

Water Treatment Costs

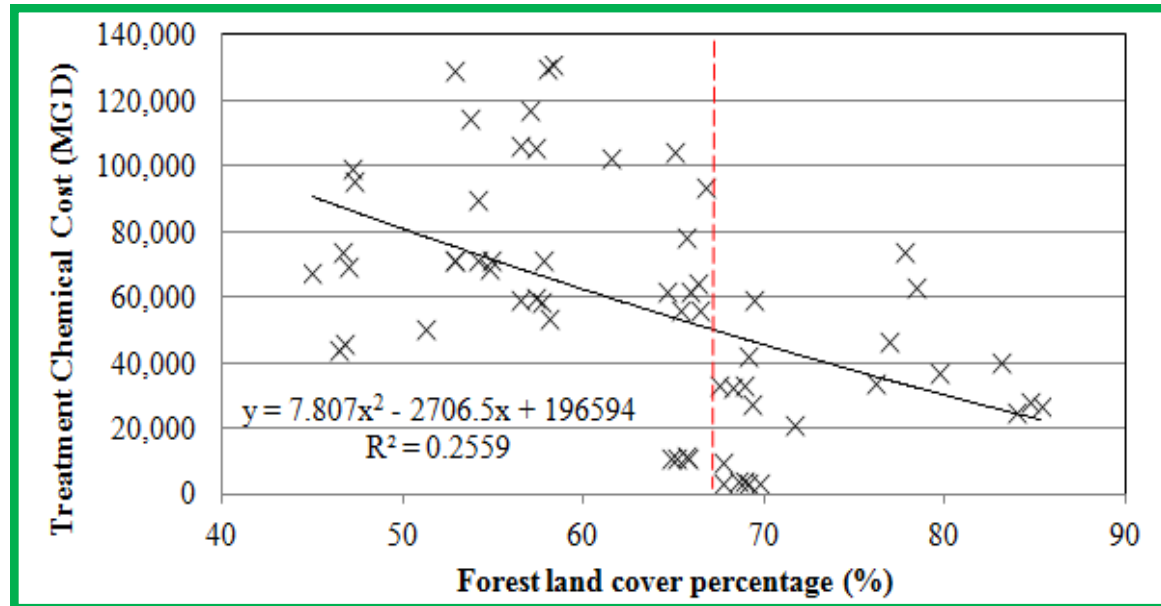
Analysis

- Obtained water treatment cost estimates from the 13 water supply operators.
- Determined the amount of forest in each of the sampled watersheds, and analyzed the cost estimates to see if there was a correlation between the cost to treat drinking water and the amount of forest cover in that watershed.

Findings

Watersheds with ~70% or more forest cover demonstrated a trend of lower costs to treat drinking water.

Water treatment costs trended higher with increased levels of turbidity in the watershed.



Messaging Themes from Lessons Learned in the Study:

- ✓ Healthy Forests = Clean Water.
- ✓ Water quality protection results from quality management of forests.
- ✓ Adding forest cover in transitional sub-watersheds may improve water quality.
- ✓ Robust markets for forest products contribute to sustained forest cover on the landscape.



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www.ncagr.gov



Acknowledgments

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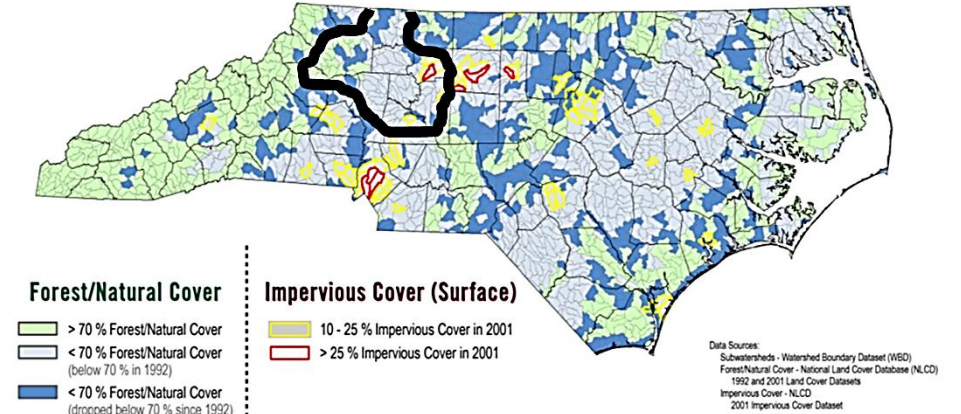
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Connecting Forests, Watersheds & Drinking Water

A Case Study in the High Rock Lake Watershed of North Carolina

Study Location

The High Rock Lake watershed comprises most of the northern half of the Yadkin-Pee Dee River basin in North Carolina, encompassing approximately 3,970 square miles. The general land-cover breakdown for the watershed, as determined in this study was 65% forest, 20% agriculture, and 15% urban.



Above map was produced by the N.C. Forest Service and is adapted from Figure 4f-5 of the 2010 North Carolina Forest Action Plan: www.ncforestactionplan.com

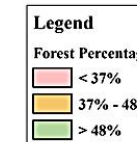
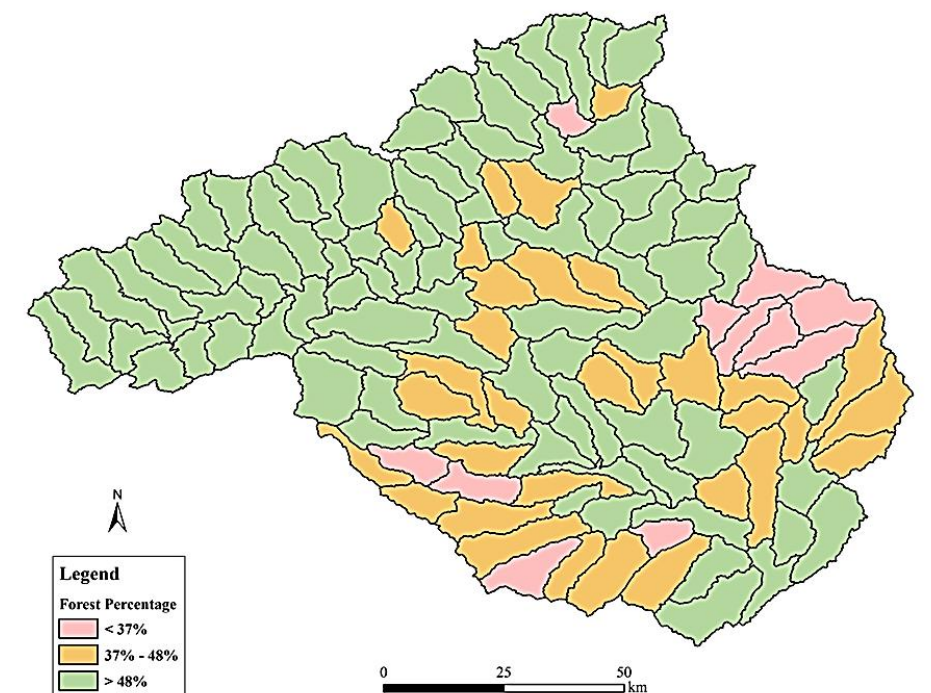
Goals

- The primary goals of this study were to determine the relationship between the amount of forest cover in a watershed, and:
 - ...Watershed biology (a measure of overall water quality)
 - ...Quality of drinking water sources
 - ...Water treatment costs

Overall Findings

The study identified ranges of forest cover (map at right) that may serve as a proxy for the general quality of water that can be expected from each subwatershed:

- < 37% forest...poor water quality
- 37% to 48% forest...transitional
- > 48% forest...better water quality



Above map shows 12-digit HUC subwatersheds of the High Rock Lake watershed, and the range of forest cover for each.

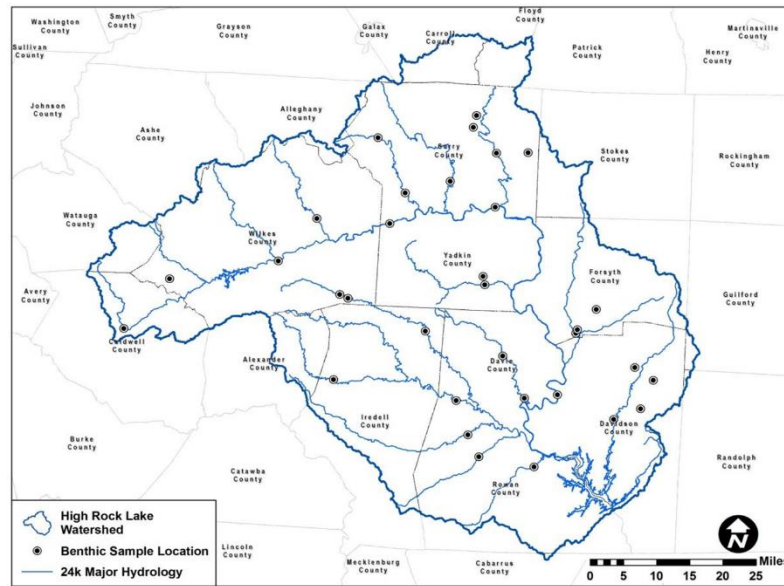


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Assessing Watershed Biology

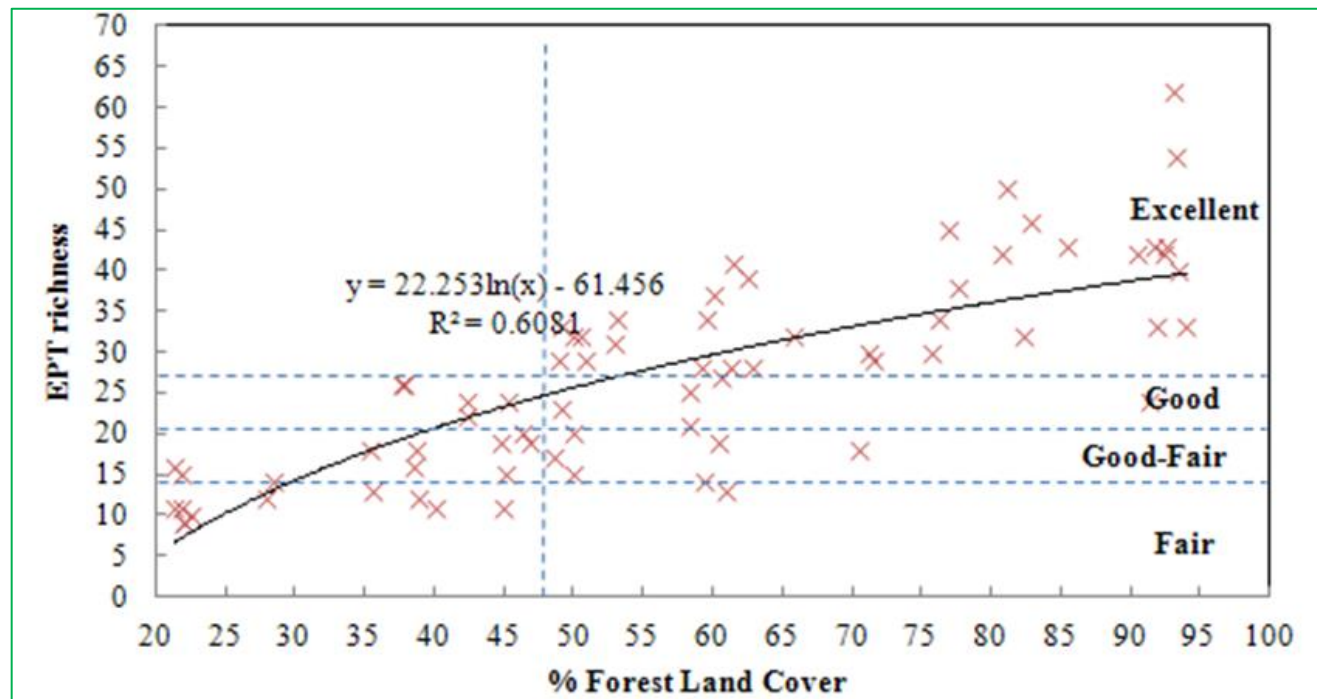
Analysis

- Retrieved 71 individual datasets of samples of aquatic life (benthic macroinvertebrates) from 33 locations (map at right), taken in 1992, 2001, 2006, 2008, and 2011.
- Determined the amount of forest in each of the sampled watersheds, and analyzed the data to see if there was a correlation between the quality of aquatic life that was sampled and the amount of forest cover in that watershed.



Findings

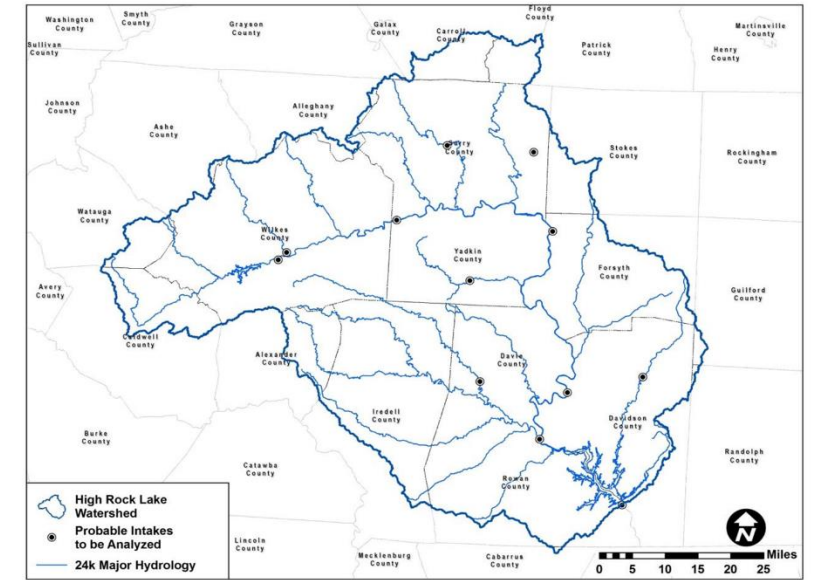
Watersheds with ~45% to 50% or more forest cover exhibited more robust and diverse populations of aquatic life, which is a generally accepted measure of overall stream health and water quality.



Assessing the Quality of Drinking Water Sources

Analysis

- Obtained datasets from water quality grab samples at 13 drinking water supply intakes for turbidity and fecal coliform (map at right).
- Determined the amount of forest in each of the sampled watersheds, and analyzed the data to see if there was a correlation between the quality of the water that was sampled and the amount of forest cover in that watershed.



Findings

Turbidity and coliform levels trended lower in watersheds with at least ~60% to 70% forest cover.

