The Sharpshooter

Oregon Society of Soil Scientists Quarterly Newsletter

Winter, 2022

Hey OSSS members and fans!

Welcome to your favorite dirty periodical, the *Sharpshooter*. This time, I wanted to share with you all some ideas my partner Elliott and I have been exploring during the pandemic as a healthy (we *think*) way to stay sane, learn, grow, and connect to some new neighbors- all the while protecting the soil!

Marissa Theve (OSSS President) cross-country skiing in her neighborhood during 2021 Christmas snow event.

It all stemmed from our neighborhood association's decision to denounce the city's rezoning of a church parcel (zoned single family) to highrise to facilitate its conversion into affordable housing. It felt wrong to me to oppose this proposal considering the housing shortage in Salem which has jacked rent and home prices up beyond the means of many. So I did some reading about Not In My Backyard (NIMBY) culture and how it has facilitated the housing shortage.

What the heck does this have to do with soil?

Until Oregon House Bill 2001 passed, single family zoned areas only allowed single family homes, excluding even duplexes. For Salem, this is about 66% of the city, meaning denser, more affordable housing types are illegal. What does that mean for places increasing in population? Sprawl. If you need more housing and you can't build up, you must build out, likely paving over prime farmland soils within the urban growth boundary or encouraging folks to build outside of town and commute in.

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How the US made affordable homes illegal

When multifamily housing is proposed near them, existing residents often defend (usually free) on-street parking, so most cities require developers to pave 1.5 parking spaces per unit. These parking requirements are expensive to build and hog valuable land that could be used for housing, leading to more expensive rent, and less walkable cities. In fact, parking requirements are often used by cities against home builders as a bargaining chip. An alternative that I prefer is to ask car parkers to pay for what they use through adequately priced on-street permits and meters, which would free up spaces faster in commercial areas and reduce trips. In the grand scheme of owning a car, parking is one of the least expensive bills, but residents, including those who don't own vehicles, usually subsidize it so we expect it to be free. Building denser, more walkable cities can greatly reduce GHG emissions, which ultimately affects all natural resources.

This all makes me think back to my first hydrology course at the University of Rhode Island when we dumped a bucket of water onto a massive expanse of pervious pavement on campus. It sat there for minutes before soaking in because the space had not been properly maintained and was clogged up. Now I see that the issue was not the failure of the pavement to remain pervious, but instead that we tie up so much land for parking in the first place. I could amble about this for an entire *Sharpshooter*, but I'll leave it here for now. Hope we can pick up this conversation at our winter meeting at Worthy Brewing this February 25th over a pint of something delicious.

Stay OSSS-um,

Marissa Theve *(OSSS President)*

Save the Date

2022 OSSS Winter Meeting

Bend Feb 24th-26th!

Join us in Bend at Worthy Brewing Feb. 24-26, 2022 to explore how soil influences our culture and vice versa. We will hear from a variety of speakers and enjoy the hospitality of Worthy Brewing on Friday, and head to the field Saturday to get in the pits at vegetable and livestock producers' fields. See the OSSS events page for more details and registration. If you have questions about this event contact OSSS President Marissa Theve (osss.pres@gmail.com).

Agenda:

Thursday 2/24

6:30pm Public talk at Worthy Brewing

Friday 2/25

Guest talks and membership meeting; Worthy regenerative garden tour; Kiss the Ground film viewing and discussion; lunch, dinner, and two beers included!

Saturday 2/26

Field tour featuring local farmers and a bagged lunch.

Registration prices:

OSSS Members : $135

Non-Members: $200

Students: $55

Lodging reservations are on your own, but here are some options that are within a short walk or drive of Worthy Brewing, Bend, OR.

Sleep Inn (1 min walk- across the street)

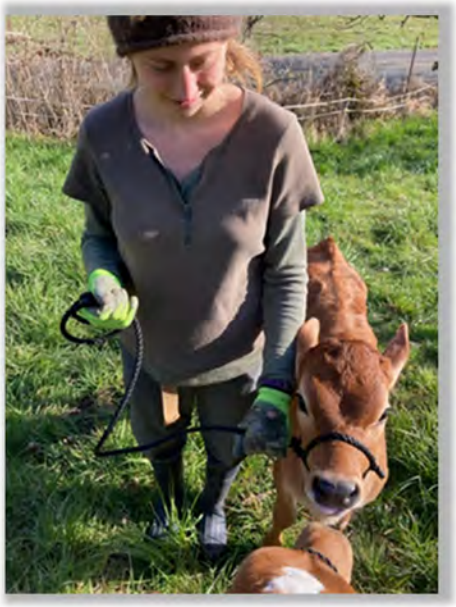
Country Inn and Suites by Radisson (6 min walk)

Home2 Suites by Hilton Bend (8 min walk)

The Camp (10 min drive)

New Member Spotlight
Kristin McAdow

Welcome to OSSS Kristin!



Kristin McAdow became a member of OSSS in February, 2021; shortly after joining the OSU Soil Health Laboratory as the Laboratory Manager. In her position, she manages everyday business operations and trains students in soil fertility and health analyses. She is also one of the instructors for Methods of Soil Analysis (SOIL 512/514), a 2-week intensive summer field and lab analysis course for graduate students.

Prior to joining the lab, she earned her M.S. in Soil Science and B.S. in Botany & Conservation Biology at the University of Wisconsin-Madison. Her interest in soil health stems from her experience working for small farms in Wisconsin and the Pacific Northwest, as well as researching remediation methods for lead (Pb) contaminated soil.

When she's not in the lab, Kristin enjoys art, gardening, backpacking, bike-touring, sharing dinner with friends, and receiving packages of cheese mailed from her Wisconsin family and friends. Looking forward to the February OSSS meeting!

OSU Central Analytical Lab is now the Soil Health Lab

If you haven't heard… we've changed our name to reflect our mission! For the past two+ years, the Central Analytical Lab has started shifting focus from traditional fertility testing to soil health assessments. Soil Health Lab better describes our specialty in providing region-specific soil health resources to the Willamette Valley and broader Pacific Northwest. Currently, we serve growers, gardeners, and researchers at universities, national laboratories, and government-funded programs. Our service mission also expands to both undergraduate and graduate students in the OSU community. We offer undergraduate technician positions, teach a summer field/lab course (SOIL 512/514), and often train graduate students in how to run their own analyses in our lab.

To learn more about the services we offer and how to submit a sample to the lab, check out our website or send us an email!

—Kristin McAdow (OSSS Member)

Website:
https://cropandsoil.oregonstate.edu/shl
Email: Soil.Lab@oregonstate.edu

Photo Credit: Kristin McAdow

Soil Scientist Interview:
Dan Cressy
Part One

Sarah Brame (Umpqua National Forest Soil Scientist) and Jenessa Stemke (OSU Graduate Student) recently had the pleasure of interviewing one of our own and lifetime Oregon Society members, Dan Cressy, who worked as a Soil Scientist for many years. He is now retired but still actively involved in the soil science community and provides mentorship for younger soil scientists. He helped Jenessa on one project requiring information about wildfire weather and wildfire effects on soil. He is currently helping Sarah as she tackles the huge job of being both the Soil Scientist for the Umpqua National Forest and the Swiftwater Field Office of the Roseburg BLM where Dan worked. Most of Dan's career was spent working with the BLM in Oregon as a Soil Scientist and has wide knowledge and experience in forest soil management.

How did you become interested in a career as a Soil Scientist?

My interest in soils goes back to the late 1950s in Alameda, California, when, as a boy, I worked in my neighbor's garden and marveled at the mystery of how vegetative life sprang from the soil. During my high school years, I became alarmed at the growing air and water quality crisis in this country and decided on a career in environmental sciences. I attended Humboldt State where I received a B.S. degree in Natural Resource Management in 1971. The two soils courses I took there particularly fascinated me.

Feeling the pressure of the draft I entered the Air Force as a weather observer. The knowledge gained from this job would later nicely compliment my work in soil science. After four years of military service, I narrowed my career options to meteorology or soil science. I found the weather world too fast-paced for this slow person, so soil science it was. I did soil science post-graduate studies at California Polytechnic College, San Luis Obispo. In 1977, I took my first job offer which was to map soils for the Bureau of Land Management, Bakersfield District as part of a botanist – soil scientist team developing range sites east of the Sierra Nevada Mountains.

Dan Cressy working on 2001 Kernel John Burn monitoring project.
Photo credit: Ed Horn

You have a long career working as a soil scientist. Can you tell us more about your career?

In 1983 I transferred to Price, Utah where I was reclassified as a natural resource protection specialist. There I worked primarily in the oil and gas/ geophysical exploration program and a little in coal, hard rock mining and mineral materials (bentonite clay, rock, sand and gravel). I was involved with the permitting process, developing surface protection provisions and writing

the environmental analysis. After that would come the compliance work covering the construction, operational and reclamation phases. Effectiveness monitoring was also important in evaluating how well practices worked. Acting in the capacity of a petroleum engineer technician, I would witness the plugging of wells at abandonment to ensure they were sealed with cement along all strata that produced oil, gas and/or water. The main purpose was to protect aquifers from contamination.

My last nineteen years (1990 – 2009) were here in the Roseburg District where I was classified once again as a soil scientist but still heavily involved in surface protection. The timber program took up the bulk of my time. The second biggest chunk of my time was devoted to reciprocal road right-of-way actions, nearly all of which involved timber companies building roads to access their lands. There were also rock quarry development and reclamation, outdoor recreation, mining, reality actions such as powerline and pipeline right-of-ways, noxious weed control, oak woodland restoration, archeology digs, public off-road vehicle impacts, watershed analysis, and other activities or situations that called for soil scientist input. Unlike my position in Utah, this one required considerably higher knowledge of slope stability and landslides in evaluating projects and developing design features.

In *The Sharpshooter Newsletter, Spring 2022edition*, we will continue our interview with Dan Cressy in part two of *Soil Scientist Interview: Dan Cressy.* In this portion of Dan's interview, we ask him to share his thoughts about forest soil management: what are his observations over the years of forest soils management and what advice he has for newer forest soil scientists? He gave us a preview of the subject matter he wants to cover: "I want to focus on a major concern of mine and that is: cumulative impacts to the soil resource that affect its long-term productivity. My anecdotal evidence derived from aerial photo interpretation and 19 years of field observations suggests that the residual impacts (what still remains) from timber harvests are extensive and significant, at least in the BLM Roseburg District area of the Coast Range, Klamath Mountains and the lower to mid slopes of the Cascades. I want to express my opinions about the possible implications to the soil resource and how it should affect forest soils management going forward."

— DanCressy , Jenessa Stemke and Sarah Brame (OSSS Members)

What does Snow have in Common with Soil? It's the Pits

Few people consider snow beyond its recreational value and effect on winter driving. In the Pacific Northwest we have snow events and snow conditions that can be exceptional. The influence that snow has on our daily lives is profound and influential.

So even if the above is true why have an article about snow in a soil science publication? What is common to both soil and snow scientists is the use of pits, and the data that both disciplines rely on that are gathered from evaluations of those excavations.

Group describing a snow pit.
Photo credit: Bruce Moffit

In North America and the rest of the world thousands of snow pits are dug during the winter season. The impetus for these snow excavations is usually for one of two purposes, to either determine the water content of the snow pack or to estimate the stability of the snowpack and the subsequent effect on winter travel.

Snowpack stability and instability is influenced by crystal texture, past and current weather, aspect, slope, and the weather at the time the layers were deposited. Snow scientists derive forecasts and predictions of snow instability and stability based on tens and hundreds of excavations dug nearly every day throughout the winter in North America. State Departments of Transportation, ski resorts and backcountry travelers use the predictions and forecasts to plan trips, initiate hazard mitigation and open or close areas for recreation.

For predictions of future water supply and determining possible run off scenarios snow hydrologists focus on the Snowpack Water Equivalent (SWE) of the snowpack. How much liquid water will this snow transform into in the near future? Measuring the density and depth of the different layers (horizons) is the key measurement for SWE.

For snow and soil; remote sensing, automated data collection, and historical knowledge can be used to interpret potential current and future conditions. For precise, location specific information, digging a pit and evaluating the results can give you the exact data needed for a specific location.

Looking at a pit in soil or in snow what are common characteristics the excavators are attempting to determine? In soil or snow texture matters, what are the grain sizes and shapes? In soil you are working with a medium, mineral soil that is relatively stable. Clay, silt, sand can withstand manual manipulation and retain their diagnostic features. The ephemeral nature of snow make field observation essential for determining density, stability, and horizonation. Texture and density in both mediums influence present and future water supply.

Texture in snow has tens of variations with dendrites, stellars, bullets, and sideplanes as examples of descriptive terms. Each snow event leaves a layer that can vary from previous and future layers depending on temperature, wind, aspect and timing of deposition. Distinct from the O, A, B, C labels used for soil layers, for snow: depth, thickness, density, and crystal structure is used to define layers. In soils the site we excavate today will likely retain its characteristics until we return, in snow time and temperature can significantly alter our findings within a few hours.
— *Bruce Moffit (OSSS Past-President)*

Photo credit: Lora Koeing, NASA
https://photolibrary.usap.gov/PhotoDetails.aspx?filename=west-antarctica-snow-pit-sampling.jpg

Links to more information

1. SNOWPIT https://avalanche.org/avalanche-encyclopedia/snowpit/
2. Snow Pit Procedures https://www.nasa.gov/pdf/186123main_SnowPitProcedures.pdf
3. Snowpack Maps https://www.nrcs.usda.gov/wps/portal/wcc/home/snowClimateMonitoring/snowpack/snowpackMaps/
4. Central Oregon Avalanche Center: Avalanche Forecast By Zone https://www.coavalanche.org/
5. Northwest Avalanche Center: Avalanche Forecast By Zone https://nwac.us/

Message from the Editor

I hope you are enjoying The Sharpshooter Newsletter!

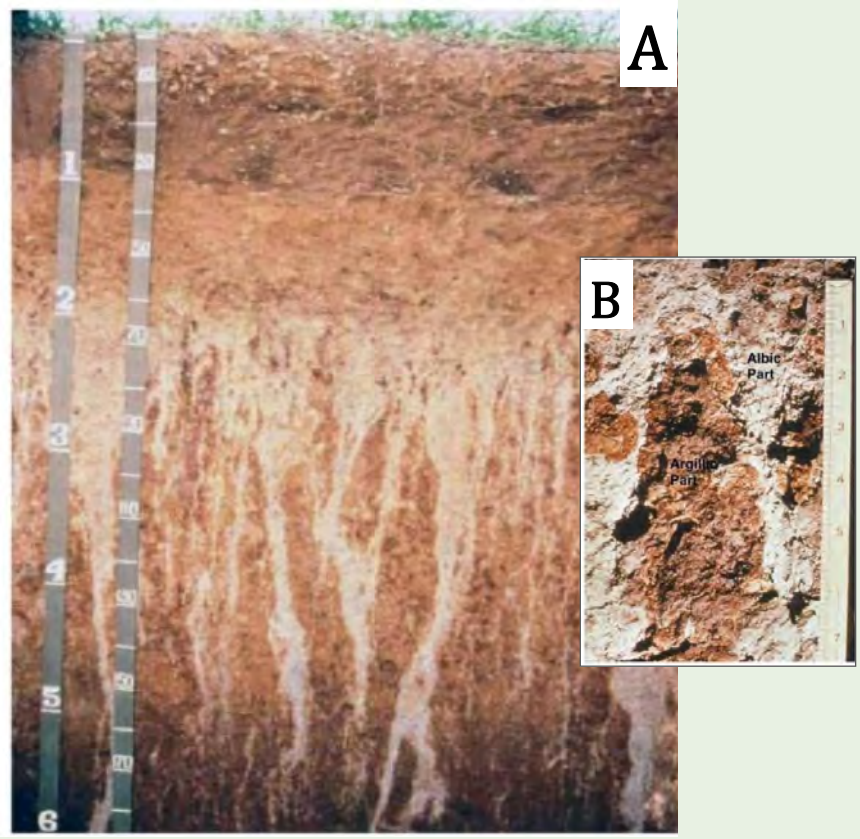
I am approaching my new role in OSSS as The Sharpshooter Editor, with intent to fostering an inclusive and safe space for all Soil Scientist and Soil Enthusiasts to share their thoughts and ideas. What I mean by this is, I want to hear from you (our readers and OSSS members) about your interests and ideas for future articles. Is there a soil science subject that you would like to read about, or you are interested in writing an article? If yes is your answer you can email me at sharpshooter_editor@yahoo.com.

Thank you for taking the time to read this issue. I look forward to meeting or hearing from you.
—*Katie Chambers*

Soil Pedology and Taxonomy: Glossic Horizon Adventures

When Katie asked me to write an article for the Sharpshooter, I was stumped. My Pacific NW experience is very limited. All my field experience was in the southeastern US (mainly east Texas, north Louisiana, SW Arkansas). I settled on glossic horizons/features because I have seen a lot of them and it looks like a few are mapped over fragipans in Oregon and some in the foothills of the Olympic mountains in Washington. I am no "expert" on glossics but the survey crews I worked on mapped around 400,000 acres of soils with glossics so I have puzzled over a lot of samples that had glossic materials.

According to the soil taxonomy gurus, a glossic horizon is a degrading argillic, kandic or natric horizon that is 5 cm or more thick and is 15 to 85% albic (E) material. The clays and iron oxides have been stripped out. The albic material shows up as light-colored tongues, interfingers, skeletans or silt coats (there were almost as many ways to describe this as there were soil scientists) extending into the argillic or natric horizon below. Normally the glossic/albic material (E) comes out of the ground as a gray color if there is any moisture at all but turns bed sheet white as it dries. A glossic horizon gives you the impression of a normal looking argillic or natric horizon that has been chewed up by a lawn mower that left albic material behind.



Profile of Fragiudalf (in Tennessee) that has a fragipan below a depth of about 60 cm. The gray soil material consists of eluvial coatings surrounding the browner soil material of the prism interiors. Scale in feet (left) and centimeters (right) (photo A). This Glossic horizon is a degrading argillic horizon. Albic material (white) surrounds remnant argillic horizon peds (brown) (photo B).
Photo credit: USDA/NRCS Illustrate Guide to Soil Taxonomy

The glossics I dealt with seemed to be caused by fluctuating water tables that stripped out the clays and iron oxides. Our piezometer data indicated that the water tables were fairly constant during the non-growing season, but moved up and down like a crazed elevator during the spring and fall when we got rain and the trees and other vegetation were growing. Our area had three basic scenarios where glossic horizons commonly developed; (1) over a clayey lithologic discontinuity, (2) over a fragipan (especially common in Louisiana), and (3) on lower, loamy stream terraces.

Glossic horizons in my experience developed on nearly level to very gently sloping landscapes. They were especially prone to appearing on mounded landscapes. Yes, the

southeast has mounds similar, at least in outward appearance but not internal structure, to mima mounds. The glossic features were especially prominent in the intermound position and less prominent in the mounds. The mound/intermound soils were different and consistent enough that we mapped these areas as complexes. Oddly enough, the mounds became more prominent and a larger percentage of the map unit as you moved from east to west. Louisiana seemed to have fewer mounds than east Texas. When it comes to glossic horizons, the key seemed to be the fluctuating water table. No fluctuating water table equaled no glossic horizon.

Glossic horizons are pretty striking to look at if you see them in a pit or trench wall, but in bucket auger samples they appear rather jumbled up. And a power probe (Bull probe) sample is problematic because sometimes you strike the albic tongue and sometimes you miss it. It is really easy to over or underestimate the percent of albic material in a power probe sample. If you ever photograph a pit with glossic features the tendency is to mist or moisten the wall before the photo. That is a mistake if you want the glossics to show up well. Once you moisten the glossics they turn gray again. If you photograph them dry (when they are white), they will be more prominent and visible in the photo.

The fluctuating water table is one of the big drivers of interpretations for use in these soils. Standard septic systems often do not work very well. Trafficability for equipment (like logging equipment) can be difficult. The water table can turn these soils "soupy" in the winter. Once your equipment broke through the "crust" on top there generally was no bottom. More than once I watched as log trucks were being dragged out of one of these areas by one or sometimes two log skidders chained together and leaving behind ruts nearly as deep as the belly of the log truck.

I hope this helps if you ever have the opportunity (or misfortune) to encounter glossic horizons.

—Joel Bolin (OSSS Member)

Dam if I Know

In a remote corner of Lane County sits Hult Pond. Originally constructed as a millpond for the Hult Lumber Company back in the 1940s, the pond has changed ownership over the years and has outlasted the companies that constructed and owned it. The Bureau of Land Management (BLM) acquired Hult Pond in 1994. Since then, the BLM has struggled to maintain an aging, hazardous, and increasingly costly dam that has outlived its effective lifespan and original purpose. Following a 2017 inspection by the Army Corp of Engineers, the BLM is proposing to decommission and remove Hult Dam; an Environmental Impact Statement is being prepared and public scoping runs through January 31, 2022.

View of Hult Pond from the shoreline.
Photo Credit: Jonas Parker

As the project's hydrologist and soil scientist, I've got my hands full! Not only will this project be challenging to fully understand and assess, but I've found that the resources I'm responsible for are solidly front and center! Streams, including Lake Creek, flow through the project site while soils and geology are not atypical of the Oregon Coast Range: alluvium and colluvium derived from heavily weathered sandstone of the Tyee Formation. Specifically, Bohannon gravel, and Peavine silty-clay loams depending on the hillslope position.

Planning is in the early stages and my analysis hasn't even begun, but I wanted to share with you a few observations. If you blend my two professional duties (water and soil), you get wetlands and there is no shortage of wetlands at Hult Pond. Here's where it gets fun! While I've dug plenty of test pits to verify the indicators of a reducing environment and looked high and low for obligate wetland vegetation, I'm still faced with the dilemma of how best to map and quantify my findings. Hear me out. The BLM, Army Corp, and the Department of State Lands (DSL) all have nuances in what constitutes a wetland when it comes to definition, permitting, mitigation, and management. A BLM wetland may not be an Army Corp wetland or vice versa. The solution here seems simple enough: map and describe the area as many times as it takes to satisfy all the regulatory agencies involved; any given patch of ground may be coded as: BLM wetland? (no), Army Corp wetland? (yes), DSL wetland? (no), for example.

Soil observation pit.
Photo Credit: Jonas Parker

Allow me to share one more conundrum. While quantifying the acreage of wetlands that we can see today will be relatively simple, that will represent only a third of my wetland assessment. Part two is how much wetland will be *lost* if the reservoir is permanently drained. Part three is how much riparian wetland will be *gained* as Lake Creek is restored through the reservoir footprint. Both complicated because the area is currently inundated! In answering Part two, I'll need to make some assumptions about drain rates and the potential for tributary headcutting. To help with part three, I will likely rely on bathymetric contours of Hult Pond and make some assumptions: steep terrain will become well drained (non-wetlands) while depressions and flat terrain will remain at least seasonally saturated (likely a wetland). I also have Lake Creek and its riparian area upstream and down to consider as a surrogate for what it could look like in the reservoir footprint if the reservoir is drained. In both cases, Lake Creek is low gradient, low energy, highly sinuous, and experiences frequent flooding. So-called "river-wetland corridors" (Wohl *et al.*, 2021) are prevalent even where some of these areas have been managed for industrial forestry (harvest and plantation-style replanting of Douglas fir) in recent decades.

I'm optimistic as I think about the future of Hult Pond. If the dam is removed, in addition to being a safer site, the biological benefits (e.g. fish passage) and the physical benefits (restoring stream and wetland form and function) could be huge! I'm also hopeful as I ponder the research and monitoring opportunities associated with any dam removal. Indeed, if you look at the Dam Removal Information Portal (DRIP), while many dams have been removed and extensively studied, not many dams this size and in this terrain have been studied. My only hope is that I ask enough of the right questions now to set the stage for researchers and land managers of the future.

—Jonas Parker (District Soil Scientist for the Northwest Oregon District Bureau of Land Management: j1parker@blm.gov*)*

For more information:
Wohl E, Castro J, Cluer B, Merritts D, Powers P, Staab B, and Thorne C. June 2021. "*Rediscovering, Reevaluating, and Restoring Lost River-Wetland Corridors.*" Frontiers in Earth Science. Volume 9. Article 653623.

View of Hult Pond from the road.
Photo Credit: Katie Chambers

OSSS Scholarship Recipients 2021-2022

I am pleased to introduce this year's scholarship recipients: Fabian Curiel-Garcia and Hunter Calvert. Fabian is a student at Oregon State University with a major in Crop & Soil Science, concentration in agronomy. He transferred to OSU from Chemetka Community College. Hunter is a 2nd year at Oregon State University, with a major in Environmental Science, concentration in Environmental Agriculture.

I am deeply inspired by the conversations I had with these students, and reading the applications renews my commitment to advancing the field of soil science. I believe access to education and supporting the next generation of soil scientists is crucial for ensuring a healthy future, as so much depends on the continued health of our soil. Both students have expressed their gratitude to OSSS for the financial support for their education. I have thoroughly enjoyed the opportunity to serve as scholarship committee coordinator for the past two years, and will be passing off the role to Kevin Hesson as part of his Eastside Director responsibilities. If you would like to participate on the scholarship committee to select next year's recipients, please email osss.scholarships@gmail.com.

1.How did you get interested in the field of soil science?

Hunter: I have always been fueled by the green fire of environmentalism. So, as I began my environmental science degree, I knew soil health underscored the healing of ecosystems, but its critical importance was beneath the surface until I took the general soil science class at OSU. I learned of the complexity and liveliness of the soil ecosystem as well as its fundamental role in sustaining all life. Soil science satisfied my desire to study nitty-gritty ecological interactions, to solve juicy sustainability problems, and to get my hands dirty all the while. Career-wise, soil was my bridge from environmentalism to sustainable agriculture and food systems.

Fabian: My grandpa came to the United States as part of the Bracero program. My family has worked in industrial agriculture so I have always been around it. I have always loved being outside, being around plants, and growing vegetables. In high school, I participated in Future Farmers of America and took animal science classes, both of which I enjoyed. I worked at Coleman Farms, where I grew hops, beets, cauliflower. I also enjoy working with electronics and studied engineering, but I want to stay involved in agriculture, so I want to integrate technology with agriculture. I find precision agriculture to be fascinating.

2. What is your favorite soil fact?

Hunter: Earthworms are the masters of the soil, almost to the scale of Frank Herbert's Dune. In a single acre of land, earthworms move 8 tons of earth in a year (NYPL). I love to study Charles Darwin's work on earthworms, who stated there may be no other animals "which have played so important a part in the history of the world, as have these lowly organized creatures." Darwin even went so far as to say that all soil in this country had passed through a worm many times over, which I think is closer to the truth than not.

Fabian: The soil microbiome is so important for soil health. In my soil classes, I enjoyed learning about the interconnectedness of soil and other aspects of the environment. I also learned the importance of soil bacteria and how it plays a role in protecting plants from diseases. Soil has a connotation of being "dirty" and making people sick, but it also has many benefits. I have a great appreciation for mycorrhizae, what I once heard called "wood-wide web". As an example of the importance of microbes in plant health: pine trees were shipped as bare-root from the U.S. to other countries but they weren't surviving when planted until they were provided microbes from their native soil.

3. What are your career goals?

Hunter: I'm interested in working in agroecology, which includes studying ecological farm design

along with social justice solutions for human issues in agriculture. After my undergraduate degree in Environmental Science, I will either pursue a graduate degree in agroecology or food policy, leading to work with a food justice organization. I hope to work with communities and farmers to build food systems based on cultural equity, economic sovereignty, and ecological resilience from the soil up.

Fabian: I want to get involved in making soil testing available at lower costs and with faster turnaround time. This is important because the more soil testing that is done, the better a farmer can understand how much fertilizer is needed. This can optimize crop yield while minimizing fertilizer application and runoff or groundwater contamination. An educational component is important to help farmers understand the importance of soil testing, how to take samples, and how to interpret results and develop meaningful fertilizer programs based on the soil tests.

4. What is something you think everyone should know about soil?

Hunter: It's good for you! It smells good, it feels good on your skin, and you might even benefit from eating a little bit. It also keeps the entire global ecosystem intact, so we would all benefit from being soil activists.

Fabian: Soil is not just lifeless and inanimate, but rather more a living breathing and requires care and management. Soil is just as important as the crops that are growing on it and in it. We learn to care for the plants, but many people don't know how to care for the soil. The Dust Bowl is a poignant example of a wake-up call to pay attention to soil health.

5. What do you think is the biggest (or a major) soil-related challenge, and what do you think we can do to address it?

Hunter: Agriculture is certainly the largest soil-related challenge. Current industrial farming methods and agricultural monopolies threaten our soil resources and thus the entire global food supply, which is especially an issue under the pressures of a Climate Crisis. I think agricultural policy specifically needs to prioritize on-farm biodiversity, on-farm fertility, low tillage, and the economic sovereignty of farmers. Community initiatives can create local markets that support ecologically-sourced food and provide resources for those most in need. Industrial agriculture is a relatively new practice, for traditional farming methods have been sustaining our planet for thousands of years, so policy must also uplift a diversity of farming wisdom. Agroecology is an effective framework for solving these issues. I'd encourage readers to check out agroecological movements and literature!

Fabian: I think that lack of access to soil testing is a major concern in underserved areas. Some countries ban fertilizer sales above a certain threshold, but smart use of fertilizer in timing and placement can balance cost, yield, and environmental health.

6. *Favorite classes and/or research involvement:*

Hunter: My favorite class was World Views and Environmental Values with Dr. Vogt, which opened up my environmentalism to values beyond Western worldviews! And how can I leave out SOIL 205 with Professor Cassidy?

Fabian: My favorite class was Soil 205 at Chemetka Community College. I learned about the soil texture triangle and soil horizons, and that there are so many so many soil types and properties. I learned about the soil-forming factors and that so much influences soil characteristics. It was this class that helped me understand more about soil and made me decide to pursue soil instead of horticulture or botany. I want to do more research this year, and I'm considering a masters' degree.

— Jenessa Stemke *(Scholarship Committee Coordinator)*

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 OSSS | P.O. Box 391 | Corvallis, OR 97339

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