



## **Mass extinction and turnover in planktonic Foraminifera at the Cretaceous/Paleogene (K/Pg) boundary at Bidart section (sw France)**

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The Bidart section, located at the eastern margin of the Atlantic Ocean, is complete in the K/Pg interval but its P0, P1a and P1b subzones are less expanded than at El Kef and Ellès section located in the southern margin of the Thethyan realm. At this section, the K/Pg boundary is characterized by a rusty barren layer which underlying the base of the earliest Danian dark boundary clays.

The planktic foraminiferal Maastrichtian assemblages, composed of 76 planktic foraminifera species, are rich in cosmopolitan species (80%) which were largely dominated by small biserial species mainly of *Heterohelix* genera. These cosmopolitan species are associated with many tropical and subtropical species which are less frequent (20%) and well diversified.

Prior the K/Pg boundary, at the uppermost Maastrichtian, 11 species were progressively extinct. At the K/Pg boundary, a total of 45 species (59,2%) were suddenly extinct. The latter extinct taxa are characterized by a large and ornate test adapted generally to the deep water dwellers such as of *Globotruncanita*, *Globotruncana*, *Abathomphalus* and *Rugoglobigerina* genera.

Among the 20 maastrichtian species which persisted at the lowermost Danian mainly are cosmopolitan and are characterized by small and tiny tests they are for most considered as “Cretaceous species survivors”. Besides, they are surface and subsurface

dwellers. Among them many species belong to *Guembelitra* and *Hedbergella*. Except *Guembelitra cretacea* and *G. trifolia*, the other cretaceous survivors species disappear progressively through the low Danian without reaching P1b subzone.

After the K/Pg mass extinction and during the lowermost Danian P0 zone, the total fauna is rare. The planktonic foraminifera are dominated by *Guembelitra* species. In this zone, 13 species appeared. Among them *Globoconusa conusa* and *Eoglobigerina eobulloides* are tiny, smooth and high trochospiral. Especially the first species shows microperforate calcareous wall, and the second shows weak developed cancellate wall. The 11 others appeared at the upper part of the P0 biozone such as: *Eoglobigerina fringa*, *Guembelitra danica*, *G. irregularis*, *Eoglobigerina pentagona*, *Woodringina hornerstownensis*. From these latter, *Woodringina* are characterized by a finely microperforate calcareous wall and are triserial at their initial stage becoming biserial at late stage.

Five others maastrichtian survivors species disappeared at the P1a subzone: *Heterohelix striata*, *H. pulchra* disappeared at the lower part of the P1a subzone, *Pseudoguembelina costulata* at the middle part of the P1a subzone and *Hedbergella monmouthensis*, *H. holmdelensis* disappeared at the upper part of the P1a subzone. Versus, across the P1a subzone, 14 Danian species progressively appeared such as: *Parvularugoglobigerina eugubina* and *Chiloguembelina taurica* with a simultaneous disappearance of six others Danian species (e.g. *Globoconusa conusa*, *Parvularugoglobigerina eugubina*, *P. hemisphaerica* and *Parasubbotina moskvini*).

Throughout the P1b subzone, 14 other species were progressively appeared (e.g. *Subbotina varianta*, *Chiloguembelina crinita*, *Eoglobigerina trivialis*).

In conclusion, in the same Danian levels in which the surviving Cretaceous species are disappearing, new Danian species progressively appeared. The frequencies of the progressive appearance of the new Danian species (41 species), is less important than the Cretaceous species frequencies disappearance at the K/Pg boundary (45species) and at the lower Danian (18 species).