

Much of the text for this article was written for the *Hiwassee River Basinwide Water Quality Plan*, March 2002, published by the North Carolina Division of Water Quality's Basinwide Planning Program. Following are the article's text references:

CALFED Bay-Delta Program. 1999. *Monitoring, Research and Assessment Components for Benthic Macroinvertebrate Communities*. Sacramento, CA.

Erman, N.A. 1996. *Status of Aquatic Invertebrates in Sierra Nevada Ecosystem Project: Final Report to Congress, Vol II, Assessments and Scientific Basis for Management Options*. University of California. Davis Centers for Water and Wildland Resources.



CORRECTIONS:

Last month's issue of *Water Drops* stated that soil testing was free to residential homeowners. Actually there is a \$6.00 charge for residents of Georgia. In addition, the Union County Extension Service office phone was incorrectly listed. The correct number is: (706) 439-6030.

WATER DROPS

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Headwaters of Crawford Creek in the Brasstown Creek watershed

The Hiwassee River Watershed Coalition is made up of representatives from the Cherokee, Clay, and Blue Ridge Mountain SWCDs; Cherokee, Clay, Towns and Union County Commissions; individuals, families and businesses. We strive to facilitate water quality improvements throughout the upper Hiwassee River watershed, across political boundaries, while honoring local initiatives.

HRWC is an IRC incorporated §501(C)(3) non-profit organization to which contributions are tax deductible.

The Headwaters

Many streams in a given river basin are only small trickles of water that emerge from the ground. A larger stream is formed at the confluence of these trickles. This constant merging eventually forms a large stream or river.

Most monitoring of fresh surface waters evaluates these larger streams. The many miles of small trickles, collectively known as headwaters, are not directly monitored and in many instances are not even indicated on maps. However, degradation of headwater streams can (and does) impact the larger stream or river.



Fish communities are limited and small insects called benthic macroinvertebrates dominate aquatic life in smaller headwater streams. Benthic macroinvertebrates are often thought of as "fish food" and in streams and rivers they are critical to a healthy fish community. However, these insects, both in larval and adult stages, are also food for small mammals, such as river otter and raccoons, birds and amphibians (Erman, 1996). Benthic macroinvertebrates in headwater streams also perform the important function of breaking down coarse organic matter, such as leaves and twigs, and releasing fine organic matter.

might be more important

In larger rivers, where coarse organic matter is not as abundant, this fine organic matter is a primary food source for benthic macroinvertebrates and other organisms in the system (CALFED, 1999).



When the benthic macroinvertebrate community is changed or extinguished in an area, even temporarily, it can have repercussions in many parts of both the terrestrial and aquatic food web.

Headwaters also provide a source of insects for repopulating downstream waters where benthic macroinvertebrate communities have been eliminated due to human alterations and pollution. Adult insects have short life spans and generally live in the riparian areas

than the River...

surrounding the streams from which they emerge (Erman, 1996). Because there is little upstream or stream-to-stream migration of benthic macroinvertebrates, once headwater populations are eliminated, there is little hope for restoring a functioning aquatic community.



Because of the small size of headwater streams, they are often overlooked during land use activities that impact water quality. All landowners can participate in the protection of headwaters by keeping small tributaries in mind when making land use management decisions on the areas they control. This includes activities such as retaining vegetated stream buffers, minimizing stream channel alterations, and excluding cattle from streams. Local rural and urban planning initiatives should also consider impacts to headwater streams when land is being developed.



Executive Director, Callie Dobson, wrote this month's article. Should you be interested in contributing to "Water Drops", please contact the Coalition at 706-896-8091.