

Report for 2003DE22B: Undergraduate Internship: Fairfield Run: An Evaluation of Stream Habitat Restoration at the UD Experimental Watershed

- Water Resources Research Institute Reports:
 - Sentoff, Kristen, Gerald J. Kauffman, 2004, Fairfield Run: An Evaluation of Stream Habitat Restoration at the UD Experimental Watershed, Delaware Water Resources Center, University of Delaware, Newark, Delaware, 56 pages.

Report Follows

Undergraduate Internship Project #3 of 10 for FY03

Ms. Sentoff's project is funded by the *DWRC*. She will recommend habitat restoration techniques for areas along Fairfield Run, a tributary of the White Clay Creek. Fairfield Run was classified by previous *DWRC* interns (Jennifer Campagnini in FY00 DWRC project G-04, continued by Tara Harrell in FY01 as DWRC project G-14) as impaired by bank erosion due to watershed urbanization. A related project, investigated by Judith Walker and also advised by Gerald Kauffman, is "Blue Hen Creek: An Evaluation of Stream Habitat Restoration at the UD Experimental Watershed", project **2003DE26B** (intern project #29 of 32 to date).

"Many students do not realize what wonderful natural resources we have right here in Newark. I am excited to have the opportunity not only to learn about water resources management in the UD Experimental Watershed, but also to help improve the watershed for future education and enjoyment."

-- Kristen Sentoff, University of Delaware undergraduate senior, Natural Resource Management major.

Abstract:

Previous research has delineated the UD Experimental Watershed for educational purposes and has determined that surrounding land use negatively impacts the streams in it. The purpose of this project is to conduct research into stream restoration techniques and collect the necessary data for restoration implementation on Fairfield Run in the UD Experimental Watershed. The researchers chose a reference stream reach and candidate sites for restoration. They then conducted water quality, habitat, and stream geomorphology surveys. This data was incorporated into stream restoration designs. The candidate restoration sites were found to be impaired in comparison to the reference condition in terms of both water quality and habitat. The restoration and reference stream reaches had similar geomorphology classifications. The researchers selected vortex rock weirs, branch packing, single vanes, tree revetments, stone toe protection, live stakes, and cross vanes from the restoration techniques for use on Fairfield Run. Many viable restoration techniques are available that utilize natural materials already found in the UD Experimental Watershed. Fairfield Run is impaired and could be improved through use of some of these restoration techniques. Furthermore, its geomorphology classification suggests that it is a good candidate for restoration. The restoration project can be used to further the educational mission of the UD Experimental Watershed by involving students and the public in an effort to improve stream quality and watershed health.