

ABSTRACT

Coral Recruitment and Transplantation in Reef Management:
Buccoo Reef, Tobago.

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Monthly monitoring of water quality at Buccoo Reef, south-western Tobago, was conducted over an eighteen month period. Water quality parameters monitored were temperature, salinity, dissolved oxygen, pH, turbidity, nitrite, nitrate, ammonia, dissolved inorganic phosphate, total phosphate and chlorophyll 'a'.

Temporal variation in water quality parameters was generally evident at all sampling stations. The three main groupings of the monthly data produced by Principal Components Analysis (PCA) generally described a seasonal aspect attributed to the suite of water quality parameters. It is evident in the PCA plots that one group is comprised of predominantly dry season months, another of predominantly wet season months, and an intermediate group generally comprised of transition months between wet and dry seasons.

The PCA ordinations of the six sampling stations based on the grouped water quality data for both dry season (March, 1990) and wet season (August, 1990) months indicated that the water quality characteristics at the stations sampled were generally dissimilar. This suggested spatial heterogeneity in the water quality characteristics of the Buccoo reef environment regardless of season.

ACKNOWLEDGMENTS

Coral recruitment was investigated at six stations at Buccoo Reef over a 16-month period, using clay and glass tiles. The stations were located at the eastern forereef, the perimeter of the Blue Hole, the sloping bottom of the Blue Hole, a sand channel at the Coral Gardens, the outer western reef lagoon and the base of the Pigeon Point forereef. Of the stations investigated, the Coral Gardens station in the reef lagoon and the eastern forereef station were identified as areas of relatively high recruitment. Recruitment was found to be higher during wet season months. Spatial and temporal patterns in recruitment indicate that areas of Buccoo Reef damaged or destroyed by natural events or human activities may have little recovery potential due to low recruitment. One option that could increase the recovery potential of such areas is to introduce or increase the source of recruits, by transplanting live adult coral colonies.

Live fragments of the scleractinians *Acropora cervicornis*, *Porites porites* and *Montastrea annularis* were transplanted to artificial structures placed at two sandy bottom localities in the reef lagoon. One locality was close to the recruitment station in the sand channel at Coral Gardens, and the other was close to the recruitment station on the sloping bottom of the Blue Hole. *A. cervicornis* and *M. annularis* transplants were more successful than those of *P. porites*, as determined by survival and growth rates. The results indicated that the survival of transplanted corals was more successful at the Coral Gardens locality which was characterised by relatively lower water turbidity and lower sedimentation rates. The potential of coral transplantation as a management option is discussed.