SHARPSHOOTER
OREGON SOCIETY OF SOIL SCIENTISTS

VOL. XXII, NO. 3
SUMMER 2009

What's Inside This Issue:

PRESIDENT'S MESSAGE

by Daniel Moreno

Hey Society Members,

It looks like we have a great Summer Tour shaping up! I hope all of you will consider participating this year (Thursday, September 10, 9:00am–5:00pm) as it is going to be interesting, fun, and delicious! Transportation, lunch, and admission to the Oregon Garden are all included in the price!!! I really look forward to seeing all of you again. As you may recall, this year's Summer Tour theme is the Soil-Waste Interface: The Human Waste Stream Conundrum. We will be visiting two very different waste treatment facilities with different approaches and methods. The human waste stream in Oregon (and in many places in the US) is expected to increase in size and shape as population growth increases. Yet, the life expectancy of many of these landfills is less than 45 years. Will garbage travel far away? In the mean time, many natural treatment alternatives are starting to sprout due to the high cost of energy. Currently several pilot projects for natural wastewater treatment alternatives are being operated in several parts of the state.

The OSSS Summer Tour '09 will offer just a small sampling of the current old-stream waste management operations and the new innovative treatment alternatives. We will visit the large, state-of-the-art Coffin Butte landfill (currently the second largest in the state) as well as the Oregon Gardens. Check out how 1200-1700 tons of trash per day is managed, along with a leachate and gas recovery system. For our second stop, we will also have the privilege of having Renne Stoops as our guide for the Oregon Gardens. Renne has been with SPROut and has been involved at all phases of the project at the Oregon Gardens. SPROut manages the function and ecology of the Oregon Garden Wetlands and utilizes parts of the garden site as an outdoor laboratory for phytotechnology field research and demonstration. The tour will explore The Oregon Garden Wetlands, a 17+ acre site that accepts almost all of Silverton's municipal treated wastewater for further nutrient removal and temperature reduction through a series of natural treatment processes before the water re-enters the watershed at Brush Creek. These wetlands are incorporated into a botanical display garden, used for irrigation and education, managed to support wildlife, and the maintenance practices must carefully balance aesthetic concerns with treatment function and ecology. The tour will also explore SPROut's various on-site projects including: the greenroofs, the living wall, barley straw algae control research, raingarden, 'botanical burrito eco-reactor,' parking lot plantings, and the floating wetlands! Wear comfortable shoes for off-pavement walking!

Get on board the bus and ready yourself for the future! Our tour begins at 9:00am on Thursday, September 10, meeting on the OSU Campus at the OSU Compost Observatory. There is free parking on campus in the student lots. A light lunch and beverages will be provided around 12:00; bring a snack if you don't plan on having a big breakfast.

Whether or not you are traveling from afar, please consider joining us Wednesday evening (around 6:00pm) at Squirrel's Tavern in downtown, cosmopolitan Corvallis. They have great home cooking and a fabulous variety of northwest taps flowing! There are a number of lodging and camping options in the Corvallis area. The Benton County Fairgrounds has RV and tent sites with new showers for $15–25/night

(http://www.bentoncountyfair.com/oaks/rates.php) and there is the new Hilton Garden Inn adjacent to the OSU Campus if you're looking for comfort – 541-752-5000. Really, there are a lot of options; please contact me if you need some assistance.

AND PLEASE, REMEMBER TO REGISTER AS SOON AS POSSIBLE (see registration form in this issue of the Sharpshooter). Deadline for registration is August 30, if you want to be in for the super secret prizes we have yet to think about (!) Get on board the bus and let's get out there! See you then!

When you get into town, get on Harrison Ave. heading west (if you came in on Highway 34 from I-5, you're already on Harrison!). Take a left on NW 30th Street and then left again at Campus Way. Park in the any of the nearby student lots (green signs ONLY). Walk east around Nash Hall and past it (south side of building), look for the compost piles (south side of Agriculture and Life Sciences Building). Call if you are lost! Daniel – 541-737-2291. Here's a link to the OSU Parking Services campus map to help you find a parking spot. Remember: GREEN (student) lots only!

http://oregonstate.edu/facilities/transit_pkg/Parking%20Services%20Brochure%2003-05-09.pdf

WESTSIDE NOTES

by Steve Campbell

The Environmental Protection Agency (EPA) is involved in what is known as an Ecosystem Services Research Program in the Willamette River watershed (http://www.epa.gov/ecology/pdfs/esrp-factsheet-willamette.pdf). The EPA defines ecosystem services as the direct and indirect benefits we obtain from nature. These include:

- Clean air
- Clean water
- Food
- Clothing
- Recreation
- Products we use in our daily lives

(http://www.epa.gov/ecology/faq.htm)

The research in the Willamette River Basin will strive to quantify the area's ecosystem services and understand the effect man-made stressors have on those services. Understanding these interactions will help local decision makers understand the ecological costs and benefits of existing and proposed land management and growth policies. The study will focus particularly on maintaining and improving river conditions with targeted work on the area's riparian forests.

The EPA has selected the Panther Creek watershed in the Oregon Coast Range in Yamhill County as a location for developing and testing methods for quantifying ecosystem services on a smaller than basin-wide scale. Some of the research objectives include:

- Create an inventory of above- and belowground carbon stocks and to quantify the quality of the carbon stocks.
- Characterize the hydrogeomorphology of the watershed and develop a conceptual understanding of how water moves through or is retained in the watershed.
- Conduct a systematic analysis of the terrain in the watershed to identify the repeating components of the landscape. From this, develop a strategy for sampling soils in the watershed and characterizing their variation across the landscape.
- Develop a Soil-Landscape-Climate model for predicting the distribution of soil carbon in the watershed and ultimately, by a terrain-based extrapolation based upon the model, the east slopes of the Coast Range Mountains and foothills.
- Assess and quantify the effects of forest land use management on above- and belowground carbon storage, and on water quantity and quality (e.g. temperature, dissolved and particulate carbon, nutrients, and other components).

The Natural Resources Conservation Service (NRCS) staff in the Salem soil survey office is collaborating with the EPA on the Panther Creek ecosystem services project. Matthew Fillmore, long time OSSS member, is the Salem

soil survey office leader. They plan to sample 10 to 13 pedons to a depth of 2 meters across a variety of landscape positions in the Panther Creek watershed. Samples will be analyzed by the National Soil Survey Laboratory in Lincoln, Nebraska. The data from this sampling project will be used in the Soil-Landscape-Climate model discussed above. It will also be used in the effort to update soil survey maps and tabular data in the Oregon Coast Range.

EASTSIDE NOTES

by Jenni Moffitt

The following is the second installment of an update on the North Klamath Soil Survey. Part 1 of the update presented information about new survey boundaries for the North Klamath Soil Survey and information about the water table study being conducted in the Klamath Basin. This installment of the update presents the North Klamath Soil Survey's study on how diatomaceous earth and ash influence Ksat and permeability in soils.

Soil Survey Updates – Klamath & Lake Counties – March 2009 Part 2

By Chris Gebauer
Soil Survey Project Leader
North Klamath Soil Survey / Winema National Forest EUI

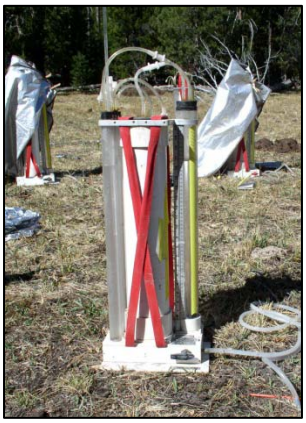
The NRCS soil survey crew and the USFS Terrestrial Ecological Unit Inventory (TEUI) crew are cooperating to complete a joint soil survey and TEUI of the Winema National Forest and the private lands in northern Klamath County.

Some highlights from the Ksat & Permeability Study portion of that project:

The National Soil Survey Laboratory in Lincoln, NE, assisted the crews in collecting in situ Ksat data at representative sites for each of 4 selected soils in Klamath Co., OR. The sites were selected to evaluate the diatomaceous and/or volcanic nature of the soil parent material. The combination of parent materials, geomorphic position, and soil structure in these soils appears to affect soil physical properties. The crews wanted to determine if conventional estimates of soil permeability classes and Ksat values were accurate. These sites/soils were previously sampled and conventionally characterized in 2005; Ksat data were collected in 2007. The data will help refine Ksat and permeability data published in the soil survey.

Participants included:
Chris Gebauer, Project Leader Soil Scientist, NRCS, Klamath Falls, OR
Ron Raney, Assistant State Soil Scientist, NRCS, Portland, OR
Jason Outlaw, Resource Soil Scientist, NRCS, Klamath Falls, OR
Eric Nicita USFS Soil Scientist - EUI Team, Winema Natl. Forest Regional Office, Klamath Falls, OR,
Philip J. Schoeneberger, PhD., Research Soil Scientist, NSSC, NRCS, Lincoln, NE

General Comments:
Ksat and Permeability (and their respective classes) are not synonyms. They have similarities, can under limited circumstances carry the same "units," and are used in similar ways but are intrinsically different parameters (see p. 2-68, Field Book for Describing and Sampling Soils, 2002). The tables below summarize the estimated Permeability Classes, estimated Ksat Classes, and the corresponding "measured" average in situ Ksat for a couple of the sites sampled. Permeability classes were estimated using USDA-NRCS MO-1 Technical Note #26 guidance. Ksat classes were estimated using National Soil Survey Handbook (NSSH) Exhibit 618-9 guides.



Amoozemeter equipment set-up at Chinchallo #2 site.

Soil properties that affect saturated hydraulic conductivity are distribution, continuity, size, and shape of pores. Observable properties related to soil pore geometry include: texture, structure, pore size, density, organic matter, and mineralogy. (NSSH, sec. 618-50)

The Amoozemeter method for determining in situ Ksat generally worked well in these soils. Diatomaceous materials presented some challenges but generally

worked well. The same cannot be said of very paragravelly, coarse pumiceous ashy layers containing high water tables. Conditions of saturated soil associated with water tables are not compatible with this method, and alternate methods should be used (e.g. the "well pump-out method"). All field indications suggest that such coarse soil layers (unless dense) move a great deal of water, very quickly.

Diatomaceous materials tended to have "measured" Ksat values that were lower than both estimated Ksat classes and estimated permeability classes. In the Kirk soil, which has no diatomaceous influence, measured Ksat values fit better (with the exception of the dense, 2BC horizon) with estimated Ksat classes and permeability.

Sample Results:

Site 1 Chinchallo Soil:

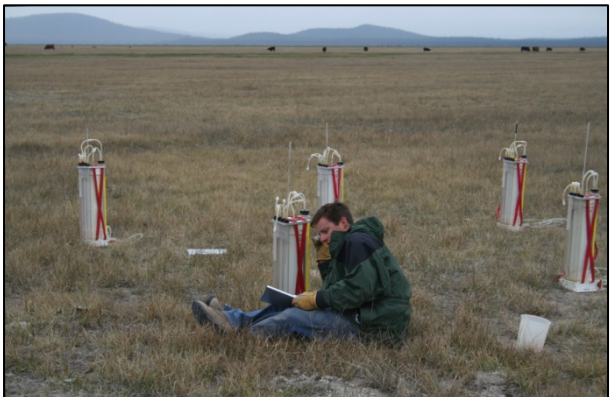
Horizons Evaluated			**Permeability** *(estimated)*		**Ksat** *(estimated)*		**Ksat "Measured"**	
Horizon	**Depth (cm)**	**Texture**	**class**	**in / hr**	**in / hr**	**class**	**in / hr**	**class**
A	20	diatomaceous silt loam	slow	0.06-0.2	0.142-1.417	mod. high	0.260	mod. high
AEg	45	diatomaceous silt loam	slow	0.06-0.2	0.142-1.417	mod. high	0.017	mod. low
Eg	68	diatomaceous silt loam	slow	0.06-0.2	0.142-1.417	mod. high	0.010	low
2Eg	115	PgrV ashy cos	very rapid	20-100	1.417-14.17	high	*N/A*	*N/A*

The in situ Ksat determinations ("measured" values) are within range of the estimated Ksat class for the A horizon. The Ksat for the AEg and Eg layers are at least an order of magnitude lower than the estimated class ranges.

Site 3 Kirk Soil:

Horizons Evaluated			**Permeability** *(estimated)*		**Ksat** *(estimated)*		**Ksat "Measured"**	
Horizon	**Depth (cm)**	**Texture**	**class**	**in / hr**	**in / hr**	**class**	**in / hr**	**class**
A2	20	medial fine sandy loam	mod. rapid	2.0-6.0	1.417-14.17	high	2.620	high
2Eg	50	PgrV ashy loamy cos	mod. rapid	2.0-6.0	1.417-14.17	high	2.342	high
2BC	75	PgrV ashy loamy cos	mod. rapid	2.0-6.0	1.417-14.17	high	0.137	mod. low

The 2BC horizon Ksat value is 2 orders of magnitude lower than the estimated Ksat class. These results initially appear anomalous, given that this horizon has the same texture (PgrV ashy loamy cos) as the horizon above it. However, the 2BC horizon is described by the soil survey crew as having massive structure, with moderate excavation difficulty (in contrast to low excavation difficulty and weak to moderate structure in the horizons above it). Consequently, this soil is tentatively being mapped as a "dense substratum" phase of the Kirk soil because of this denser layer. It does not meet the criteria for a densic horizon (it appears to be root limiting but is not root restrictive). The soil survey crew has observed this type of dense, subsurface layer all around this relict lake shore. After we collected the Ksat data, the soil survey crew downloaded the first installment of some piezometer data from a data logger installed at this site. The initial data from that piezometer appear to confirm that this 2BC layer does indeed slow down (though not stop) water movement through the soil profile.



The nearshore, relict lake terrace on a lake plain setting at the Kirk soil site, on the western edge of the Klamath Marsh. Chris Gebauer and Amoozemeters in operation showing the approximate spacing of replications. The typical pattern was 5 "replications" per layer arithmetically averaged to determine a representative Ksat.

OSSS SUMMER TOUR REGISTRATION

2009 Summer Tour
Willamette Valley – Soil-Waste Interface
Thursday, September 10, 2009
The Human Waste Stream Conundrum

Attractions to consume!

- Visiting 2 local, state-of-the-art waste treatment facilities:
  - Coffin Butte Landfill – Leachate/methane collection system. Check out how 1200-1700 tons of trash per day is managed.
  - Oregon Gardens – a 17+ acre site accepting almost all of Silverton's wastewater. These wetlands are incorporated into a botanical display garden, used for irrigation and education, managed to support wildlife.
- Transportation provided! – Air-conditioned tour bus!
- Gourmet lunch box and admission at the Oregon Garden – included!
- $50 per person; $25 for Students, $10 for children under 18
- It's summer in the Willamette Valley

Registration **must** be received before August 30, 2009 to receive a chance at super-secret prizes!

Please make checks out to OSSS and mail this form to:
Daniel Moreno, OSSS President 2009
OSU, 116 Gilmore Hall
Corvallis, OR 97331-3906

Call me anytime if you have questions, comments, suggestions...
Work phone: 541-737-2291
Email: daniel.moreno@oregonstate.edu

We're meeting at Squirrel's Tavern (Corvallis) on Wednesday evening (9/9) @ 6:00pm ! Be There!

Name(s)
Address
City
State and Zip
Phone
Email

Please register as soon as possible to guarantee a spot on the tour bus and to make sure we get all the needed supplies.

DATES TO REMEMBER

July 23-25, 2009: Washington Society of Professional Soil Scientists Summer Tour, Hydric Soil Session, Olympia, WA. For more information: http://www.ieway.com/wspss/wspss_events.html

August 9-12, 2009: North American Biochar Conference 2009 University of Colorado at Boulder, Wolf Law Building, 2450 Kittredge Loop Drive, Boulder, Colorado 80309. For more information: 2009 North American Biochar Conference

August 18 and August 19, 2009: There will be a Forest Slash to Biochar Demonstration in Glide, Oregon on August 18, and in Merlin, Oregon on August 19. For more information contact Jim Archuleta, Umpqua National Forest Soil Scientist at: 541-498-2531 or email at: jgarchuleta@fs.fed.us

September 10, 2009: Oregon Society of Soil Scientists Summer Tour "Soil-Waste Interface" tour begins at 9:00am on Thursday, September 10. Meet in Corvallis at the OSU Campus - Compost Observatory. For more information (after August 1): www.oregonsoils.org

Nov 1-5, 2009: ASA-CSSA-SSSA International Annual Meetings, "Footprints in the Landscape - Sustainability through Plant and Soil Sciences," Pittsburgh, PA. For more information: https://www.soils.org/meetings

February 14-18, 2010: ECA – International Erosion Control Annual Conference, Dallas, TX. For more information: International Erosion Control Annual Conference

March 21-26, 2010: 2010 National Collegiate Soils Contest, Celebrating the 50th National Soils Contest Anniversary, Lubbock, TX, hosted by Texas Tech University. For more information: contact Wayne Hudnall, 806-742-4490 wayne.hudnall@ttu.edu

MEMBER SPOTLIGHT

STAN WINTHER

As interviewed by Jaimee Davis (formerly Hammit)

- Where did you grow up?

On a farm on the north side of Eugene, Oregon.

- You said you went to UO and OSU. What did you study? How did you get into soils?

After graduating from OSU in Geology in 1972, I helped my Dad around the farm for a year. Then one day my Dad called the Ag. Department at OSU and asked what were the possibilities for me at OSU. They were very positive about my chances in Soils and the career that would come from it. So I became a Soils student and then a Crops student.

- Tell us about your experience in the Peace Corps. What were the soils like in Malaysia?

Because Malaysia is almost on the equator, most of the soils were considered to be Oxisols because of the heat and moisture.

Unlike the U.S. system of delineating polygons by sampling landscape features, the Malaysian mapper follows a grid system and samples the soil at regular intervals. Thus, my crew of laborers would cut a trail through the

jungle with a machete and a compass. Then they would dig soil pits at precise points whether or not that point was useful or not. As an officer, I was not allowed to do any physical work. Thus, a laborer would auger my holes for me. The funny thing was--most of the laborers were around 5 foot 4 inches tall whereas I am 6 foot 1 inch. Therefore, they cut branches to the height of their heads while I had to dodge those uncut limbs when I arrived 2 or 3 weeks later.

- You say that eastern Oregon soils are "terrible but interesting." Tell us what you mean by that. What is one of the most interesting soils you've mapped in eastern Oregon?

Most of the soils of Eastern Oregon are either too rocky or too shallow to bedrock. There are exceptions, of course. In Western Oregon, the soils are simply deeper. In Grant County, we have heavy clay soils combined with the rock and shallowness. The shallowness is the result of horizontal basalt flows. For the counties in the NE quadrant of Oregon, ash has covered many soils that instantly makes them deeper. The ash is derived from Mt. Mazama (Crater Lake). In the Bend area, the Mazama ash begins as a sandy loam texture, filters down to a loam in Grant County, and finally a silt loam in Wallowa County.

My most interesting soil is a soil called Silverlake (Fine, smectitic, frigid Calcic Argixerolls) located in Wallowa County between Enterprise and Joseph. It consisted of a silt loess over a dense clay over white, lime-covered cobbles over a duripan with sandy loam under the pan.

- Tell us about the short stories you write. How did that come about?

I have been writing short stories for the Sharpshooter for about 15 years. It began one day in Enterprise when I looked out the window at our parking lot and noticed that the soil conservationist's vehicles were pointed outwards and the soil survey's vehicles were facing inwards. I thought to myself, "Is there a point in time in which the conservationist must rip out of the parking lot to help a rancher with their soil problem?" I think not. From then on, there has been much to write about.

Hopefully most of my humor comes from the fact that most of soil surveyors are very hardworking, honest people who simply raise their families and then retire. They are never in the news and they live a quiet lifestyle. In my stories I have them playing spies, appearing in court, uncovering mysteries, and committing murder.

OSSS LAUNCHES NEW WEB SITE

by Cory Owens

We've moved! Starting August 1 - Check out OSSS online at www.oregonsoils.org!!!

Drum roll please…..The Oregon Society of Soil Scientists is leaving the dark ages of the internet and moving to a new website! We will now live online at www.oregonsoils.org. There were several goals that we started out with for the new site:

1. Members should be able to register for events (Summer Tour/Winter Meeting) online, and pay online.
2. Members should be able to pay dues online.
3. New members should be able to join OSSS online.
4. Improve communication between OSSS board and members.
5. Foster a greater sense of community among members.
6. Make it way cooler.

I am proud to say that we have achieved all these things! Justin Hartman (member since 2009) has spent countless hours creating the online interface to be able to safely and securely register for events, pay dues, and join. Vice President Cory Owens has diligently been learning the wordpress content management system to create the look of the site and develop content.

To get you going on your new OSSS web experience here are some helpful Q&A's:

When will the new site be up and running?

August 1, 2009!

How will I register for events, pay my dues, or update my account on the new site?

Justin has created the awesome interface called myOSSS. Like most internet sites members and guests can create a username and password that will give them access to the myOSSS environment. In myOSSS, you can register for events, update your contact information, put your name on the consulting list, and check the status of your dues, and more. You have to have a myOSSS account to register online for events and pay dues. You do not have to be a member to have a myOSSS account. You create a myOSSS account by going to the Join page, entering your information, selecting the appropriate option (new member, current member, guest, etc), and ta-dah, you are in!

The only people who have access to the database of your contact information are the webmasters (Vice President Cory Owens and website creator Justin Hartman) and Secretary Kurt Moffit. The most cost effective way to facilitate online payment was to subscribe to PayPal. The OSSS will never receive any of your payment information. When you pay online we will just get a message from PayPal telling us what you've purchased. For more information on the security of PayPal please check out www.paypal.com and select Security Center in the upper right hand corner. We are also including the standard option to pay via mailed check or in person at events for those who are not comfortable with online transactions.

How will the website improve communication from the board and foster community between members?

The first thing you'll see when you go to www.oregonsoils.org is the newsfeed. This is the place for up to the minute news items, announcements, and special info provided from the OSSS board and members. Anyone visiting the site can start posting comments on news items and discussion and feedback about features can begin. If you choose the Stay Connected page you can subscribe to the newsfeed and receive an email update every time a new item is posted to the site. I recommend this as a great way to keep up-to-date on OSSS activity.

Look for a message board and other community interfaces in the future.

How is the site cool?

There are so many ways the site is cool! To begin with the new logo designed by PICA artist Miles Johnson gives a modern update to our visual presence. There is all the standard OSSS information that was available on the vintage site including the constitution and bylaws, Sharpshooter archive, links, and contact information for the board. Webmaster Cory Owens is planning on expanding the OSSS content even further in the future. Keep an eye out for information on:

- Working toward your ARCPACS certification
- Photo Gallery
- History of the Society
- Possible online store for t-shirts and other OSSS swag

Plus any other great ideas that members come up with!

Thanks to the members for all their patience during the website overhaul. I know it was inconvenient to have the old site down. We hope that folks enjoy the new site as much as we've enjoyed putting it together for you.

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

Website and email address:
http://osss.peak.org
email: osss@peak.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 sent on 3-1/2" disk in most any DOS, MAC or ASCII format, along with a hard copy. In doing so, the *Sharpshooter* can get to you faster.

Member rates

$ 30.00	Regular member
18.00	Associate member
35.00	Sustaining member
10.00	Student member
300.00	Lifetime member

SHARPSHOOTER
OREGON SOCIETY OF SOIL SCIENTISTS

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