

LINKAGES BETWEEN SIMPLE SEDIMENT METRICS AND AQUATIC COMMUNITIES IN STREAMS OF THE PIEDMONT ECOREGION OF GEORGIA

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Abstract. According to United States Environmental Protection Division and Department of Agriculture, sediment is the number one cause of water quality impairment. Sixteen percent of streams in Georgia are listed for sediment or biota problems, and sediment is typically the assumed cause of biotic impairment. Because sediment loads and stream mobility are expensive and difficult to measure, this study examines the feasibility of using easily measured metrics (e.g., turbidity and percent fine sediment) to explain variability in biotic index scores along a landuse gradient. We measured aquatic assemblage metrics (fish and macroinvertebrates), baseflow sediment concentrations, turbidities, percent fines in the stream bed, local channel slope, and baseflow velocity in 42 streams having a wide range of local conditions and watershed characteristics. Preliminary results indicate that turbidity and suspended sediment concentrations (SSC) were related to forested landuse within a 25-ft stream buffer, but were not explained by overall watershed landuse conditions. Turbidity and SSC were highly correlated when stormflow and baseflow samples were analyzed together, however, baseflow turbidity samples were all less than 30 NTU's, lacking sufficient variability to replace SSC sampling. Independently, both parameters were weakly related to biotic factors, but explained a high amount of variability when coupled with percent urbanization or impervious surface.