LATE CENOZOIC TURNOVER IN THE CARIBBEAN REEF CORAL FAUNA

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Study of the stratigraphic ranges of reef coral species in scattered sequences (Dominican Republic, Bahamas, Costa Rica, Jamaica, and Florida) suggests that a major episode of faunal turnover occurred in the Caribbean region between early Pliocene and mid Pleistocene time. In a data set composed of all reef corals except the families Mussidae and Oculinidae and the genera Cladocora and Madracis, approximately 90% of the Mio-Pliocene fauna, composed of as many as 65-70 species, became extinct during this time interval. Ten of 27 genera became extinct. Despite the high numbers of extinctions, the total number of species in the Caribbean reef coral fauna dropped only slightly over the time interval, due to similar numbers of originations and extinctions in the fauna. With one possible exception, new species arose in surviving genera, and no new genera formed.

Although similar numbers of species became extinct within early Pliocene, late Pliocene, and early Pleistocene time units, shallow water communities experienced higher numbers of extinctions during the late Miocene and early Pliocene. Deeper water communities experienced higher numbers of extinctions during the late Pliocene and early Pleistocene. Species surviving the turnover episode occur in deeper water communities and belong predominantly to the family Agariciidae. Nearshore grass flat communities contain the highest number of early extinctions. No difference in extinction patterns could be detected between taxa which reproduce primarily by fragmentation and those that reproduce primarily by larval recruitment. Although originations appear evenly distributed among community types, a large number occur in Florida along the northern margin of faunal distribution.

The increased extinctions in shallow water communities and increased originations in the north suggest that turnover occurred primarily in response to change in abiotic factors such as temperature and siltation, and not in response to species-area effects associated with sea level change.

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