

# PURBECKIAN LIMNIC OSTRACODA REWORKED IN THE EARLY MIOCENE MARINE DEPOSITS OF THE VIENNA BASIN, SLOVAKIA



Nález resedimentovaných purbeckých limnických ostrakód v spodnomiocénnych morských sedimentoch slovenskej časti viedenskej panvy

Radovan Pipík<sup>1</sup>, Ján Schlögl<sup>2</sup>, Jean-Paul Colin<sup>3,4</sup>

<sup>1</sup> Geological Institute, Slovak Academy of Sciences, Severná 5, SK-974 01, Banská Bystrica, Slovakia; e-mail: pipik@savbb.sk

<sup>2</sup> Department of Geology and Paleontology, Faculty of Sciences, Comenius University, SK-842 15, Bratislava, Slovakia

<sup>3</sup> Impasse des Biroulayres, 33610 Cestas, France

<sup>4</sup> Universidade de Lisboa, Faculdade de Ciências, Centro de Geologia, Campo Grande, C-6, 3° 1749-046, Lisbon, Portugal

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## Abstract

Pri výskume morskej neritickej fauny vertebrát a invertebrát na lokalite Cerová boli v burdigalských íloch nájdené veľmi dobre zachované limnické mezozoické lastúrničky *Cetacella armata* Martin, 1958, *Cypridea* ex gr. *tumescens* (Anderson, 1939), *Cypridea* cf. *altissima* Martin 1940, *Mantelliana perlata* Wienholz, 1968, *Theriosynoecum forbesii* (Jones, 1885), *Darwinula* sp.

Nájdené lastúrničky patrili k celosvetovo rozšírenej limnickej faune, ktorá v Európe zanikla nástupom aptskej transgresie. Prítomnosť *Theriosynoecum forbesii* potvrdzuje resedimentáciu fauny z vrchnojurských až spodnokriedových sedimentov zodpovedajúcich biozóny *Theriosynoecum forbesii* (fig. 1A).

Nález purbeckých lastúrničiek dokumentuje limnickú sedimentáciu v oblasti strednej Európy vo vrchnej jure až spodnej kriede a prítomnosť týchto sedimentov v oblasti viedenskej panvy ešte v spodnom miocéne, ktoré sa v geotektonických jednotkách prilahlých viedenskej panve dnes nenachádzajú. Za pravdepodobný zdroj vzhľadom na geologický vývoj strednej Európy a na stupeň zachovania resedimentovaných lastúrničiek je možné uvažovať jednotky vonkajších Západných Karpát.

Burdigalian clays with thin silty tempestites layers outcropped near the village Cerová have been investigated for its abundant neritic/bathyal vertebrate and invertebrate fauna.

Among the Miocene marine neritic ostracoda, we have found well-preserved limnic Mesozoic ostracods *Cetacella armata* Martin, 1958, *Cypridea* ex gr. *tumescens* (Anderson, 1939), *Cypridea* cf. *altissima* Martin 1940, *Mantelliana perlata* Wienholz, 1968, *Theriosynoecum forbesii* (Jones, 1885), *Darwinula* sp. These taxa were a part of the limnic Mesozoic ostracod fauna wide-spread over the world, which disappeared in the Europe with marine Aptian transgression and was replaced in the Late Cretaceous by new and modern ostracod taxa (Babinot et al., 1996).

A presence of *Theriosynoecum forbesii* (Fig. 1A) confirms that these limnic ostracods were reworked to the Early Miocene deposits from the Late Jurassic/Early Cretaceous deposits of the *Theriosynoecum forbesii* Zone, equal to the Tithonian/Berriasian age. In the lithostratigraphical division, this zone corresponds to Purbeck and lower Hastings Groups known from the southern England and north-western France (Horne 1995).

With a respect to this biostratigraphical attribution, this discovery induces a paleogeographical problem on a source geological unit because no limnic Late Jurassic/Early Cretaceous deposits have been found in the Central Europe till now. The eastern edge of the Bohemian Massif can be regarded as the most possible source, which was at this time emerged land (Fig. 1B). Unfortunately preserved Late Jurassic/Early Cretaceous deposits are of marine origin and a lack of the Purbeckian limnic deposits is un-

derlined by Lower Cretaceous regression and karstification of the older deposits. Moreover, well-preserved ostracod valves without any marks of transport-related holes and smoothening of the ornamentation, and a relatively large distance of the deposition area from the Bohemian Massif make this "source" questionable, even impossible. Perfect preservation requires a transport on a short distance from the neighboring geological units. Central Western Carpathian geotectonic units can be hardly accepted as a possible source, due their continual and fully marine Late Jurassic–Early Cretaceous sedimentary sequence. The only source of the Purbeckian deposits, which could be partially emerged in that time, can be situated in the Outer Western Carpathians, however this limnic deposits were completely eroded.

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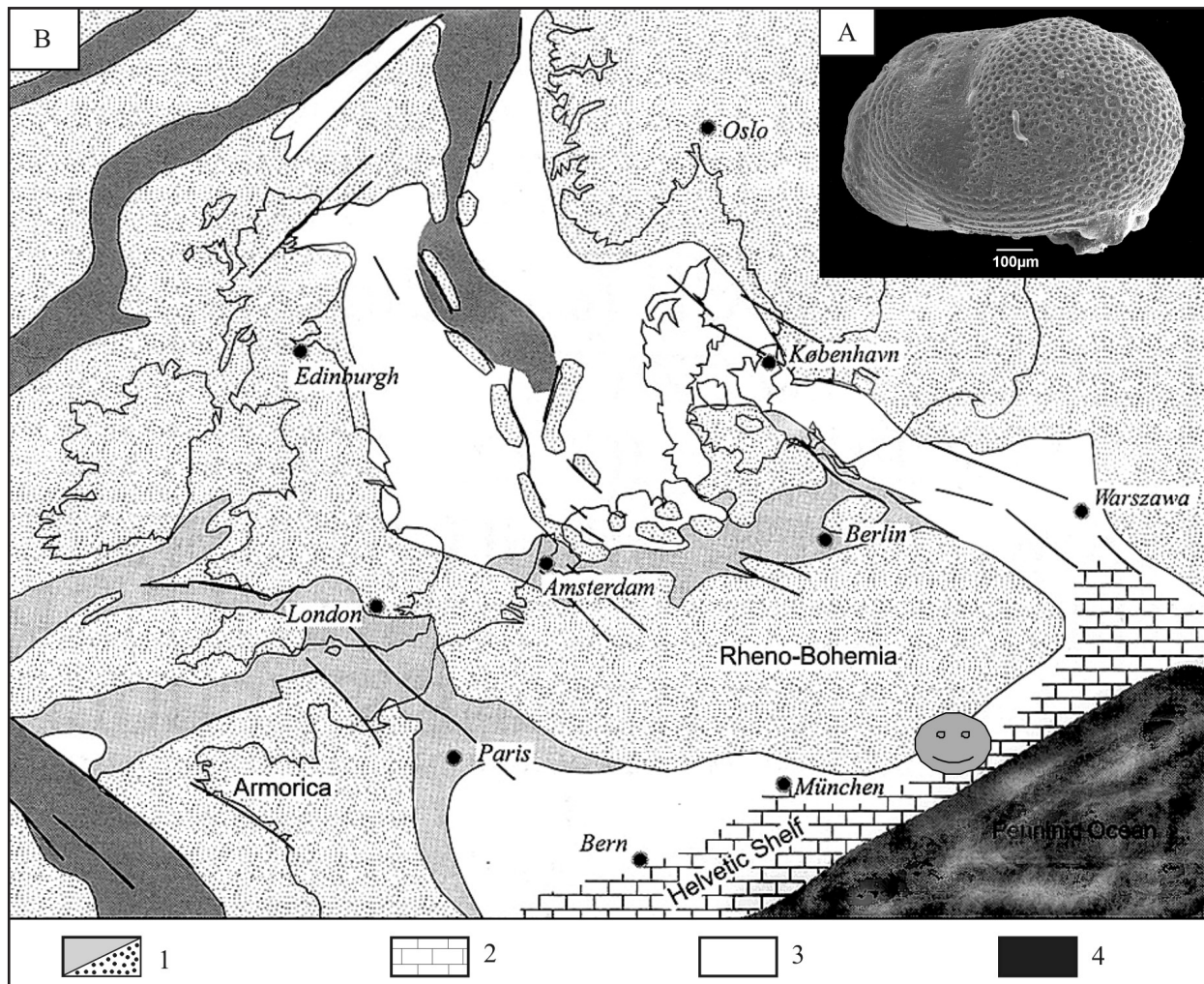


Fig. 1: (A) *Theriosynoecum forbesii* (Jones, 1885) found in the Early Miocene deposits at Cerová and (B) paleogeographic situation of the Early Cretaceous in Europe (from Voigt et al. 2008). A smiling gray pictogram shows approximate position of the locality Cerová. Legends: 1 – land area/Wealden, 2 – carbonate platform, 3 – shallow shelf, 4 – deep basin.

**References**

- Babinot, J. F. – Colin, J. P. – Tambareau, Y. (1996): Late Cretaceous non-marine ostracods from Europe: biostratigraphy, palaeobiogeography and taxonomy. – *Cretaceous Research* 17, 151–167.
- Horne, D. J. (1995): A revised ostracod biostratigraphy for the Purbeck-Wealden of England. – *Cretaceous Research* 16, 639–663.
- Voigt, S. – Wagreich, M. – Surlyk, F. – Walaszczyk, I. – Uličný, D. – Čech, S. – Voigt, Th. – Wiese, F. – Wilmsen, M. – Niebuhr, B. – Reich, M. – Funk, H. – Michalík, J. – Jagt, J. W. M. – Felder, P. J. – Schulp, A. S. (2008): Cretaceous. – In: McCann, T. (ed.): *The Geology of Central Europe, Vol. 2: Mesozoic and Cenozoic*, Geological Society of London, 923–997.