

Water Quality Assessment: Coupling Science and Education

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Abstract

The Maryland Coastal Bays are a group of five shallow water estuaries under pressure of residential and commercial development. Associated with this development is the potential for eutrophication of the bay waters and subsequent deterioration of habitats sensitive to poor water quality, e. g. seagrass beds. We developed an "early warning system" for eutrophication by exploring the relationship between water quality and epiphytic mass on natural and artificial substrates at various sites in the Coastal Bays. A strong correlation was found between epiphytic colonization on natural and artificial substrates and historic water quality data. The first phase couples science with teacher education by providing a summer research internship for a public school teacher from the local area. Working directly with the scientists, the teacher learned sampling techniques, computer skills, and data analysis.

In the second phase, students used this technique to monitor streams within the Coastal Bays watershed. They placed artificial substrates in tidal creeks of the Coastal Bays. A correlation was then made between water quality and the colonization on the substrates following the method explained above. Students applied authentic scientific methods and procedures in their study of aquatic ecology and human impacts. As a multi-discipline component, students wrote an article for public dissemination regarding their work.

This two-phase project can serve as a model for other research centers where scientists can work with teachers during the summer months and teachers can, in turn, apply the knowledge back to the classroom.