



SOIREE IN THE STREAM

August 3, 2015

By Annalisa Purser

In an unprecedented effort to understand the connections between mountain water supply and urban demand, more than 50 researchers from 22 different lab groups and seven universities, including the University of Utah, gathered to study the Red Butte Creek watershed in a collaborative, three-day venture, July 20-22.

This coordinated effort, organized by the National Science Foundation-funded [iUTAH](http://iutahepscor.org/) (<http://iutahepscor.org/>) project, brought faculty and students together from disciplines ranging from sociology to chemistry and from atmospheric physics to ecology. Together, they collected hundreds of water, soil, vegetation, insect and microbial samples from more than 70 sites throughout the watershed that included protected natural areas, as well as urban environments with heavy human impacts.

“Red Butte Creek is a great place to address questions of how both water supply and demand are coupled,” said Paul Brooks, U professor and project coordinator. “In the face of ongoing climate change and growing populations, these questions are relevant not just to Utah, but to much of the west. Although small, Red Butte Creek is large enough that we can perform research in both high-elevation areas similar to areas that supply water for the entire western U.S., as well as low-elevation areas where people live and water is needed.”



Hannah Vander Zanden (left), Jordan Risley (middle) and Simone Jackson (right) sort and classify insects found in Red Butte Creek.

Once the data is analyzed, the project will provide a comprehensive “snapshot” of the water and surrounding land and air to better understand how to maintain a safe, stable, high-quality water supply in the face of growing demand for water and increasing climate variability.

A stream hydrology team headed by Bethany Neilson, a professor in Utah State University’s Civil and Environmental Engineering Department, used both physical observations and dilute tracers to reveal how and where the stream gains and loses water as it moves downstream.

When compared with chemical information collected by multiple research groups at the U, the researchers will begin to understand how the stream continues to flow when it doesn’t rain for months; how much of the stream water comes from snowmelt and how long the water is stored as groundwater before becoming part of the stream; how human impacts affect the quality of water both in the stream and in the ground; how to manage the landscape to ensure a more resilient stream during times of drought and more.

Because water is central to so many aspects of climate, weather, society and ecosystems, researchers that study water cycling and availability are scattered in many departments, programs, government offices and stakeholder groups and rarely have time and resources to come together on a joint project.

“Getting together in the same place not only allows us to gather information that will provide a more complete picture of our water issues, but just as importantly, it facilitates connections that otherwise wouldn’t happen,” Brooks said. “I’ve already heard many reports that discussions in the field the other week have led groups to self organize to jointly analyze data and follow up on this event with future research projects and connections to regional resource managers”

Jordan Risley, an incoming sophomore studying sociology at USU took part in the project. After spending the summer in an office, he was excited to get his hands dirty.



Hannah Vander Zanden, a postdoctoral researcher in the U’s Department of Geology and Geophysics, shows a bottle of healthy insects collected from the protected upper reaches of Red Butte Creek.

As an undergraduate just learning about his field, Risley took the opportunity to volunteer on the project and found himself working with “team bug life,” as he jokingly called it.

The stream ecology group, lead by Hannah Vander Zanden, a postdoctoral researcher in the U’s Department of Geology and Geophysics, and Simone Jackson, a lab technician in the U’s Department of Biology, spent the week collecting leaves along the creek, algae from rocks and macro invertebrates from the water.

By analyzing the isotopic and chemical

contents of these samples, the researchers will be able to address fundamental questions on the food web that supports life in the stream.

“Spending the day with ecology researchers might seem unrelated to sociology, but that was the point of the project,” Risley said. “This experience was everything I could have hoped for as a sociology student. I got to meet researchers I would normally never connect with, learn about their research processes, understand the types of questions they ask, learn about how our disciplines intersect, and to top it off, I got to spend the day at Red Butte Creek.”

After three long days in the field, researchers took samples back to their labs and have begun developing a sharable database for their findings that will document the diversity of data collected, coordinate sample analyses and begin to strengthen links between research groups.

A similar effort will be conducted on the Logan River this month. As more data is collected, the researchers will gain a broader understand of water in the West and will integrate results into publications and presentations that will help guide future research and decisions about how to manage water resources in Utah and beyond.

Annalisa Purser is a communications specialist at University Marketing and Communications. If you have an interesting story idea, email her at annalisa.purser@utah.edu (<mailto:annalisa.purser@utah.edu>).