

# EFFECTS OF RIPARIAN ZONE MANAGEMENT ON WATER QUALITY AND INVERTEBRATE COMMUNITY STRUCTURE IN THE TIFTON UPLAND REGION OF THE GEORGIA COASTAL PLAIN

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**Abstract.** This research investigates the link between riparian zone management and water quality in the Tifton uplands region of the Georgia coastal plain. This area was once part of a vast coastal plain pine forest which was logged extensively between 1900 and 1920, and transformed into an area dominated by agriculture. Today, this area is one of Georgia's most productive agricultural regions, and is composed of a mosaic of cropland, pasture and silvicultural areas.

The areas of native vegetation that have become reestablished along the intermittent streams that drain this region appear to play an important role in maintaining regional water quality, and their protection has recently been included in a list of best management practices distributed by the U.S. Soil Conservation Service. However, these guidelines are only voluntary, and economic incentives still exist for certain destructive farming practices such as installing drain tile, converting riparian buffers to wet pasture, and clear cutting riparian buffers to allow center pivot irrigation systems to pass unimpeded.

As part of a plan to better understand the role of riparian buffers in an agricultural region, 12 second order tributaries under three different management regimes were sampled bi-weekly for turbidity and nutrients, and monthly for invertebrates.

Results from this research indicate that maintaining a riparian buffer between streams and upland agriculture can significantly lower  $\text{NO}_3\text{-N}$ ,  $\text{PO}_4\text{-P}$ , and turbidity levels within these streams. The aquatic invertebrate community also differs markedly in areas with and without riparian vegetation. A relatively diverse assemblage of aquatic invertebrates dominated by shredding insects and crustaceans were found in streams with an intact riparian zone, while less diverse assemblages of filtering taxa dominated streams with no riparian buffer.