
A new palaeological approach: CT scanning of shell beds from the upper Triassic of southwest England

Solène Bourdas*¹ and Richard Twitchett²

¹Université Lille Nord (France) – Université des Sciences et Technologie de Lille, Cité Scientifique 59655 Villeneuve- France – France

²The Natural History Museum [London] – Royaume-Uni

Résumé

The Late Triassic mass extinction event is the second most important biodiversity crisis of the Phanerozoic, and took place at a time of global warming and rising atmospheric carbon dioxide. In the UK, marine fossils preserved in shell beds in the Langport Member (Lilstock Formation), provide an insight into the communities that existed during the onset of recovery in the very latest Triassic, following the mass extinction. The depositional setting is not fully understood, but may correspond to a shelf lagoon or a carbonate ramp, with the shell beds representing storm deposits. Analysis of this important community is hindered because the shells are preserved as natural moulds - holes and impressions in the rock where the shells have been dissolved. This study focuses on testing a new approach to obtain palaeontological data, using Computed Tomography (CT) scanning on these fossil beds. The objective is to reconstruct three-dimensional representations of macrofaunal specimens from natural moulds, facilitating the identification and documentation of the species. A total of 227 specimens were discovered within a single sample. Although further clarification of the species identification is needed, as well as comparative and quantitative study to better understand the community dynamics, preliminary results show that the fauna consists primarily of bivalves and gastropods, along with solitary corals and serpulid tubes. Ecological interactions, including corals attached to bivalve shells and serpulids encrusting gastropods, were recorded in this community for the first time. This innovative approach of CT scanning and 3D visualization offers a non-destructive method for studying fossils preserved as natural moulds, and enables valuable palaeoecological information to be extracted. The results contribute to our understanding of this time period and the dynamics of local recovery after mass extinction.

Mots-Clés: CT scanning, Macrofauna, Shell beds, Late Triassic mass extinction, Langport Member

*Intervenant