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SHARPSHOOTER

OREGON SOCIETY OF SOIL SCIENTISTS

VOL. XIX NO. 1

Kah-Nee-Ta High Desert Resort & Casino O.S.S.S 2006 Annual Meeting March 2 – 3, 2006

by Kathy Verble

(Note: Details of the Winter Meeting are located on page 9.)

We will be heading to sunny central Oregon to the Confederate Tribes of Warm Springs, land of the Warm Springs, Wasco and Paiute Native American Tribes. Reservation lands extend from the summit of Oregon's Cascade Mountains and snowcapped Mt. Jefferson at 10,497 feet, east to the Deschutes River's elevation at 1,000 feet, with the Metolius River and Lake Billy Chinook forming the southern boundary.

The Kah-Nee-Ta High Desert Resort & Casino is better than ever with their recent renovation. The arrow shaped Lodge offers panoramic views of the high

desert, Warm Springs River, and

Cascade Moun-

tains. You can sit back and enjoy the Olympic-size hot mineral pool with a 140' water slide, the hot tubes, or visit Spa Wanapine for a spring-fed min-

eral soak, a native hot stone therapy message, or any one of their message and body treatments. You can head outdoors for hiking, biking, golfing, tennis, miniature

golf, or fishing. Try your luck at Indian Head casino, visit the arcade, shop the gift and sport shops, work out at the fitness center, or stroll around the Lodge to see the artwork that is build into and surrounds the resort. Visit their web sites at <http://www.warmsprings.com/> and <http://kahneeta.com/> for additional information.

During our field trip we will visit the Museum at Warm Springs. The impressive 25,000 square foot, \$7.6 million facility houses the single largest collection of Indian artifacts under one roof. The Museum represents a major achievement for the Tribes. The Museum also offers walking trails along Shitike Creek and an outdoor amphitheater for performances and demonstrations. Their web site is <http://www.warmsprings.biz/museum/>.

BOOK YOUR ROOM. A block of Lodge rooms at a 50% discounted rate have been reserved until February 15th. The room rate is \$69.00 for a 1-bed or 2-beds for single or double occupancy. There is a 4% Tribal service fee and a \$14.00 per person charge for additional occupancy. The same \$69.00 rate is guaranteed for Friday and Saturday nights with a two-night minimum stay required on weekends. Call Kah-Nee-Ta at 1-800-554-4786 ☎



PRESIDENT'S MESSAGE



Kathy Verble
OSSS
President

During the OSSS Summer Tour, we visited The Land of Fire in the Lower Klamath Basin. For the winter meeting our focus will be on the Land of Water & Food in the Upper Klamath Basin. Although, dammed and diked extensively for agriculture, the basin is still a place of wetlands and aquatic diversity. The shallow waters, rivers, springs and marshlands provide a stopover on the Pacific Flyway for bald eagles, ducks, geese, and swans on their fall migrations. It hosts the largest congregation of wintering bald eagles outside of Alaska and provides harbor for some fish, mollusks, and snails not found elsewhere.

The Klamath Basin lies in a transitional zone between the Cascade Mountains and the Basin and Range Province and encompasses about 1.0 - million acres. The basin is part of a composite graben formed by north to northwest trending normal faults and the basin-and-range-style faulting has divided the basin into a series of small sub-basins. The geology consists primarily of volcanic deposits with lowland fluviolacustrine deposits. The occurrence of hot springs and hundreds of warm water wells indicate

geothermal systems within the basin.

Klamath Lake is Oregon's largest lake and the source of the Klamath River, which is the second largest river in California. Three Oregon rivers, Wood, Williamson, and Sprague run into the Upper Klamath Lake. About 25% of the water supplied to Upper Klamath Lake originates in the Wood River valley due to the high density of artesian springs.

In the 20th century, the naturally shallow eutrophic lake became hypereutrophic resulting in water-quality problems. During the droughts in the 1990s and the water crisis in 2001, water quantity issues heightened. Water is needed for irrigation to about 240,000 acres of farmland, for fish species listed under the Endangered Species Act, and for protection of Tribal trust resources. In addition, concerns about ground-water quality and depletion are becoming more prominent.

In 2002, the Klamath Basin Federal Working Group was established by President Bush to find short and long term solutions to ensure adequate water resources for human and natural communities. Many agencies, environmental and conservation groups, industry, farmers, tribes, and community leaders are working together to reach a workable resolution to the competing demands for Klamath Basin water. Many joint partnerships have been made to advance long-term wetland restorations efforts. The Williamson River project and the Wood River Valley project are two of the most ambitious and major wetland restoration projects considered critical to the future health of Upper Klamath Lake.

During our annual meeting we will be informed about the issue relating to water resources, quality, conflicts, uses, and management; restoration projects and their ecological significance; exploration for new sources of water; and research and studies in the basin. ❁

" In 2002, the Klamath Basin Federal Working Group was established by President Bush to find short and long term solutions to ensure adequate water resources for human and natural communities. "





WESTSIDE NOTES

By Dan Cressy

(Note: My two year term as Westside Director is coming to a close. I encourage one of you westsiders who is good at networking and keeping abreast of what is happening here in Pacific Northwest on soils-related topics to come forward as a nominee. The main duties are to write quarterly articles for the Sharpshooter and to attend board meetings. The elections will be held at our winter meeting.)

Umpqua National Forest's Multitasking Subsoiling Equipment

In my fall 2004

Westside Notes I wrote about the equipment and techniques employed by the BLM Roseburg District to subsoil compaction (Subsoiling is a method of tillage that effectively shatters the com-

Subsoiling Grapple Rake (SGR)



action while causing little mixing of soil horizons. The shattering is accomplished by winged-shaped shoes that are attached to curvilinear shanks. As the shoes pass through the base of the compacted layer, they slightly lift and then release the compacted layer, causing it to shatter). For roads, a tractor-mounted self-drafting winged subsoiler and an excavator with winged subsoiling shanks attached to its buckets work in tandem to subsoil and to pull slash, other organic material, and some inoculating topsoil onto the subsoiled surface. For trails, only the excavator is used.

The Diamond Lake Ranger District of the Umpqua National Forest has developed its own subsoiling equipment with the primary objective of doing watershed restoration in a much more cost efficient manner and at the same time assuring satisfactory results. The efficiency results from multiple restoration and silvicultural tasks/projects being performed by a single piece of equipment with only one entry to the site. Most often targeted is legacy (old, existing) compaction caused by unregulated and regulated timber harvest and site preparation, by undesignated recreation, and by roads eliminated from the transportation system but whose imprint is left on the landscape.

There are three separate implements in the inventory, each

(Continued on page 11.)

Dues Reminder

Please check the address label to see if you owe dues for 2006. Dues can be sent to:

OSSS
P.O. Box 2382
Corvallis, OR 97339

If your mailing address is incorrect on the label, please e-mail the correction to Ed Horn at ehorn@azhawk.com.



DATES TO REMEMBER

March 1-5, 2006: National Society of Consulting Soil Scientists Annual Meeting; Marietta, Georgia. More information at <http://www.nscss.org/>

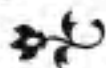
March 2 - 3, 2006: OSSS 2006 Annual Meeting, Kah-Nee-Ta, High Desert Resort & Casino.

July 9-15: World Congress of Soil Science; Philadelphia, Pennsylvania. More information at <http://www.colostate.edu/programs/IUSS/IBwcss/>

July 16-22: Post World Congress Tour: Pacific Northwest, USA. Contact OSSS member Duane Lammers at e-mail address diammers@fs.fed.us for more information. A description of the tour is also available at http://www.ext.colostate.edu/aes/tour/pp/ps/pre_post9.pdf.

November 4-8, 2006: Soil Science Society of America Annual Meeting; Indianapolis, Indiana. More information at <http://www.soils.org/meetings.html>.

// We were able to scramble up the pahoehoe chimney-like vents that were formed in the Devils Homestead basalt flow between 2,000 and 8,000 yrs. ago. //



OSSS Summer Tour In the Land of Fire

Our thanks for a great summer tour goes out to Jim McKeehan from the Modoc National Forest Doublehead Ranger District for being an excellent tour guide, to Julie Donnelly-Nolan of the Volcano Hazards Program, USGS for providing a wealth of information and putting together a great tour route, and to Kathy Clark for providing our wonderful lunch.

This year's summer tour was to north-eastern California at the Lava Beds National Monument located in the Tule Lake Basin and Medicine Lake Volcano. Geologically speaking, the Tule Lake Basin is an "extensional environment." Tectonic forces are slowly stretching the earth's crust, evidenced by the dropping of the basin floor between north-south-trending faults along the west and east sides of the basin. Prehistoric Tule Lake once extended much farther south before much of the former basin was filled in by lava flows from the north and east sides of Medicine Lake Volcano.

We started at the monument's visitor's center with a video

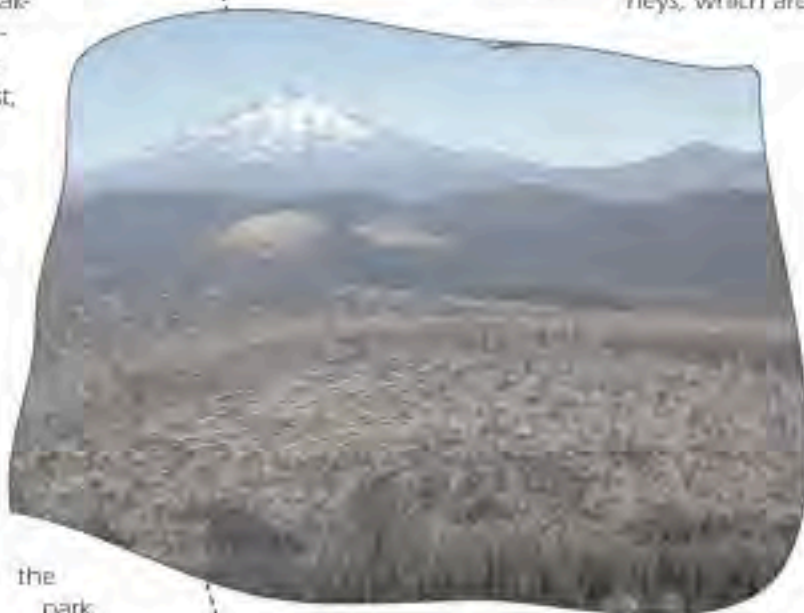
overview
of



Chris Gebauer and Seth at the entrance of a lava tube at the Fleener Chimneys stop, which is the origination of the 2.5 mile Devils Homestead lava flow.

the basin. Later in the evening some hardy souls hiked to the fire lookout on top of the butte.

Our next stop was at Fleener Chimneys, which are



the park. Our first tour stop was at Schonchin Butte cinder cone where we viewed the large andesite Schonchin Flow that extended north and west across

Holocene spatter cone vents located on Gillem Fault. We

were able to scramble up the pahoehoe chimney-like vents that were formed in the Devils Homestead basalt flow between 2,000 and 8,000 yrs. ago. We were also able to view the Callahan andesitic aa flow (the youngest at the park) that erupted from Cinder Butte approximately 1,110 years ago.

We then left the national monument and met

View of Mount Shasta from the Little Mount Hoffman Lookout with the Little Glass Mountain Lava Field in the foreground.

(Continued on next page.)



(Summer Tour: from previous page.)

our guide, Jim McKeenan from the Modoc National Forest. Jim took us to several destination points along our tour of Medicine Lake Volcano and was an excellent guide and source of information. Our first stop was at Mammmoth Crater (south of the monument). This broad basaltic shield



Mark Keller and Ed Gross (holding up a lava tube) at the Fleener Chimneys stop Lava Beds National Monument.

erupted about 30,000 years ago. The pit crater and vents produced the basalt and basaltic andesite lava that covered 2.2 miles³, including 70% of the monument, and formed most of the monument's lava tubes. At 400 feet deep, the crater was awesome!

Our next stop was on the upper north side of the volcano where we were able with the help of flashlights to peer down into 15-foot tree molds. The molds were cast when very fluid basalt flowed around the trees (radiocarbon age of 10,200 B.P.).

We continued on to the north rim of the caldera where we could view the Medicine Lake Glass Flow (approx. 5,000 yrs calibrated age) that covers 570 acres with grey dacite. Our lunch stop was at Med-

icine Lake, which is located within the 4.5 by 7.5 mile central caldera. The lake sits in a bed of glacial clay that prevents the water from draining away. Mark Keller took an opportunity to take a swim after lunch.

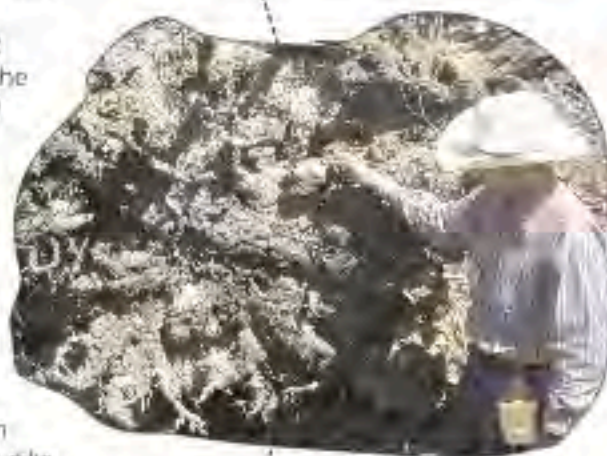
We proceeded to Little Mt. Hoffman, which is one of the many cinder cones. Directly below to the west we viewed the late Holocene Little Glass Mountain rhyolite flow (1100 yrs. BP). From this spectacular viewpoint, one could see Lassen Peak to the south, Mt. Shasta to the west, Mt. McLoughlin and Mt. Scott to the north, and Dome of Glass Mountain to the east. We drove along the south edge of the Hoffman Flow that is comprised of two steep-sided viscous lavas (1200 yrs BP). Then we walked out onto Glass Mountain, which is comprised of the youngest lava flow at the volcano (900 yrs BP) and covers 4,210 acres. This Holocene rhyolite flow erupted from three of the thirteen vents along a dike.

The rhyolite varies from black aphyric obsidian to pumiceous, lighter-colored samples.

We looped back to the southeast part of Lava Beds National Monument where we stopped at Valentine Cave. This cave was formed from basaltic andesite flows from spatter vents on the north flank of Medicine Lake Volcano (10,850 yrs. BP). The cave

had pahoehoe floors, lava pools, lava pools and cascades, lavacoles, dripstones, lava benches, and mid-stream pillars. The cave extended eerily back for quite a ways. Three hardy souls (Ed Horn, Ron Reuter, and I) ventured back on all fours to the extent of the cave.

Several of our members were able to stay and visit additional sites in the Lava Beds National Monument including a guided tour of Captain Jack's Stronghold. I have several published papers from Julie Donnelly-Nolan on the volcano area that will be available at the winter meeting for anyone interested in planning a visit to the volcano. ☼



John Good pointing out shallow soil root features in a blow down pine tree (lodgepole?) at the lava cast forest Lava Beds National Monument. The roots become polished nodules when they rub against the rock as the tree rocks back and forth in the wind

Land of Water and Food

*March 2-3, 2006
at Kah-Nee-Ta*

OSSS Annual Winter Meeting TENTATIVE AGENDA

Wednesday, March 1

6:30 – 8:30 No Host Social – Appaloosa Lounge

Thursday, March 2

8:00 – 8:45 Registration and Continental Breakfast

8:45 – 9:00 Greetings and Introduction

9:00 – 12:00 Presentations:

USGS & OWRD Upper Klamath Basin Ground Water Study

Kenneth Lite, OWRD

NRCS Diatomaceous-influenced Soils in Klamath County

Chris Gebauer, NRCS

Diatomaceous Influences on Soils in the Klamath Area Water Table Study

in Klamath County Soil Survey, Northern Part & Winema Nat. Forest EUI

Chris Gebauer, NRCS

A New Understanding of the Upper Klamath Basin Geological Framework:

A Work-in-Progress

Margaret Jenks, DOGAMI

Williamson River Delta Preserve Project

Mark Stern, The Nature Conservancy

NRCS Web Soil Survey

Steve Campbell, NRCS

Nutrient Loading of Surface Waters in the Upper Klamath Basin

Kenneth Rykbost, Klamath Experiment Station

Klamath Reclamation Project

Wood River Valley Restoration Project

NRCS Sprague Hydrologic Modeling Study

12:00 – 1:00 Lunch

1:00 – 3:00 Presentations continued

3:00 – 3:30 State Based Soil Science Licensing & Certification

Luther Smith, SSSA Executive Director,

Certified Professional Soil Scientists/Classifiers

3:30 – 5:00 OSSS Annual Business Meeting

7:00 – 9:00 Banquet

Friday, March 3

8:00 – 9:00 Registration and Continental Breakfast

9:00 – 12:00 Presentations continued

12:00 – 1:00 Lunch

1:00 – 5:00 Field Trip to the Museum at Warm Springs

Land of Water and Food

March 2-3, 2006

Kah-Nee-Ta High Desert

Resort & Casino

Reservations 1-800-554-4786

Web site <http://kahneeta.com/>



2006
Winter Meeting
Registration Form

Name: _____

Title & Organization: _____

Address: _____

City / State / Zip: _____

Telephone / email: _____

Fax: _____

Early Registration Deadline: February 22* Please register early. (We need head count for meals.)

Type of Registration:	Regular Member	Retired Member	Member Spouse	Student Member	Non-Member	Total
Full Meeting**:	___ \$90.00	___ \$75.00	___ \$45.00	___ \$30.00	___ \$100.00	_____
Thursday:	___ 50.00	___ 40.00	___ 30.00	___ 20.00	___ 55.00	_____
Thursday Banquet:	___ 15.00	___ 15.00	___ 15.00	___ 15.00	___ 15.00	_____
Friday w/Field Trip:	___ 50.00	___ 40.00	___ 30.00	___ 20.00	___ 55.00	_____

Yes, I would like to co-sponsor student attendance to the meeting with a donation of: _____

* Late Registration Fee after February 24: \$10.00 _____

Total _____

** Full Registration includes Continental Breakfast both days, Lunch on Thursday, and the Field Trip on Friday. The Banquet cost is not included in the registration, but part of the meal cost is subsidized by the Society.

If you would like to join our society, please see our web site at <http://oss.peak.org/>.

Yes, I would like to take this opportunity to join the Oregon Society of Soil Scientists.

My application for _____ membership and my dues are enclosed for: \$ _____

Completed registrations should be returned to:

OSSS

C/o Kathy Verble

7673 Jackson Hill Rd. SE

Salem, OR 97306

Officer Candidate Brief Introduction

Will Austin

Will has a B.S. in Earth Science from Western Oregon State University and a M.S. in Soil Science from Oregon State University. He is employed as the Laboratory Director of OSU Central Analytical Laboratory and does private consulting as Will Austin PNW Soil, Inc. Many of us know Will as the current coach for the OSU Soil Judging team. Will's is also a member of SSSA, Western Society of Soil Science, and Oregon Onsite Waste Water Association.

Ballot for Election of Officers

Please circle or write-in candidate of choice, and mail to:

OSSS

C/o Kathy Verble

7673 Jackson Hill Rd. SE

Salem, OR 97306

Vice President - Pres. Elect

Wil Austin

or Write-In:

Westside Director

(none filed)

or Write-In:



USDA Announces Web Soil Survey

Internet-based System Allows Users Access to Soil Survey Information

Agriculture Secretary Mike Johanns announced the launch of a USDA Web Soil Survey site on August 16, 2005. This web site is designed to provide secure public access to the national soils information system. This site is a simple yet powerful way to access and analyze soils data that contributes to every aspect of public and private land use and development.

The website has been designed with three easy to use features - Define, View and Explore, and operates much like internet sites that provide locator and directional information. When viewers visit the web soil survey, they are asked to "Define" a geographic area of interest by selecting a state and county or just by highlighting an area. Once a location has been defined and projected on the screen, the viewer has the choice to print the map and related information, save it to their hard drive or download the data for use in a geographic information system (GIS).

The viewer also can "Explore" the designated location for soils data for specific properties and interpretations. This flexibility provides the viewer an opportunity to build a customized report that addresses the viewer's individual needs. Information can be delivered in a variety of formats to include print, CD, DVD or other media.

To view the website go to <http://websoilsurvey.nrcs.usda.gov> ☛

ANNOUNCEMENTS

Soil Data Viewer 5 Software is Released

Soil Data Viewer is a tool built as an extension to ArcMap geographic information system software that allows a user to create soil-based thematic maps and reports. The application can also be run independent of ArcMap, but output is then limited to tabular reports.

The soil survey attribute database associated with the spatial soil map is a complicated database with more than 50 tables. Soil Data Viewer provides users access to soil interpretations and soil properties while shielding them from the complexity of the soil database. Each soil map unit, typically a set of polygons, may contain multiple soil components that have different use and management. Soil Data Viewer makes it easy to compute a single value for a map unit and display results, relieving the user from the burden of querying the database, processing the data and linking to the spatial map.

Soil Data Viewer contains processing rules to enforce appropriate use of the data. This provides the user with a tool for quick geospatial analysis of soil data for use in resource assessment and management. Software and user guides for Soil Data Viewer 5 can be downloaded at <http://soildataviewer.nrcs.usda.gov/>. ☛

New OSSS Members

Please welcome our new members who have joined OSSS over the past year.

Dannelle Aleshire Mount Angel

Sarah Hoffman Corvallis

Shanna Bernal-Fields Corvallis

Chad McGrath Portland

Chris Gebauer Klamath Falls

Rose Herrington Woodburn

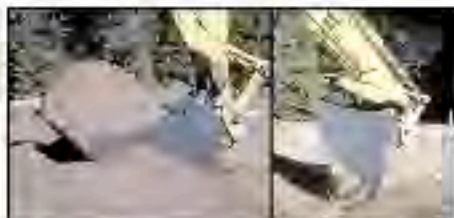
Georg Grathoff Portland

Darlene Southworth Ashland

(Westside Notes: from page 3.)

being excavator attachments with their own separate niche in watershed restoration. One implement is the Subsoiling Grapple Rake (SGR). The SGR was specifically created for prescriptions that combine brush disposal and grapple piling with the subsoiling needs of

Subsoiling Excavator Bucket SEB



newly created or legacy compaction. Just as in the Roseburg BLM operations, the slash and other organic material can be placed as effective ground cover over subsoiled surfaces. One neat feature is a coulter blade that is

“ The SBCH was able to meet the objectives of brush release, precommercial thinning, wildlife enhancement, fuels reduction and site productivity in a single project for \$530/acre compared to \$1750/acre using separate equipment. ”



attached above both subsoiler shanks that can cut through subsurface obstructions such as roots or grass sod on the surface.

The second implement is the Subsoiling Excavator Bucket (SEB). It is similar in design and function to the Roseburg BLM's bucket. It was developed for total

road obliteration prescriptions, particularly, midslope roads that can impact fish-bearing streams. The tasks that can be completed by the SEB in addition to subsoiling are culvert removal, waterbar installation, out-sloping of the road prism, removing fill from small and large draws, and returning fillslope material to near original slope position. In some small jobs the need for a dozer may be eliminated.

The third implement is the Subsoiling Brush Cutter Hitch (SBCH) that is mounted to the excavator arm. The brush cutter that originally attached to the excavator arm is now mounted to the SBCH. The SBCH-brush cutter assembly is designed for forage enhancement, fuels reduction and pre-commercial thinning of trees. A coulter blade is also attached above both subsoiling shanks.

All three implements give versatility and results that a tractor-mounted subsoiler can not match in ameliorating compaction. They have the surgical ability to subsoil spots the tractor will miss and to avoid spots where subsoiling may not be desirable, for example, near the base of tree boles where large tree roots can be damaged. They are more maneuverable at avoiding obstacles such as boulders. They create a broken pattern of tilled soil at the surface, eliminating the continuous furrow associated with tractor subsoiling. This is ideal for water infiltration in forested environments and can prove beneficial on the steeper grades or conditions with a heavy clay horizon present. Tractors are unable to place organic material on top of a subsoiled surface. Such placements by SGRs and SEBs have been shown to maintain aggregate stability and buffer the soil from moisture and temperature fluctuations. This can allow increased natural regeneration and maintenance of seedling vigor.

On the flip side, the cost tractor of subsoiling is often the lowest available since tractors are considerably more efficient at getting a subsoiling project done. However, the cost savings of multitasking with the excavator attachments is considerable. The SGR costs about \$200 to \$350 per acre to operate. On one multi-tasking job the cost savings using the SGR was \$490/acre when compared to doing the jobs separately. In a road decommissioning, in-house work using the SEB saved \$40,000 compared to the lowest contractor bid. The SBCH was able to meet the objectives of brush release, pre-commercial thinning, wildlife enhancement, fuels reduction and site productivity in a single project for

(Continued on next page.)



(Westside Notes: from previous page.)

\$530/acre compared to \$1750/acre using separate equipment.

The content of this article covering the Forest Service portion came from a Forest Service's Forest Management Technical Note titled "Multipurpose Subsoiling Excavator Attachments" and a PowerPoint presentation by Jim Archuleta, Soil Scientist for the Diamond Lake Ranger District. Jim was instrumental in the development of these subsoiling attachments, along with Mike Kerr (Umpqua NF, Engineering). Jim can be reached by phone at 541-498-2531 or by e-mail jgarthuleta@fs.fed.us. Information about the pricing and availability of the implements can be obtained by contacting USDA Forest Service Patent Advisor, Janet Stockhausen esq 608-231-9502 or by e-mail jstockhausen@fs.fed.us.

Restoration of Compacted and Degraded Soils

While on the subject of subsoiling I thought I would mention an ongoing study in the Little River Adaptive Management Area of the Umpqua National Forest. The purpose is to determine if the mechanical restoration methods of spot cultivation using the VH

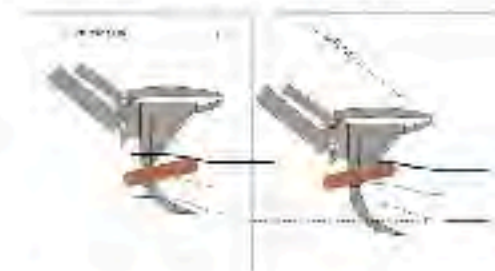
mulcher (www.vhmulcher.com) and subsoiling are effective and efficient treatments for restoring soil structure in compacted fine-textured soils. On five acre treatment blocks growth of planted Douglas fir and incense cedar and changes in soil structure are being monitored. Work is in progress to analyze and report on the results. Key contacts are Robert Powers of the Silviculture Research Lab in Eureka, California and Dan Morrison of the Umpqua National Forest.

I would like to also inform Sharpshooter readers about a paper on restoration Jim Archuleta co-authored with Chuck Bulmer and Mike Curran titled "Restoring and enhancing productivity of degraded tephra-derived soils". I have to admit that I did not know the meaning of "tephra". For those of you who also need some educating, the SSSA Glossary of Soil Science Terms defines it as "a collective term for all clastic volcanic materials that are ejected from a vent during an eruption and transported through the air, including ash, blocks, cinders, lapilli, scoria and pumice." ☘

Subsoiling Brush Cutter Hitch



Coulter blade cuts through surface/subsurface OM



URBISOL CORNER

Urban interface where soils versus critters.

by John Good

Using large dead wood in landscapes we can create habitat for critters, and soften human impact on the environment. Standing and downed trees decay, providing environment for macrobes, microbes, flora and fauna. Decaying wood also provides an ecosystem for birds, squirrels, salamanders and other critters. Organisms feeding on organisms, and environmental influences put this food web in continual flux. ☘

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:

OSSS
Box 2382
Corvallis, OR 97339

Web site and email address:

<http://osss.peak.org>
email: oss@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.

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

Kah-Nee-Ta

High Desert Resort & Casino

O.S.S.S 2006

Annual Meeting

March 2 – 3, 2006

(Reserve room before 2/15)

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by Kathy Verble

(Note: Details of the Winter Meeting are located on page 9.)

We will be heading to sunny central Oregon to the Confederate Tribes of Warm Springs, land of the Warm Springs, Wasco and Paiute Native American Tribes. Reservation lands extend from the summit of Oregon's Cascade Mountains and snowcapped Mt. Jefferson at 10,497 feet, east to the Deschutes River's elevation at 1,000 feet, with the Metolius River and Lake Billy Chinook forming the southern boundary.

The Kah-Nee-Ta High Desert Resort & Casino is better than ever with their recent renovation. The arrow shaped Lodge offers panoramic views of the high

desert, Warm Springs River, and

Cascade Moun-

tains. You can sit back and enjoy the Olympic-size hot mineral pool with a 140' water slide, the hot tubes, or visit Spa Wanapine for a spring-fed min-

eral soak, a native hot stone therapy message, or any one of their message and body treatments. You can head outdoors for hiking, biking, golfing, tennis, miniature

golf, or fishing. Try your luck at Indian Head casino, visit the arcade, shop the gift and sport shops, work out at the fitness center, or stroll around the Lodge to see the artwork that is build into and surrounds the resort. Visit their web sites at <http://www.warmsprings.com/> and <http://kahneeta.com/> for additional information.

During our field trip we will visit the Museum at Warm Springs. The impressive 25,000 square foot, \$7.6 million facility houses the single largest collection of Indian artifacts under one roof. The Museum represents a major achievement for the Tribes. The Museum also offers walking trails along Shitike Creek and an outdoor amphitheater for performances and demonstrations. Their web site is <http://www.warmsprings.biz/museum/>.

BOOK YOUR ROOM. A block of Lodge rooms at a 50% discounted rate have been reserved until February 15th. The room rate is \$69.00 for a 1-bed or 2-beds for single or double occupancy. There is a 4% Tribal service fee and a \$14.00 per person charge for additional occupancy. The same \$69.00 rate is guaranteed for Friday and Saturday nights with a two-night minimum stay required on weekends. Call Kah-Nee-Ta at 1-800-554-4786 ☎



PRESIDENT'S MESSAGE



Kathy Verble
OSSS
President

OSSS Annual Winter Meeting

During the OSSS Summer Tour, we visited The Land of Fire in the Lower Klamath Basin. For the winter meeting our focus will be on the Land of Water & Food in the Upper Klamath Basin. Although, dammed and diked extensively for agriculture, the basin is still a place of wetlands and aquatic diversity. The shallow waters, rivers, springs and marshlands provide a stopover on the Pacific Flyway for bald eagles, ducks, geese, and swans on their fall migrations. It hosts the largest congregation of wintering bald eagles outside of Alaska and provides harbor for some fish, mollusks, and snails not found elsewhere.

The Klamath Basin lies in a transitional zone between the Cascade Mountains and the Basin and Range Province and encompasses about 1.0 - million acres. The basin is part of a composite graben formed by north to northwest trending normal faults and the basin-and-range-style faulting has divided the basin into a series of small sub-basins. The geology consists primarily of volcanic deposits with lowland fluviolacustrine deposits. The occurrence of hot springs and hundreds of warm water wells indicate

geothermal systems within the basin.

Klamath Lake is Oregon's largest lake and the source of the Klamath River, which is the second largest river in California. Three Oregon rivers, Wood, Williamson, and Sprague run into the Upper Klamath Lake. About 25% of the water supplied to Upper Klamath Lake originates in the Wood River valley due to the high density of artesian springs.

In the 20th century, the naturally shallow eutrophic lake became hypereutrophic resulting in water-quality problems. During the droughts in the 1990s and the water crisis in 2001, water quantity issues heightened. Water is needed for irrigation to about 240,000 acres of farmland, for fish species listed under the Endangered Species Act, and for protection of Tribal trust resources. In addition, concerns about ground-water quality and depletion are becoming more prominent.

In 2002, the Klamath Basin Federal Working Group was established by President Bush to find short and long term solutions to ensure adequate water resources for human and natural communities. Many agencies, environmental and conservation groups, industry, farmers, tribes, and community leaders are working together to reach a workable resolution to the competing demands for Klamath Basin water. Many joint partnerships have been made to advance long-term wetland restorations efforts. The Williamson River project and the Wood River Valley project are two of the most ambitious and major wetland restoration projects considered critical to the future health of Upper Klamath Lake.

During our annual meeting we will be informed about the issue relating to water resources, quality, conflicts, uses, and management; restoration projects and their ecological significance; exploration for new sources of water; and research and studies in the basin. ❁

" In 2002, the Klamath Basin Federal Working Group was established by President Bush to find short and long term solutions to ensure adequate water resources for human and natural communities. "





WESTSIDE NOTES

By Dan Cressy

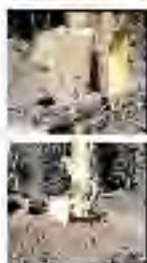
(Note: My two year term as Westside Director is coming to a close. I encourage one of you westsiders who is good at networking and keeping abreast of what is happening here in Pacific Northwest on soils-related topics to come forward as a nominee. The main duties are to write quarterly articles for the Sharpshooter and to attend board meetings. The elections will be held at our winter meeting.)

Umpqua National Forest's Multitasking Subsoiling Equipment

In my fall 2004

Westside Notes I wrote about the equipment and techniques employed by the BLM Roseburg District to subsoil compaction (Subsoiling is a method of tillage that effectively shatters the com-

Subsoiling Grapple Rake (SGR)



action while causing little mixing of soil horizons. The shattering is accomplished by winged-shaped shoes that are attached to curvilinear shanks. As the shoes pass through the base of the compacted layer, they slightly lift and then release the compacted layer, causing it to shatter). For roads, a tractor-mounted self-drafting winged subsoiler and an excavator with winged subsoiling shanks attached to its buckets work in tandem to subsoil and to pull slash, other organic material, and some inoculating topsoil onto the subsoiled surface. For trails, only the excavator is used.

The Diamond Lake Ranger District of the Umpqua National Forest has developed its own subsoiling equipment with the primary objective of doing watershed restoration in a much more cost efficient manner and at the same time assuring satisfactory results. The efficiency results from multiple restoration and silvicultural tasks/projects being performed by a single piece of equipment with only one entry to the site. Most often targeted is legacy (old, existing) compaction caused by unregulated and regulated timber harvest and site preparation, by undesignated recreation, and by roads eliminated from the transportation system but whose imprint is left on the landscape.

There are three separate implements in the inventory, each

(Continued on page 11.)

Dues Reminder

Please check the address label to see if you owe dues for 2006. Dues can be sent to:

OSSS
P.O. Box 2382
Corvallis, OR 97339

If your mailing address is incorrect on the label, please e-mail the correction to Ed Horn at ehorn@azhawk.com.



DATES TO REMEMBER

March 1-5, 2006: National Society of Consulting Soil Scientists Annual Meeting; Marietta, Georgia. More information at <http://www.nscss.org/>

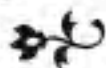
March 2 - 3, 2006: OSSS 2006 Annual Meeting, Kah-Nee-Ta, High Desert Resort & Casino.

July 9-15: World Congress of Soil Science; Philadelphia, Pennsylvania. More information at <http://www.colostate.edu/programs/IUSS/IBwcss/>

July 16-22: Post World Congress Tour: Pacific Northwest, USA. Contact OSSS member Duane Lammers at e-mail address diammers@fs.fed.us for more information. A description of the tour is also available at http://www.ext.colostate.edu/aes/tour/pp/ts/pre_past9.pdf.

November 4-8, 2006: Soil Science Society of America Annual Meeting; Indianapolis, Indiana. More information at <http://www.soils.org/meetings.html>.

// We were able to scramble up the pahoehoe chimney-like vents that were formed in the Devils Homestead basalt flow between 2,000 and 8,000 yrs. ago. //



OSSS Summer Tour In the Land of Fire

Our thanks for a great summer tour goes out to Jim McKeehan from the Modoc National Forest Doublehead Ranger District for being an excellent tour guide, to Julie Donnelly-Nolan of the Volcano Hazards Program, USGS for providing a wealth of information and putting together a great tour route, and to Kathy Clark for providing our wonderful lunch.

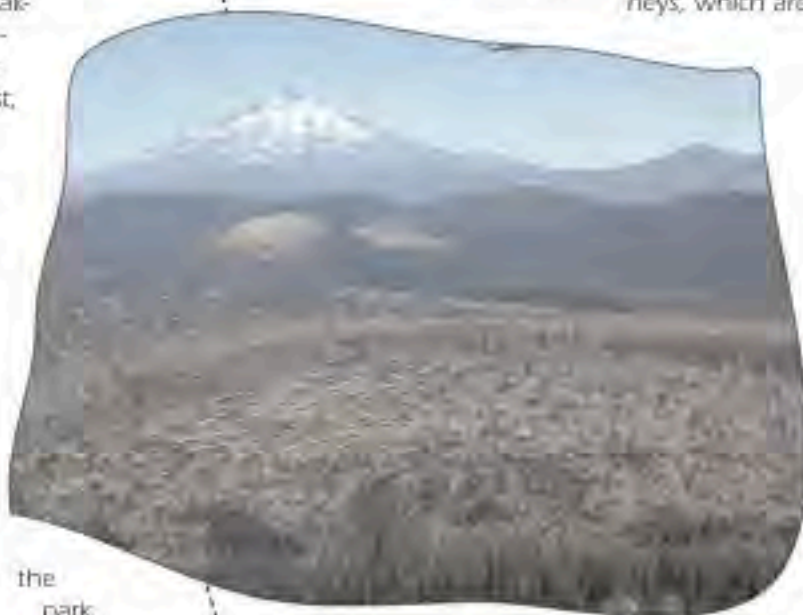
This year's summer tour was to north-eastern California at the Lava Beds National Monument located in the Tule Lake Basin and Medicine Lake Volcano. Geologically speaking, the Tule Lake Basin is an "extensional environment." Tectonic forces are slowly stretching the earth's crust, evidenced by the dropping of the basin floor between north-south-trending faults along the west and east sides of the basin. Prehistoric Tule Lake once extended much farther south before much of the former basin was filled in by lava flows from the north and east sides of Medicine Lake Volcano.

We started at the monument's visitor's center with a video

overview
of

the basin. Later in the evening some hardy souls hiked to the fire lookout on top of the butte.

Our next stop was at Fleener Chimneys, which are



the park. Our first tour stop was at Schonchin Butte cinder cone where we viewed the large andesite Schonchin Flow that extended north and west across

Holocene spatter cone vents located on Gillem Fault. We

were able to scramble up the pahoehoe chimney-like vents that were formed in the Devils Homestead basalt flow between 2,000 and 8,000 yrs. ago. We were also able to view the Callahan andesitic aa flow (the youngest at the park) that erupted from Cinder Butte approximately 1,110 years ago.

We then left the national monument and met

View of Mount Shasta from the Little Mount Hoffman Lookout with the Little Glass Mountain Lava Field in the foreground.



Chris Gebauer and Seth at the entrance of a lava tube at the Fleener Chimneys stop, which is the origination of the 2.5 mile Devils Homestead lava flow.

(Continued on next page.)



(Summer Tour: from previous page.)

our guide, Jim McKeenan from the Modoc National Forest. Jim took us to several destination points along our tour of Medicine Lake Volcano and was an excellent guide and source of information. Our first stop was at Mammmoth Crater (south of the monument). This broad basaltic shield



Mark Keller and Ed Gross (holding up a lava tube) at the Fleener Chimneys stop Lava Beds National Monument.

erupted about 30,000 years ago. The pit crater and vents produced the basalt and basaltic andesite lava that covered 2.2 miles³, including 70% of the monument, and formed most of the monument's lava tubes. At 400 feet deep, the crater was awesome!

Our next stop was on the upper north side of the volcano where we were able with the help of flashlights to peer down into 15-foot tree molds. The molds were cast when very fluid basalt flowed around the trees (radiocarbon age of 10,200 B.P.).

We continued on to the north rim of the caldera where we could view the Medicine Lake Glass Flow (approx. 5,000 yrs calibrated age) that covers 570 acres with grey dacite. Our lunch stop was at Med-

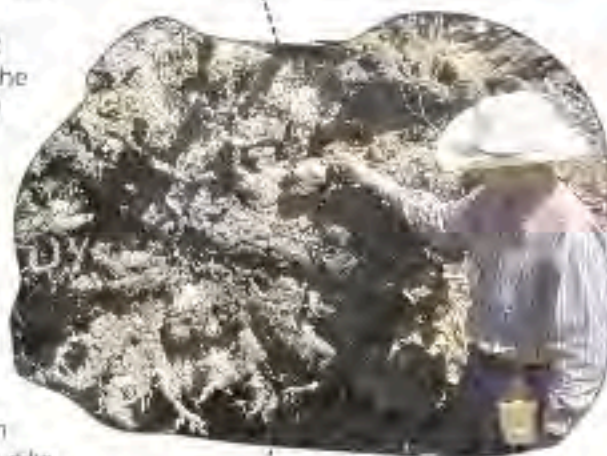
icine Lake, which is located within the 4.5 by 7.5 mile central caldera. The lake sits in a bed of glacial clay that prevents the water from draining away. Mark Keller took an opportunity to take a swim after lunch.

We proceeded to Little Mt. Hoffman, which is one of the many cinder cones. Directly below to the west we viewed the late Holocene Little Glass Mountain rhyolite flow (1100 yrs. BP). From this spectacular viewpoint, one could see Lassen Peak to the south, Mt. Shasta to the west, Mt. McLoughlin and Mt. Scott to the north, and Dome of Glass Mountain to the east. We drove along the south edge of the Hoffman Flow that is comprised of two steep-sided viscous lavas (1200 yrs BP). Then we walked out onto Glass Mountain, which is comprised of the youngest lava flow at the volcano (900 yrs BP) and covers 4,210 acres. This Holocene rhyolite flow erupted from three of the thirteen vents along a dike. The rhyolite varies from black aphyric obsidian to pumiceous, lighter-colored samples.

We looped back to the southeast part of Lava Beds National Monument where we stopped at Valentine Cave. This cave was formed from basaltic andesite flows from spatter vents on the north flank of Medicine Lake Volcano (10,850 yrs. BP). The cave

had pahoehoe floors, lava pools, lava pools and cascades, lavacoles, dripstones, lava benches, and mid-stream pillars. The cave extended eerily back for quite a ways. Three hardy souls (Ed Horn, Ron Reuter, and I) ventured back on all fours to the extent of the cave.

Several of our members were able to stay and visit additional sites in the Lava Beds National Monument including a guided tour of Captain Jack's Stronghold. I have several published papers from Julie Donnelly-Nolan on the volcano area that will be available at the winter meeting for anyone interested in planning a visit to the volcano. ☘



John Good pointing out shallow soil root features in a blow down pine tree (lodgepole?) at the lava cast forest Lava Beds National Monument. The roots become polished nodules when they rub against the rock as the tree rocks back and forth in the wind

Land of Water and Food

*March 2-3, 2006
at Kah-Nee-Ta*

OSSS Annual Winter Meeting TENTATIVE AGENDA

Wednesday, March 1

6:30 – 8:30 No Host Social – Appaloosa Lounge

Thursday, March 2

8:00 – 8:45 Registration and Continental Breakfast

8:45 – 9:00 Greetings and Introduction

9:00 – 12:00 Presentations:

USGS & OWRD Upper Klamath Basin Ground Water Study

Kenneth Lite, OWRD

NRCS Diatomaceous-influenced Soils in Klamath County

Chris Gebauer, NRCS

Diatomaceous Influences on Soils in the Klamath Area Water Table Study

in Klamath County Soil Survey, Northern Part & Winema Nat. Forest EUI

Chris Gebauer, NRCS

A New Understanding of the Upper Klamath Basin Geological Framework:

A Work-in-Progress

Margaret Jenks, DOGAMI

Williamson River Delta Preserve Project

Mark Stern, The Nature Conservancy

NRCS Web Soil Survey

Steve Campbell, NRCS

Nutrient Loading of Surface Waters in the Upper Klamath Basin

Kenneth Rykbost, Klamath Experiment Station

Klamath Reclamation Project

Wood River Valley Restoration Project

NRCS Sprague Hydrologic Modeling Study

12:00 – 1:00 Lunch

1:00 – 3:00 Presentations continued

3:00 – 3:30 State Based Soil Science Licensing & Certification

Luther Smith, SSSA Executive Director,

Certified Professional Soil Scientists/Classifiers

3:30 – 5:00 OSSS Annual Business Meeting

7:00 – 9:00 Banquet

Friday, March 3

8:00 – 9:00 Registration and Continental Breakfast

9:00 – 12:00 Presentations continued

12:00 – 1:00 Lunch

1:00 – 5:00 Field Trip to the Museum at Warm Springs

Land of Water and Food

March 2-3, 2006

Kah-Nee-Ta High Desert

Resort & Casino

Reservations 1-800-554-4786

Web site <http://kahneeta.com/>



2006
Winter Meeting
Registration Form

Name: _____

Title & Organization: _____

Address: _____

City / State / Zip: _____

Telephone / email: _____

Fax: _____

Early Registration Deadline: February 22* Please register early. (We need head count for meals.)

Type of Registration:	Regular Member	Retired Member	Member Spouse	Student Member	Non-Member	Total
Full Meeting**:	___ \$90.00	___ \$75.00	___ \$45.00	___ \$30.00	___ \$100.00	_____
Thursday:	___ 50.00	___ 40.00	___ 30.00	___ 20.00	___ 55.00	_____
Thursday Banquet:	___ 15.00	___ 15.00	___ 15.00	___ 15.00	___ 15.00	_____
Friday w/Field Trip:	___ 50.00	___ 40.00	___ 30.00	___ 20.00	___ 55.00	_____

Yes, I would like to co-sponsor student attendance to the meeting with a donation of: _____

* Late Registration Fee after February 24: \$10.00 _____

Total _____

** Full Registration includes Continental Breakfast both days, Lunch on Thursday, and the Field Trip on Friday. The Banquet cost is not included in the registration, but part of the meal cost is subsidized by the Society.

If you would like to join our society, please see our web site at <http://oss.peak.org/>.

Yes, I would like to take this opportunity to join the Oregon Society of Soil Scientists.

My application for _____ membership and my dues are enclosed for: \$ _____

Completed registrations should be returned to:

OSSS

C/o Kathy Verble

7673 Jackson Hill Rd. SE

Salem, OR 97306

Officer Candidate Brief Introduction

Will Austin

Will has a B.S. in Earth Science from Western Oregon State University and a M.S. in Soil Science from Oregon State University. He is employed as the Laboratory Director of OSU Central Analytical Laboratory and does private consulting as Will Austin PNW Soil, Inc. Many of us know Will as the current coach for the OSU Soil Judging team. Will's is also a member of SSSA, Western Society of Soil Science, and Oregon Onsite Waste Water Association.

Ballot for Election of Officers

Please circle or write-in candidate of choice, and mail to:

OSSS

C/o Kathy Verble

7673 Jackson Hill Rd. SE

Salem, OR 97306

Vice President - Pres. Elect

Wil Austin

or Write-In:

Westside Director

(none filed)

or Write-In:



USDA Announces Web Soil Survey

Internet-based System Allows Users Access to Soil Survey Information

Agriculture Secretary Mike Johanns announced the launch of a USDA Web Soil Survey site on August 16, 2005. This web site is designed to provide secure public access to the national soils information system. This site is a simple yet powerful way to access and analyze soils data that contributes to every aspect of public and private land use and development.

The website has been designed with three easy to use features - Define, View and Explore, and operates much like internet sites that provide locator and directional information. When viewers visit the web soil survey, they are asked to "Define" a geographic area of interest by selecting a state and county or just by highlighting an area. Once a location has been defined and projected on the screen, the viewer has the choice to print the map and related information, save it to their hard drive or download the data for use in a geographic information system (GIS).

The viewer also can "Explore" the designated location for soils data for specific properties and interpretations. This flexibility provides the viewer an opportunity to build a customized report that addresses the viewer's individual needs. Information can be delivered in a variety of formats to include print, CD, DVD or other media.

To view the website go to <http://websoilsurvey.nrcs.usda.gov> ☛

ANNOUNCEMENTS

Soil Data Viewer 5 Software is Released

Soil Data Viewer is a tool built as an extension to ArcMap geographic information system software that allows a user to create soil-based thematic maps and reports. The application can also be run independent of ArcMap, but output is then limited to tabular reports.

The soil survey attribute database associated with the spatial soil map is a complicated database with more than 50 tables. Soil Data Viewer provides users access to soil interpretations and soil properties while shielding them from the complexity of the soil database. Each soil map unit, typically a set of polygons, may contain multiple soil components that have different use and management. Soil Data Viewer makes it easy to compute a single value for a map unit and display results, relieving the user from the burden of querying the database, processing the data and linking to the spatial map.

Soil Data Viewer contains processing rules to enforce appropriate use of the data. This provides the user with a tool for quick geospatial analysis of soil data for use in resource assessment and management. Software and user guides for Soil Data Viewer 5 can be downloaded at <http://soildataviewer.nrcs.usda.gov/>. ☛

New OSSS Members

Please welcome our new members who have joined OSSS over the past year.

Dannelle Aleshire Mount Angel

Sarah Hoffman Corvallis

Shanna Bernal-Fields Corvallis

Chad McGrath Portland

Chris Gebauer Klamath Falls

Rose Herrington Woodburn

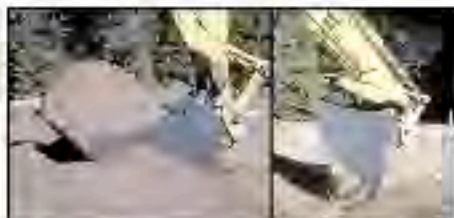
Georg Grathoff Portland

Darlene Southworth Ashland

(Westside Notes: from page 3.)

being excavator attachments with their own separate niche in watershed restoration. One implement is the Subsoiling Grapple Rake (SGR). The SGR was specifically created for prescriptions that combine brush disposal and grapple piling with the subsoiling needs of

Subsoiling Excavator Bucket SEB



newly created or legacy compaction. Just as in the Roseburg BLM operations, the slash and other organic material can be placed as effective ground cover over subsoiled surfaces. One neat feature is a coulter blade that is

“ The SBCH was able to meet the objectives of brush release, precommercial thinning, wildlife enhancement, fuels reduction and site productivity in a single project for \$530/acre compared to \$1750/acre using separate equipment. ”



attached above both subsoiler shanks that can cut through subsurface obstructions such as roots or grass sod on the surface.

The second implement is the Subsoiling Excavator Bucket (SEB). It is similar in design and function to the Roseburg BLM's bucket. It was developed for total

road obliteration prescriptions, particularly, midslope roads that can impact fish-bearing streams. The tasks that can be completed by the SEB in addition to subsoiling are culvert removal, waterbar installation, out-sloping of the road prism, removing fill from small and large draws, and returning fillslope material to near original slope position. In some small jobs the need for a dozer may be eliminated.

The third implement is the Subsoiling Brush Cutter Hitch (SBCH) that is mounted to the excavator arm. The brush cutter that originally attached to the excavator arm is now mounted to the SBCH. The SBCH-brush cutter assembly is designed for forage enhancement, fuels reduction and pre-commercial thinning of trees. A coulter blade is also attached above both subsoiling shanks.

All three implements give versatility and results that a tractor-mounted subsoiler can not match in ameliorating compaction. They have the surgical ability to subsoil spots the tractor will miss and to avoid spots where subsoiling may not be desirable, for example, near the base of tree boles where large tree roots can be damaged. They are more maneuverable at avoiding obstacles such as boulders. They create a broken pattern of tilled soil at the surface, eliminating the continuous furrow associated with tractor subsoiling. This is ideal for water infiltration in forested environments and can prove beneficial on the steeper grades or conditions with a heavy clay horizon present. Tractors are unable to place organic material on top of a subsoiled surface. Such placements by SGRs and SEBs have been shown to maintain aggregate stability and buffer the soil from moisture and temperature fluctuations. This can allow increased natural regeneration and maintenance of seedling vigor.

On the flip side, the cost tractor of subsoiling is often the lowest available since tractors are considerably more efficient at getting a subsoiling project done. However, the cost savings of multitasking with the excavator attachments is considerable. The SGR costs about \$200 to \$350 per acre to operate. On one multi-tasking job the cost savings using the SGR was \$490/acre when compared to doing the jobs separately. In a road decommissioning, in-house work using the SEB saved \$40,000 compared to the lowest contractor bid. The SBCH was able to meet the objectives of brush release, pre-commercial thinning, wildlife enhancement, fuels reduction and site productivity in a single project for

(Continued on next page.)



(Westside Notes: from previous page.)

\$530/acre compared to \$1750/acre using separate equipment.

The content of this article covering the Forest Service portion came from a Forest Service's Forest Management Technical Note titled "Multipurpose Subsoiling Excavator Attachments" and a PowerPoint presentation by Jim Archuleta, Soil Scientist for the Diamond Lake Ranger District. Jim was instrumental in the development of these subsoiling attachments, along with Mike Kerr (Umpqua NF, Engineering). Jim can be reached by phone at 541-498-2531 or by e-mail jgarthuleta@fs.fed.us. Information about the pricing and availability of the implements can be obtained by contacting USDA Forest Service Patent Advisor, Janet Stockhausen esq 608-231-9502 or by e-mail jstockhausen@fs.fed.us.

Restoration of Compacted and Degraded Soils

While on the subject of subsoiling I thought I would mention an ongoing study in the Little River Adaptive Management Area of the Umpqua National Forest. The purpose is to determine if the mechanical restoration methods of spot cultivation using the VH

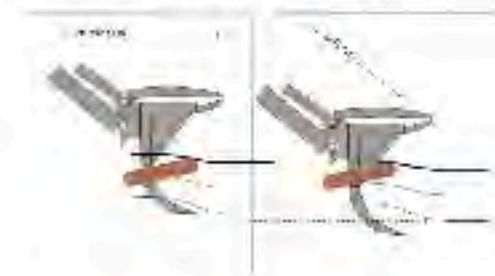
mulcher (www.vhmulcher.com) and subsoiling are effective and efficient treatments for restoring soil structure in compacted fine-textured soils. On five acre treatment blocks growth of planted Douglas fir and incense cedar and changes in soil structure are being monitored. Work is in progress to analyze and report on the results. Key contacts are Robert Powers of the Silviculture Research Lab in Eureka, California and Dan Morrison of the Umpqua National Forest.

I would like to also inform Sharpshooter readers about a paper on restoration Jim Archuleta co-authored with Chuck Bulmer and Mike Curran titled "Restoring and enhancing productivity of degraded tephra-derived soils". I have to admit that I did not know the meaning of "tephra". For those of you who also need some educating, the SSSA Glossary of Soil Science Terms defines it as "a collective term for all clastic volcanic materials that are ejected from a vent during an eruption and transported through the air, including ash, blocks, cinders, lapilli, scoria and pumice." ☘

Subsoiling Brush Cutter Hitch



Coulter blade cuts through surface/subsurface OM



URBISOL CORNER

Urban interface where soils versus critters.

by John Good

Using large dead wood in landscapes we can create habitat for critters, and soften human impact on the environment. Standing and downed trees decay, providing environment for macrobes, microbes, flora and fauna. Decaying wood also provides an ecosystem for birds, squirrels, salamanders and other critters. Organisms feeding on organisms, and environmental influences put this food web in continual flux. ☘

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:

OSSS
Box 2382
Corvallis, OR 97339

Web site and email address:
<http://osss.peak.org>
email: oss@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.

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

Kah-Nee-Ta

High Desert Resort & Casino

O.S.S.S 2006

Annual Meeting

March 2 – 3, 2006

(Reserve room before 2/15)