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Fossil Brown Bears of Slovakia

Los osos pardos fósiles de Eslovaquia

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ABSTRACT

The fossil remains of bears are very frequently found in the karst sediments of the Western Carpathians. Besides cave bears, two taxa of fossil brown bears (*Ursus tauba-densis*, *Ursus arctos priscus*) have been present in the Slovak territory during the Late Pleistocene Period too. Recent European brown bear (*Ursus arctos arctos*) is appearing in the Western Carpathians Mountains at the beginning of the Holocene or already at the end of the Pleistocene Period respectively.

So far, osteological remains of arctoid bears have been described from 23 Slovak localities. The most frequently, these remains belong to the taxon *Ursus arctos* ssp. or to the recent subspecies *Ursus arctos arctos*. The fossil findings of brown bears from the Late Pleistocene are less frequent.

Key words: brown bears, Late Pleistocene, Holocene, Western Carpathians, Slovakia

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INTRODUCTION

The fossil findings of representatives of the family Ursidae are known in the territory of Slovakia from sediments dated from the Middle Miocene to the beginning of the Holocene Period. They are found relatively frequently, especially in the karst sediments of the Late Pleistocene. Most of these fossil remains belong to cave bears (*Ursus spelaeus*), which lived in the Slovak territory of the Western Carpathians Mountains from the end of the Middle Pleistocene to the end of the Late Pleistocene. However besides cave bears, two taxa of fossil brown bears (*Ursus taubachensis*, *Ursus arctos priscus*) have been present in the same territory during the Late Pleistocene Period too. Recent European brown bear (*Ursus arctos arctos*) is appearing in the Western Carpathians Mountains at the beginning of the Holocene or already at the end of the Pleistocene Period respectively.

GEOGRAPHICAL DISTRIBUTION OF FOSSIL BROWN BEARS IN THE TERRITORY OF SLOVAKIA

As the first of fossil brown bears, probably *Ursus taubachensis* (RODE, 1931) rarely occurred in the Slovak territory during the Last Interglacial. However, it suddenly began dying out here by the end of this warm climatic period or by the beginning of the Last Glacial respectively. Thus, the fossil findings of this bear species have some stratigraphical value. MUSIL (1996) has been described the fossil remains from the Certova pec Cave as *U. cf. taubachensis*. Probably, the fossil

remains of the arctoid ursid from the Besenová-Bána travertine quarry belong to this taxon too (see figure 1). This relatively big bear species came from the south, whereas it probably had reached the southwestern areas as the first ones in the Slovak territory.

The other relatively big bear taxon from the arctoid branch of ursid phylogeny, which lived in the territory of Slovakia during the Last Glacial Period, was fossil subspecies *Ursus arctos priscus* GOLDFUSS, 1822. The taxon probably evolved from some local population of brown bears in the territory of Middle or Western Europe, but it is not descendant of brown bears from southern Europe (*Ursus arctos arctos*) (MUSIL, 1996). These fossil brown bears, as large as a grizzly, were rarely extended between paleopopulation of cave bears (MUSIL, 1996) in the extensive European territory of the Paleoarctic area (SCHMIDT, 1970). They lived in the same territory and in the same environment (MUSIL, 1964) together with them. However, there were ascertained some morphological differences between these single taxa, especially in the shape of the both cranium and teeth. These fossil brown bears have been extended in Slovak territory especially in the mountainous areas of the Middle Slovakia. They expanded here probably from the west (Moravia?), but it is not out of question their next migration to the east. The fossil remains of these ursids are not as abundant as the ones of cave bears, but they have been solitarily described as *U. arctos priscus* or *U. arctos cf. priscus* from some Slovak caves – the Vazec Cave, the Vyvieranie Cave, the Lisková Cave

(SABOL, *in press*), the Kupcovie izbicka Cave and probably from the Okno Cave (SABOL, 1999) too (see figure 1). However similarly to cave bears, these big fossil brown bears began dying out in Slovak territory at the end of the Last Glacial too.

In the time between the end of the Last Glacial Period and the beginning of the Holocene Period (approximately 10 000 years BP) the recent European brown bears (*Ursus arctos arctos* LINNÉ, 1758) are appearing in the Slovak territory of the Western Carpathians Mountains. Similarly as brown bears from the Last Interglacial (*U. taubachensis*), their presence in the territory of Slovakia is also the result of some migration waves of brown bears from the southern Europe, probably from the Balkan Peninsula (MUSIL, 1996). But to the different from the Taubach bears, the recent brown bears expand probably from the south-east in the Slovak territory. The findings from the Lukáč Abyss can be the evidence of that. They belong among the geologically oldest (end of the Pleistocene – beginning of the Holocene) osteological remains of this subspecies in Slovakia. The biotope of recent European brown bears consists of coniferous and mixed forests in the near inaccessible rocky terrain with sufficient number of dry refuges (such as caves), and the presence of water. The original distribution (nearly in all Europe) of these ursids is only insular and imperceptible in the present in Western Europe, whereas Slovakia makes the western boundary of their more continuous distribution in Eurasia (FERIANCOVÁ-MASÁROVÁ & HANÁK, 1965). There live approxima-

tely 1.000 individuals in Slovak mountains today. However, their distribution here is restricted only to area of some mountains (the Strážov Highland, the Malá Fatra Mts., The Velká Fatra Mts., the Beskydy Mts., the Oravská Magura Mts., the Choc Hills Mts., the Tatras Mts., the Low Tatras Mts., the Levoca Hills Mts., the Slovenské rudohorie Mts., the Polana Mts., the Stiavnica Hills Mts., the Kremnica Hills Mts., the Vtáčnik Mts. and the Ziar Mts.) (FERIANCOVÁ-MASÁROVÁ & HANÁK, 1965), whereas it was much larger in the past (see figure 2). The fossil and subfossil findings of osteological remains of these bears from the Lukáč Abyss, the Silická Brezová (HOKR, 1951), the Bear Cave near Ruzín (AMBROS, 1990), the Fox Cave in the Little Carpathians Mts., the Bear Cave – Huciaky, Klenovec, and the Sípová Cave (see figure 1) are evidence of that. Also it is not out of the question that findings described only as *Ursus arctos* ssp. from the Jasov Cave (VOLKO-STAROHORSKY, 1929), the N III Cave in the Belianske Tatry Mts. (FEJFAR & SEKYRA, 1964), Lucivná (SKUTIL, 1938), the Nová éra Cave, the Belianska Valley, the Cervená Magurka Cave, the Pod Úplazom Cave, the Psie diery Cave and the Moldava Cave probably belong to the representatives of the subspecies *Ursus arctos arctos* too (see figure 1).

CONCLUSION

On the basis of our knowledge about fossil and subfossil taxa of brown bears we are able to draw that these ursids were relatively abundant in the Slovak territory

of the Western Carpathians Mountains in the past. They were relatively abundantly represented to the rate of the single paleopopulation states and to the rate of the taxa in the single geological periods.

So far, their osteological remains have been described from 23 Slovak localities. The most frequently, these remains belong to the taxon *Ursus arctos* ssp. or to the

recent subspecies *Ursus arctos arctos*. The fossil findings of brown bears from the Late Pleistocene are less frequent.

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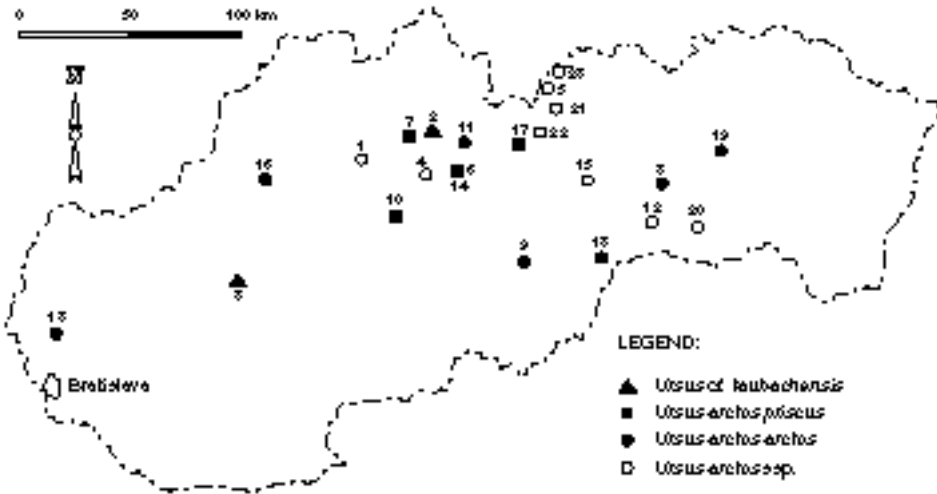


Figure 1. Location of brown bear localities in Slovakia. 1, Belianska valley; 2, Besenová-Bána; 3, Certova pec; 4, Červená Magurka Cave; 5, Pod Uplazom Cave; 6, Vyvieranie; 7, Lisková Cave; 8, Lukáč Abyss; 9, Klenovec; 10, Kupcovie izbicka; 11, Bear Cave - Huciaky; 12, Moldava Cave; 13, Fox Cave; 14, Okno; 15, Psie diery Cave; 16, Sipová Cave; 17, Vazec Cave; 18, Silická Brezová; 19, Bear Cave near Ruzin; 20, Jasov Cave; 21, N III Cave; 22, Lucivná; 23, Nová éra Cave.

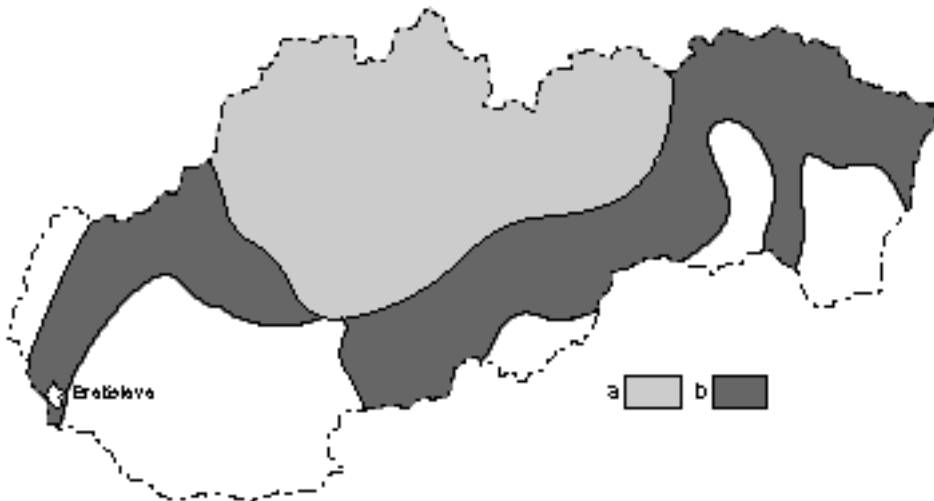


Figure 2. The geographical distribution of brown bears (*Ursus arctos arctos*) in the territory of Slovakia. a) area of geographical distribution in the present. b) area of assumed geographical distribution in the past

REFERENCES

- AMBROS, C. (1990). The osteological findings from the Bear Cave near Ruzin (in Slovak). *Slovenská archeológia*, Bratislava, **XXXVIII** (1): 31-38.
- FEJFAR, O. & SEKYRA, J. (1964). The periglacial sediments and fauna of caves in the High Tatras Mts. (in Czech). *Ceskoslovensky kras*, Praha, **16**: 57-66.
- FERIANCOVÁ-MASÁROVÁ, Z. & HANÁK, V. (1965). *The Vertebrates of Slovakia IV. The Mammals* (in Slovak). SAV, Bratislava, 336 pp.
- HOKR, Z. (1951). The results of paleontological researches in Czechoslovakia in 1950 (in Czech). *Vestník Ústředního ústavu geologického*, Praha, **26** (1): 35-38.
- MUSIL, R. (1964). The Brown Bears from the end of the Last Glacial (in Germany). *Casopis Moravského musea – Acta Musei Moraviae*, Brno, **XLIX**: 83-102.
- MUSIL, R. (1996). The Certova pec Cave and its fauna (in Czech). *Slovensky kras*, Liptovský Mikuláš, **XXXIV**: 5-56.
- SABOL, M. (1999). The fossil bears from the Okno cave. *Mineralia Slovaca*, Bratislava, **31** (2): 87-108.
- SABOL, M. (2001). Fossil and Subfossil Findings of Brown Bears from selected Localities of Slovakia. *Slovak Geological Magazine* Bratislava, *in press*.
- SCHMIDT, Z. (1970). The occurrence and the geographical distribution of ursids (Ursinae) in the territory of the Slovak Carpathians (in Slovak). *Slovensky kras*, Liptovský Mikuláš, **VIII**: 7-20.
- SKUTIL, J. (1938). The Paleolithe of Slovakia (in Slovak). *Spisy Historického odboru Matice Slovenskej*, 4, Martin, 160 pp.
- VOLKO-STAROHORSKY, J. (1929). The report about the research of the Jasov Cave (in Slovak). *Sborník Muzeálnej slovenskej spoločnosti*, Martin, **23**.