

THE "EDGE EFFECT" ON A SUBMERGED CORAL REEF:
SEDIMENTATION AS CONTROLLING FACTOR FOR
CORAL SURVIVAL, GROWTH AND RECRUITMENT

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ABSTRACT

The mechanism of the "edge effect," a common pattern of coral distribution on shallow reef flats, was investigated in Kaneohe Bay, Oahu, Hawaii. A submerged reef in the South section of the bay was selected to eliminate the forcing of high temperature, low salinity and low tide exposure that shallow reef flats experience. Physical parameters such as bathymetry, water flow and sedimentation, chemical parameters such as nutrient concentration, and biological parameters such as species composition, survival, growth and recruitment were measured over the course of fourteen months. All physical and chemical parameters were uniform across the reef except for sedimentation. Sediment accumulation in traps placed 50 cm above the bottom was higher in the bare center of the reef than on the coral-covered edges. This result suggests that sedimentation, either directly or indirectly, is a factor in the observed distribution of coral colonies in South Kaneohe Bay.