

What's Inside This Issue:

- President's Message
- Summer Tour Invite
- East- and Westside Notes
- Member Spotlight
- Dates to Remember



PRESIDENT'S MESSAGE

by Markus Kleber

Hello OSSS members,

Your new president came from Germany to the United States almost 10 years ago, in January 2005. I touched down on a dismal rainy morning at San Francisco International to start as a geological scientist at the Lawrence Berkeley National Lab in Berkeley. It was not my first exposure to the US as I had spent an adventurous year in Alabama long ago and had been back for meetings and vacation. But this stay was likely to be of a more permanent nature and the rain certainly dampened my enthusiasm for the new environment. When the sun rose bright and brilliant the morning after my arrival, I greeted it with great relief.

I basked in the California sun for almost two years until the opportunity came to move on to western Oregon, the place where rain was invented and that proudly calls itself the "rain coast." And guess what, a couple of days after my arrival in Corvallis in October 2006, it started to rain and would not stop for two weeks in a row. The funny thing is, however, that by now I don't register rainy days anymore. Rather I take notice when it does not rain, and relish the moments when the sun comes out and looks at me as it is trying to do right now while I am writing this note. I like to think of this habit as a metaphor for the Oregonian way of life: looking ahead in anticipation of the beautiful and marvelous things to come.

But before I get sidetracked with views into the future, let me give you a brief curriculum vitae. I was 10 years old when Neil Armstrong set foot on the moon, and watching him do so on TV made me yearn to lead a life of excitement and discovery as well. I didn't quite make it to astronaut status, but succeeded in becoming a naval aviator (as was Armstrong), flying helicopters aboard small frigates. Most of the training happened in the US, and I used the opportunity to travel to Edwards Air Force Base, Cape Canaveral, Huntsville, Norfolk, Pensacola and so on to see the rockets and spaceships and be close to that culture of "pushing the envelope" that was at the heart of the space age.

But while I was living a slightly downsized version of my boyhood dreams, I increasingly noticed that nature in itself can be as fascinating as technology, and, most importantly, that understanding the environment is vital to the maintenance of our standard of living on this planet. I don't want to get into poetry, but looking at those images of the blue earth that were transmitted back from lunar orbit by the Apollo missions, while making me want to be up there in the spaceship, also started a process of realizing what our species needs to be concerned with if we want to hand a habitable environment down to future generations.

So after 10 years in the Navy, I went back to school and got a degree in agricultural biology. My major was in plant sciences with a strong emphasis on plant ecology, plant nutrition and plant protection. This was in the late eighties/early nineties, when the public started to become aware of global change. Global change is the term used to indicate that our global human habitat is threatened by four major developments: population increase, loss of biodiversity, soil degradation, and climate change.

It occurred to me that soil is at the heart of all four of these factors. So I stayed on at the university for a PhD in soil science, measuring carbon dioxide and methane evolution from soils in the field for a full three years. Towards the end of that period, I was able to predict the amount of CO₂ evolved from my soils within a 5% error margin just by looking at the weather report. This was not so for the evolution of methane—the processes involved here are much more complicated and thus impossible to predict without detailed knowledge of what exactly is going on right there in the soil. So when I got the opportunity to do more detailed, mechanistic research after my PhD, I moved on to the ancient University of Halle (founded in the year 1502, Martin Luther among the first faculty!) in central Germany. When I was there two important things happened: I got involved in a European initiative to better understand the biogeochemistry of volcanic soils (andisols); and I became a member of another research program investigating soil carbon turnover. The latter interest led to numerous international contacts and ultimately brought me to Berkeley, and when in 2006 the opportunity arose to join OSU to work at carbon turnover problems in the shadows of the Cascades volcanoes, I felt that was just the thing for me to do.

Today I continue to be thrilled with Oregon and love every minute I can get outside to hike a trail and explore the scenery. My vision for OSSS is to make it a recognized regional network for those interested in maintaining the functionality and the beauty of Oregon soils and ecosystems. To achieve this, we have to do our best to preserve the immense local and regional knowledge accumulated by our legacy membership and make it available to the new generation of soil-minded professionals. In order to do so, I would like to explore any serious proposal that makes old salts and young hopefuls talk to each other. I invite all of you to join me in this effort and come forward with suggestions to this end. Our next opportunity to gather and exchange tips and tricks will be during the upcoming 2014 summer tour, when we intend to investigate a gigantic cross section of Missoula flood deposits at the Sidney cut bank of the Willamette River near Salem. Our camp site will be right across the cut bank at Rogue Farms where phenomenal plants (Hops!) grow at rates in excess of one foot per day on the very soils we will be looking at.

By way of closing statement, I take the liberty of borrowing the last line from one of James Cassidy's presidential messages: "Forward!!!! To the Future!!!!"

Hope to see you all at Rogue Farms this summer!

MaK

Going Rogue: The OSSS Summer Tour 2014

by Markus Kleber, OSSS President

"Floods are among the most powerful forces on earth. Human societies worldwide have lived and died with floods from the very beginning, spawning a prominent role for floods within legends, religions, and history. Inspired by such accounts, scientists have studied the role of floods on humanity and its supporting ecosystems, resulting in appreciation for the many-faceted role of floods in shaping our world."¹ The OSSS Summer Tour 2014 will examine the

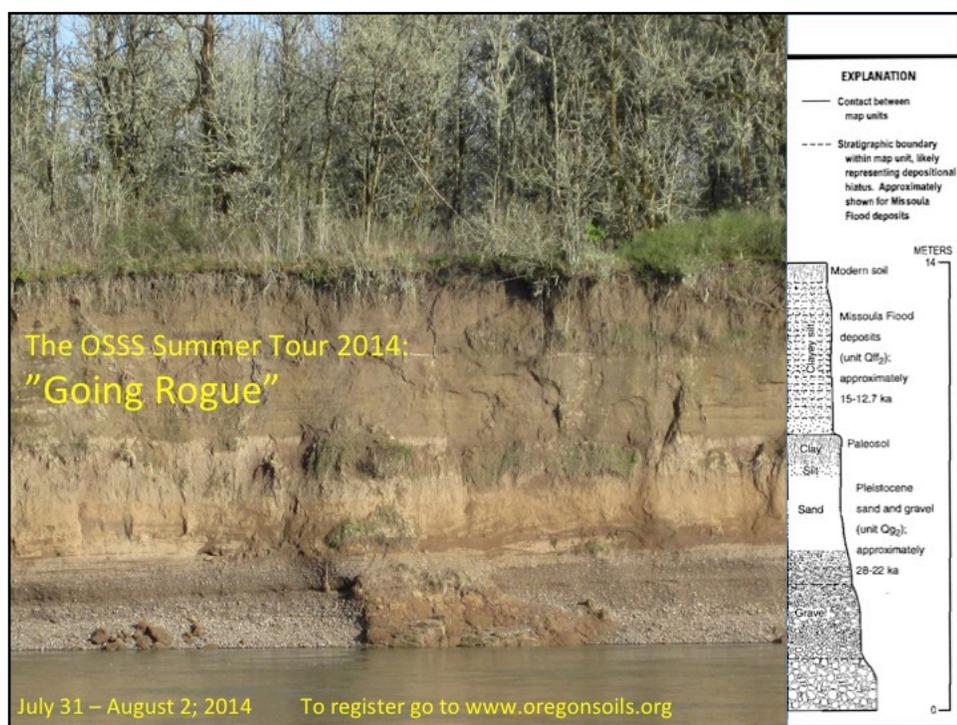


Figure 1. Sidney stratigraphic section as seen from campsite at Rogue Farms.

anatomy of a landscape shaped by the second largest flood event in the last 1.8 million years – the Missoula Floods with a peak discharge of 17 million cubic meters per second. We will meet in the afternoon of July 31 to camp at Rogue Farms near Salem, in full view of a 14m-tall natural exposure of Pleistocene deposits called the Sidney stratigraphic section (Figure 1).

OSSS legacy members will be on hand to introduce landscape history as we gather on the western bank of the Willamette right across this spectacular sight, where at least ten beds of Missoula Flood deposits can be discerned.² On Friday, August 1, we will board a bus to tour four soils developed in and adjacent to these sediments (Figure 2). A pizza lunch at nearby Ankeny Winery will help to carry us through a day that will bring us face to face with landscape history. The evening is reserved for animated discussions of the wonders seen during the day, supported and inspired by some signature, grain-based products of the fertile soils developed from those sediments. We will break camp Saturday morning to give those who wish to enjoy some fun on the river the opportunity to do so.

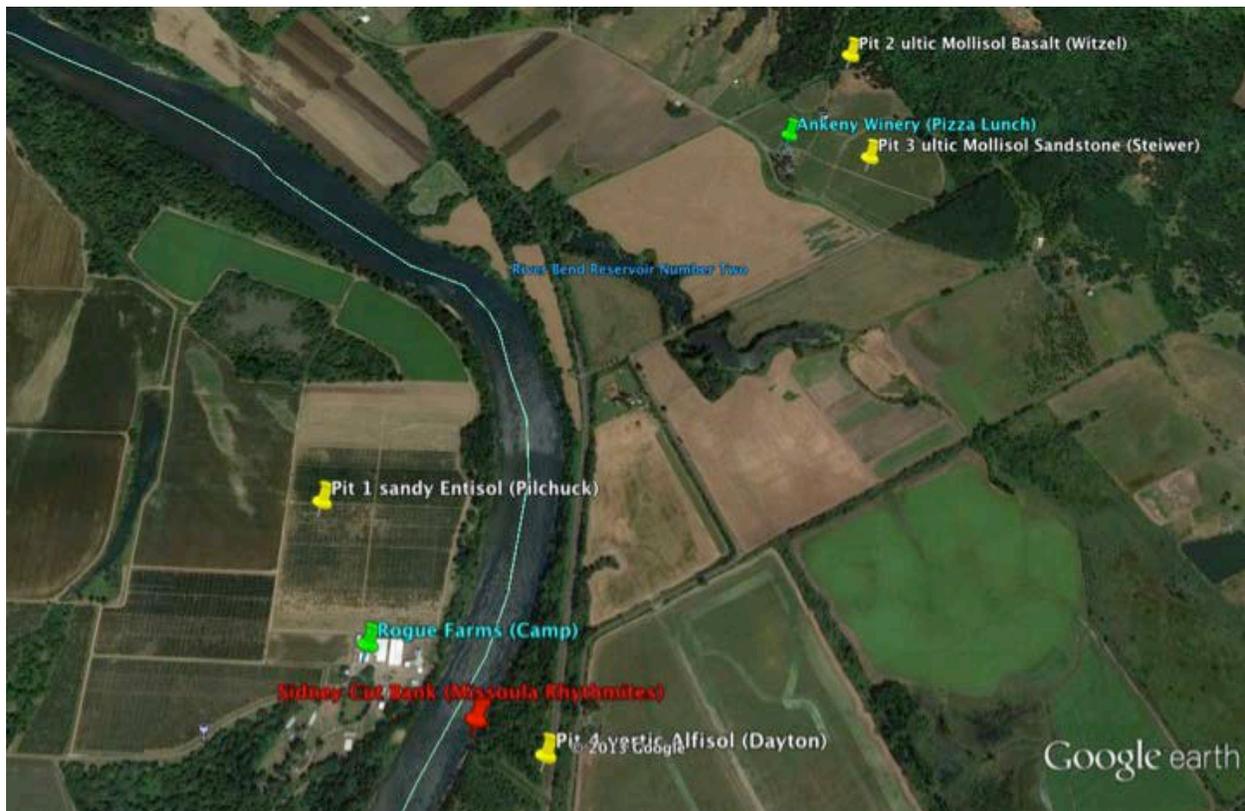


Figure 2. Location of campsite and soils near Rogue Farms.

Join us for this singular opportunity to get an exclusive, in-depth view of landscape history in the Willamette Valley. Sign up early at the OSSS web site to secure your spot.

References

- ¹ O'Connor, J.E., and J.E. Costa. 2004. The world's largest floods, past and present – Their causes and magnitudes. U.S. Geological Survey Circular 1254, 13p.
- ² O'Connor, J.E., Sarna-Wojcicki, A., Wozniak, K.C., Polette, D.J. and R.J. Fleck. 2001. Origin, extent, and thickness of Quaternary geologic units in the Willamette Valley, Oregon. U.S. Geological Survey professional paper 1620, 52p.

OSSS Winter Meeting, 2014 Photo Gallery

Rachel Danielson, one of the new OSSS student liaisons, compiled a Google doc with pictures from the 2014 Winter Meeting.

Click here to access the pictures:

https://docs.google.com/presentation/d/1KedUf_1erjdaHHtYwa0ktsqp_khrVqtr0mkLRXcu14/edit?usp=sharing



Jason McClaughry brilliantly describing how the Tuff of Smith Rock represents the northwest boundary of the Crooked River Caldera.

Photo credit *Emily Hess, PSU Graduate Student*

In order to add your own images click on the link, the layout is similar to a Power Point document, click insert, and add your own images and comments on Winter Meeting 2014 (WM '14) or on other OSSS tours.

The OSSS website will be receiving a functionality facelift. We have heard your comments, and we are going to prioritize the event information and registration process section of the website first and then move on to other functions like photo galleries that can serve as a wealth of soil imagery. For now please visit the photo document and feel free to add your comments.

Slippery Slope at Dixie Meadows

~ Winter Tour Reflections from Ed Horn ~

John and Lynn Breese were very kind to let us to dig out soil pits on their place and allowing us to look at soils under less than ideal conditions. A few of us got down and dirty, braved the puddles at the bottom of the pits to sample and texture horizons. Tom Clark did a fine job of explaining the soil characteristics for each of the two soils: First Pit - Homehollow (Fine-Loamy, mixed, superactive, mesic Vitritorrandic Durixerolls) with low sage vegetation; Second Pit - Erakatak (Clayey-skeletal, smectitic, frigid Vitrandic Argixerolls) with big sage vegetation. Having dug in these soils during the dry season it was interesting to see them now under wet conditions. My ecology professor in college told me to look at the same site at different times of the year and under different weather conditions to better understand the factors influencing the site. For the Homehollow pit, it was interesting to see water seep out of the pit face just above the heavy textured argillic horizon. We were told by range ecologists that low sage plants can tolerate saturated conditions better than big sage. It is the abrupt texture change from the surface to the clayey subsoil and the concave drainage position that collects extra water and saturates the surface. This stop shows how soil drainage and position in the landscape influence vegetation.

WESTSIDE NOTES

by Mark Fery

The OSSS Winter 2014 meeting was a great success and along with it came the OSSS timeline activity. I know a number of members, both junior and senior, had some lively discussions standing around the display. It's something a number of members would like to see continue in various ways, and it can only be expanded with your help. If you've got stories, pictures, or events to add to our recorded history, please get in touch with me and I'll help make sure it goes into the OSSS records. Look forward to a much improved display next year!

The best way to record history is as it happens. If you're on the west side and something noteworthy is happening in your circle, please let me know and I'll work with you to make it known to the rest of the membership!



Eastside Director, **Meghan Krueger**, sporting her dusty, black soil hat!

EASTSIDE NOTES

by Meghan Krueger, Eastside Director

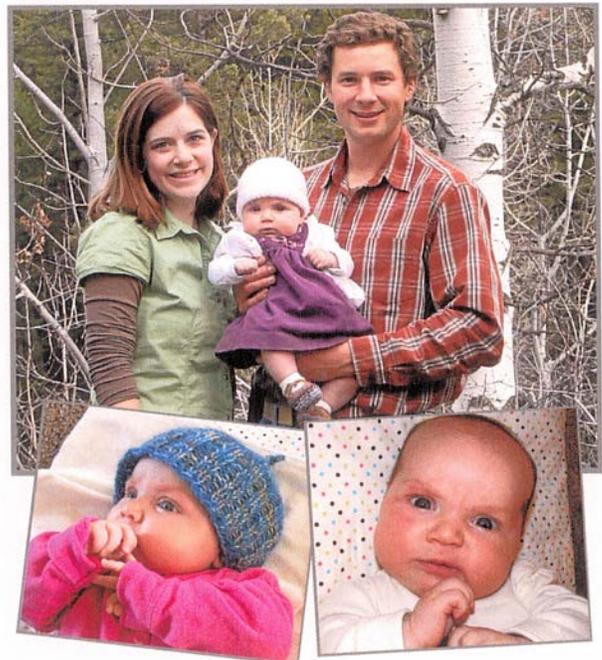
The following is a profile of a recent Eastsider, **DAVID RAND**:

I grew up in the Willamette Valley and graduated with a bachelor's degree in soil science from OSU in 2008. For the last six years, I have worked as a soil scientist for the Natural Resources Conservation Service mapping Bureau of Land Management (BLM) rangeland in Malheur County, Oregon. This spring, my wife, eight-month-old daughter, and I will move to Salem where I will continue working for the NRCS on a soil survey of the Willamette National Forest.

The highlight of my work in Southeast Oregon is characterizing soil-plant relationships in collaboration with BLM range ecologists. During field work, my ecologist partner and I documented dominant landforms and vegetative expressions. Our interdisciplinary approach to site selection makes it easier to find meaningful patterns in the data because it holds soil-forming factors consistent.

Prior to last field season, our crew understood little about soils associated with black greasewood (*Sarcobatus vermiculatus*) except that these soils are often very alkaline. However, once we compiled field data this winter, it became clear that soils typical of each ecological site had a distinct pH distribution with depth. Furthermore, the characteristics of the distributions helped explain the presence and abundance of indicator species (see diagram on next page).

As one looks at the catena diagram, it is interesting to note that soil chemistry and vegetative expressions changed *within* landforms. Had my mapping partner not insisted on a sampling scheme stratified by vegetation as well as landform, my dataset would have contained so much variability that these chemical patterns would have been undetectable.



Dave, Hannah and Libby Rand

Malheur County, Oregon, Southern Part
 Greasewood Ecological Site/Soil Catena
 Revised by David Rand 4/2014

Ecological Site Name:	Sodic Bottom R024XY003OR	Alkaline Basin R024XY625OR	Low Sodic Terrace R024XY013OR	Sodic Terrace R024XY014OR	Loamy 8-10 R024XY016OR
Potential Production:	1400-2000 lbs/ac./yr.	600-1200 lbs/ac./yr.	200-400 lbs/ac./yr.	200-600 lbs/ac./yr.	400-900 lbs/ac./yr.
Indicator Species:	black greasewood basin wildrye inland saltgrass	black greasewood basin big sagebrush basin wildrye inland saltgrass	black greasewood shadscale bud sagebrush inland saltgrass basin wildrye	basin big sagebrush black greasewood shadscale bud sagebrush indian ricegrass basin wildrye	Wyoming big sagebrush Thurber's needlegrass bluebunch wheatgrass indian ricegrass
Soil Reaction:					
Land Surface:					
Soil Series/	Wabuska	Tenply (proposed series)	Bubus	Valmy	Nevador
Taxonomic	Coarse-loamy, mixed,	Coarse-loamy, mixed,	Coarse-loamy, mixed,	Coarse-loamy, mixed,	Fine-loamy, mixed,
Classification:	superactive, calcareous, mesic Aeric Halaquepts	superactive, calcareous, mesic Xeric Torrifluvents	superactive, calcareous, mesic Duric Torriorthents	superactive, calcareous, mesic Duric Torriorthents	superactive, mesic Durinodic Xeric Haplargids
Landform:	Flood plain	Flood plain	Alluvial fan	Alluvial fan	Fan remnant

My time in Southeast Oregon has been a great adventure including: inadvertently excavating live snake eggs from a depth of one meter in a coarse-loamy Cambid, enjoying beautiful sunsets and electrical storms from Jordan Valley, negotiating a spring creek with my mapping partner, and building wonderful relationships within our close-knit crew.

In 2008, I received the OSSS/John B. Goode scholarship. I am grateful for the OSSS's support and hope to reconnect once I move closer to meetings and functions.

DATES TO REMEMBER



June 20-22, 2014, California Forest Soils Council Summer (CFSC) Field Tour. Plumas County Serpentine Soils, featuring the work of Earl Alexander and local management topics. Lodging or camping near Greenville, CA. Registration and tour details available the beginning of May. Email CFSC Chair, Jennifer Wood at jtwood1234@gmail.com to receive tour and registration information. *CEUs are available for this tour.* Updates will be posted at www.caforestsoils.org

July 31 – August 2, 2014, OSSS 2014 Summer Tour: Going Rogue. Rogue Farms, Independence, OR. Meeting registration opens May 1.

Other Upcoming Conferences posted on the SSSA website <https://www.acsmeetings.org/meetings>

Nov. 2-5, 2014, ASA, CSSA, SSSA International Meetings, Long Beach, CA.

MEMBER SPOTLIGHT

~ Rachel Danielson ~

In June of 2013, I received my B.S. in Earth System Science with a minor in Biological Science at the University of California, Irvine. Through my undergraduate course work, I developed a broad comprehension of biology, physics, chemistry, and mathematics, and the application and interactions of these subjects to environmental science, with coursework spanning terrestrial and marine biogeochemistry and ecology, atmospheric dynamics, geology, plant physiology, genetics, research and field methods, chemistry, physics, and calculus. I became interested in climate change and how human disturbance percolates through an ecosystem. I began to understand the importance of soil as mediator between the biosphere, atmosphere, and hydrosphere, and its dynamic role as a setting for transformation, circulation, and accumulation in the environment. It is this intricacy of soils, as well as their importance in global carbon balance and food production, that eventually drew me to pursue a Master's Degree in Soil Science.

For my master's thesis, I will be working with Dave Myrold to assess microbial response to loss of biomass and soil structure disturbance as a result of logging one year after harvest, and comparing this response to baseline data collected one year before harvest. Samples collected from nine sites across both Oregon and Washington that differ in abiotic conditions, but have the same dominant tree species (Douglas-Fir), will be assessed for changes including extracellular enzyme activity, C:N ratios in soil and biomass, relative abundance of bacteria and fungi, soil carbon and nitrogen mineralization rates, and microbial community composition through next-generation DNA sequencing, to assess any clear and varied responses to timber harvest. With the growing complexity of ecological models and increased interest in global microbial diversity, understanding disturbance response variability across heterogeneous systems could be useful for modification of global and regional models of diversity and carbon cycling.

I hope that this project will not only help me build the skills needed to perform high quality research, but allow me to gain a deeper understanding of how environmental change may be mediated through soil microorganisms in response to disturbance. Understanding these processes requires a broader understanding of physical and chemical soil processes, as well as soil morphology, necessitating a solid background in soil science. Soils around the globe have been drastically altered through conventional agriculture practices, compaction, dumping, clear cutting, exotic species invasion, climate warming, and building; yet we rely on soils as a food source and a reservoir for carbon. In order to improve and maintain better soil conditions as well as to build respect and harmony between people and the ecosystems they depend on, I hope to attain a career involving public education, investigation of the effects of human disturbance on ecological function, and the creation of policy to protect natural landscapes and to improve both environmental and human health.

Stevens Hydra Probe Soil Sensor

your solution for quality soil data



All-in-One Multi-Parameter Sensor

- Soil Moisture (WFV %)
- Soil Temperature
- Soil Electrical Conductivity
- Real Dielectric Permittivity
- Imaginary Dielectric Permittivity
- and many more!

Features of the Stevens Hydra Probe

- Excellent precision and accuracy
- Temperature corrected measurements
- Smart Sensor technology
- No calibration required for most soils
- SDI-12 or RS-485 signal output
- Measure temperature down to -10° F (-30° F probe option also available)
- Five year performance warranty

Other Soil Measurement Solutions from Stevens Water



The **NEW** Wi-Fi Enabled POGO Wireless Soil Sensor

The POGO enables manual soil readings to be taken quickly and easily. Use with your **Apple iPhone, iPad, or iPod Touch** (Android coming soon) to take readings wirelessly via Wi-Fi connection. Save collected soil data and email to anyone for further analysis.



Stevens pF Sensor

The Stevens pF Sensor is a matric potential probe that measures soil water potential using an innovative heat capacitance method. This makes the Stevens pF Sensor more accurate and provides high-accuracy readings even in dry or saline soils. Additionally, the sensor offers a measurement range of 10,000 bar, for a wider range of applications.



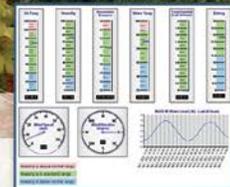
Data Loggers



Weather Sensors



Data Communication



Data Collection & Analysis

Tel: 800.452.5272
503.445.8000
Web: www.stevenswater.com

Celebrating 100 Years of
History and Innovation
1911 - 2011

Stevens[®]
Water Monitoring Systems, Inc.

Sharpshooter

The *Sharpshooter* is the official newsletter distributed to the members of the Oregon Society of Soil Scientists. Published quarterly by the Oregon Society of Soil Scientists. Send address changes or inquiries about membership to:

OSSS

P.O. Box 391
Corvallis, OR 97339

Website:

<http://www.oregonsoils.org/>

Advertisements

Reach more than a hundred soil science professionals with an advertisement in the *Sharpshooter*. And the price is right—whole page \$45, 1/2 page \$25, 1/4 page \$15, or 1/6 page \$10. All you need to do is provide a jpg file copy to the *Sharpshooter* editor by the deadline (first of the month – January, March, June, and November).

All articles and advertisements submitted are subject to room available basis.

News items

Remember all articles submitted to the *Sharpshooter* can be emailed to the *Sharpshooter* editor (see below) in most any text, http, or word processing format. Pictures are best in 300 dpi jpg format.

Member rates

\$50.00	Regular Member
\$55.00	Sustaining Member
\$30.00	Student Member
\$500.00	Lifetime Member

E
X
E
C
U
T
I
V
E

B
O
A
R
D

President: Markus Kleber

ph: (541) 737-5718
email: markus.kleber@oregonstate.edu

Vice President: Gabriella Coughlin

email: coughlig@onid.orst.edu

Past President: Teresa Matteson

ph: (541) 840-3616
email: tmatt0@rtdata.com

Secretary: Alicia Leytem

ph: (541) 908-0336
email: leytema@gmail.com

Treasurer: Shannon Andrews

ph: (503) 593-7434
email: shannonbandrews@gmail.com

Student Liaison: Kathryn Barnard

Portland State University
email: katbarnard@gmail.com

Westside Director: Mark Fery

ph: (503) 399-5741, Ext. 107
email: siltyclayloam@gmail.com

Eastside Director: Meghan Krueger

ph: (541) 221-2667
email: meghan.krueger@or.usda.gov

Newsletter Editor: Andy Gallagher

ph: (541) 745-7878
email: avg@redhillsoil.com

Membership Director: Alicia Leytem

ph: (541) 908-0336
email: leytema@gmail.com

Publications Administrator: Tracy Mitzel

ph: (541) 737-5712
email: tracy.mitzel@oregonstate.edu

Student Liaison: Gabriella Coughlin

Oregon State University
email: coughlig@onid.orst.edu



OREGON SOCIETY OF SOIL SCIENTISTS
P.O. Box 391 • Corvallis, OR 97339