Ber. Inst. Geol. Paläont. K.-F.-Univ. Graz	ISSN 1608-8166	Volume 7	Graz 2003

REEF CORAL DIVERSITY IN THE LATE MAASTRICHTIAN OF JAMAICA

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Studies of Caribbean reef coral faunal change across the Cretaceous-Tertiary transition have been hampered by the lack of well-sampled late Maastrichtian coral assemblages from the region. Recent work on Jamaican Cretaceous strata, however, indicates that these successions preserve diverse shallow water macroinvertebrate communities from the terminal Maastrichtian (66.7-65.8 mya). This provides an ideal opportunity to examine Caribbean reef coral diversity and palaeoecology immediately preceding the K-T transition and to make inferences concerning the effects of the K-T boundary event.

Jamaican Upper Cretaceous sediments include a thick succession of fossil-rich impure limestones, shales and mudstones deposited as part of an ancient volcanic island arc complex. These fossil bearing units are exposed in a series of Cretaceous Inliers across Jamaica. The fossil assemblages are dominated by abundant rudist bivalves and scleractinian corals. The present work focuses on large collections (>1000 specimens) of corals made from the Latest Maastrichtian units in the Maldon and Marchmont Inliers in western Jamaica and in the Central Inlier (including the Guinea Corn Formation) in central Jamaica. We tabulated species occurrences and relative abundances at each Late Cretaceous site in Jamaica. We then compared this Maastrichtian data set with taxonomic records from over 60 well sampled Cenozoic lithostratigraphic units from the Caribbean. We also compared diversity and taxonomic richness data from a single densely fossiliferous coral unit (the 'Main Coral Bed') in the Guinea Corn Formation with similar coral-rich horizons from the Late Oligocene Moneague Formation and Late Pleistocene Falmouth and Port Morant Formations of Jamaica.

In all three inliers, corals are significant parts of the fossil fauna. The coral assemblage is ecologically diverse containing a range of taxa with massive, circumrotary, ramose, phaceloid and plate shaped colonies, as well as fixed and free solitary growth forms. With approximately 20 genera and 38 species, taxonomic richness in the Jamaican Late Maastrichtian assemblage is higher than roughly 75% of all assemblages in the Cenozoic data set. Similarly, diversity and richness in the 'Main Coral Bed' of the Guinea Corn Formation was comparable to that of coral rich units in shallow water carbonates from the Middle to Late Cenozoic of Jamaica.

Thus, diversity in terminal Maastrichtian Jamaican coral faunas is moderate to high relative to well sampled Cenozoic assemblages. There is no evidence for a drop in taxonomic richness before the K-T boundary, neither is there evidence that corals are less abundant or noticeably more ecologically restricted at this time. This is in stark contrast to the sparse, species-poor Caribbean faunas of the Paleocene through Early Eocene.