

# *The Sharpshooter*

## Oregon Society of Soil Scientists

### Quarterly Newsletter

### Spring, 2019



#### **Spring 2019 Sharpshooter**

##### **President's Message:**

Hello Soil Enthusiasts! Since the wonderful Winter Meeting in Lincoln City, the OSSS board has been very busy planning for the year ahead. I'm excited to be the new president of OSSS working with an excellent board comprised of both new and existing members. We have a lot of fantastic ideas to further our mission and to get even more involved than we already are.

Just a couple short months out of the winter meeting we have already hosted an OSSS Soil Workshop out of the Coos Bay area (I'll talk about that later) and have had a board retreat that resulted in an exuberant amount of great ideas as well as business efficiencies. We have a lot planned for the year ahead and a lot of work still to be done. I hope that we can get even more member engagement this year and create some new outreach opportunities to the public and soil professionals alike.

For those of you that may not know me, I first developed a passion for soil science during my undergrad years at the University of Florida while studying in environmental science. After graduating, I began working for the Florida Department of Health primarily in the permitting

of onsite wastewater treatment systems, where soil science is a crucial part of making decisions. Only a year or so into the job I decided that I would pursue a master's degree in soil and water science from UF once again (Go Gators!) while still working full time. My graduate advisor at the time introduced me to the Florida Association of Environmental Soil Scientists or FAESS for short, where I felt like I fit in immediately. It may have helped that the first business meeting I ever attended was poolside in the Florida Keys with a snorkeling excursion on the agenda as well (I'll add this to the ideas for OSSS meetings).

I spent 5 years of my professional career in Florida (also where I grew up) before moving to Oregon in 2015 to work for DEQ as an onsite wastewater specialist here on the southern coast. Since that time I have become a Certified Professional Soil Scientist and have become active in helping put on soil training opportunities with DEQ as well as OSSS. I could not be happier to be out in the Pacific NW with all the amazing sights, sounds, and adventures that seem limitless.

I hope to get to know those I have not yet met and to continue to learn more about those I have.

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Stay tuned for exciting announcements from OSSS and feel free to contact me anytime about opportunities to get involved or to give suggestions or ideas. Here's to another great year with OSSS!

Sean Rochette  
OSSS President

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Sean enjoying the soil pit at the Winter Meeting.  
Looks pretty happy doesn't he?

## Editors note

By Vance Almquist

As the new Editor of the *Sharpshooter* I have been given an editorial latitude to creatively implement changes within each *Sharpshooter*. Having said that, don't expect me to do anything too radical (publishing in Esperanto?). However, I do have a proposed addition which I would like to discuss with you all here. It is this: I would like to do the heavy lifting required to put together a special edition at the

end of every year which features a handful of scientific publications from soil scientists working within Oregon. Submissions would ideally be presenting research from around the region and of approximately 2-5 pages in length. Peer-review would primarily be sourced from within the society. These articles would present findings from research projects which may not be large enough for a big journal, are in their early stages, or may be very regionally specific.

I have no doubt that this could be a fun and worth-while endeavor which actually brings many of us together, but it will require some work. There are some details left to be hammered out to be sure. The largest of which is figuring out if any of you would be interested in contributing/reviewing. So with that, I'll leave it for you all to ponder. Please contact me (last page) with your questions, thoughts, concerns, and especially if you think you'd like to contribute/review/volunteer.

Regardless of the outcome regarding the peer review publications, the *Sharpshooter* is always looking for contributions. This edition is pretty much a straight forward newsletter detailing the happenings which have taken place over the last few months. However, wouldn't it be great if future issues were to have a couple of additional pieces which are more unusual, perhaps a story from the field, or some retrospective historic pieces? If you think so, consider writing one—I would be thrilled to help edit it and get it in the next issue of the *Sharpshooter*!

I hope you enjoy our most recent issue.

Vance Almquist  
*Sharpshooter* Editor

# Soil Scientist Spotlight

## Jim David, Ochoco National Forest, Wins Prestigious *Rise to the Future Field Soil Scientist of the Year* Award

Contributed by: Sarah Hash



*JD, who apparently does own a suit, receiving his award from some very important people in Washington, D.C.*

While this announcement comes a bit late, we are pleased to recognize Jim David (known to most of us as JD), Forest Soil Scientist on the Ochoco National Forest, who was the 2018 recipient of the **Rise to the Future Field Soil Scientist of the Year** award. The annual Rise to the Future awards recognize outstanding achievements by natural resource professionals in the Forest Service's fisheries, hydrology, soil, and air programs. One award in each category is given for the entire nation, so it's a tremendous honor to be recognized. He went to Washington, D.C. to receive the award in person last summer. JD has consistently pushed the boundaries of understanding and interpreting soils on the Ochoco National Forest and

Crooked River National Grassland. He is literally a walking encyclopedia of the soils in his area, and his voluminous knowledge extends to adjacent landscapes in the Blue Mountains of northeastern Oregon, the Great Basin of Oregon and Washington, and northern California.

For over a decade, JD has played an integral role on the multi-agency Crook County, Oregon Initial Soil Survey. He has partnered with Soil Scientists and Ecologists from the NRCS and BLM and with a private contractor to complete the soils inventory for all of Crook County while taking the lead on the Ochoco NF portion. He has mapped well over 700,000 acres of soils and ecological units and has managed to work through complicated concept matches with adjacent NRCS and BLM partner inventories. He has been a mentor and leader on this survey, displaying a deep understanding of the relationships between soils, landscapes, vegetation, and ecology. Without his efforts, the survey on the USFS portion of Crook County would not be completed.

JD has also been a strong force in the development of state-and-transition models associated with Ecological Site Descriptions (ESD) for the management of rangelands in central and eastern Oregon. He has worked closely with Dr. Tamzen Stringham, University of Nevada Reno (formerly Oregon State University), and FS Program Managers to develop and refine these models, which describe the trajectory and ecological response to a variety of disturbances, and provide site-specific, best available science regarding landscape treatments and their relationship to the

About the Author: Sarah Hash is the OSSS Eastside director and Soil Scientist serving the Deschutes National Forest ; Bend -Ft. Rock and Crescent Ranger Districts



establishment and spread of invasive annual grasses.  
*Cont'd on next page*

JD has also worked with the Dr. Gregg Riegel, Area Ecologist with the FS in Bend, since 1994, helping to develop soil and vegetation concepts for the Riparian Ecological Type Classification and Ecological Status Scorecards for Central and Southcentral Oregon. Early in the project, Jim trained and mentored six soil scientists working on the Ochoco NF, as well crews on the Fremont-Winema NF, and Lakeview District BLM. This was at a time when our understanding of physical and biologic properties of hydric soils was in its infancy and few practitioners had been exposed to this information. JD was the key player that both possessed the intellect to understand the newly evolving literature AND had the field experience to apply and make man-



*JD in his natural habitat; digging holes and telling people what's up*

agement interpretations regarding livestock grazing effects.

Over JD's extensive field-oriented career with the U.S. Forest Service, he has always been a strong advocate for collaboration among multiple resource areas. His broad knowledge base covers not only soils, but also botany, range, forestry, archaeology, hydrology, fisheries, and wildlife (especially beaver). In the 1990's, he co-led a state-supported effort that resulted in a beaver

-trapping moratorium on the Ochoco National Forest, which is still in place. The most striking part of this is



*JD really enjoys digging holes ! He has been quoted as saying "you gotta be like a badger if you wanna be a good soil scientist"*

Jim is a licensed trapper, so he understands the benefits and impacts of furbearer trapping more than most professional conservationists.

In the era of a steady stream of retirements and reductions in work force, Jim David is a rarity of experience and expertise in his field. Many developing professionals have sought mentorship and advice from JD because the breadth and depth of his knowledge is unparalleled. Kurt Moffitt, from the NRCS Redmond MLRA Soil Survey Office said, "Speaking for myself, I owe a lot thanks to JD for the training and education he has provided to me, especially relating to real-world application of soil management techniques--whether it be engineering concerns, wildlife, or water-related, he has the answers. (...) He has always been eager to teach the next generation, and has helped the careers of many soil scientists, range cons, and wildlife bios in the FS, BLM, and NRCS."

OSSS extends its warmest congratulations to Jim David for this well-deserved award!



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# Weighing Anchor: A recap of the Winter Meeting in Lincoln City

Story by Vance Almquist

February on the central coast of Oregon is a beautiful thing, with this year being no exception. We of course were there for one of the largest migrations of soil scientists in the state of Oregon, the winter meeting of OSSS. This year was James Cassidy's "last year" organizing and this year he really outdid himself. We had the pleasure of staying at the Historic Anchor Inn; the whole place to ourselves. If you've never been there, imagine yourself in a musty old motel which has been filled to the brim with the flamboyant and campy trappings of a slightly deranged sailor, who also happened to collect lamps, so many lamps. With the surroundings in mind, gather 50 soil scientists, a magician, a one-person show, a jug band, dancing (plus a conga line), and you have yourself an evening at the Anchor Inn with the Oregon Society of Soil Scientists.



Left: Alicia Leytem (OSSS Secretary) sporting one of the many, many nautically themed hats at the Anchor Inn. Right: Revelry and bonding at the Anchor Inn.

A short drive down the road and you find yourself at the Eventuary, a former mortuary where we held the presentations and poster sessions.

The presentations were themselves eclectic, complementing the surroundings. Each of the invited speakers was there to provide us with fodder for deep thinking in topics we may not often grapple with, and I think it's safe to say they did that. Jay Noller presented a history of the universe, the generation of atomic elements, the formation and history of the Earth, and the dynamic nature of Earth's soils. Markus Kleber recounted the history of the Andisols soil Order (in which Oregon played a big part) and used this history to provide us with an appreciation for the philosophic questions which underly every classification scheme. Greg Retallack presented his research into the origins of life and soil, reinterpreted the Ediacaran fauna, and asked whether there are soils on asteroids— as always, there was some controversy but he got us all thinking about the ubiquity of life on the planet (and hopefully elsewhere). Historian Randall Beeman (coauthor of *A Green and Permanent Land: Ecology and agriculture in the 20th Century*) gave a fascinating history of agricultural practices in the United States in the 20th century, and provided an especially interesting point of view on the drive for technological advancement and its effects on labor and capital. Following Dr. Beeman we heard from Jason Bradford of the postcarbon institute regarding future energy usage in the post-peak oil world (e.g. we should be reserving fossil fuels for plowing, not driving to and from work). He was followed by Cynthia Beal who presented an interesting view on death and sustainable funerary practices/usages of soil for burial.

After all the talks we had a brief break, an even briefer membership meeting in which next year's board was voted in, followed by the poster presentations.

*Cont'd on next page*

The setup for posters this year wasn't ideal, however, and the students had a hard time talking over the jug band in the next room. Nevertheless, it was a day full of surprises and interesting ideas. Well done!

The next morning we gathered for the field tour which had been principally organized by Pedro Martinez, a doctoral student and pedologist at Oregon State University. Our first stop was in the Oregon Coast Range, north of Otis to look at some deeply weathered soils and talk about the role of Red Alder in the formation of these soils. We were joined by Dr. Steve Perakis of the USGS who has been studying the biogeochemistry of

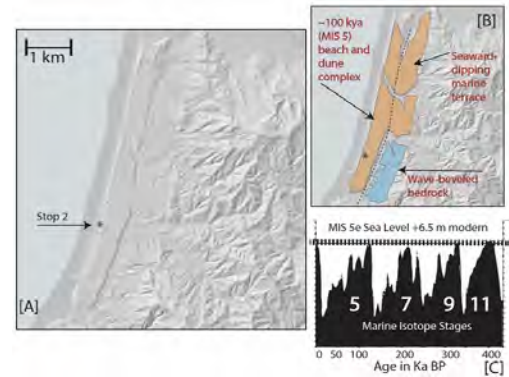


Left: Pedro preparing the pit face at our first stop. Right: The soil, a Typic Fulvudand (similar to Tolovana series), was formed in colluvium and residuum derived from the underlying gabbroic sill.

Coast Range forests for nearly 20 yrs. He discussed a recent paper (\*) which he coauthored along with Julie Pett-Ridge of OSU. Their paper draws the link between nitrogen fixation by Red Alder, the production of nitric acid, and subsequent release of cations from minerals. Besides the revelation of the newly reported mechanism of nitric acid weathering, Dr. Perakis et al. have also demonstrated that these systems are nearly hydroponic, that most of their cations come not from the soil but the rain water. I guess this shouldn't have come as a surprise considering that this soil has a base saturation in the single digits to low teens. But this drew an interesting parallel between the soils under tropical rainforest, which often also have extremely low BS, and the soils of our temperate rainforest. Though the nutrient dynamics may be somewhat simi-

lar, the soils themselves are quite different (andisols versus ultisols and oxisols) though likely only because of climate (temperature mostly) and time. Very interesting indeed.

Following the brilliant presentation of Steve's, we all headed back to the Anchor Inn grabbed some lunch and headed out again to see the complex spodosol stratigraphy preserved in a 100 ky old marine terrace.



Geomorphology and age of the marine terrace at stop two. VWA

We observed wood whose carbon had been replaced by translocated silica, intradunal lakes, and the development of spodic horizons which leads to surface ponding on these old terraced (pictures on following page). All told, great job on organizing the field trip Pedro, and thank you all for the lively discussions and thoughtful insights at each pit!



The group standing below an incision-fill sequence with multiple spodosolic facies.

\* Steven S. Perakis, Julie C. Pett-Ridge. **Nitrogen-fixing red alder trees tap rock-derived nutrients.** *Proceedings of the National Academy of Sciences*, 2019; 201814782 DOI: [10.1073/pnas.1814782116](https://doi.org/10.1073/pnas.1814782116)





[A]



[B]



[C]



[D]



[E]



[F]

A) stacked spodosols; B) Translocated organic matter; C) soft-sediment deformation (seismic); D) Bifurcating E horizon (grey); E.) Podzolization, cut-fill sequence; F) More soft sediment deformation features



# Soil Stories From the State

A REVIEW OF SOIL-RELATED STORIES OVER THE LAST FEW MONTHS

## Northwest Oregon Bureau of Land Management Aquatics Field Day and Soil Field Trip

Story by: Marissa Theve and Jonas Parker

On April 17th, the Northwest Oregon Bureau of Land Management aquatic habitat management working group (generally hydrologists, fish biologists, and soil scientists) hosted a field meeting at the south fork Rickreall Creek. Also in attendance were partners from local soil and water conservation societies and watershed councils. The groups all shared projects needs and successes with partnerships over a camp-fire lunch.



Pitching a quick fire for lunch on the road; all in a days work for folks at the BLM

Though it was nearly buried already, the team viewed a three year old, in-stream log-placement project completed by the Marys Peak field office, located in Salem. The agenda included data sharing, eDNA, Candace Fallon from the [Xerces Society](#) in Portland spoke about a rare species of caddisfly, training opportunities, Soil Survey ecological sites, drones, restoration, stream temperature monitoring, roadwork, and more.

After lunch, BLM soil scientist Chris Sween led a soil monitoring demonstration using the S1 mobile mapping app, which is now available to the public. Lastly, the group talked about tether-assisted logging from Drs. Belart and Chung of Oregon State University and the implications for timber sale planning.



BLM staff at the soil field day at Hole in the Road timber

Additionally, on April 23<sup>rd</sup>, the soil scientists from the Northwest Oregon District teamed up with the Cascades field office timber sale administrator Bonnie Trefren to discuss wet season ground-based harvest and yarding activities at [Hole in the Road timber sale](#).

In attendance were BLM district staff, Oregon state office Soil, Water, and Air lead, and a representative from Freres Lumber Company, who purchased the timber sale. *Cont'd on next page*

About the Authors: Marissa Theve is as a BLM soil scientist for the Cascades and Marys Peak field offices and currently serving as the OSSS Westside Director. Jonas Parker works as a Northwest Oregon District Hydrologist for the BLM

The team discussed the benefits of checking on-site conditions before allowing ground-based yarding on sales within the seasonal restriction.



Soil Disturbance Monitoring Protocol demonstration

Soil moisture is measured on a unit-specific basis by BLM soil scientists before allowing purchasers and their operators to use heavy equipment. If approved, the purchaser gains increased efficiency and a more consistent flow of wood to mills. The BLM achieves better communication with its operators and a protected soil resource for future timber production, habitat, and recreation opportunities.

## 2019 Oregon Envirothon

Contributed by: Marissa Theve

On May 3<sup>rd</sup> 2019, well over 100 high schoolers from across the state of Oregon gathered to share their enthusiasm for natural resources at the 2019 Oregon Envirothon. 33 teams completed hands-on examinations in the subjects of soils, aquatic ecology, forestry, wildlife and this year's environmental issue, "Agriculture and the Environment: Knowledge and Technology to Feed the World". Teams submitted oral presentations, which judges reviewed prior to the test, and the top two teams presented farm management plans to the entire group. The high score for the soils test was 44 out of 49 possible points, up from 41/50 last year. While Logos Charter School's team came in first this year, all participating students are environmental champions. The winning team will take a trip to the national competition, hosted this year by North Carolina State University in Raleigh July 28<sup>th</sup> to August 2<sup>nd</sup>. Special thanks to the Oregon Envirothon Soil Team for assisting the soils station and

helping to inspire the next generation of pedologists!

For more information about how you can support these efforts in the future, check out: <http://www.oregonenvirothon.org/> or the Oregon Envirothon Facebook page.



Highschool school students looking very concentrated as they describe soils for the 2019 Envirothon

## Soil Workshop Recap:

Contributed by Sean Rochette

I'm happy to report that the OSSS Soil Workshop back in April outside of Coos Bay was a great success. We received many comments and praise about the workshop from attendees. Hopefully this is just the beginning of continued annual workshops and fulfilling part of our mission to educate and provide training in soil science.

A special thanks goes out to those that helped me and OSSS to make this event possible. For those that were unable to attend, we had a great lineup of speakers in the morning including Ron Reuter, Markus Kleber, Marissa Theve, and a couple of South Slough folks that covered a variety of soil science related topics. After the morning classroom session at the South Slough interpretive center, we enjoyed a catered lunch followed by explorations in the field around the Wasson Creek Marsh area.

*Cont'd on next page*



In and around the marsh area the group explored several soil pits with focus on redoximorphic features, hydrology, landscape position, disturbed soils, texturing, and more. It will be interesting to see how this site changes with restoration efforts that are scheduled to start sometime in the near future.

With a very successful soil workshop behind us, it is never too late to start planning for the next one. I would like to encourage members that may have soil workshop ideas to contact the board. We are always happy to get ideas for topics, presenters, and sugges-



There were some beautiful redox features on display in the soils formed in estuarine sediments (mostly SiCL-SiC).

tions for locations. Of course, volunteering to assist with a future workshop is always appreciated as well. I hope all those who attended the soil workshop had as good of a time as I did while furthering their education in soil science.

## Summer Tour

Update by Vance Almquist

Preparations are underway for this year's summer tour. Our tentative plan is to visit the Rogue River at Gold Beach to look at the effects of the Chetco Bar Fire. There is even the possibility that the Northwest Forest Soils Council will join us for their summer tour as well!

Be on the lookout for more details once we get the go-ahead from the Forest Service Rangers. We will be seeing serpentinitic soils, and the unique ecosystems they support (and their unique responses to fire), and discussing the ins-n-outs-n-what-have-you's of post-fire recovery/ impact mitigation strategies.

## Treasurers Corner

By Pam Keller

OSSS is doing well financially. Currently we have \$13,526 with only about \$1,500 in outstanding bills. The surplus is largely due to good attendance at our events the past two years, and some unexpectedly good deals on event venue expenses. Many thanks to all of you for participating and especially to the event organizers: Shannon Andrews Capellazzi, Bruce Moffatt, James Cassidy, Alicia Leytem and Sean Rochette. The Board has heard from members that OSSS should start giving student scholarships. Agreed! Initially we will be offering a \$1000 undergraduate award this year, and a graduate student award the following year. Jenessa Stemke is heading this up and be sure to look for details in the summer edition of the Sharpshooter. In addition to our scholarship fund, we'll donate \$100 to Envirothon, an annual environmentally themed competition for high school aged students. Oregon Envirothon is held annually at the Oregon Gardens in May and the winner goes to the national (plus Canada!) event in the summer (for details regarding this year's Envirothon please see Marissa Theve's summary on page 10.

## Sharpshooter Annals

It was 8 years ago this week that Scott Burns and Jay Noller were testifying at the Oregon State Senate regarding the adoption of the Jory as the state soil. Clearly whatever they said worked!

(only 22 states have official state soils)



About the Author: Pam Keller is a retired soil scientist with a background in computer science and specialization in GIS; she has been serving as the OSSS treasurer since 2016

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:

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Please feel free to submit an article. We welcome input from soil scientists near and far.

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