

VOL. XXXIV, NO. 1 WINTER 2015

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PRESIDENT'S MESSAGE

by Markus Kleber

Nobody who has experienced the Oregon coast's serene beauty will dispute its visual allure. Visitors hiking towards the shoreline often find that drifting, mysterious patches of fog in ancient forests can quickly recede to reveal breathtaking vistas of beaches lined with wild rocks. At the waterline, visitors might enjoy a blast of sea air and work up an appetite for hot clam chowder or other marine delicacies. What else can paradise be but a sampling of superb Oregon wines and diligently crafted beers after a day spent braving the elements face-to-face with Neptune, ruler of the waves?

But there is another side of the coastal region—a side that that only the initiated sees and appreciates. It takes a soil scientist to recognize that this interesting stretch of land has a combination of climate, geology, and vegetation so unique that it creates truly extraordinary soils. There are other places in the world that are wet and warm, but clorpt factors in this region stay within the narrow window that allows newly precipitated and highly

unstable minerals to remain in their immature state without being forced by desiccation and high summer temperatures to crystallize into more orderly, though much less fascinating, phyllosilicates. Additionally, small-scale variability in soil forming conditions along the coast can lead to a colorful spodosol in one place and a large amount of organic matter in another.

During the upcoming winter meeting we will celebrate the area's pedogenic diversity with an expedition to examine a coastal histosol, a non-allophanic andisol, and a spodosol—the latter of which is surrounded by younger, less mature siblings. We will prepare ourselves for this adventure with a series of talks explaining the region, its soils, and the factors responsible for the marvels before us. Because soils are the foundation of life, industry, and prosperity, we will hear about the ways that coastal soils are managed, including a bit of history and a peek into the future. All of this will happen in a creative, curious, and communicative environment with an emphasis on exploring the topics that interest OSSS members the most.

To participate, please join us for the 2015 OSSS Winter Meeting in historic Astoria, Oregon. Proceedings will commence with a gathering on Wednesday, February 25, at Buoy Beers in Astoria. Activities on Thursday the 26th will be indoors and feature the opportunity to debate, exchange theories, and peruse this meeting's poster session titled: "Recent Developments in Northwest Soil Science." Inspirational media will be available to facilitate communications. Friday the 27th will find us on the road to test theory in the face of reality.

A special "Thank You" goes to Shannon Andrews for arranging the logistics of the meeting. So bring your rain gear and a positive attitude towards humid ecosystems, and the reward will be a one-of-a-kind experience with the very real possibility of glorious coastal sunsets.

I look forward to seeing you all in February!

SPECIAL NOTE: We have skipped an issue of the Sharpshooter—Fall 2014 (issue #: Vol. XXXIII, No. 4) was not published. Please note this for future reference.

2015 WINTER MEETING SCHEDULE

SOIL DEVELOPMENT IN ISOMESIC ZONE OF NORTHERN OREGON COAST

Wednesday

8:00pm Informal Welcoming Reception

- Buoy Beer 8th and Waterfront
- Not paid for by OSSS Registration

Thursday

		Presenting
7:00	Registration	
7:00	Breakfast	
8:30	Opening Remarks	Markus Kleber
9:00	Tied to the Coast: Geomorphic Controls on Soil Development at the OR Coast	Jay Noller
10:00	Coffee and Tea Break	
10:20	Discovery of Non-allophanic Andisols in the PNW	John Baham
11:00	Organic Matter Influence in Andisols	Andrew Giguere
11:40	Break for Lunch Set Up	
12:00	Lunch - Café Rio	
1:15	Skipanon River Watershed Project: Triumphs and Frustrations	Bill Eagle
2:00	Managing a Precious Resource: Forestry in the Oregon Coast Range	Doug Maguire
3:00	OSSS Business Meeting	
4:00	Poster Session, Wine, and Heavy Appetizers	
6:30	Dinner at Bridgewater Bistro	

Friday

Saturday

7:00	Breakfast	
8:30	Opening Remarks - Site Descriptions	Markus Kleber
9:00	Load Up	
9:20	Arrive Cullaby Lake - Bergsvik Series Histosol	Bill Eagle
11:00	Load Up	
12:00	Arrive at Nehalem Bay State Park for Lunch	
1:00	Dune Entisol with spodic surrounding soil	Jay Noller
1:30	More developed Spodosol	
3:15	Load Up	
3:40	Arrive Oswald West State Park - Ascar Series Andisol	John Baham
5:00	Load Up	
5:20	Arrive at Cannon Beach for Sunset at 5:58	
	Not paid for by OSSS Registration - just fun trips with fun people	
	Breakfast	

9:00 Load Up for Golf Outing

10:00 Load Up for Problematic Inceptisol Architecture Issues in Astoria Tour

11:00 Load up for Tillamook Head Hike

To Register and Pay Online Please visit Oregonsoils.org

Oregon Society of Soil Science

Winter Meeting - Soil Development in Isomesic Zone of Northern Oregon Coast February 26-27, 2015

Holiday Inn Express, Astoria, Oregon

This is the time to renew your membership!							
	Thu	rsday	Friday	y	Mem	bership	
Register as a Lifetime OSSS member	\$	70.00	\$	70.00		_	
Register as an OSSS professional member	\$	70.00	\$	70.00	\$	50.00	
Register as an OSSS student member	\$	50.00	\$	25.00	\$	30.00	
Register as a non OSSS member	\$	120.00	\$	70.00			
I would like to sponsor a student (include name)						-	
I would like to donate to OSSS							
LATE REGISTRATION Professional (after Feb 1)						-	\$75
LATE REGISTRATION Student (after Feb 1)							\$25
Total							

Attendee's Name		
Street address		
City		
State		
Email address		
Phone number		
Your organization		
Your alma matter		

Circle any dietary restrictions	Gluten Free	Dairy Free	Vegetarian Vegan		
Please connect me with others in my area for carpooling	yes	no	area		
Activities not included in OSSS WM registration Expect me for the Welcoming Reception at Buoy Beer Weds Please include me in a golf group excursion on Saturday	yes yes	no no			
Please include me in a Tillamook Head Hike on Saturday	yes	no			
Please include me in an additional soils tour	yes	no			
Room Reservation InformationPlease book your own room at the Holiday Inn ExpressCost for a Riverfront room (per night + 10% tax)\$ 109.00Cost for a Standard room (per night + 10% tax)\$ 96.00Price good for Tues-Sat NightsYou can choose two queens or one kingWeds and Thurs Nights recommended204 West Marine Drive, Astoria, OR 97103http://www.astoriahie.com/index.html888-898-6222					
Please return Registration to: Shannon Andrews 513 NW 17th St Corvallis, OR 97330 503-593-7434					

WINTER MEETING 2015 – ABSTRACTS

Tied to the Coast: Geomorphic controls on soil development at the Oregon Coast Author: Jay Noller

The Coastal Mountains of Oregon are relatively low in elevation, but they are favored with copious winter rainfall and cool, frequently foggy, summers. Soil temperatures at 50 cm depth are above 8 degrees celsius in winter and below 15 degrees in summer, a rather rare condition called an "isomesic" temperature regime. The consequences for pedogenesis are obvious: high moisture availability throughout the year leads to both – high biomass (=soil organic matter) production and high mineral weathering intensity. Here I show how these baseline conditions are modified by geography and geomorphology.

Discovery of Non-allophanic Andisols in the Pacific Northwest Author: John Baham

Probably the most straightforward definition of an andisol is the one provided by Guy D. Smith: soils with large amounts of X-ray amorphous materials. However, the historic meaning of the term "Ando" soil (Japanese *An*, dark, *do*, soil) connoted acid soils derived from volcanic ash and having thick, dark horizons, tying the soil order to a specific parent material (volcanic ash). In the early '80s of the last century, evidence emerged that this condition would have to be reconsidered and that andisols can be made of all kinds of parent materials, to develop into a distinct category that is now called "non-allophanic" or "aluandic" andisol.

How meaningful are taxonomic subdivisions of Andisols for soil biology? Author: Andrew Giguere

While Andisols comprise a lower percentage of area than most other soil orders worldwide, they have a disproportionate influence on human activities. These soils are often located in regions with high population density and often have high agricultural productivity. Significant progress has been made in determining not only chemical and physical properties of these soils, but also in achieving taxonomic distinction. However it remains unclear if classifications of Andisols say anything useful about the biology of these soils. Differences in chemical and physical properties suggest that there should be implications for soil biology, but this field has seen little research activity to date. Here I explore the importance of biological activity in Andisols and discuss some hypotheses about how differences in chemical and physical properties between the major Andisol types may impact biology.

Managing a precious resource – forestry in the Oregon Coast Range Author: Doug Maguire

The forests of the Oregon Coast Range rank among the most productive native forests in the world, in part due to the depth, texture, and nutrient content of the soils in this region. Forestry practices most typically involve the clearcutting system, requiring a period of site preparation and regeneration that includes varying treatments of logging residues and aggressive treatment of competing vegetation, with very conscious efforts to minimize soil disturbance. Silvicultural regimes (release, thinning, fertilization) over the course of stand development vary by site type and productivity as determined by soils and climate, with soil water holding capacity the key soil factor, and precipitation regime and vapor pressure deficits the key climatic factors.

OH, THE SIGHTS WE'LL SEE, THE PLACES WE'LL GO (apologies to Dr. Seuss!)



Top: South View from Astoria Column

Right: Cullaby Lake and Wetland

Bottom: End of Basalt Flow at Ecola Park and Coast South of Oswald Park













Top Left. Spodosol at Nehalem Bay

Top Right: Non-Allophanic Andisol at Oswald

Left. Goethite and Clay Deposits at Oswald State Park

Bottom: Spodic Development near Nehalem Bay



BOARD POSITIONS UP FOR ELECTIONS

Get involved with your society – shape our future and help us move forward! There are several OSSS Board positions that will be up for election this winter meeting. If you are interested in filling a position or have a nomination, please email the secretary (Alicia) at secretary@oregonsoils.org. We will be accepting nominations up until the OSSS business meeting at the winter meeting, and all members are eligible to run for a position. Below is a listing of the positions that will be up for nomination, as well as the contact information for the current position holders in case you have questions about the position, the duties it entails, or anything else.

Position Treasurer Secretary Eastside Director Student Liaison (PSU) Student Liaison (OSU) Currently held by Shannon Andrews sh

Shannon Andrews <u>shannonbandrews@gmail.com</u> Alicia Leytem <u>secretary@oregonsoils.org</u> Meghan Krueger <u>yogameg@gmail.com</u> Lynn Hickerson <u>jlynnhickerson@gmail.com</u> Rachel Danielson <u>danielsr@onid.oregonstate.edu</u>

Thank you and we look forward to seeing you this February in Astoria!

UPDATE FROM THE SALEM MLRA SOIL SURVEY OFFICE

by Jason Martin, MLRA SSO Leader, Salem, OR

This past summer was an eventful time for the NRCS Soil Survey Office based out of Salem. Staff members Jason Martin, Dave Johnson, Brandi Baird, and David Rand worked hard to accelerate and improve the availability and quality of soil survey data in Western Oregon. The primary work focus was the initial soil survey of the Willamette National Forest, a joint effort with the US Forest Service and Oregon State University. The staff completed field mapping on 107,000 acres, for a total of approximately 260,000 acres completed to-date. The bulk of the work was done on the complex landslides of the western Cascades, including the HJ Andrews Experimental Forest. All data is currently in the progressive correlation process.

Not all work completed was in the Willamette National Forest. The NRCS finally completed the extensive revision of Yamhill County. Major changes were posted to Web Soil Survey for both the spatial line work and the tabular data that accompanies the soil mapping in the eastern part of Yamhill County. The survey now includes all lands within Yamhill County, and changes were made along the boundary of adjacent surveys in order to complete the joins. Questions or concerns regarding the change can be directed either to the NRCS Soil Survey Office in Salem or the State Soil Scientist in the Portland NRCS Office.

MEMBER SPOTLIGHT

by Lynn Hickerson, Student Liaison



I began my undergraduate education four years ago, certain that I would be a student and professional in the field of geology. I drove across country from the great state of Tennessee to specifically study Oregon geology. Geologic processes amazed me then and still do. I became a rock hound. Many field trips were had to southern, western, and northeastern Oregon. I quickly learned that this state is a giant playground for geologists.

As the photo to the left might indicate, I am not just interested in rocks. I began to study plants alongside my geology classes. One class - Soils and Geomorphology, taught by Dr. Scott Burns, sparked my transition to double major in Plant Biology and Earth Science. It was the best decision in my undergraduate career. His passion for all things related to soil is undoubtedly infectious, even to the hard rock geologists leery about studying soils. I was hooked and realized that the entire cycle from rock, to soils, to plants, and all the interactions in-between was what I should be exploring.

This is how I became introduced to OSSS. I went to the OSSS 2014 winter meeting to gain a perspective on soil professionals in Oregon and to explore what kind of research is being done. Yep, my mind was blown. These people love soil! This was something I decided that I would like to help advocate for, and so I became the next Student Liaison for PSU.

A new interest in research was created for me as well. This past summer I joined an REU program and stayed at The University at Buffalo, NY. The primary focus of the program was to allow for interdisciplinary research in ecosystem restoration. My project was to study the stress responses to drought of multiple genotypes of *Brassica rapa*. This was my introduction to studying plant physiological processes undergoing different environmental pressures. It was an incredible experience learning how to use a wide range of equipment and control various conditions in a greenhouse. In the end it was a successful study. My next step in this research will be using the skills I developed from the drought study to implement various soil factors. Understanding the plant and soil interface processes in agricultural practices is crucial for keeping the entire cycle – from rock, to soil, and to plant – healthy and thriving. One soils class and meeting others with similar admiration for our earth's soils has ignited my passion for what I am studying now and will continue to study in the future. See you at the next OSSS meeting!

SSSA 2014: THE GRAD STUDENT EXPERIENCE

Adrian Gallo (2nd year master's student, forest soils)

"I found the conference rather invigorating and a necessary breath of fresh air, particularly at this stage in my graduate program. It is great to step outside of a narrow research box and be reminded of other folks tackling problems that might provide direct insights into your research problems; conversely, you might be working on something that can benefit others and thus collaboration is born. The overall range of issues presented during the conference was daunting, but the insights and understanding of natural phenomena governing our field are truly exciting."





Rachel Danielson (2nd year master's student, soil microbiology)

"The conference provided a good perspective of the current 'hot topics' in soil science. I was part of a group of researchers who came together for a workshop on the use of a bioinformatic software package, highlighting the interest in furthering the understanding of the soil microbiome within the soil scientist community. After attending a variety of sessions pertaining to sustainable agriculture, microbial ecology, climate change, water resources, and landscape-scale heterogeneity, the message was clear: We need to understand microbial communities more deeply in order to determine how our environment functions and how we can potentially protect it."

Trang Nguyen (2nd year PhD student, soil microbiology)

"I really enjoyed the special talks on soil microbiology throughout the conference. In particular, some interesting work investigated the response of microbial communities to prolonged periods of drought. This work provided results that challenged my expectation that activity levels of the community would be low. The work suggested a need for us to reconsider how carbon cycles through the microbial community in dry regions."





Shannon Andrews (2nd year PhD student, soil chemistry and microbiology) "I went to an interesting talk by Dr. Sjoerd Willem Duiker from Penn State about a service learning project for undergrads that has impacted the lives of many youths in Kenya. The talk was in the Environmental Sustainability for Smallholder Farmers and was called 'Custom Haybaling as a Business Opportunity for Destitute Youth in Kenya.' The idea was to give homeless and orphaned kids on the streets in Kenya a way to provide for themselves. The dairy industry in Kenya is unique in that 70% of the milk is not pasteurized, homogenized, or even refrigerated. For this reason the dairies are located in the middle of population centers. The surrounding savannahs produce high quality hay for these dairies and can be sold for up to \$3.00 per 40kg bale, which is about equivalent to the cost of a living for one day in Kenya. The service-learning students from Penn State, along with the help of Dr. Duiker, were able to work with the Kenyan children that they gathered off of the streets to build and operate mobile hay

baling devices. They kids take a scythe and cut the dry grass and then carry it over to a wooden contraption to bale the hay. They are successfully charging landowners \$1/bale. They do not have to deal with any transportation or marketing of the hay, they just provide the manual labor and equipment. As a result the kids are each able to make \$4.00/day on average during the dry season. This is above the poverty line and gives the youths participating the ability to provide food and shelter for themselves and other members of their family as well as giving them a sense of purpose and teaching them business planning and execution. I was moved by this story and talked to him after the presentation. He said that there are opportunities for OSU to participate in similar kinds of programs."

Fumiaki Funahashi (4th year PhD student, plant pathology and soil microbiology) "The meeting was exactly 'meeting' people who I wanted to meet. They gave me great advice and tools that I can use for my soil DNA sequencing and model calculation work and pushed me a lot towards finishing my program."



DATES TO REMEMBER



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

...AND COMING IN THE SUMMER OF 2015 -



Date: TBD (Sometime late July, early August)

Time: Thursday afternoon till the break of dawn on Saturday

Basecamp accommodations provided by OSU Geology Dept. field station in Mitchell, OR.

Go to: <u>http://</u> <u>ceoas.oregonstate.edu/</u> <u>academics/field/geology/</u> <u>Geo495/location/</u>for more information





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Meeting contact: Gabby Coughlin, 702-301-8685 or gabriella.coughlin@gmail.com

Summer 2015 OSSS visits.... The Painted Hills!



Geology and Paleoenvironment of the Clarno Unit John Day Food Rock National Monament, Orag Kak A. Baumar Degry J. Busick II. J. Lander Degry J. Busick

Join us as we explore this paleopedologist's paradise by learning its prehistoric past from the man who wrote the book on the John Day Fossil Beds, Dr. Greg Retallack, along with in-depth discussions on its geology, wildlife biology, rangeland ecology and ONE OF A KIND SOILS!

Meeting-goers will participate in mini-mapping exercises alongside our legacy members and area rangeland specialists to get a feel for survey-style mapping and soil interpretations.

This meeting will also feature kid-friendly archeology digs and activities for all ages. So come one, come all to Wild and Wonderful Wheeler County this summer!



Highlights

- Paleosol guru, Greg Retallack
- Campfire dinner and starlit science
- discussions • Live music and dancing provided by PDX's
- finest: Joy Pearson and Jacob Miller
- Special commemorative OSSS brews on tap!

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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:

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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

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