

# **Underprivileged High School Students are Provided the Opportunity to Participate in Scientific Research Performed in the Field of Environmental Science**

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Varying nutrient levels in the Maryland Coastal Bays have always been of particular interest to environmentalists and concerned citizens. The Maryland Coastal Bays are comprised of five shallow water estuaries that stretch from the states of Delaware, down through Maryland, and finally into Virginia. In 1999, the Maryland Coastal Bays Program established several goals that would aid in protecting and conserving the local ecosystem. One goal was to improve water quality and habitat quality by reducing the causes of eutrophication. A second goal was to protect existing habitats, restore degraded habitat, and create new habitat to enhance the reproduction and maintenance of healthy resource populations. To assist in meeting these goals, we developed a research project that established an “early warning system” for eutrophication. Artificial substrates, grids with simple “gift wrapping” ribbons attached, were placed in the water to simulate bay grasses. A strong correlation was made between water quality and the colonization of epiphytic growth on the artificial substrates.

To further test this data, we proposed to monitor and assay sites within the watershed during two-week intervals throughout the entire summer of 2001. Funding provided by U.S. Fish and Wildlife made it possible to hire four underprivileged high school students from Worcester County, Maryland, USA. These students earn a weekly salary while assisting in environmental research. To obtain a complete picture of nutrient input into the Maryland Coastal Bays watershed, three previously researched sites were chosen, as well as one new site. The first phase of the research includes collecting samples and data regarding the water column and sediment. Data will be collected on the following parameters: total suspended solids, turbidity, temperature, salinity, light, dissolved oxygen, chlorophyll a, nitrates, phosphates, and ammonium. The second phase requires the students to prepare the artificial substrates by sanding the ribbons and attaching them to plastic grids. The grids are anchored in place in all four sites and left for a period of two weeks. At each two-week interval, new grids are replaced as the “older” grids are collected. Students will then scrape the epiphytic accumulation from the ribbons to analyze total dry and ashed mass, as well as chlorophyll a. The third phase includes a study of macroinvertebrates and microinvertebrates found at the sites. The macroinvertebrates are often discovered using seine nets and large strainers. The microinvertebrates are found on small clear plastic disks that are left in the streams at least six months prior to collection. The fourth phase has the students cleaning the streams of debris and transplanting, into the streams, native bay grasses. Finally, the fifth phase has the

students designing a personal web page that will share their scientific analysis of the collected data with local residents.

The most powerful tool in this study is education. These students have been provided a unique and rewarding opportunity to learn about the environment and their local watershed. Furthermore, they are accomplishing the goals and plans of the Maryland Coastal Bays Program with their informative research project.