

The Sharpshooter

Oregon Society of Soil Scientists

Quarterly Newsletter

Spring 2024



President's Message

Welcome to the Spring edition of the *Sharpshooter*, the official newsletter of the Oregon Society of Soil Scientists!

I'm happy to welcome you to the 2024-2025 OSSS adventure. As Vance may have shared, we are planning to take the group to the Klamath area for the summer tour to explore the implications of the dam removals underway in that area. After many years of intense water conflicts, they are ending up taking out four dams in the area. By this Fall, the Klamath River will be undammed to make way for salmonid habitat recovery. In past years, I remember news headlines about hundreds of thousands of salmon dying in the Klamath due to the dams and agricultural water withdrawals. It's very exciting to see this kind of win for the natural waterways and fisheries. I'm very curious to see how this will change the landscape and the locals' way of life. Let's go take a look! Let us know if you have ideas about places to stay in the area. We have not yet thought of a place to host the 2025 winter meeting, but that will be a topic of discussion at our upcoming board retreat June 7-9. Stay tuned for the next *Sharpshooter* when we announce our news about the winter meeting. Looking forward to a fun year of exploring soil together,

Wendy Peterman, Board President



New 2024 OSSS board

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Winter Meeting Recap

It's hard to believe a month has passed since OSSS held our annual meeting at the glorious H.J. Andrews experimental forest. Harder still to believe that everything came together despite rescheduling the meeting due to a late-winter snowstorm. The theme of the meeting, titled "Visions of 2124", was our way of expressing the question: how might our best, present understanding of the interdependencies between ecological and socioeconomic processes be used today to support sustainable land use in Oregon a century from now?



Our first speaker, Dr. Cindy Prescott from the University of British Columbia kicked off the meeting with an eye-opening, thought-provoking, and paradigm-shattering elaboration of the current state of knowledge pertaining to the below-ground and above-ground ecological processes which undergird forest productivity. It is difficult to truly do justice to how eye-opening the presentation was, and many of the attendees who work the region's forests came away from it excited to bring the findings to their colleague's attention and who knows, may even come to inform the next version of the Northwest Forest Plan!

Dr. Jana Compton of the U.S. Environmental Protection Agency's Office of Research and Development presented a comprehensive synopsis of her long-term studies of nutrient sources and fluxes in Willamette Valley groundwater. One of the key take aways from this presenta-



Key Speakers: Dr. Cindy Prescott, Dr. Jana Compton, Dr. Jillian Gregg

tion was that timing of fertilizer application (especially fall and winter) was a significant determinant of nitrogen fluxes and into the groundwater and streams. This highlighted how uptake and delivery need to be considered in the climate context, the soil context, and the specific crop.

Dr. Jillian Gregg of Oregon State University's department of Sustainability presented two talks in one, with the first half being dedicated to state of the science regarding expected warming based on the most recent climate models and the realistic interventions. The second half of the talk presented her (and co-authors) work on the effect of sampling by depth increment or by mass equivalence in estimating soil carbon.

During the afternoon, we had several lightning talks and a short outside exercise. The first talk was from Ron McCormick presented an out-of-the-box conceptual overview of ecological theory, resilience and adaptive capacity, and its relation to sustainability. Ron Reuter presented us with a wide-ranging overview of soil science education, pit description, and soil judging. Jenessa Stemke of OHSU presented on a comprehensive system she has been developing for integrating and organizing the myriad socioecological

dimensions of wildfire and its impacts. Kate Meyer of the USFS provided an overview of the concept of “Stage 0” floodplain restoration, its goals, and how this practice can improve both hydrologic and ecological resilience of the restored reaches.



Following the technical talks, we held our business meeting (minutes can be found on our website) and elected a new board. Finally, we ended the first day with an evening poster session which was very well attended and a silent auction, to which the proceeds went to the John B. Good scholarship fund.



On Saturday, Kate Meyer led our group on a sun-drenched tour of a large “Stage 0” floodplain restoration project taking place on the South Fork of the McKenzie River. We began our tour in a stand of burned trees on the edge of the restored reach, charred reminders of the Labor Day fires of 2020. Looking out over the restoration area we discussed how the elevation of the water table led to markedly different fire behavior in the restored versus unrestored sections of the riparian

corridor. We made our way across a ½ mile expanse of Cottonwood bottoms toward the sound spring runoff and along the way stopped to examine the site’s remarkable recovery in the short time that has passed since. We discussed how the restored reaches had much more complex habitat, higher water table heights, and the dramatic and rapid improvement in salmonid spawning and rearing success. While it may not be immediately obvious how this was connected to soil science, we highlighted how wetland soils and their hydrology increase water quality and how the principle behind the creation of diverse habitat in the restored reach mirrors what we are beginning to understand about soil and societal resilience.

We ended the field tour with a visit to a soil pit dug by Victoria Moreno in an un-burned portion of the H.J. Andrews Forest. The pit was located on the middle to lower third of a toe slope. The parent material was identified as being colluvium derived from brecciated tuff and presented a relatively simple profile due to a high degree of bioturbation. The soil was classified in the field as likely being an Andic Dystrudept (photo below).

Vance Almquist Past President



Interview with New OSSS President– Wendy Peterman

The OSSS was really lucky to have a Wendy Peterman join the board last year as Vice President. She is now the new president and we wanted to use this opportunity for our members to get to know Wendy a bit better. Sahalie Ellickson, OSSS student liaison, interviewed Wendy last month.



Where are you originally from?

I am originally from Northern California. My family moved around the bay area, the Sacramento Valley, and remote areas of the north bay during my childhood. As a younger adult, I settled in San Diego, CA.

How did you end up in Oregon if you were not originally from here, or how did you land where are now?

I came to Oregon in 2005 with my daughter to be near some friends who moved here from San Diego. I had been homeschooling my daughter and teaching modern dance, and we

decided to come to Oregon for a slower pace of life. I had always wanted to be an environmental scientist, I didn't know exactly what kind. I had never heard of soil science, but friend of mine was married to a soil scientist. That introduced me to the world of soils.

What is your educational background?

I have a bachelors degree in dance, a postbaccalaureate in environmental sciences and apply ecology, a masters degree soil science, and a PhD in Forest engineering with an emphasis in soils, remote, sensing and forest modeling.

Where are your degrees from?

My dance degree is from San Diego State University, and the rest are from different departments in Oregon State University.

What is your current job title?

My permanent job title is forest soil program manager at the Willamette National Forest. I'm currently on a temporary detail in the Coconino national Forest as an acting deputy district ranger.

What does your day to day look like at your current job?

Most of my days are spent in conversations with interesting people discussing problems related to climate change and land management. This ranges from academic and field scientists to agency leadership to program managers who are trying to understand the effects of climate change and fire on our Forests.

What work do you do with soil, what field of soil, is there other fields within soil science that interest you?

I largely help people understand soil. It's not something most people ever think about. It's something under your feet that you move around with machinery. Most people don't understand that it's alive and extremely complex and varied. They tend to need someone who has invested a lot of time and energy in understanding the minutia and complexities of the soil and the implications of soil texture, moisture, climate, and how these

things can affect forest health. Human behaviors and disturbances can detract from that. We need to know how to avoid these impacts and how to restore them if they've already made them.

Is this what you wanted to be when you were a kid or what you thought you would be when you grew up?

No. I had never heard of a soil scientist when I was a child. Women generally were not scientists or engineers. I thought it would be a nurse or a teacher, because that's what I saw. My fourth grade teacher told me that was a copout - I should be a doctor. So I spent a lot of years wanting to be a pediatrician. As a teenager, I got very interested in environmental science, which also wasn't really a field yet. A major in environmental science tended to mean you were dealing with city sewage. I had no interest in that. I ended up starting school studying civil engineering. I got bored with that quickly and majored in dance. I always maintained my interest in, awareness, and study of science. when I got too old to dance due to injuries, Environmental science finally caught up as a field, and I went back to study it. I Cast a wide net And studied everything I could related to the Environment: Philosophy, economics, GIS, climatology, oceanography, wildlife management, and soil.

I ended up falling in love with both GIS and soil. Growing up near the redwoods I was also extremely connected with trees. This led me to specialize in forest soils.

What is your favorite part of your job?

At this point, my favorite thing about my job is seeing all the new soil scientists who are coming into the world starting their careers, and just being really energetic - supporting them and teaching them and just being an awe of their brilliance.

What is your least favorite part of your job?

I don't really have a part of my job I don't like. I'm just always so grateful for the really cool work that I get to do, the organization I work for, and all of the amazing people from different agencies and universities that I get to work with.

How long have you been involved with OSSS?

I have been involved with OSSS since 2007. My masters professor brought me to my first meeting in Troutdale, Oregon. I haven't always attended the meetings in person, but I have always contributed to the organization. Below is the group photo from the first OSSS winter meeting I attended. It was 2010.



OSSS 2010 Winter meeting

Do you have any future goals or plans during the time you are serving as OSSS president?

My goals and plans mostly relate to keeping things running, supporting the board, and inspiring new leaders to engage with the soil community and share their passion for the science.

What is your favorite OSSS memory?

My Favorite OSSS memory is riding on a bus through the Columbia River Gorge with Scott Burns teaching us about Columbia River basalts, lahars, and mudflows.

What is your favorite soil fact, or soil joke?

Unfortunately, I am not one of those people who remembers jokes. I do remember thousands of facts about soils though. I like to think about water movement in the soil. I think a lot about the forces acting on water and how that affects roots. I like the word Hygroscopic. It's fascinating to me that clay particles could exert force on water particles that never lets them leave no matter how hard the atmosphere is pulling on them. Soil Physics was my favorite class in grad school.



CONTRIBUTE YOUR OREGON SOILS PHOTOS TO THE OSSS ARCHIVE



Send an email with the following and any additional information to morenov@oregonstate.edu to contribute to our interactive map of Oregon soils

01

High resolution photo of entire soil profile

Please only send JPG or PNG file format photos

02

A link to an Official Soil Description

If not yet described by the NRCS, share a brief description of the soil properties

03

Location of the soil profile

Include coordinates, general location or regional description

04

Photo credits

Include the name of photographer and source of the additional soil information

Fertile Ground

As an item that may be of interest to OSSS members and other ecological minded folks, the March 2024 issue of High Country News (HCN) (<https://www.hcn.org/>; <https://www.hcn.org/edu/student/>) has a feature article titled REGENERATION UNDERGROUND. It focuses on native vegetation regeneration and the latent native seeds and tubers often found in the soil, even in otherwise invasive dominated sites. The article is pretty extensive and touches on several different ecotypes with some examples from the Grand Ronde tribes restoration efforts. Plus the cover and article artwork is pretty neat.

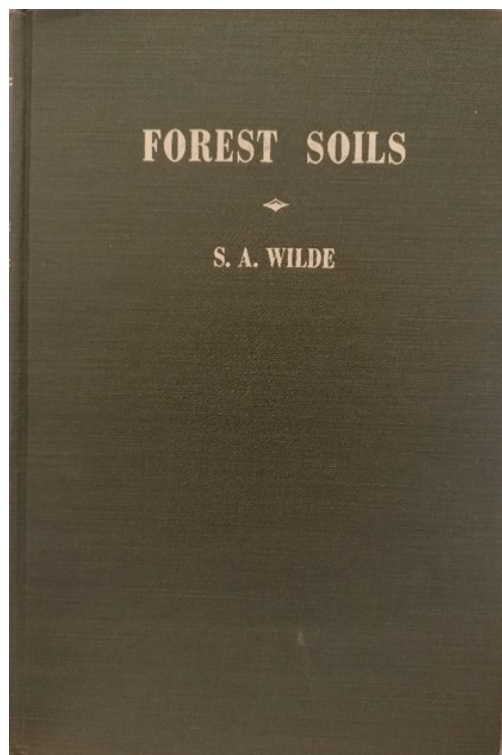
I also note that HCN also offers free digital subscriptions and access to archives to college and high school students and educators. I know the printed magazine is found in many (most?) libraries, and imagine it is at most university libraries. If not, it should be! Good resource for those not familiar.

Craig Busskohl—West side director



The Wandering Ion

I recently came across a 1958 vintage soils text book titled “ *Forest Soils. Their Properties and Relation to Silviculture*” by S.A. Wilde and have really enjoyed reading it. The word usage and descriptions of soil processes are fascinating. It’s almost like learning soils all over again through a slightly different lens. I wanted to share an excerpt from the book (chapter 2 pg. 19) in hopes you find it just as interesting as I did.



“Weathering and the Life Cycle

In the words of Fallen (1862), “the tooth of time incessantly grinds the crust of our planet..” Under the influence of physical, chemical, and biotic agents of weathering, the solid mass of the earth is broken into fragments of rocks and their building blocks—minerals, soluble salts, bases, and acids. Either in Situ or after relocation by gravity, water, and winds, the products of weathering become the prey of plant roots and microbes. Thus, after millions of dormant years in the earth’s crust, the ions of essential nutrients enter the cycle of organic life.

The length of the stay of nutrient ions above the ground is determined by many conditions: climate, topography, nature of the soil, and the form of land utilization. Some of the ions find their way into blades of grass only to be plowed under in the fall; the next spring runoff of a torrential rain many carry them down the valley, down river to be buried again in a sedimentary rock formed on the bottom of the ocean. Other ions may be trapped by the feeding roots of a tree and chained to the ever-turning wheel of forest soil fertility; their destiny will be to travel ceaselessly from foliage to plants to cells of microorganisms, the soil solution, and back to the foliage. No one has excelled Aldo Leopold (1949) in the description of the fate of the indestructible wandering ion:

X had marked time in the limestone ledge since the Paleozoic seas covered the land. Time, to an atom locked in a rock, does not pass.

The break came when a bur-oak root nosed down a crack and began prying and sucking. In the flash of a century the rock decayed, and X was pulled up and out into the world of living things. He helped build a flower, which became an acorn, which fattened a deer, which fed a man, all in a single year from berth in the man’s bones, X joined in chase and flight, feast and famine, hope and feat... When the man took leave of the prairies, X moldered briefly underground, only to embark on a second trip through the blood-stream of the land...”



Sarah Brame– Sharpshooter Editor



OREGON SOCIETY OF Soil Scientists

The Sharpshooter is the official quarterly newsletter distributed to the members of the Oregon Society of Soil Scientists. Send address changes or inquiries about membership to: osss.pres@gmail.com or

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