Rapid biological recovery following the Cretaceous-Paleogene boundary catastrophe in the Maastrichtian type area

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Present-day marine biotas are increasingly subject to anthropogenically-forced extinctions. The study of the global mass extinction event at the Cretaceous-Paleogene (K-Pg) boundary can aid in our understanding of the patterns of selective extinction and survival and the dynamics of ecosystem recovery. Outcrops in the Maastrichtian type region (The Netherlands, Belgium) comprise an expanded K-Pg boundary succession, presenting a unique opportunity to study marine ecosystem recovery within the first thousands of years following the Chicxulub impact. We have reevaluated and studied the palynological, micro- and macropalaeontological record of this unique succession. Ecosystem changes across the K-Pg boundary in this region are rather limited, showing a general shift from epibenthic filter feeders to shallow-endobenthic deposit feeders. The fauna of the lowermost Paleocene still has many 'Maastrichtian' characteristics, a biological assemblage that survived the first hundreds to thousands of years into the earliest Paleocene. The shallow-marine oligotrophic carbonate sea of the Maastrichtian type area was inhabited by starvation-resistant, low nutrient-adapted taxa, that were seemingly less affected by the short-lived detrimental conditions of the K-Pg boundary catastrophe, such as darkness, cooling, food-starvation, ocean acidification, resulting in relatively high survival rates. The high survival rate allowed for a fast recolonization and rapid recovery of marine faunas in the Maastrichtian type area.