

BENTHIC RECOVERY SUBSEQUENT TO THE CRETACEOUS-TERTIARY BOUNDARY - THE EUROPEAN EXAMPLE.

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Extremely complex benthic communities characterize the Late Maastrichtian - Early Danian interval in the Danish region, with an overall diversity of calcitic benthic invertebrates in excess of 1500 species, and an overall dominance of bryozoans in terms of both density and diversity. Sediments deposited during this period were dominated by pelagic organisms accumulating on a wide, sub-photic carbonate ramp.

In the most continuous and complete successions, modest and gradual faunal fluctuations of the Maastrichtian chalk are abruptly replaced by a highly anomalous, very simple community at the K/T boundary. Less than 10 species of calcitic invertebrates composed exclusively of echinoderms and bryozoans are presently known from this so-called 'dead zone': 2 species of bourgueticrinid crinoids, probably 3 species of echinoids, as well as 4 species of cheilostome bryozoans, 1 free-living and 3 rooted, with the echinoderms making up the bulk of the skeletal residue. All of these species are primarily soft-bottom colonisers, and most occur very scattered in Late Maastrichtian strata elsewhere in the region.

The basal 'dead zone' community - and thus the earliest Danian community known - comprises only 5 species representing the genera *Pavolunulites* (bryozoan), *Bourgueticrinus* and *Democrinus* (crinoids), *Aerosoma* (echinoid) plus an unidentified spatangoid echinoid. Of these, *Pavolunulites* n.sp. and *Democrinus maximus* are not known from any Maastrichtian strata; whereas closely related *Pavolunulites* species abound in the underlying Late Maastrichtian chalk, the genus *Democrinus* has its earliest known occurrence in the basal 'dead zone' community. It appears that the genus *Democrinus* has evolved directly from *Bourgueticrinus* through neotony, and it is thus a true crisis representative.

Towards the end of the c. 2 m thick 'dead zone' the anomalous boundary community is replaced by a faunal succession exhibiting a gradual transition towards typical Danian bryozoan limestone, with the gradual re-appearance of such important groups as brachiopods, sponges, and calcitic bivalves. The transition is completed well within the earliest Danian NP1 Zone.