

Environmental studies major puts love of water to work on Nine Mile Run

Part of a series profiling undergraduate researchers provided by University of Pittsburgh Office of the Provost.

By Niki Kapsambelis

By studying the changing course of an urban stream, Mike Muder is following a current that has remained constant through much of his life: A love of water and a concern for the environment.

Muder, a junior who is majoring in environmental studies with a certification in geographic information systems, grew up in Ben Avon on the outskirts of Pittsburgh. An avid fly fisherman, he spent his childhood playing on the area's three rivers aboard his family's boat.

"I pretty much grew up on the rivers, and that's where I want to stay," he says.

So when Daniel Bain, an assistant professor in the Department of Geology and Planetary Science, put out a call for interns to help him work on a project involving water quality in Nine Mile Run, Muder figured he was a good fit for the job.

"Nine Mile Run always interested me, [as did] any kind of city park. I'm a big fan of Schenley and Frick [parks]," says Muder, who attended high school in Oakland and spent a lot of time in the neighborhood's adjoining green space.

The research followed up on the Nine Mile Run Restoration Project, one of the largest urban stream restoration undertakings in the nation. Sponsored by the U.S. Army Corps of Engineers as well as the city of Pittsburgh, the work lasted three years and cost \$7.7 million.

After workers painstakingly positioned rocks, trees, native grasses and wildflowers along 2.2 miles of the stream, Bain's research asked whether the stream's health had actually been restored.

"Restorations are difficult," explains Bain. "Once you start messing with a stream, you assume some responsibility and repair things."

To get a more accurate picture of what happened to Nine Mile Run, Muder and fellow undergraduate Emily Broich got maps from 1872, 1907, 1921 and today to illustrate the contraction of the stream through dumping of slag by steel mills.

Muder also helped with field work such as installing bank pins, which are large metal pins that are hammered into the stream bank and painted. After a major storm in August, he returned to measure the erosion by checking the distance between where the paint ended and the bank began. In some cases, the erosion was so severe



Undergraduate researcher Mike Muder examines the restoration of a Nine Mile Run stream in Pittsburgh's Frick Park.

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— Daniel Bain, Pitt professor

that the pins were completely washed away.

"I've been impressed again and again with Mike," says Bain. "He picks through details ... He loves the old history, the maps, and so I'm really privileged to have him working with me."

Muder presented his work at the Undergraduate Research Fair in the spring of 2007, then took on an internship with the Army Corps of Engineers over the summer working as a water quality technician. In addition to crunching numbers, he also got to go out on a boat and do water quality sampling, which was how he spent his 21st birthday — and he couldn't be happier.

He hopes to intern with the corps again, and possibly work there after graduation. In the meantime, he's working with Bain on another project examining how urbanization in the Girty's Run watershed north of Pittsburgh affects flooding around Millvale.

Bain agreed to mentor undergraduate researchers in part for personal reasons: When he was an undergraduate himself, he was given the same opportunity, and he wanted to repay the favor.

"It really changed what I ended up doing," he says of his own experience. "It strengthened my desire to be a research sci-

entist. Pitt undergraduates, I'm surprised by how talented they are. You can get really high quality work out of them."

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