SHARPSHOOTER
OREGON SOCIETY OF SOIL SCIENTISTS

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What's Inside This Issue:

PRESIDENT'S MESSAGE

Note from the Editor:

Please mark your calendars for February 18-19, 2010! These are the dates for the Oregon Society of Soil Scientists 2010 Winter Meeting to be held at McMenamin's Edgefield in Troutdale, OR. Daniel Moreno is planning a great winter meeting—the theme is ***"Soil-Waste Interface Solutions."*** At this meeting Daniel plans to cover the major alternatives of waste treatment, looking at natural treatment alternatives such as phytoremediation, water reuse, treatment wetlands, groundwater recharge, etc. We will see how humans have found out over time that the old natural systems appear to be the most cost effective of overcoming the waste conundrum. A preview of ***"Dirt! The Movie"*** is also planned, so please mark your calendars and come on down (or maybe it is up)! More information about the winter meeting will be available in the next Sharpshooter. McMenamin's Edgefield is a great place to hold our winter meeting and you can read more about them on their website at: http://www.mcmenamins.com/index.php?loc=3

WESTSIDE NOTES

by Steve Campbell

The following is from a fact sheet on Forest Biomass Utilization, prepared by the Intermountain Forest Tree Nutrition Cooperative, University of Idaho. There is currently a project underway on the Umpqua National Forest to convert forest biomass to bio-char:

Catastrophic wildfire risks are high in public forest lands due to ever increasing fuel loads. Biomass fuels accumulate due to continuing forest growth, while effective fire suppression efforts have decreased cyclic consumption by natural, low-level fires. To decrease the risk of stand replacing wildfires, public land managers are mechanically removing fuels from millions of acres nationwide, but costs are staggering.

- Utilizing forest biomass to produce an energy product could offset costs of mechanical biomass removal including post-fire salvage logging. However, transporting bulky biomass to central processing facilities must be minimized or eliminated in order to make forest bioenergy production viable.
- Portable pyrolysis units convert biomass into bio-oil in the woods. Bio-oil can substitute for fuel oil, or be used as a crude oil and further refined into higher value products [1]. Transporting dense, high-value bio-oil is much more cost effective than transporting bulky, low-value biomass.
- In-woods bio-oil production through pyrolysis also tackles concerns over removing carbon and nutrients from forest sites. A byproduct of pyrolysis is bio-char, which is equivalent to the charcoal found in fire ecosystems.
- Bio-char retains most of the carbon and nutrients contained in biomass and can be used as a soil amendment to enhance soil productivity. Bio-char produced by portable pyrolysis can be left at the field site to maintain soil fertility and soil carbon—which is not a possibility with centralized pyrolysis facilities, again, due to high transport costs.

- Charcoal is known to remain stable in soils for hundreds or thousands of years. It resists microbial decay that break down biomass into simple compounds, including greenhouse gases. Such long bio-char residence times allow carbon removed from the atmosphere by growing forests to be indefinitely sequestered in soil [2].

Replacing fossil fuel with bio-oil and storing carbon in soil with bio-char draws down atmospheric carbon more than other renewable energy schemes and as a consequence may include carbon trading revenue [3].

To assist the development of such ideas, we have assembled a multi-disciplinary, inter-organizational project composed of the following collaborators:

- The Umpqua National Forest is hosting this work because of their need to reduce hazard fuels in fire-prone forests ecosystems and a keen interest in maintaining soil productivity.
- Renewable Oil International® LLC, is providing a portable pyrolyzer capable of operating at forestry field locations.
- The University of Montana is evaluating the economics of in-woods conversion and the avoided need to transport biomass against a centralized pyrolysis plant requiring biomass transport.
- The IFTNC and the Rocky Mountain Research Station are evaluating the impact of biomass removal and char amendments on soil fertility, soil carbon, and forest production compared to removal-only.

For more information contact Mark Coleman, Department of Forest Resources, University of Idaho, Moscow, ID 83844-1133, mcoleman@uidaho.edu, 208-885-7604

1. Badger, P.C. and P. Fransham, *Use of mobile fast pyrolysis plants to densify biomass and reduce biomass handling costs--A preliminary assessment.* Biomass and Bioenergy, 2006. **30**(4): p. 321-325.
2. Glaser, B., J. Lehmann, and W. Zech, *Ameliorating physical and chemical properties of highly weathered soils in the tropics with charcoal - a review.* Biology and Fertility of Soils, 2002. **35**(4): p. 219-230.
3. Laird, D.A., *The Charcoal Vision: A Win Win Win Scenario for Simultaneously Producing Bioenergy, Permanently Sequestering Carbon, while Improving Soil and Water Quality*. 2008. p. 178-181.

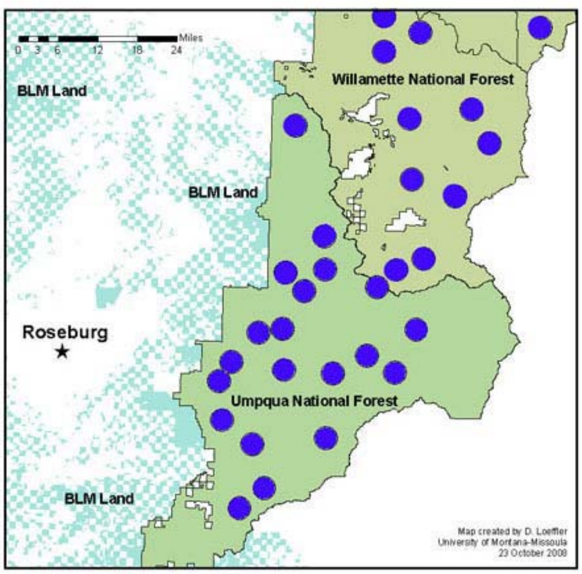


Figure 1. Map of biomass supply area with circles representing portable pyrolyzer supply areas within the Willamette and Umpqua National Forests coupled with a centralized processing facility located in Roseburg, Oregon with a supply area extending beyond the map area.

Figure 2. Renewable Oil International portable pyrolyzer.

EASTSIDE NOTES

by Jenni Moffitt

The following is a summary of initial findings of soluble salt concentrations in playas. The Geomorphic Description System describes playas as "usually dry, nearly level lake plains that occupy the lowest parts of closed depressions. Temporary flooding occurs primarily in responses to precipitation-runoff events. Playa deposits are fine grained and may or may not have a high water table and saline conditions." Playas have recently raised interest as wildlife habitat, specifically for sage grouse. Ron Reuter and OSU-Cascades have been doing research on these playas concurrently with projects being done by the Prineville District BLM.

Using Electromagnetic Induction (EMI) to Monitor Hydrologic Patterns in Central Oregon's Playa Habitat

by Laura Dlugolecki, OSU Masters Student

Central Oregon's high desert seasonal wetlands, also known as playas, are considered to provide regionally important habitat for a wide variety of wildlife species. Some playas have been excavated to create livestock watering holes, possibly altering their hydrologic function and affecting surrounding areas. Concern over alteration of these habitat areas and the subsequent decline in ecological function has spurred research interest and rehabilitation activities in these areas. Two excavated playas on the Prineville Bureau of Land Management district were identified for rehabilitation activities including: filling in the excavated area, re-grading that area to mimic the topography of undisturbed playas, and then fencing off a 5-acre area around the playas to minimize impact from livestock. These actions attempt to change the hydrologic patterns in the playas to mimic the distribution of water across the playa area seen in undisturbed playas. Undisturbed playas generally have various low points of water collection and drier high points. They do not generally have one very deep low point that holds all the water, as seen in excavated playas.

Electromagnetic induction (EMI) is a noninvasive, portable method used to gather information regarding physical conditions in subsurface soil. The EMI device can collect data from various observation depths in a relatively short time period. EMI uses electromagnetic energy to measure the near-surface (1-m depth) apparent conductivity of the soil substrate (EC_a). The EMI records values of EC_a as it is manually passed over the soil surface. The values of EC_a vary due to changes in soluble salts, water content and clay contents. With the incorporation of a GPS unit, the EC_a data are spatially referenced instantaneously. The geo-referenced data collected from the EMI is easily transformed into map imagery that can be used to assess site conditions.

In the arid climates typical of these playas, the EMI readings were interpreted to identify changes in the concentration of soluble salts, which serves as a proxy for seasonal hydrological patterns. EMI data was gathered on the two aforementioned excavated playas prior to the rehabilitation activities in September of 2008. This data was collected and mapped to identify the hydrologic distribution in and around excavated playas. According to the data collected, the EC_a is highest in the excavated part of the playa, with small amounts of variation in the surrounding playa area. This signifies that most of the playa water collects in the excavated area and this low-point remains wet for the longest period of time throughout the season.

In October and November of 2008, the two playas were filled and fenced. EMI data collected in November of 2009 shows that water appears to be distributed differently across the playas than it was in 2008. From initial visual observations of the EC_a data, the water seems to be distributed across the playa in a greater extent. The concentric circles of different EC_a values radiating from the playa center seen in the 2008 data seem to be wider and more irregular in the 2009 data, perhaps suggesting a more gradual drying process. It is possible that a more gradual drying process will affect vegetation growth and type in the playas. After the intensive earth-moving activities conducted on these playas it is reasonable to expect a different drainage pattern for the playa area. It can be expected that these drainage patterns will continue to change and adjust over time. A more descriptive representation of any changes in the playa's hydrology will likely be seen over several years of monitoring.

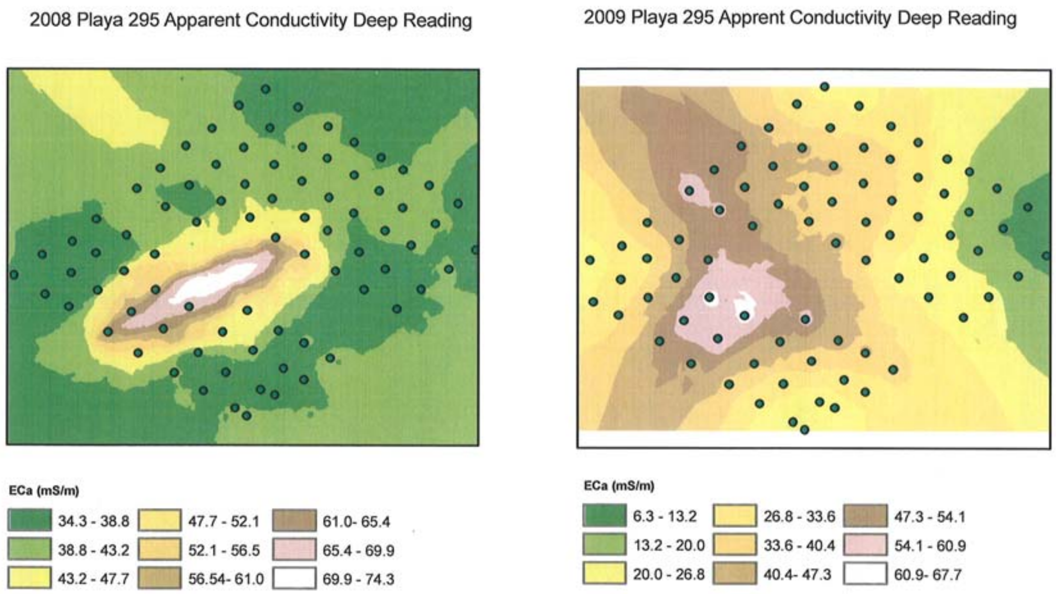


Figure 1. EMI data output showing apparent conductivity (EC_a) measured in milli-Siemens/meter. The maps represent deep soils (1 m.) The map on the left shows a higher concentration of soluble salts in the excavated area, with low concentrations of salts in the surrounding area, indicating water collection in the excavated low point. The map to the right represents EC_a after the pit was filled in. Soluble salt concentrations are more dispersed.

MEMBER SPOTLIGHT

ED HORN

As interviewed by Jaimee Davis

- How did you first become a Soil Scientist?

Growing up in Colorado I did not have a clue of what I wanted to be when I grew up. In high school, I took an aptitude test that showed that my abilities lie as either an accountant or a scientist. I ended up taking the scientist route eventually figuring out that “soil” went on the front end of this. At the University of Colorado, I became interested in plant ecology and ended up graduating with a Bachelor of Arts degree in environmental biology. It was difficult to find work out of college in this field. I found that employers were looking for specialized workers not generalists. After putting in applications and searching for work, I picked up a brochure put out by the Soil Conservation Service (SCS, now NRCS) called “So you want to be a Soil Scientist!” After reading this brochure and finding out soil scientist’s work outdoors, dig in the dirt, do cartography, and put together soil maps in the off season, I was hooked! This was the perfect career job for me. I went back to school and took enough classes to graduate with a Bachelor of Science degree in Agronomy Soils option at Colorado State University in Fort Collins. My first soils job was working for the Bureau of Land Management in Miles City, Montana. I worked as a summer temp doing a Phase 1 watershed inventory, which was the precursor to the Soil Vegetation Inventory Method (mapping soils and vegetation) that was done in Oregon in the late 70s and early 80s.

➢ What are some of the most exciting experiences you've had with soils?

I got my first permanent job as a soil scientist working for the SCS in Medford, Oklahoma. One of the unexpected perks of working for the SCS was the opportunity to go on out-of-state soil survey details. Since I love to travel and explore new places that I haven't been to, this turned out to be one of the most fulfilling parts of my job. My first detail was to Alaska. I left behind the fine, mixed, superactive thermic udertic Paleustolls of Oklahoma, which were great soils for growing wheat, sorghum, tomatoes and okra. In Alaska, the cultivated agriculture was replaced with wilderness. Muskegs dotted the landscape surrounded by black and white spruce, and higher up on the hills just below timberline were the dreaded alder thickets. Soils in the muskegs were classified as Cryohemists and Cryosaprits. The slightly better drained uplands in south central Alaska, contained one of the most colorful soils that I have seen in my career - the Humicryod. This is an Alaskan Spodisol and it has an organic surface overlying a dark reddish surface top soil horizon underlain with a white or light colored eluvial horizon grading to a reddish Bir layer underlain with a coffee brown bhir ortstein horizon. All of this was over gravelly glacial till. My detail was based out of Talkeetna, Alaska and all the detailees that I worked with came from various places across the country—places such as Nebraska, Arizona, Maine, Washington, Colorado, and Oklahoma. They were all great to work with. I would run into a number of them again later on in my career. In Talkeetna, we stayed at the Talkeetna Roadhouse. They served large family-style meals at a big, long community table that made for good conversation and interesting stories. Since Talkeetna is the jump-off point for climbers climbing Mt. McKinley, we got to hear stories about climbing the mountain and of the helicopter rescues that happened when things didn't go well. We had some of our own bear, helicopter and fish stories to spin also. We used a helicopter to transport us from the Talkeetna out to our mapping areas. These areas were true wilderness and did not have any roads or trails or markers to follow. We had to rely on using aerial photos and a compass for navigation. We also did not have radios to talk to the pilot but had to set up predetermined pickup points using flairs, smoke bombs, mirrors and orange tarps to guide the pilot in for our pickups. We did 3 to 4-mile transects through white spruce, muskeg, cobweb like alder stands and finally the open tundra. In the middle of our detail our helicopter crashed. There was apparently a crack in the oil supply to the tail rotor gear box. Without oil, the tail rotor froze up. We found out that helicopters need a functional tail rotor to keep the helicopter from spinning around like an out of control top. Our pilot was able to keep us level and we went down in a flat muskeg that helped cushion our landing. Minutes before, we were over steep mountain slopes, so we were extremely lucky that no one was hurt, and were euphoric about surviving this crash.

➢ What are your hobbies?

I do enjoy skiing, which my parents forced me to do way back in the early 60s. My feet always got cold—my boots were too small and I couldn't imagine why anyone would want to do this sport. As the equipment improved, and t-bars turned into chairlifts, my enjoyment of skiing also improved. While I was working for the SCS in Craig, Colorado, I spent my winters on the ski slopes over in Steamboat Springs, Colorado. I met some high-performance ski bums (really nice folks) that introduced me to heli-skiing up in British Columbia, Canada. Back then, I thought it was going to be a once-in-a-lifetime event but since I keep in touch and they keep twisting my arm, I will be doing it again this December, tracking the powder one more time! When I was in college (University of Colorado at Boulder) I went out for track and cross country–long distance running events. At that time our coach got a number of us runners to run a marathon. He took us on a trip out to San Diego, California, where he previously coached high school track, to run the Mission Bay Marathon. I did pretty well and ended up running more of these events including the Boston and Pikes Peak marathons.

➢ You've gotten to do soils work in other countries too? Tell me about that.

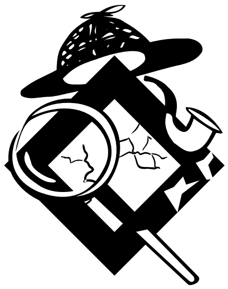
During my career as a soil scientist, I crossed paths a second time with a number of people that I worked with. On my Alaska detail I worked with a guy that was completing his master's on a soils project in Lesotho, South Africa. While in Alaska, I found out that we had a common acquaintance of a person that I worked with in my first soils job in Miles City, Montana. He asked me if I would be willing to help him describe soils for his project. I jumped at the chance. This would be my first trip out of the country and to a different continent. I found that diagnostic soil properties are the same in Lesotho as they are in Medford, Oklahoma. It doesn't matter which continent you are on.

➢ How has technology changed in the field of soil science throughout your career?

As I begin to wrap up my career as a soil scientist, one thing that has impressed me the most has been the development of technology. Technology is great when it works. When I started soil mapping in the late 70s, computers were just starting to be used in soil survey manuscript development. We wrote our map unit descriptions out by hand and had our field office secretary type them out on her fancy electric typewriter with correction tape. Computer-assisted writing followed and in Craig, Colorado (1983-1987), we got our first field office computer with a 25 megabyte hard drive, and started using a word processor with spell check for completing our map unit descriptions. I was amazed at the time that a whole map unit description could be saved on a single 5.5 inch floppy disk! Back then, we did not have geographic information systems (GIS) to draw out our soil maps but instead inked our soil lines using rapidograph ink pens onto black and white stereo pair photographs. We used stereoscopes to bring out the relief for delineating slope groups. Rapidograph pens were notorious for clogging up and would deliver an occasional ink splotch to the photograph while shaking the pen to get ink flow. However, one of the most useful developments for soil surveys was the invention of the global positioning system. My first project leader told me knowing where you are at in the landscape is the most important part of mapping. This becomes important in drawing soil lines and making interpretations. Also, being able to go back to the exact spot where a soil series was described helps save us time selecting locations for field reviews. GIS and digital elevation models have replaced hard-copy photographs and stereoscopes for delineating slope, and aspect delineations. Modeling techniques and high resolution digital imagery is the wave of the future. Hopefully this will make soil mapping more consistent among mappers and usable for users.

OUT-OF-ORDER 2 — another mystery!

by Stan Winther



There was a shriek from Mrs. Gains, the downstairs maid, followed by the frantic footsteps of the other servants running from all points of the mansion! One by one they all joined Mrs. Gains in the parlor, staring at the horrible scene before them. Lying on the floor under a pile of rock was Sir Crumley. His skull appeared to have been crushed. The monolith above the body was clearly missing. A pool of blood had formed beside the body and a collapsed, folding chair was lying nearby. Belvadeer, the chauffer, hesitated but called the police anyway. The authorities ordered that nothing be moved and that help would be sent immediately.

Inspector Finch of Scotland Yard was dispatched to the scene. Finch was a former soil correlator but now a police inspector. Since no one had seen an intruder and the windows and doors were all secure, Finch was quick to declare that death was accidental and thus the case be closed. Nonetheless, Sir Crumley was an important man, so Sedgwick Holmes was notified. He had been very helpful in previous cases.

According to Sir Crumley's assistant, the missing profile was an entisol. The monolith itself was a loamy-skeletal, mixed, mesic Typic Xerorthents. More precisely, it was the Zambi very cobbly silt loam. Furthermore, the OSD showed the profile to be from Zimbabwe. Because the monoliths were still in alphabetical order, the entisol profile was near the middle of all the monoliths.

While he was waiting for Holmes to arrive, Finch thought back to a time when he was very involved in soil classification. He was responsible for 4 or 5 soil surveys in northern England and this was the fourth remapping of the area (also known as a "once over"). An update of soil mapping usually occurred every 200 years because no one is alive to remember if one had ever been conducted before. Even then, the senior soil scientist was demanding, "More hectares, and more hectares from every soil scientist!" Funding from the royal family and later from Parliament was dependent on these numbers to show mapping progress. Obtaining permission was a problem too, because feudal lords tended to be suspicious of government people. Eventually the mapping was completed and Finch was without a job. With job retraining he had become a police inspector but he had never forgotten his soil "roots" or rooting soil.

When Holmes and Dr. Watson arrived, Belvadeer guided them into the parlor where Inspector Finch was waiting. Holmes quickly glanced about noting the rock pile, the body, the row of monoliths, the missing monolith, and the flooring.

"Holmes, I saw no reason to bother you," said Finch, "but my supervisor thought otherwise. As to the case, I believe Sir Crumley was simply examining the entisol profile for loose rocks, he lost his balance, and all the rocks came tumbling down upon him. The downstairs maid found him this morning. According to Belvadeer, a single light illuminates the parlor at night. I do wonder, though, what happened to the profile itself. One of the staff must have taken it. If so, then that person is guilty of tampering with evidence."

Then Finch proceeded to inform Holmes as to the facts of the case. In the meantime Dr. Watson examined the body and did confirm the obvious—that death resulted from a blow to the head by a blunt object, probably one of the rocks. Based upon the body's rigidity, Dr. Watson theorized Sir Crumley had died sometime the previous night.

At this point Sedgwick began his investigation by doing the following:

- placing the rocks into a bag and weighing the bag
- examining a hallway table and chairs
- focusing his magnifying glass on the carpeted hallway as well as the linoleum covered parlor
- using a tape measure around the monoliths

While Dr. Watson and Finch were discussing the size of the blood-stained rock, Holmes had quietly disappeared down the hallway and then reappeared 10 minutes later.

"Holmes, there you are," Finch cheerfully said. "What do you make of this rock? It is almost stone-size and yet Sir Crumley was able to secure it to the surface layer."

"I can tell you," said Holmes, "that Sir Crumley was murdered and you are holding the murder weapon."

"What!" Finch exclaimed. "Have you gone mad!? This is a simple case and I am ready to go home."

Sedgwick calmly continued, "The murderer was short, had a TUD (taxonomic unit description) stuck to the bottom of his right sandal, and was nearsighted." Holmes paused. "Moreover, the murderer took the monolith, several rocks, and escaped through a loose panel down the hallway."

"Incredible claims require incredible proof. Do you have such proof?" asked Finch

Holmes looked straight at Finch and said, "There was an intruder and his footprints overlap all the other shoe marks meaning he was the last person in the room. In addition, he is from an African tribe known as the Witoo. I can say this because I have made a study of shoes worn by soil scientists from around the world – from mucklucks to the arctic north to leather boots in the middle latitudes to sandals in the tropics. I had attempted to publish my findings in a local soils newsletter known as the 'Long, Narrow Shovel' a few years back, but it was rejected. So I renamed it as follows, 'Footwear Worn by Pedologists with a Special Emphasis on Tread.' It was accepted."

"Now Holmes if, for the sake of argument, there was a murderer, how can you deduce that he was short?" demanded Finch.

"The tribesman hid behind this monolith, which was leaning against the wall. See his sandal marks on the linoleum and the fresh sawdust? The tread is worn but still recognizable. If you look carefully at the monolith, you can see a hole at about 4.5 feet from the floor, probably in the middle of the A horizon. Add 4 inches to the height of the hole and you get the top of his head which is less than 5 feet tall."

"What about being nearsighted?" asked Watson.

"When the intruder was leaving, he bumped into the hallway table. A person with good eyesight would have easily maneuvered around it, but he did not. See how the table legs have moved slightly over the carpet, revealing a dust free area. Furthermore, the intruder had to use a chair to get close enough to read the order name above each monolith. This explains why rubber marks from the legs of the folding chair moved progressively from monolith to monolith and then stopped at the entisol. If his eyesight had been better, he would have walked directly to the entisol."

"It was at this point Sir Crumley entered the room," Holmes continued, "and discovered the intruder removing the entisol monolith from the wall. There was a struggle over it. The monolith fell and, sadly, Sir Crumley was under it. Sir Crumley was killed by that surface cobble from the Zambi very cobbly silt loam monolith."

“Okay, okay!! What about the TUD and his sandal?” Watson asked.

“The intruder was looking for a particular monolith. To be sure he was taking the right one, he had brought its profile description. The description was recorded faithfully in a Zambi TUD. Remember that Sir Crumley rotates his collection of monoliths just like any modern museum and the intruder had to have the correct one. Thus, the intruder approached the monolith, measured the thickness of each horizon and textured their layers, and compared them to the Zambi TUD. See the ribboned mud ball below the missing monolith? All of which took time and the possibility he would be caught. Just when he was satisfied with the profile and was removing the monolith from the wall, Sir Crumley entered. The TUD was dropped and torn underfoot in the fight. One corner of the paper stuck to the intruder’s sandal. Once again, look at the tread of the sandal and see the smooth area which resembles a corner of a piece of paper. I found that corner in the basement. The larger piece was gathered up along with the monolith itself after Sir Crumley was down.”

“If any of this is true, how did the intruder escape?” asked Finch.

“Even though the tread marks vanished in the carpeted hallway, I simply followed the trail of silt grains dropped from the monolith using my magnifying glass. The trail lead to a loose wall panel and then to the basement and eventually to the street.”

“And where is he now?” asked Finch in disbelief.

“I do not know, but I can say he will return to claim the rocks,” said Holmes. “The intruder was only able to carry away a few rocks along with the monolith. And, of course, you wonder how I know this. I simply weighed all the rocks and then converted that number to rocks on a volume basis. That number was less than 35 percent rock fragments. By definition the Zambi soil is skeletal, therefore several rocks were missing.

“If he returns like you say, how do you propose we set a trap?” asked Watson.

“After a day or so, we simply gather the remaining rocks and dispose of them in the dumpster located in the street and wait,” said Holmes.

The following day the rocks were bundled up and dropped into the dumpster as outlined by Holmes. That night Holmes received a phone call from Inspector Finch in which Finch declared that he had captured a short, African tribesman and would Sedgwick be present at the questioning.

The tribesman identified himself as Azi from Zimbabwe. He had meant no harm. He simply had to retrieve the Zambi profile. Even though Azi’s English was poor, Finch and Holmes were able to piece together his monolog. Azi told the following story.

Five years ago Sir Crumley had come to their African village in search of the perfect entisol. Several gun bearers accompanied him in a Landrover. Space in the Landrover was set aside for a large wooden box, which resembled a coffin. Believing the white man to be important, the villagers welcomed him as an honored guest. In return Sir Crumley opened the box and distributed an assortment of his shovels. Shovels? Yes, shovels. There were the round nosed spades, flat nosed spades, and posthole diggers. With these implements they could dig latrines, postholes, wells, and graves. Later they would plant trees and crops. From then on, the villagers seemed to thrive and their valley blossomed.

After a while, Sir Crumley chose 5 quick witted youths to train as soil scientists. He taught them to describe soil pits, classify soils, draw soil boundaries, and take soil monoliths. But first he gave them his special sharpshooters. Azi was especially eager to learn. Later he promised to teach them how to speak English.

In the meantime Sir Crumley was noting any and all soil holes dug by the villagers and by the youth. Even though he seemed to be disappointed with their findings, he was patient. Then the village elders decided to build a sacred hut for their god. A rocky knoll was chosen. Unfortunately their new posthole diggers were useless against the rocks. Thus a pit had to be dug for every post hole. That is when Sir Crumley became excited over one of the soil pits (as excited as an Englishman can be and not show it).

One day when the villagers were out hunting or gathering crops, Sir Crumley and the youths made a monolith from the soil and rocks in that particular soil pit. The boys knew the site was sacred but Sir Crumley was their leader, so they did as they were told.

The volume of the missing soil and rock was small but it was enough to cause the structure to sag noticeably. When the village elders discovered the truth, the tribe vowed vengeance and Azi was sent to retrieve it because he had the best knowledge of English.

Azi came to England on a freighter. He found Sir Crumley at the museum. It had been 5 years since they had seen each other but Azi was no longer a youth, so Azi felt he had no need to disguise himself. He had visited the museum often in an effort to locate the stolen monolith. Fortunately, the next rotation of monoliths brought the desired monolith out for display. One day he hid behind a monolith until all the visitors had left for the day and then proceeded to examine the profile. After the incident, Azi separated the soil from the board and mailed the soil home. But he had to have the rocks as well.

“Finally, there was the curse…” Azi spoke in a hushed tone and then halted. At this point a pin could have been heard hitting the floor because of the silence.

Everyone in the room, of course, knew Sir Crumley had died a horrible death for violating sacred ground. More importantly, would they suffer the same fate?

Azi had to be prompted to continue. His voice trembled but he was able to utter the following words, “The curse is that the subsoil of the Zambi soil would quickly develop clay films that would render it useless as an entisol.”

After a moment of relief at not being struck dead, Finch angrily hit the table and shouted, “What nonsense is this?! Azi, take your rocks and leave. Sir Crumley’s death was an accident and that is how it will be officially recorded! Holmes, I do not want to hear any more of this from you.”

DATES TO REMEMBER

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

February 18-19, 2010: Oregon Society of Soil Scientists 2010 Winter Meeting, McMenamin’s Edgefield, Troutdale, OR. Theme is “Soil-Waste Interface Solutions.” Look for more information in the next sharpshooter and on our web site at: http://www.oregonsoils.org/

March 3-6, 2010: National Society of Consulting Soil Scientists 2010 Annual Meeting, Amelia Island, FL and Cumberland Island, GA. Theme: “Diverse Opportunities for Consulting Soil Scientists in a Challenging Economy.” For more information: 2010 NSCSS Annual Meeting

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

June 20-24, 2010: Western Society of Crop Science & Western Society of Soil Science, with the National Cooperative Soil Survey Conference, University of Las Vegas.

Aug 1-6, 2010: A 19th World Congress of Soil Science, Australia - Oral papers closed; poster papers due Jan 31, 2010.

Oct 31-Nov 4, 2010: ASA-CSSA-SSSA International Annual Meetings, Long Beach, CA. Meeting theme: "Green Revolution 2.0: Food + Energy and Environmental Security.” For more information: ASA-CSSA-SSSA International Annual Meetings.

SUMMER TOUR A STUNNING SUCCESS

by Cory Owens

Prez Daniel did a spectacular job organizing this year's summer tour! Our morning started at Coffin Butte Landfill where we learned about how the landfill is organized and how it processes its leachate and makes good use of its methane generation. We also got to see the composting facility hard at work. Box lunches were enjoyed along with wine tasting and the stunning views from Willamette Vineyard before traveling to the Oregon Gardens. At the Oregon Gardens we toured the constructed wetland system, which treats the city of Silverton's water for temperature pollutants. The Gardens were in full bloom and were an excellent way to wrap up the day. Below is a smattering of photos from Ed Horn.

The OSSS group at The Oregon Gardens—looking at the living wall of the A-Mazing Water Garden.

Coffin Butte Land Fill – Aerial View

Flowers for sale at The Oregon Gardens

Catching some rays in the A-Mazing Water Garden at The Oregon Gardens

Dennis Hutchison enjoying the view and relaxing at our lunch stop (Willamette Valley Vineyards).


Stevens Hydra Probe Soil Sensor
All in one multi-parameter soil sensor
The Stevens Hydra Probe soil sensor is the most robust and unique soil sensor available. Users can select up to 22 parameters, including:
▪ Soil Moisture
▪ Soil Temperature
▪ Soil Electrical Conductivity
▪ Real and Imaginary Dielectric Permittivity
▪ and many more!
Features of the Stevens Hydra Probe
▪ Extensively researched and well-tested, durable design provides quality data over many years without removal or recalibration
▪ Over 10 years of field use
▪ Excellent precision and accuracy
▪ Temperature corrected measurements
▪ Smart Sensor technology
▪ No calibration required for most soils
▪ SDI-12 or RS-485 signal output
Over 100 universities, government agencies (USDA, USGS, NOAA, DOD, NASA), farms, vineyards and other companies use the Hydra Probe for quality data analysis!
The POGO portable multi-parameter soil sensor - just poke and go!
The POGO portable soil sensor enables manual readings to be taken quickly and easily. Simply insert the Hydra Probe into the soil you wish to sample, select the soil type and user defined location, and click “Sample” on the PDA’s screen. The soil measurements can be logged to the PDA for further analysis via MS Excel or other spreadsheet programs.
The POGO enables immediate understanding of soil conditions for agriculture, greenhouse monitoring, research, golf course greens, ground penetrating radar studies or any other application that requires manual checking of soil conditions at multiple locations.
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Sharpshooter

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

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