

# **Microtopography and the Organization of Two Assemblages of Coral Reef Fishes in the West Indies**

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Two walls of Salt River Canyon, St. Croix, U.S. Virgin Islands are at the same depth in the fore reef environment and are separated by only 100m, but they differ in microtopography. Replicate visual censuses of the fish assemblages on these two walls, by four saturation divers, gave consistent estimates of the species assemblages on the two walls. Significant faunal differences between the two walls are best understood in terms of combined features of coloration, predator avoidance, and feeding habit displayed regularly by individuals occupying a given microhabitat. It appears that characteristic sets of environmental circumstances occur within a habitat with sufficient frequency to give a consistent direction to natural selection, producing the patterns we have observed. Thus, form and function is predictable in relation to microhabitat, although species occurrence is not. The "order" and "chaos" concepts of community structure in coral reef fish, with their narrow focus on the predictability

of species occurrence, underemphasize the possibility for a simple and direct role for natural selection in shaping the functional characteristics of an assemblage on a small scale.