

ARCHEOLOGICKÝ ÚSTAV AKADEMIE VĚD ČESKÉ REPUBLIKY V BRNĚ

**PŘEHLED VÝZKUMŮ**  
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**Last Foragers of Northern Bohemia**  
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**1999 - 2001, Final report**

For several reasons, the region of Northern Bohemia (Czech Republic) has been neglected by previous archaeological research: first, the distance from the national capital, Prague, second, the population change and the interruption of local research tradition at the end of the World War 2, and third, formation of a vast military zone after the World War 2. Recent systematic surveys have shown that this region has specific potentials for studies of the Mesolithic, a period hitherto poorly known in Czech archaeology. Especially the sandstone rockshelters, a typical feature of Northern Bohemian landscape, are promising not only for archaeology but also for broader contextual studies of Holocene paleoclimatology, environment, settlement strategies, and resource exploitation. Until 1998, our surveys concentrated on the regions of the Polomené Mts. and the Peklo Valley, both south of the town of Česká Lípa

Since 1999, in frame of the NGS programme, this research achieved a higher level of a systematic collaborative project. In addition, we expanded the geographic scope to new subregions of Northern Bohemia. Systematical excavations were held at sites in the Labe-River Sandstones and the Bohemian Switzerland natural reserves, in the former military zone of Ralsko, and at the Bezděz Castle Hill. Smaller regional surveys were held in the adjacent areas as well. Also, we initiated mutual collaboration over the national border (J. Vollbrecht, excavator of the open-air Mesolithic sites at Reichwalde, Saxony).

### **1. Methodology:**

In frame of preliminary surveys, the individual rockshelters were selected basing on several viewpoints: size, shape, insolation, distance from water, danger from damage, etc. In some cases, small test-pits were made to obtain preliminary evidence of human presence.

During the systematic excavation, regular trenches were located, 1,5 – 2 m wide, usually in transversal direction to the rock wall. All artifacts (pottery, lithics, etc.) and bones are measured three-dimensionally, and computerized. Stratigraphic sections and plans are drawn separately. As a result, we may combine the computerized sections and plans of artifact distributions with the drawings of layers and features.

The sediment is being sieved for microliths, microfauna, snails and paleobotanical macroremains, and samples for sedimentological (granulomet-

ric) analyses were taken from the individual layers. Especially the content of the hearths was floated for paleobotanical macroremains. Charcoal samples were taken for C14 dating.

### **2. Personal structure:** **Archaeologists:**

Jiří Svoboda, Institute of Archaeology, AS CR, Brno-Dolní Věstonice (Mesolithic archaeology)

Lenka Jarošová, Institute of Archaeology, AS CR, Brno-Dolní Věstonice (Mesolithic archaeology)

Vladimír Peša and Petr Jenč, Regional Museum of Česká Lípa (Later prehistoric and Medieval archaeology)

### **Geologists and paleoecologists:**

Václav Cílek, Institute of Geology, AS CR, Prague (Geology)

Vojen Ložek, Institute of Geology, AS CR, Prague (Malacozoology)

Ivan Horáček, Faculty of Science, Charles University (Vertebrate fauna)

Petr Pokorný, Institute of Botany, AS CR, Prague-Třeboň (Paleobotany)

Emanuel Opravil, Institute of Archaeology, AS CR, Brno-Opava (Paleobotany)

Václav Sojka, Nature Protection, Labe-river Sandstones Reserve, Děčín-Chřibská

C14 datings were kindly provided by Hans van der Plicht, University of Groningen, and a geochemical analysis by Josef Havel, Masaryk University at Brno.

### **Students:**

Institute of Basic Education ("Institut základů vzdělanosti"), Department of Anthropology, Charles University, Prague (1999-2000),

Faculty of Humanities, Department of Archaeology, Masaryk University, Brno (2001),

Faculty of Science, Department of Anthropology, Masaryk University, Brno (1999-2001).

Individual students from other universities and faculties, American, Australian, and Czech, participated as well. The students were organized in groups of about 10 people for each excavation week.

### **3. The Labe-River Sandstones (Labské pískovce) Natural Reserve (July 4-27, 1999).**

#### **1999/1. The "Švéd" Rockshelter**

cadastre Doubice, distr. Děčín

Relatively large (about 30 x 5 m) but low rockshelter, in a side gorge, with SES exposition, evidently used as a refuge during historical times. As a result the upper part of the sediments was removed from inside.

Transversal trench, 5,3 x 2 m. Depth - entrance: 1,75 m, interior: 0,5 m.

The trench at the entrance opened the following section:

- removed sediments (including redeposited Mesolithic industry together with subrecent pottery)
- intact sandy layers with prehistoric pottery
- sterile layer of whitish sand
- intact sandy Mesolithic layer (with a rich lithic industry, including characteristic microlithic triangles. Surprisingly, the same layer contained three fragments of a broken Neolithic axe. A C14 sample from this position,  $8180 \pm 110$  BP (GrN 25170), shows a fully Mesolithic age, so that any Neolithic admixture must be a mechanical disturbance. E. Opravil determined the charcoal as predominantly *Quercus* sp. with additional pieces of *Pinus* sp.

#### 1999/2. The "Jezevíč" Rockshelter

cadastre Doubice, distr. Děčín

This rockshelter lies in a side gorge adjacent to the "Švéd" rockshelter, it is 15 m long, maximally 2,5 m wide, and opens toward the SES.

Longitudinal trench (irregular shape), 5 x 2,5 m, with additional trenches. Maximal depth: 2,5 m.

The sedimentary filling has previously been damaged by several generations of large badger's nests and the bioturbation still continues recently. Thus, a volume of disturbed sediments had to be removed prior to serious excavation. Subsequently, a portion of intact stratigraphy was found, with three superimposed hearths. These hearths occurred as more or less regular spots of burnt sand, charcoal, and burnt stones - some are usable as ochre for painting, separated by thin interlayers of yellowish sand. The lithic industry is not rich, but important by relationship to these individual stratigraphic levels. The C 14 samples were taken from each hearth:

Lower hearth  $8530 \pm 150$  BP (GrN 25171)

Middle hearth  $5090 \pm 35$  BP (GrN 25169)

Upper hearth  $4730 \pm 50$  BP (GrN 25168)

Interesting results were obtained by P. Pokorný by floating the lower, Mesolithic hearth for paleobotanical macroremains. Following species (mostly seeds) were determined: *Sambucus nigra*, *Picea abies*, *Rubus idaeus*, *Chenopodium album*, *Rubus* sp., *Pinus sylvestris*, *Corylus avellana*, *Poaceae*.

These results are important not only for environmental reconstruction, but also for evidence on possible plant gathering. This concerns *Sambucus nigra*, berries such as *Rubus*, and, evidently, hazel. E. Opravil determined the charcoal from the three hearths as predominantly *Pinus* sp. and *Quercus* sp., with a single fragment of *Tilia* sp. from the upper hearth.

#### 1999/3. The "Sojčí" Rockshelter

cadastre Jetřichovice - Studený, distr. Děčín

This rockshelter lies in a side gorge of the Chřibská Kamenice river, it is about 15 m long, maximally 4 m wide, and opens towards the SES.

Transversal trench, 2 x 3,5 m. Maximal depth: 2 m.

The trench yielded a complex sequence of darkish, sandy-loamy layers with hearths and charcoal and prehistoric pottery (0,6-0,8 m). Charcoal from this context was determined by E. Opravil as of *Pinus* sp. and *Pinus sylvestris*, *Quercus* sp., *Corylus avellana*, *Acer* sp., *Betula* sp., and *Populus/Salix*.

In the yellow-whitish sand of the subsoil (0,8 - 1,4 m) was a regular Mesolithic hearth with related small pits (this is a typical pattern in the region), and with relatively rare lithic industry. The charcoal is exclusively of *Pinus sylvestris*. Still deeper (1,4 - 2 m), the stratigraphy continued into sterile sand.

#### 1999/4. The "Arba" Rockshelter

cadastre Srbská Kamenice, distr. Děčín

This is a small rockshelter located in a rock wall high above the Kamenice river. The length is 11 m, maximal width 5 m, and exposure is towards the WSW.

Trench 2,5 x 2,5 m. Depth: 0,8 m.

The site provided a surprisingly high density of lithic artifacts, but in a shallow stratigraphy and partly disturbed situation. Thus, the organic material mostly originates from the recent bioturbation. The lithics are a typical Mesolithic industry (total of 6577 pieces), with numerous microlithic triangles. By number of these microliths and their statistical structure, Arba is actually one of the richest Mesolithic sites in the Czech Republic.

#### 4. The former "Ralsko" military zone (July 1-21, 2000).

##### 2000/1. The "Uhelná rokle" Rockshelters

cadastre Hradčany - Ralsko, district Č. Lípa

The site is formed by a lineary ordered series of three long, south-facing rockshelters (1-3) in one of the central valleys of the Hradčanské Cliffs area. The name indicates coal production in the past. A shallow trench showed that in the Rockshelter 1,

earlier deposits have already been removed during medieval and later activities.

Rockshelter 2 is 20 long and maximally 4 m wide. Two transversal trenches were made, both 4 m x 1,5 m, separated by 4,5 m distance. Maximal depth (2a) was 1,8 m. The above 0,5-0,7 m is formed by a sequence of darkish, humous and sandy-humous layers with interlayers of charcoal and burnt sand (hearths). Following (0,5-1 m) were sandy, light grayish layers with charcoal. All these layers included later Neolithic pottery and lithics, Bronze Age and Hallstatt Age pottery.

A regular hearth at the base of this sequence, without archaeological material, provided a date of  $8530 \pm 150$  BP (GrN 25776) and thus supplied the only evidence of an episodic Mesolithic occupation inside the Hradčanské Cliffs area.

The remaining 0,8 m of the deposits was filled by sandy layers of yellow, light-brownish, and white colorations. Some charcoal was distributed in the light-brownish layers. No archaeological finds were recovered. At the base was an accumulation of large sandstone boulders, and the weathered sandstone bedrock.

Rockshelter 3 is about 15 m long and maximally 3 m wide. Square trench of 1,5 x 1,5 m was made, with depth of 2 m. The whole stratigraphic sequence is formed by humous and sandy-humous layers of yellow, brownish and grayish coloration. Two important interlayers with charcoal and burnt sand (hearths) were located in the depth of 0,8m and 1,3 m. Large sandstone boulders appeared at the base, above the weathered sandstone bedrock. The archaeological context was later Neolithic, Bronze Age and later pottery.

#### **2000/2. The "U Obory" Rockshelter**

cadastre Doksy, district Č. Lípa

A smaller rockshelter in the same valley of Uhelná rokle in center of the Hradčanské Rocks, separated in two parts, 6m and 4,5 m long, respectively; the width is about 2 m.

Longitudinal trench 3,5 x 1,5 m in the left abri. Maximal depth: 2,5 m (and a small trench in the right abri).

The upper 0,5 m of the stratigraphic sequence (in the both parts of the rockshelter) provided a series of darkish, humous and sandy-humous layers, interstratified with charcoal and burnt-sand interlayers (hearths). The archaeological context was later prehistoric (later Neolithic and Bronze Age) ceramics and lithics.

Surprisingly, the lower 2 m of the stratigraphy in the left abri was formed by glacial loess, with a few humic interlayers, sandstone debris, and pseudomycelia. This is a unique case of loess deposition in

the sandstone areas, and thus a source of information about later Pleistocene environments in North Bohemia. The molluscs were sampled by Vojen Ložek. There were no traces of human presence in this layer. We did not reach the sandstone bedrock.

#### **2000/3. The "Donbas" Rockshelter**

cadastre Hradčany – Ralsko, distr. Č. Lípa.

A 15 m long and 3 m wide, north-facing rockshelter at the bank of the Ploučnice river, at the northern margin of the Hradčanské Cliffs. The name is derived from an inscription left by the Soviet Army on the rock wall

Transversal trench, 3,5 x 2 m. Maximal depth: 0,7 m.

This rockshelter yielded a complex but shallow sequence of darkish, sandy-loamy layers with medieval features, hearths, charcoal and Hallstatt Age (Billendorf culture) pottery (0-0,6 m). The layer with prehistoric ceramic material yielded a date of  $3800 \pm 130$  BP (GrN 25773). Whereas *Populus/Salix* dominated in one of the medieval features, charcoal from the prehistoric context was determined by E. Opravil as of *Pinus sylvestris*, *Corylus avellana*, and *Acer* sp.

Between this stratigraphic complex and the sandstone bedrock was a shallow interlayer of 0,05-0,1 m, with a few lithic artifacts, probably Mesolithic.

#### **2000/4. The "Bezděz" Rockshelter**

cadastre Bezděz, district Č. Lípa

This rockshelter, 18 long and about 3 m wide, is located in a sandstone formation at the western slope of the phonolithic Smaller Bezděz Hill, near a medieval royal castle.

Trench 3,5 x 2,5 m. Depth: 1,6 m.

The upper part of the section (0-0,25 m) provided important medieval features (relicts of bitumen-ovens), related probably to the castle construction during the 13<sup>th</sup> century. Wood and charcoal related to the oven construction is of *Fagus sylvatica* and *Acer* sp. Other charcoal from this layer is of undetermined conifers and deciduous trees, *Pinus sylvestris*, *Quercus* sp., and single fragments of *Tilia* sp. and *Populus/Salix*.

Bellow was a stratigraphy of brownish to darkish sandy-loamy layers, with Bronze Age (Lusatian, 0,3-0,5 m), Middle Neolithic (Stroked pottery 0,5-0,9 m) and Mesolithic (facies with microlithic trapezes) layers (1-1,6m), interstratified by charcoal layers. There was a sterile interlayer between the Neolithic and the Mesolithic. The base was formed by weathered sandstone, directly covered by the lowermost Mesolithic charcoal layer. The whole section was rich in faunal remains, both molluscs

and smaller vertebrates, and it was sampled by Vojen Ložek and Ivan Horáček.

The C14 date of  $6930 \pm 120$  BP (GrN 25772) corresponds well to the archaeological context: a Mesolithic with trapezoid microliths. Several bone awls were recovered as well, and a polished and pierced bead from a deer canine were associated. Together with another, unfinished pierced artefact, this piece is the only decorative object discovered during our project.

After E. Opravil, the charcoal from the Mesolithic layer belongs mainly to *Pinus sylvestris*, with a few fragments of *Quercus* sp., *Fraxinus excelsior*, and *Corylus avellana*.

Thus, Bezděz is potentially a key site for considering the Mesolithic/Neolithic transition. In relationship with the paleozoological analyses and C14 datings, there is a good perspective to reconstruct the stratigraphic, paleoenvironmental and chronological context of the transitional period.

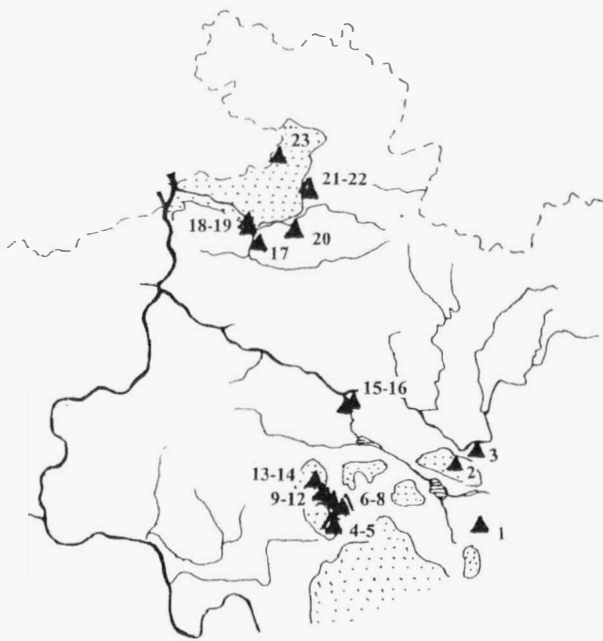


Fig. 1. Northern Bohemia, network of the systematically explored Mesolithic rockshelters. 1: Bezděz, 2: Uhelná rokle, 3: Donbas?, 4-5: Vysoká and Nížká Lešnice, 6-8: Proškův převis, Strážník, Stará skála, 9-12: Máselník, Černá Louže, Pod Černou Louží, Šídelník, 13-14: Heřmáanky, Hvězda, 15-16: Pod Zubem, Pod Křídlem, 17: Arba, 18-19: Dolský mlýn, Okrouhlik, 20: Sojčí převis, 21-22: Švédův and Jezevčí rockshelters, 23: S. Vencí's rockshelter. Dotted areas: sandstone plateaus ("rock-cities"), after Demek et al., 1965.

## 5. The Bohemian Switzerland (České Švýcarsko) Natural Park (July 1-27, 2001).

### 2001/1. The "Dolský Mlýn" (Grundmühle) Rockshelter

cadastre Vysoká Lipa, distr. Děčín

More than 20 m long rockshelter, maximally 3 m wide, exposed to SE. on the shore of the Kamenice river at the base of a steep river canyon. The sedimentary filling is thick, as a result of sand accumulation from the side-gorges to the main canyon.

Trench A: 3 x 2 m. Depth: 2,6 m.

Trench B: 2,5 x 2 m. Depth: 3,2 m.

In the both trenches, the stratigraphy starts finely bedded sandy and charcoal layers (0,4 m), with New Age pottery, disturbed by recent and subrecent pits from above. The charcoal is of *Pinus sylvestris* and *Corylus avellana*; associated were seeds of *Secale cereale* and *Bromus* sp.

Following was a complex of 1,2-1,4 m composed of thick sandy layers, interstratified by more humous and darker layers, and hearths. This complex included prehistoric pottery and lithic industry. The charcoal is predominantly of *Pinus sylvestris*, accompanied by *Corylus avellana*, *Tilia* sp., *Quercus* sp., *Fraxinus* sp., *Ulmus* sp., *Acer* sp., *Populus/Salix*, seeds of *Bromus secalinus*, achenocarps of *Chenopodium album* and *Malva pusilla*, nutshales of *Corylus avellana* and *Carpinus betulus*, and sclerocia of mushrooms. Results of a geochemical analysis of one of the clayish microlayers, realised by J. Havel, suggests possible organic nature of the sediment (housing animals?).

The base of the both trenches was formed by 1-1,4 m of sandy deposits with darker interlayers, with Mesolithic artifacts. A sequence of C14 dates were obtained from charcoal layers and hearths in the depth intervals of 20 - 35 cm, with the results of  $6720 \pm 120$  BP,  $7020 \pm 50$  BP,  $7770 \pm 70$  BP, and  $6910 \pm 60$  BP (the last date from the deepest location is probably contaminated). In trench B, 210 cm below surface, there was a massive hearth composed of a huge accumulation of basalt pebbles collected and transported from the nearby river bed, with a date of  $7020 \pm 50$  BP. Thick pebble overlayer formed a coverage of three circular, pan-shaped depressions. Another, less complex hearth composed of basalt pebbles, burnt sand and charcoal was found below, in the total depth of 240 cm, and a date of  $7770 \pm 70$  BP. The charcoal is predominantly of *Pinus sylvestris*, accompanied by *Tilia* sp., *Populus/Salix*, *Ulmus* sp., *Quercus* sp., *Corylus avellana*, *Acer* sp., and *Fraxinus* sp.; and *Corylus avellana* nutshales.

Since the Mesolithic industries of Dolský Mlýn are characterized by the microlithic trapezes, the both C14 dates correspond well to this cultural context.

### 2001/2. The "Okrouhlík" Rockshelter

cadastre Kamenická stráž, distr. Děčín

More than 30 m long line of rockshelters, with maximal width 3 m, opened to SW. The sedimentary filling is shallow and it was partly removed in the eastern part.

Trench I: 4-4,8 x 2 m. Depth: 0,3 m (upper plateau) - 1,3 m (slope)

Trench II: 2 x 1,5 m. Depth: 0,8 m

Trench IIA: 2 x 1,25 m. Depth: 1,6 m

Contrary to the nearby site of Dolský Mlýn, the Mesolithic layers were located in a quite shallow position at Okrouhlík, trench I. On the upper plateau, features such as a central hearth, an adjacent pan-shaped depression, and a structure of smaller, kettle-shaped pits around, appeared just below the surface. The hearth in the center of the plateau, only 0,3 m below surface and on top of the whitish-yellow coarse-grained basal sands, was formed by a

deposit of several charcoal microlayers and red-burnt sand. The variability of C14 dates, taken from the central hearth and from two adjacent pits, shows that the recorded features may not be contemporaneous, but have accumulated during longer time-span of using the rockshelter platform. Naturally, such a shallow situation also suffered from recent pits and other disturbances. Contrary to Dolský Mlýn, the Mesolithic industry from Okrouhlík is characterized by typical microlithic triangles, with three C14 dates of 7300 - 9170 BP (Table 1).

At the base of the trench II we found another massive hearth composed of basalt pebbles, similar to the 1,75 cm hearth at Dolský Mlýn. The hearth was located in the depth of 0,8 m on the surface of whitish-yellow basal sand; its C14 date is 7940 ± 70 BP. Lithic industry from this context was poor. An adjacent trench IIA, by reaching the depth of 1,6 m, demonstrated that the underlying sands are archeologically sterile.

The charcoal from the hearths was determined as predominantly *Pinus sylvestris*, associated with *Quercus* sp., *Corylus avellana*, *Populus/Salix*, *Ulmus* sp., *Acer* sp.; numerous nutshells were of *Corylus avellana*.

**Tab. 1. C14 dates for the North Bohemian Mesolithic. Correction after the program CALIB.REV.4.3. (Stuiver - Reimer 1993).**

Lokalita	Kontext	Hloubka cm	Materiál	Číslo vzorku	Datum (BP)	Interval (2 sigma)	Datum (bp)
Pod zubem	ohniště, C	75	uhlíky	GrN 23332	6790 ± 70	7510-7785	7656
Pod zubem	uhl. poloha, B	80	uhlíky	GrN 23333	6580 ± 50	7421-7570	7461
Bezděz	uhl. poloha	140	uhlíky	GrN 25772	6930 ± 120	7571-7970	7745
Dolský mlýn	uhl. poloha	175	uhlíky	GrN 26557	6720 ± 120	7422-7788	7581
Dolský mlýn	ohniště	210	uhlíky	GrN 26558	7020 ± 50	7699-7942	7838
Dolský mlýn	ohniště	240	uhlíky	GrA 19156	7770 ± 70	8407-8699	8584
Dolský mlýn	uhl. poloha	260	uhlíky	GrA 19157	6910 ± 60	7614-7916	7719
Okrouhlík I	ohniště		uhlíky	GrA 19158	7300 ± 60	7970-8276	8151
Okrouhlík II	ohniště		uhlíky	GrA 19161	7940 ± 70	8590-9012	8927
Šídelník I	uhl. poloha	76-79	uhlíky	GrA 11456	7120 ± 80	7758-8147	7941
Šídelník I	uhl. poloha	90	uhlíky	GrN 24213	7830 ± 170	8335-9227	8596
Černá Louže	uhl. poloha	cca 230	uhlíky	GrN 21558	7950 ± 80	8545-9027	8929
Pod Č. Louží	konc. uhlíků	120-125	uhlíky	GrA 11455	7620 ± 80	8212-8588	8405
Vys. Lešnice	konc. uhlíků	cca 240	uhlíky	GrN 24217	7930 ± 160	8393-9267	8925
Pod zubem	uhl. poloha, B	115-120	uhlíky	GrN 23335	7660 ± 130	8182-8748	8412
Pod zubem	uhl. poloha, B	115	uhlíky	GrN 23334	8110 ± 240	8408-9545	9025
Pod křídlem	uhl. poloha	50-70	uhlíky	GrN 23331	8160 ± 80	8815-9401	9124
Švédův převis	konc. uhlíků	120-130	uhlíky	GrN 25170	8180 ± 110	8778-9470	9228
Šídelník III	ohniště	80	uhlíky	GrN 24214	8300 ± 150	8818-9547	9397
Uhel. rokle II	ohniště	70	uhlíky	GrN 25776	8530 ± 150	9137-9911	9529
Jezevčí převis	ohniště 3	cca 240	uhlíky	GrN 25171	8410 ± 65	9160-9532	9469
Máselník I	konc. uhlíků 6	cca 110	uhlíky	GrN 21556	8560 ± 70	9438-9682	9533
Máselník I	konc. uhlíků 7	cca 130	uhlíky	GrN 21557	8790 ± 70	9553-10154	9888
Okrouhlík I	jamka 5		uhlíky	GrA 19162	8680 ± 70	9531-9910	9624
Okrouhlík I	jamka 6		uhlíky	GrA 19163	9170 ± 70	10211-10547	10357
Níz. Lešnice	konc. uhlíků	120	uhlíky	GrN 24210	10160 ± 190	11195-12802	11901



**Fig. 2.** Bezděz: pierced and polished deer tooth.



**Fig. 3.** Bezděz: medieval bitumen-furnace (left) and the Late Mesolithic/Neolithic trench (right).



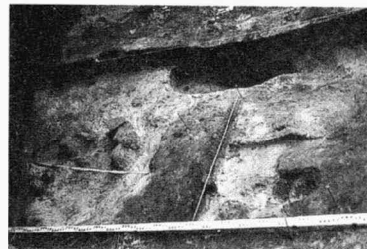
**Fig. 4.** Dolský mlýn: Hearth with filling of basalt pebbles.



**Fig. 5.** Dolský mlýn: Pan-shaped pits after removal of the pebble coverage.



**Fig. 6.** Okrouhlík: Hearth with filling of basalt pebbles.



**Fig. 7.** Okrouhlík: Central hearth with adjacent pits.

## 6. Supplementary surveys:

1999, April 26-May 2. - This was the initial prospection survey of rockshelters in the Labe-River Sandstone Reserve. It appeared that certain rockshelter fillings were already destroyed or damaged in the past, especially during more than a century of burying garbage ("Smetník", etc.); others suffered from historical human activities, being used for wood-coal and asphalt ovens, refugia, cellars, or from animals, especially badgers. A number of large-sized and well insulated rockshelters in the higher parts of the Sandstones provided no trace of human occupation. In addition, we realised a trip to the neighbouring part of Germany (Saxonia), where a Mesolithic rescue excavation is being realised by Jürgen Vollprecht in the area of the coal mine of Reichwalde. Possible interregional relationships over the national border and further collaboration were discussed.

1999, September 26-October 1. - This survey was realised in frame of three microregions: The Hradčanské Cliffs, an area which was until 1990 a military zone, so that no previous research was possible. Rockshelters in the Uhelná Roke (Coal Gorge) in the central part of this area were selected for the 2000 excavation. - The Loneliness Valley. An isolated gorge, north of Česká Lípa, provides one promising rockshelter, where a preliminary test trench yielded prehistoric pottery and Mesolithic artifacts. - Further research in the Labe-River Sandstones area, along the Kamenice river canyon. The rockshelter of Dolský Mlýn was tested and selected for the 2001 excavation, whereas several other rockshelters (U pukliny, Soorgrund) yielded negative results.

2000, July 24-28. - This survey centered on regional context of the NE part of the former military zone area. Concerning Mesolithic, one more site was discovered in the area of the deserted medieval village „Černá Novina“. Mesolithic artifacts were discovered in secondary position, in front of a rockshelter modified as a cellar during the Middle Ages. The section documented at this site (max. depth of 1m) included an upper humous layer, light-brownish sandy layer (Early New Age pottery), whitish *podzol* horizon, and an orange coarse-grained sand (archaeologically sterile). Importance of this site is therefore mainly in its isolated geographic position on the NE margin of our investigated.

2001, April 24-May 2. - Survey in a separate sandstone region of NE Bohemia, the Teplice-Adršpach and Broumov Cliffs. Even if this whole area lies in a higher location and thus colder climate compared to the North Bohemian sites, and the sandstones there are less suitable for rockshelter formation, we selected one site, "U sekery", for test trenching, in spring 2002.

## 7. The concluding seminar organized at Dolní Věstonice, Nov. 29, 2001

Introductory papers were held by V. Sojka (Sandstone landscape), J. Svoboda (Surveys in the North Bohemian sandstone pseudokarst, Summary of the 1977-2000 Mesolithic research), L. Jarošová (Results of the 2001 excavation season), and V. Peša (Postmesolithic finds from the North Bohemian pseudokarst).

Scientific contributions were presented by D. Nývlt (Continental glaciation of Northern Bohemia), P. Pokorný (Paleobotany: northern versus southern Bohemia), V. Jankovská (The Jestřebí pollen section), I. Horáček (fauna), and E. Drozdová (anthropological finds).

Comparative Mesolithic materials from other regions were presented by K. Valoch (Smolín, south Moravia), J. Vollbrecht (Reichwalde, Saxony), I. Sýkorová and P. Šída (new Mesolithic sites in Central Bohemia) and P. Škrdla (Mesolithic finds from the Morava river valley).

## 8. Conclusions

The 1999-2001 excavation and survey project expanded into several unexplored subregions of North Bohemia: in the north, the Labe-River Sandstones and Bohemian Switzerland natural reserves along the German border; to the southeast and east, the area of the former military zone Ralsko (Hradčanské Cliffs). Finally, the remarkable phonolithic hill of Bezděz provided an important Mesolithic assemblage in a good environmental and stratigraphic context. As an interesting preliminary result, it seems that the artifact densities at certain northern sites (Švéd, Arba, Dolský Mlýn, Okrouhlík), if compared to the previously excavated more southern sites, reflect an increasing trend from south to north. If this pattern is true, we should relate the the North Bohemian Mesolithic occupation to the densely occupied European Plain in the north, rather than to the Central Bohemian Basin in the south. On the contrary, some southern sites offered a better organic preservation, with faunal remains and bone industry.

The paleobotanical and paleontological evidence demonstrates the formation of the forested landscape since the early Holocene (Boreal and Early Atlantic periods), but not a radical shift between the Mesolithic and later prehistoric landscapes during the Atlantic. Compared to the Middle Holocene variability of habitats, the subrecent and recent vegetational cover of this region, dominated by conifers, looks more monotonous. The forthcoming paleobotanical, malacozoological and vertebrate-paleontological analyses should confirm this picture.



In terms of C14 chronology, the typologically diagnostic Mesolithic sites may now be separated in two stages, with the boundary (calibrated) between 8000 - 8500 bp:

**Sites with trapezes:** Dolský mlýn, charcoal layers and hearths in the depths of 175 cm, 210 cm, 240 cm, and 260 cm: four data from 6720 ± 120 BP to 7770 ± 70 BP; Bezděz, 140 cm charcoal: 6930 ± 120 BP.

**Sites with triangles:** Pod zubem, 115-120 cm charcoal deposits: 7660 ± 130 BP and 8110 ± 240 BP. Pod křídlem, 50-70 cm hearth: 8160 ± 80 BP; Švédův převis, 120-130 cm charcoal concentration: 8180 ± 110 BP; Okrouhlík I. a series of four dates between 7300 ± 60 and 9170 ± 70 BP.

There does not seem to be a chronological overlap between these two stages, nor between the Mesolithic (ending at 7500 bp) and Neolithic, starting in central parts of the Czech Republic at around the same date. However in Northern Bohemia, the earliest Neolithic (Linear Pottery) is only represented by a few potsherds, whereas the later Neolithic (Stroked Pottery) already forms a dense horizons, both at open-air sites and in the rockshelters. At Bezděz, there is a sterile interlayer between the latest Mesolithic and the Stroked Pottery layer. We consider these informations as basic for understanding the Mesolithic/Neolithic transition in its environmental context.

#### Perspectives:

As a part of the Dolní Věstonice Studies Series, a multidisciplinary monographic volume resuming the results of this project are prepared for publication.

*Jiří A. Svoboda, AÚ AV ČR Brno*

**Sídelní aglomerace velkomoravských mocenských center v proměnách údolní nivy.**  
Zpráva o výsledcích grantu Grantové agentury ČR č. 404/96/K089

Interdisciplinární sídelně - archeologický "nivní" projekt byl řešen v letech 1996-2001 na pracovišti Archeologického ústavu AV ČR Brno v Mikulčicích. Jako spolunositelé se na něm postupně podíleli: Moravské zemské muzeum v Brně, Ústav archeologické památkové péče Brno, opavské pracoviště Památkového ústavu v Ostravě, Český geologický ústav v Praze, brněnské pracoviště Botanického ústavu AV ČR v Průhoniciích, Veterinární a farmaceutická univerzita v Brně a Mendelova zemědělská a lesnická univerzita v Brně.

Hlavním předmětem studia byla údolní niva řeky Moravy v Dolnomoravském úvalu a v ní ležící velkomoravská centra, zejména Mikulčice a Staré Město - Uherské Hradiště. V popředí zájmu stály otázky, proč nejvýznamnější centra velkomoravského státu vznikala na říčních ostrovech v nivě větších řek jižní a jihovýchodní Moravy, částečně i jihozápadního Slovenska, a jak se přírodní podmínky nivy promítly do života těchto center. K lepšímu uchopení problematiky mělo přispět posouzení holocenního vývoje přírody a osídlení celé moravní nivy v prostoru Dolnomoravského úvalu, tj. mezi Napajedelskou bránou a soutokem s Dyjí. U kolem projektu bylo podpořit další razantní zpracování obrovského pramenného fondu z Mikulčic a jeho publikaci.

Cílem projektu byla příprava podkladů pro novou komparaci obou předních center Velké Moravy, a to zejména v oblasti geografických podmínek, sídelního a hospodářského vývoje. Oproti některým dřívějším diskusím, založeným na kvantitativních ukazatelích (počty kostelů, bohatých hrobů, zbraní a pod.), které v 80. letech vedly k otevřenému sporu o "prvenství" mezi Mikulčicemi a Starým Městem, nová etapa výzkumu se zaměřila na střizlivou kritickou analýzu jednotlivých složek pramenného fondu obou lokalit. Současně usilovala o přiblížení metodiky práce obou středisek výzkumu.

Projekt svým zaměřením vycházel z obecných potřeb raně středověkého výzkumu na Moravě a v České republice. Šlo především o prohloubení orientace na široce pojatý sídelně-archeologický výzkum a o nové možnosti exaktního datování archeologických pramenů. S pomocí projektu bylo v Mikulčicích zprovozněno středisko interdisciplinárního výzkumu s paleoekologickou a dendrochronologickou laboratoří. Jako vzor v tomto úsilí stála některá vědecká pracoviště v Německu, Polsku a v dalších zemích Evropy, zaměřená zmíněným způsobem již několik desetiletí.

Problematika velkomoravských center a údolní nivy byla sledována ve třech rovinách. V nejširší úrovni byla studována údolní niva Dolnomoravského úvalu a její holocenní osídlení. Ve střední rovině se práce soustředily na komparaci Mikulčic a Starého Města - Uherského Hradiště. V nejužším a nejdetailnějším pohledu byla problematika údolní nivy a velkomoravských center sledována na lokalitě Mikulčice-Valy.

Protože sledované území svým rozsahem mnohonásobně překračovalo možnosti soustavného terénního průzkumu, omezily se terénní aktivity projektu na 4 krajinné transekty: 1/ širší prostor mikulčické aglomerace, 2/ širší prostor staroměstsko-uherskohradištské aglomerace, 3/ Strážnické Pomoraví, 4/ Soutok Moravy s Dyjí.

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