Evaluating the Hilsenhoff Biotic Index as a Biological Monitoring Indicator in Stream Ecosystems

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Many metrics have been developed using benthic macroinvertebrates as biological monitoring indicators for stream ecosystems. This project examined the ability of the Hilsenhoff Biotic Index (HBI), a metric developed to measure organic pollution in streams, to accurately describe variance in stream properties based on land use. Through analysis of macroinvertebrate and geospatial land use data, HBI values were plotted against a gradient of catchment land use. Additionally, the effect of increased sample size on site HBI values was analyzed for a mixed land use and forested catchment stream in order to determine the number of samples necessary to discern between the sites. Significance and standardized effect size were established for samples at Potash Brook and Snipe Island Brook. HBI values were significantly related to the percentage of a catchment in urban and forested catchment land use, supporting the importance of watershed-level controls on stream ecological conditions.