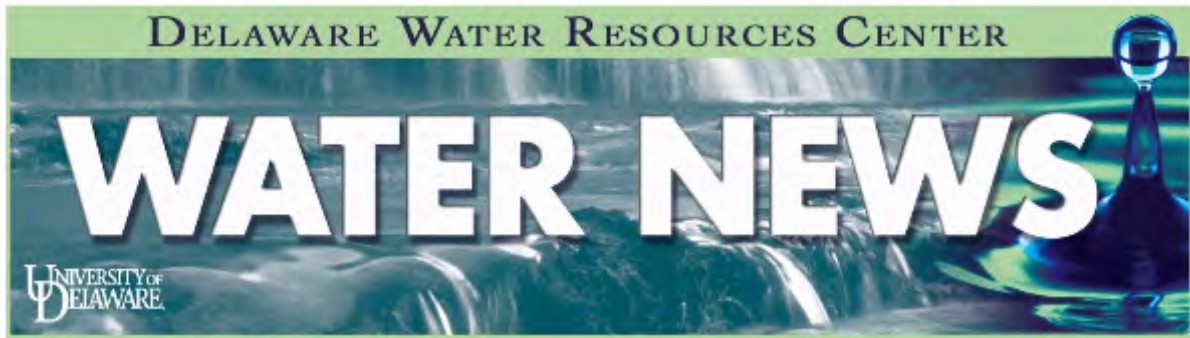


[View this email in your browser](#)



March 2016

Volume 15

No. 1

Celebrating Our 50th Year!

[View the newsletter online](#)

Delaware: The First (Water) State in the Union



Twitter, CSPAN, the New York Times...water is increasingly in the news these days. From the California drought to blizzards and coastal flooding in Delaware, not to mention the Flint River crisis, water issues are impossible to avoid. Through all the noise of the election, the economy, and even March Madness, water is "bubbling up to the top" for the public as well as top officials from governors to the President. I saw this first-hand when invited to represent the University of Delaware and the state at the White House Water Summit on March 22, 2016, which coincided with World Water Day.

These national water issues were also the focus of the National Institutes for Water Resources (NIWR) meeting this past February in Washington, DC, which Martha Narvaez and I attended with our colleagues and the directors of water resources institutes at 48 other land grant universities

stretching from Maine to Alaska to Guam and the U.S. Virgin Islands. We spent much of our time discussing these national water issues with scientists from NOAA, USDA, Department of the Interior, EPA and the US Army Corps of Engineers.

It is clear that it is indeed in the national interest to address these water crises through the research and education programs supported through the USGS and the National Water Resources

Research Program created by LBJ and Congress in 1964. At the DWRC, I am glad to report that we are doing our best to train the next generation to address these profound water resources issues that have great impact on the economy and ecology of the United States. At our February 29, 2016 special leap-day meeting of the DWRC Advisory Panel, we heard presentations on the work of our graduate research assistants and undergraduate interns supported by DWRC, who put on display a very impressive body of research.

Over the last year we have sponsored the research of 20 students who joined with faculty and scientist advisors across four colleges of the University to work on addressing the water resources problems of tomorrow. I am happy to report that the future of water resources is in good hands with this cohort of budding water scientists, and that the DWRC is poised to address the water challenges in Delaware, the Delmarva, and indeed nationally and globally. Although Delaware may be small, we are always the First State for water resources.

DWRC Director Gerald Kauffman invited to White House Water Summit on World Water Day

On March 22, 2016, University of Delaware Water Resources Center (DWRC) Director Gerald Kauffman was invited to participate at the White House Water Summit at 1600 Pennsylvania Avenue in Washington, D.C. On UN World Water Day, the White House hosted this first-ever national Water Summit to shine a spotlight on cross-cutting, creative solutions to solving the water problems of today and announced nearly \$4 billion in private capital committed to investment in water-infrastructure projects nationwide, more than \$1 billion from the private sector over the next decade to conduct research and develop new technologies, and nearly \$35 million this year in Federal grants from the EPA, NOAA, NSF, and USDA to support cutting-edge water science.

At the White House, Dr. Kauffman and 200 attendees heard from the Administration and five U.S. Congressmen that water science and policy research at universities such as UD is especially pertinent because water is one of America's top domestic public policy challenges right now, and the push is on to invest more in this economic and environmental resource to reduce the chances of future disasters similar to Flint River, the California drought, or coastal Delaware flood emergencies. The White House announcement highlighted national initiatives such as research conducted by the University of Delaware Water Resources Center (DWRC) and The Nature Conservancy (TNC) into economic incentives to promote watershed restoration and explore the feasibility of a Brandywine Christina Healthy Watershed Fund as part of a \$35 million William Penn Foundation Delaware River Watershed Initiative (DWRI).



Gerald Kauffman attends World Water Day Reception after the White House Water Summit near the Lincoln Memorial and the U.S. Institute for Peace at the George P. Schultz Great Hall

The DWRC is one of 54 National Institutes for Water Resources (NIWR) supported by the US Department of Interior and U.S. Geological Survey at land grant universities in the 50 states, District of Columbia, and the three island territories of Guam, Puerto Rico, and U.S. Virgin Islands. The DWRC is hosted at the University of Delaware by the Institute for Public Administration, within the School of Public Policy and Administration in the College of Arts and Sciences, and in association with the College of Agriculture and Natural Resources.



Meeting citizen scientist Gayle Hedquist at World Water Day reception overlooking the Lincoln Memorial



Meeting Gregory McAdams, MD, from the American College of Cardiologists at World Water Day reception

DWRC Advisory Panel Meets on Leap Day

On February 29, 2016, the DWRC Advisory Panel utilized the extra day authorized by Julius Caesar and the Julian Calendar in 46 BC and met on Leap Day at the University of Delaware on the Newark Campus.

The DWRC Advisory Panel reviewed student presentations and recommended continued funding for graduate students Lauren Lechner and Daniel Sanchez-Carretero. Undergraduate students Ryan Hall, Margaret Orr, and Jillian Matz are on track to present posters at the research forum at Perkins Student Center on Friday April 29, 2016. Graduate student Alex Soroka is completing USGS supported research and plans to graduate later this year.

The DWRC Advisory Panel also discussed water research and education priorities for Delaware and a poll was distributed requesting the panel to update the priorities (such as Climate Change and Sea Level Rise) and recommend any additional priorities to the list.

DWRC Director Dr. Gerald Kauffman also welcomed Dr. Afton Clarke-Sather, Assistant Professor of Geography as the newest member of DWRC Advisory Panel. He thanked outgoing Department of Geography's Dr. Luc Claessens for his several years of service to the DWRC Advisory Panel as well as the UD WATER group. AWRA National President Martha Narvaez from the DWRC discussed the national priorities of the American Water Resources Association during her 2016 term and discussed natural linkages at the national level between the AWRA and the DWRC and the other 53 land grant universities that are part of the National Institutes for Water Resources (NIWR).

Just after noontime DWRC Program Coordinator Maria Pautler adjourned the meeting and the attendees broke to enjoy a luncheon prepared by the chefs at the UD Trabant Center.



Students present research findings at the Annual Advisory Panel meeting, Leap Day, 2016.

Student Research Presentations to the DWRC Advisory Panel on Leap Day

- Grad student Lauren Lechner, advisor Dr. Pei Chiu, Removal of Phosphate from Water Using Scrap Iron
- Grad student Daniel Sanchez-Carretero, advisor Dr. C.P. Huang, Electrochemical Reduction of Carbon Dioxide
- Undergraduate intern Ryan Hall, advisor Dr. Paul Imhoff, Integrating Biochar Amendments in Green Stormwater Management Systems for Enhanced Nitrogen Treatment of Stormwater Runoff
- Undergraduate interns Margaret Orr and Jillian Matz, advisor Dr. Shreeram Inamdar, Water Workings at Fair Hill Nature Resource Management Area: Rainfall and Sedimentation / Rapid Changes in Stream Water Quality
- Graduate student Alex Soroka, advisor Dr. Amy Shober, Maximizing Yield and Nitrogen Use Efficiency in Delaware's Irrigated Corn

DWRC Water Research Priorities

- Water pollutants -- their sources, fate, cycling, and transport
- Water supply, demand, and conservation
- Groundwater identification and protection
- Nutrient management and water quality
- Management and control of storm water runoff
- Treatment and re-use of wastewaters
- Protection and restoration of wetlands
- Pathogens, public health, and water quality
- Water resources topics in marine studies
- Water resources policy issues, such as climate change

DWRC Advisory Panel

- Mr. Jayme Arthurs, USDA Natural Resources Conservation Service, Dover, DE
- Mr. Chris Bason, Center for the Inland Bays, Rehoboth, DE
- Dr. Afton Clarke-Sather, Department of Geography, University of Delaware, Newark, DE
- Mr. Tom Coleman, City of Newark Public Works & Water, Newark, DE
- Mr. Jeff Downing, Mt. Cuba Center, Wilmington, DE
- Ms. Asia Dowtin, Ph.D. Candidate, Department of Geography, University of Delaware, Newark, DE

- Dr. Mingxin Guo, Dept. of Agriculture & Natural Resources, Delaware State University, Dover, DE
- Ms. LeeAnn Haaf, Partnership for the Delaware Estuary, Wilmington, DE
- Mr. Stephen Hokuf, Dept. of Planning, NCC Government Center, New Castle, DE
- Dr. Paul Imhoff, Dept. of Civil and Environmental Engineering, University of Delaware, Newark, DE
- Dr. Shreeram Inamdar, Department of Plant and Soil Sciences, University of Delaware, Newark, DE
- Dr. Janet Johnson, Department of Political Science, University of Delaware, Newark, DE
- Mr. Richie Jones, The Nature Conservancy – Delaware, Wilmington, DE
- Dr. Thomas McKenna, Delaware Geological Survey, University of Delaware, Newark, DE
- Mr. Matt Miller, Aqua Pennsylvania, Bryn Mawr, PA
- Ms. Martha Narvaez, Water Resources Center, University of Delaware, Newark, DE
- Ms. Ginger North, Delaware Nature Society, Hockessin, DE
- Ms. Betzaida (Betzy) Reyes, U.S. Geological Survey, Dover, DE
- Mr. Kash Srinivasan, Wilmington, DE
- Mr. Robert Struble, Brandywine Valley Association, West Chester, PA
- Ms. Jennifer Volk, Kent County Cooperative Extension, University of Delaware, Dover, DE
- Ms. Jennifer Walls, Division of Watershed Stewardship, Delaware DNREC, Dover, DE

Spotlight on 2015-16 DWRC Undergraduate Internships

Application of ^{31}P NMR Spectroscopy to Understand Phosphorus Speciation in Wastewater

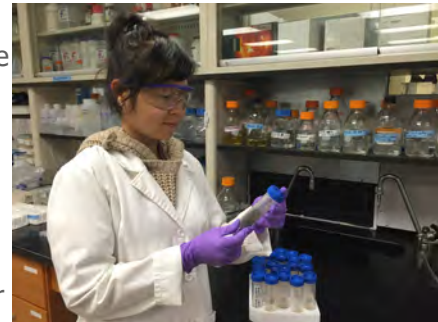
¹Ha Vu, ²Deb Jaisi

¹Department of Chemistry and Biochemistry

²Department of Plant and Soil Sciences

Through an undergraduate internship program at the Delaware Water Resources Center, I obtained an opportunity for research experience in the Environmental Biogeochemistry Laboratory under Dr. Deb Jaisi. The overall goal of my research project was to identify phosphorus (P) speciation in wastewater and link the speciation to understand transformation of P between orthophosphate and polyphosphate (poly_P) species in the Kent County Wastewater Treatment Plant (KCWWTP) in Milford, DE. Microorganisms

involved in the active P removal processes in the aeration basin of WWTP undergo aerobic and anaerobic oscillation for nitrate removal. During oxic condition microorganisms uptake large amount of orthophosphate and synthesize poly-P, while breaking poly-P down to obtain energy in anaerobic stage. In this study several samples were collected from the WWTP to determine the relationship between dissolved oxygen (DO) and changes in P speciation using solution P nuclear magnetic resonance spectroscopy (^{31}P NMR). Orthophosphate and pyrophosphate were the major P species in all samples. However, their dominance varied during aerobic condition; polyphosphate was much higher but decreased as the DO decreased. Furthermore, changes in monoesters and diesters during redox cycling suggested synthesis of both of these P compounds slightly higher during anaerobic cycle. These results provided clear insights into P speciation during redox alternation and are useful for tapping microbial incorporation of P into macromolecules and energy storage compounds for efficient P removal from wastewater.



DWRC and UD Water Intern Poster Session

DWRC and UD Water 2015-16 Undergraduate Internships Research Project Poster Session will be held on April 29, 2016, from 12:30 to 5:00 PM, in the UD Perkins Student Center.

Join the DWRC on Friday, April 29 to view and discuss posters as part of the 1st Celebration of Undergraduate Engaged Scholarship, hosted by UD's Office of Research and Experiential Learning. This event is free and open to the public with convenient parking in the Perkins Center Garage. Location can be found [here](#).



Jobs and Internships in Water Resources

The Land Conservancy for Southern Chester County (TLC)
Outreach Coordinator

The Outreach coordinator will assist The Land Conservancy for Southern Chester County (TLC) and The Bucktoe Creek Preserve (BCP) by continuing and enhancing its Outreach to the Community via Education Programming, Events, Volunteer Recruitment and Memberships.

Coordinator will work cooperatively with all departments of TLC, with special emphasis on Education and Sponsorship & Events and will report directly to the Executive Director. Position is as an independent contractor, with flexible part-time hours, including some evenings and weekends. Pay is commensurate with experience. More details can be found [here](#).

The Land Conservancy for Southern Chester County (TLC)
Teacher/Naturalist

The Teacher/Naturalist is one of the public faces of The Land Conservancy for Southern Chester County (TLC), and he/she will conduct education and outreach, as well as increase visibility in the community. A strong background in environmental education and natural history is required; however, the most important attributes are genuine excitement for TLC and our mission and a "can-do" attitude. Strong written and platform communication skills are vital since the Teacher/Naturalist may be asked to represent TLC at public functions/programs throughout the year. Applicants should have first aid certification. A more detailed description can be found [here](#).

Delaware Department of Natural Resources and Environmental Control (DNREC)
Seasonal Assistant Education Coordinator

This position will coordinate education volunteers to assist on school programs and public tours, scheduling school programs, and leading a variety of educational interpretive programs. This position will also assist the Delaware National Estuarine Research Reserve (DNERR) Education coordinator with planning special events, developing curriculum and instructional materials, and teacher trainings. Duties may vary for the St. Jones Reserve and the Blackbird Creek Reserve.

Work is performed under various weather conditions. Additional work on weekends, evenings, and holidays may be scheduled.. A more detailed job description is available [here](#).

There are more exciting job opportunities in our area. Click the links to find out more information about each position!

- New Castle County Land Steward and Conservation Programs Manager with Delaware Wild Land. Information available [here](#).
- GIS Specialist with New Castle County. Information available [here](#).

- Biological Aide/Research Assistant with DNREC's Fish & Wildlife. Information available [here](#).
- GIS Specialist with Sussex County. Information available [here](#).
- (2) Wetland Field Technicians with DNREC's Wetland Monitoring & Assessment Program. Seasonal employment information is available [here](#).
- Stormwater Intern for the City of Newark. Information available [here](#).
- Job postings at the Delaware Nature Society can be found [here](#).

Environmental Education (EE) Grants

Under the Environmental Education Grants Program, EPA seeks grant proposals from eligible applicants to support environmental education projects that promote environmental awareness and stewardship, and help provide people with the skills to take responsible actions to protect the environment. This grant program provides financial support for projects that design, demonstrate, and/or disseminate environmental education practices, methods, or techniques. Since 1992, EPA has distributed between \$2 and \$3.5 million in grant funding per year, supporting more than 3,600 grants.

Applications are now being accepted for the 2016 EE Grants Program. Applications are due by April 8, 2016, 11:59 p.m. Eastern Time. More information [here](#).

UD College of Agriculture and Natural Resources - Jobs and internships are listed [here](#).

UD College of Earth, Ocean, and Environment - Jobs and internships are listed [here](#).

Delaware Environmental Institute (DENIN) - Jobs and internships are listed [here](#).

Upcoming Water Conferences and Events

Lights, Camera, EARTH!

UD's environmental film festival, free and open to the public, will take place at various venues on UD's main campus. April 8-10, 2016. Learn more at the festival [website](#).

Graduate Student Water Initiative - Abstracts welcome!

The Water Research Centre at Queen's University in Kingston, Ontario, Canada is pleased to invite you to submit an abstract to the Water Initiative for the Future (WatIF): International Graduate Student Conference July 2016. WatIF hopes to empower the leaders of tomorrow for the future of the world's water and create a community of young water leaders.

For more information on WatIF 2016 and to submit your abstract--due April 11, 2016--please visit [here](#).

National Water Dance: Art and Science on the Christina River

Experience Delaware's contribution to the National Water Dance: Art and Science on the Christina River on April 16, 2016 - Learn more [here](#).

Rising Seas and Extreme Events on Vulnerable Coasts Symposium

The University of Delaware and Franklin Institute are pleased to present "Rising Seas and Extreme Events on Vulnerable Coasts," a symposium honoring Brian F. Atwater (UD Ph.D. '80), recipient of the 2016 Benjamin Franklin Medal in Earth and Environmental Science. The symposium will feature five invited speakers who will discuss coastal processes and associated hazards.

Presentations will be followed by an open panel discussion and posters presented by selected registrants. April 20, 2016. More information can be found [here](#).

34th Annual WRADRB Recognition Dinner

April 20, 2016, 5:30 PM - 9:00 PM. The Down Town Club, Center City, Philadelphia. Celebrating and recognizing those who help support the longest un-dammed river east of the Mississippi!

More info [here](#).

41st annual Ag Day!

April 30, 2016: UD College of Agriculture and Natural Resources 41st annual Ag Day. Come hear what our water interns have been working on in the local community! Themed "SustainAGbility: Doing What Nature Would Do". Also features the UD Botanic Gardens Spring Plant Sale. Rain or shine, 10:00 AM – 4:00 PM. Visit their website for more info [here](#).

Creating a Flood Ready Community

"Planning 201" reviews the multiple sources of flood risks to Delaware communities that can be addressed and mitigated through planning, codes, and ordinances. It covers floodplain requirements for municipalities and tools for adapting to flood risk. Sources of funding and technical assistance will also be presented. More information can be found [here](#) under "Creating a Flood Ready Community."

May 20, 2016, 9:00 AM - 12:00 PM (noon) - University of Delaware Paradee Center, Dover, Del. Cost: \$50

2016 AWRA Mid-Atlantic Conference, September 15-16, 2016

Save the date for the 2016 AWRA Mid-Atlantic Conference, September 15-16, 2016. The conference will be held at the Chase Center on the Wilmington Riverfront. Conference details can be found at the conference website [here](#).

Water Resources Information and Training

Brandywine Watershed Clean Ups

- April 9, 2016, 8:00 AM - 12:00 PM (Noon) - Brandywine Creek Stream Stewards Spring Clean-up! Join The Nature Conservancy, First State National Historical Park, and Brandywine Creek State Park for our Stream Stewards Clean-up event. Volunteers will help us protect natural resources by clearing trash and debris from the Brandywine Creek and its tributaries. Three meet-up sites to choose from: Rocky Run at the Nature Conservancy, Smith Bridge Parking Lot at the First State National Historic Park, and Thompsons Bridge at the Brandywine Creek State Park. For more information, check out their website [here](#).
- Saturday, April 23rd, 2016. 9:00 AM - 1:00 PM
Join the Young Friends of the Brandywine for the 23rd annual Brandywine River Cleanup! We will cleanup the banks of the Brandywine from Lenape Bridge outside of West Chester to Thompson's Bridge in Delaware. Lunch is provided! More information [here](#).
- April 30, 2016 - Brandywine Cleanup! Canoe-based, and requires pre-registration. For more information call the Brandywine Red Clay Alliance: 610-792-1090

Christina River Watershed Clean Up

April 9, 2016, 8:00 AM - 12:00 PM (noon) - The Christina River Watershed Cleanup's mission has always been the removal of man-made debris from within this beautiful watershed, while raising public awareness for pollution prevention. Since the Cleanup began in 1992, more than 360 tons of tires, appliances, household items, and other trash have been removed from the watershed.

Join hundreds of volunteers and help clean the single most important natural resource in our region! More info available [here](#).

London Britain Township Clean Up

April 16, 2016, 9:00 AM - Extracting invasive, non-native plants, & trash from a Township Park.

1364 Flint Hill Rd, Landenberg, PA, 19350.

For more information contact [April Schmitt](#) by email or at (484) 883-0110

Delaware Sea Grant and local partners have adapted a popular rain garden app for the mid-Atlantic region to help homeowners build their own rain gardens and improve water quality. More information about the app can be found [here](#).

Free Book Downloads from Water Wiki!

[Organic Waste Recycling: Technology and Management – Third Edition](#)

- This book covers the principles and practices of technologies for the control of pollution originating from organic wastes and the recycling of these organic wastes into valuable products such as fertilizer, biofuels, algal and fish protein, and irrigated crops.

[Integrated River Basin Governance](#)

- Drawing on both past and present river basin and valley scale catchment management examples from around the world, the book develops an integration framework for river basin management. Grounded in the theory and literature of natural resources management and planning, the thrust of the book is to assist policy and planning.

Download Links available [here](#).

The Delaware Section of the American Water Resources Association events information can be found [here](#).

The Delaware Student Section of AWRA - activities can be found [here](#).

The DENIN events calendar is found [here](#).

The State of Delaware public meeting and workshop information is found [here](#).

The Sierra Student Coalition offers environmental leadership training. For details visit their website [here](#).

Get Ready to Plant a #WaterSavingYard with These Winners

Winter feel like it is lingering, but now is the perfect time to start making your springtime gardening plans to save water. Need motivation to dig in? Check out the EPA's #WaterSavingYard [Photo Gallery](#) on Facebook, plus see the [Twitter page](#) for inspiration. More than 80 photographs of beautiful and water-efficient landscapes were submitted during the #WaterSavingYard photo challenge last summer, and since announcing the Facebook photo winners in the Fall 2015 Current, even more fan-favorite photos have been added to the album, showcasing just how beautiful, water-efficient, and diverse low water-using landscapes can be. In the photo gallery, you can also find the winning photographs that received the most "likes" on Instagram, as well as the top picks selected by EPA for water-efficient design.

- More information, as well as some of the EPA's top picks for beauty and efficiency, can be found [here](#).
- The #WaterSavingYard Photo Gallery can be found [here](#).



- Image on right, from gallery, is Mike Voelkel of Brinklow, Maryland, who transformed his lawn into a rain garden after his well went dry.

Welcome new subscribers! Contributions, comments and questions are always appreciated. Water News serves citizens interested in topics on Delaware water resources and is published by the Delaware Water Resources Center, University of Delaware.

Delaware Water Resources Center
University of Delaware
Water Resources Agency
Institute for Public Administration
School of Public Policy and Administration
261 Academy St.
Newark, DE 19716
302-831-4929
<http://ag.udel.edu/dwrc/>
Gerald Kauffman, Ph.D., Director
Maria Pautler, Program Coordinator

To unsubscribe, email [Maria Pautler](mailto:mpautler@udel.edu)

This email was sent to ahomsey@udel.edu
[why did I get this?](#) [unsubscribe from this list](#) [update subscription preferences](#)
Delaware Water Resources Center · DGS Annex · Newark, De 19716 · USA

The MailChimp logo is displayed in a white, cursive font within a dark gray rounded rectangular box.