POSTER PRESENTATION

EVALUATION OF BENTHIC DIATOMS AS WATER QUALITY INDICATORS IN THE BLACKBIRD CREEK WATERSHED, DELAWARE

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Benthic diatoms have been used as water quality indicators in freshwater systems throughout the world (e.g. Kelly, Penny, Whitton 1995; Lowe, Pan 1996; Szczepocka, Szulc, 2009). The goal of this study is to evaluate the use of benthic diatoms as water quality indicators of the Blackbird Creek watershed in relation to land use. The land of Blackbird Creek consists of 43% agriculture, 35% forest, 17% wetlands, and 4% urban/residential area (Coyne, 2007).

Sediment samples will continue to be collected from Blackbird Creek and DNA will be extracted from sediments using methods described in Coyne et al. (2001). Water samples are collected to analyze and record nutrients and water quality parameters of each site. DNA is extracted from the samples and analyzed using denaturing gradient gel electrophoresis (DGGE). DGGE produces a banding pattern or "fingerprint" of the microbial community (Muyzer et al., 1993), where each band represents a different species (Coyne, 2007). Potential indicator species will be identified and a quantitative estimate of species abundance using quantitative real-time PCR (QPCR; Coyne et al., 2005) will be obtained. To evaluate effects of nutrient enrichment on benthic diatom communities, a series of experiments will be conducted (Coyne, 2007).

Sample DNA run on a DGGE gel have already shown a strong diatom species presence, but further analysis is required. The information gathered during this study will hopefully aid in identifying ecological problems such as eutrophication in Blackbird Creek. The knowledge gained in this study will be used to obtain a better understanding of the diatom communities present, determine the effects land use has on water quality, and provide strong information to aid the improvement of land management practices.

References

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