RIPARIAN CORRIDORS AS POTENTIAL BIODIVERSITY REFUGIA

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ABSTRACT

Forested corridors are used to protect streams from agricultural pollution and runoff. Corridors may also encourage terrestrial and aquatic biodiversity by providing habitat in suburban and agricultural landscapes, increasing connectivity of fragmented patches, and excluding invasive plants. Surprisingly, current guidelines for corridor construction are based on limited quantitative data. The goal of this study was to determine if and how forested buffers can be effectively used to preserve native biodiversity.

In March 2006, we conducted a pilot study of soil chemistry across buffers at twelve 1,000-m transects along forested stream corridors in and near Newark, DE, in agricultural and suburban/urban environments. After this pilot study, we decided to focus on one watershed in hopes of minimizing variance within the study area. In the summer of 2007, we collected soil samples, aquatic macroinvertebrate samples, and invasive plant densities at 36 study sites located on first-order and second-order streams throughout the White Clay Creek watershed.

Analysis of data collected is ongoing, and these measurements will be repeated in the summer of 2008. Preliminary data from the pilot study and supported by initial results from further soil tests suggest that nutrients such as phosphates, nitrates, and ammonium might be filtered effectively by forested riparian corridors. At the same time, no statistically significant correlation between buffer width and aquatic macroinvertebrate community integrity is immediately apparent. Macroinvertebrate identification is incomplete at this time, and ongoing analysis may yet reveal an impact of buffer width on stream biota.

Further analysis of data collected last year and data collected this coming summer is necessary to reach any conclusions about the effectiveness of riparian corridors as refugia for native biodivty.