

## THE FIRST POST-K/T BIVALVE FAUNA - A MAASTRICHTIAN REMNANT

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The relationship between diversity and ecosystem structure on the one side, and the stability of the ecosystem on the other, has been a major theoretical subject in ecology for decades. Surprisingly this approach has been virtually ignored in the discussion of mass extinctions in paleoecology, though ecosystem stability, resilience and robustness appear to be of crucial importance in that context.

The focus on ecological stability, and thus on diversity and structure as an alternative to the mere presence/absence of taxa across the boundary, underlines the importance of taphonomy, and thus of the taxonomic differences in preservational potential among molluscs, especially the bivalves.

The white chalks and limestones dominating the K/T boundary sequence in northern Europe, is faunally strongly and systematically biased, containing exclusively calcitic fossils, - with one lucky exception. Hardground formation on either side of the boundary clay in eastern Denmark, yields an extremely rich (Late Maastrichtian), and a more scarce (Early Danian) fauna of aragonitic bivalves and gastropods. These two faunas are the temporarily closest molluscan faunas known.

Some of the Maastrichtian bivalves belong to genera with strong Tertiary affinity, and the majority of the Danian species occur in the Maastrichtian as well. The presence of this aragonitic fauna element strongly smoothens the abruptness of the apparent extinction pattern, and permits analysis of the event following an ecosystem concept.

The overall pattern of the bivalve depletion across the boundary is an ecologically balanced one, where all trophical groups (infaunal suspension feeders, epifaunal suspension feeders, deposit feeders, carnivores) survive, but in reduced numbers of species. This indicates ecosystem dynamics as an important agent in the faunal change at the K/T boundary.