UPPER CHATTAHOOCHEE HEADWATERS RIPARIAN RESTORATION AND EDUCATION PROJECT

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REFERENCE: *Proceedings of the 1997 Georgia Water Resources Conference*, held March 20-22 at the University of Georgia, Kathryn J. Hatcher, Editor, Institute of Ecology, The University of Georgia, Athens, Georgia.

Abstract The Riparian Restoration and Education Project, a project of the Upper Chattahoochee Riverkeeper, focuses efforts in the upper reaches of the Chattahoochee River watershed. Working with state and federal scientists, resource managers, local governments, and citizens we are characterizing the upper basin to prioritize subwatersheds for protection and/or restoration work. The project also includes the development and implementation of an instream and riparian stream restoration. This community-based project will result in a "road map" for conservation efforts in the headwaters region.

"Protect the best, then restore and reconnect the rest"
(Pacific Rivers Council 1996)

INTRODUCTION

The Chattahoochee Headwaters Riparian Restoration and Education Project (RIP-REP) focuses on assessing existing nonpoint source pollution problems and their associated land uses in the basin. This assessment is used as a basis for characterizing and prioritizing areas for restoration efforts such as streambank restoration and riparian reforestation. Work began on the project in the fall of 1996 and is scheduled to conclude in 1998. An integral component of the project is demonstrating the value of functioning riparian zones as a way for individuals and communities to better understand the relationship between land use and water quality. Because riparian zones are a first link in the land-water interface, RIP-REP will target education and restoration efforts on riparian systems.

Riparian zones are recognized as an integral component to aquatic ecosystems (Gregory et al. 1991). Riparian buffers have the capacity to reduce nonpoint source pollution, such as nutrients and sediment (e.g. Lowrance et al. 1994). Additionally, these areas also support high levels of biodiversity (Naiman et al. 1993), provide shade necessary for cool water fisheries (Barton et al. 1985), and are an important food input to aquatic ecosystems (Vannote et al. 1980). Riparian zones can also stabilize streambanks (Georgia Soil and Water Conservation Commission 1994) and often help attenuate flooding.

Riparian zones, however, must be viewed within the larger landscape affecting local water conditions because land use practices throughout the watershed can affect local stream conditions (Barling and Moore 1994, Roth et al. 1996). Our restoration project, therefore, will include work with local communities to address land use practices throughout the watershed in addition to the specific riparian restoration area.

PROJECT AREA

The Upper Chattahoochee River watershed is part of the Apalachicola-Chattahoochee-Flint (ACF) River Basin and includes major tributaries to the Chattahoochee such as the Soque and Chestatee rivers. The northern portion of the basin is within the Chattahoochee National Forest. This upper watershed drains just over 1000 square miles in the Northeast Georgia counties of Hall, Habersham, White, and Lumpkin. Population in these counties has grown between 9% and 18% in the last five years and population growth is projected to continue with increases between 14% and 32% by the year 2010 (U.S. Army Corps of Engineers 1995). Dominant land uses in the area include agriculture (both poultry and livestock), forest and residential development (Georgia Natural Heritage Program 1996).

Streams in this area range from the small, bedrock substrate, steep gradient tributaries in the Blue Ridge physiographic region to the lower gradient, warmer, sand-cobble-silt substrate streams in the Piedmont. A number of streams in this area are state designated trout streams supporting populations of Brook, Brown, and Rainbow trout (Georgia Department of Natural Resources 1995). These rivers all drain into Lake Lanier before flowing toward Atlanta, 60 miles south of the headwaters region.

WATER QUALITY ISSUES

Water quality in this drainage is adversely affected by nonpoint source pollution with a number of streams or stream segments listed as non-supporting or partially supporting their designated uses (Georgia Department of Natural Resources 1996). Nonpoint source related water quality problems include elevated levels of nutrients, fecal bacteria, and sediment. Nutrient loads from animal manure on agricultural land in the study area range from 53 - 111 tons/mi^2 of nitrogen and 12 - 25 tons/mi^2 of phosphorus

(Frick et al. 1996). These values are reportedly higher than many counties within the ACF basin and coincide with the highest concentration of poultry farms within the basin (Frick et al. 1996). Levels of fecal bacteria in tributaries to Lake Lanier have been reported in several studies to violate the State standard (e.g. Clean Lakes Program 1994, Georgia Department of Natural Resources 1996). Additionally, sedimentation is thought to be the most severe anthropogenic threat to Georgia's wild trout fishery (England 1987) and studies in other Piedmont rivers (Yellow River, Falling Creek) indicate that suspended sediment is adversely affecting fish diversity (Barnes et al. 1996).

PROJECT PROCESS

A number of working groups help steer the direction of the RIP-REP project. A technical working group consisting of representative members from federal and state agencies (such as the Natural Resources Conservation Service, Environmental Protection Agency, and Wildlife Resources Division and Environmental Protection Division of the Department of Natural Resources) and regional groups and universities is working together on the basin characterization process. Existing data is being compiled on a GIS database to better understand patterns and factors affecting water quality in the watershed and to target stressed subwatersheds for restoration work. This group also facilitates dialogue to avoid overlap with any ongoing, existing agency projects.

Another working group made up of local citizens meets throughout the project to follow the project's progress and to provide feedback regarding the project direction. The citizen group consists of people from a variety of backgrounds who live throughout the watershed. This group will be especially critical during the subwatershed prioritization when stakeholder opinion will help establish those priorities.

Finally, a local government working group is meeting several times throughout the project's duration. Representatives from each of the regions four counties and seven municipalities gather for project updates and to discuss possible inter-jurisdictional strategies for maintenance of water quality.

EDUCATION PROGRAM

The educational component of RIP-REP targets local community groups, civic organizations, and local governments. A slide show is initially being used to introduce people to the concept of riparian zones and familiarize them with project goals. Initial outreach efforts explain the potential effects of land use on water quality and discuss specific water quality problems in the local area.

A second phase of community education will begin when characterization materials become available. This second phase will provide specific information on the condition of certain subwatersheds and allow groups the chance to comment regarding site selection.

RESTORATION PROJECT

Selection and design of the restoration project will take into account the principal causes or source of stream channel instability. The chosen site and reference sites, for models of comparison, will be examined in greater detail to plan restoration work. Sites will be sampled for parameters such as aquatic biota, nutrient chemistry and sediment yield. A subset of the technical working group with others will assist in site design following the restoration techniques of D.L. Rosgen (1994), focusing on concepts of river morphology and stream dynamics. Local community members and landowners will be encouraged to visit the site during the restoration process. Post-project monitoring will take place to evaluate restoration effectiveness.

CONCLUSION

Collaborating with resource managers, local government decision makers, and stakeholders is allowing us to proceed with a restoration process that emphasizes community input. The importance of citizen involvement in the success of resource planning and management is well recognized (e.g. Viessman Jr. 1985, Grisham 1988, Blahna and Yonts-Shephard 1989, Sirmon et al. 1993) and several projects in Georgia (such as the Savannah River Basin Watershed Project and the Conasauga River Ecosystem Based Study) have found this to be true. Combining a rigorous, scientifically-based assessment with community input is making RIP-REP more likely to succeed and paving the way for future protection and/or restoration efforts in the Chattahoochee Headwaters region.

ACKNOWLEDGMENTS

Funding for this project came from grants awarded to the Upper Chattahoochee Riverkeeper by Region IV of the U.S. Environmental Protection Agency, the National Fish and Wildlife Foundation, and the Lyndhurst Foundation.

LITERATURE CITED

Barnes, K.H., J.L. Meyer, and B.J. Freeman. 1996. Suspended sediments and Georgia's fishes: an analysis of existing information. Environmental Resources Center, Georgia Institute of Technology, Atlanta, GA.

Barling, R.D. and I.D. Moore. 1994. Role of buffer strips in management of waterway pollution: a review. Environmental Management 18:543-558.

Barton, D.R., W.D. Taylor, and L.M. Biette. 1985. Dimensions of riparian buffer strips required to maintain trout habitat in Southern Ontario streams. North American Journal of Fisheries Management 5:364-378.

Blahna, D. J. and Yonts-Shepard, S. 1989. Public Involvement in Resource Planning: Toward Bridging the Gap Between Policy and Implementation. Society and

Natural Resources, Volume 2, Taylor and Francis, UK. pp. 209-227.

Clean Lakes Program. 1994. Project completion report diagnostic/feasibility study of lake Sidney Lanier, Georgia. Institute of Natural Resources, the University of Georgia, Athens, GA.

Couch, C.A., E.H. Hopkins, and P.S. Hardy. 1996. Influences of environmental settings on aquatic ecosystems in the Apalachicola-Chattahoochee-Flint River Basin. U.S. Geological Survey National Water Quality Assessment Program, Water-Resources Investigations Report 95-4278. Atlanta, GA.

England, R.H. 1987. Fisheries management on Georgia's National Forest. Managing Southern forests for wildlife and fish a proceedings, USDA Forest Service General Technical Report SO-65:65-71.

Frick, E.A., G.R. Buell, and E.H. Hopkins. 1996. Nutrient sources and analysis of nutrient water-quality data, Apalachicola-Chattahoochee-Flint River Basin, Georgia, Alabama, and Florida, 1972-1990. U.S. Geological Survey National Water Quality Assessment Program, Water-Resources Investigations Report 96-4101. Atlanta, GA.

Georgia Department of Natural Resources. 1995. Rules and regulations for water quality control 391-3-6-.03. Georgia Department of Natural Resources, Environmental Protection Division. Atlanta, GA.

Georgia Department of Natural Resources. 1996. Water quality in Georgia 1994-1995. State 305(b) Report. Georgia Department of Natural Resources, Environmental Protection Division. Atlanta, GA.

Georgia Natural Heritage Program. 1996. State of Georgia land cover statistics by county. Georgia Department of Natural Resources, Wildlife Resources Division Project Report 26. Atlanta, GA.

Georgia Soil and Water Commission. 1994. Guidelines for streambank restoration. Atlanta, GA.

Gregory, S.V., F.J. Swanson, W.A. McKee, and K.W. Cummins. 1991. An ecosystem perspective of riparian zones. BioScience 41:540-551.

Grisham, A. 1988. Public information and citizen involvement. Water Resources Bulletin 24:449-453.

Lowrance, R., R. Todd, J. Fail, Jr., O. Hendrickson, Jr., R. Leonard, and L. Asmussen. 1984. Riparian forests as nutrient filters in agricultural watersheds. BioScience 34:374-377.

Naiman, R.J., H. Decamps, and M. Pollock. 1993. Ecological Applications:209-212.

Pacific Rivers Council. 1996. Healing the watershed - a guide to the restoration of watersheds and native fish in the west. Pacific Rivers Council, Inc. Eugene, OR.

Rosgen, D.L. 1994. A classification of natural rivers. Catena:169-199.

Roth, N.E., J.D. Allan, and D.L. Erikson. 1996. Landscape influences on stream biotic integrity assessed at multiple spatial scales. Landscape Ecology:141-156.

Sirmon, J. S., E. William, and C. Liggett. 1993. Communities of interests and open decisionmaking. Journal of Forestry 91:17-21.

U.S. Army Corps of Engineers Mobile District. 1995. ACT/ACF comprehensive study. The regional economic forescast of population and employment, Vol. I. Prepared by DRI/McGraw-Hill.

Vannote, R.L., G.W. Minshall, C.W. Cummins, J.R. Sedell, and C.E. Cushing. 1980. The river continuum concept. Canadian Journal of Fisheries and Aquatic Sciences 37:130-137.

Viessman, Jr., W. 1985. Addressing social and environmental issues in water resources planning and management. Water Resources Bulletin 21:311-314.