SPECIES MEMBERSHIP IN PLEISTOCENE CORAL REEF COMMUNITIES

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There is considerable debate concerning the degree to which species membership in coral reef communities is limited. Ecological studies conducted over short time frames provide ample evidence for fluctuating community membership. Our recent paleontological studies of Pleistocene reefs, however, suggest membership is limited in reef coral communities over large temporal scales. To investigate limited species membership, we first determine whether taxonomic composition is significantly different among communities from different times or places. We then ask if the observed pattern of shared taxa among communities is different from that expected by a random sampling of the available within-habitat species pool. In Pleistocene Caribbean coral communities from Curacao and San Andrés, we find extremely high consistency in within-habitat community structure. Similar results were also obtained from communities of different ages in Papua New Guinea. We believe these consistent patterns in within-habitat species membership on broad spatial and temporal scales indicate more order to coral reef communities than coral reef ecologists have heretofore recognized.