Effect of Stream Nutrients on Benthic Algal Overgrowth in Vatia Bay

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According to a NOAA study on “Nutrient Dynamics and Changes to Benthic Communities in Vatia, American Samoa”, Vatia Bay is experiencing an unusual overgrowth of benthic algae, threatening to outcompete the Bay’s corals. NPS’s water quality data indicates high levels of nitrogen and phosphorus within the streams feeding Vatia Bay. To determine whether there is a relationship between the algal overgrowth and excess nutrients entering the Bay from these streams, I hypothesized that the percentage of benthic algae on the ocean floor will decrease as the distance from the mouth of the streams increases. To test this hypothesis, three transects were mapped at each of the two streams, extending from the stream mouths to the edge of the reef at 45°, 90°, and 135° angles. Equidistant points of 20m apart were plotted along each of these six transects, and at each of these points, a 1m by 1m quadrat was laid on the ocean floor. The percentage of algae, coral, sand, and other matter within the quadrat at each plotted point was estimated and recorded. The data was graphed to show the percentage of algae and coral (y-point) versus the distance from the stream mouth (x-point) at each given point.

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