

The Current

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Idaho Water Resources Research Institute

Letter From the Director:

Dear Friends of the Idaho Water Resources Research Institute,

Spring is blooming on the Palouse and as it does the Water Institute is blooming right along with it. For one thing, as we have recently added Dr. Alycia Bean, to the staff as our Program Manager for Outreach and Crowdsourced research. More recently, the Water Institute welcomed Kyra Sims on board as our Program Technician and Administrative Assistant. We are also adding a full complement of young water resource professionals to our team with the addition of Melissa Topping an M.S. student and Nikhil Vishwanath a Ph.D. student, both of which come from the College of Natural Resources. This summer, they will also be joined by a Post-Doctoral Fellow, Dr. Naveen Joseph who will work closely with Center for Modeling Complex Interactions and the Northwest Knowledge Network on a project that interfaces water resources with public health.



The Water Institute is also adding two new facilities to our infrastructure. The first is the beta testing laboratory in Morrill Hall. This facility which opened in January 2019, will allow us to work with students to test crowdsourcing tools that can be used in water resource research. The second is wet lab space in the University of Idaho's Integrated Research and Innovation Center. The wet lab is scheduled to open this summer and will provide analytic capacity related to water chemistry. These facilities are part of the Water Institute's Moscow-based, core facilities. These facilities will be made available to the University-wide community, and a web-site that focuses on the structure of that collaboration is scheduled to go public this summer.

Finally, at the end of this summer, the Water Institute will have produced its 5-year charter, and as a sneak preview, I am delighted to tell you that collaboration remains a central tenet within our business practices. Our collaborative spirit extends across the University of Idaho to our colleagues at fellow research universities within the state, and with state agencies and our neighboring tribal communities. The other, we remain firmly committed to the collaborative scientific enterprise. We are also in the process of developing exciting collaborative activities that extends beyond our borders, across the region, the nation and internationally.

Best,
Dr. Alan Kolok

Second Annual Water Symposium

By: Kyra Sims Program Technician

The Second Annual, University of Idaho Water Symposium was held on April 24th, 2019. Dr. Janet Nelson, the University of Idaho's Vice President for Research provided the introductory comments. She welcomed the presenters and noted the academic diversity in attendance.

The second speaker of the Symposium was Dean of the College of Agriculture and Life Sciences, Dr. Michael Parrella. He updated the audience on a major initiative, the Center for Agriculture, Food and the Environment (CAFE). The close association between agriculture, livestock production and water was front and center in his presentation, and the Water Institute looks forward to working collaboratively on this major initiative.

Seven lightning talks, presented by students and professors, were given after Dean Parrella's presentation. In the lightning talk format, a series of slide templates were given to each of the speakers, including one that focused on the Idaho Connection. On that slide the presenters were asked to relate their research to Idaho. The relevance of the research was far ranging from the engineering of a submersible automated drone, to social science and classic hydrology.

After the lightning presentations there were two breakout sessions. The first posed the question "What can the Water Institute do for you and your students?" The second was a follow up question of sorts, as it asked the attendees, "How can the Water Institute collaborate with you. Specifically, what do we need to make this collaboration happens?" From the results of these two questions we plan on charting our course forward with the rest of our faculty colleagues

The symposium wrapped up with the Water Institute's Director, Dr. Alan Kolok revealing the much awaited, \$500 "Door Prize". He announced the initiation of the Water Institutes's Graduate Travel Voucher, where students can apply for funds to attend national and regional conferences relating to the vast field of Water Resources Research. It appeared that the crowd was excited to know that the "Door Prize" was available to any industrious student. For more information regarding the travel voucher please see our Facebook page or contact us at IWRRI@uidaho.edu.

A huge thank you to the presenters and attendees for taking the time to join our symposium. We are looking forward to the Third Annual Water Symposium in Fall 2019!



Amanda Ward: Undergraduate Student, Computer Science



Melissa Topping: Graduate Student, Fish and Wildlife Sciences

"Your event was well organized and thoughtful. I got to learn quite a bit about environmental sciences that I had no idea about and made some exciting connections." -Amanda Ward

Beta Testing

By: Melissa Topping, Graduate Student

The Water Institute, in collaboration with colleagues at the University of Nebraska, are working to understand the accuracy, precision and robustness of data collected during citizen science campaigns. To do this, the Water Institute has been conducting a variety of beta testing events to further understand how participants respond to instructions and different types of tools. Beta testing refers to the pre-testing of a tool, traditionally used in computer and software contexts, before its official release to the public. When used in a citizen science context, beta testing refers to the testing of tools and sensors to assess the volunteers' accuracy, precision and instruction interpretation prior to use in a campaign setting.

Our water quality beta testing at the University of Idaho is currently focusing on the Hach© Nitrate test strips, and how volunteers interpret different types of instructions. We are interested in how citizen scientists will respond when prompted to either categorize their results or interpolate their results along the colorimetric concentration gradient. Understanding how participants respond to instructions and the tools provided will help the Water Institute equip volunteers with tools that are vetted relative to their accuracy and precision.

In our current beta testing procedure, the volunteers are provided water samples spiked with nitrate and asked to follow set instructions. The Institute's graduate student collaborators have conducted a total of five beta testing events, including events conducted at Idaho DEQ's 29th Annual Idaho Water Quality Workshop in Boise and the 2019 Spokane River Forum. Through these events, the Water Institute has beta tested with over 135 volunteers and spread the word about our efforts to over 350 interested community members.



**Nikhil Vishwanath, PhD
Student, ORED Open House**



**Beta Testers: Student Beta
Testing Event, UI**



**Melissa Topping & Beta
Tester, ORED Open House**

New Arrivals

by: **Kyra Sims, Program Technician**

The Water Institute would like to welcome it's newest members: Melissa Topping, M.S. Student, Nikhil Vishwanath, Ph.D Student, Kyra Sims, Program Technician, and Naveen Joseph, Post Doctoral Fellow. They all will be contributing to the Water Instiute's achievements over the coming season with the helpe of Director, Dr. Alan Kolok, and Program Manager, Dr. Alycia Bean.



Alan Kolok



Melissa Topping



Kyra

Midwest

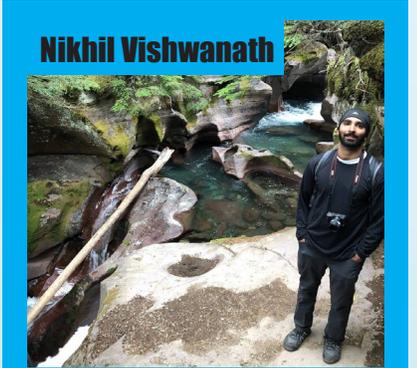
By: **Sarah Bennett, Graduate Student**

Shortly after moving to Omaha I finally had time to get back into adventuring and exploring, and I began spending a tremendous amount of time outdoors and volunteering. At the same time, I was learning a lot about my new state. It's true. Nebraska has a lot of corn and cows, and I mean a lot, but we also have some really wonderful natural places.



The Nebraska Sandhills, long grass prairies, sprawling oak savannas, and millions of migratory birds are just some of the parts of Nebraska less known about. What we also have, though, are water resources struggling to cope with the man-made world growing around it. The Ogallala aquifer is being depleted, nitrate leeching and runoffs are a concern from agriculture products, channelizing the Missouri River has transformed flood plains, upstream dams and levees have stunted rivers, and smelting in the Omaha area a century ago still has left some areas polluted with lead.

Learning about these interactions and the relationship between natural and social environments is what really inspired me to begin taking courses and learn more about the field. I took Natural Resources courses online at Oregon State University for two years and then I happily was accepted to Idaho's M.S program last fall. Dr. Kolok has twenty years of research and experience in the Omaha area and has previously worked on Citizen Science projects that test water sources in the Midwest for nitrate contaminants. I am so thrilled to begin working with Dr. Kolok and his team and I'm excited to see how Citizen Science opportunities can be leveraged to better illustrate the scale and impact of contaminants on our water sources in the great plains.



Nikhil Vishwanath



Alycia Bean

Coliform Monitoring in Southern Idaho:

By: Nikhil Vishwanath, Graduate Student

The Water Institute is conducting a microbial source tracking study in Mink Creek in southeastern Idaho. Most of the Mink Creek Watershed is located on United States Forest Service land and has multiple uses, including cattle grazing and recreational activities by the Caribou-Targhee National Forest.

The site was last sampled for fecal coliforms by the Idaho Department of Environmental Quality in 2017, and several locations throughout the watershed were found to exceed regulatory limits for recreational activities. While the suspected source was thought to be cattle, a definitive source was not identified due to the fact that fecal coliforms are present in many species, and the molecular biology had not been done at the time to differentiate between them.

In this study, we will elucidate both the levels and sources of fecal coliforms throughout the creek and its tributaries. Levels will be measured using our new Colilert IDEXX system, a state-of-the-art system that we will temporarily house at Idaho State University for the summer. The vertebrate sources for the coliforms will be determined by molecular analysis, using quantitative PCR to determine the percentages of host-associated bacteria (Bacteroides) in each sample.

Results from this research project will provide stakeholders with information necessary to implement best management practices to reduce coliform levels in the watershed. The research will also be a component of Ph.D. student, Nikhil Vishwanath's dissertation. This project is being conducted in collaboration with the USFS, Idaho DEQ, the University of Idaho's Rangeland Center, and Idaho State University.



Beautiful scenary in southern Idaho, while doing field work.

TO:

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