# SHARPSHOOTER

OREGON SOCIETY OF SOIL SCIENTISTS

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# Otter Crest Revisited

## OSSS Annual Meeting

Mark Keller, outgoing OSSS President, put together an excellent program for our annual meeting at Otter Crest this year on February 17-18. The theme of the meeting was "Shake, Rattle and Roll – Nature's Coastal Rock Band." We were fortunate to have perfect weather for the meeting and the Oregon Coast was beautiful.

Our first speaker was Dr. Robert Yeats, professor emeritus from OSU and author of the book "Earthquakes in the Pacific Northwest." Dr. Yeats gave us a very interesting overview of earthquake hazards and their causes in the Pacific Northwest.

Heather Easterly, 2004 OSSS Scholarship recipient and Portland State University graduate student, followed with a presentation on her research on iron-bearing films found on ephemeral pools along the Oregon Coast.

***Herb Huddleston receiving his "key" award. That's one key he'll never lose.***

Dr. Curt Peterson, professor of geology at Portland State University, gave a presentation on his efforts to map prehistoric tsunami deposits in Seaside and Cannon Beach, Oregon. He also talked about his recent experience in characterizing deposits in Sri Lanka from the recent tsunami in the Indian Ocean.

Dr. John Baham, professor of soil science at OSU, and graduate student Nick Chambers presented information about the biogeochemistry of iron in coastal Oregon soils.

Following these presentations, the annual banquet was held. The OSSS Scholarship of $500 was presented to Kurt Moffitt, Oregon State University. The Good Scholarship, also $500, was presented to Shanna Bernal-Fields, also at OSU. OSSS also contributed $600 to assist the OSU Soil Judging team, and the high school soil judging program.

The evening program featured three speakers that had experienced the 1964 tsunami that struck the Oregon and northern California coasts. Tom Horning, engineering geologist, talked about his experience in Seaside. The tsunami

***harbor seals on the beach near Otter Crest***

(Continued on page 4.)

# President's Message

**Kathy Verble**
**OSSS**
**President**

Thank you again to Mark Keller for an interesting and informative OSSS Winter Meeting. We all enjoyed the great dry, sunny, warm days at the coast. Unfortunately, the entire winter and spring has been abnormally dry. We've had five months of below-average rainfall and low snow packs for most areas.

The recent heavy rains in late March and early April have given some reprieve and played a part in the delay of a recommendation by Oregon Drought Council to declare a statewide drought emergency. Steam flow is up but much of the rainfall recharged the dry soils, thus, did not end up in the reservoirs. Earlier in March Governor Kulongoski declared drought emergencies for Baker and Klamath Counties and the Oregon Drought Council recently recommended the drought status designation for Hood River, Sherman, Gilliam, Morrow, Umatilla, and Crook counties.

We will be able to experience Klamath water shortage on our summer tour this August in the Klamath Falls area. Conflicts between fish and farming interests are already on the rise. In addition, last year's decision to shift water to Klamath farmers at the expense of fish and wildlife has resulted in an investigation by the Inspector General of the U.S. Interior Department of water management in the Klamath Basin. The focus of the investigation will be on whether politics shaped last year's decision.

Some interesting data:

- Second driest water year on record
- Drought conditions exist in all 14 basins measured
- Snow conditions are approximately 44% of normal statewide
- Stream flow condition range in the 35-75 percentile statewide, but some streams are running as low as 14% of normal
- Columbia system is projected at 66% of normal stream flow
- Irrigation reservoirs contain about 50% of their normal supply
- Dalles Dam will be 21% below normal
- Salem's winter precipitation (Oct 1st – March 15th) was 11.17" compared to average of 30"
- Portland had 5 record setting temperature days in a row
- Farmers have started irrigating fields a month early
- Many farmers expect to lose up to 75% of crop yields
- May be looking at increase in power rates, more wildfires and a longer fire season, problems for municipal water suppliers, and a decline in fish numbers.

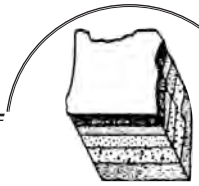
# Westside Notes

*by Dan Cressy*

### *Willamette Valley Clay linked to Thick Blankets of Mount Mazama Air fall*

Karin Baitis, an OSSS member and soil scientist at the Eugene BLM, and Michael James of Geoenvironmental Services in Eugene were conducting a study to understand the existing soil stratigraphy and unusual hydrochemical conditions of the West Eugene Wetlands in the southern Willamette Valley. In the process they may have solved the mystery of an anomalous 2 to 5-foot thick gray clay layer found near the surface throughout the Willamette Valley. The evidence points strongly towards the layer being composed of volcanic ash from the eruption of Mount Mazama (current site of Crater Lake 80 miles to the south east) 7700 years ago (6850 BP). This article is my attempt at a condensed version of a paper

(Continued on page 6.)



# Eastside Notes

*by Larry Thomas*

***First a brief update and introduction to your new Eastside Director.***

I started in the field of Soil Science by obtaining a BS degree in Soil Science and Biology from Cal Poly Pomona in 1975. My first field experience was as a soil scientist mapping soils on the Navajo Indian Reservation in Oct 1975. I moved on to the BLM in January 1977 to the Rawlins District Office to work on Coal Environmental Impact Statements. In April 1979 I moved again to the Prineville District as the District Soil Scientist just as the Brothers Soil Survey (Crook, Deschutes, and Lake Co) crews were finishing up their field mapping. In 1980 they finished up the South Fork John Day River and the District's public lands north along the Deschutes and John Day Rivers. I worked as the District Soil, Water & Air program lead until early 1990s. In the mid 1980s I became the District Hazmat Coordinator as a collateral duty, in addition to my soil science and hydrology duties. In 1991, I also added the duties of the District Noxious Weed Coordinator (1991-2002). Since then, because of the need for soil science involvement in the Rangeland Health assessments (standards and guidelines) on BLM allotments, my work as been divided between both standards and guidelines assessments and District Hazmat duties.

***Soil Survey Happenings on the East Side for 2005 field Season***

Big news in the Crook Co soil survey is the additional Ecological Site Inventory (ESI) Crew to work in the GI Basin area. Prineville BLM soil scientist Ed Horn will be paired with a range technician, and Kate Peterson BLM (NRS) will be working with Tom Clark (NRCS) and Dick Kern (NRCS) soil scientists on range site and condition class mapping keyed to the soil map units. Jerry Weinheimer, project leader at the NRCS office in Redmond, will be working with Kurt Moffitt soil scientist student trainee who won this year's OSSS scholarship presented at the winter meeting. Jerry has stated that Kurt will be getting work exposure to all facets of soil survey work during his stay this summer. The NRCS field review for the Crook Co Survey is scheduled for July 25-29, 2005.

The Grant Co soil survey will be focused in the North Fork John Day River area north of Ritter, Oregon. Jamie Kienzle, project leader and Stan Winther soil scientist will be looking at the mesic soils sites on scabland and mounds as well as mesic soil sites with ponderosa pines. The Grant Co. NRCS field review is scheduled for Oct 3-7, 2005.

In Klamath County, Sue Malone project lead for the North Klamath soil survey will be joined by Sara Hoffman, a soil scientist student trainee.

# Editor's Notes

*by Steve Campbell*

We're always looking for Sharpshooter articles. OSSS members are involved with many interesting projects related to soil science. Please consider sending me an article about your current activities or whatever else you'd like to share with the members.

# Dates to Remember

**June 12-16, 2005:** Western Society of Soil Science Meeting; Ashland, Oregon. Information available at http://www.asa-cssa-sssa.org/branch/western-soils/

**June 5-10, 2005:** Society of Wetland Scientists Annual Meeting; Charleston, SC Information available at http://www.sws.org/charleston2005/

**July 30 - August 4, 2005:** Soil and Water Conservation Society's Environmental Management Conference; Rochester, NY. Information available at http://www.swcs.org/default.htm

**August 25-26, 2005:** OSSS Summer Tour; Klamath Falls area.

**November 6 - 10, 2005:** ASA-CSSA-SSSA International Annual Meetings; Salt Lake City, Utah. Information available at http://www.asa-cssa-sssa.org/meetings/acs/

(**Annual Meeting** from page 1.)


***Mark Keller, outgoing OSSS president opening the winter meeting***

resulted in three feet of water in Tom's home and their car was swept up the street by the force of the water. Our own Kathy Clark, outgoing OSSS Secretary, talked about the effect of the tsunami in Neskowin. She recalled that the constant sound of the surf suddenly stopped as the water rushed away from shore. In a few moments the first wave hit, crashing over the seawall and covering their front lawn. Two more large waves followed and then it was over. Terry Thompson, Lincoln County Commissioner, worked on a fishing boat in 1964. He recalled coming into the Crescent City, CA harbor and seeing only one building standing – the others had been destroyed by the force of the tsunami.

***View of Otter Crest from the beach.***

The evening program was featured in an article by Lori Tobias in The Sunday Oregonian on February 20, 2005. What great publicity for the OSSS! (See the newspaper colage on page 7.)

The following day started with a presentation on the dune, loess and coastal terrace soils along the Oregon coast by long time OSSS member Dr. Frank Reckendorf. Frank provided assistance to many of the soil survey projects along

***Dennis and Pat Hutchison Beach Combers Otter Crest beach***

***Good Scholarship recipient Shanna Bernal-Fields on the left. OSSS Scholarship recipient Kurt Moffitt on the right.***

***Ron Reuter contemplating Johnson Creek landslide. Ed Gross in the background***


***Dr. Robert Yeats, speaker and author of "Earthquakes in the Pacific Northwest"***

***Georg Grathoff pointing out gray layers of fine grained vermiculite loess to Kathy Verble.***

the Oregon coast and is very familiar with the soils in the area.

Dr. Georg Grathoff, professor at PSU gave a presentation on his research concerning the weathering mineralogy in dunal soils near Newport, OR. He also talked about his research in northern Patagonia in Argentina.

Our last speaker was Dr. George Priest, geologist with the Oregon Department of Geology and Mineral Industry. He talked about the latest research findings on the Johnson Creek landslide. This landslide has had a major impact on Highway 101.

The meeting concluded with a field trip to Dr. Grathoff's sand dune study site and a visit to the Johnson Creek landslide.

***Jay Noller and Alan Niem looking at sediments on the beach at foot of Johnson Creek Landslide***

(**Westside Notes** from page 2.)

written by Karin and Michael on the subject and published in the Rolling Stone News (a newsletter of the US Government – Applied Geomorphology Consortium), Winter 2005. The complete research document is available at www.edo.or.blm.gov/planning/research.

The bodies of evidence pointing towards Mt. Mazama origins include:

1. There is no fluvial bedding evident in the clay layer which is massive with no reworking, suggesting the transport was not by water.

2. A loose matrix with minerals lacking clay coatings and iron oxide stains indicates that the deposits are quite young. Radiocarbon dating of a mega fauna site at another gray clay layer in the Willamette Valley produced a figure of 6850 BP. Less than ten thousand years of weathering was calculated to exist in the ten foot soil profile of the West Eugene valley floor.

> **"...they may have solved the mystery of an anomalous 2 to 5-foot thick gray clay layer found near the surface throughout the Willamette Valley."**

3. The minerals are those that are common in the "typical" pumitic Mazama ash including shiny hexagonal ilmenite and magnetite grains. The mineral suite that is more rhyolitic in nature is not the same as that produced by recent erosion of soils and weathered andesitic and basaltic volcanics transported by the Willamette or McKenzie Rivers. It is also very different from the rhyolite of the local geologic formations. The upper three feet of hillslope profiles are different from the valley floor soils (well drained silty brown soils) but they contain the same unique mineralogy.

4. Present is fractured quartz that is characteristic of a very explosive placement event.

5. The clay mineralogy is different from that associated with Missoula flood deposits that were once thought to be the origin of the gray clay. The clays are also different from those of a typical Cascadian source. The presence of kaolinite is surprising in such a young deposit and is indicative of hydrothermal alteration that would occur within a volcanic superstructure such as Mt. Mazama.

6. In West Eugene streams, the water has anomalously high electrical conductivity and a mix of ions that are very different from that of the Willamette and McKenzie Rivers and that mirror Crater Lake quality.

Mt. Mazama eruptions and caldera collapse were a series of catastrophic events lasting 200 years that would have affected human occupation in the entire region. Where the gray clay is present, no archeological lithics are found. The paleosols below the clay deposit are red and brown in color, suggesting that more oxygenated soils in a better drained landscape existed prior to the eruptions. This coincides with paleoecologic data from Beaver Lake in the mid Willamette Valley which suggest that the valley experienced a pronounced change in drainage throughout an 11,000 years record causing riparian gallery forests and wetland habitats to develop on the valley floor 7500 years ago.

The results of this study suggest that a fine-grained pyroclastic surge came into the Willamette Valley from Mt. Mazama. Within an hour of the eruption, fine particles would have begun raining down in a density sorted regime with heavier scoriacious silicate rich lithics (fragments) into the Eugene area and lighter pumice and glass that blew higher in the atmosphere raining down secondarily. Where the ash fell onto well-drained hillslopes, the ash weathered into Andisols, still present today. Where the ash fell into low lying areas that remained saturated for long periods of time, it weathered into an amorphous gel gray clay). The fine particle size of this ash deposit along with its smectitic and kaolinitic properties allowed it to weather into a massive clay that shrinks and cracks in the summer and swells in the winter forming an impervious subsurface layer resulting in the wetlands. A change in vegetative species on the valley floor, from drier oak and fir, to riparian and wetland species, the lack of archaeological lithics in this stratigraphic unit, and climate change around the eruption of Mt. Mazama, suggests that the eruption may have led to immense landscape and occupation shifts in western Oregon during the early to mid Holocene.

***The "urban interface where soil versus critters.***

# URBISOL CORNER

*by John Good*

Tribute to Bill Denison

I would like to pay a tribute to William "Bill"Denison who died recently after an extended illness. He was my graduate advisor in mycology (study of fungi) at OSU. When I was looking for advisors he had a sign on his office door that said COMPOST, and I knew then he was my man. When asked how to pronounce some of the mycological terms and names he would say 'with confidence.' He was a man of confidence, an international figure and founder of N.W. Mycological Inc.

Bill was always interested in teaching students about fungi of the world. He emphasised that mycorizal fungi is the rule not the exception, and the presence of lichens (symbiot of fungi and algae) was a good indicator of air quality. He was a good man.


***Lori Tobias attended our annual meeting banquet, and wrote this story in The Sunday Oregonian on February 20, 2005. OSSS's Kathy Clark was a featured speaker.***

## Sharpshooter

The *Sharpshooter* is the official newsletter distributed to the members of the Oregon Society of Soil Scientists. Published quarterly by J.B. Good, Inc. and the Oregon Society of Soil Scientists. Address changes or inquiries about membership to:

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

## News items

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***Coastal Rock Band members entertain soil scientists. (Story on page 1.)***

***Dues Reminder***

If you haven't paid your 2005 OSSS dues, please send them to:
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