

December 2003

Mountain Profiles

A newsletter of the West Virginia Association of Professional Soil Scientists

Report from the 2003 Annual Meeting



Our annual meeting this year was less controversial than the past two, but it was quite educational.

Saturday was filled with lectures in the morning on Shepherd's campus, and we visited an archeological dig in the afternoon. John Stiteler, an archeologist with Gannett Fleming, Inc., gave a practical overview concerning how knowledge of soils is so important in archeological investigations. John Wah, a graduate student at UMD, discussed how phytoliths can identify past vegetative cover, and how the presence of phytoliths helps identify former surfaces, now buried. Rhett Herman from Radford University discussed electrical resistivity, conductivity, and magnetic surveys as they relate to archeological interpretations. His techniques were used in the field on Saturday afternoon to help locate buried foundations at an old plantation.

Friday night's business meeting dealt with maintaining our list of consulting soil scientists, the 2003 Conservation Partnership Meeting, WVAPSS' participation in the upcoming Northeast Forest Soils Conference, the challenges to WVAPSS that might arise from President Drohan's departure, funding for the Smithsonian project, and announcement of new officers. Our new President Pro-tempore and vice president is Wendy Knoll, Skip Bell continues as Secretary-Treasurer, and Ron Estep is Past President. Council members are Steve Carpenter, Stephanie Connolly, and Jared Beard. Details of the business meeting can be obtained from the minutes.

The academic community provided much of the attendance at our annual meeting. Participation by WVAPSS membership was disappointing. Nine members and a greater number of non-members were present for the business meeting and banquet.

Ron Estep

WVAPSS Soil Scientist Registry Available On Line

The WVAPSS Soil Scientist Registry is now available on line and can be accessed at http://webpages.shepherd.edu/PDROHAN/wvapss/Registry_2003_2.doc

Wear Your WVAPSS Colors

Thanks to the efforts of Wendy Noll, WVAPSS has a new supply of high quality, 100% cotton t-shirts for sale. These shirts have the WVAPSS logo over the left breast. Short sleeve T's cost \$9.50 and are available in medium, large and x-large. Long sleeve T's cost \$12.50 and are available in large and x-large. Colors are; white, gray, navy, and hunter green.

We also have some of our old style short sleeve t-shirts left in green (large only) and powder blue (x-large only). They are a 50/50 cotton/polyester blend and cost \$5.00.

You can place an order by calling or e-mailing Skip Bell (304-284-7564; skip.bell@wv.usda.gov).

Change in Officers for 2003-04

In accordance with Article XII, Section 4 of the WVAPSS Constitution, the Executive Council has appointed Wendy Noll President pro-tempore for 2003-04. Wendy will complete the term of President Patrick Drohan. Patrick resigned as WVAPSS President after moving to Nevada to accept a position as Assistant Professor in the Department of Environmental Studies, University of Nevada, Las Vegas. Wendy will also continue to carry out her responsibilities as Vice President.

With this appointment, the officers for 2003-04 are:

Past President (Chairman Nominations and Registration Committee)—Ron Estepp
President Pro-tempore—Wendy Noll
Vice President—Wendy Noll
Secretary-Treasurer—Skip Bell

Council Members (in order of seniority):

Chairman Public Relations and Education Committee---Steve Carpenter
Chairman Ethic and Registration Committee—Stephanie Connolly
Chairman Constitution and By-laws Committee—Jared Beard

Much thanks to Wendy for stepping up to fill Patrick's shoes as President. Good luck to Wendy, Patrick and all the WVAPSS officers in their new positions.

WVU Faculty and Student Recognitions

Two WVU soils faculty and two soils graduate students were recognized at the 2003 annual national meeting of the American Society of Mining and Reclamation held in Billings, MT on June 1-7. Dr. Jeff Skousen became the the President of ASMR for 2003-2004. Dr. John Sencindiver was presented the William T. Plass Award. This award is the highest award given by the society for outstanding contributions for a significant portion of the individual's career in the areas of mining, teaching, research and/or regulating authority as they relate to land reclamation.

Jim King, Jeff Skousen's graduate student, was presented with an ASMR Memorial Scholarship. Kyle Stephens, John Sencindiver's graduate student, was presented an award for the best oral presentation by a graduate student. Twelve graduate students from across the nation were included in the competition. Kyle's thesis, "Characterization of Wetland Soils in the Beaver Creek Watershed," is available on the web at <http://etd.wvu.edu/templates/showETD.cfm?recnum=2864>.

The 2004 annual national meeting of ASMR will be held in Morgantown, WV on April 18-24. Additional information will soon be available on the web at <http://fp1.ca.uky.edu/asmr/> or by contacting Jeff Skousen.

John C. Sencindiver

Welcome new members

Mark Van Lear is a Soil Data Quality Specialist at the NRCS Region 13 Soil Survey Office in Morgantown. Mark, his wife Athena, and son Tanner are living on a 70 acre farm near Grafton.

Dr. Javier Gonzalez is a soil scientist/chemist with USDA-ARS, located in Beckley. Dr. Gongalez comes to us from Mexico with a tour of duty at Iowa State University, where he received his MS and PhD degrees.

Steve Baker is a NRCS Soil Scientist in Philippi. He is currently working on updating the soil surveys of Preston, Tucker, and Barbour Counties. Steve and his new bride, LaRae (a NRCS Soil Conservationist), are living near Bridgeport.



Timmy Cook at the annual meeting. Future member?

Subaqueous Soils Expand Boundaries of Soil Survey

In July, Steve Carpenter and I attended a workshop in Delaware that presented one of the newest fields of soil science.....subaqueous soils. You may be wondering why a couple of mountaineers would be interested in subaqueous soils. After all, about the closest Steve and I have ever gotten to a subaqueous landscape in West “By God” Virginia, is a river bottom, most often encountered after flipping a canoe or raft. Plus, we’ve got plenty of work just managing our subaerial soil surveys. But, the MLRA Region 13 Office in Morgantown is responsible for quality assurance of National Cooperative Soil Survey programs on the coastal plain of Maryland and Delaware, where estuaries abound. So, we thought it was our duty to find out all we could on this exciting new field. As Steve is often heard saying, “Pretty good gig if you can get it!”

The National Workshop on Subaqueous Soils was held in Georgetown, Delaware about 25 miles west of Rehoboth Beach. It was jointly sponsored by the University of Maryland, University of Rhode Island, University of Maine, and NRCS. Participants were mostly from the mid-Atlantic region, but came from as far as Florida, Maine and Nebraska.

The workshop has hand-on intensive. Long mornings were spent in the field, that is to say, Rehoboth Bay or vicinity. Participants were divided into 4 groups and rotated daily between collecting core samples from beneath Rehoboth Bay with a “vibracore” rig, wading to collected samples by hand with bucket or McCauley peat augers, describing and classifying subaqueous soil profiles, and collecting bathymetric data.

The “vibracore” rig was quite interesting. It consisted of a concrete vibrator (the type used in construction) attached to a 12 foot section of 3 inch aluminum irrigation pipe. This section of pipe was attached to an electric winch cable suspended from a tri-pod



Cary Coppock (U of MD) pulls a vibracore sample.

mounted on the back of a boat. It was lowered to the surface of the subaqueous landscape and vibrated through the soil to a depth of about 8 feet. The upper end of the pipe was

sealed with wet rags so that a vacuum was formed. This held the saturated sample in place in the pipe while it was winched back up to the surface. Later, the entire pipe was cut in half with a circular saw to reveal the soil profile inside.



Dr. Mark Stolt (U of RI) prepares to describe a soil profile collected with the vibracore rig.



Phil King, NRCS Soil Scientist (on left) demonstrates collection of a Subaqueous soil core using a bucket auger.

Soil profiles were described using standard methods and terminology, but naturally, they were quite a bit different than profiles that we see here in the Mountain State. Buried O horizons were common, as was evidence of benthic fauna such as clam or tubeworm burrows and shell fragments. Many of the soils had the distinctive rotten-egg odor indicating the presence of sulfidic materials. All of the profiles we observed during the week classified as Aquents. Most were Sulfaquents, with a few Psammaquents and Hydraquents observed. Many of the profiles we described classified as Thapto-Histic Sulfaquents. These soils have buried organic materials and are common where the subaqueous landscape is a submerged marsh that has been buried under a deposition of mineral materials. Textures of the mineral soils were mainly sand or loamy sand in shallow areas where energy levels were relatively high. Finer textured soils were observed in deeper, quieter areas of the bay such as the lagoon bottom. A mucky modifier was frequently used with the mineral textures, especially in transition horizons between mineral and organic soil materials.

Bathymetric data is collected in order to generate a contour map of the subaqueous landscapes. Like subaerial soil surveys, an understanding of the soil-landscape relationship is fundamental to forming a model for delineating soil units in the subaqueous world. Many inferences about the subaqueous landscape can be made from tonal changes on high-quality color infrared aerial photography. But, changes in

subaqueous landscapes are so subtle that, most often, a precise contour map is essential for constructing a quality soil survey map.

Bathymetric data was collected by running transects by boat across the bay at regular intervals. A fathometer was used to measure depth to the soil surface (bay bottom). This was integrated with a GPS to determine location/time of each data point. Post processing of the data includes adjustments for tide fluctuations (a very involved process). Arcview (ESRI) and Surfer (Golden Software) software are used to create base maps. For smaller areas, bathymetric data can be collected by rod and level, or with ground penetrating radar (GPR) on frozen water bodies.

Afternoons were spent in the classroom. Instructors included Dr. Martin Rabenhorst (U. of MD), Dr. Mark Stolt (U. of RI), Dr. Laurie Osher (U. of Maine), Kelvin Ramsey (DE Geol. Survey), and Philip King (NRCS-DE). We were presented lectures on processes of subaqueous soil formation, coastal geology and geomorphology, subaqueous landforms, subaqueous soil taxonomy, subaqueous soil survey and interpretations, and benthic/estuarine ecology. Several case studies were also presented by graduate students.



Dr. Rabenhorst (U of MD) (in white ball cap) explains use of bathymetry equipment

I'll admit that going into this workshop I was a little skeptical about this whole field of study. I had many questions. Are pedogenic processes at work in subaqueous environments? Are subaqueous landscapes stable? Can subaqueous soil-landscape models be constructed and consistently applied for soil survey? Can we make accurate and defensible interpretations for subaqueous soils that justify the high cost of conducting a subaqueous soil survey?

After attending this workshop, I believe the answer to at least the first three questions is definitely YES. The jury is probably still out on the last question. But one thing is for certain.....the health and productivity of our Nation's estuaries has huge economic and social implications. A thorough understanding of the subaqueous environment, including subaqueous soils, is essential for making informed management and restoration decisions.

All in all, this was one of the best organized, most informative, and most enjoyable workshops I've ever attended. My hat is off to all those involved with its organization and instruction. I know that Marty Rabenhorst and Cary Coppock from the University of Maryland, and Phil King, NRCS Project Leader in Delaware put in many long hours of preparation. They did a great job.

For more information on subaqueous soils:

Demas, G. P., Rabenhorst, M.C. 2001. Factors of subaqueous soil formation: a system of quantitative pedology for submerged environments. *Geoderma* 102 (2001) 189-204.

<http://www.elsevier.nl/locate/geoderma>

Demas, G. P., Rabenhorst, M. C. 1999b. Subaqueous soils: pedogenesis in a submerged environment. *Soil Science Society of America Journal* 63, 1250-1257.

Skip Bell

ON THE LIGHTER SIDE

Sweet Venomous Charlie

I enjoy life and get lots of pleasure from little adventures. I also have this knack for tracking and interrogating offenders. Maybe I learned this knack from watching western movies in my youth. Maybe it came from overhearing the numerous quite conversations of Mingo County girls as they plotted how to entrap me in their amorous stalkings.

As the floodwaters threatened Moorefield late one evening, the new District Conservationist and I decided to move our fleet of trucks to higher ground. We drove into the darkened town and spotted two young men behind our office, stealing gas from our government vehicles. Instinctively, we bounded from our vehicle and gave chase. The perpetrators separated, and one cut from the dark alley toward the front of the Tastee Freeze. I yelled for Charlie to cut him off toward the left and I would surround him from the right.

The plan worked perfectly, and the dummy darted inside the Tastee Freeze. Charlie and I darted as well, jerked him up, and led him back to the office for interrogation.

Charlie was a redheaded, ruddy, friendly-faced, stout lad who was very likeable. However, he had recently returned from duty in Viet Nam, where he had been both shot at and shot. He had a small trickle of venom still flowing thru his veins. Like a fat rattler quietly sleeping in the autumn sun, you do not want to step on Charlie's tail. For some reason, stealing gas from our government fleet was a synonym for stepping on Charlie's tail.

We interrogated the lad. We huffed and puffed and threatened. He sang like a canary. We learned who he was, who his family was, who his partner in crime was, and where he could be found. After successfully terrifying this lad, we decided to let him go. We were pleased with our success. We were even more pleased and gratified when, after the lad left, we spotted a pool of yellow liquid where he had been setting. We had scared the water out of him.

I have this knack for interrogation. Maybe it came from the western movies, or maybe from those Mingo girls. Maybe even that small flow of venom in Charlie's veins helped a little too.

Anonymous

Photos from the 2003 Annual Meeting



2002-2003 WVPSS President, Ron Estep



Dr. Rhett Herman demonstrates the use of the EM-31 Electromagnetic Conductivity Meter in archeological investigations.



John Stiteler, Archeologist, Geo Decisions, a division of Gannett Fleming, Inc. presents: An overview of soils and archeology work



John Wah, Univ. of MD, presents: Use of Phytoliths in soils and archeology Interpretation.



John Ravenhorst, Archeologist, Harpers Ferry National Park, presents: Use of Soils interpretation in archeology in The National Park.