End-Cretaceous extinction and Paleogene recovery of planktonic microfauna in the Western Carpathians: Stratigraphic constraints and paleoenvironmental proxies

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K/T boundary has been previously constrained in Western Carpathians, but its existence is still uncertain due to Laramian erosion and absence of lowermost P-serie biozones (P0–P1). New evidences of the K/T boundary has been gathered from the study of stratigraphic drillings in Middle Váh Valley area, Horná Nitra Depression and Magura Zone.

K/T boundary is most properly marked in the Kršteňany KRS-3 borehole, and that by LO of *Abathomphalus mayaroensis* and FO of *Parvularugoglobigerina eugubina*. Transitional interval is also well dated by microperforate species *Globoconusa daubjergensis*, *Eoglobigerina simplicissima*, etc. The section grades upward to the Selandian formation with *Praemurica inconstans* and *Morozovella angulata*, and Thanetian formation with *acme* of acarininids (*A. wilcoxensis*, *A. coalingensis*, *A. pseudotopilensis*, etc.). The PETM interval is approximated by negative carbon isotopic excursion, magnetic reversal Chron C24r and appearance of excursion taxa (*Acarenina sibaiyensis, Discoaster araneus*). Ypresian formations are rich in diversified morozovellids (*M. formosa*, *M. subbotinae*, *M. aragonensis*, *M. lensiformis*, etc.), and higher up in Lutetian formations by species *Morozovella gorrondatxensis*, *Turborotalia frontosa*, *Acarinina topilensis*, *Globigerinatheka kugleri*, etc. Considering that, the Kršteňany section provides most complete stratigraphical record from the K/T boundary up to the late Middle Lutetian (Zone E10, pre-MECO).

K/T boundary is well constrained in plankton-rich sequence of the Žilina ZA-1 core section and Jasenica section (Fig. 1). The ZA-1 sequence begins with Maastrichtian marlstones containing of rich globotruncanid and heterohelicid foraminifers like *Abathomphalus mayaroensis*, *Gansserina gansseri*, *Racemiquembelina fructicosa*, etc. This formation passes into dark bioturbated marls with impoverished microfauna, which higher up abruptly change to *Parasubbotina*- and *Subbotina*-rich associations of the lowermost Paleocene formation. Middle Paleocene sequences are significantly enriched in large-sized morozovellids (e.g. *M. angulata*, *M. acuta*), globanonalinids (e.g. *G. pseudomenardi*, *G. compresa*) and muricate acarininids (e.g. *A. strabocela*, *A. soldadoensis*). Marly sequence also contains coralgal limestones of Kambühel Formation. Magnetic susceptibility record of Maastrichtian sequence, as well as most of the Paleocene, indicates paramagnetic behavior. A distinct change, with higher magnetic susceptibilities, is seen however at the K-T interval and lowermost Paleocene, and may indicate magneto-mineralogical variations or illustrate the paleoenvironmental changes.

K/T boundary is also inferred in deep-water sequence of the Magura Zone. It is marked by rich microfauna of guembelitrids, which indicates *Guembelitria* bloom at the K/T boundary. Herein, this stress microfauna is well documented by species *Guembelitria cretacea*, *G. danica* and *Woodbringina hornerstownensis*, which correspond to the P0 biozone of Arenillas et al. (2000). Paleocene sediments above *Guembelitria*-bearing formations differ by appearance of *Parasubbotina* species.

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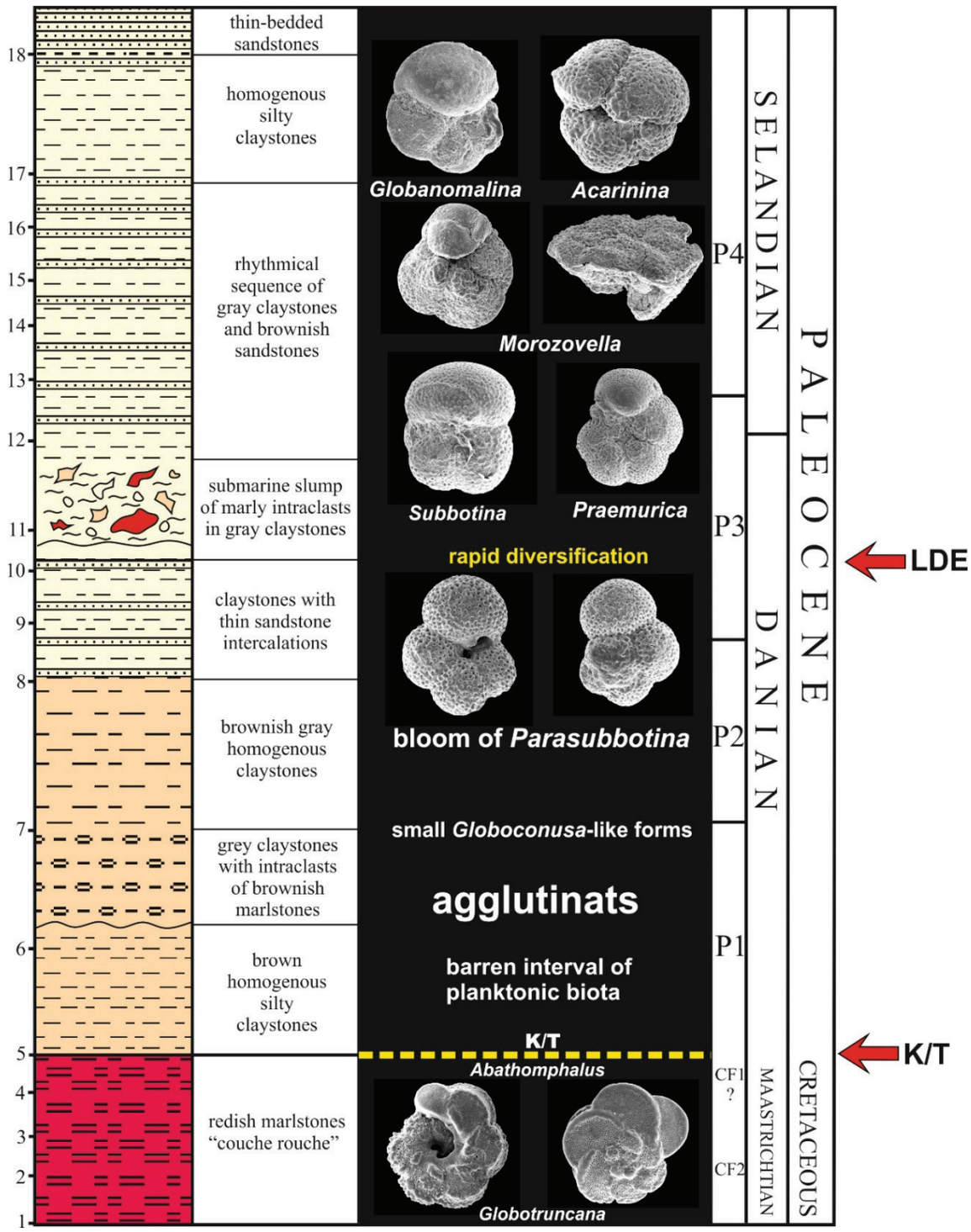

Fig. 1. Transitional beds through the K/T boundary showing a distinct lithological changes, disturbances (olistostromes) and turnovers in foraminiferal microfauna (Jasenica section, Mid Váh Valley). Late Danian event (LDE) marked a recovery and new radiation of planktonic foraminifers.