

The Newsletter of the Maine Association of Professional Soil Scientists

Volume 25, Issue #1

#### www.mapss.org

Winter 2022 Edition

#### 2021-2022 Executive Committee

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#### **PRESIDENT'S MESSAGE** Christopher C. Dorion, Maine LSS #454

We are entering our third year of the Covid pandemic, and also the end of my third year as MAPSS President. I will be handing over the helm to Rod Kelshaw on March 15<sup>th</sup>. In the early winter of 2020, we had organized the annual meeting at USM in Portland, which had to be cancelled. In 2021 we went to a Zoom format, and we will unfortunately be Zooming again on March 15<sup>th</sup> this year. We will be collaborating with MAWS for a joint Zoom conference. At present, the format will feature the MAPSS business meeting from 11:00am to noon. From noon to 1:00pm, the Zoom link will remain open, so that members can enjoy informal chats with other members. At 1:00pm the joint Zoom will begin with regulatory updates from agencies. This has been requested by regulatory staff. Following these updates, a presentation on PFAS issues in Maine will be presented. A second presentation may take place immediately following. Later in the afternoon, MAWS will hold their business meeting.

The MAPSS E.C. realizes the shortcomings of these Zoom sessions, and, with much planning, have been able to consistently hold our traditional field conferences during this time. This past September, we held a successful field conference. I would like to share my observations on our the Wolfe's Neck Center / Farm / State Park field conference last September.

MAPSS Technical committee members Tony Jenkins, Rod Kelshaw, and Chris Dorion began exploring potential field venues in the early summer of 2021. Potential sites were first researched using remote data such as Web Soil Survey (WSS), Google Earth imagery, and various GIS databases (public lands, surficial geology, hydrology, etc.) for suitability. Several past and new sites were considered and visited. Wolfe's Neck was selected after much consideration.

#### 2022 Annual Meeting, March 15th:

We will hold a joint Zoom meeting with MAWS so that updates common to both of our associations can be efficiently disseminated. This has been requested by regulatory staff. Please follow periodic updates on the MAPSS website for programming. Registration will be on-line through the MAWS website. Please see page 18 for a preliminary agenda.

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.





MAPSS Wolfe Neck Center. Photo courtesy of Dave Moyse. Soil pit TP-3 at the pasture site. Skerry cobbly loam, drained phase. Full set of photos and soil descriptions are at <u>www.mapss.org</u>. Special thanks to site monitors Tony Jenkins, Rod Kelshaw, Greg Granger, Nick Butler, and Chris Dorion

As with past field conferences over the last 30 years, the objective was to provide a professional level of training to natural resource professionals, ranging from soil scientists, site evaluators, wetland scientists, code enforcement officers, regulatory staffs, educators, and any interested individual from the general public. Preconference planning identified 3 sites with a variety of parent materials and soil series. Soil pits were dug with a small excavator provided by NRCS and operated by Greg Granger. Wolfe's Neck Woods Center & Farm, as well as Wolfe's Neck Woods State Park, provided staff during the field planning phase and the day of the conference, as well as landowner permission, access, and Dig Safe location of utilities.

Site 1 was located in a forested wetland complex in Wolfe's Neck Woods State Park, and featured a challenging stream determination, potential vernal pool identifications, wetland delinations, and a catena of soils from VPD to MWD and several depth classes. TP-2, within the wetland, was an Abram VPD variant; TP-3 was a Colonel sandy loam, located +/- along the wetland – upland boundary; TP-4 was a Peru fine sandy loam located in the upland.

Site 2 (photo above) was located in active pasture land. The lower landscape positions featured 2 soil test pits comprised of PD Scantic marine sediments, while the topographically highest soil test pit contained a glacial lodgement till keying out to the Skerry soil series. In the Scantic soils, the question arose as to whether the apparent PD soils were in fact drained by agricultural measures, and thus the redoximorphic features were relict.

Site 3 was located on a forested hillside backslope below bedrock outcrop on the summit and shoulder positions of the hill. This site was chosen because the excavator dug soil pits showed evidence of colluviation (downslope movement of soil). This is a common occurrence in Maine on backslope and toe slope landscape positions on moderate to steeply sloping hillsides, though has not been generally noted here in northern New England. TP-1, the lower soil pit, keyed out to a Skerry fine sandy loam. TP-2, located upslope, also keyed out to a Skerry sandy loam. TP-2 contained orstein at ~ 20 inches below the mineral soil surface, with corresponding groundwater present. This was unusual, given the time of year and dry August and the deep depth of the pan at ~ 41 inches. Colluviation was evident in both soil test pits, with stringers and thin beds of sand dipping downslope throughout the profiles. These 2 soil pits elicited lively discussion and were specifically chosen as challenging, but not atypical situations in Maine.



Attendees spent the morning circulating among the three sites, then convened for a picnic lunch at the Mallett Barn area. The afternoon featured a Q&A with regulators, site monitors, and attendees. As in past MAPSS workshops, we asked regulatory staff to be present to offer opinions, guidance, and other suggestions that will improve the work we do as soil scientists. Special thanks to MDEP staffer Bill Noble and NRCS State soil scientist Tony Jenkins for providing guidance, opinion, and regulatory viewpoints. CEU credit of 6.0 hours was awarded at the conclusion of the field conference to attendees. In summary, attendees enjoyed a spectacular late summer day amidst farm, field, and forest with an important panel discussion in a cavernous 19<sup>th</sup> century post and beam barn.

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#### Updating 2009 MAPSS Guidelines:

There have been several important updates, additions, and deletions over the last 13 years. We need to incorporate these changes and move to an all digital document. There are currently scanned portions of the Guidelines which are large files and cumbersome to download and edit. Please step forward if you have an interest in working on the committee to update the Guidelines.

# MAPSS – MAWS Joint Annual Meeting: Trial Run in 2022

In early December of 2021, Chris Dorion and Matt Kennedy (MAWS Program Chair), with authorization from their respective E.C.s, organized what would be the first joint MAPSS – MAWS annual conference. Venues were explored in the area from Augusta to Portland. Colleges and Universities were not hosting conferences, so private facilities were investigated. We settled on Portland (Holiday Inn by the Bay), met with their conference coordinator, reserved A/V technical equipment, selected menu options, and were ready to pay the initial deposit when the Omicron variant of SARS-Covid2 began its inexorable rise in Maine. At that point, we reconvened both E.C.s, weighed the upsides and downsides, and made the decision to postpone to a future date. This decision was not taken lightly. It was to have been a two salon conference, with concurrent talks and presentations, along with poster presentations during lunch and breaks. This format would have allowed attendees to choose the talks of interest to them while attending each respective association's business meeting independently. We will try this format again in the future.



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MAPSS 2021 Treasury Report		
MAPSS Checking Account as of 12/31/20		\$13,126.18
<u>2021 Income:</u>		
2021 Dues (full membership)	\$800.00	32 full members at \$25.00 each
2021 Dues (associate membership)	\$120.00	8 associate members at \$15.00 each
2021 Dues (student membership)	\$0.00	0 student members at \$0.00 each
2021 Dues (honorary membership)	\$0.00	0 honorary members at \$0.00 each
	\$920.00	
Annual Meeting Registration	\$0.00	0 registrants at \$45.00 each
	\$0.00	0 registrants at \$50.00 each
	\$0.00	0 students at \$15.00 each
-	\$0.00	
Workshop	\$585.00	13 registrants at \$45.00 each
1	\$550.00	11 registrants at \$50.00 each
		5 registrants at \$30.00 each
-	\$1,285.00	0
JEC Scholarship Donation	\$80.00	
2020 Late Memberships	\$25.00	
TOTAL INCOME	\$2,285.00	
2021 Expenses: Envirothon (Maine Association of Conservation Districts) Annual Meeting Facility	\$1,000.00	
Annual Meeting Expenses (copies) Janet Cormier Scholarship Workshop (MAWS portion) Website Host (DiscountASP.net)	\$120.00	
Domain Registration (Speedsoft)	\$18.95	
TOTAL EXPENSES	\$1,138.95	
MAPSS Checking Account as of 12/31/21		\$14,272.23



#### Proposed Slate of Officers for 2022-2023:

President	Rod Kelshaw
Vice President	Roger St. Amand
Treasurer	Gary Fullerton
Secretary	Eric Whitney
Past President	Chris Dorion
Director	Natalie Marceau

#### Website:

The website link "REGULATORY/SOIL links" in the left navigation pane on the MAPSS website was reorganized in January, 2022. The purpose was to place the most commonly accessed links in a descending cascade. For example, the first link is Web Soil Survey, followed by the new HSG assessment method and the new Form E and F, and cascading down to OSDs and field manuals. Several of the HSG links were scattered about the website and challenging to find. On the following pages are screen shots of the new organization. If anyone finds dead links or similar problems, please contact web master Chris Dorion or Matt Dorman.

The on-line directory of members (<u>http://www.mapss.org/directoryinfo.htm</u>) was updated in early February, 2022. Please review your specific contact information and send any edits to: <u>dorionchristopher61@gmail.com</u>

<u>Congratulations to Recent Maine Licensed Soil Scientists:</u> Anna Biddle Chris Coppi Mike Jakubowski Eric Whitney

# VERIFY YOUR LICENSE INFORMATION AND STATUS:

Go to:

https://www.maine.gov/pfr/professionallicensing/professions/board-licensure-geologists-soil-scientists

Link to the menu options in the right navigation pane to maintain the accuracy of your license contact information.

License renewals are due by December 31 each year. Failure to pay the renewal fee may result in the loss of your license and you will be required to reapply and retake all exams.



# Soil and Wetland Science Links

- A step by step visual guide to using Web Soil Survey (WSS) can be downloaded in PDF format here. This is needed to populate the data fields in the methodology for HSG determinations.
- Here is the Hydrologic Soil Group (HSG) field determination methodology which was approved by the MAPSS membership at the Annual Meeting on March 13th, 2019. This methodology had a minor revision in December, 2019. A visual guide to Web Soil Survey is linked above.
- Faster HSG lookup method using WSS for 1) soil horizons of a typical soil series; 2) associated depths; 3) Ksat Low-Rv-High values. This is a 13.3 M 12 page PDF instructional manual developed by MAPSS with significant assistance from NRCS.
- Hydrologic Soil Group (HSG) sample worksheet
- UPDATE TO FORM F from Bill Noble: Subject: Soil Logs for Soil Scientists Attached is the updated long form (Form F SS2) for logging deep excavations such as for documenting soil conditions for stormwater basins and the short Form F for soil scientists. These are a result of some comments that had been received from soil scientists doing work on site location projects, and due to an amendment to the geologists and soil scientists licensing law in 2019. Columns have been added for horizons and structure, and the terms consistency and mottling are replaced by consistence and redox, respectively, as they are understood to be preferred terms by the USDA. Also, the title "certified" is replaced by "licensed" because of the law change.

Note that the regular DEP forms E and F have also been updated, and they can be sent upon request.

Using these forms for DEP projects is suggested, not mandatory. You can use your own forms as long as they include the same information, but I hope you will find these forms useful.

Bill Noble can be reached for additional information.



- Regulatory guidance for soil criteria for site specific determinations for Prime Farmland and Farmland Soils of Statewide Importance is posted here. USDA definitions of surface stoniness class p.141-142 (Soil Science Division Staff, 2017, Soil Survey Manual: C. Ditzler, K. Scheffe, and H. C. Morgan (eds.), USDA Handbook 18, Government Printing Office, Washington, D. C.).
- Official Soil Series Descriptions (OSDs)
- Field Book for Describing and Sampling Soils, version 3.0
- Field Indicators for Identifying Hydric Soils in New England, 2018
- National soil survey data including Online Web Soil Survey, Historical soil survey publications, Status and schedule, Laboratory and research data, and National Soil Characterization Data - National Soil Laboratory site specific data with search routines.
- Field Indicators of Hydric Soils in the United States -A Guide for Identifying and Delineating Hydric Soils, Version 8.2, 2018
- Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region, 2012
- Testing Wetland Delineation Indicators in New England Boulder Fields, June 2012, by Robert
  W. Lichvar, Katherine E. Curtis, Jennifer J. Gillrich, and Lindsey E. Dixon
- The 2013 National Wetland Plant List. This interactive web site is described by Paul Minkin, U.S. A.C.O.E.: "By using the NWPL website, users can sort and download customized plant lists – e.g., just for the Northcentral/Northeast region, just Maine, or even just a county in Maine. This site will contain any changes that are made to plant names, indicators, etc. (we are already working on the 2014 update). There are also assorted other tools – photos to help with identification, county-level occurrence data, etc. – that are available on the site."
- MDEP NRPA Identification Guide for Rivers, Streams, and Brooks, dated 6/2/2018. This is additional guidance on stream determinations in the State of Maine.



- Ksat Values For New Hampshire Soils, 2010
- Site-Specific Soil Mapping Standards For New Hampshire And Vermont, 2011
- Standards For A High Intensity Soil Map New Hampshire, 2008
- Web Soil Survey for the U.S. Follow these instructions.
- Soil Science Society of Northern New England
- MDEP Bureau of Land & Water Quality
- School of Food and Agriculture at the University of Maine at Orono
- Maine Geological Survey with numerous mapping products of interest.
- The Home Page of the Maine Association of Wetland Scientists (MAWS)
- · Visit or volunteer with the University of Maine Herbarium
- Maine State Soil Website the CHESUNCOOK series

#### **Remembrance of Bob Rourke:**

Robert (Bob) Rourke professor of Soil Taxonomy at the University of Maine at Orono died on January 1, 2022. By my account Bob was the last of a great generation of soil scientists who taught many people (such as myself) of the importance of soils and soil science. He was able to make soils interesting and explain the difficult concept of soil taxonomy as well as many other soil concepts using terms that most people could understand. Bob was tough with his talk but gentle when it came down to the bottom line. He said "in my class a C is a good grade, a B is a very good grade, if you get an A, you know more than me".

Bob was a very active member of our soil science community. He was a member of MAPSS for several decades. Bob was part of the committee that compiled Maines High Intensity Soil Mapping Guidelines, he authored many bulletins (I have 6 of them) on the chemical and physical properties of dozens of soils in Maine that were published by the University of Maine Agricultural Experimental Station. He cooperated with NRCS soil scientists that were mapping and describing soils throughout the northeast to answer questions related to the use and management of soils. This information helped farmers, regulatory agencies, planners and the general public understand how soils can be used to grow crops, treat waste water and prevent erosion. Bob was the author of the manual that was used for soil judging and was instrumental in having the best team the University of Maine ever had for soil judging. He, John Ferwerda, and Ken La Flamme authored "Soils of Maine" which was the bases of understanding soils in Maine.

Perhaps the most important contribution to soils in Maine and throughout the world was Bob's research and understanding of Spodisols. He was a world renowned expert on Spodisols. He came up with the physical characteristics that could be seen in the field to match the chemical characteristics found in the lab. This allowed soil scientists to identify and map these soils properly. Those of you who have ever identified wet spodic and albic horizons particularly along the coast and in the mountains have Bob to thank for being able to



do so. This important soil information has allowed regulators feel comfortable permitting things that will function properly under known conditions.

For many years Bob proctored the exam that soil scientists took to become certified in Maine. He gave out the infamous "blue books" and expected you to fill them with answers to broad questions like "what morphological characteristics are associated with poorly drained soils in Maine". Well, I spent about 5 hours filling out 4 blue books hoping I gave Bob what he was looking for in his vague questions. In the end, I found Bob to be very fair with his grading. Once I passed he told me "now you have a license to learn". This was, without a doubt, the most important license I have ever acquired in my lifetime.

While working for the Plant and Soil Department at the University of Maine as a Research Technician in 1981 I got to know pretty well. He had a lab which ran samples for the studies he conducted adjacent to the lab I worked in. He would always talk about how he loved Aroostook County and being able to help the farmers in the county grow potatoes, broccoli, small grains and other crops.

After Bob retired I saw him at UMaine hockey games collecting 50-50 raffle tickets. He was a big Maine Hockey fan who cheered for the team whenever he got a chance.

Bobs obituary can be obtained at BrookingsSmith.com. Gifts in his memory may be made to Aroostook County Action Program, 77 Main Street, Presque Isle, ME 04769.

Respectfully submitted,

David L. Marceau, licensed soil scientist # 182

#### **Thoughts on Retirement:**

#### What a Retired Soil Scientist Does with Some of his Time David L. Marceau, ME CSS #182; Former MAPSS President

I'm sure many of you who are working are wondering what it is like to be retired as a soil scientist. Yes, if retired, you may have the luxury of being able to stay up late and not have to get up early if you wish. And, yes, there probably aren't as many people telling you where you need to be and when. However, that is not what I'm talking about. I'm talking about what occupies your time. You know, what hobbies do you have or projects do you like to work on?

For me it is pretty simple. I have always liked being outside, owning land and managing it for forestry and agriculture. I own 170 acres near my house and have plenty of projects to keep me busy. Read on and I'll be happy to describe two projects I've worked on recently. If nothing else, they both kept me out of trouble.

Project #1



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Last summer I spent several months building stone walls (which I had on my bucket list for many years). I started with an area where the farmers who cleared my field piled stones along its edges, but not in an orderly



manner. That is to say, they made a linear pile of stones about 10 to 25 feet wide along the edge of the field, not taking the time to build a stonewall. Thus, building my wall was made somewhat easier because I had lots of stones to work with close to the area where I wanted to build it. I decided to build a wall 30 inches tall and 24 inches wide from stones on my property. I came up with these dimensions after examining several walls and deciding what would be the most durable (stay in place) and estimating how many stones I had to work with without having to forage very far. I call the wall I built a "farmer's wall" because it is somewhat uneven (some stones stick out or curve in and is not built by some landscaper like you find in Camden) and is made of stone from the field adjacent to it. Because the stones had been piled for more than a century, they were covered with about 12 to 18 inches of organic matter that had accumulated from the pine trees adjacent to the wall. The acidity of the soil organic matter in conjunction with snakes, chipmunks, and salamanders, all of which contributing a series of void spaces between the stones perfect for these animals to live in. Thus, what I thought was an 18 inch deep pile of stones was closer to 3 feet once they were unearthed. So, a random pile of stones that I thought would build about 30 feet of wall ended up building about 100 feet of same.

Before I forget, since you, the reader, are Soil Scientists, you probably would want me to mention what kind of soils on which I built my wall. They were mostly in the Lyman-Tunbridge complex. Time will tell, but I figure that the

shallow to bedrock soils will be less susceptible to frost action (due to their depths) than other deeper soils.

The only equipment I used to build the wall was my tractor (1998 John Deere 1070 with a loader) and a heavy steel bar. The tractor was used to move rocks and the steel bar helped me shift them into place. I also marked a 4 foot maple sapling with electric tape at 24 and 30 inches to allow quick measurements of the walls width and height. Before starting my project I thought it might be too difficult for a 65 year old to handle. However, I found out that if you let the tractor and bar do most of the work it is not as difficult as it might seem.

#### Project #2

Another project was to cut hemlock logs for my daughter's house. She has decided to build a post and beam style house and needed the timbers to build with. So, I told her we could cut them on my land and have them sawn has needed. We started by measuring and marking trees that we thought would meet the requirements of the list of timbers provided by the timber frame company that is going to frame the house up. From the preliminary measurements we took of standing trees we estimated we would need 40 hemlock trees that were in the neighborhood of 20 to 28 inches in diameter. Once we actually got the trees to the wood yard we found we needed 48 trees to complete the project. We had underestimated because of the inability to determine the diameter and straightness of the top 25 to 40 feet of the longs. Much to our delight, we did not encounter much "shake" (a form of rot) in the trees we cut.



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Initially, I thought we might use my tractor and wood winch to haul logs. However, after seeing the size of the trees needed and where the trees were located, we decided to hire a friend to haul out the logs with a skidder. He could take about five times as much volume as I could with my tractor so it was much more efficient that way.

One interesting fact is that the trees we selected for the job were similar in diameter, grew not far from one another, and at very different rates. I examined some 20 inch trees that were 80 years old and some that were 120 years old. Thankfully they both were of good quality. You could tell when the land had apparently been cleared around the trees by the growth rings because their rings were much wider than when they were when shaded out.

The project was not without its difficulties. During the preliminary stages of our work, I decided to investigate where most of the hemlock was that we needed. I did so by driving my tractor through a boggy area which I thought was frozen enough to hold my tractor. A little while later I found myself setting on my tractor in about 24 inches of water with no way to get out. Fortunately, I had my cell phone and my neighbor was able to pull me out with his skidder. Then when we were harvesting the logs some were covered with a significant amount of "mud". Thus, at times, we were forced to file our saws as often as every 20 to 25 cuts and had to have extra chains for our saws.

But it was worth it! I can actually say I had fun and I estimate we saved Natalie about \$4000.00 on her house project. Also, without question, this was the best use of the hemlock trees located on my property.

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.



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Finally, after the troubles I experienced during the latter part of last year, I will be forever\_thankful that I am healthy enough to enjoy my property enough to work on my bucket list. Even though I have to spend more time in doctor's offices and rest more between times of hard physical activity.

# SOIL AND PLANT SCIENCE DIVISION UPDATE

Staff:

Nicholas Butler – Soil Survey Office Leader; Dover-Foxcroft, ME (Currently acting Soil Survey Leader in Saint Johnsbury, VT and Paul Smiths, NY offices)

Alaina Kresovic – Soil Scientist; Dover-Foxcroft, ME

Joshua Dera – Soil Scientist; Dover-Foxcroft, ME

Christopher Mann – Ecological Site Specialist; Dover-Foxcroft, ME

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Jasmine Gregory – Student Pathways Soil Scientist (University of Maine); Dover-Foxcroft, ME Local Projects:

<u>Raster Soil Survey</u>: Collaborative effort with the Cooperative Forest Research Unit (CFRU) at the University of Maine. Using LiDAR and computer models to predict soil series across the landscape. Pilot project conducted in Southern Somerset County (Soil Survey Area 602) that will expand to Northern Maine (Soil Survey Areas 620/621) and eventually state-wide.

<u>Forest Productivity</u>: This is an effort to improve site index and forest productivity data in Maine made available via the Web Soil Survey. The project consists of assigning an actual soil series to each georeferenced FIA plot in the state via remote sensing and existing SSURGO data. Once we have a soil series for each point, we will utilize the plot data for each site to develop site index and forest productivity of the various tree species that occur on each soil component.

<u>Dynamic Soil Properties</u>: This is a national effort for each soil survey office to collect dynamic soil property data. We are planning to look at the impacts of various logging techniques on carbon levels in the soil and compare these to various agricultural practices including but not limited to row crops, no-till farming, hay production, and pasture. We plan to focus on our state soil Chesuncook.

<u>Remote Projects:</u> White Mountain National Forest: We continue to focus most of our regional efforts to completing the initial soil survey for the entire county by 2026. The last remaining initial soil survey left in the Northeast Region is the White Mountains. The past few summers the Dover-Foxcroft soils crew has spent numerous weeks collecting data in the WMNF. We will continue to do so, as needed, until the survey is completed.

<u>Lake Champlain Basin</u>: Another top priority in the region is update the soil data within the Lake Champlain Basin. The soils in this region are very-fine clays (> 60%) of the Vergennes Catena. There has been significant amounts of run-off and clay dispersion in this region that has impacted water quality of Lake Champlain. This effort was proposed by Vermont NRCS to help preserve the natural resources associated with the lake.

# Dover-Foxcroft Crew Hosts Diverse Collaborators for DSM Field Data Collection in Maine

By Jamin Johanson and Nicholas Butler, October 26, 2021



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(Pictured left to right: Lucy Zendzian, Nicholas Butler, Chris Mann, Jamin Johanson, Suzann Kienast-Brown, Dr. Colby Brungard, Jessica Philippe, Josh Dera)

Soil scientists from the Dover-Foxcroft, Maine office (DFX) dig for soils data in more ways than one. Time is spent during the long Maine winters digging through historic data in old file cabinets in search of georeferenced soil pit descriptions. So far, they have unearthed over 2,500 existing soil descriptions and repurposed them to serve as training data for a collaborative digital soil mapping (DSM) project. Once the snow melts, the DFX crew directs their efforts to the field where they dig and describe additional soil pits to refine and test the performance of DSM model predictions.

The week of October 18<sup>th</sup>, the Dover-Foxcroft soils crew were joined by DSM project collaborators Dr. Colby Brungard, Suzann Kienast-Brown, Jessica Philippe, and Jamin Johanson for a week of field data collection. Throughout the week, participants broke into small groups to dig soil pits, document soil property observations, and discuss soil-landscape patterns. The DSM collaborators were able to gain valuable insight that will aid them in assisting the Dover-Foxcroft staff with future projects.

This exciting DSM project is made possible through a collaboration with Dr. Brungard and the University of Maine's Cooperative Forest Research Unit (CFRU). Dr. Brungard is an Assistant Professor of Pedology at New Mexico State University and active member of the National Cooperative Soil Survey (NCSS). His contributions to this project are funded by the CFRU, which is interested in 5m resolution soil property data to support their forest management and conservation operations. The CFRU includes over 40 of the largest timber producers and conservation groups in Maine, representing more than 4 million acres of forest land in the state.

The CFRU project led by Dr. Brungard has two study areas. The first study area is comprised of a 1.4-millionacre "pilot" area near the Dover-Foxcroft field office. This pilot area encompasses the most recently published



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survey in the state and an active update project. In order to stratify the project area by soil parent material for data collection and spatial modeling, a parent material map was generated using existing SSURGO polygons in the recent survey. For the active update portion of the pilot area, over 600,000 acres, soil staff were able to hand-digitize a high-quality parent material map with the aid of LiDAR, imagery, and older-vintage SSURGO products.

Over the past two years, the DFX staff collaborated with Dr. Brungard to produce a shapefile of 2,660 soil pit locations with an attribute table containing soil class and property data observed at each location. Most of the soil descriptions were originally collected as rapid transect points for traditional soil survey and, as a result, they are not full pedon descriptions and were never entered into the NASIS database. Yet, when combined with high-resolution LiDAR DEMs, satellite imagery, and DSM modeling techniques, these forgotten soil observations contain sufficient detail to produce high quality raster layers of soil classes and various soil properties. In addition to the 2,660 training data points, the DFX crew described a stratified random sample of 46 additional soil pits in 2021, which was used as an independent validation dataset to test the accuracy of DSM spatial predictions.



(Collecting validation data. Pictured left to right: Lucy Zendzian, Josh Dera, Dr. Colby Brungard, Alaina Kresovic)

During the field week, Dr. Brungard took the opportunity to share with the group some results modeling four soil properties in the central Maine study area: depth to bedrock, depth to redox, depth to densic contact, and O horizon thickness. By overlaying the shapefile of soil observations on a raster stack of 140 covariate layers (derived from LiDAR DEMS and Landsat imagery), Dr. Brungard identified very good predictive models for depth to bedrock, depth to redox, and depth to densic contact. There was no suitable model for predicting O horizon thickness with our dataset.

The second project area covers 4.6 million acres in northern Maine. This area is dominantly timberland owned by members of the CFRU. This area was surveyed at order 3 scale and published in 2010. Though this is an order 3 survey, the soil-landscape models and linework are some of the best in the state. This allowed us to bypass the rigorous task of hand-digitizing a parent material map and just generate one from the existing SSURGO.



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The CFRU group is extremely interested in precision timber management, yet our forty-acre minimum delineations for these mostly unorganized townships are what they have to work with. Our hope is to extrapolate the models from the pilot area in central Maine to the north during the winter months of fiscal year 2022. The primary purpose of this field week was to collect a probabilistic sample in the northern project area to be used as an independent validation of the models that Dr. Brungard will produce this coming winter. Throughout the week we were able to collect over 30 full pedon descriptions in various parent materials. The Dover-Foxcroft soil staff will continue to collect soils into the fall/spring/summer as needed to establish a validation dataset.

As a side project, the CFRU has requested the development of raster-based soil interpretations to aid in their precision management aspirations. Using the soil property models mined from the existing data in the pilot area, Dr. Brungard will attempt to establish soil interpretations for: Harvest Equipment Operability and General Harvest Season. If these are successful several others have been suggested including Soil Rutting Hazard. In preliminary efforts to model soil interpretations it was determined that having a soil series assigned to each raster pixel may be necessary, not just select soil properties. Efforts have begun to model soil series across the pilot area and the hope is to eventually extrapolate these soil series predictions to the north.

This is a multifaceted collaborative effort between members of the Natural Resource Conservation Service, academia, private forest industry, and the National Cooperative Soil Survey. Dr. Brungard and other select members of the DSM focus team are pushing the limits and expanding into new areas of raster-based modeling to meet the needs of the forestry community. Raster-based soil interpretations to enhance precision forest management could be game changer for the forest industry.



(Question and answer session in the field with CFRU members on how we can better serve their needs. Pictured from right: Dr. Colby Brungard, Suzann Kienast-Brown, Jamin Johanson, Chris Mann, Nicholas Butler, CFRU member, Lucy Zendzian)



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#### Maine Association of Professional Soil Scientists March 25, 2021 Annual Business Meeting Minutes (to be approved / amended at the March 15, 2022 Annual Business Meeting) 3:00 pm to 4:30 pm Via Zoom

The meeting was called to order at 3:00 pm by Maine Association of Professional Soil Scientists (MAPSS) President Chris Dorion.

# **Election of Officers**

A motion was made and passed for the following slate of officers for 2021:

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- President: Chris Dorion
- Vice President: Roger St. Amand
- Secretary: Sean Donohue
- Treasurer: Gary Fullerton
- Past President: Dave Marceau
- Director: Natalie Marceau

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# **Treasurer's Report**

Gary Fullerton reported on MAPSS' finances. \$1,005 in fees collected for the 2020 annual meeting that was cancelled due to the pandemic have been earmarked as a credit for those who paid for the next in-person annual meeting, which is anticipated to be in 2022. MAPSS did provide support for a \$1,000 scholarship in 2020 and made a \$100 donation to Ducks Unlimited. MAPSS did not fund the Envirothon in 2020. A motion was made and passed to approve the Treasurer's report with verbal amendments that would be incorporated into an updated and final written Treasurer's Report and posted to the MAPSS website by Chris Dorion.

# Envirothon

Chris Dorion spoke with the Envirothon management, and confirmed the Envirothon is being held virtually this year. Envirothon is still seeking financial support to offset the costs of holding the event virtually. A motion was made and passed to donate \$1,000 to the 2021 Envirothon.

# Janet Cormier Scholarship

Mike Jakubowski reported on the Janet Cormier Scholarship. No complete applications have been accepted as of yet this year. Mike is anticipating that one to two complete applications may be received. The deadline for submitting an application has gone by, but MAPSS will be flexible on the deadline due to the pandemic. Gary Fullerton mentioned that this year the scholarship amount is \$1,080. The membership discussed having a report made to MAPSS by scholarship recipients in future years in the form a verbal update or poster presentation. The membership generally agreed this would be a good idea. A motion was made and passed for a \$1,080 scholarship in 2021 and a \$1,000 scholarship in 2022.

# **Newsletter Editor**

Chris Dorion reported that it has been difficult to find a new newsletter editor since Don Phillips stepped down from the position after many years. After brief discussion on alternatives to a traditional newsletter and the



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need for a volunteer, no MAPSS members expressed an interest. Chris Dorion ultimately volunteered to put together a spring newsletter and will be asking the membership for articles soon.

#### Land Use Planning Commission Rezoning and Soil Suitability

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Chris Dorion and Dave Rocque discussed the recent Land Use Planning Commission rule change for rezoning applications that requires the applicant to demonstrate that the soils at the site are suitable for the proposed rezoning. The membership briefly discussed that there are no clear standards for how soils would be deemed suitable or not.

#### **Natural Resource Field Workshop**

Tony Jenkins reported that September 8 has been selected as the date for a MAPSS sponsored workshop. The location is to be determined, but will probably be located in southern Maine. It is anticipated the workshop will include review and discussion of soil pits dug by an excavator and include hydric soil profiles, moderately well drained soil profiles for discussion of hydrologic soil group classifications, and a discussion of the use of LIDAR to disaggregate USDA Soil Survey map units without completing a full on-site high intensity soil survey.

#### **MAPSS 2009 Guidelines for High Intensity Soil Surveys**

Tony Jenkins reported that technical committee members are needed to update the MAPSS 2009 Guidelines. Tony also mentioned that he has made efforts with USDA – NRCS to return certain moderately deep or deeper moderately well drained series to their former hydrologic soil group C classification from group D, but has not made much headway. The possibility of a MAPSS letter of support was discussed to help advance this effort. A motion was made for MAPSS to support returning moderately deep and deeper moderately well drained soils to a hydrologic soil group C designation from group D until the National Engineering Handbook can be updated. After discussion, the motion was not voted on, but Chris Dorion proposed revisiting this at a later time when the development of a formal letter to USDA-NRCS could be discussed in more detail. Tony suggested that if written, the letter be accompanied by a list of applicable series in Maine. The meeting adjourned at 4:30 pm.

# Updates on the Janet Engle Cormier Scholarship for 2021-2022

The status of the scholarship remains <u>Active</u>. The committee will review applicants up to the date of the Annual Meeting on March 15, 2022, at which time the scholarship recommendation(s) will be presented to the membership for approval.

MAPSS did not award scholarship funding in 2021 as there were no applicants.

\$1,080 was available in 2021. The MAPSS membership will vote on scholarship amounts at the March 15, 2022 Annual Meeting.

Mike Jakubowski, Chair, Scholarship Committee



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Maine Association of Wetland Scientists Maine Association of Professional Soil Scientists Winter Conference & Annual Meeting Tuesday, March 15, 2021 Via Zoom Webinar

- 11:00 11:05 *Welcome from MAPSS President*, Chris Dorion
- 11:05 12:35 MAPSS Annual Business Meeting
- 12:35 1:00 **Break**
- 1:00 1:05 Welcome from MAWS President, Lee Burman

1:05 – 1:20 *MDEP Regulatory Update*, Mark Stebbins, Maine Department of Environmental Protection

1:20 – 1:35 **USACE Regulatory Update**, Colin Greenan, U.S. Army Corps of Engineers, New England District

1:35 – 1:50 **LUPC Regulatory Update**, Corrine Michaud-LeBlanc, Maine Land Use Planning Commission

1:50 – 2:05 **MDIFW Regulatory Update**, Bob Stratton, Maine Department of Inland Fisheries and Wildlife

- 2:05 2:20 USFWS Regulatory Update, Patrick Dockens, U.S. Fish and Wildlife Service
- 2:20 2:30 Break
- 2:30 3:20 **PFAS Keynote address**, David Madore
- 3:20 3:30 Break

#### 3:30 – 5:00 MAWS Annual Business Meeting

Certificates of Attendance for 1.5 hours of contact time for the conference and 1.5 hour for either of the annual business meetings will be sent to all registered attendees via email.

Register online at: http://mainewetlands.org/store/

\$15 for active MAWS/MAPSS members \$25 for non-members



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#### Free for Students

For those that prefer, you may register online, and send payment to: Roger St. Amand, MAWS Treasurer P.O. Box 76 Bass Harbor, ME 04653

Any questions, please feel free to call or email Matt Kennedy, MAWS Program Chair, Phone: 207.400.5757, Email: mkenn117@gmail.com

No Refunds for Cancellations

#### MAWS to MANRS - A Special Request for Review from the MAWS President

#### Aleita "Lee" Burman 19Jan2022

It was one of those long summer evenings in Maine. I accepted an offer to go fishing with my significant other to one of his secret fishing spots. You know the place – no people and big fish. How could I say no? I don't usually fish, just like to ride along and check it out. It was a warm and humid, calm and windless evening; just right for puttering up the wide river that would be our home for the next couple of hours. While my usual M.O. in the field is working, this was a great chance to observe and reflect. A Thoreau moment, if you may.

This river is within a large, topographically low area that includes bogs, marshes, and low upland ridges. The current is steady, but with a deep, smooth bottom. Not a ripple except where a fish jumps, a muskrat swims, or a turtle pokes its head out to see what we are doing (and, oh yes, a cast lure!). While I sometimes struggle with writing wetland functional assessments (yes, the function is there but is it a "primary" function?), this place leaves no doubt as to functions and values – it has them all and then some.

And as the sun goes down, wildlife activity goes up significantly, and so does the fishing action (catch & release only in this place!). I have so many questions! Why does wildlife activity increase at dusk, is it that the daytime critters are just finishing up as the nighttime critters are just getting started? Is it only this evening, this temperature, this wind direction and speed, this place? Is there a perfect height range for the kingfisher to hunt from? How does the recent dam project down stream effect hydrology here? Does the burr oak prefer well drained soils but only near waterways? What kind of fern is that? Mushroom? Insect? What about climate change? Hmmm, I wish I had more knowledge base and people to learn from at my fingertips. But wait, I do – MAWS!

Which brings me to the reason for this special request and the future direction I would like to see MAWS take. As a membership, we are diverse people with diverse interests and a diverse knowledge base. We are not only wetland scientists, as the name implies, but like myself, many of us are also soil scientists. We are wildlife biologists, botanists, geologists, hydrologists, fisheries biologists, climate change specialists, foresters, engineers, policymakers, planners, etc. We are natural resource scientists and consultants (and then some) truly.

At the next business meeting in March, I will be asking the MAWS membership to consider changing the name of the Maine Association of Wetland Scientists (MAWS) to the Maine Association of Natural Resource Scientists (MANRS). I feel strongly that the new name reflects who we already are as a group, who we have evolved to over the 30 years since MAWS was established, and who we want to be in the future. More than just a name change, being MANRS will allow us to expand our focus beyond just wetland science, to include other important protected natural resources such as rivers and streams, soil science, wetland-based wildlife ecology, and all of those areas most of us need to be proficient in to do our jobs. I feel that MANRS will be uniquely suited to provide opportunities for cross-discipline training and promotion of research in these other fields. We can accomplish training through our regular workshops, with an expansion of subject matter, and we can accomplish promotion of research through our regular stipend program. This change will allow opportunities to expand the content of



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our workshops, support and contribute to the expansion of protected natural resource science, and promote policies that contribute to the sound stewardship of protected natural resources in Maine (as it is written for wetlands only in the MAWS constitution). I believe we will attract a larger membership and that we will all benefit from this greater diversity and knowledge base.

And we have already started working in this direction! We are currently collaborating with the Maine Association of Professional Soil Scientists (MAPSS) on our upcoming web workshop which will include regulatory updates as well as one or several talks on a subject that is of interest to both memberships. The general request of the membership at the next business meeting will be to approve forming a committee to look at the logistics of a name change (and asking for volunteers to be on this committee). This change has been talked about for a long time during MAWS executive committee meetings and there is no better time than the present to explore this to see if and how it will work for both the organization and the membership. I am positive that it will and look forward to leading the way towards this change.

If you have any comments or questions prior to the annual meeting, please contact me at blburman@gmail.com. Thank you and keep up the good work (and happy fishing too!). Lee Burman, MAWS President