

The Lay of the Land

The Newsletter of the Maine Association of Professional Soil Scientists

Volume 18, Issue #2

www.mapss.org

Summer 2014 Edition

PRESIDENT'S MESSAGE

Don Phillips, CSS; MAPSS President; Phillips EcoServices

The soil science profession in Maine is not in vigorous shape. This isn't news - our profession has been becoming increasingly redundant to competing earth science professions since even before I became President. I wrestled with steps I could take (if any) to solve this problem. I did not want to just sit around and let inertia take over hoping our problem would eventually sort itself out because that would be the lazy way out. But what could I do? What could anybody do? Nobody can turn this issue around all by themselves.

The lack of interest in soil science is a nationwide problem but one that it isn't confined only to soil science. I understand that it goes across the breadth of the biological, physical, and ecological sciences. In an email I received from UMaine's Ivan Fernandez, Ph. D., he remarked that he has noticed a shift from "empirical and field based sciences" to "molecular technique and modeling" interests over the years. I have copied below a snippet from his email, which he compiled from others, summarizing the situation we currently face.

"I have been observing this [shift] for some time now. Organisms and their habitats are being written out of biology, so far as direct experience with them is concerned. We soon will have no means of knowing what is going on in nature, as no one will be investigating nature, or even have a clue as to how to do so. It is somewhat disconcerting to attend conferences and witness paper presentations where it is clear that the presenter has never seen a living, wild specimen of the organism being reported on and would not know how to go about finding one."

IN THIS ISSUE

President's Message <i>Don Phillips, CSS</i>	Page 1
Johanna Szillery appointed to Board of Certification for Geologists and Soil Scientists	Page 3
An Interesting Email from our Recently Departed NRCS State Soil Scientist <i>from Tony Jenkins, NRCS</i>	Page 3
Welcome Aboard, Kaizad Patel	Page 4
MAPSS Technical Committee Meeting Minutes – April 25, 2014	Page 5
Obituary: John Michael Toothaker, CSS #449	Page 7
A New Pamphlet <i>Don Phillips, CSS</i>	Page 8
MAPSS / MASE / MAWS Workshop Update <i>Dave Rocque, CSS, LSE</i>	Page 9
Registration Form: MAPSS/MAWS/MASE 2014 Workshop	Page 11

Note: Opinions expressed by the authors of articles are not necessarily endorsed by MAPSS

The Maine Association of Professional Soil Scientists (MAPSS) was formed in 1975. The Mission of MAPSS is to promote soil science through the exchange of technical, political, and regulatory information that influence and guide the profession of soil science. MAPSS members have interdisciplinary professional backgrounds in both the private and public sector, including soil consultants, wetland scientists, site evaluators, state and federal government scientists and regulators, students, and others with an interest in the natural sciences. The organization's goal is to ensure the success and promote the advancement of the soil science profession. MAPSS strives to provide guidance, education, and training to its members and the public on soil science issues of interest and concern.



Like I wrote above, as President, I cannot just sit around with my head in the sand, hoping our profession can miraculously revive itself. I do not have any special influence, let alone control, on how society views soil science, but giving up without even *trying* to do something just isn't in my nature. So, in a nutshell, here's my plan.

I'd like to see a section on our website devoted to educational brochures, flyers, and/or pamphlets on technical subjects that can be downloaded by anyone. Dave Turcotte, and then Rod Kelshaw, have already designed attractive brochures on Maine soils in general. Both brochures are, in my opinion, sorely needed to fill a niche. We should continue bringing these brochures to fairs and schools and so on in the hopes that perhaps one of them will help inspire a younger person to pursue a soils-based career.

What's missing in our stable of documents, in my opinion, are equivalent documents on more technical soils-related topics designed mostly for DEP and LUPC staff, Code Enforcement Officers and Town Planning Board members. They are the folks who often have the final say as to whether or not an Order 1 High Intensity Soil Survey prepared by a Maine Certified Soil Scientist is required to support a given project. These are the same folks, I hasten to add, that our own Dave Rocque has been trying so diligently to reach with his outstanding Natural Resources Workshops through the years.

It's easy to talk about what might be needed; what's harder to do is step up – like Dave R., Dave T. and Rod K. have done – and not only throw out ideas, but follow up with action. As President, I'm willing to take the next step forward and introduce a pamphlet that addresses the differences between USDA County Soil Maps and what we licensed soil scientists generally produce – an Order 1, High Intensity Soil Survey.

We know that the purpose and scale of both are valid, but do other users know the difference and the circumstances under which one or the other can be used? I'm not sure people in general do, so that is what I tried to address in my draft. A preview of this pamphlet can be found elsewhere in this issue. Or, you can attend the upcoming Natural Resources Workshop at Mt. Blue State Park and pick up a copy for yourself.

Nor should we stop there. Relevant topics for other downloadable documents are plentiful: connotative-style soil maps, hydrologic soil groups, stormwater issues; the list goes on. We need people to step up and prepare some more for the website.

I'd like to end this address more positively than I began. I'm encouraged that our profession has taken a good solid step towards the future. After years of a vacant seat on the Maine Board of Certification for Geologists and Soil Scientists, it has recently appointed a new member – Johanna Szillery, CSS. Although I'm surely taking the risk that I could be jinxing her or putting unwanted pressure on her with my words, I believe she will become an energetic and positive new voice who will support our profession by maintaining the high standards of the practice. No, she is not going to change our profession all by herself, but we've all seen her energy, charisma, and communication skills as a former MAPSS President and those are the traits I believe we need on the Board.



Johanna Szillery appointed to Board of Certification for Geologists and Soil Scientists

We are proud to announce that Johanna Szillery, CSS and MAPSS member, has been appointed to the Maine State Board of Certification for Geologists and Soil Scientists. Johanna is currently an environmental scientist with CES, Inc. and takes on the consulting soil scientist seat which was left vacant by Steve Howell.

Johanna holds a master's degree in Plant, Soils, and Environmental Sciences from the University of Maine (2003) and a bachelor's degree in Biology from Drew University (1998).

Johanna has over ten years of experience in the soil science, wetland science, and natural resources field, which includes positions in academic research, Federal government, and as an environmental consultant. She has served as president of the MAPSS, and is an active member of the Maine Association of Wetland Scientists. She specializes in wetland and natural resource delineation, planning, and permitting; and soil surveys and suitability assessments.

Johanna joins another new member to the Board, Keith Taylor, CG. Keith is a geologist with St. Germaine Collins, has been a certified geologist since 1991. He fills the seat formerly held by Andy Tolman.

Robert Marvinney, the Chair of the Board, anticipates convening a meeting of the Board in the early fall.



AN INTERESTING EMAIL FROM OUR RECENTLY DEPARTED NRCS STATE SOIL SCIENTIST

From: Jenkins, Tony - NRCS, Bangor, ME

Subject: HAHT soils, carat symbols and the like

Hi, I was looking for something else and came across the below passage from my personal favorite expert on HAHT. It may help when deciding to use carats and other applications of nomenclature for anthropogenically impacted soils. Underline emphasis was mine. If HAHT conventions are discussed in the MAPSS newsletter sometime the quote might be very helpful for context. Thanks again Dr. Galbraith!



Tony:

Intentional and profound are the key words when used with modification. We have unintentionally modified the soils of Greenland through global warming. We do not intend to accelerate erosion when we farm, but we do. We do not intend to poison our soil with mercury; it is collateral damage, so to speak. But if we purposely move soil from one spot to another, or purposely puddle and then flood soils so that they become anaerobic enough to grow only rice, and that causes a profound change in soil properties, it is intentional. If we add manure as a fertilizer source, it is a normal practice and barely alters the soil properties. But if we purposely add in bone, char, manure, compost, and build the soil surface and change it into a mollic epipedon in the middle of a jungle soil, it is a profound change. The one I struggle with is the long-term adding of lime to an Ultisol, which changes it into an Alfisol. The intent is to produce crops, the farmer cares less what the soil order is. So that one is iffy, but if left alone, it will revert back. If that reversion takes several decades (2 generations), then we should probably recognize it. But how could you map it, since the landform did not change? For now, we have stayed away from those really tough ones.

Jenkins, Tony - NRCS, Bangor, ME wrote:

I cannot say I am completely clear on the need for “intentional” alteration (e.g. in anthropic epipedon definition). I guess it would be the difference between the chemical alteration from manuring and anthropogenic deposition of hydrogen ions or mercury... but I am not clear on that.

Tony Jenkins
State Soil Scientist/Technology Team Leader
USDA-NRCS
Bangor, ME

Welcome aboard, Kaizad Patel

On behalf of our membership, I would like to welcome Kaizad as a member of MAPSS. Kaizad is a Ph. D. student at the University of Maine working with Dr. Ivan Fernandez, and he generously offered his assistance to the Executive Committee after last year’s Annual Meeting to help with the newsletter. Already, our Newsletter Editor wouldn’t know what to do if he didn’t have his help. Welcome, Kaizad.

Don Phillips, MAPSS President & Newsletter Editor





MAPSS TECHNICAL COMMITTEE MEETING MINUTES

USDA Service Center Conference Room, Augusta, ME

April 25, 2014 1:30 pm

Purpose: Determining Hydrologic Soil Group Designations from Soil Test Pit Data

Attendees: Chris Dorion, Tony Jenkins, Steve Howell, Dave Marceau, Lindsay Hodgman, Greg Granger, Dave Rocque, Don Phillips

The MAPSS Technical Committee met with NRCS State Soil Scientist Tony Jenkins, NRCS Assistant State Soil Scientist Lindsay Hodgman, and NRCS Soil Scientist Greg Granger to discuss how to determine Hydrologic Soil Groups from test pit data for anticipated adoption as a part of our services during the development of High Intensity Soil Surveys by our members. The meeting was called to order at 1:30 p.m. by Tony, who then passed out the following handouts (links provided for downloading):

- 1) [Chapter 7: Hydrologic Soil Groups](#), NRCS National Engineering Handbook; 12 pp, January, 2009 (click on [Chapter 7, HSGs, National Engineering Handbook](#))
- 2) Table 7-1, from above;
- 3) NRCS Soil Survey Technical Note No. 6 - [Saturated Hydraulic Conductivity: Water Movement Concepts and Class History](#), 12 pp, December, 2004 (click on [Technical Note No. 7](#))
- 4) [618.88 Guide for Estimating \$K_{sat}\$ from Soil Properties](#), NSSH Part 618 (Subpart B) | NRCS (click on [Guide for estimating Ksat from soil properties](#)); and
- 5) Primary Characterization Data sheets documenting technical soil properties (including lab generated physical properties, and official pedon descriptions) associated with the Ragmuff, Chesuncook, and Nicholville soil series.

Tony began by quickly going through the process using data from the Ragmuff series, using Table 7-1 from the NRCS National Engineering Handbook as a guide. Discussion followed an order suggested by the eight *Key Issues* he wrote (in usual shorthand fashion) on the whiteboard during his discussion, and which he subsequently emailed to attendees. Tony's notes were later rewritten by DP for easier reading, as presented in the text box shown on the next page.

Key Issue #1: Determining Depth to Water Impermeable layer: Tony cautioned that soil scientists must be certain where the reference point is, with respect to depth – the top of the soil surface, or the top of the mineral layer - since this is not clearly stated in Table 7-1. He recommended that a reference should be determined as policy by MAPSS, and wrote this as *Key Issue #1* on the whiteboard. Consensus from attendees stated that it should be at the top of the mineral soil surface. Determining the proper depth is critical to using Table 7-1.



Determining Depth to High Water Table: A debate ensued as to whether the typical Maine soil scientist would call a horizon with 1% redox concentrations, as notated on the pedon description for Ragmuff, as the depth that marks the high water table.

Key Issue #2 and #3: Assigning K_{sat} of Least Transmissive Layer in depth range: Two avenues can be used. The 1st avenue is by using representative K_{sat} values from an analogous soil survey source, like SoilWebSurvey for respective series and horizons. The 2nd is by following NSSH/NSSM guidance based on in-situ soil properties. Tony recommended going through the 2nd avenue first, and then reviewing published NRCS sources afterwards. To get this value, Tony used the Guide for Estimating K_{sat} from Soil Properties. Similar to the textural triangle, it delimits “Bulk Density Classes” (medium, low, or high density with a range of values for each) overlying the textural limits. Tony chose the “High Density” triangle, with the appropriate texture documented for Ragmuff’s Cd horizon (silt loam), based on the assumption that a Cd horizon typically has higher bulk density values. Discussion here led to Tony recommending that MAPSS should establish arbitrary or other guidance for certain properties and/or circumstances, like those related to dense basal till (see *Key Issue #2*).

Going through the exercise for the Ragmuff series, Table 7-1 showed a dual HSG of C/D. This decision led to *Key Issue #3*, in which MAPSS must decide how to deal with dual HSG designations for a HISS?

Key Issue #4: Discussion proceeded to using the **Chesuncook** data as an exercise, and the Technical Committee had more comments and asked more questions. For instance, with respect to where the Seasonal High Water Table (SHWT) is and whether 1% redox marks its depth, Dave Marceau commented that practicing soil scientists in Maine should be held to the industry standard, not the very technical standards that are practiced by NRCS soil scientists. Dave Rocque agreed. Tony’s response was that we should use “more subtle” standards of recognizing soil properties as opposed to thinking that we should hold ourselves to a higher standard. Another very important consideration, according to Tony, is to select a test pit at a representative location. For instance, Tony stated that if a soil scientist chose to place a soil test pit at a “wetter” part of a moderately well drained soil when the representative location should be on the “drier” part, then the data may not be representative. Discussion led to Tony’s *Key Issue #4* – what redox conditions will be necessary to mark the SHWT?

Key Issues (see text for further explanation)

1. Depth to water impermeable layer: from surface or from mineral soil
2. Arbitrary or other guide: on assigning a K_{sat} value for a Cd
3. How do dual HSG designations (ie., C/D, etc) affect HISS?
4. What redoximorphic conditions will be necessary to identify the SHWT?
5. What should be considered as an impermeable layer? A “firm” or “very firm” consistence? Physical differences between textures in two contrasting horizons?
6. What basis do you use to pick a bulk density (abbreviated as D_b) class (i.e., low, medium, or high)?
7. Extenuating circumstances regarding structure, OM, percent Redoximorphic Features, etc.
8. Protocols for disturbed sites (ie., Entisols)



Key Issues #5, #6 and #7: Discussion proceeded to using the **Nicholville** data as an exercise, and similar comments and questions arose. For instance, Tony believes the impermeable layer, as documented on the Nicholville pedon description, begins at its “very firm” 2C2 horizon – not the “firm” 2C1 horizon – due to a combination of physical soil differences between the two horizons. This led to Tony’s *Key Issue #5*, what kind of criteria would separate a “firm” layer from a “very firm” layer? How about contrasting textural differences? Ditto for *Key Issue #6*, what basis will MAPSS use to pick a bulk density class (“low”, “medium”, or “high”)? And ditto for *Key Issue #7*, what kind of extenuating circumstances, as explained in the narrative, should a Maine soil scientist use when considering organic material, redoximorphic features, etc? And finally, MAPSS should establish protocols for determining HSGs in HA/HD soils, and ditto for soil series that can transmit water fast (HSG = A) along with those that transmit water much slower (HSG = D).

Upon finishing his talk, Tony re-emphasized that the value of determining our own HSGs lies in making a decision based on *what’s actually there*, not what is based on an unrelated set of data collected elsewhere. He summarized by reminding attendees that coming up with our own HSG depends on utilizing a greater expertise of identifying soil properties than what we may currently be doing.

Lindsay Hodgman wrapped up the talk by showing how to get into various WebSoilSurvey pages, including the Primary Characterization Data for Maine soil series.

The MAPSS TC meeting was adjourned at about 3:45 pm.

Submitted on April 27, 2014 by Don Phillips

John Michael Toothaker, CSS #449

We regret to inform you that a colleague of ours, John Michael Toothaker, died unexpectedly of a cardiac arrest on July 16, 2014, at the Maine Medical Center with his family by his side. John earned his Maine Soil Scientist certification in December 2001 and was an active soil scientist and site evaluator. John is survived by his wife Beth and sons, Cody and Kolt.



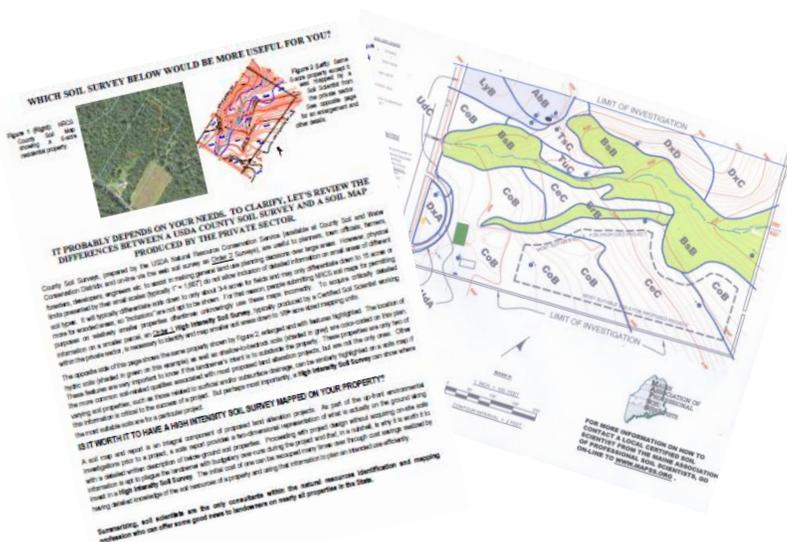
John attended the University of Maine at Farmington and earned a BA in Geology and Geography in 1991. While still a student at UMF, he found summer employment in 1990 with the Franklin County Soil and Water Conservation Commission and continued working there on a part-time basis until graduating in December 1991. John continued his career with soils by joining DARCO Engineering of Readfield, Maine, an engineering company specializing in septic system design services, eventually gaining his site evaluator license in 1995. John was then hired by Sebago Technics in 1997, where he began his environmental consultant career as a site evaluator and began apprenticing as a soil scientist. He stayed with Sebago Technics until 2003, when he left to start his own company (Tooth and Associates) to provide site evaluation, soil science, and wetland science services for the private sector. John was an active member of MAPSS during his time with Sebago Technics.

A NEW PAMPHLET
Don Phillips, CSS, Phillips EcoServices

Pictured here is a double-sided pamphlet that I hope the membership will approve for the website. It is designed to fill a niche that Dave Turcotte's and Rod Kelshaw's *Soils of Maine* brochures don't quite fill – this is an educational pamphlet relating to a more technical aspect of soils, and mostly intended for those who make land planning and permitting decisions.

Having something like this would be beneficial to us in many ways. For instance, if it goes on the MAPSS website, then anyone can download it. It can be electronically sent to anybody – state and/or municipal regulators, developers, or as a marketing tool to potential clients – to explain the differences between USDA County Soil Maps versus Order 1, High Intensity Soil Maps that private-sector Certified Soil Scientists produce. It can also be printed on standard-sized paper we all have at our offices and tucked in with other documents as a courtesy service to recipients. We can change the wording or other parts, as the situation arises, without having to contract others to do this for us. And finally, once we get the first one (of a series), other similarly needed educational pamphlets can follow. I plan to bring a few copies of this pamphlet to the upcoming MAPSS / MAWS / MASE Natural Resources Workshop as handouts to attendees.

I believe that we, as an association, are sorely lacking in providing this sort of outreach and educational service. I also believe that if we have information like this on our website, it would vastly improve our value as a profession. Comments will be welcomed.





MAPSS/MASE/MAWS WORKSHOP UPDATE

Dave Rocque, Maine Department of Agriculture

How many years ago was it when I told everyone “this is my last workshop”? Someone told me a long time ago to “never say never”. I obviously didn’t listen.

I thought I might try to skip a year (as compared to saying I won’t do any more) so I did not have another workshop in the pipeline for this year. I began to feel a little guilty, and so I offered to redo the **Mt. Blue State Park** workshop at the MAPSS, MASE and MAWS annual meetings. The overwhelming response was, yes! My take was that, not only are the workshops a good opportunity to learn something new, they are also a great social networking opportunity between a number of groups with which we frequently interact. The interaction allows us to see things through the eyes of the other groups and to perhaps educate each other. That sort of interaction makes us all better at what we do.

As I see it, there are several benefits from redoing a workshop. One is that we get to ruminate over what we saw and were told during the first workshop; we can then come back with new questions and are able to take a second look to see if what we thought we saw the first time is what we see the second time.

A second benefit is that regulators also get to ruminate over what they said about the sites last year and decide if their opinions have stayed the same or have changed.

A third benefit is that the conditions present during the first workshop may change during the second one. That may have a significant effect on everyone’s opinion (everyone is biased by what they see, even if it is not normal). As you may recall, last year we had a lot of rain before the workshop, making all of the drianageways look like major streams and filling the soil pits with water. Hopefully, this year will be more normal (not sure what that is any longer) for early September and water levels will be low.

And, last but not the least, it gives the experts a chance to ruminate over what they originally determined. In the case of soil scientists classifying the soil pits, we just came back from looking at several soil pits again and have changed some aspects of our determinations of each of them. Last year, we classified 17 soil pits in one day. That is a tough task and the soils were saturated the day of the determinations. Some of the pits were relatively easy to classify but others were not. We were able to focus on the more troubling soil pits this time.

I think you will find this a worthwhile workshop, whether it is your first or second trip to the site. Not only will you find it educational, informative, a good source of CEUs and an excellent opportunity for social interaction, but it is also a beautiful location. Hopefully you agree and will take the time to register. See you there on Wednesday, September 3, 2014.

Mark your calendars for Wednesday, September 9, 2015. That is the date for the next joint workshop I am currently working on which will be at **Sebago Lake State Park**. My last one (ha ha). I have located a number of interesting natural resource features which will be highlighted at this workshop, including:





1. Sandy spodosol soils with a large transitional area between uplands and wetlands (Mt. Blue had sandy spodosol soils but very little transition area). Wetland determinations are tough on sandy sites because of both soils and vegetation. Since there is very little capillary action in sandy soils, plants may not always match soil drainage conditions like they (usually) do in finer textured soils. The transect ends in a histosol.
2. Lacustrine sediment that is a spodosol in the uplands. That is uncommon anywhere in the state, but more so in southern Maine. This transect is in a hummocky hemlock forest, which will make a wetland determination interesting.
3. A boulder field in a low wet area and one in an upland area of glacial till soils. How do you classify (map) soils in such areas? (Are they even soils?) What about the hydrology? How are they regulated, especially if located within the shoreland zone? What is the use and management of such soils? This site also has a logan on the lake that has shoreland zoning issues.
4. A flood plain on the Songo River with sandy soils. Is the area a wetland? Where does the shoreland zone begin (the water levels are controlled by a dam)?
5. There are three stream and vernal pool determinations in a variety of settings, some of which are within the shoreland zone and backed up by the lake (sound familiar) and therefore have additional regulatory implications.

The wrap-up discussions will take place at Songo Beach, not a bad place to have a discussion. If discussions get too heated, we can always jump into (or throw – or threaten to throw - someone else into) the lake. It should be another great learning and socializing opportunity. If you want an interesting place to eat lunch, try Songo Locks, just a short distance down State Park Road. Watch as boats are raised or lowered to access the river up or downstream of a dam. The locks are manually operated.



