

## Message from the Department Chair



It is early December and overlooking Lake Mendota, I see a great sky and the wind causing small whitecaps over the water. It feels like home - that lowlands country named the Netherlands. Since I moved here in 2011, I have found such a welcoming and warm home at the Department of Soil Science. Overlooking Lake Mendota for a while is part of my routine whilst pondering over an administrative matter. That has become a bit of a necessity as earlier this year I was elected Department Chair. And I suppose that the task of a chair is to look outside, gauge opportunities, and think about the wind and its ever changing directions.

I am greatly honored and humbled to serve the department and its scientific excellence and leadership. Many thanks to Bill Bland for his six years of exceptional service as Department Chair. Our Department has a long tradition of doing some of the best soil science in the world and we silently worship our ancestry, but we are always working on new and novel things. We are working on upgrading our teaching and research facilities, writing a proposal for new faculty hire, and are rethinking some of our main soil science courses. Both the soil science discipline and the ways we teach our science are evolving and we have some strategic decisions to make whilst maintaining and improving our extraordinary standards.

All of us in Soil Science in Madison are convinced that these are great times to be a soil scientist. There are many global issues in which soil science plays an important role and aside from the need to feed the world, there are issues related to water scarcity, climate change, energy production and biodiversity. Our students are excited by these issues and the new technologies and insights that we have available and are developing. We have excellent instructors, researchers, academic staff and students and are striving to move the Department and soil science onwards and upwards. At the same, we are forced to cope with reduced state support that affects us at all levels. Many of you provide financial support to our Department and it helps us to enhance the research quality and teaching needed for the next generation of UW Madison soil scientists. With your generosity we maintain the Soil Science core irrespective of the wind direction.

May I wish you all the best for a Joyous Season and a very Happy 2016!

**Alfred Hartemink**

## Student Profile: Elizabeth McNamee

As world leaders gather in Paris in hopes of a climate agreement, researchers in Wisconsin are doing their part to make the cheese-curd state's dairy systems more resilient to climate change. Elizabeth McNamee, a joint MS student in Soil Science and Agroecology with Professors Bill Bland and Matt Ruark, is investigating soil water dynamics in dairy systems to better understand how long-term cropping practices influence soil water availability. Elizabeth's work is part of the larger USDA-funded project, "Climate Change Mitigation and Adaptation for Dairy Production Systems in the Great Lakes Region." Elizabeth grew up among the ocean and mountain landscapes of New Hampshire. She ventured north to Montreal to receive a BS in Geography and International Development from McGill University, where her research focused on global-scale analysis of agricultural crops and biophysical indicators.



ANTIGO SILT LOAM

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## Research Corner: Steve Ventura



Most of my colleagues have a lab group – graduate students and post-doctoral researchers that work together on the same general subject, often sharing physical facilities such as laboratories. I mentor graduate students working on very different topics, housed in five buildings around campus. Some of them have never met! Here's the activities of my un-group:

- Urban agriculture and food systems: We are in the last year of a big USDA-supported effort, the Community and Regional Food Systems project aimed at issues of food insecurity in large urban areas. Among the outputs will be an extension type website about urban agriculture production methods and an urban food systems planning toolkit.

- Managed grazing in Wisconsin woodlots: Wisconsin property tax code provides an incentive (tax reduction) for farmers to turn cattle loose in their woodlots. However, foresters and conservationists typically oppose this practice because it can degrade soils and timber value. We have two projects aimed at figuring out how to minimize the damage and even enhance the quality of grazed woodlots.

- Cumulative land use and water quality impacts of hard rock mining: A great deal of iron ore and other metals are extracted from northern Minnesota, Wisconsin, and Michigan. This process has a significant impact on the environment, which Scott Cardiff is documenting for his dissertation through support of a prestigious US Environmental Protection Agency STAR fellowship.

- Risk and mitigation of lead in backyard gardens: Along with colleagues Professor Doug Soldat and Outreach Specialist Geoff Siemering, we are working with community organizations and the Medical College of Wisconsin on this project in Milwaukee.

The common thread for “my group” is that all the projects have some spatial analysis component and all have some angle on how we manage land and the soil resource. Hopefully the members of this un-group will go forth as its stewards.

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## Field Trip

As part of the Soil Science 325 course, a group of Soil Science students went on a three-day field trip and visited the Antigo silt loam - the State Soil of Wisconsin! The Antigo silt loam was selected to represent the more than 550 different soils in Wisconsin thanks in no small part to the efforts of Francis Hole. The field trip was supported by the FD Hole Endowment, and benefited from the help of Dan Vanderleest.



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## Awards, Honors, and News

Congratulations to **Melanie Stock** (PhD student with Francisco Arriaga) on winning the inaugural Jaya Iyer Award for the most outstanding presentation in Graduate Seminar (Soil Sci. 728). Melanie was selected for the award by the 728 committee for her May 6 prospectus presentation “A water-energy balance approach to quantify frozen soil conditions for manure management.”

**Prof. Phil Barak** was recently published in **Grow Magazine**. His article, “Second life for phosphorus,” features ideas about how to retrieve nutrients from wastewater in a valuable form - and it started from a basic lab experiment.

**Prof. Joel Pedersen**, is part of the leadership team for a new 5-year, \$20 million multi-institutional grant from the **National Science Foundation**, the **Center for Sustainable Nanotechnology**. Joel's contributions will focus on impacts of nanomaterials living things. His group will explore the fates and transport of nanoparticles in the environment, and how they interact with membranes of living organisms. Congratulations to Joel and the rest of the UW-Madison team on this tremendous achievement!

The **Hickey Lab** announces two recent publications: “Relations of microbiome characteristics to edaphic properties of tropical soils from Trinidad”, **Frontiers Microbiology** and “Complete genome sequence of the phenanthrene-degrading soil bacterium *Delftia acidovorans* Cs 1-4,” **Standards in Genomic Science**.

Our new soil ecologist, **Thea Whitman**, just published a paper in **Nature Communications**, entitled “A dual-isotope approach to allow conclusive partitioning between three sources.” The paper describes a new technique to separate one biogeochemical pool (e.g., total soil CO<sub>2</sub> emissions) into its three different sources (e.g., roots, soil organic carbon, and plant litter). The approach uses just two stable isotopes, expanding the range of possible questions and making it a powerful tool to help advance our understanding of element cycling in complex systems.



## Recent Graduates

### UNDERGRADUATE DEGREES

**Bergquist, Galen E. - BS, 2015** Soil Science  
**Calkins, Cody A. - BS, 2015** Soil Science  
**Manolache, Sabina M. - BS, 2015** Soil Science  
**Todd, Connor H. - BS, 2015** Soil Science

### GRADUATE DEGREES

**Anderson, Tyler J. - MS, 2015**  
Production and evaluation of wastewater-derived brushite as fertilizer (RA Barak)

**Brewer, Katherine B. - MS, 2015**  
Potential of flue-gas desulfurization gypsum for reducing soil phosphorus losses in runoff (RA-Arriaga)  
Katherine has accepted a position as a Compliance Specialist with NRCS in Nebraska.

**Campbell, Claire A. - MS, 2015**  
Assessing the impacts of tannin diets on land applications of dairy manures (RA-Ruark & Powell)  
Claire has accepted the position of Soil Scientist with the US Forest Service in Missoula, MT.

**Henderson, Haily S. - MS, 2015**  
Evaluating the use of crop sensors and fertilizer nitrogen management strategies for winter wheat in Eastern Wisconsin (RA-Laboski)  
Haily will be working for AgSource as a Nutrient Management Specialist for the northwest region of Wisconsin.

### McFarland, Elyssa R. - MS, 2015

The effect of flue gas desulfurization gypsum, tillage and nitrogen fertilizer on corn grain production in Wisconsin (RA Arriaga)  
Elyssa has returned to Iowa where she has accepted a position as Iowa Field Manager with Soil Health Partnership.

### Ruis, Sabrina J. - PhD, 2015

Carbon and nitrogen cycling in turfgrass soils of Wisconsin (RA Soldat)

Sabrina is currently working on her family's strawberry farm in central Minnesota while she pursues positions in teaching/research, postdocs and industry.

### Vanderleest, Clay P. - MS, 2015

Water table level effects on cranberry irrigation management (RA Bland)

Clay is continuing his studies for a PhD in the Soil Science Department (Arriaga)

### Wilhelm, Kelly R. - PhD, 2015

Active layer dynamics along the rapidly warming western Antarctic peninsula (RA Bockheim)

## Our Supporters

4/1/2015 to 11/15/2015

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Dr. & Mrs. Beaver  
Prof. & Dr. Brown  
Dr. & Mrs. Cates  
Mr. Cattanaach  
Dr. & Mrs. Checkai  
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Mr. Werlein  
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## Department of Soil Science at the University of Wisconsin-Madison

I/we wish to join other students/alumni, industry, and friends in enhancing the teaching, research, and outreach programs in the Department of Soil Science by contributing as indicated below.

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Online donation is available on our website <http://soils.wisc.edu/alumni-friends/>



## Profiles

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## Awards, Honors, and News

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Congratulations, **Claire Campbell** (RA Ruark) and **Haily Henderson** (RA Laboski) for their award-winning presentations at the recent Soil Science Society of America Annual Meetings in Minneapolis. Claire received 2nd place in the MS oral competition with her presentation entitled, "Determining effects of multiple tannin manure applications on dairy forages and soil." Haily received 4th place in the MS poster competition with her poster entitled, "Crop sensors as an in-season nitrogen management tool for winter wheat in Wisconsin." There were over 100 entries between the four categories (MS oral, MS poster, PhD oral, and PhD poster).

## Alumni Updates

Congratulations, Julie and **Mack Naber** (MS '11) on the birth of their twin boys, Nathaniel David (5 lbs 6 oz, 19.4 in) and Henry Adams (5 lbs 14 oz., 20 in) this past July 2, 2015.

**Anna Cates** (MS '14) and **David Evans** (BS '11, MS '13) were married this past summer. Anna is currently working on her PhD in the UW Department of Agronomy.

Share your latest news with the form below.

## 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](mailto:jgarvin2@wisc.edu)

Name: \_\_\_\_\_

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

Home Address: \_\_\_\_\_

Email: \_\_\_\_\_ Phone No.: \_\_\_\_\_

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News to share: \_\_\_\_\_  
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Profiles

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