SHARPSHOOTER
OREGON SOCIETY OF SOIL SCIENTISTS

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What's Inside This Issue:

President's Message

by Will Austin

Summer Vineyard Tour Finished, Winter Meeting Up Next

Greetings, members and guests!

The summer Vineyard Tour was attended by 47 members and guests. The pre-tour meeting began at the Evergreen Aviation Museum with a tour of aircraft, then moved on to Erratic Rock State Park for a brief geomorphic overview of the central Willamette valley, and finished with a dinner at the Oregon Hotel in McMinnville.

Cloquatro soil profile at Breyman Blueberry farm

The summer vineyard tour departed Western Oregon University after we received two very good presentations on the *Effect of Climate Change and Vineyards in Oregon* given by Dr. Patty Skinkis and the *Subsurface Geology of an Ankeny and Willamette Vineyard Transect* given by Dr. George Moore. We visited the Ankeny and Airlie vineyards. We had stops at the Breyman blueberry farm, Ankeny wildlife refuge, and the Kennel Family truffle and non-soil strawberry farms. Along the tour route we explored soil geomorphic surfaces above and below the maximum elevation of the historic Missoula flood deposits. Many thanks to Judy Haney for facilitating a very enjoyable lunch on the deck at Ankeny vineyard. Also many big thanks to Joe Olexa at Ankeny Vineyard and Mary Olson at Airlie vineyard for being our hosts.

Will talking about lab data sampling at Ankeny Vineyard

The winter meeting will be held in Newport. Meeting date is Thursday February 28th and Friday the 29th. Thursday will be a full day of guest speakers followed by a dinner banquet. Friday will be a half day of presentations with an afternoon field trip. Lunch will be provided both days. Full details and registration will arrive in December via a hard copy edition of the Sharpshooter. Theme for this year's meeting is the Urban-Rural Soil Interface. I have contacted a number of interesting speakers for this event. You won't want to miss them! More details in December.

Ready for another silent auction? I have started acquiring items for this year's offering. Remember, proceeds of the auction go toward our student scholarship and activities fund. If you have anything to contribute, let me know.

Don't forget to mark your calendars:

WINTER MEETING
FEBRUARY 28 and 29, 2008
NEWPORT

Westside Notes

by Dan Cressy

Long-term Studies to Better Understand Forest Management Effects on
Long-term Soil Productivity and Quality

Before beginning this article, defining the two terms in the title of the article would be helpful. Soil productivity has been the term most often used but as efforts to protect the soil resource are more directed towards considering the whole ecology, the term, soil quality, is being increasingly used in research literature.

Soil Productivity: The capacity of a soil to produce a certain yield of crops or other plants with a specified system of management.

Soil Quality: The capacity of a soil to function within ecosystem boundaries to sustain biological productivity, maintain environmental quality, and promote plant and animal health.

I am in my eighteenth year as a soil scientist at the Roseburg District Bureau of Land Management where timber is the largest program. I have constantly observed the legacy of past forest management on the soil resource, both on-the-ground and from studying old aerial photographs. Early practices of the 1950s through 1970s often caused high levels of mechanical soil displacement, compaction, surface erosion, mass wasting and organic matter consumption. The detrimental effects to soil quality are still evident today. Many of these effects even with amelioration will persist into the indefinite future. One common legacy where log skidding occurred is soil profiles of exposed, highly compacted subsoil. Where these subsoils are clayey, very little loosening of the compaction and topsoil development have occurred in the 30 to 50 plus years following harvest. Tilling the compaction would jump-start the recovery process but the time needed for soil formation to totally replace the topsoil and subsoil lost could measure in the hundreds, if not thousands of years in the more extreme cases.

As disheartening as it is to see the hits the soil resource has taken, I do take comfort in the much improved practices of today. Even so, today's best management practices cannot totally prevent new detrimental soil impacts. Also, there inevitably will be occasional episodes of operational fall down when all the best management practices are not fully followed (unseasonably wet soil conditions is the most common setting for operational fall down). Consequently, cumulative impacts over time will continue to be an issue. Several questions I have on the subject are:

- What will be the long-term effects of multiple timber harvests to soil quality and productivity?
- Will the best management practices and the soil's rest period between harvest entries be enough to at least maintain soil quality and productivity?
- At what level should thresholds be set for acceptable cumulative impacts when planning projects and monitoring results?

One specific concern of mine is the effect whole-tree yarding over multiple entries might have on the nutrient supply of soils with naturally low base saturation (base saturation is a measure of a soil's fertility). These soils are the inceptisols with the great-group prefix "dystr" and the ultisols.

Because of my interest in cumulative impacts I have started following a number of studies on the subject. The most ambitious one in terms of the number of participants and study sites is the North American Long-term Soil Productivity Research Program (LTSP). It is a cooperative program of the Forest Service that began in 1989 and has grown to include as cooperators the British Colombia's Ministry of Forestry and the Canadian Forest Service in Ontario. The goal has been to have sites covering the range of major soil types and climates. In the three western coast states there are sixteen core sites and twelve affiliated sites.

The study design is based on research that shows productivity declines on non-wetland sites are related principally to site organic matter losses and soil porosity reductions. At the core sites are nine plots that represent all possible combinations of three levels of compaction (none, moderate and severe) and three levels of organic matter removal (bole only, bole + crown, and total above-ground organic matter). Plots of ameliorative treatments

and best management practices have been added at many core sites to see how soil productivity can be restored or improved.

The study is designed to run from 60 to 120 years. Papers have been published on five year results of the oldest established sites (http://treesearch.fs.fed.us/pubs/22169, 22170, and 22171). Some results were surprising to me. For example, above-ground organic matter removal at the Sierra Nevada sites resulted in declines in microbial biomass and respiration, yet severe compaction treatments had no such effect, even on the clayey soil. One study (Hassink et al., 1993) was cited with a possible explanation. The study found that bacteria occupy only 0.4 percent of the surface area of available pores in sand, loam and clay soils. A 50 percent reduction in available porosity would still leave the majority of the surface area uninhabited. Another explanation offered was that predators might not be able to gain access to the now more abundant smaller pores, thus helping to stabilize the microbial community (Hansen, 1996 and van der Linden et al., 1989).

The recent Northwest Forest Council Tour (abbreviated itinerary given in the summer 2007 Sharpshooter on page 3) stopped at a LTSP affiliated site in the Umpqua National Forest. I plan to discuss this and the other projects on the tour in a future Westside Notes. Jim Archuleta, the Diamond Lake District soil scientist (541-498-2531; jgarchuleta@fs.fed.us), would be a good contact for information on the projects covered in the tour.

Another cooperative endeavor is the Long-term Ecosystem Productivity (LTEP) Program that establishes a plan for integrating research sites on the subject. In 1988 The Pacific Northwest Research Station initiated the research program in collaboration with the National Forests, Oregon State, the University of Oregon, Western Washington University, Washington State Department of Natural Resources and the Western Ecology Branch of the EPA. The research includes a 200-year experiment on four sites totaling 670 acres in western Oregon and Washington. The 200-year OSU study on rotting logs covered in the summer 2006 Westside Notes might be part of this effort (I was not able to verify if this was the case before submitting this article). The plan seeks to answer two basic questions:

- Does altering the pattern of succession through species manipulations influence long-term ecosystem productivity?
- Do the amount, timing, and distribution of organic matter left on-site influence long-term ecosystem productivity?

One subject being explored is the potential detrimental effects to the soil created by suppressing early seral species in favor of quick timber stand establishment (how commercial timber lands are generally managed). Curtailing the nitrogen fixing of pioneering species such as red alder and ceanothus is one effect (nitrogen fixation is an important process since most Pacific Northwest forests are nitrogen-limited). There are less obvious ones. Certain pioneering species such as red alder and lodgepole pine are known to accelerate the weathering of primary minerals. Consequently, curtailing them could eventually affect other nutrients' availability on certain soil types. One study is documenting successional relationships of mycorrhizal fungi to forest community dynamics. Another study is tackling the Biscuit Fire.

LTSP and LTEP have their own web sites. Another website I came across is SoLo (http://forest.moscowfsl.wsu.edu/smp/solo/). It is being developed as a computerized and networked collection of representative documentation on soil quality monitoring and long-term ecosystem sustainability. Emphasis is on National Forests of Region 1 (Idaho and Montana) but research publications covering other regions are being added.

New and Improved Web Soil Survey

by Steve Campbell

The USDA - Natural Resources Conservation Service recently released version 2.0 of Web Soil Survey with many new features and enhancements. Check it out at: websoilsurvey.nrcs.usda.gov. Here is a summary of the new features and improvements:

- Ability to navigate to section, township, and range in the Public Land Survey System.
- When navigating to an address, a red plus (+) sign is displayed at address location.
- Soil mapunit descriptions are available by clicking links on the legend mapunit names at the Soil Map tab.
- The transparency level of colors on interpretive maps can now be adjusted at the Soil Data Explorer tab.
- Topographic map backgrounds are now available, in addition to the original aerial photo background.
- Custom soil reports can now be created using the new Shopping Cart feature. The custom reports include soil maps, interpretative maps, and selected tables of soil properties and interpretations. The reports are in PDF format.
- You can now navigate to certain Federal land categories such as National Forests, National Parks, and Bureau of Land Management field offices.

Dates to Remember

November 4-8, 2007: Soil Science Society of America Annual Meeting; New Orleans, Louisiana. Information available at www.acsmeetings.org/2007.

February 20-24, 2008: National Society of Consulting Soil Scientists Annual Meeting; Myrtle Beach, South Carolina. Information available at www.nscss.org.

February 28-29, 2008: Oregon Society of Soil Scientists Winter Meeting; Newport, Oregon.

May 26-30, 2008: Society of Wetland Scientists Annual Meeting; Washington, D.C. Information is available at www.sws.org/2008_meeting/.

2008 OREGON SOCIETY OF SOIL SCIENTISTS SCHOLARSHIP and JOHN B. GOOD SCHOLARSHIP

The Oregon Society of Soil Scientists awards two $500 scholarships to deserving college students: the OSSS Scholarship and the John B. Good Scholarship. The OSSS has long offered scholarships to students who demonstrate excellence in scholarship and who have the potential for accomplishment in a natural resource management career. The Good Scholarship is awarded to one who meets the criteria for the standard scholarship *and* who has demonstrable community service experience. There is only one application form necessary; all applicants will be considered for both awards.

Past recipients of an OSSS Scholarship are not eligible to apply.

SCHOLARSHIP APPLICATION

DEADLINE: January 15, 2008

PLEASE TYPE OR PRINT IN BLACK INK

1. Name: _____
Last, First, Middle

2. Home Address: _____
Street City State Zip

3. Do you hold other grants or scholarships at present? __Yes __No
If yes, list type and amount: _____
_____

4. Schools attended:

A. High School: _____
Name of School Location

B. University or College: _____
Name of School Location

(Attach copy of transcript for all undergraduate work completed)

Major course of study: _____

Number of hours for all college level work completed: ___

Number of hours completed at present institution: ___

Overall GPA for all institutions attended: ___ GPA at present institution: ___

C. List all other educational institutions attended such as vocational schools, industrial schools, etc. Give dates of attendance and subject pursued:

_____
_____
_____
_____

D. If not presently enrolled, when and where do you plan to enroll?

_____
_____
_____
_____

PLEASE ATTACH THE FOLLOWING ITEMS TO YOUR APPLICATION:

1. A copy of all college transcripts.

2. A one-page letter describing your study plans, including subject matter area, your attitude toward conservation, your career plans, your financial need and any other significant points that you feel will be important in evaluating your application for this **scholarship**.

3. A resume that includes past and present employment, professional societies, civic organizations, honors or awards, position of leadership since high school graduation, etc.

LETTER OF REFERENCE:

One letter of reference should be emailed directly to the Chairman of the **Scholarship Committee** by January 15, 2008. Do not attach letter of reference to this application. Request that the person supplying the letter of reference mail his/her letter directly by email to:

Dr. Jay S. Noller, Chairman, Scholarship Committee, Oregon Society of Soil Scientists, jay.noller@oregonstate.edu

Name and Address of person supplying letter of reference:

_____
Name

_____
Office Address

_____
City State Zip

_____
Contact Phone E-Mail Address

RELEASE

"I hereby give permission to use the information provided on this application for recognition purposes if selected."

Applicant's Signature:_____ Date_____

CHECKLIST FOR OSSS SCHOLARSHIP APPLICATION:

- Complete Application
- Complete
    - Summary of all college transcripts (winner subject to verification)
    - Resume
- Have letter of reference emailed directly to Scholarship Chair (see below)
- Email application and attachments to the Chairman of the Scholarship Committee

Dr. Jay Noller, Chairman Scholarship Committee
Oregon Society of Soil Scientists
Email: jay.noller@oregonstate.edu

****DEADLINE for Application and Letter of Reference is January 15, 2008****
Applications received after this date cannot be considered. Applications that are incomplete or missing the letter of reference will not be considered by the selection committee.

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 and J.B. Good, Inc. Address changes or inquiries about membership to:

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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

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