WATER QUALITY IN AN URBAN STRETCH OF THE CHATTAHOOCHEE RIVER

Lisa Casanova[1], Charity Perkins[1], Dominique Smith[1], Darian Morgan[1], and Jason Ulseth[2]

AFFILIATION: [1]School of Public Health, Georgia State University, 140 Decatur St. Atlanta, GA 30302;
[2]Chattachoochee Riverkeeper, 916 Joseph E Lowery Blvd NW #3, Atlanta, GA 30318
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The Chattahoochee River, a major Georgia waterway, is both a drinking water source for nearly 3 million people and a surface water discharge point for 100 public and private wastewater treatment plants serving metro Atlanta and the surrounding areas, as well as being a major recreation site. This project measured water quality over 6 months during two separate years at 15 sampling points along a 15-mile stretch of river that runs past the City of Atlanta. This stretch includes multiple discharge points for wastewater treatment plants serving the greater Atlanta area, and receives stormwater runoff from local communities. Water samples from the river were analyzed for human fecal indicators, including E. coli and male-specific coliphage. Water samples were collected at 1-mile intervals from the middle of the river at a depth of 6 inches. Samples were analyzed for E. coli using membrane filtration and male-specific coliphages using EPA method 1601 and two-step enrichment procedure and single agar layer. Mean E. coli concentrations across sampling sites on each sampling date ranged from 1.5-2.7 log10 CFU/100mL, with no clear trend over time. Mean E. coli concentrations at each sampling point across 2 years ranged from 1.9-2.2 log10 CFU/100mL, with no significant differences between sites. There was no significant difference in E. coli levels upstream and downstream of two wastewater treatment plant effluent discharge sites in the 15 mile stretch. All sites were positive for male-specific coliphage over the course of sampling. The presence of fecal indicator organisms in the river suggests that the waterway is vulnerable to fecal contamination from numerous sources; given the multiple uses of the river by the surrounding population, effective monitoring and watershed protection is vital for protecting water quality.

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