



USDA-CSREES 2007 National Water Quality Conference

[Evaluating in-stream denitrification in a New England stream](#)

Increased loads of watershed nitrogen (N) from are a major cause of water quality degradation, especially in coastal waterways. According to regional budgets, only 20-30% of this N reaches coastal waters indicating there are N “sinks” across the landscape. First and second order streams have been associated with substantial N processing; however, several studies have observed minimal N retention within streams. We have assessed the in-stream N removal and denitrification rates in one small New England stream. We tracked the fate of isotopically enriched nitrate along a 500 meter stream reach in order to examine the efficacy and practicality of this method for future in-stream denitrification studies in New England and assess the temporal and seasonal variability associated with this method. We collected in-channel chemical, hydrologic, and physical data as well as riparian zone vegetation and soil characteristics. We also will be using the OTIS (One-dimensional Transport with Inflow and Storage) model to quantify hydrologic processes such as advection, dispersion, and transient storage. We hypothesize that denitrification will occur in areas with greater amounts of woody debris and with decreased hydraulic radii of the inundated channel. Outcomes of this research will contribute to better watershed management by improving the knowledge base for the selection of locales for individual and public investment of pollution control and restoration, thereby advancing stream/riparian restoration and management practices.

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