

REEF-CORAL DIVERSITY FROM THE LATE OLIGOCENE ANTIGUA FM. AND TEMPORAL VARIATION OF LOCAL DIVERSITY ON CARIBBEAN CENOZOIC CORAL REEFS.

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New collections and continuing taxonomic revision have changed our view of the Cenozoic history of Caribbean reef-corals. Oligocene to Recent history was characterized by two episodes of apparently rapid biotic turnover. Previous work has documented in detail a Plio/Pleistocene transition with extinction of over 50 percent of a Late Pliocene fauna. An Early Miocene transition remains to be fully documented, but up to one half of the total number of reef-coral genera recovered from Late Oligocene deposits were extinct by the Late Miocene (Frost 1977, Budd 2000). Both transitions included regional extinctions and decrease in regional coral diversity, but the effects of these extinctions on local reef-coral assemblages remain unclear. I will examine the community response to these extinctions at the local scale by comparing ecological diversity of local assemblages from the Late Oligocene Antigua Fm. with the diversity of Neogene faunules from units in Costa Rica, Curacao, the Dominican Republic, Jamaica, Panama, and Trinidad.

The reef-coral fauna preserved in the Chattian (Late Oligocene) Antigua Fm. on Antigua in the Leeward Islands is one important component of the Oligocene Caribbean regional fauna (Vaughan 1919). New collections from the Antigua Formation comprise 542 colonies from 36 collections in 16 localities yielded 45 species from 25 genera including 11 species that have not been previously described. Local assemblages from the Antigua Fm. include between 10 and 30 species. However, these richness estimates are suspect because of uneven sampling among different reef units. Shannon's H and Fishers's α are two other measures of diversity that might be less subject to sampling effects because they incorporate information about the abundance distribution within each assemblage (Hayek and Buzas 1997). Both measures are not correlated with numbers of specimens recovered from the reef units considered here. Using these measures, there is no significant differences in diversity between local assemblages in the Antigua Fm. and Neogene local assemblages. Examination of rank abundance plots supports this result.

Local diversity was insensitive to the regional environmental changes responsible for the Oligocene/Miocene transition on Caribbean reefs, suggesting that there was sufficient redundancy in the regional fauna to allow functioning local communities to be built from a reduced species pool.

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