

Seawater Chemistry and Microbial Communities Associated with Healthy Tissues on Three Species of Caribbean Reef Corals

By

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The variation in microbial communities inhabiting the coral surface microlayer (CSM) of three dominant reef building corals (*Diploria strigosa*, *Montastraea cavernosa*, and *Montastraea annularis*) will be evaluated. The variation within microbial communities will be linked to an understanding of the natural and human factors contributing to a large-scale environmental gradient. Studies of the back reef environment of the Curaçao, Netherlands Antilles reef tract will be focused on: (1) determining the variation in bacterial communities inhabiting the CSM through the use of DNA probes and checkerboard DNA-DNA hybridization, (2) macromolecular analyses to determine the relative proportions of proteins, polysaccharides, and lipids making up the CSM, and (3) water-column studies to assess physical and chemical characteristics including nutrients, suspended sediments, major ions and metals, and hydrocarbon concentrations. By linking variation in microbial communities with an understanding of processes and causes that operate at various spatial scales, this study will provide a sensitive assessment of those factors immediately and directly impacting reef health as well as baseline data for the future study of microbially controlled mechanisms of coral mortality such as coral disease.