MAINE ASSOCIATION OF PROFESSIONAL SOIL SCIENTISTS

The Lay of the Land

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ONE PERSON'S PERSPECTIVE ON THE 2013 MT. BLUE NATURAL RESOURCES WORKSHOP

By Al Frick , CSS & LSE; Former MAPSS President; Albert Frick Associates, Inc.

MT. BLUE TRAINING EXERCISE CONSULTANTS & REGULATORS 'CALIBRATING'

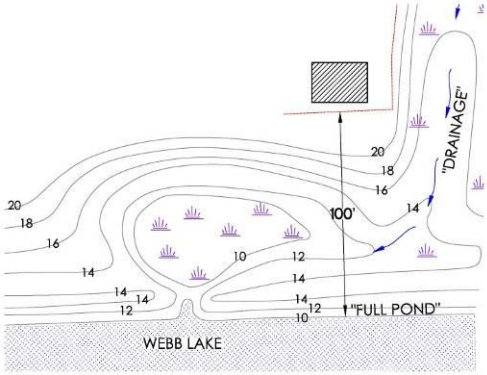
Most of the environmental consulting group *(Soil Scientists, Site Evaluators, Wetland Scientists*, etc.) know by now that *David Rocque*, when selecting sites for training workshops, does not necessarily gravitate toward straightforward (central concept) sites or soil pits, but rather tends to seek our locations that offer challenges out of the ordinary situations.

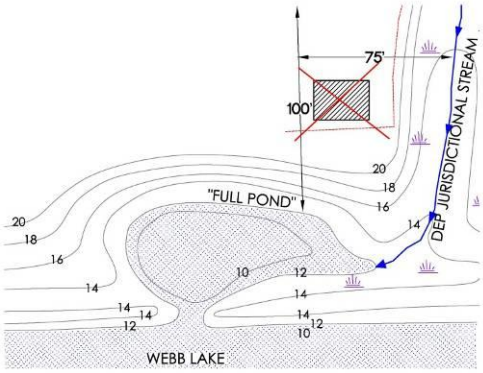
The *Mt. Blue* training workshop on September 4, 2013, set up by *Dave Rocque*, was no exception; however, in this case, he had unexpected help from *Mother Nature* that perhaps nobody saw coming.

The situation occurred on Field Site #1 (figure 1) (manned by *Dave Rocque* and *Dale Knapp* for those who were in attendance*)* along the shoreline of Webb Lake. The site exhibited an '*ice ridge*' (a.k.a. ice berm or ice push) (about 2' - 4' high) along Webb Lake that was formed by ice plates pushing/bulldozing against the shoreline from the ice sheets expanding when warmed and exerting tremendous thrusts to heave the soil into a berm over geologic time. The normal high water level (shoreline) for setback purposes was characterized by the Regulators to be along the outside edge of the ice ridge, and the 'regulatory' shoreline seemed very apparent and straightforward at that time.

Also during the Regulators preview of the site, the adjacent forested wetland in the Shoreland Zone apparently exhibited a drainage swale to the regulators, but it was not categorized as a jurisdictional stream, due to lack of channelization, stream bank, exposed mineral bottom, etc.) (See Figure 1 for a graphic representation of the site features at that time).

Between the Regulators classification and the training date of the workshop, there was significant rain, and the natural resource characteristics changed significantly.





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.

The consensus of most of the professional consultants participating in the work shop found the site to look like that depicted in Figure 3. The lake level rose (perhaps to 'full pond') and ponded water was evident well into the inlet. The 'drainage swale' categorized by the Regulators had been scoured out, and exhibited a 'channel with banks, mineral bottom", and met the characteristics of jurisdictional DEP stream per the applicable standards. Hence, the first scenario, illustrated in Figure 1, seen by the Regulators looked much different to the consultants later, as represented in Figure 3.

It was a real *'eye opener'* to all, and since it was a training exercise, everyone could walk away simply shaking their heads and having lively discussions. However, imagine if a building was under construction, based on site analysis consistent with Figure 1, and a neighbor challenged the permit. State or local regulators go to the site and now see it like that shown in Figure 3. The building is ordered to be razed and the septic system ordered to be removed! (A training exercise with lively discussions turns into a nightmare from hell for a Consultant or Property Owner).

This training exercise that took place at Site #1 was 'food for thought' for both consultants and regulators.

Mike Mullen, DEP, being the very thoughtful and objective Regulator that he is, said "*you know, the next time I hear a consultant say 'it didn't look like that when I saw it', I will stop, listen and definitely give it more thought".*

Natural Resources can Change Appearances

This training exercise clearly showed that natural resources can change appearances, and/or morph over time, and that responsible professionals can make differing classifications based on objective observations.

Lakes and Great Ponds Published Full Pond Elevations

If all lakes and Great Ponds were given a full pond elevation, it would take some of the variability out of the problem, and help to define what is a 'normal full pond' elevation, and not a 'flooded elevation'.

Streams (Jurisdictional)

The streams difficult to categorize by the consulting and regulating community are usually small streams. It is not uncommon for a small stream to take on stream regulatory characteristics when it becomes slightly steeper sloping (4-8%) where the stream flow gains velocity and washed out to expose a mineral bottom and developed defined channels, however that same stream, when entering a flatter terrace, will lose its velocity and scouring ability and it is not uncommon to lose a stream thread where it morphs into a drainage swale, with organic vegetative bottom or becomes braided into several drainages. In many cases in a small stream setting with variable slope gradient along its drainage, the drainage exhibits 'jurisdictional stream' characteristics for a segment, then the stream characteristics disappear for a segment, making it a drainage swale and then the 'stream' can reform later down slope again. (And as we learned during the training sessions, the various segments also can change based on the amount of runoff and velocity to which the stream was recently exposed, and/or the amount of time of organic deposit during dry spells.

So, what does an Environmental Consultant do about this?

a. *Quit and become an ex-patriate in Iceland*
b. *Stop going to these training sessions, they are too 'scary'*
c. *Drink hard and often and try to forget about this type of stuff*
d. ***ALL of the above***.

PRESIDENT'S MESSAGE

By Don Phillips, CSS; MAPSS President; Phillips EcoServices

Ever since I got into the habit of reading the newspaper every day, I always went straight-away to the comics first. Next, I would read the regular news, followed by any section that had environmentally related and/or outdoor lifestyle type articles featuring hunting, fishing, and/or backpacking adventures. If I ever read the classified announcements at all, they'd be last. Old habits die hard, so when I read Al Frick's **One Person's Perspective On Last Summer's Natural Resources Workshop At Mt. Blue**, I knew *exactly* where I'd place it in this newsletter – First Page! Hey, can you see a little bit of Calvin & Hobbes in his characters, or am I the only one who does? In any case, Al's whimsical but enlightening cartoon is definitely *NOT* comical. He touched upon concerns common to all of us in the natural resource identification and mapping community. These issues won't be going away anytime soon, and I hope everyone takes his message seriously.

Another message, this time from our own State Government, that we must take with the utmost seriousness is how some in Augusta want to **Discontinue the Board of Certification of Geologists & Soil Scientists.**

As most of you know, the Governor's Office of Policy & Management submitted a Budget Savings Report on 9/30/2013 which, among other recommendations, stated that the Board of Certification of Geologists & Soil Scientists should be eliminated. As stated in a part of the report, the "*OPM and the Department recommend discontinuation of the licensing program for geologists and soil scientists without jeopardy to public safety."*

To say that we were (still are, actually) outraged is an understatement. Clearly, this was something the Executive Committee had to deal with before it got out of control, and we jumped right on it. The Executive Committee and others teamed up to write as convincing and powerful a letter as we could on behalf of the MAPSS membership to oppose this action. Many members wrote as individuals, and I read letters from like-minded soil associations, e.g., the Society of Soil Scientists of Northern New England and the Soil Science Society of America. Both of these latter groups wrote articulate letters to legislators to express their support opposing this proposal, and for that, we are grateful. Encouragingly, the Legislative responses to those letters were unified in their strong opposition to abolish the Board.

Following the letter-writing phase of the process, the Legislature's Joint Standing Committee On Appropriations and Financial Affairs, co-chaired by Sen. Dawn Hill (Senate Co-Chair) and Rep. Margaret Rotundo (House Co-Chair), hosted a Public Hearing at the State House in Augusta on January 17th to hear comments regarding this issue. Despite receiving short notice, several MAPSS members and I attended, at which time we presented spoken and written testimony in opposition. We walked away encouraged that this proposal will not go anywhere. Meanwhile, we will remain vigilant.

IN THIS ISSUE

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

High Intensity Soil Surveys (HISS) & Accompanying Connotative Map Legends Proposal

by Chris Dorion, CSS, MAPSS Technical Committee Chair and Former MAPSS President; CC Dorion Geological Services, LLC

This synopsis is to be used in conjunction with the accompanying narrative titled *High Intensity Soil Survey (HISS) for Maine Certified Soil Scientists* and the accompanying *Explanation and Usage Guide*.

Based on several years of feedback from engineers, code enforcement officers, town and city planners, regulators, landscape architects, foresters, and other professionals, a request for a more user-friendly soil map and narrative is now presented to the MAPSS membership with the intention of adoption into the *MAPSS Guidelines*.

Specifically, the MAPSS Technical Committee has identified previous problematic areas that will be addressed by HISS mapping alternative:

- Produce a high intensity soil map without the reliance on commonly used variants and taxadjuncts, which often characterize our mapping.
- The difficulty in the determination of hydrologic soil groups (HSGs) for soil map units defined by variants and taxadjuncts. Secondly, Maine certified soils scientists have lacked guidance on determination of HSGs using best professional judgment for unique or unusual field conditions. The accompanying article on HSGs by State Soil Scientist Tony Jenkins, shown on page 5, addresses this challenge.

We have borrowed heavily from New Hampshire's HISS mapping standards and connotative legend. Many thanks are extended to the Soil Science Society of Northern New England (SSSNNE).

The first step for MAPSS is approval by the MAPSS membership of this proposal.

The second step is to present our HISS mapping standards and connotative legend to regulators for adoption into ordinance (at the Town/City level) and statute (at the State level). Concurrently, MAPSS would provide a training workshop explaining this alternative mapping style for engineers and other professionals who utilize our mapping products.

Overall, we expect that this proposal will provide Towns and the State with the ability to better design, craft, and implement land use practices, such as cluster development, conservation subdivisions, and "smart growth", among others. At present, lot sizing is based on the "cookie cutter" approach of fixed, minimum area lot sizing, without regard to the physical characteristics of the land. Cluster development and other modern land use practices are more economical for the developer, provide for reduced environmental impacts and footprint, minimize "sprawl", and decrease the costs to Towns and Cities of extending infrastructure.

High Intensity Soil Survey (HISS) Standards for Maine Certified Soil Scientists:

by Chris Dorion, CSS, MAPSS Technical Committee Chair and Former MAPSS President; CC Dorion Geological Services, LLC

1. Requirements of the HISS Soil Survey:

(A) A Maine Certified Soil Scientist (MCSS) shall provide a narrative describing the purpose for preparing the soil map.

(B) A MCSS shall describe the intended use and management of the land for which the soil survey is being completed.

(C) A MCSS shall describe the limitations of the soil map with regard to its applications, such as scale or dissimilar* soils, and soil map units that are limiting* for the intended use and management. Map unit purity† standards shall be followed.

(D) A MCSS shall use the ***Explanation and Usage Guide*** exhibit in **Appendix 14** of ***Guidelines for Maine Certified Soil Scientists for Soil Identification and Mapping***, dated March, 2009 (http://mapss.org/publications.htm).

* Dissimilar, limiting: a body of soil within a map unit that is not shown because it represents <25% of the map unit; and deviates so much from one or several of the five properties in the ***Explanation and Usage Guide*** that the intended use and management are significantly affected

† Map unit purity: the soil in a map unit shall contain >75% of all five (I, II, III, IV, V) properties in the ***Explanation and Usage Guide***

2. Standards of the HISS Soil Survey:

(A) Standards for Class A, B, C, and D maps shall follow the ***Guidelines for Maine Certified Soil Scientists for Soil Identification and Mapping***, dated March, 2009 (http://mapss.org/publications.htm).

Note from MAPSS Newsletter Editor: Tony Jenkins, NRCS State Soil Scientist, contributed the following Addendum in a 2/12/14 email

Hydrologic Soil Groups: On-site development where appropriate should be a viable option.

Hydrologic soil groups are assigned to soil series using guidance in the NRCS National Engineering Handbook Part 630 (Specifically Chapter 7). The history of the application, "evolution", and maintenance of HSGs in official soil survey information is interesting and I will review it briefly at the annual meeting on 18 March. NRCS official soil survey data HSGs are derived from one representative pedon's properties filed in the NRCS soils database, and is usually regionally selected. Conversely, the importance of HSGs to the membership via our clients is sometimes very high indeed and is often site-specific. So I ask you to entertain my proposition that the most accurate assignment of HSG for HISS map units would be obtained by using the detailed soil descriptions that are representative of the HISS map unit component(s). Where applicable, professional soil scientists can use on-site soil descriptions to develop direct and inferred soil property data sufficient to develop HSGs on a map unit basis for project areas. I will review the method and the properties involved, as well as some of the necessary soil morphology/judgment considerations involved for the soil scientist at the annual meeting as well. The results of this presentation/vetting by the membership may result in a motion to amend the HISS guidelines as follows:

V. Hydrologic Group:
Shall be determined by analyzing the soil test pit data and applying the best named soil series match, or by manually assigning a hydrologic soil group using methods outlined in Chapter 7 of the USDA-NRCS National Engineering Manual. Cross referenced with *Water Management Guide – Part 1 – Drainage (SCS, 1976).*

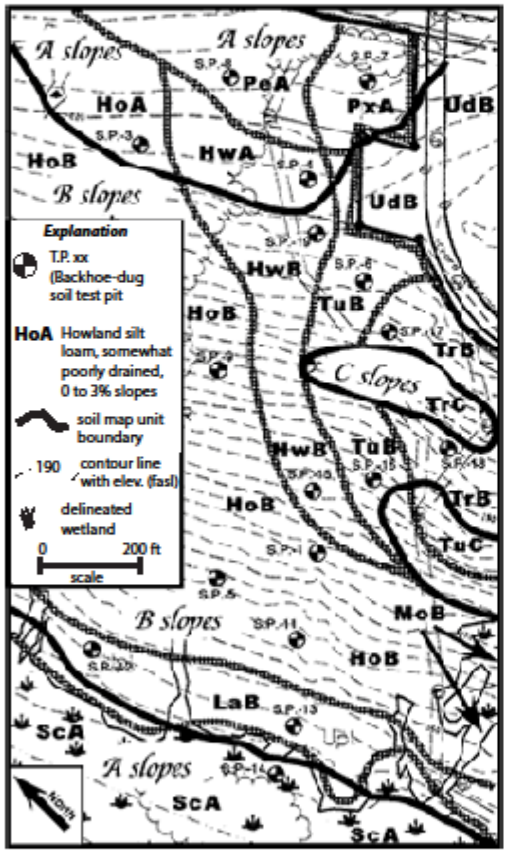
Homework question: what is the most reasonable and legally defensible way to assign a Ksat estimate to the limiting layer in your HISS test pit? The answer to this may make or break this proposal. I look forward to a spirited discussion!

PROPOSED CONNOTATIVE LEGEND AND HIGH INTENSITY SOIL SURVEY PLAN EXAMPLE

by Chris Dorion, CSS, MAPSS Technical Committee Chair and Former MAPSS President; CC Dorion Geological Services, LLC

Explanation

HoB	Howland silt loam, somewhat poorly drained, 3-8% slopes	*changes to*	**4/2B/5/1/C**
HwA	Howland silt loam variant, deep, 0-3% slopes		**4/2B/4/1/C**
HwB	Howland silt loam variant, deep, 3-8% slopes		**4/2B/4/1/C**
LaB	Lamoine silt loam, 3-8% slopes		**4/5/5/1/D**
MoB	Monarda silt loam, 3-8% slopes		**6H/2BZ/4/1/D**
PeA	Peru sandy loam, 0-3% slopes		**4/2B/4/1/C**
PxA	Peru sandy loam variant, 0-3% slopes		**4/2B/5/1/C**
ScA	Scantic silt loam, 0-3% slopes		**5H/5/5/1/D**
TuB	Tunbridge sandy loam, 0-3% slopes		**3/2A/3/1/C**
TuC	Tunbridge sandy loam, 3-8% slopes		**3/2A/3/1/C**
TrB	Tunbridge sandy loam variant, 3-8% slopes		**3/2B/3/1/C**
TrC	Tunbridge sandy loam variant, 8-15% slopes		**3/2B/3/1/C**
UdB	Udorthents, 3-8% slopes	*changes to*	**7/8/5/1/ND**



FURTHER EXPLANATION

Please refer to the **Appendices**, located from pages 10 to 28, for actual soil series data.

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rev. 2JUL2013.ccd
rev. 5AUG2013.ccd,dm
rev. 2DEC2013.ccd
rev. 03FEB2014.ccd,dr
rev. 05FEB2014.ccd,dr
rev. 11FEB2014.Tech. Comm.

Explanation and Usage Guide: I / II / III / IV / V

I. DRAINAGE CLASS:

1 Excessively and Somewhat Excessively Drained
2 Well Drained
3 Moderately Well Drained
4 Somewhat Poorly Drained
5 Poorly Drained
6 Very Poorly Drained
7 Not Able to Determine

II. PARENT MATERIAL:

1 Glaciofluvial deposits
2 2B. Dense basal till
2A. Ablation till
3 Very fine sand and silt deposits (eaolian / lacustrine)
4 Multiple parent materials
5 Silt and clay deposits (marine)
6 Alluvial deposits
7 Organic materials
8 Filled, regraded, or excavated materials
9 Other - described in narrative

III. BEDROCK CLASS:

1 0 – 10 inches (0 - 25 cm)
2 10 – 20 in. (25 - 50 cm)
3 20 – 40 in. (50 - 100 cm)
4 40 – 60 in. (100 - 150 cm)
5 >60 in. (>150 cm); depth described in narrative

IV. SLOPE GROUPS:

1 0 – 10%
2 10 – 20%
3 20 – 40%
4 >40%

OR, additional slope classes to be determined by the soil scientist, such as 1a (0 - 3%); the slope class(-es) shall incorporate the 20% break.

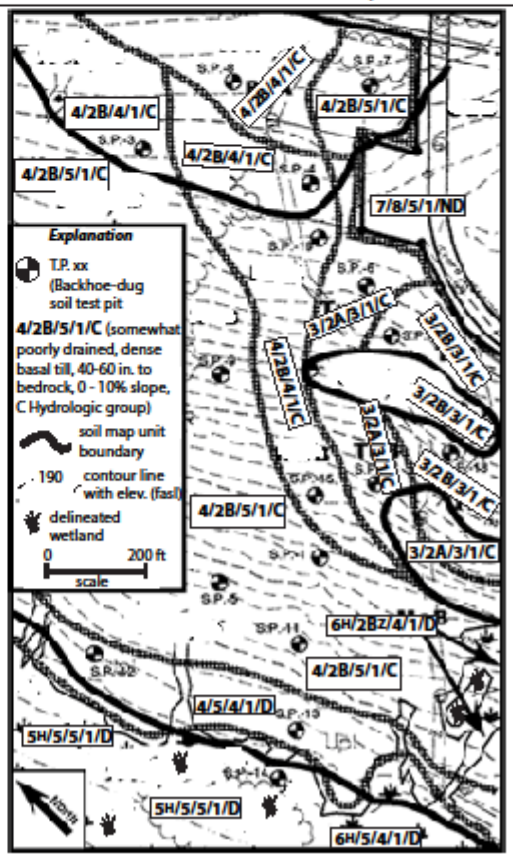
V. HYDROLOGIC GROUP:

A
A/D
B
C
C/D
D
ND (Not Determined)

MULTIPLE CLASSES WITHIN A SOIL MAP UNIT:

For example, a complex of deep and very deep bedrock depths can be represented with the first number being the prevalent depth class in the map unit:

4/2B/4,5/1/C



STREAMS

by David Marceau, CSS & LSE, Former MAPSS President; Gartley & Dorsky Engineering & Surveying

The importance of streams as a part of our environment is difficult to overstate. The amount and quality of water they provide to water supplies, rivers, lakes and ponds has an enormous affect on human life and many living organisms.

Water quality can be measured in a few different ways. If you are examining water for purposes of drinking water the federal government has established standards for drinking water quality through the Clean Water Act. These standards are based upon the risk of a given contaminant causing a problem to public health, not whether the water tastes or smells good.

An indirect way to measure water quality is to determine its biological integrity. This is a measure of the risk (possibility of breaking down) due to a natural or human event. The State of Maine DEP usually performs this risk assessment. The Classes that Maine has are AA, A, B, and C. A stream rated as Class AA has been altered the least in comparison to its natural environment and the expectation to achieve natural conditions is high while degradation is unlikely. Conversely, a Class C stream is still good quality, but the margin for error before significant degradation might occur in these waters in the event of an additional stress being introduced (such as a spill or a drought) is the least. This system is not a measure of chemical water quality, rather it uses aquatic life as indicators to good water quality.

The types of organisms found in a freshwater stream can tell you a lot about the quality of water. Caddisflies (Trichoptera), mayflies (Ephemerellidae) and stoneflies (Plecoptera) are an indication of good water quality. Snails (Stylommatophora) and leeches (Arhynchobdellida) are an indication of poor water quality. By keeping track of the relative amount and diversity of these organisms scientists can identify changes in water quality. Therefore, they can determine whether a stream has been degraded or not.

As soil scientists we usually don't consider ourselves experts in water quality. However, we do know a lot about the type of things that effect water quality and a stream's ability to provide those qualities. For example: we know that springs are found at the interface between rapidly permeable soils and slowly permeable soils. We also know that heavy equipment and bare soils can cause erosion problems and that discharges associated with septic systems and farms can affect water quality. We are also the folks that are out in the landscape delineating wetlands, identifying streams for all kinds of purposes and generally determining whether lots are buildable.

As you know the State of Maine DEP defines a jurisdictional River, Stream or Brook by the following definition:

> River, Stream or Brook: a channel between defined banks created by the action of surface water and has 2 or more of the following characteristics:
>
> A. It is depicted as a solid or broken blue line on the most recent edition of the U.S. Geological Survey 7.5-minute series topographic map or, if that is not available, a 15-minute series topographic map [1995, c. 92, §2];
>
> B. It contains or is known to contain flowing water continuously for a period of at least 6 months of the year in most years [2001, c. 618, §1.];
>
> C. The channel bed is primarily composed of mineral material such as sand and gravel, parent material or bedrock that has been deposited or scoured by water [1995, c. 92, §2.];
>
> D. The channel contains aquatic animals such as fish, aquatic insects or mollusks in the water or, if no surface water is present, within the streambed [1995, c. 92, §2.];
>
> E. The channel contains aquatic vegetation and is essentially devoid of upland vegetation [1995, c. 92, §2.].
>
> "River, stream or brook" does not mean a ditch or other drainage way constructed, or constructed and maintained, solely for the purpose of draining storm water or a grassy swale.

In my experience the primary determining factor for stream determinations usually comes down to being able to find and identify aquatic insects or mollusks within the streambed. Whether there are insect larvae, snails and/or leeches present in a given scoured channel can make or break a project, which determines the value of a given property. It is not clear to me whether aquatic worms and some other organisms qualify as "aquatic animals" as defined in D above.

In my career as soil scientist I have observed hundreds of streams. Like the streams shown in Figures 1 and 2, many were borderline between showing the regulated characteristics mentioned above, or not. These streams were difficult to identify because they generally had low flows and sometimes went underground in some areas or became sheet flow in other areas. Because these "streams" had low flows, they were often confined by culverts, which further complicated a stream determination by concentrating their flows, therefore forming scoured channels where one may not have formed under natural conditions.

Figure 1: The MDEP determined that this drainage met criteria as a stream.

However, I have observed very small streams provide habitat for fish and other organisms that I thought would never be possible until I examined them. Several years ago I observed a stream in the spring time that was about a foot wide and about four inches deep that had fingerling brook trout about an inch long. Therefore, much to my amazement, I knew adults had spawned in this stream the fall before. These small trout were found in several small pools about 300 feet from anything I would have thought any fish could have navigated. The stream ran through some coarse grained till and showed no evidence of water flowing at the surface in several sections of the stream. The way I figure it, the water supporting the trout flowed above the substrate in some sections and through the coarse grained soils in other sections.

Figure 2: The MDEP determined that this drainage did not meet criteria as a stream. Both photos emphasize the need for the observer to exercise due diligence by walking and checking many points along the drainage.

More recently, a regional fisheries biologist told me that the DIF&W did an inventory of all the small drainages they could find that flowed into the ocean from Belfast to Camden. Much to their amazement they found that nearly all of them contained trout, many that they never would have suspected.

This fall I was conducting a wetland delineation along with an inventory of streams on a parcel of land in the midcoast area and found one organism which I had never seen before and several which I don't see very often. In a pool of water, separated from any observable flowing water, I saw something that looked at first to be a blade of grass. However, upon further observation I could see that it was a live something or other. After my return from performing fieldwork I identified the organism as a horse hairworm (*Nematomorpha gordioidea*). It was cream colored, about 10 inches long but only about 1/32nd of an inch wide. There were several of them in the pool which seemed to slither along the bottom. As it turns out these worms are parasites of grasshoppers, crickets and beetles. These insects eat the eggs that are laid by the adult worm and the young develop in the stomach of the insect. This was a new one for me. In this same pool I also found several eastern newts (*Notophthalmus viridescens*) and caddish fly (Trichoptera) larva. These two organisms I was able to identify immediately because I had seen them many times before.

So, just because you are a "soil scientist" does not mean you aren't able to identify streams, assist in determining water quality, and be a valuable resource to the public, regulators, and businesses as well.

TOPSOIL & CIVILIZATION

A book review by Dave Turcotte, CSS, Senior Soil Scientist, NRCS

Every now & then over my nearly 17+ years in the Dover-Foxcroft NRCS soil survey office I come across a landmark book on soil from days gone by (i.e. before many of us were born). There was a time in my college career when I actually thought that old books and journals were "outdated". Now I realize that vintage knowledge is most important, as history teaches us lessons that serve as the foundation for all applied science.

"Topsoil & Civilization" (Dale and Carter, 1955, University of Oklahoma Press, reprinted and available through Amazon) is a fascinating, one-of-kind book that chronicles mankind's impact on the soil resource and how civilizations have risen and fallen accordingly. The book begins with a description of what life on earth was like even before primitive man came along as a hunter and gatherer ~ 1 million years ago. His impact on the land really did not really begin to have adverse consequences until ~ 7,500 years ago, when he became civilized with superior intelligence and tools, and began domesticating plants and animals. Until that time topsoil across the earth was a work in progress – since then much of that development has been reversed.

Nations that have "conquered" other civilized nations or "colonized" regions inhabited by barbarians have – as a rule – generally done so because they have exhausted their lands and depleted their natural resources. Early civilized man simply did not recognize or care about land use capability, particularly when it came to monocultured cropland, overgrazing grassland and overharvesting forestland. Some areas were more vulnerable than others to soil erosion, such as on steeper terrain, with more erodible topsoil textures, where higher intensity rainstorms were more prevalent, or in windier semi-arid areas. In addition, civilizations require cities (as seats for government, manufacturing, education, distribution and creativity) that are dependent on surplus food, fiber, shelter and clean water from the rest of said nation.

The vast majority of civilizations have only lasted around 30-70 generations (or about 800 – 2,000 years), mostly due to soil erosion and desertification. There are three notable exceptions: The Nile River Valley (in Egypt), Mesopotamia (present day Iraq) and The Indus River Valley (present day Pakistan). Each of these regions had these common attributes: inherently fertile soil, a dependable source of water for food and basin irrigation, scant rainfall, and level land. Of the three the Nile Valley had the most longevity, for its annual floodwaters were not as silt laden as the latter two, and the harsh desert around it and mountains above it helped to keep it protected from being conquered by civilizations who had depleted their own natural resources.

Much of the book focuses on the Mediterranean Region because early civilized man had most of his origins there. Truth be told, that region is not as arid as one might think, it is just effectively drier now as a function of soil erosion and desertification over the millenniums. Goats and sheep exasperated these processes when the land was deemed too eroded to crop anymore, and overharvesting of timber ultimately resulted in costly siltation of irrigation ditches, canals and reservoirs.

In the Mediterranean Region it was the Roman Empire that was most prosperous and progressive for 7 full centuries, beginning in 508 B.C. The density of the population in Latium (where the Roman Empire originated) , Punic Wars in Italy (that severely depleted the land) and steep hillsides of Italy forced the Empire to conquest more and more into North Africa, Sicily & Sardinia, and Eastern Spain. Eventually as they expanded their Empire more and more they became vulnerable, and it finally fell in 193 A.D. The Romans thought they could control soil erosion with cisterns, terraces, dams and water diversions, but these engineering structures eventually fail, ultimately undermined by the forces that they are built to control. Much has been written for and against the Roman Empire and their conquest of other civilizations, but they were only following the Assyrians and Persians, and indeed were succeeded by the Arabs, Mongols, Spaniards, French and Germans. The Romans pursued conquest (rather than colonization) because the desirable lands that surrounded them were already civilized.

It is in the book's chapter on Western Europe, which has only been civilized ~ 1,000 years, where modern day soil conservation practices come into play. Much of this humid region is less vulnerable to water erosion, due to a maritime climate where most of the precipitations comes in the form of gentler rains, mists or snow. Nevertheless there were

lessons to be learned here, and they came in time with conservation practices that are still fundamental to this day, such as crop rotations (grain / root / sod), contour tilling, manuring and liming. Western Europeans also introduced the horse for agricultural applications, and this animal was much more efficient in cultivation than oxen (used in other parts of the world) were.

Since the U.S. originated out of European settlements, much of what we learned in terms of soil conservation came from here. However, with such an abundance of productive land for European settlers to exploit, it took over 300 years of civilization in this country before a concerted effort was made to protect not only soil but water and air. That exploitation peaked when tractors came to field in the 1920s. If one wants to read a good book on the pinnacle of that exploitation then I'd recommend reading "The Worst Hard Time: The Untold Story of Those Who Survived the Great American Dust Bowl" (Timothy Egan, 2006).

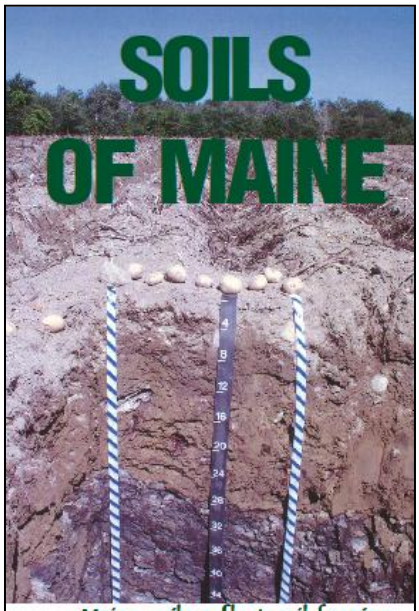
There is so much more I could share about this book, but my space has become limited. I will say that parts of the Asian, African, Central and South American regions were addressed too as far as various civilizations' and cultures' impact on mother earth. Also, there were many historical black and white landscape pictures included. Truth be told, starvation and pestilence from repeated failures to acknowledge the suitability and limitations of our terrestrial resources has likely resulted in more mortality to mankind than bombs or bullets.

EDUCATION REPORT

by Dave Turcotte, CSS, MAPSS Education Chair

Since last spring our display board has visited Unity College, the Common Ground Fair in Unity, and Deering Hall at the University of Maine in Orono. After next month's meeting I plan to have it set up at the University of Southern Maine and Unity College again. The display had a minor adjustment made to it before last year's annual meeting; otherwise, it's been a couple of years since it has had a significant revision. The most notable additions to supporting materials for the display board is the 2nd brochure that Rod Kelshaw developed a year ago, and some soil fertility and particle-size posters that I came across at the Dover-Foxcroft soil survey office last summer. If someone in the membership wishes to join the education committee and take some initiative to give it a fresher outlook then that would be welcomed.

For the 8th consecutive year MAPSS had a presence at MOFGA's Common Ground Fair, and after a one year hiatus we had our display board set up again at its Agricultural Demonstration Area. We had 3 presentations at a soil trench that abuts a wetland, and a "Soils of Maine" Power Point presentation in the audio-visual tent. It does not cost us anything to be at the fair, and we get an incredible amount of exposure there from passersby, many of which are quite knowledgeable and passionate about the soil resource. At this time I wish to thank Dave Rocque, George Bakajza, Corinne Knapp, Anna Donahue and Don Phillips for helping to staff our booth and/or lead a presentation there. At next month's meeting I'm hoping that more members will express an interest in helping us make a professional representation there yet again.



Maine soils reflect soil forming processes active since the last glacier melted about 12,500 years ago. The glacier advanced southeasterly to deposit rock fragments and soil material as ice-contact till or water-sorted sediments (fine marine or coarse fluvial). These materials - along with organic deposits, lake or river deposits and bedrock to lesser extents - form the soils of Maine. Glacial till soils over soft, calcareous bedrock provide for productive potato ground in Aroostook and Penobscot Counties.

Currently, we have fewer than 50 copies of the older brochure – its 1st panel is shown on the right - and more than 400 of the newer one; therefore I recommend that we purchase more of the older one, which must be approved by vote of the membership. The cost of purchasing more would be about $340 for 500, $654 for $1,000, or $871 for 2,500. If approved, I suggest that we first incorporate a few minor modifications which would include updating the Chesuncook acreage figure from "about 75,000" to "hundreds of thousands" and inserting three applicable soil education links.

TWO UPCOMING EVENTS THAT MAY INTEREST YOU

2014 Northeast Regional Cooperative Soil Survey Conference

June 23-26, 2014
Center for the Environment, Plymouth State University
Plymouth, New Hampshire

Forest Soils and Ecology

New Hampshire and Vermont NRCS, U.S. Forest Service, and the Society of Soil Scientists of Northern New England, along with Plymouth State University will be hosting the 2014 Conference in Plymouth, New Hampshire. The central theme is "Forest Soils and Ecology". Highlights will be the soils research at the Forest Service's Hubbard Brook Experimental Forest (http://www.hubbardbrook.org/), the White Mountain National Forest Soil Survey, and ecological site mapping of the northern forest.

There are two days of meetings with invited presentations planned, an evening banquet, and a poster session. There are also **two** days of field tours planned!

Web Site

Please follow the latest postings for the conference (including registration details and meeting agenda) as they become available at:
http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/survey/partnership/?cid=stelprdb1242569

We're looking forward to seeing you at a great 2014 regional conference!

Society of Soil Scientists of Northern New England

Soil Classification Course

Taught by NRCS Experts
Friday, March 14, 2014

Objectives

Participants will receive up-to-date information and gain knowledge about soil taxonomy particularly as is applies to soils of the glaciated Northeastern United States. This course will be particularly valuable for those making soil maps and preparing related reports. Upon completion of the course, applicants will understand the process of classifying a soil from pedon description data and other known characteristics. Additional training will raise your level of understanding in the design of soil map units. Current and future objectives of the soil survey will be presented. Participants will be asked to give their feedback on soil survey information. The registration fee includes coffee and a catered LUNCH.

Instructors

Al Averill, NRCS State Soil Scientist for Massachusetts and Vermont
Deb Surabian, NRCS State Soil Scientist for Connecticut and Rhode Island

Course Content

8:30 -9:00 A.M.	Registration & Coffee
9:00–9:50 A.M.	Introduction to *Soil Taxonomy*
9:50-10:00 A.M.	Break
10:00 10:50 A.M.	Diagnostic Horizons and Characteristics
10:50 A.M.-12:30 P.M.	Exercise: Soil Classification
12:30–1:15 P.M.	Lunch & Soil Survey User Feedback with Questionnaire
1:15–2:00 P.M.	Soil Survey concepts: The Soil Series, Map Unit Design, Web Soil Survey as a related information source
2:00–2:45 P.M.	Exercise: Map Unit Naming
2:45–3:00 P.M.	The National Cooperative Soil Survey: Current and Future Work

If you have a copy of the 11th Edition of *Soil Taxonomy*, please bring it with you

Course Location

USFWS Northeast Regional Office, 300 Westgate Center Road, Hadley, MA
(Off Russell St. – Rte. 9)

More Information On NRCS Course

- **Contact** Tom Peragallo (SSSNNE; tperagallo@gmail.com) to get a registration form and a site location map
- **Course Fee** is $30.00 payable to

  SSSNNE, C/O Marc Jacobs
  P.O. Box 417
  Greenland, NH 03840-0417
- A Certificate of Attendance will be provided to all participants at the end of the Course to document CEU's

TWO UNIVERSITY / COLLEGE LEVEL TEACHING OPPORTUNITIES

From: Samantha Langley-Turnbaugh [mailto:langley@usm.maine.edu]
Sent: Thursday, November 07, 2013 11:22 AM

Adjunct instructor to teach ESP 260 Soil and Water Conservation Engineering to Environmental Science students in Spring 2014 semester. Pay is approximately 3K. Course meets 4:10 - 6:40 PM on Wednesdays at Gorham campus. Maximum of 20 students. Teaching experience and graduate degree or PE preferred. Contact Rob Sanford, Chair Department of Environmental Science RSanford@usm.maine.edu or Therese Martin, Administrative Assistant Theresem@usm.maine.edu 780 5390.

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From: Kevin Spigel [mailto:KSpigel@unity.edu] Associate Professor of Geoscience; Co-Director of Undergraduate Research; Unity College
Sent: Tuesday, October 29, 2013 8:36 AM

I am looking for someone who might be interested in a temporary teaching opportunity at Unity College in spring 2015 for a sabbatical replacement (pending the outcome of my application). The teaching responsibilities would include an Environmental Geology course and a Weather and Climate course. Each course has a lab component to it. If you are interested or would like more information, please contact Kevin Spigel (kspigel@unity.edu) or by calling 207-948-9215. Feel free to pass this announcement along.

AN EMAIL YOU MAY WANT TO READ

When last summer's feature article **THANKS TO ALL WHO'VE KEPT US GOING** (Vol. 17, Issue 2) went out, it ended with a request for more information pertaining to our history. Al Frick was one of a few people to send more info, but what he sent was the most inclusive. He filled us in with a lot of missing historic information which, someday, might really be useful to know. Read what he wrote below. For disclosure, not all of Al's email is shown due to limited space.

From: Albert Frick [mailto:albert@albertfrick.com]
Sent: Wednesday, August 14, 2013 8:26 AM

MAPSS BACKGROUND:
MAPSS started out not as Maine Association of Professional Soil Scientists but as Maine Association of Consulting Soil Scientists. The early group which you are trying to find information on was a small group of certified Soil Scientist that were from the private sector and consulting (10 to 12 or so) some of the ones active that I recall were of course **Dr. Roland "Doc" Structmeyer** but also included **D. Bruce Verrill, Bill Willey, Darryl Brown, Peter Crane, Bruce Whitney, Ken Stratton, and Dennis Durgin.** In reality, the people you listed, who indeed have done a lot for Soil Science in Maine in the 1970's and 1980's were not actually active in the Association at that specified time due to the nature of the group and its purpose, which was to promote consulting Soil Science in the private sector.

Because there were only about 10 to 12+- members in total, there were only 2 executive positions that I recall: President and Secretary/Treasurer. **Dr. Structmeyer** served many years as President and I had served as Secretary/Treasurer for a few years under him when I first got going in or about 1978 -1987 era. It was later, in the history of the Maine Association of Consulting Soil Scientists (early to mid-1980's) that the Association realized that it needed to broaden its membership base to include ALL Soil Scientists who had an interest in joining and it was at that time we reached out to the staff at the U.S. Soil Conservation Service (NRCS) and the University of Maine Soils Science Department to include government employees, professors, researchers, students, and associate members etc.

I believe **Bob Joslin** was acting State Soil Scientist with the SCS at that time that supported MAPSS by accommodating federal employees going to the meetings. As we all know, **Norm Kalloch** followed and also very much embraced SCS/NRCS participating with MAPSS. **Tony Jenkins** followed with strong continual support of the federal agency. **Doc**

Structmeyer promoted student participation with both undergrads and graduate students from UMO, a tradition followed by **Dr. Ivan Fernandez** and **Dr. Samantha Langley-Tumbaugh.**

Unfortunately, **Doc Structmeyer**, who was instrumental in the formation of the Association, (along with helping the careers of many practicing soil scientists of today) has passed on, along with many of the earlier members of that group. **Darryl Brown, Peter Crane, Bruce Verrill,** and **Ken Stratton** are the very best leads to get you deeper into the early history. All of the earlier records where hand written notes etc., (pre digital age), so there may be a moldy box in someone's basement with this records, or perhaps gone.

2013 / 2014 EXECUTIVE COMMITTEE

President – Don Phillips
Vice President – Anna Donohue
Past President – Johanna Szillery
Treasurer – Gary Fullerton
Secretary – David Turcotte
Director – George Bakajza

COMMITTEE CHAIRS

Webmaster – Chris Dorion
Newsletter – Don Phillips
Education – David Turcotte
Membership – Unfilled
University of Maine, Orono, Liaison – Ivan Fernandez
University of Southern Maine Liaison – Samantha Langley-Turnbaugh
Technical Chair – Chris Dorion
State of Maine Liaison – David Rocque
USDA NRCS Liaison – Tony Jenkins
DEP Task Force representative – Mike Banaitis

NOMINEES FOR 2014 / 2015 EXECUTIVE COMMITTEE

President – Don Phillips
Vice President – Anna Donohue
Past President – Johanna Szillery
Treasurer – Gary Fullerton
Secretary – David Turcotte [1]
Director – George Bakajza

COMMITTEE CHAIRS

Webmaster – Chris Dorion
Newsletter – Don Phillips
Education – David Turcotte [1]
Membership – Vacant
University of Maine, Orono, Liaison – Ivan Fernandez
University of Southern Maine Liaison – Samantha Langley-Turnbaugh
Technical Chair – Chris Dorion
State of Maine Liaison – David Rocque
USDA NRCS Liaison – Tony Jenkins
DEP Task Force representative – Will Be Dropped Until Further Notice

Notes

Willing To Step Down If Someone is Willing to Step Up

Superscript [1]: Will serve one or the other position, but not both

MAPSS 2013 Treasury Report

MAPSS Checking Account as of 12/31/12		**$9,877.17**
2013 Income:		
2013 Dues (full membership)	$1,325.00	*53 full members at $25.00 each*
2013 Dues (associate membership)	$180.00	*12 associate members at $15.00 each*
2013 Dues (student membership)	$0.00	*3 student members at $0.00 each*
	$0.00	*3 honorary members at $0.00 each*
2014 Dues (associate membership)	$15.00	*1 associate members at $15.00 each*
	$1,520.00	
Annual Meeting Registration	$1,640.00	*41 registrants at $40.00 each*
	$100.00	*2 registrants at $50.00 each*
	$30.00	*2 students at $15.00 each*
	$1,770.00	
Mt. Blue Workshop	$2,065.00	*59 registrants at $35.00 each*
	$960.00	*24 registrants at $40.00 each*
	$90.00	*3 registrants at $30.00 each*
	$3,115.00	
TOTAL INCOME	**$6,405.00**	
2013 Expenses:		
Annual Meeting Facility (Maple Hill Farm)	$1,753.96	
Envirothon (Maine Association of Conservation Districts)	$1,000.00	
Janet Cormier Scholarships	$1,000.00	*2 scholarships of $500 each*
Brochures	$353.85	
Annual Meeting Speaker and Copies	$248.88	
Common Ground Fair	$139.99	
Website Host (DiscountASP.net)	$120.00	
Exec. Committee Meetings	$65.00	
Mt. Blue Workshop	$47.23	
Display Board	$28.35	
Domain Registration (Speedsoft)	$15.95	
Bank Fee	$6.40	
University of Maine Soil Judging Team	$0.00	
TOTAL EXPENSES	**$4,779.61**	
MAPSS Checking Account as of 12/31/13		**$11,502.56**

Nominations from the floor Will Be Allowed

Maine Association of Professional Soil Scientists
2014 Annual Meeting Registration
Tuesday March 18, 2014
Room 2, Wells Conference Center, University of Maine, Orono

Name _____

Company or Affiliation_____

Address:_____

Work Phone:_____ Cell Phone:_____

Fax:_____ E-mail:_____

Are you a Maine Certified Soil Scientist? _____ If yes, License #: _____

Are you a USDA-NRCS Soil Scientist? _____ If yes, How many years in Maine? _____

Are you SSSA Certified? _____ APSS _____ CPSS _____ Certification #:_____

Membership Dues: _____

*Full Member - **$25** Associate Member - **$15** Students who attend annual meeting - **Free**

*Full members must be Certified Soil Scientists in Maine, NRCS Soil Scientists working in Maine for at least 3 years, or have taught collegiate courses in soil science in Maine and been an associate member for at least 3 years.

Registration Fee: _____ Note: **Registration deadline is Tuesday, March 4th, 2014**

Full and Associate Members - **$40** Students - **$15** Non-members - **$50**
(add $10 if registering at the door; lunch will not be guaranteed)

Total Amount Enclosed: _____

Please submit form and check made payable to **MAPSS** and mail to:

Gary Fullerton
104 Millturn Road
Limington, ME 04049

for more information: www.mapss.org

gfullerton@sebagotechnics.com

Note: CEUs pending for Maine Licensed Site Evaluators

2014 Annual Meeting Program Agenda

Room 2, Wells Conference Center, University of Maine, Orono
March 18, 2014

8:00 - 8:30 **REGISTRATION** (coffee and pastries provided)

8:30 - 10:00 **BUSINESS MEETING**

- President's Introduction – *Donald Phillips*
- Treasurer's Report – *Gary Fullerton*
- Secretary's Report – *Anna Donahue for Dave Turcotte*
- UMaine Update – *Ivan Fernandez*
- USM Update – *Samantha Langley-Turnbaugh*
- Education Committee and JEC Scholarship Award Winner(s) – *Anna Donahue*
- Election Of Officers - Nominating Committee (*Anna Donahue)*

10:20 - 10:30 **BREAK**

NEW BUSINESS

10:30 – 11:00 **Envirothon Update** – *Rebecca Jacob, Knox- Lincoln SWCD / Education Coordinator, Maine Envirothon*

11:00 – 11:15 **2014 and 2015 Autumn Workshops**: – *David Rocque* -

11:15 – 12:00 **Measuring / Quantifying Carbon Sequestration In The Organic Pad: Howland Research Forest**
Holly Hughes, Environmental Physics Group, University of Maine

12:00 - 12:45 **BUFFET LUNCH**

12:45 - 1:30 **Soil Health and Sustainable Agriculture**
Dr. Ellen Mallory, Sustainable Agric. Specialist & Asst. Professor, UMaine Cooperative Extension Service

1:30 - 2:15 **Connotative Legends, HISS Plans, HSG Determinations … and Maybe Even An Update on the USDA-NRCS**
Tony Jenkins, State Soil Scientist / Technology Team Leader: USDA-NRCS, Bangor, Maine

2:15 - 2:30 **BREAK**

2:30 - 3:30 **Technical Committee Update and Proposed Connotative Mapping Standards** – *Christopher Dorion*

- Members will vote to adopt, or not adopt, these Standards at the conclusion of the Technical Committee's update

*Maine Licensed Site Evaluators will be awarded 6 professional development hours for full day attendance