

VOL. XXV, NO. 4 FALL 2012

What's Inside This Issue:

- President's Message
- Winter Meeting Info and Registration
- Summer Meeting Report
- Westside Notes
- Dates to Remember



James Cassidy, at the Drew's Road Overlook, sampling a piece of diatomaceous lacustrine mudstone on Stop 2 of the 2011 OSSS Summer Tour.

PRESIDENT'S MESSAGE

by James Cassidy

Hello OSSS members, old and new! It is truly winter here in the Willamette Valley; our summer tour to the Orifices of Oregon seems like ancient history (see the full story inside!) as I am in the throes of the end-game of a terrific OSU Fall term teaching the next generation of soils enthusiasts and professionals! The students are the future and I am so honored and humbled to have the good fortune to be the one who gets to expose them to what we all know to be the truth...where <u>it all</u> comes from and where <u>it all</u> returns – the SOIL!!! That is a FACT! No escaping it once you know - truly the master-link in what we know as REALITY!!! I have over 180 students this term and am slated to have over 200 next term (soils are hot!)! Can you believe that? Think of your intro to soils class – was it the thing that got you turned onto soils? I bet it was...that process is still happening, every term here at OSU—approximately 200 students get the low down on how it all REALLY works! Such a great job – I am lucky.

As you may recall, one of my goals when I was President last time (this is my second tour of duty, BTW!) was to focus on the next generation of soils professionals by getting as many students as possible involved in our society. My focus this go-around remains the same – get more students and young soils professionals involved in the OSSS, and grow our membership base and become a force for advancing our message – it's all about SOIL! But more about the students and how YOU can help later...

The first order of business is telling you about the upcoming winter meeting! Save the dates! - February 28 and March 1 (Thursday-Friday) - registration information and details about the meeting are in this Sharpshooter and on our website http://www.oregonsoils.org/. We have a great meeting shaping up and we are again joining forces with the Soil Quality Project spearheaded by Teresa Matteson. The meeting will again be in Portland but will be convened at the Edgefield Manor (super fun place for a meeting!). We have a block of rooms reserved until January 28, 2013, so please make your reservations now! The first day kicks off with Keynote Speaker, Greg Retallack, University of Oregon and his topic will be: Global cooling by grassland soils in the geological past and near future. The rest of day one is all field trips. The second day is all talks and activities. Lots of good food and drink, a speed-networking session, business meeting, "Toasting and postering" - a poster session during social hour, big-room talks and smaller sessions too! As requested by our members from last year's meeting to have more "soily" talks, we have responded! We will have an entire track of talks tailored especially for the OSSS members (in addition to the Soil Quality Network talks). Naturally, you will be free to go to whatever sessions you wish; however, I think you are going to like what we are cooking up. The OSSS track theme is "What's Hot in Oregon Soils – a snapshot of current soil research efforts by the next generation." We really want to put the focus on current research that the next generation of student soil scientists is working on. We are inviting all of the OSU and PSU Soils and Geo graduate students, as well as those students who have recently graduated and/or are recently employed to come and give us a snapshot of what they are all working on! I expect a dozen or so young participants, ALL of whom will either be presenting posters or giving short, back-to-back, 10- to 15-minute talks about their research or about the work they are doing at their new jobs. Come find out what the future looks like! We plan on contrasting this exciting, new, forward-learning work with a couple of legacy presentations from some

of our most distinguished soil scientists and to ask them to give the long view in context of the students' presentations. The aim is to create a dialogue between the previous and the present generations of Oregon soil scientists. We also intend on gathering as many undergraduate students interested in seeing what the OSSS is all about and add yet another dimension of future generations to the mix. But it won't mean a thing if you aren't there to put in your perspective. Don't miss this one!

Now, here are some ways that you can help make this meeting a great success. First, set aside the dates and commit to coming to the meeting(!) Second, get your room squared away (here's a link to McMenamins <u>http://www.mcmenamins.com/128-edgefield-room-rates</u>) and send in your registration, either by mail or register online at: <u>http://www.oregonsoils.org/?q=content/soil-quality-network-2013-registration</u>. Third, "Fund the Future!" Consider helping with an extra contribution to help pay for rooms and transportation for this exciting group of students. Professors with graduate students – send your students and ask them to participate and pay the \$75 special rate for grad students (a great value!). We want to create an exciting, stimulating, fun, scientific, cultural experience for these students. Help us do that by kicking in a little extra – don't worry, we'll make it easy on the registration form (!)

To the future! To the next generation!! To SOIL!!!

Thanks!

WINTER MEETING ANNOUNCEMENT

The Oregon Society of Soil Scientists, the Oregon Branch of the Soil and Water Conservation Society, and the Western SARE-funded Soil Quality Network will collaborate to host the 2013 Winter Meeting scheduled for *February 28 – March 1, 2013* at McMenamins Edgefield in Troutdale, Oregon. Concurrent sessions will be based on two themes: (1) *What's HOT in Oregon Soil Science*, and (2) *Soil Quality Network 2013: the relationship of soil quality to water quality and quantity.*

Keynote Speaker:

• Gregory J. Retallack, University of Oregon, Geological Sciences

Global cooling by grassland soils in the geological past and near future

Evidence from the fossil record supports the contention that agricultural soils are a globally significant force for carbon sequestration. Major innovations in the evolution of vegetation such as the Devonian origin of forests created new weathering regimes and soils (Alfisols, Histosols), which increased carbon consumption and sequestration, and ushered in the Permian-Carboniferous Ice Age. Similarly, global expansion of grasslands and their newly evolved, carbon-rich soils (Mollisols) over the past 30 million years may have induced global cooling and ushered in Pleistocene glaciation. Grassland evolution has been considered a consequence of mountain uplift and tectonic reorganization of ocean currents, but can also be viewed as a biological force for global change through coevolution of grasses and grazers. Organisms in such coevolutionary trajectories adapt to each other rather than to their environment, and so can be forces for global change. Some past farming practices have aided greenhouse gas release. However, modern grassland agroecosystems are a potential carbon sink already under intensive human management, and carbon farming techniques may be useful in curbing anthropogenic global warming.

SQN 2013 Guest Presenters:

• <u>T. Graham Shepherd</u>, Soil Scientist/Agricultural Advisor, BioAgriNomics Lt, New Zealand. Graham's Visual Soil Assessment is ultimately about farm management practices and highlights where the deficiencies are in the soil and pasture or crop, and the options available to farmers to raise their soil, plant and environmental scores.

Graham Shepherd will discuss soil quality topics that may include the following:

• Need for good quantitative measurements of soil/plant/animal/production and environmental performance, and how visual assessments can bring clarity to the interpretation of the data.

- VSA's ability as a quick and simple tool to assess and monitor the condition of the soil and the performance of the pasture/crop.
- o Interpretation of analytical data citing physical, chemical and biological examples.
- Soil fertility and smart farming it's more than NPKS.
- Pasture quality and its implications.
- Measures to help maximize water utilization by the plant (drought-proofing a farm).
- The VSA Environmental Scorecards. The scorecards provide an effective method to assess the environmental footprint of a farm by assessing whether a farm has a low, moderate or high potential to sequester soil C and emit nutrients and GHG gases into the environment.
- Key performance indicators (KPIs) an integral part of assessing and monitoring how your farm advisor and farm are performing.
- <u>Jeffrey P. Mitchell</u>, UC Davis, Kearney Agricultural Center, Extension Specialist, Vegetable Crops. Jeff actively participates in the Conservation Cropping Systems Workgroups to achieve resource-preserving and economically viable conservation agriculture systems in California. These systems contribute to greater production efficiencies, reduce negative environmental impacts, ease labor requirements, and result in more vibrant farm economies.

Jeff Mitchell - content pending

Day 1 – Field demonstrations will include Graham Shepherd's Visual Soil Assessment; other field demos pending.

Day 2 – Formal Presentations:

SOIL QUALITY NETWORK 2013

~ DRAFT MEETING AGENDA ~



OSSS Winter Meeting and Soil Quality Network 2013 February 28th and March 1st

Location: McMenamins Edgefield http://www.mcmenamins.com/Edgefield 2126 S.W. Halsey St. Troutdale, OR 97060 Local: (503) 669-8610 Elsewhere: (800) 669-8610 edge@mcmenamins.com

More information and online registration at http://www.oregonsoils.org/

Day 1: Thursday, February 28, 2013

Time	Session
7:00am	Registration/Continental Breakfast
8:00am	Welcome/Housekeeping – Moderator
8:15am	Opening Session – Keynote Speaker: Greg Retallack, University of Oregon Topic: Global cooling by grassland soils in the geological past and near future
9:15am	Break
9:30am	TOUR travel – OSSS vs. SQN 2013 (Presenters TBD???)
10:00am	Tour Stop #1 – Poor SQ site - EMSWCD property Farmer presentation & hands-on activities
12:00pm	Lunch – location TBD (provided with registration)
1:00pm	 Tour Stop #2 – Good SQ site – Fiddlehead Farm??? Farmer presentation & hands-on activities
3:00pm	Travel – Return to McMenamins Edgefield
3:30pm	Break

Blackberry Hall – Social Hour and Poster Session – Network with Task Groups 4:00pm OSSS Annual Meeting – All welcome! – Blackberry Hall 5:30pm Then Dinner/Evening on your own – continue network building!!! Day 2: Friday, March 1, 2013 8:00am Breakfast and Speaker (included in registration): Carrie Sanneman, Willamette Partnership Topic: Nutrient Tracking Tool 9:00-9:25am Soil Quality Network Website and Database debut 9:30am Concurrent Sessions (2 hours) **Oregon Society of Soil Scientists –** Soil Quality Network: SQ related to WQI and WQt Past & Current 9:35 - student #1 Graham Shepherd 10:05 – student #2 Assessments/Results Relate work to Water Quality and Quantity 10:35 - student #3 11:05 – 11:30 Soil Science Experience Speaks Outreach to Farmers – tools and strategies McMenamins Groundwater Project Tour – divide into groups led by PSU 11:35am students. PSU can have a poster in Thursday session. Each group visits one well and student guide presents work, sample design, data, etc. 12:15-12:45pm Lunch Fajita Buffett lunch (included in registration) with primary speed mentors Speed Mentoring – 2 more sessions x 15 minutes 12:45-1:15pm 1:15pm Break 1:30pm Concurrent Sessions (2 hours) **Oregon Society of Soil Scientists –** Soil Quality Network: Past & Current SQ related to WQI and WQT 1:35 – student #4 Jeff Mitchell Assessments/Results 2:05 - student #5 Relate work to Water Quality and Quantity 2:35 - student #6 3:05 – 3:35 – Soil Science Experience Outreach to Farmers – tools and strategies Speaks

3:40pm	Wrap-up Panel Discussion / Interactive
	Topic:
	Panelists:

4:15pm Adjourn

Don't miss the grand opportunity to continue the energy at the OSU Small Farms Conference, LaSells Stewart Center, Oregon State University!

Saturday, March 2, 2013 in Corvallis, Oregon. To register, visit

http://smallfarms.oregonstate.edu/2011SFC 2011 webpage (2012 not yet available).

Thanks to Our Meeting Sponsors! – full list TBD



One person can receive up to 14 CEUs during this event.

CCA – certified crop advisor CPAG – certified professional agronomist CPSS – certified professional soil scientist CPSC – certified professional soil classifier



Soil Quality Network 2013 and OSSS Winter Meeting February 28th and March 1st



Location: McMenamins Edgefield http://www.mcmenamins.com/Edgefield 2126 S.W. Halsey St. Troutdale, OR 97060 Local: (503) 669-8610



More information and online registration at http://www.oregonsoils.org/

Registration

Name		
Affiliation		
Address		
City	State	Zip
Email	Phone	

Please provide the following information:

- 1. Select your preferred track. (check one) 🗆 What's HOT in Oregon Soil Science? 🗆 Soil Quality Network 2013
- 2. Dietary preference (check all that apply) 🗆 vegan 🗋 vegetarian 🗋 gluten-free 🗋 dairy-free
- 4. Did you attend SQN 2012? (check one) 🛛 Yes 🗋 No
- 5. Do we have permission to **post your name and contact information** <u>online</u> as an attendee? (check one) 🗆 Yes 👘 No

Conference Registration (check one)	Fee
Current Member of	\$150
 SWCS membership number 	
 OSSS membership number 	
 Other: Professional Natural Resource Society and number 	
SQN registration + OSSS membership (renewal or new)	\$185
SQN registration + new SWCS membership	\$195
Non-member	\$200
🗖 Undergraduate Student	\$50
🗖 Graduate Student	\$75
Late registration: after February 8, 2013	\$225
\square Fund the Future (extra donation for student rooms and transportation)	\$

METHOD OF PAYMENT - Choose One. Payment must accompany application. All payments are non-refundable and must be made in U.S. dollars.

Check enclosed for above amo	ount - Check #	Mail check & registratio	n to:	OSSS	
Credit Card 🛛 Visa 🗆 AmEx	□ MasterCard			PO Box 391	
				Corvallis, OR 97339	
Card #	Expiration		Ver	ification Code	
Address (for card)	19 U	City & State	- 12 	ZIP	
Phone number	Email				

Signature _____ Date _____

Oregon Society of Soil Scientists & PO Box 391, Corvallis, OR 97339 & (503) 836-7645

This page is intentionally blank

SUMMER TOUR SUMMARY

by Veronica Nelson

ORIFICES OF OREGON – OSSS SUMMER TOUR 2012

OSSS Members and OSU students had the opportunity to join OSSS President James Cassidy and Professor Markus Kleber to tour the "Orifices of Oregon" in Central/Southeastern Oregon this past August 2012. For three days, we hiked, climbed rock formations like Big Horned Mountain Sheep, tested and identified soils, discussed rock formations, and listened to the experts explain away various geologic processes and land formation events that had to occur in order for us to marvel at their majestic beauty. Two teens who came along had a great time exploring the landscape and treasures that the landscape held, as experts such as Dr. McKay told tales to reveal the secrets that created the black glass obsidian of the Glass Buttes and the sunstones with their copper shimmer that dotted the land as if the soil contained diamonds as far as the eye could see. Each day, we would lunch and then dine together before settling in to our respective tents for a night's rest.

One of the teen's favorite memories was that even though a lot of the folks started the trip as strangers, with a common goal—to explore nature's wonders—the ease with which we all came together to explore and enjoy nature's beauty made for some great times and memories. Couple that with the great sites, great food, excellent company, and ending each long day at relaxing hot springs every night—well...it just did not get much better than this "hard-core" trip!

Stop Name	Date	Travel Time	Arrive	Time at Location	Leave
Bend (COCC Newberry Hall Parking Lot)	8/9/2012	117.71	7:00 AM	Start - 1 hr	8:00 AM
Glass Buttes	8/9/2012	2 hr	10:00 AM	3 hrs	1:00 PM
Riley Gas Stop	8/9/2012	30 min	1:30 PM	30 min	2:00 PM
Hart Mountain Refuge	8/9/2012	2 hr	4:00 PM	2 hrs	6:00 PM
Camp at Hart Mt Hot Spring Camp	8/9/2012	30 min	6:30 PM	13 hrs	7:30 AM
Sunstone Mine	8/10/2012	1 hr	8:30 AM	2 hrs	10:30 AM
Plush - Lunch Stop	8/10/2012	1 hr	11:30 AM	1 hr	12:30 PM
BLM Juniper Tree Cutting	8/10/2012	30 min	1:00 PM	30 min	1:30 PM
Abert Rim	8/10/2012	1 hr	2:30 PM	30 min	3:00 PM
Summer Lake Hot Springs Camp	8/10/2012	1 hr	4:00 PM	15 hrs	7:30 AM
Crack in the Ground	8/11/2012	2 hr	9:30 AM	1 hr	10:30 AM
Fort Rock	8/11/2012	1 hr	11:30 AM	2 hrs	1:30 PM
Hole in the Ground	8/11/2012	30 min	2:00 PM	1 hr	3:00 PM
Big Hole	8/11/2012	30 min	3:30 PM	30 min	4:00 PM
Lava Butte	8/11/2012	45 min	4:45 AM	30 min	5:15 PM
Bend	8/11/2012	25 min	5:45 AM	End	

The itinerary was planned by Soils Professor James Cassidy and is given in the following table:

We kicked off the trip with some coffee in Sisters before heading to our first destination at the obsidian covered Glass Buttes.

The Buttes had a rough rocky mounded appearance at the top as shown in the picture, with obsidian randomly scattered about and dried lichens coloring the rock in fluorescent yellows, greens and burnt umber.



Next we met with Keely López a wildlife refuge specialist at Hart Mountain National Antelope Refuge. She informed us about the history and native wildlife of the refuge. She also explained how the wild horses, which used to roam the refuge, had been relocated as they were not native species to the area and caused a lot of damage to the natural habitat at Hart Mountain. Hart Mountain is now a native antelope refuge. We ended Day 1 at the refuge soaking in the natural hot springs. One of the hot springs was more obscure and was simply a little "hole in the ground" surrounded by a more natural setting of grass. It was perfect for about four or five people and was relaxing after a long day. The other hot spring had a cement enclosure built around it. While the larger spring was nice, and one could still see the sky, there was something very sweet about the smaller spring being that it was in a more natural setting. During the Pleistocene epoch, some 10,000 years ago, the Warner Valley was once a lake 360 feet deep and covering 500 square miles.



The "bathtub ring" reminds us that this desert place was once a very wet place and could some day be this way again.



We drove a total of ~800 miles on this trip with a small mishap when a bird took a kamikaze dive into our windshield. Des-

perately trying to keep up with our small caravan of vehicles, we placed a piece of card-board in front of the departed spirit and just kept driving to our next destination, lunch in Plush—which was not very "Plush" at all!

On the way we would stop and marvel at various destination points such as Fort Rock and Crack in the Ground and our tour geologist, Daniele Mckay would fill us in on some of the historical background or Dr. Kleber would marvel at how a tree's root system could penetrate the basalt rock formations hundreds of meters to get at the life-giving water it needed to sustain its existence in the desert.



Sunstone mining, Abert Rim, and hot spring fun followed by meteor showers before bed!









Crack-in-the-Ground's cool, 2+ mile path was a destination favorite with many fun climbing opportunities for all. As we walked through the volcanic fissure, we were met with rock sidewalls illustrating historical events that created a large, porelike, semi-bubbled appearance in some regions where ages ago steam desperately tried to escape the molten rock that trapped it. The eruptions from the Four Craters Lava Field were accompanied by a slight sinking of the older rock surface, forming a shallow, graben-like structure about 3 kilometers wide and extending to the south into an old lake basin. Crack-in-the-Ground marks the western edge of this small, volcano-tectonic depression. The crack is the result of a tension fracture along a hinge-line produced by the draping of Green Mountain lava flows over the edge of an up-thrown side of the concealed fault zone[1].





Fort Rock was one of the final destination points. Recently, the age of Fort Rock has been estimated at 50,000 to 100,000 years. This coincides with a period of time when large pluvial lakes filled the valleys of Central Oregon and much of the Great Basin of the western United States. At its maximum, the water in Fort Rock Lake was estimated to cover nearly 900 square miles (2,300 km²) and was about 150 feet (46 m) deep where the Fort Rock tuff ring formed [2]; top view image complements of Wikipedia.

Many thanks to the team of folks that made this trip an enjoyable and memorable event! Here's a message from OSSS President, James Cassidy: "I especially want to thank those who joined us along the way – your time sharing your expertise made the trip amazing. If you wish to contact our experts, see the information below for Daniele Mckay, Keely López, Allan Makinson, and Steve Flock. Also, a special thanks to Nate for driving the second van (over 800 miles!)."

Tour geologist - Daniele Mckay

OSU Cascades Geology dmckay1@uoregon.edu

Hart Mountain speaker: Keely López

Wildlife Refuge Specialist Hart Mountain National Antelope Refuge PO Box 21 Plush, OR 97637 (541) 947.2731 Keely_Lopez@fws.gov http://www.fws.gov/sheldonhartmtn/hart/index.html

OSSS Past President 1997 (and mysterious hot spring barley-water provider!): Allen Makinson allenmakinson@msn.com

Sunstone mine guide: Steve Flock Lakeview BLM SFlock@blm.gov

Other contact email addresses: james.cassidy@oregonstate.edu, Ryan Stewart: treasurer@oregonsoils.org, markus.kleber@oregonstate.edu, ninalebomb@hotmail.com, azelask@gmail.com, verblek@yahoo.com, tisdelln@onid.orst.edu, pser461@ecy.wa.gov, dmckay1@uoregon.edu, Keely_Lopez@fws.gov, allenmakinson@msn.com, SFlock@blm.gov, veronicn1@gmail.com



OSSS 2012 SUMMER TOUR PARTICIPANTS

WESTSIDE NOTES

by Mark Fery

Greetings from the State Capitol! The Salem NRCS soils staff (myself included) has been busy in this first season of the initial mapping effort for the Willamette National Forest. The forest extends nearly 110 miles, from north of the city of Detroit to south beyond Oakridge on the western slopes of the Cascade mountains, encompassing nearly 1.7 million acres. We're on track to meet the 100,000 acre goal this year along with introducing at least 8 new proposed soil series: two mesic/udic Andisols, two frigid/udic Andisols, two cryic/udic Andisols, and both a mesic and a frigid udic Inceptisols with ochric epipedons.

In addition to the field mapping, 10 sites have been equipped with soil moisture and soil temperature monitoring equipment which records a reading every 30 minutes at various depths. The data will eventually help us confirm our field determinations of soil moisture and temperature regimes as well detect changes in, or long term stability of, climatic zones. In the meantime I will continue to faithfully trek to all 10 sites each year to perform the all important battery swap!

Don't forget to look in future Sharpshooter issues for updates on this project as well as other happenings on the West side. And please, if you have soils news from this side of the mountains, don't hesitate to share it with me. Send me an email at: siltyclayloam@gmail.com.

DATES TO REMEMBER



February 28 – March 1, 2013: Oregon Society of Soil Scientists Winter Meeting, McMenamins Edgefield, Troutdale, OR. Visit our events page for the latest information and registration: <u>http://www.oregonsoils.org/?page_id=5</u>

March 8, 2013: Washington Society of Professional Soil Scientists Winter Meeting, Wenatchee, WA. Check out their events page for the latest information: <u>http://www.ieway.com/wspss/wspss_events.html</u>

Spring 2013: 2013 National Collegiate Soils Contest, Platteville, WI. More information to come.

June 3-6, 2013: International Union of Soil Sciences, Global Soil Carbon Conference, Madison, WI; Group conference that focuses on soil C in space and time, soil C properties and processes, soil C in relation to soil use and management, and the role of soil C in sustaining society and the environment. Visit their web page for more information: <u>http://iuss-c-conference.org/</u>

August 1-3, 2013: Oregon Society of Soil Scientists, Secrets of the Soil Summer Tour 2013, Southern Oregon Coast, Harbor Bench, Old Growth, Cranberry Bogs and Sand Traps!, More information to come. http://www.oregonsoils.org/?page_id=5

November 3-7, 2013: ASA-CSSA-SSA International Annual Meeting, Tampa, FL.



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. Address changes or inquiries about membership to:

OSSS Box 2382 Corvallis, OR 97339

> E X E C

> U

Т

I V

Е

В

0

А

R

D

Website and email address: 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 disk and hard 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

\$ 30.00	Regular member
35.00	Sustaining member
10.00	Student member
300.00	Lifetime member

President: James Cassidy ph: (541) 737-6810 email: james.cassidy@oregonstate.edu Vice President: Teresa Matteson ph: (541) 753-7208 email: tmatteson@bentonswcd.org Past President: Joshua Owens ph: (503) 780-4912 email: joshua.m.owens@gmail.com Secretary: Alicia Leytem ph: (541) 908-0336 email: leytema@gmail.com Treasurer: Ryan Stewart ph: (541) 737-2291 email: ryestewart@yahoo.com

Westside Director: Mark Fery ph: (503) 399-5741, Ext. 107 email: <u>siltyclayloam@gmail.com</u> Eastside Director: Sarah Hash ph: (541) 383-4044 email: <u>sarahjanehash@gmail.com</u> Newsletter Editor: Jaimee Davis ph: (503) 808-4390 email: Jaimee.W. davis@usace.army.mil Membership Directors: Alicia Leytem, Ryan Stewart ph: (541) 908-0336, (541) 737-2291 email: <u>leytema@gmail.com</u>, ryestewart@yahoo.com Publications Administrator: Tracy Mitzel ph: (541) 737-5712 email: tracy.mitzel@oregonstate.edu



OREGON SOCIETY OF SOIL SCIENTISTS P.O. Box 2382 • Corvallis, OR 97339