicate, that this valley was glacial refugee with extremely favourable conditions. Phytolith analysis did not revealed any interesting information on hunter-gatherer occupation.

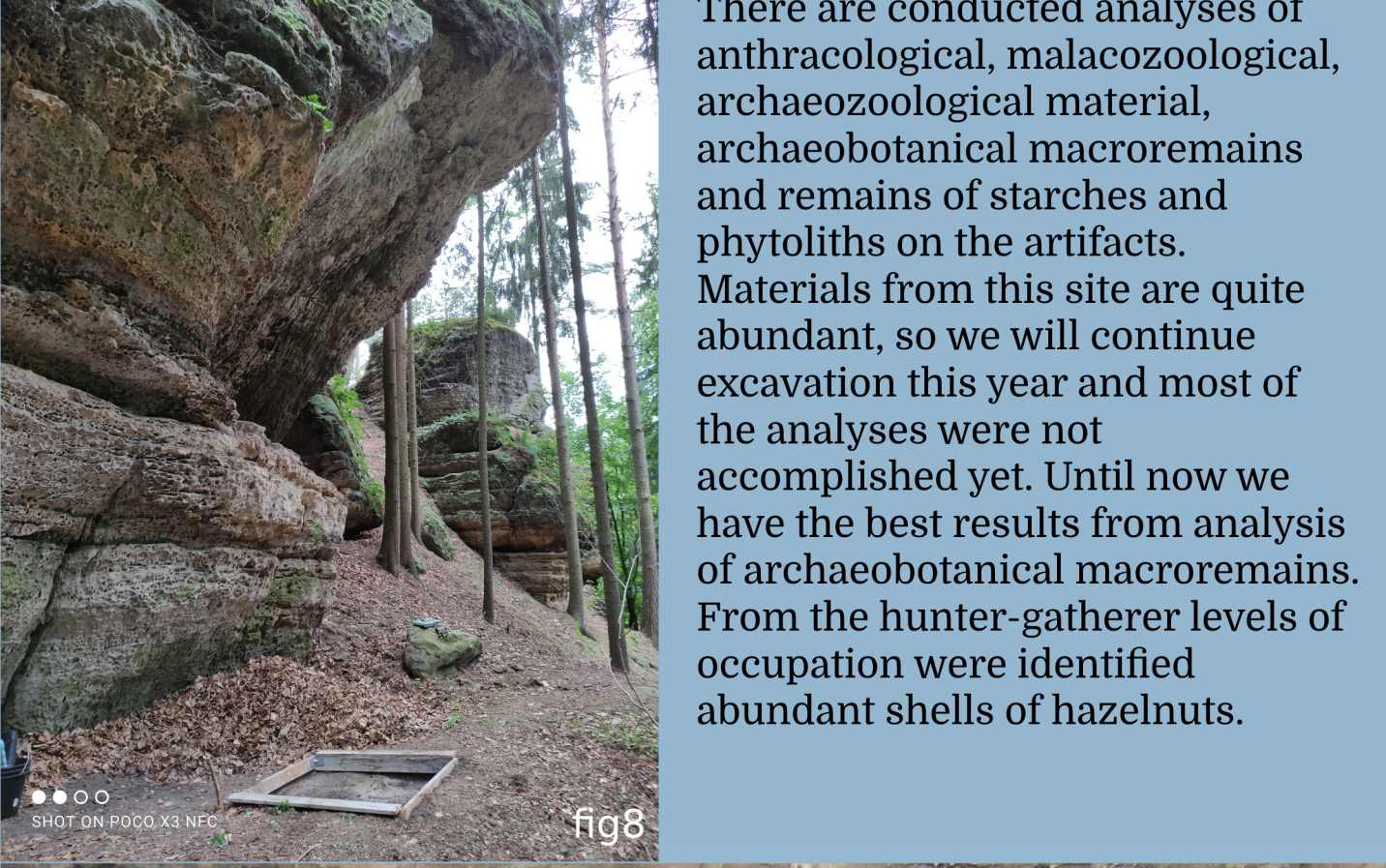
Dome rockshelter



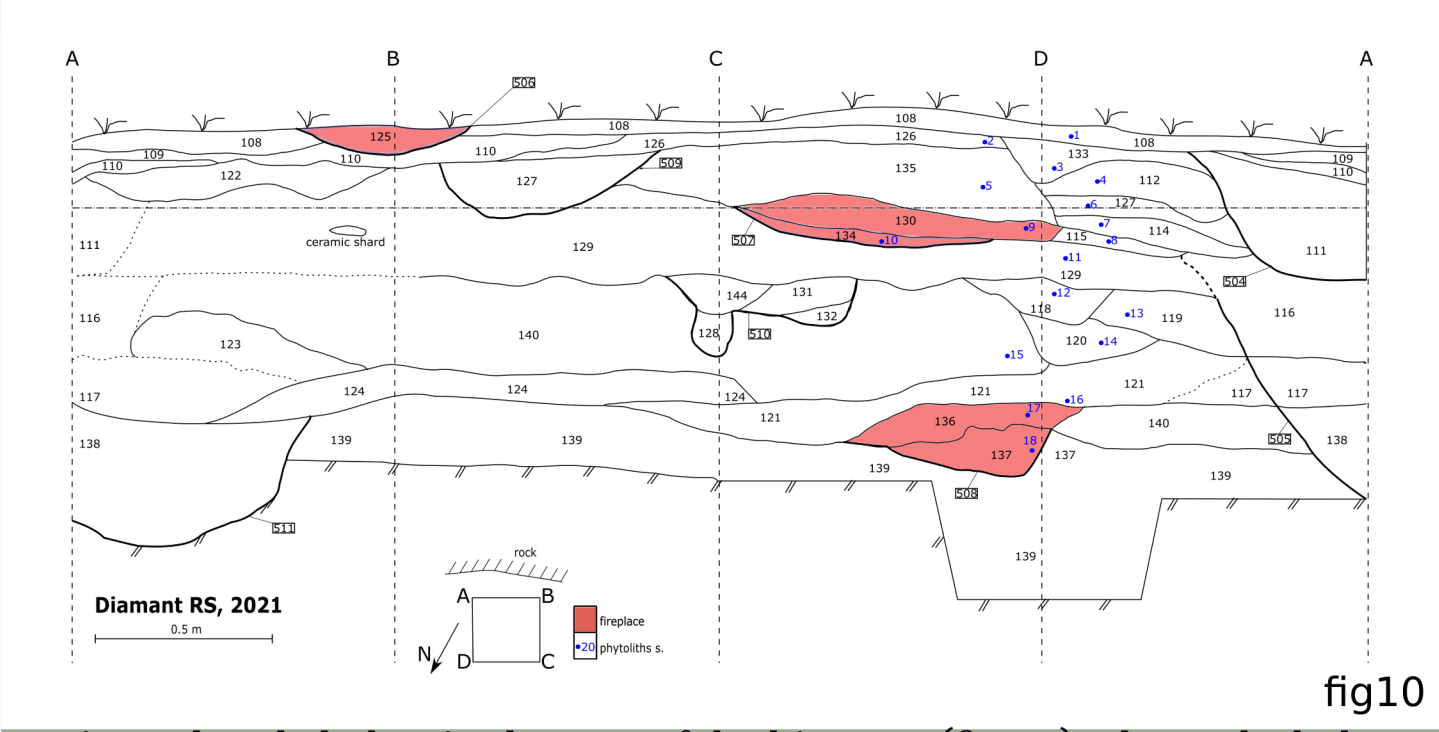
The most interesting features were fireplaces – most probably from the Mesolithic period (fig. 09). Especially because construction of one of them was very similar to the one in Diamond rock shelter.



This rock shelter represents most dense concentration of the artifacts which we found in Kokořínsko region until now.

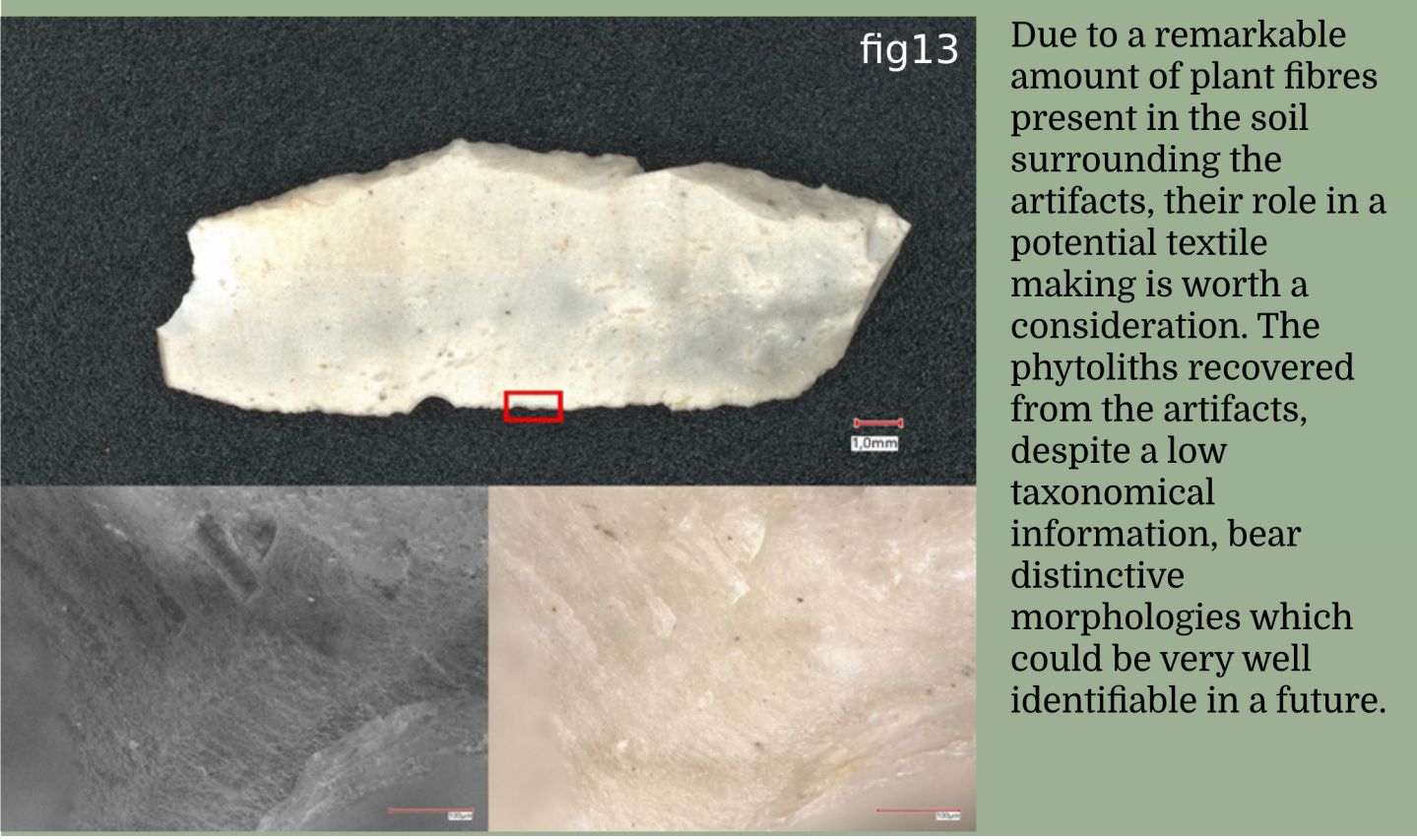
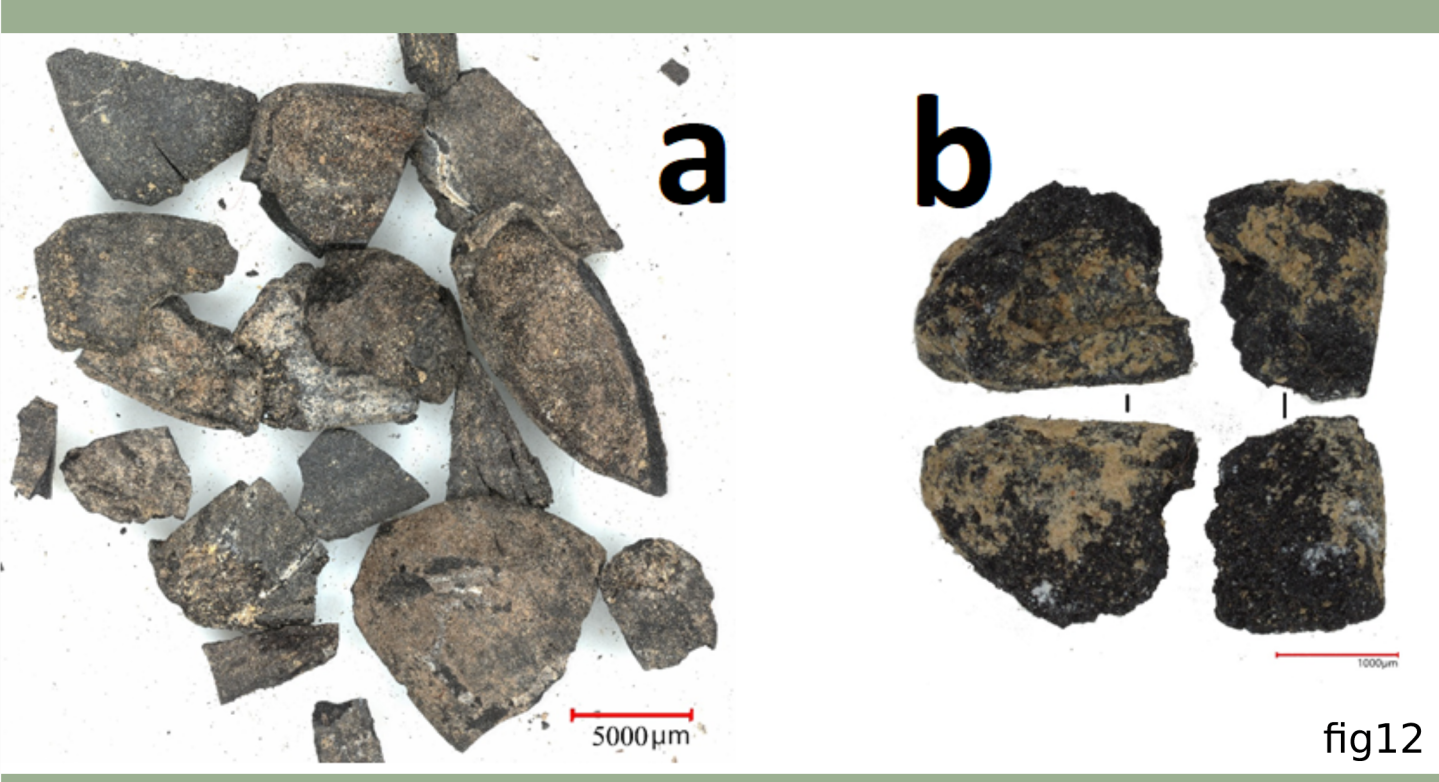


Diamond rockshelter



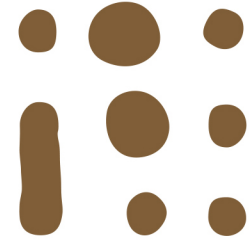
Dimond rockshelter is also one of the big ones (fig. 10). The rock shelter is facing North. The pit was situated under the overhang. Its stratigraphy was well preserved, however it was more difficult to read, than in case of the Dome rockshelter (fig. 11). C14 dating was not accomplished yet, but according to typology of lithics found at the site we associate hunter-gatherer occupation of the site with Mesolithic period. There are conducted analyses of anthracological, malacozoological, archaeozoological material, archaeobotanical macroremains and remains of starches and phytoliths on the artifacts. Work on the last three of them is practically finished. Results from analysis of archaeobotanical macroremains.

From the hunter-gatherer levels of occupation were identified abundant shells of hazelnuts (fig.12:a), some raspberries and rosehip (fig.12:b). Interesting observation were also done when looking at the phytolith and starches analyses (example of studied artefact fig. 13). For the two artifacts from Diamond, it is not sure if they were used for plant processing, striation reflects rather processing hard materials such as wood, antler, or bone, but could be also a product of processing different plant materials, so the interpretation is still open.



During our fieldwork in Kokořínsko region, we try to test pit different rockshelters, different in their size, location above the river and orientation. Preservation of the most of the remains and datasets which can help us understand plant use during Late Palaeolithic and Mesolithic period (Final Pleistocene and beginning of the Holocene) is good. We use several methods direct and indirect to reconstruct natural environment and plant use by people in this region. For the reconstruction of the local environment is the best approach in this region malacozoological analysys. Study of antracological record can help us to see selectivity of the wood used in fireplaces compared to overall coverage. In proceeded sites it vary considerably during the time. Direct view on how and which plants were proceeded by hunter-gatherers could be seen thanks to use wear analysis in combination of phytolith and starch grain analeses. An attempt to integrate analysis of plant phytoliths and starch grains with use-wear traces on the stone surfaces has brought some promising pilot results, partially decoding functions of the Mesolithic industry. Analysis of more tools from wider area would be plausible to strengthen the information about relationships between the residues, use-wear and overall shapes of the tools, which could lead to a better understanding of their usage. And of course also analysys of archaeobotanical macroremains can reveal important points in terms of used plants. Due to preservation conditions, only carbonised remains were preserved and evaluated in the analysis of plant macroremains. Among plant remains, by far the most numerous finds of hazelnut shells (Corylus avellana). This can be both indication that hazelnuts were the most important plant component of the human diet in the Mesolithic period, but also, they have better potential to be preserved than many other berries, roots and fruits, which are much more difficult to be conserved. When considering potential wild plant resources manipulated by Mesolithic hunter- gatherers, apart from hazelnuts, attention should be paid to the find of Chenopodium sp. seed and possibly the seed of rose hip fruit (cf. Rosa sp.). The fruits of Rosa sp. are edible and may have been utilised for its medicinal value, characterized by uniquely high concentration of vitamin C. Also, Chenopodium sp. is well known for its extensive use for food as well as medicine. Green leaves and stems are eaten raw, boiled or dried for future use. Seeds are most commonly used for porridge or ground into flour subsequently used for making bread. To conclude most of the information presented here is only preliminary record and we hope to precise our record more in future seasons. However it seems that we are able to track hunter-gatherer plant use by several methods, which can show us different aspects of the past reality.

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