

K/T BOUNDARY EVENT IN THE ROMANIAN CARPATHIANS

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Abstract: Three sections from Romania, displaying a continuous sedimentation across the K/T Boundary Interval, were detailed investigated from litho- and biostratigraphical points of view. The K/T Boundary was pointed out based on nannofloras, assigned to the Upper Maastrichtian *Nephrolithus frequens* and *Micula prinsii* Nannozones, as well as to the Lower Paleocene *Biantholithus sparsus* and *Cruciplacolithus primus* Nannozones. Successively blooms of *Thoracosphaera* and *Braarudosphaera bigelowii* are present, slightly above the K/T Boundary in all the studied sections.

Key words: K/T Boundary, lithostratigraphy, biostratigraphy, Carpathians, Romania.

INTRODUCTION

A continuous marine sedimentation across the Cretaceous/Tertiary Boundary interval in Romania was argued so far from the East Carpathians, based on palaeontological results (Antonescu & Alexandrescu, 1982; Ion et al., 1994, Ion, 1995; Melinte1999). The above mentioned studied, focused mainly on the turbiditic deposits of the Outer Flysch Zone, brought micropalaeontological evidence (dinoflagellates, planktonic foraminifera and calcareous nannofossil assemblages) for locating the K/T Boundary in the East Carpathians.

The aim of this study is to present the results of the detailed litho- and biostratigraphical investigations, focused on the marine sediments of the Upper Maastrichtian-Lower Paleocene from the East and South Carpathians.

LITHOSTRATIGRAPHY

The investigated sections are situated in Romania, in the East and South Carpathians (Fig.1).

The Lepsa section (Section 1 in Fig. 1) is located in the Outer Flysch Zone of the East Carpathians (Marginal Fold Nappe, *sensu* Săndulescu 1984). The Upper Maastrichtian-Lower Paleocene sequence

is represented by the calcareous turbidites of the Lepsa Formation, cropping out along the Lepsa Valley.

The Ialomita section (Section 2 in Fig 1) is placed in the southernmost end of the East Carpathians, along the right bank of the Ialomita River. The investigated deposits, namely the Gura Beliei Formation (which belongs to the post-tectonic cover of the Outer Dacides), are mainly represented by red marls. This formation is followed, in the stratigraphical succession, by variegated (violaceous and gray) silts and clays, with thin sandstones interbedded of the Sotrile Formation. Detailed lithostratigraphical studies pointed out the presence, within the upper part of the Gura Beliei Formation of a black clay layer (5 cm thick), intercalated in the red marls.

The Cheia section (Section 3 in Fig.1) is situated in the South Carpathians (Olt River Basin). The Upper Maastrichtian–Lower Paleocene succession is made up by a pelagic deposition: the gray marls of the Caciulata Formation, belonging to the post-tectonic cover of the Median Dacides. A thick pile of conglomerates, assigned to the Paleocene Calimanesti Formation, covers the marls of the Caciulata Formation.

The three sections presented herein were detailed sampled for calcareous nannofossil analyzes.

BIOSTRATIGRAPHY

All the investigated sections from the Romanian Carpathians offered diversified nannofloral assemblages. The Uppermost Maastrichtian was pointed out based on the successively first occurrence of the nannofossils *Nephrolithus frequens*, *Micula murus* and *Micula prinsii*. The Upper Maastrichtian calcareous nannofossil assemblages were assigned to the CC25 and CC26 Nannozones of Sissingh (1977).

In all the three studied sections successively blooms of *Thoracosphaera* and *Braarudosphaera bigelowii* were observed. These blooms are associated with a very poor content of other nannofossils (only few specimens of *Watznaueria barnesae*, *Micula decussata* and *Prediscosphaera cretacea* could be observed). To note that the blooms of *Thoracosphaera* and *Braarudosphaera bigelowii* are placed in the Ialomita section just above the black clay level. A pronounced decreasing of the Cretaceous taxa follows these blooms. Simultaneously with this bio-event, the “new incoming” Tertiary taxa, as *Neobiscutum parvulum*, *N. romeinii* and *Cruciplacolithus primus*, first occurred. The Lower Paleocene nannofossil assemblages contain also some “survivors” Cretaceous species, such as: *Cyclagelosphaera*

alta, *C. reinhardtii*, *Markalius inversus*, *Neocrepidolithus neocrassus*, *Octolithus multiplus* and *Zygodiscus spiralis*.

CONCLUSIONS

Three investigated sections from Romanian Carpathians were detailed studied from lithological point of view and for their calcareous nannofossil content.

In all the studied sections the nannofloral assemblages argue for a continuous sedimentation within the K/T Boundary Interval.

The nannofloral events observed in the sections from Romania are, in generally, the same observed in other areas of the Tethys Realm, as: Tunisia (Perch-Nielsen, 1981), Spain (Lamolda and Gorostidi, 1992; Pospical, 1995) and other Carpathian zones (Bubík, 1999).

Around the K/T Boundary the disappearance of the most Cretaceous calcareous nannofossils was identified. This is in accordance with the mass extinction of the planktonic organisms reported in the Tethys Realm around the K/T Boundary Interval (Stinnesbeck & Keller, 1996).

To remark that in one of the studied sections a black clay layer, followed by the *Thoracosphaera* and *Braarudosphaera bigelowii* blooms, was identified.

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Fig. 1.

