The origin and distribution of obsidian in prehistoric Bohemia

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ABSTRACT

This paper summarizes current knowledge of the distribution of obsidian in prehistoric Bohemia (Czech Republic). In terms of this raw material's distribution, Bohemia is a peripheral area, and it is also the westernmost part of its regular archaeological occurrence. Because of its rarity within the specified area, it is possible to identify this material quite easily even in earlier archaeological literature, and together with new discoveries, to create a coherent picture of its distribution. So far, only two locations in Bohemia have been described where the processing of raw obsidian material is documented. Both these sites are located in the eastern part of the study area; in terms of location these are the closest sites to the anticipated sources. The sites are dated to a later stage of the Stroked Pottery culture. Because no such processing sites are known from other periods, we believe it was mainly the distribution of entire blanks and pre-prepared cores that took place at that time.

Furthermore, our study discusses the original sources of obsidian in terms of the region that is being monitored. In accordance with the aims of our investigation, the selected obsidian artefacts were subjected to geochemical analysis to identify their origins. The peak of the distribution is the period of the Stroked Pottery culture (4900–4500/4400 cal BC). The basic outcome of the geochemical analysis is the identification of at least two sources of raw material in the Carpathian source area.

KEYWORDS

Obsidian, outcrops, raw material distribution, Palaeolithic, Neolithic, geochemistry

Introduction

In terms of its distribution in Czech prehistory, obsidian represents only a marginal raw material. Its frequency in the relevant chipped stone collections (i.e. those collections with at least 100 pieces) during the period of its peak distribution is always less than one per cent, while in most cases there are only sporadic artefacts (Table 1). Owing to the relative ease of its recognition, this raw material was already identified in Bohemia in the first half of the 20th century (Stocký 1926), much earlier than other imported raw materials such as siliceous rocks of Polish origin (Lech 1980) or Bavarian Jurassic cherts. Since the early 20th century the number of finds has increased only slightly in Bohemia. Despite previous sporadic attempts to synthesize the data (Steklá 1959) this raw material did not become the

No.	Locality	Archaeological period	Quantity	Reference	No of SAMPLES
1	**Bylany**	LBK	2	Ø	
2	**Čáslav - Hrádek**	STK	1	Stocký 1919, 128	
3	**Čistá 5**	MESOLITHIC	1	Vích 1999, 28	
4	**Dobruška**	?	5	Burgert 2015, 251	
5	**Dobřany**	LBK	1	Burgert 2015, 262	11
6	**Dolní Poříčí**	UPPER PALAEOLITHIC / MESOLITHIC	1	Vencl 2006, 61	
7	**Holohlavy**	LATE LBK	1	Pavlů, Vokolek 1996, 53	
8	**Horní Sloupnice 2**	MESOLITHIC	1	Čuláková 2010; 2015, 147	
9	**Hradišťko**	MESOLITHIC (?)	1	Vencl 2006, 130	
10	**Jaroměř**	STK IV	3	Burgert 2015, 251	5
11	**Jaroměř**	STK IV	3	Kalferst 2001, 140	
12	**Jaroměřice 1b**	LGK	1	Vích 2001, 40	
13	**Jevíčko Předměstí 19**	NEOLITHIC (?)	1	Vích 2005, 40	
14	**Jevíčko Předměstí 23**	?	1	Vích 2003, 43	
15	**Karlovice**	STK/LGK	?	Filip 1947, 220, 223	
16	**Koldín**	MESOLITHIC	1	Burgert 2015, 260	
17	**Kolín**	STK	?	Dvořák 1936, 21-23	
18	**Kolín - obchvat**	STK	4	Burgert 2015, 260	8-9
19	**Křesetice**	?	1	Burgert 2015, 260	
20	**Libomyšl**	NEOLITHIC	1	Macháčková 1998, 53	
21	**Lochenice**	?	2	Buchvaldek 1990, 30; Sláma 1990, 113	
22	**Lochenice - kanalizace**	NEOLITHIC	1	Burgert 2015, 262	
23	**Nebovidy**	STK	?	Dvořák 1936, 26	
24	**Nedošín 11**	NEOLITHIC	1	Vích 2008-2009, 62	
25	**Plotiště n. L.**	STK IVb	78	Burgert 2015, 262	1-2
26	**Plotiště n. L. - JZD**	?	1	Ø	
27	**Polepy u Kolína**	STK	?	Dvořák 1936, 26	
28	**Praha 6 - Liboc**	NEOLITHIC	1	Žebera 1955, 38	
29	**Předměřice n. L.**	STK	1	Kovárník, Bláha, Kalferst 2011, 167	4
30	**Předměřice n. L. – Honkeho cihelna**	STK IVb	2	Ø	
31	**Putim**	UPPER PALAEOLITHIC / MESOLITHIC	1	Dubský 1949, 40, 44	
32	**Ražice**	UPPER PALAEOLITHIC / MESOLITHIC	2	Dubský 1949, 40, 44	
33	**Semonice**	STK IVb	1	Ø	
34	**Skřivany**	STK	?	[Prokop] 1913, 39; Stocký 1926, 72	
35	**Smiřice**	STK IV	18	Šnajdr 1903; Stocký 1926, 72	6-7
36	**Stradouň**	UPPER PALAEOLITHIC / MESOLITHIC	1	Vích 2012, 253	10

No.	Locality	Archaeological period	Quantity	Reference	No of SAMPLES
37	**Tisová 18**	LBK /EARLY AENEOLITHIC	1	Burgert 2015, 262	
38	**Úhřetice**	LBK + NEOLITHIC	3	Burgert 2015, 262	3
Σ			144		

Table 1. Inventory of all known prehistoric obsidian finds in Bohemia. The sites marked grey are those from which samples were analyzed
Таблица 1. Списък на всички познати праисторически обсидианови находки в Бохемия. Обектите, от които произхождат анализираните образци са оцветени в сиво

subject of more consistent research until the last few years (Burgert 2015; Burgert et al. 2016) (fig. 1).

Chronological classification of the distribution

All the traceable obsidian finds from Bohemia are summarized in Table 1. As is shown by their chronological classification, this raw material was used continuously in Bohemian prehistory from at least the Upper Palaeolithic to the Eneolithic. In terms of the frequency of its occurrence, the Stroked Pottery (STK) culture period (4900–4500/4400 cal BC) appears to have been its distributional peak. The obsidian finds are concentrated exclusively in the later period of this culture (STK IV of Zápotocká 1970), based on pottery associations. This also corresponds approximately to the peak of the obsidian distribution in the nearby Lengyel culture area (Mateiciucová 2008).

Bohemian finds of obsidian from earlier chronological periods, i.e. the Palaeolithic and the Mesolithic are problematic. No obsidian is known from sites that so far have been examined using systematic archaeological research. All archaeological occurrences are based on surface collections and are dated only within the context of the specific site. The vast majority, however, come from peripheral areas with a high proportion of habitats of hunter-gatherer communities and an absence of long-term prehistoric farming settlements (fig. 2).

The distribution scheme

So far in Bohemian prehistory, only two locations have been described where the processing of raw obsidian material has been recorded (Šnajdr 1903; Burgert 2015). The sites where obsidian nodules were processed are characterized by the presence of cortical flakes. Both sites (Smiřice and Plotiště nad Labem) are in the eastern part of the study area (fig. 2. D), i.e. they are the closest sites to the anticipated sources and to the route of raw material distribution. Both sites are dated to a later stage (IV) of the STK culture. At the same time, 84 per cent of all the finds of obsidian (n=6) are present on these two sites. Because no such processing sites are known from other periods, we believe that it was mainly the distribution of entire blanks and pre-prepared cores that took place at that time.

Throughout the duration of the Linear Pottery (LBK) culture (5700/5600–5100/5000 cal BC) and the STK culture the Czech Neolithic chipped stone industry is characterized by blade technique. In sufficiently large assemblages, the ratio between blades/fragments and flakes is usually balanced. Obsidian artefacts from Bohemia are quite small. When assess-

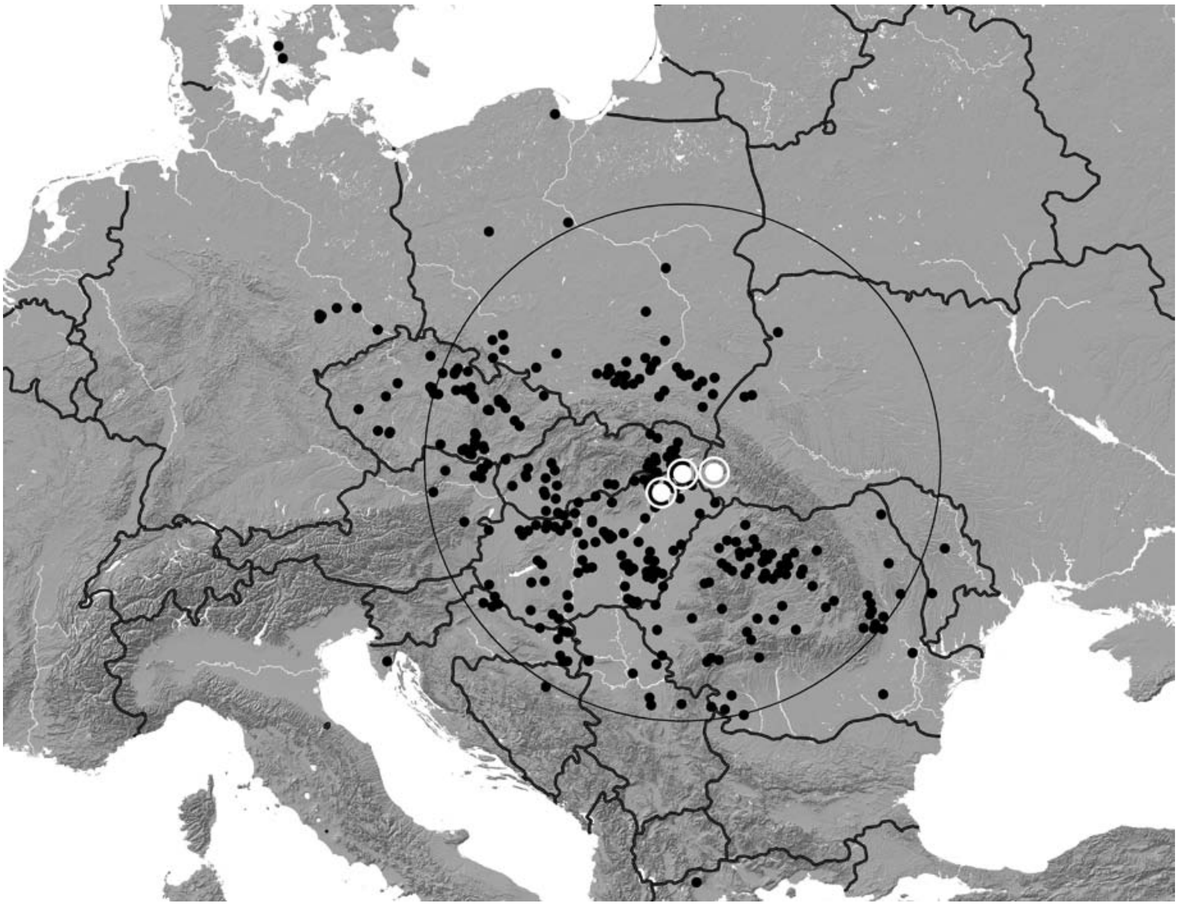

Fig. 1. Overall distribution range of Carpathian obsidian during prehistoric times (after Burgert 2015, fig. 2)
Обр. 1. Цялостен обхват на разпространение на карпатски обсидиан в праисторията (по Burgert 2015, fig. 2)

ing the size of complete obsidian blades (i.e. figuratively the sizes of the cores, which are rare) from STK contexts, we are confronted by a methodological problem.

Since most of the finds come from eastern Bohemia, we can only properly assess this area. The local dominant raw material from the entire Neolithic period comprises silicites from glacial deposits (80%). The chipped industry based on this raw material is also of relatively small size, however. This is most evident in the STK settlement of Jaroměř (in the Náchod district), which represents the largest assemblage so far analyzed from this area (Burgert 2017). The assemblage, which consists of 2015 items, includes 202 complete blades without further modification. The median length of these blades is 30 mm. This reflects the overall small-sized character of the industry and therefore this cannot be directly associated with obsidian.

The provenance of the raw material

To determine the provenance of the Bohemian obsidian, a total of 11 samples from 8 archaeological sites were selected (fig. 3). All these samples come from properly dated find contexts with plenty of pottery. The only exception is an artefact from the Stradouň site, which, based on the results of the surface survey, can be classified only as belonging to the

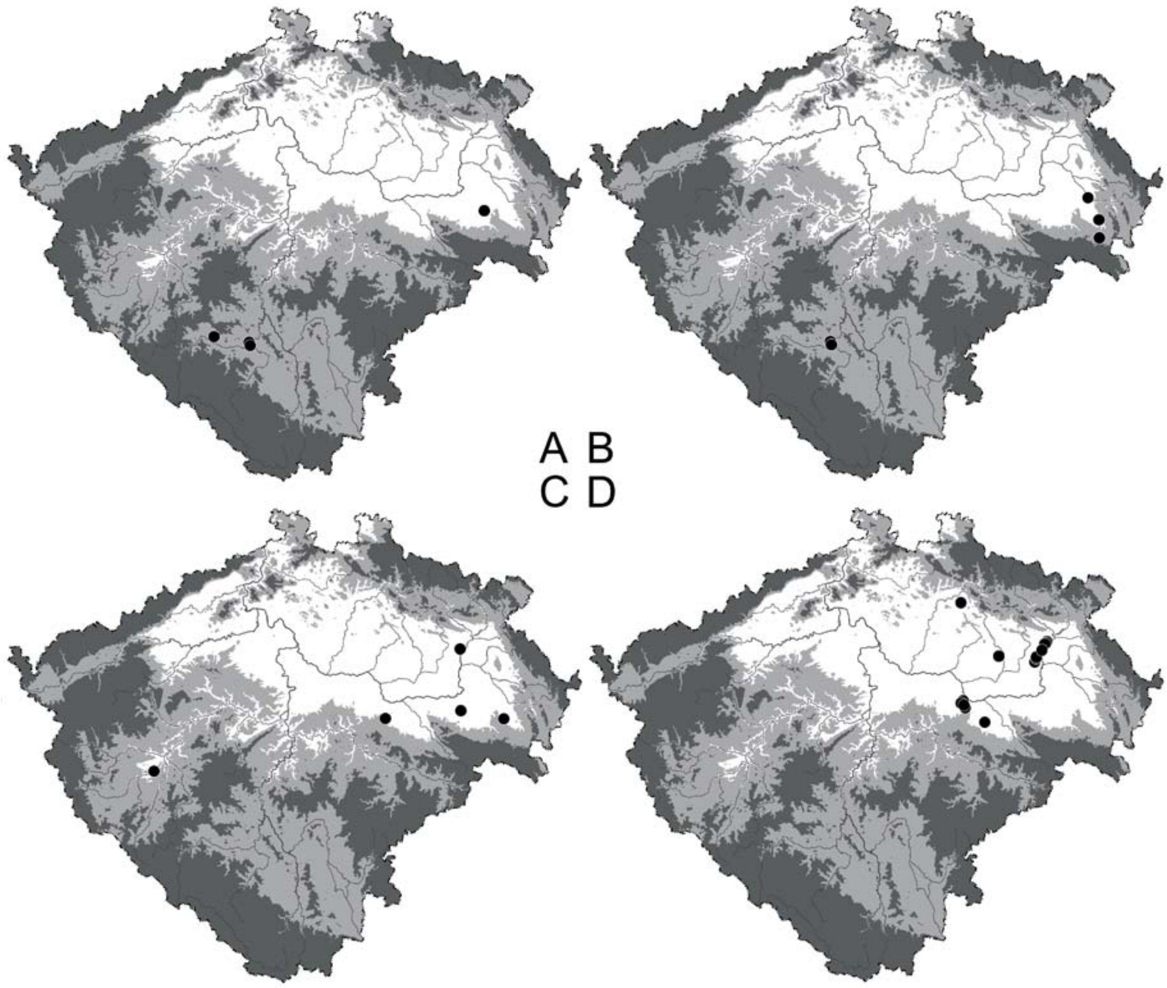

Fig. 2. Distribution of obsidian in Bohemia during individual chronological periods. A: Palaeolithic, B: Mesolithic, C: LBK, D: STK
Обр. 2. Разпространение на обсидиан в Бохемия през отделните периоди. А – палеолит, В – мезолит, С – култура на линейно-лентестата керамика (LBK), D – култура на керамиката с набодена украса (STK)

Palaeolithic/Mesolithic periods. In the region where this site is located no later prehistoric settlements are known. From other archaeological sites, however (e.g. Plotiště nad Labem, Smiřice, Kolín) multiple samples were selected. The reason for this was their striking macroscopic differences, reflected particularly in the glass turbidity or its fluid structure. Apart from sample no. 10 referred to above (Stradouň), the finds are dated to the Neolithic, to both the LBK (5700/5600–5100/5000 cal BC) and STK (5100/5000–4500/4400 cal BC) periods.

Methodology

A description of the appearance of the obsidian artefacts was made using a stereomicroscope fitted with a water immersion objective lens. Magnetic susceptibility (MS) of the pieces was measured using a portable KT-6 kappameter. The composition of chemical elements was determined using a hand-held ED-XRF spectrometer (Innov X Delta) with a 4W Rh-anode and a ≥ 25 mm^2 silicon drift detector. The measuring parameters: beam (1) 1 – 40 kV, beam (2) 2 – 10 kV, in geochemical mode, an exposure time of 140s. Measurements were

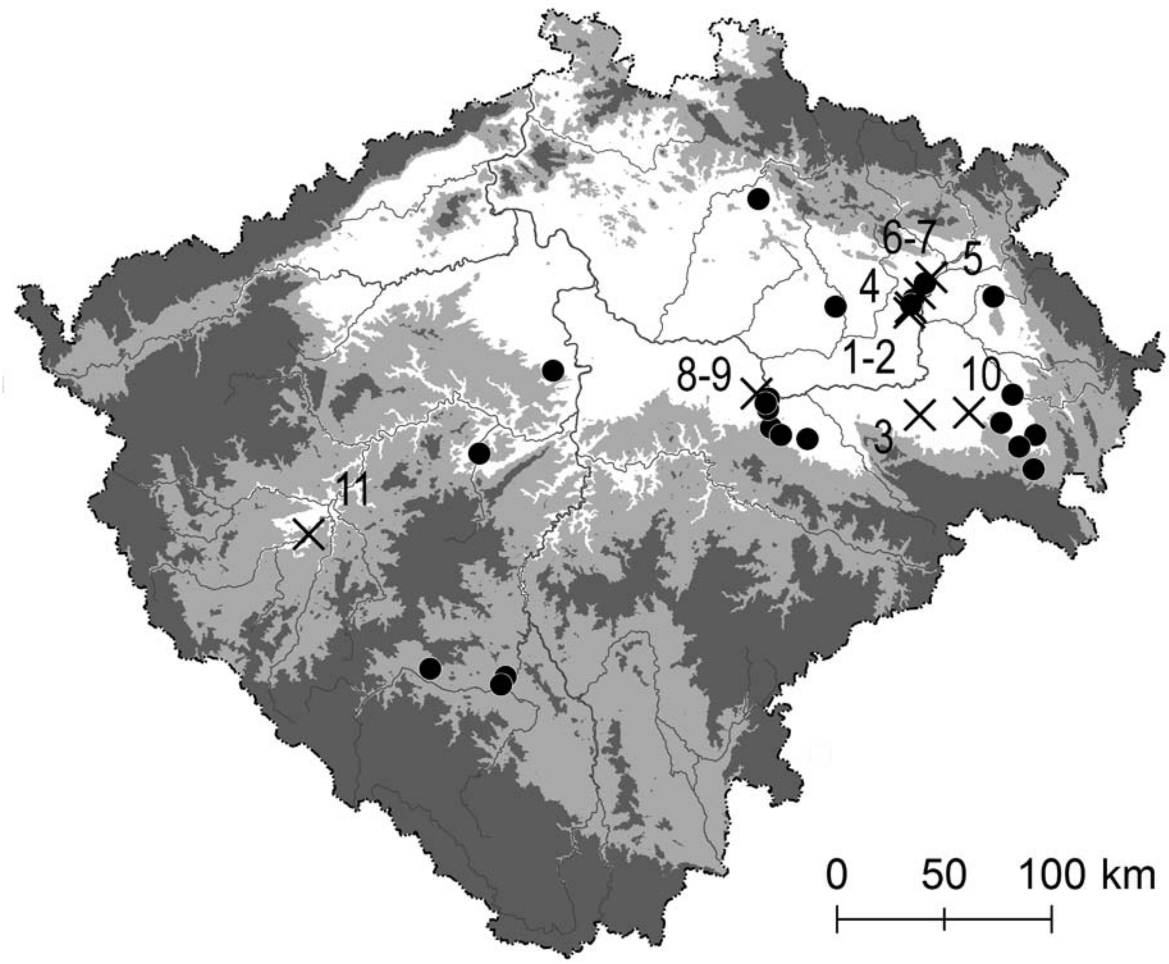

Fig. 3. Locations of samples analyzed; the sample numbering is maintained throughout the entire study
Обр. 3. Местоположение на анализираните образци. Номерирането на образците е едно и също в рамките на изследването

taken on the surface of artefacts, which had been cleaned with acetone.

Serving as external calibration for the measured obsidian were ATHO-G rhyolitic glass and T1-G diorite glass (Jochum et al. 2006); calculation of the calibration function was carried out using the method of linear regression of least squares (L. Prokeš in Burgert et al. 2016). Used as comparative samples in the Rb-Zr chart are data from natural sources, Carpathian 1a (southern part of the Zemplín Hills in the Slovak Republic, with the primary source: 8 x Viničky, 3 x Malá Bara), Carpathian 1b (northeastern part of the Zemplín Hills, secondary source and artefacts from its surrounding area: 8 x Cejkov, 1 x Kašov, 1 x Brehov), Carpathian 2T (the Tokaj-Zemplín Hills in Hungary, 5 x Tolcsva, 1 x Erdőbénye), Carpathian 2E (the Tokaj-Zemplín Hills in Hungary, 4 x Erdőbénye, 1 Olaszliszka). Identification of the individual natural sources is based on previous work by Williams-Thorpe et al. (1984), Biró et al. (1986) and Rosania et al. (2008) (fig. 4).

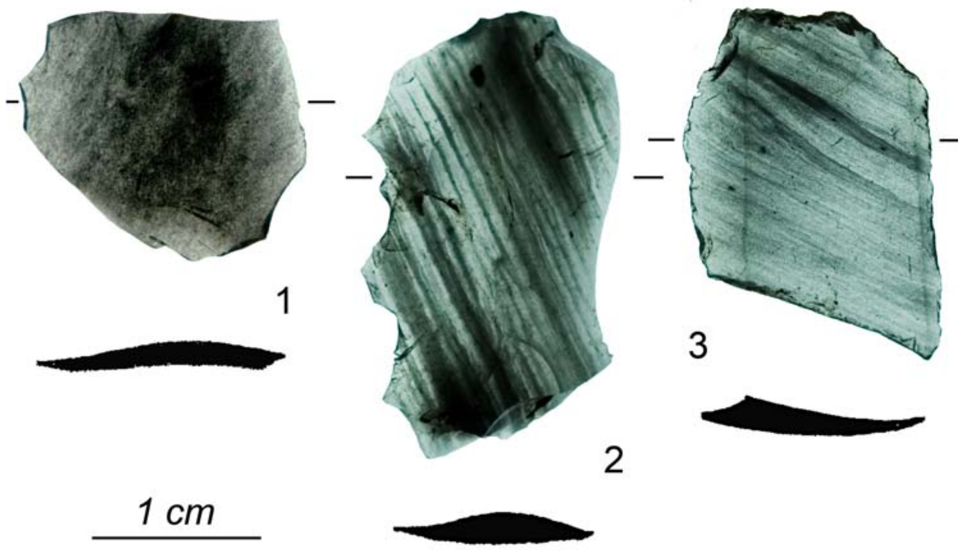

Fig. 4. Translucency of selected obsidian artefacts: 1-2 Plotiště nad Labem (sample no. 1 and 2), 3 Dobřany (sample no. 11). Photographed in transmitted light (photo by P. Burgert)
Обр. 4. Полупрозрачност на избрани артефакти. 1-2 Плотище над Лаба (образци № 1 и 2), 3 Добржане (образец № 11). Снимани в условията на преминаваща светлина (снимка П. Бургерт)

Evaluation of the results

According to observations under a stereomicroscope a noticeable fluidal arrangement of crystallites (i.e. the nuclei of tiny mineral individuals of various shapes) was visible in the obsidian artefacts, forming both lighter and darker bands. For three obsidians (from Plotiště 1, Úhřetice and Stradouň) these inclusions can already be identified as microliths (microscopic crystals) because their crystal surfaces created a number of small reflections in the glassy mass. The vast majority of the obsidians were very translucent, poor lumen was observed in samples from Předměřice and both samples from Kolín. Three artefacts (from Smiřice and Kolín 1 and 2) were additionally characterized by not having a glassy but only a matte lustre of their mass. Clear sculpting (i.e. natural etch marks) of the original obsidian surfaces was observed on the artefacts from Předměřice, Smiřice 2 and Stradouň. Their magnetic susceptibility was measured indicatively and this showed that there was a direct relationship between the susceptibility and the weight of the artefacts; no obsidian, however, particularly deviated in terms of the values of magnetic susceptibility, which became evident specifically after its conversion to the same weight (fig. 5).

In terms of their chemistry volcanic rocks and their glass reflect the geotectonic position in which they originated. The Carpathian obsidians can therefore be distinguished on the basis of selected trace elements from resources found in the Mediterranean Sea or in Turkey, which, theoretically, could also occur in Central Europe (see for example Williams-Thorpe et al. 1984, fig. 7). These authors analyzed 264 archaeological obsidian artefacts, which in terms of their timeframe included artefacts from the Middle Palaeolithic through the Upper Palaeolithic, the Mesolithic, abundant finds from the Neolithic and scarce finds from the Eneolithic. Of these, 242 samples corresponded to the Slovakian source Carpathi-

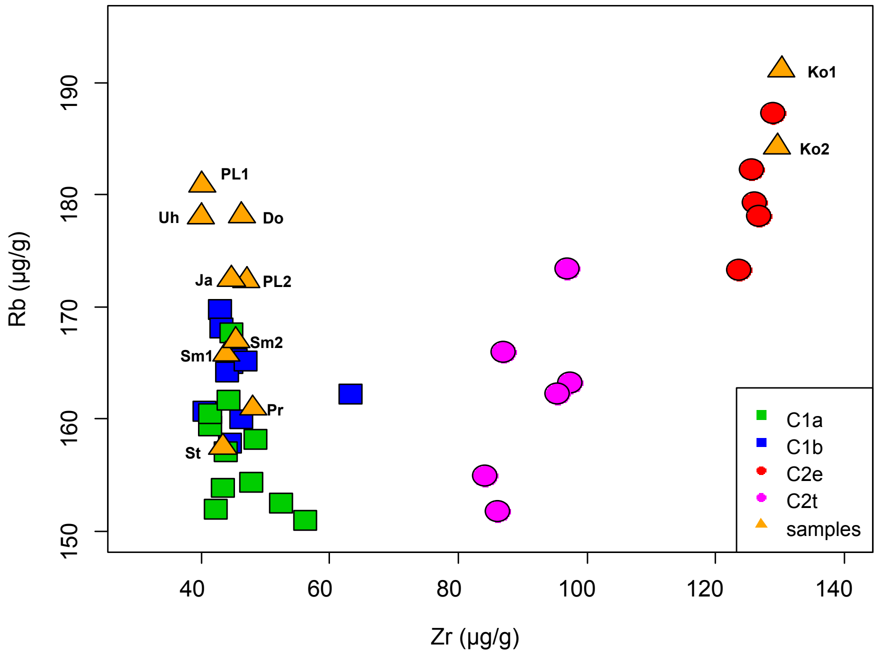

Fig. 5. Binary Rb-Zr diagram for distinguishing the provenance of Bohemian obsidian artefacts based on quantification using the pXRF method. Green squares – Carpathian 1a source (Viničky and Malá Bara); blue squares – Carpathian 1b source (Brehov – Cejkov); violet circles – Carpathian 2T source (primarily Tolcsva); red circles – Carpathian 2E source (Erdőbénye – Olaszliszka); yellow triangles with site abbreviations – Bohemian obsidian artefacts (PL – Plotiště nad Labem, Uh – Úhřetice, Do – Dobřany, Ja – Jaroměř, Sm – Smiřice, Pr – Předměřice nad Labem, St - Stradouň, Ko - Kolín) (after Burgert at al. 2016, fig. 4, adjusted)

Обр. 5. Бинарна Rb-Zr диаграма за идентифициране на произхода на бохемски обсидианови артефакти, базирана на рентгенова флуоресценция. Зелени квадрати – карпатски източник 1a (Винички и Мала Бара); сини квадрати – карпатски източник 1b (Брехов-Цейков), лилави кръгове – карпатски източник 2a (предимно Толчва), червени кръгове – карпатски източник 2b (Ердобьонье-Оласлиска); жълти триъгълници с абревиатури на археологически обекти – бохемски обсидианови артефакти (PL – Плотище над Лаба, Uh – Ухретице, Do – Добржане, Ja – Яромиерж, Sm – Смержице, Pr – Пржедмержице над Лаба, St – Страдоун, Ko – Колин) (по Burgert at al. 2016, fig. 4 адаптирана)

an 1 (which at that time was not subdivided), 16 could have been derived from the Hungarian source Carpathian 2T (Tolcsva), while 6 pieces matched the Carpathian 2E source (Erdőbénye). The Slovakian source was divided into two sub-sources: one source is represented by non-sculpted and poorly translucent obsidian from the Borsuk rhyolite body near Viničky and Malá Bara, which was probably minimally used during the prehistoric period. The second and key source was represented by sculpted obsidian pebbles and fragments from a secondary source, in the gravels between Brehov and Zemplín (Přichystal, Škrdla 2014), near which there are also rich prehistoric sites at which this obsidian was utilized (i.e. Cejkov and Kašov).

Selected trace elements were determined by means of non-destructive ED-XRF spectrometry. In addition to the main elements such as Si, Al, Fe and K, 12 trace elements were also determined (As, Ba, Mn, Rb, Sr, Ti, Th, U, V, Y, Zn, Zr), while recently Sr, Rb and Zr have proved to be the most indicative. These elements, for example, with the same meth-

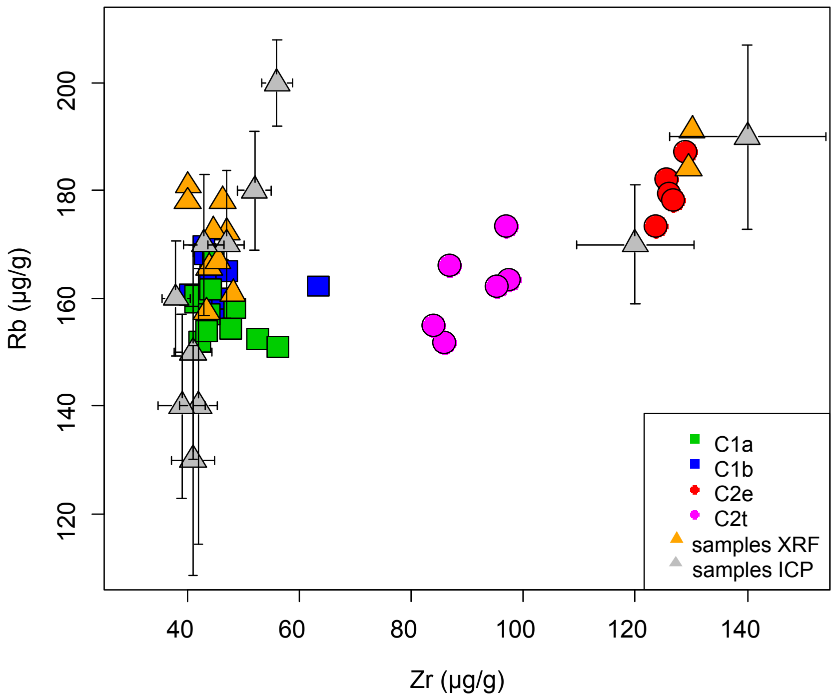

Fig. 6. Binary diagram Rb-Zr using data from Fig. 6 completed with the quantification of Zr and Rb, in artefacts by means of the ICP method (grey triangles with lines). The measurements demonstrated a significantly higher Zr content in both artefacts from Kolín (after Burgert at al. 2016, fig. 5, adjusted)
Обр. 6. Бинарна Rb-Zr диаграма, използваща данните от обр. 6 и показваща количественото определяне на Zr и Rb в артефактите чрез метода ICP (сиви триъгълници с линии). Измерванията показват значително по-високо съдържание на Zr в двата артефакта от Колин (по Burgert at al. 2016, Fig. 5, адаптирана)

odology for their determination, were used by Richard E. Hughes and Dagmara H. Werra (2014) to determine the origin of the obsidian artefacts from Rydno, a Late Mesolithic site in central Poland. To determine the provenance of Czech obsidian artefacts we used a binary Rb-Zr diagram (fig. 5). The natural obsidian sources are shown by green and blue coloured squares (Slovakian sources Carpathian 1a, 1b), while the Hungarian obsidians are shown by purple and red coloured circles (Carpathian 2T, 2E). Analyzed Bohemian artefacts made of obsidian are represented by yellow triangles accompanied by the abbreviation of the site. The chart suggests that, with the exception of the obsidians that are labelled Kolín 1 and 2 that originate from the Carpathian 2E source in Hungary, all the others correspond to the Slovakian sources, and more specifically to the secondary source close to Brehov. Here, it must be emphasized that no clear-cut answer to the question of whether the Carpathian 1a-1b obsidian sources in Slovakia can be reliably distinguished geochemically has yet been published and it is therefore likely that geochemically they overlap. The same is also likely for the Carpathian 2T-2E sources in Hungary, where there are also other locations (e.g. Mád) that are not plotted on the Rb-Zr diagram. The Slovakian sources, however, differ from one another by either the presence or the absence of sculpture, by the shapes of the obsidian raw material and their translucency (Přichystal, Škrdla 2014), while the obsidians from Mád-Kakashegy have a very distinctive appearance, i.e. without sculpting, and are almost opaque (fig. 6).

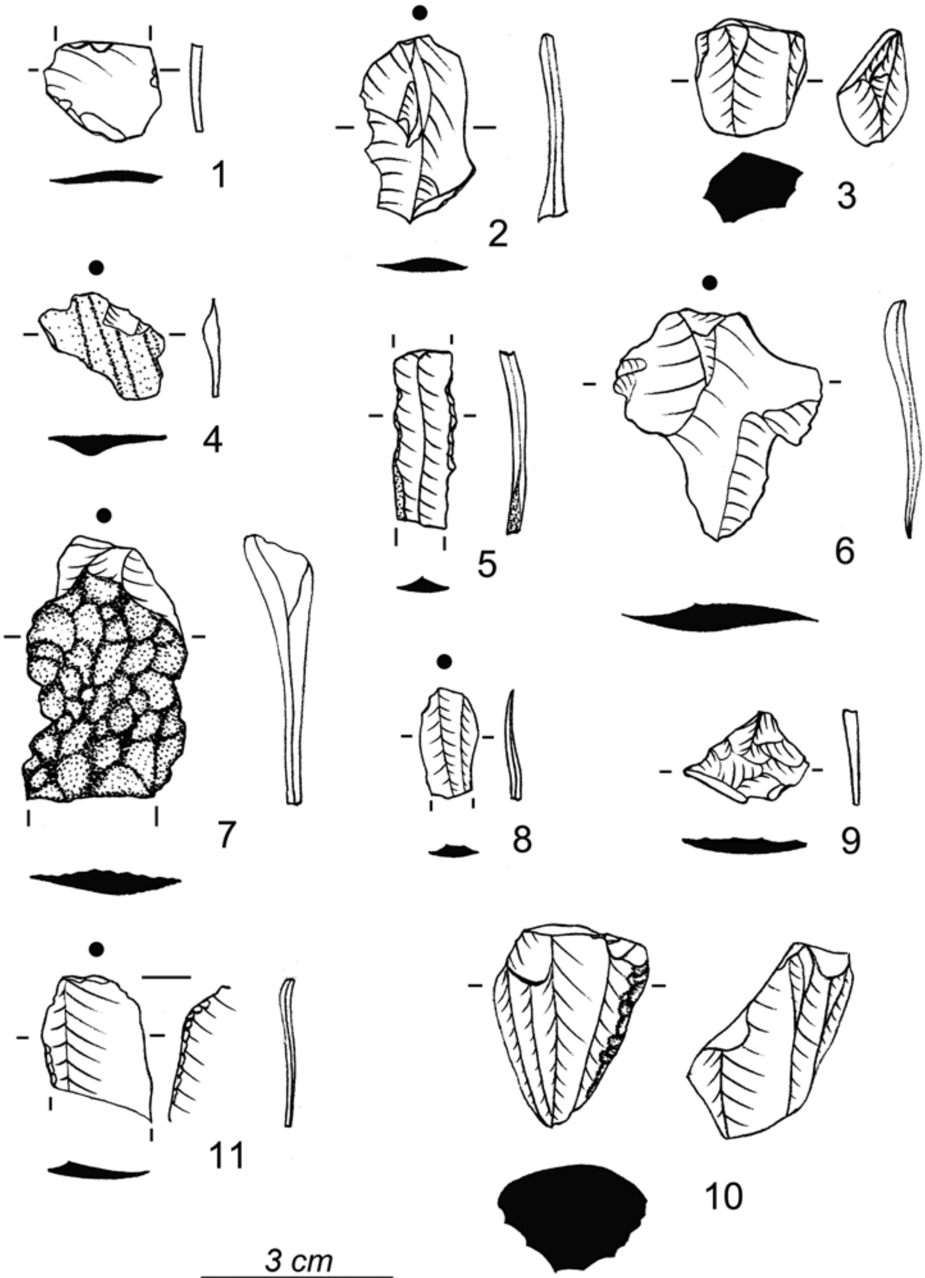

Fig. 7. Illustrations of individual samples, the numbering of which is maintained throughout the entire study (drawing by P. Burgert)
Обр. 7. Рисунки на артефактите-образци, чието номериране е едно и също в рамките на изследването (автор П. Бургерт)

Conclusions

Geochemical research on the obsidians from the Czech prehistoric sites shows that the most of them come from the Slovakian source located in the Zemplín Hills. If we need to decide between the Carpathian 1a (Viničky) and 1b (Brehov-Cejkov) sources, the higher levels of Rb point to the Brehov-Cejkov source. This classification is also confirmed by the occurrence of the sculpting relics on the original surface of the material (especially that from Stradouň and Smiřice 2) and it is also evidenced by the usual clear translucency of the obsidian artefacts (e.g. from Plotiště 1 and 2, Úhřetice and Dobřany). It is evident that this source played a major role throughout the entire period of Czech prehistory (Přichystal, Škrdla 2014). This is also true of Czech obsidian, because the artefacts from both the Upper Palaeolithic (Stradouň) and those corresponding to the Linear and the Stroked Pottery cultures are made from it.

Both artefacts from Kolín that are associated with a later stage of the STK culture deviate from the studied assemblage group, however. They are poorly translucent and have a matte lustre, while geochemically they contain higher quantities of Zr. Their origin can be identified as being from among the Hungarian sources located in the Tokaj-Zemplín Hills and, based on their high contents of Zr and Rb, they correspond to the Carpathian 2E source, i.e. the Erdőbénye-Olaszliszka area.

In terms of the archaeology, the situation referred to above presents a difficult interpretation task. It is evident that within the same timeframe (i.e. the later stage of the STK culture) obsidian from at least two sources was used at the Bohemian sites. Owing to their distance from the actual outcrops (meaning, in Bohemia, ca 500 km as the crow flies) any direct link between the sources and the consumer communities is unlikely. One possibility is that the obsidian came to Bohemia as raw material mostly in an undifferentiated manner whereby the raw materials from the various sources were indiscriminately mixed and therefore the resultant picture of the representation of the individual sources in the area is random. Another possibility is that the different source area of the obsidians from Kolín also reflects the different geo-social bonds of the local communities compared to those in eastern Bohemia. The readability of the archaeological record is further complicated by the fact that only a small volume of obsidian raw material was distributed in the area of Bohemia, as suggested by the workshop for its processing located in Smiřice where just a few nodules were chipped (Burgert 2014). The different situation that was found in Kolín may therefore represent the reflection of a single episodic event.

Annex – description of the samples (fig. 7)

Plotiště nad Labem (Hradec Králové District): SAMPLE n **1-2**; DESCRIPTION: **1**: flake (blank). DIMENSIONS: 17x15x3 mm, WEIGHT: 0.81g, APPEARANCE: translucent with a certain degree of turbidity, the inclusions are either bigger and brighter or very small and black; MS: 0.02 x 10^{-3} SI; **2**: flake (blank). DIMENSIONS: 29x17x4 mm, WEIGHT: 1.61g, APPEARANCE: highly translucent, strikingly banded, occasionally found with larger black inclusions; MS: 0.05 x 10^{-3} SI, FIG. 7. 1, 2.

Úhřetice (Chrudim District): SAMPLE No.: **3**; DESCRIPTION: a small single-platform core. DIMENSIONS: 19x17x12 mm, WEIGHT: 3.91g, APPEARANCE: highly translucent, absence of bands, comprising a plurality of small light-reflecting crystallites, MS: 0.06 – 0.07 x 10^{-3} SI, FIG. 7. 3.

Předměřice nad Labem (Hradec Králové District): SAMPLE n **4**; DESCRIPTION: cortical flake with a 90% original surface. DIMENSIONS: 22x12x3 mm, WEIGHT: 0.71g, APPEARANCE: an almost black colour and almost opaque with a number of very small black inclusions; the delicately gritty sculpted structure of the original surface of the raw material has been preserved, MS: 0.04 x 10^{-3} SI, FIG. 7. 4.

Jaroměř (Náchod District): SAMPLE n **5**; DESCRIPTION: Flake with broken distal and proximal parts and a marginally retained original surface. DIMENSIONS: 28x10x3 mm, WEIGHT: 0.8g; APPEARANCE: turbid, absence of bands, grey, MS: 0.03 x 10^{-3} SI, FIG. 7. 5.

Smiřice (Hradec Králové District): SAMPLE n **6-7**; DESCRIPTION: **6**: Cortical flake. DIMENSIONS: 37x33x5 mm, WEIGHT: 3.43g, APPEARANCE: matte lustre, fine cloudy turbidity, MS: 0.07 x 10^{-3} SI; **7**: cortical flake with an 80% original, significantly sculpted surface. DIMENSIONS: 40x26x9 mm, WEIGHT: 6.78g, APPEARANCE: a distinctly banded type with bands of a thickness of up to

2 mm, a significant amount of sculpting causes poorer translucency, MS: 0.12 x 10^{-3} SI, FIG. 7. 6, 7.

Kolín (Kolín District): SAMPLE n **8-9**; DESCRIPTION: **8**: Flake with a broken terminal part. DIMENSIONS: 17x9x2 mm, WEIGHT: 0.36g, APPEARANCE: cloudy, almost opaque, after moistening there are visible signs of a banded structure with bands of a thickness of less than 1 mm, matte lustre, MS: 0.01 x 10^{-3} SI; **9**: cortical flake. DIMENSIONS: 20x15x3 mm, WEIGHT: 0.63g, APPEARANCE: after moistening there are visible signs of a banded structure with bands of a thickness of up to 2 mm, matte lustre, MS: 0.02 x 10^{-3} SI, FIG. 7. 9.

Stradouň (Ústí nad Orlicí District): SAMPLE n **10**; DESCRIPTION: A single platform core with a partially preserved original sculpted surface. DIMENSIONS: 31x22x18 mm, WEIGHT: 14.08g, APPEARANCE: cloudy turbidity, fine light reflective crystallites inside glass matter, on part of the artefact there is sculpting with deep notches and dimples, MS: 0.18 x 10^{-3} SI, FIG. 7. 10.

Dobřany (Plzeň-South District): SAMPLE n **11**; DESCRIPTION: Flake with a broken terminal part and lateral utility retouching. DIMENSIONS: 23x16x3 mm, WEIGHT: 0.91g. APPEARANCE: almost clear, sometimes with dark bands, very fine black pigment, MS: 0.05 x 10^{-3} SI, FIG. 7. 11.

Acknowledgments

This study was accomplished with support from the project 'Building Structures, Activity Areas and Site Layouts of the Late Neolithic Settlement Areas (5000/4900-4500/4400 BC)', No. 15-16963S, financed by the Czech Science Foundation (GAČR).

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Произход и разпространение на обсидиан в праисторическа Бохемия

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(резюме)

Статията обобщава настоящето познание за разпространението на обсидиан в праисторическа Бохемия (Република Чехия, Централна Европа). Този район е най-западната точка на разпространение на този материал и стои в периферията на обсидиановата мрежа. В допълнение, разпространението на праисторически обсидиан в Чехия го окачествява като незначителна суровина. Неговото присъствие в списъците на кремъчната индустрия (например в комплекс от минимум 100 екземпляра), дори по времето на най-интензивното му разпространение, е винаги под 1% и най-често е представен от спорадични артефакти. Тъй като тази суровина е лесно разпознаваема, тя е коректно идентифицирана в Бохемия още през първата половина на 20-ти век, т.е. много по-рано от силикатните суровини произхождащи от Полша или баварския юрски кварц. От началото на 20-ти век информацията относно суровинната база на обсидиан в Бохемия бавно се увеличава.

Хронологическата класификация на находките показва, че обсидиан е използван без прекъсване в чешката праистория от късния палеолит до каменномедната епоха. По отношение на честотата на поява на тази суровина, периодът на културата на керамиката с набодена украса (STK; 4900–4500/4400 пр. Хр.) изглежда е върхът на разпространението ѝ. Находките, които подлежат на подробна класификация в

рамките на тази култура, се отнасят предимно към късния ѝ период. Това съответства приблизително на върха на разпространение на обсидиан в съседната култура Ленгиел.

С цел изучаване на произхода на суровината са избрани 11 образци от 8 праисторически обекта в Чехия. Образците произхождат от сигурно датирани контексти, съдържащи много керамика. Само в един случай датировката се базира на находки от повърхността (сред които и обсидианов артефакт) и се отнася към епохата на палеолита/мезолита. Всички останали артефатки се отнасят към неолита – периодите на културата на линейно-лентестата керамика (LBK; 5700/5600–5100/5000 пр. Хр.) и на културата на керамиката с набодена украса (STK; 5100/5000–4500/4400 пр. Хр.).

Геохимичният анализ на обсидиановите артефакти от чешките праисторически обекти показва, че повечето от тях произхождат от словашки източник в планината Земплен. Високото съдържание на Rb насочва към източника Брехов-Цейков. Това определение се потвърждава и от наличието на характерната корова повърхност на суровината, както и от нейната обичайна полупрозрачност. Безспорно този източник на суровина е играл основна роля през целия праисторически период. Това се отнася и за обсидиановите изделия, намерени в Чехия, тъй като палеолитните и неолитни артефакти са направени от тази суровина.

Два артефакта от обекта Колин от късния етап на културата на керамиката с набодена украса в централна Бохемия се отклоняват от общия модел. Те не са части от един и същи предмет и техният произход е от източниците във възвишенията Токай-Земплен в Унгария. Тази идентификация се базира на високата концентрация на Zr и Rb, които са характерни за карпатски източник 2b, тоест в района на Ердобьонье-Оласлиска.

Става ясно, че в един и същи период – късния етап на керамиката с набодена украса – обсидиан е добиван от поне два източника. Тъй като те се намират на известно разстояние от археологическите обекти в Бохемия (около 500 км по права линия), то пряка връзка между източниците и потребителите е малко вероятна. Възможно е необработен обсидиан да е достигал до Бохемия като масова суровина, без отчитане на различните му източници, което води до настоящата картина на нерегулирано разпространение на обсидиан от различни местонаходища. Друга възможност е, че различната обсидианова суровина в Колин отразява различни гео-социални връзки на локалните общности в сравнение с тези, обитаващи Източна Бохемия.