ASSOCIATION OF OHIO PEDOLOGISTS

(OHIO SOIL PROFESSIONALS)

President's Message:

By Steve Hamilton
Spring finally has arrived my flowers are starting to grow and the birds are getting there bright colors again. The buckeye trees are showing their leaves and all the others are starting to open up. The spring flowers in the woods finally bloomed a bit behind but they finally made it.

Tom Zimmerman is in charge of the summer meeting this year. We tentatively are planning to discuss soil quality and pollutants, i.e. arsenic levels in soils. The meeting will be in the Wooster area. I'm sure it will be a good training session. Hope everyone is having a good on-site year so far and hopefully it will get better as the year progresses. Remember to call OUPS before doing any work because it is a state law. It could be a possible ethics problem if you don't and could affect our insurance. (See article below) As always be safe when working out in the field if working alone make sure someone knows where you are at and carry your cell phone with you. Any suggestions for topics at the summer meeting are welcomed. Also any suggestions for the Forest soils conference would be helpful.

Let's all strive to make this year a good one and a safe one.
Steve

TRAINING CALENDER: SAVE THESE DAYS:

AOP SUMMER TRAINING MEETING, WOOSTER AREA, SEPT. 3 & 4, 2014
- START 9:00 A.M.
- SOIL CONTAMINANTS AND THEIR REMEDIATION IS THE WORKING TOPIC
- DETAILS AND ARGENDA FORTHCOMING

CENTRAL STATES FORESTRY WORKSHOP OCT. 14-16, 2014
- WAYNE NATIONAL FOREST
- IN THE ATHENS AREA
- DETAILS AND AGENDA FORTHCOMING

OUPS RECAP FROM WINTER MEETING

Remember that you are required to call OUPS before you dig. Call 811 or go to www.oups.org for more information and forms showing data required. To recap the educational material, an excavation includes auguring, digging, boring holes for percolation tests, trenching etc. They list 20 activities in their educational list and it is not all inclusive.

The key to their system is that when you call in to them they provide a ticket number for that job site. The interested parties all use that ticket number. The guy with the shovel, auger, back hoe etc. needs a ticket.

Liability in these cases can be blurred. The costs to fix a fiber optic bundle or the consequences of a gas line rupture are hard to comprehend. It is recommended that you check with your liability insurance company to see how well covered you are in these instances.

3/6/14 Minutes of the Association of Ohio Pedologists Winter Business Meeting

Following an instructive morning of presentations, President Steve Miller opened the meeting for business. Secretary Gordon Starr read the minutes from the March 2013 winter business meeting and these were approved unanimously. Those interested in reviewing the new executive council bylaws will find them on our AOP website.

Treasurer Jeff Glanville provided a detailed report of the monetary flows and balances in the various AOP accounts and this report was unanimously approved.

Academic Representative Matt Sullivan reported that the first recipient of the AOP scholarship was awarded to Allan Goldwyn. Donations to the scholarship fund are much appreciated and will be both tax deductible and apply as OSU alumni contributions. The website for scholarship giving is found at give.osu.edu. There was a call for a scholarship committee which may be formed in the future.

Election Results – the election of officers followed with results as follows:

Tom Zimmerman – President elect
Gordon Starr – Secretary
Jim Svoboda – Treasurer
At Large Members – Steve Prebonick, Dan Michaels, Larry Milliron
Jim Svoboda was elected AOP treasurer and will be given signature authorization on all the organizations financial accounts

New Business

- Ohio is to host the forest soils conference and help will be needed from AOP members. Contact: Matt Deaton.

- A motion to include an ethics discussion at our annual meeting passed unanimously.

- New President, Steve Hamilton then closed the meeting.

Respectfully submitted,

Gordon Starr, AOP Secretary
Steve Hamilton, AOP President

Beavers Impact on Floodplain Soils
By Joe Steiger

One of the five soil forming factors is plant and animal activity. This principle played out in the soil mapping of Muskingum County in the 1980's. Dam building has greatly affected the flooding of the Muskingum River and its major tributaries. However, the smaller tributaries are largely unaffected and still experience flash flooding after intense local thunderstorms. Most of these tributaries have well-defined channels in flood plains confined by steep forested slopes. Most areas are too narrow for cultivation and are used for pasture. The grasses and forbs are mostly native plants but only a few are wetland indicators. The land appears well-drained along these narrow stream valleys except for a few wet spots.

The issue we faced in mapping the soils was that the soil profiles consistently showed evidence of saturation near the surface. The soil series we were seeing included Melvin and Newark but the landscape did not support this poorly-drained condition. We concluded that the soil profile features were more important to map than current land use. There is very little tile drainage improvement in these floodplains.

This puzzle of soil formation became clear as the mapping in northeast Muskingum County was completed. Much of the area near Otsego is owned by coal companies and some valleys are Roadless. In mapping one such valley that was wooded and had no roads or trails for nearly a mile along the valley

We noted that the area held a real surprise. A series of beaver dams were stair-stepped up the valley completely blocking any stream channel. It was nearly impossible to cross the floodplain because of ponded water two to four feet deep. Where one beaver pond became shallow upstream another beaver dam crossed the valley to form the next pond.

It took only a little imagination to realize that beaver activity on these tributary valleys was a dominant condition in the wooded habitat. Until the beaver pelt fur trade began trapping in the eighteenth century, beaver were a dominant force in creating aquatic habitat. Their activity slowed stream flow and reduced downstream flooding.

A recent program of the Nature series on PBS called "Leave It To The Beaver" reminded me of the findings of the soil survey in Muskingum County. I would recommend viewing the program when it returns later on PBS.

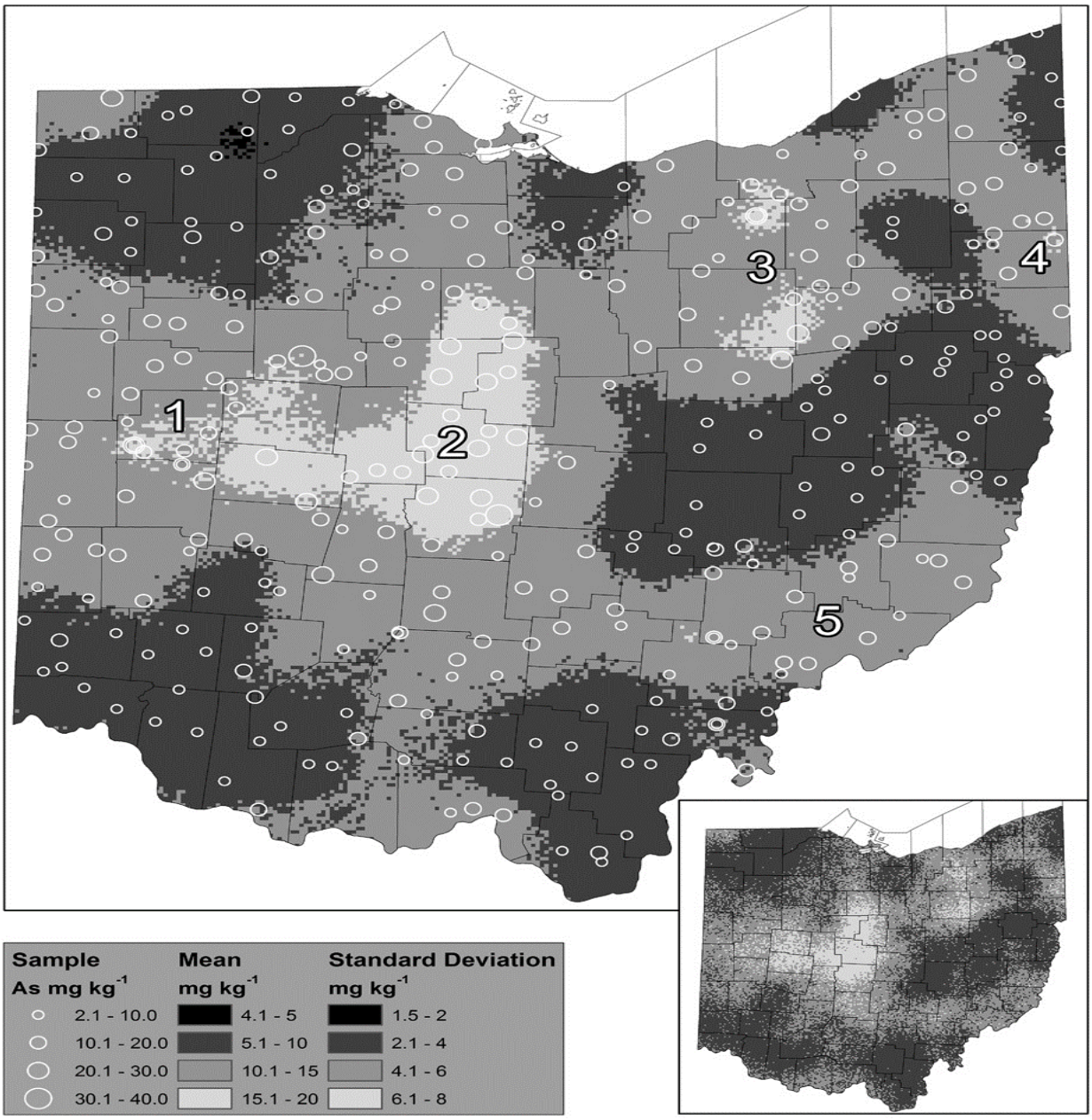
Beaver dams in slightly sloping wetland streams. The stream on the left has no or very little beaver activity. Beavers have preferred to work with the slower and more consistent surface and ground waterflow in the wetlands to the right of the image. Here the specific stream flows are controlled by regularly spaced beaver dams with a spacing between them varying from 50-200 meteres.

SOURCE: http://www.geostrategis.com/p_beavers-pasquia.htm

Editor's Note: This a photo from an interesting Canadian site that among other things deals with the effects of beaver dams on the ecology.

Science in soils: Would you like a little arsenic with that?

Do you the know Ohio's background arsenic levels? Well know you can. The abstract for the study is below. Dr. Jerry Bingham was one of the authors. It was published April of this year. The link is below but I included the map and link to the press release to pique your interest. It is interesting to see how variable the "normal background level" is.



http://www.pnnl.gov/news/release.aspx?id=1049

Spatial Patterns in Soil Arsenic to Estimate Natural Baseline Concentrations

Erik R. Venteris,* Nicholas T. Basta, Jerry M. Bigham, and Ron Rea

Arsenic in soil is an important public health concern, but risk-based toxicity regulatory standards derived from laboratory studies should also consider concentrations measured away from obvious Contamination (i.e., baseline concentrations that approximate natural background) to avoid unnecessary remediation burdens on society. We used soil and stream sediment samples from the USGS National Geochemical Survey to assess the spatial distribution of As over a 1.16 × 105 km2 area corresponding to the state of Ohio. Samples were collected at 348 soil and 144stream sites at locations selected to minimize anthropogenic inputs. Total As was measured by sodium peroxide fusion with subsequent dissolution using concentrated HCl and analysis using hydride-generation atomic absorption spectrometry. Arsenic in the soil and streambed samples ranged from 2.0 to45.6 mg kg-1. Sequential Gaussian simulation was used to map the expected concentration of As and its uncertainty. Five areas of elevated concentration, greater than the median of 10 mg kg−1, were identified, and relationships to geologic parent materials, glacial sedimentation, and soil conditions interpreted. Arsenic concentrations <4 mg kg−1 were rare, >10 mg kg-1 common, and>20 mg kg−1 not unusual for the central and west central portions of Ohio. Concentrations typically exceeded the soil As human generic screening level of 0.39 mg kg−1, a value corresponding to an increase in cancer risk of 1 in 1,000,000 for soil ingestion. Such results call into question the utility of the USEPA and similarly low soil screening levels. The contrast between laboratory concentrations occurring in nature argue for risk assessment on the basis of baseline concentrations.

Maryland Terps win first worldwide soil judging contest.
(Danielle Balduff provided this story).

Our Big Ten brethren have won regional and national contests. They won the first international contest hosted by Korea. The short version of the story is as follows.

Team USA wins Grand Prize (overall winners)
Team USA wins Group Portion of the Competition
Tyler Witkowski (UMD-ENST Alum) - 2nd Place Individual

For the full story check out this link: http://enst.umd.edu/news/terp-takes-silver-1st-international-soil-judging-competition
A number of photos can be viewed there also.

Ed. Note: Korea!? I remember going to Terra Haute, Indiana in a OSU van with a bent tailpipe in 1972. I think Dan Michaels, Steve Davis, George Derringer, Rich Hiller, Dr. Smeck, myself, and one other person whose name I cannot remember made the trip. You guys can correct me if I am wrong, old age is terrible. But notice it is all guys names, if you look at the Maryland pictures you will see both of their teams have several women. I think

this helps make the point how important AOP support for soil judging in general is key to expanding soil science knowledge for our diverse workforce. With the fewer chances for field experience today these competitions are more important than ever.

And finally to remind ourselves that we got into soils to protect it and to promote its sustainability through proper use, below is an article reprinted from the May 2014 NRCS Soil Health Update. (Thanks to Duane Wood for this one) Abridged version

CEDAR FALLS — Farmers started the soil health movement that Ray Archuleta, a conservation agronomist with the Natural Resources Conservation Service in Greensboro, N.C., sees as the solution to energy, climate, air and water quality and human health issues.

"Farmers are learning to farm in nature's image, and they are healing the land," said Archuleta during a recent workshop at the Center for Energy and Environmental Education at the University of Northern Iowa in Cedar Falls. He also gave the Shivvers Lecture at Iowa State University. “No more diapers, no more band aids," said Archuleta, who is known as the "Soil Guy." "The only way to heal the land is through understanding."

Archuleta said desperation led him to question if there wasn't a better way. He worked for the NRCS in Oregon, lived in Idaho and drove across the Snake River to work. He noticed that when farmers turned on the irrigation water every summer "that beautiful emerald river turned to chocolate. “We were putting millions of dollars into conservation, and that river was still chocolate, and that bothered me, but what resonated even more was that I had a hard-working, frugal friend who farmed 600 acres of prime Idaho land, and he couldn't make it and bring his son into the operation."

The recent National Conference on Cover Crops and Soil Health in Omaha disturbed Archuleta when it was decided that an indicator of success would be 20 million acres of cover crops. “No, no, no," he said. "I want 20 million minds and souls changed. It's understanding; not tools. Once we change the understanding of the people, the land will be healed."

Archuleta demonstrated soil health with a slake or aggregate stability test. Volunteers Nicholas Thomas and Chad Drake dropped soil clods from conventionally tilled fields in North Carolina and Iowa and from an Iowa no-till field and a North Carolina field that has been in no-till for 40 years and planted to a seven-way, multispecies cover crop. The North Carolina farmer who uses manure hasn't used commercial nitrogen fertilizer for 18 years, no phosphorus for nine years and has gone from using four herbicides to one. The field's organic matter is 6.2 percent.

The conventionally tilled soils from both states quickly slaked apart. “The water will tell on you," Archuleta said. "Water rushes in to fill the pore spaces. Healthy soils hold their integrity and pore spaces remain intact. If the clod slakes and breaks apart, the pores

collapse and there is no infiltration."

He credits farmers such as Gabe Brown, who farms 2,000 of crops and 3,000 acres of rangeland in North Dakota, for teaching him about soil health. Brown no-tills, doesn't purchase nitrogen and uses one herbicide. His farm averages 15 to 16 inches of precipitation. “And it's so cold the snot freezes to your face," Archuleta said. "Gabe grows 126-bushel corn using a 78-day variety. One field with 8 percent organic matter yielded 200 bushels. His soil health scores are the highest in the country. He grows corn for $1.10 per bushel. ISU breakeven costs are $4.60. "Brown practices adaptive grazing with his cow herd using the system that best fits the situation -- chickens follow the cattle, and he also grazes sheep.

Dave Brandt, an Ohio corn and soybean farmer, bought cows to harvest the abundant biomass generated by his cover crops. He drilled soybeans into a cover crop after rolling it down. His yield was 71 bushels per acre with no herbicide. Lucas Creswell no-tilled corn into standing cereal rye on his steep Pennsylvania farm ground and grew 170-bushel corn. North Carolina farmers are growing no-till cotton, tomatoes and potatoes with cover crops. Kansas rancher Michael Thompson grew 58 bushel corn on 7 inches of total rainfall using no-till with cover crops.

To hear or read the full of version of the article and Archuleta’s ISU Shivver's Lecture go to http://www.leopold.iastate.edu/news/calendar/2014-04-01/shivvers-soil-health-archuleta

Thanks to everybody who sent content for this newsletter. Especially to Duane Wood for his help with the transition. Keep the ideas and articles coming in. There will be a midsummer issue with details about our upcoming meetings.

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