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Evaluation of North Carolina Stream Restoration Projects; Biological Responses to Habitat Change

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Abstract Text:

Geomorphic and vegetation monitoring of streams following restoration is a widely used form of assessment to determine project success. However, little is know about the ecological functions of restored stream reaches since monitoring protocols infrequently use biological indicators.

The NCSU Water Quality Group has been conducting monitoring assessments of stream restoration projects in North Carolina. These assessments include geomorphic, bedform, vegetation and biological monitoring. Researchers agree that long-term assessments need to be conducted to address compliance issues and recovery of ecologic function. Benthic maroinvertebrate larvae (aquatic insects) were initially collected as part of an EPA funded project with the North Carolina Division of Water Quality and continued as part of a grant at North Carolina State University. These data represent up to 6 years of post-construction evaluations of aquatic insect faunas following restoration. Data were collected prior to and post-construction at 12 stream restoration projects and these data were used to prepare preliminary success criteria for biological communities. Success criteria are proposed and include an analysis of Dominant-In-Common (DIC) taxa between upstream reference reaches (if available) and the restored reach. These data suggest that a minimum of five years of post-construction information need to be collected, but also that the use of success criteria is likely related to pre-construction conditions of the stream feature. Ideas for improving the biological responses to stream restoration practices will be discussed.

Impact Statement:

Results of these evaluations can be used to determine stream restoration and mitigation effectiveness.