

Abstract for UOSPS oral presentation

Long-term trends in the Upper Oconee Watershed using the Upper Oconee Watershed Network's (UOWN) citizen-science data

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The Upper Oconee Watershed Network (UOWN) is an all-volunteer citizen science organization with the mission of protecting the Upper Oconee Watershed through advocacy, education, recreation and monitoring. UOWN has monitored streams in the greater Athens, GA area for nearly 16 years. We measure a suite of chemical and biological parameters at up to 100 sites at least annually. In an effort to detect acute and long-term effects of stressors from development/urbanization we measure fecal coliform bacteria abundance (e.g., *E. coli*; short term stressors) and macroinvertebrate assemblages (long-term stressors) at a subset of these sites. Using the data collected by volunteers from 2001 to 2015, we assessed the trajectories and current status of biological integrity in streams in the Upper Oconee watershed. We evaluated potential long-term changes in the Save our Streams biotic index through time. In addition, we related chemical parameters that may be associated with observed changes in biotic indices for nine focal streams with varying degrees of impact from development distributed throughout the Middle and North Oconee watersheds. Overall, declines in the biotic index were evident for both the Middle Oconee and North Oconee watersheds. Six of the nine streams exhibited negative trends in biotic index scores; the remaining three streams exhibited slightly positive trajectories to no change over time. Mean biotic index classifications for the nine focal sites included one “excellent”, four “good”, two “fair” and two “poor”. Poor biotic index scores were associated with elevated concentrations of nitrate, *E. coli*, and specific conductance; specific conductance was most strongly associated with declines in biotic index scores, suggesting that chemical pollution associated with urban environments is an important stressor. Streamwater pH was the only parameter measured that was positively related to biotic index scores, indicating that sites with pH below 6 may negatively affect biotic communities. The trends in macroinvertebrate index scores suggest that stream health in the Upper Oconee watershed has generally declined since 2001. Though inferring the specific mechanisms driving decreased stream health with UOWN data is not possible, the patterns we found relative to nitrate, specific conductance, and *E. coli* suggest that chemical pollution is likely an important driver of these declines. We recommend efforts to improve water quality continue to include long-term monitoring, and reductions in direct and indirect sources of chemical pollution in the Upper Oconee Watershed.