

## RECOVERY AND RADIATION PATTERNS OF PLANKTONIC FORAMINIFERAL LINEAGES IN THE AFTERMATH OF THE K-T BOUNDARY EVENT

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The highly plastic morphology of the planktonic foraminifera in the Danian indicates extremely high rates of intraspecific phenotypic diversification, interpreted as a characteristic recovery strategy of the planktonic ecosystem in the aftermath of an abrupt mass-extinction event (early recovery interval). The conspicuously rapid rates of speciation that followed the K-T boundary event, lasting only about 100,000 years, confirm punctuated equilibrium in the pelagic record. *Guembelitra cretacea*, a Cretaceous survivor, has been recorded up to the lower part of the P 2 Zone (upper Danian). This triserially coiled species remained morphologically unchanged for about 24 million years (Coniacian to Maastrichtian). Then, in less than 50,000 years, by progressive uncoiling and changing the position of the aperture, *G. cretacea* split off into several new species (*Guembelitra danica*, *G. irregularis*, *Woodringina claytonensis*, *W. hornerstownensis* and *Chiloguembelina waiparaensis*) that were to coexist with the ancestors. These microperforate non-spinose forms were probably restricted, initially to shallow epipelagic waters. Earliest individuals of the *Eoglobigerina-Pseudosubbotina*, *Eoglobigerina-Subbotina* and *Praemurica* lineages (cancellate spinose and non-spinose forms) also evolved in the Danian in a nearly coeval and parallel evolutionary trend probably from a *Hedbergella* stock. Biochronostratigraphic resolution, based on concurrence of FO's and LO's of diagnostic species, approaches 30,000 to 100,000 years in the earliest intervals. The rate of recovery among pelagic communities was apparently related to stabilization of water-masses, increase in nutrients, and restructuring of nutrient levels within the water column.