C. R. Palevol 12 (2013) 81–89

Contents lists available at SciVerse ScienceDirect

Comptes Rendus Palevol

www.sciencedirect.com

General palaeontology, systematics, evolution (Invertebrate palaeontology)

Deep-water brachiopod assemblage from the Middle Miocene of Kralice nad Oslavou, Moravia, southeastern Czech Republic

Un assemblage de brachiopodes d'eau profonde du Miocène moyen de Kralice nad Oslavou, Moravie, Sud-Est de la République tchèque

Maria Aleksandra Bitner[a,*], Kamil Zágoršek[b], Šárka Hladilová[c]

[a] *Institute of Paleobiology, Polish Academy of Sciences, ul. Twarda 51/55, 00–818 Warszawa, Poland*
[b] *Department of Paleontology, National Museum, Václavské nam. 68, CZ-115 79 Praha, Czech Republic*
[c] *Department of Biology, Faculty of Education, Palacky University, Purkrabska 2, 771 40 Olomouc, Czech Republic*

ARTICLE INFO

Article history:
Received 26 November 2012
Accepted after revision 26 January 2013
Available online 11 March 2013

Presented by Philippe Taquet

Keywords:
Brachiopoda
Middle Miocene
Badenian
Central Paratethys
Moravia
Czech Republic

ABSTRACT

Eight brachiopod species, i.e. *Novocrania* sp., *Cryptopora lovisati* (Dreger, 1911), "*Terebratula*" sp., *Megathiris detruncata* (Gmelin, 1791), *Argyrotheca cuneata* (Risso, 1826), *Joania cordata* (Risso, 1826), *Megerlia truncata* (Linnaeus, 1767), and *Platidia anomioides* (Scacchi and Philippi, 1844), have been identified in the Middle Miocene deposits of Kralice nad Oslavou, Moravia, Czech Republic. The species *C. lovisati* and *P. anomioides* dominate the studied assemblage, while others are very rare. *Novocrania*, *C. lovisati* and *M. truncata* are reported for the first time from the Moravian part of the Carpathian Foredeep. In species composition, the assemblage from Kralice resembles other Middle Miocene Paratehyan assemblages, interpreted as shallow water, but the dominance of *C. lovisati* and *P. anomioides* makes it clearly different, indicating an environment deeper than 100 m.

Mots clés :
Brachiopoda
Miocène moyen
Badénien
Paratéthys centrale
Moravie
République tchèque

RÉSUMÉ

Huit espèces de brachiopodes, *Novocrania* sp., *Cryptopora lovisati* (Dreger, 1911), "*Terebratula*" sp., *Megathiris detruncata* (Gmelin, 1791), *Argyrotheca cuneata* (Risso, 1826), *Joania cordata* (Risso, 1826), *Megerlia truncata* (Linnaeus, 1767) et *Platidia anomioides* (Scacchi et Philippi, 1844) ont été identifiées dans les dépôts du Miocène moyen à Kralice nad Oslavou, Moravie, République tchèque. Les espèces *C. lovisati* et *P. anomioides* dominent dans l'assemblage étudié, alors que les autres espèces sont très rares. C'est la première découverte de *Novocrania*, de *C. lovisati* et de *M. truncata* dans la partie morave de l'avant-fosse des Carpathes. En ce qui concerne sa composition taxonomique, l'assemblage de Kralice ressemble aux autres assemblages du Miocène moyen de la Paratéthys, interprétés comme représentant des milieux peu profonds ; toutefois, la domination numérique de *C. lovisati* et de *P. anomioides* est un trait très différent, indiquant un milieu situé en dessous de l'isobathe 100 m.

* Corresponding author.
E-mail addresses: bitner@twarda.pan.pl (M.A. Bitner), kamil_zagorsek@nm.cz (K. Zágoršek), sarka.hladilova@upol.cz (Š. Hladilová).

1631-0683/$ – see front matter
doi:10.1016/j.crpv.2013.01.004

1. Introduction

Although brachiopods are common members of the Middle Miocene communities of the Central Paratethys, surprisingly little is known about Miocene brachiopods from the Czech part of the Central Paratethys. The first, and so far the only, record illustrates and briefly describes brachiopods from the boreholes of Přemyslovice, Moravia (Zágoršek et al., 2012) where four species were recognized, i.e. *Terebratula* sp., *Megathiris detruncata* (Gmelin, 1791), *Argyrotheca cuneata* (Risso, 1826), and *Joania cordata* (Risso, 1826), although brachiopods were quite often mentioned without illustrations and descriptions (e.g. Doláková et al., 2008; Hamršmíd, 1984; Zágoršek et al., 2009). The same applies to the studied sections at Kralice nad Oslavou (Fig. 1), where brachiopods were reported in faunal lists by Procházka (1893), Toula (1893) and Hamršmíd (1984), but were never described properly or illustrated. Therefore, the aim of this paper is to give taxonomic descriptions of the brachiopods newly collected from these outcrops.

2. Geological setting

The locality Kralice nad Oslavou is situated in one of the erosional relics of marine Neogene deposits located on the crystalline rocks of the southwestern margin of the Bohemian Massif (Hladilová et al., 1999). These relics document the actual extent of the Carpathian Foredeep and post-depositional uplift and erosion (Zágoršek et al., 2009). The surrounding terrestrial Neogene sediments occurring in the area of Kralice nad Oslavou were studied by Brzák et al. (2001) and Nehyba (2003).

Kralice nad Oslavou has long been known as a fossil-rich, Middle Miocene (Lower Badenian) locality (Brzobohatý, 1997, 2001; Hamršmíd, 1984; Hladíková and Hamršmíd, 1986; Hladilová et al., 1999; Janoschek, 1937; Koutek, 1971; Procházka, 1893; Redinger, 1992; Sváček, 1996; Toula, 1893; Zágoršek and Holcová, 2003), and was recently investigated in detail by Zágoršek et al. (2008, 2009). Three outcrops, situated on the left bank of the Rakovec creek have been distinguished (Fig. 1). The greyish claystone exposed in Kralice-I (49° 11.619′ N, 016° 12.493′ E) has not yielded any fossils so far. In the second outcrop, (Kralice-II, 49° 11.591′ N, 016° 12.516′ E) the Miocene is represented by yellowish sandstone with foraminifers dominant (Zágoršek et al., 2008). The Miocene deposits of the third outcrop (Kralice-III, 49° 11.584′ N, 016° 12.538′ E) are represented by yellow marl and calcareous sandstone with a rich fauna of foraminifers, molluscs, bryozoans and echinoderms (Zágoršek et al., 2009). The age of these sections is interpreted as Early Badenian (Zágoršek et al., 2008, 2009) on the basis of planktonic foraminifers, calcareous nannoplankton, mollusks, bryozoans, and this conclusion is supported by co-occurrence of the Early Badenian forms *Bolboforma moravica* and *B. reticulata* (Redinger, 1992).

3. Material and methods

The investigated material was collected during fieldwork at Kralice-II and Kralice-III (Fig. 1) using samples taken as described by Zágoršek et al. (2008, 2009). Brachiopods were found in 31 samples, mostly from Kralice-III. The total number of specimens is 134; many damaged or fragmented, and most covered by epitaxial calcite cement. Specimens selected for scanning electron microscopy were mounted on stubs, coated with platinum and examined using a Philips XL-20 microscope at the Institute of Paleobiology, Warszawa. The specimens described here are deposited in the National Museum, Prague, under catalogue numbers P 1940–1968.

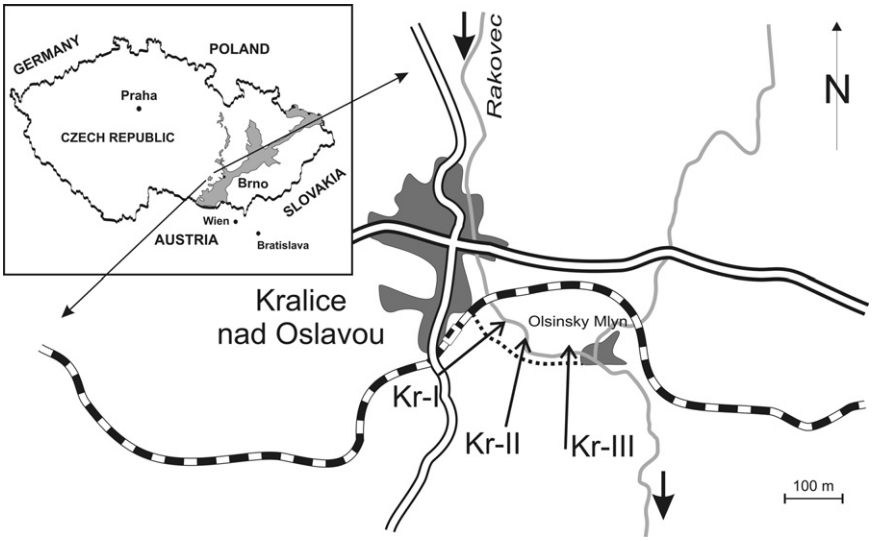

Fig. 1. Geographical sketch of the studied localities around Kralice nad Oslavou. (Kr-I: Kralice-I; Kr-II: Kralice-II; Kr-III: Kralice-III).
Fig. 1. Carte géographique des localités étudiées à Kralice nad Oslavou. (Kr-I: Kralice-I; Kr-II: Kralice-II; Kr-III: Kralice-III).
After Zágoršek et al., 2009.