

Profiles



Department of Soil Science
UNIVERSITY OF WISCONSIN-MADISON

JUN 2024 VOL. 15 NO.2

MESSAGE FROM THE DEPARTMENT CHAIR

A new name and some changes to programs but our values and principles remain the same

On July 1, 2024, the Department of Soil Science will officially become the Department of Soil and Environmental Sciences. Our faculty voted on this change nearly seven years ago to better capture the full range of our existing research and instructional programs. The gears of the University grind slowly, but the change was finally approved earlier this spring. A desire to better capture the breadth of the department's scope is not new. In fact, M.L. Jackson developed a position paper to rename the department to the Department of Soil and Water Science in 1965. While that bid failed, our new name recognizes our large and growing Environmental Science major and our new Professional MS program in Environmental Remediation and Management and better reflects the broad range of science that we conduct. The new name was not intended to convey a diluted focus on soil science. I can assure you that we remain as committed as ever to being among the best places in the world for the study of soil.

In addition to the departmental name change, we have made some significant changes to our academic offerings. Undergraduate students have shown a strong preference for majoring in broadly themed areas like Biology, Global Health, Environmental Studies, and Environmental Science. Within these majors, students can specialize by collecting certificates that give them areas of focus. There is no limit to the number of certificates a student can earn. Specialized majors, like Soil Science and many others have seen declining numbers over the years as students gravitate towards the more generalized majors. However, despite the decline in majors it is hard to find an empty seat in many of our courses. To adapt to the evolving preferences of students, we have decided to suspend admissions to the Soil Science major starting next spring, and in its place, offer a new certificate in Environmental Soil Science, which will begin this fall. At first glance, this may seem like a step backward for soil science education, but we are convinced this change will actually generate *more* interest and training in soil science on campus. The new certificate requires 4 credits of course work in introductory soil science, followed by a 3-credit course in three of the four sub-disciplinary areas of soil science: Soil Chemistry/Fertility, Soil Physics and Development, Soil Ecology and Biology, and Soils and the Environment. This structure mirrors the core 15-credit requirements of our Soil Science major. Students pursuing the certificate will be professionally advised by Zach Wyman, an Academic Advisor in our department, on career opportunities in soil science. The broad course offerings of majors like Environmental Science will allow students to pursue that major and the soils certificate at the same time without increasing their time to degree. We are very excited for the rollout of the new certificate and expect to have many times the number of students pursuing the certificate than we had pursuing the major over the past several years. None of these changes will affect our Soil Science MS and PhD programs, which continue to flourish.

In F.H. King's time, the department was called Agricultural Physics, and the Soil Science major did not exist. Regardless of the names, this is still a place that Professor King would recognize and be proud to call home. We are grateful for the support of our alumni, friends, and donors through these changes.

Doug Soldat
Chair

RESEARCH CORNER: RAYNE



Natasha Rayne joined the department in January 2024 as Assistant Professor and Soil Fertility Extension Specialist. Natasha completed her undergraduate degree in Agronomy in 2003 at the Anton de Kom University in her native Suriname. After graduation, she worked as a farm manager at a Banana Farm and later as a Program Manager at an NGO working with subsistence farmers. Following this she pursued and earned her MS degree in Plant and Soil Science followed by her PhD in Soil Science at Oklahoma State University. Her research in graduate school included nitrogen use efficiency using variable rate technology and prediction of yield and grain protein using remote sensing. After earning her PhD, she joined the faculty at UW River Falls (UWRF) where she taught various soils courses including Introduction to Soil Science, Soil Fertility, and Soil Microbiology. Her research at UWRF focused on the effects of manure and organic soil amendments on soil health and nutrient cycling. She plans to continue doing research in manure and nutrient cycling and in the use of remote sensing to improve nitrogen management and nitrogen use efficiency. She has served the American Society of Agronomy and Soil Science Society of America in various roles including as leader of the nutrient management professionals and as Associate Editor for Agronomy Journal. Natasha is a recipient of the UW System Outstanding Women of Color in Education Award. Natasha enjoys spending time outdoors, hiking, biking, and kayaking with family.

ANTIGO SILT LOAM

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DEPARTMENT NEWS

Dr. Jingyi Huang has been promoted to associate professor, and **Dr. Francisco Arriaga** has been promoted to professor. Both promotions are effective July 1, 2024. The Department of Soil Science is proud and honored to be home to these outstanding researchers, educators, and all around great citizens.



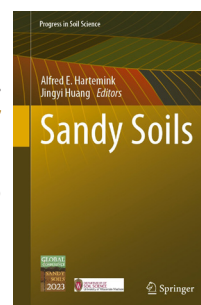
Xia Zhu-Barker and **Jingyi Huang** represented the department at this year's Ag Discovery Day held at the Wisconsin State Fairgrounds. Area third and fourth grade students and their families were invited to participate in this immersive agriculture learning experience.

An education research study from the **Balster Lab** with Drs. Melanie Spero and Alex Bajcz (then postdocs) on student success in Environmental Science coursework was featured by the Children & Nature Network, St. Paul, MN.

Oregon State University Assistant Professor **Yakun Zhang** (PhD 2019) and **Alfred Hartemink** are scanning 1,481 soil samples from 388 soil profiles collected in Antarctica between 1975 and 1986 by Emeritus Professor **James Bockheim**. This project aims at developing a new understanding and to provide a baseline of the diversity of soils in Antarctica by integrating the state-of-the-art soil spectroscopy techniques and what it means for studies of soils and climate change.

Emeritus Professors **Jim Bockheim** and **Birl Lowery** have published a new book entitled *The Soils of Mississippi* that provides a comprehensive overview of its soil and use. In recent years, Dr. Bockheim has published similar comprehensive books on Oregon, Nevada, Wisconsin, and Antarctica.

The book *Sandy Soils* edited by Alfred Hartemink and Jingyi Huang was published by Springer in June 2023. The book contains 29 chapters that are grouped in three sections: (i) Distribution and assessment, (ii) Soil carbon and soil health, and (iii) Water and the environment. The book includes chapters written by emeritus and current faculty (**James Bockheim**, **Jingyi Huang**, **Xia Zhu-Barker**, **Alfred Hartemink**) as well as current and former graduate students in our department (**Annalisa Stevenson**, **Yakun Zhang**, **Jie Hu**, **Jenifer Yost**, **Ekrem Ozlu**).



NCR-SARE announced the projects selected for the 2023 Graduate Student Grant Program. Twenty-two graduate student projects focused on sustainable agricultural issues were awarded more than \$323,000 through this NCR-SARE grant program. PhD student **Tanner Judd**, along with **Matt Ruark**, were selected for their project, "Direct quantification of manure derived N retention in cover crops after fall applications via 15N enrichment."

Thea Whitman has been elected as the incoming chair of the Soil Science Society of America (SSSA) Soil Biology and Biochemistry division. This is a significant leadership role, and we are excited to watch Thea excel in this new position.

After years without a Departmental Soil Judging Team, graduate students **Clare Tallamy** and **Hannah Anderson** (Research Assistants with Freedman) sought out to change this. The two now coach our four person team of undergraduate students that includes **Mac Munson**, **Julien Mayfield**, **Ryan Kangas**, and **Zac Raymond**. The team recently traveled to Twin Falls, Idaho to compete in the NACTA 2024 Soil Judging Contest.

Emeritus Professor **Philip A. Helmke** passed away on February 20, 2024. He was a professor in our department from 1973 to 2007. He skillfully taught graduate courses in environmental chemistry and trained and inspired many graduate students from around the world to conduct research about the soil-water-plant system. He was a talented and gifted woodworker who shared his skills with us through a handmade island cabinet displayed and utilized in our Jackson-Tanner Commons.

Our newly named Department of Soil and Environmental Sciences will welcome its first new faculty members this fall. We are pleased to announce that **Dr. Gregg Sanford** will join as an assistant professor and **Dr. Margaret Zimmer** will join as an associate professor. Look for more information on both of these individuals as well as their teaching and research endeavors in our next newsletter.

STAFF PROFILE: ZACH WYMAN



Zach Wyman joined the Department of Soil Science in May 2023, assuming the role of academic advising manager for the Environmental Sciences BS within the College of Agricultural and Life Sciences (CALS) as well as the Environmental Remediation and Management MS program. Wyman comes to the UW-Madison after serving as an academic advisor within Electrical and Computer Engineering (ECE) at Purdue University. This role was preceded by a stint in K12 education as a high school teacher and golf coach in China Grove, NC, and earlier, as a middle school teacher and football coach in Mooresville, NC. Wyman earned a double BS in English and History from the University of Illinois at Urbana-Champaign and a Master of Arts in Teaching from the University of North Carolina at Charlotte. At Purdue University, he instructed Academic and Career Planning courses for Exploratory students and a sophomore seminar for ECE majors.

This fall, he will teach a seminar course in a First-year Interest Group for incoming Environmental Science students in CALS. Wyman lives on Madison's west side, where he cherishes time with his wife, 3-year-old twins, a beloved dog, and a raised garden bed.

STUDENT PROFILE: DANA JOHNSON

Dana's interest in microbial ecology began during her childhood growing up on a farm in Iowa and grew throughout her undergraduate courses on geobiology. Her desire to combine microbial ecology and soil science brought her to UW-Madison in 2019. Dana completed her MS in Agroecology in 2021 and is currently a third-year PhD candidate in the Department of Soil Science. She works with Dr. Thea Whitman researching the effect of wildfire on soil microbial communities and C cycling in boreal forest ecosystems. Boreal forests hold large reservoirs of carbon both above- and belowground. Wildfires release some of this carbon to the atmosphere as CO₂, CO, and CH₄. However, following wildfires in the boreal forest, declines in soil respiration are frequently observed, which may partially offset C loss during the fire itself. Dana is interested in identifying the mechanisms driving decreased respiration rates as well as understanding effects of fire-induced changes to microbial communities and post-fire microbial recovery on soil CO₂ efflux. She is simulating the effects of wildfire on soils using controlled burns in the lab and tracking the response of soil and microbial communities via measuring respiration over weeks to months-long incubations, sequencing microbial community DNA, and analyzing a range of soil properties.



OUR SUPPORTERS

11/16/2023 to 04/30/2024

Marion Anderson
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Campbell Scientific Inc
Corteva Agriscience
Richard & Kimberly Cates
Arthur Cole
Steven & Elizabeth Comfort
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Douglas Soldat
Victoria Szatalowicz
Patricia & James Swan
James & Kimberly Van Herwynen
Steve Ventura & Margaret Krome
David Wenzel
Wisconsin Turfgrass Association
Thomas & Susan Wright

LEO M. WALSH DISTINGUISHED LECTURESHIP



The department hosted its annual **Leo M. Walsh Distinguished Lectureship** on April 10. Our guest presenter was Dr. Mary Lusk, Assistant Professor of Soil and Water Sciences at the University of Florida/IFAS, Gulf Coast Research and Education Center. Her presentation titled, "Altered Soils and Zombie Ponds: Reflections on a Career in Urban Soil and Water Management," was well received by the students, staff, and faculty in attendance.

This lectureship is made possible by the generosity of Leo M. Walsh to this Distinguished Lectureship in Soil Science Fund.

RECENT GRADUATES

UNDERGRADUATE DEGREES

Barwick, Maya J. | Environ. Science BS
Blesener, Evan D. | Environ. Science BS
Hathaway, Saksen A. | Environ. Science BS
Tremaine, Tanner | Environ. Science BS
Schwartz, Emily | Environ. Science BS

GRADUATE DEGREES

Welsch, Britta Soil Science MS (Soldat)
Ecology and nutrient cycling of lawns as affected by mowing, fertilization, and planted species

Muscettola, Isabella Soil Science MS (Whitman)

The effect of fire history and burn severity on soil bacterial communities in Andisols of a temperate coniferous forest



MS graduate Isabella Muscettola and Dr. Thea Whitman

Department of Soil Science at the University of Wisconsin-Madison

The Department of Soil Science is deeply grateful to its alumni and friends. Your generous support is appreciated, and we thank you! To join other students, alumni, industry, and friends in enhancing the teaching, research, and outreach programs in the department, please consider donating to one of our various funds. A complete list of funds available can be found on our website (<https://soils.wisc.edu/giving/>).

If paying by check, please make your check payable to the **UW Foundation-Department of Soil Science** and mail to:

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Profiles

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ALUMNI UPDATES

Dick Cates (PhD 1983) has completed his book, *A Creek Runs Through this Driftless Land: A Wisconsin Farm Family's Journey Toward a Land Ethic, Gratitude, and Hope*, which will be released this June by Little Creek Press, Mineral Point, WI. It begins with the geology of the Driftless Area, a brief history of the First Peoples and European immigration, and then the Cates family's journey through the years. [Dick owes a gracious thank you to Professor **Jim Bockheim** for assisting him to get the buried A horizon radiocarbon-aged through his long-time colleague, Mark Kurz, at NOSAMS, Woods Hole, MA.]

John F. Moncrief, Jr. (PhD 1981) passed away June 9, 2023. John became a professor at the University of Minnesota in the Department of Soil, Water and Climate in 1981. His research and teaching were focused on soil and plant nutrient management to optimize crop production and environmental impacts. John retired at the end of 2012.

Allison O'Brien/Kieler (BS 2022) is a Floodplain Mapping Project Lead for the Wisconsin Department of Natural Resources.

WELCOME

Hannah Francis
(Research Assistant, Ruark)

Andrew Glasgow
(Soil Technician, Popova)

Garfur Gozukara
(Researcher, Hartemink)

Daniel Igirimbabazi
(Research Assistant, Balster)

Ryan Ihrke
(Financial Specialist)

Michael Ramirez
(Researcher, Soldat)

Natasha Rayne
(Assistant Professor)

Caleb Stevens
(Research Intern, Huang)



Alumni Update

We'd love to hear from you! Please complete and return this form
or send your updates via email to: jgarvin2@wisc.edu

Name:

Degree(s) and Year(s): BS () MS () PhD ()

Home Address:

Email:

Phone No.:

Position:

Employer:

News to share:

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Profiles

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