

Minutes of the Multistate Research Committee Meeting
NE1038 - Hydropedology: Genesis, Properties, and Distribution of Hydromorphic Soils
June 3, 2013
Salisbury, MD

Participants

- Patrick Drohan (The Pennsylvania State Univ.) patdrohan@psu.edu
- Bruce Vasilas (Univ. of Delaware) bvasilas@udel.edu
- John Galbraith (Virginia Tech) john.galbraith@vt.edu
- Brian Needelman (Univ. of Maryland) bneed@umd.edu
- Marty Rabenhorst (Univ. of Maryland) mrabenho@umd.edu
- Mickey Spokas (Univ. of Massachusetts) mspokas@psis.umass.edu
- Mark Stolt (Univ. of Rhode Island) mstolt@uri.edu
- Jim Thompson (West Virginia University) james.thompson@mail.wvu.edu
- Ray Knighton (USDA-NIFA) – USDA Representative
- Jon Wraith (Univ. of New Hampshire) – Administrative Advisor

Brief Summary of Minutes of Annual Meeting

The 2013 annual meeting of the NE-1038 Multi-State Project Technical Committee was held at the Hampton Inn in Salisbury, MD on June 3, 2013.

Following introductions, project leader Mark Stolt (Univ. RI) opened the meeting at 10 AM by providing an overview of the project's three major objectives and how the work to date has supported the project.

Mark provided a brief overview of the past year's project-related outreach activities. Committee members interacted with numerous groups and exhibited project-related field work.

Outreach Activities

1. Attending members from the NE1038 project updated the USDA-NRCS on their respective research at the 2012 Northeast Cooperative Soil Survey Meeting (Univ. Maine).
2. Rabenhorst (MD) organized a field tour and made presentations at the 2013 Mid-Atlantic Hydric Soils Committee Meeting; Ocean City, MD. January 9, 2013 Field tour of hydric soils on Assateague Island National Seashore. Reviewed research sites of UMD doctoral candidate Annie Rossi to examine soil morphology along with hydrological data and biogeochemical data to help assess possible morphological features for hydric soil indicators. Jan 10 business meeting.
3. Stolt (RI) made presentations at the New England Hydric Soils Technical Committee meeting New Hampshire in March of 2013.
4. Stolt, Rabenhorst and Drohan (RI, MD, PA) presented USDA-NRCS webinars. 100 to 200 listeners in each time.
5. Needelman (MD) gave several webinars and presentations: Prescribed fire increases coastal marsh plant productivity through canopy removal. University of Antwerp, June 25, Antwerp, Belgium; Blue carbon opportunities and challenges in the Chesapeake Bay. International Blue Carbon Scientific Working Group 4th Workshop, Oct. 9-11, Annapolis, MD.; Mitigating greenhouse gases through coastal habitat restoration. American Wetland Month Webinar, US EPA, May 15, Washington, DC.; Mitigating climate change impacts through habitat restoration. Habitat Restoration Workshop of the Long Island Sound Study, Dec. 4, E. Setauket, NY.; Ditch-drained marshes: A geospatial assessment of extent, health and restoration potential in Maryland's tidal marshes. 26th annual TUGis conference, March 19, Towson, MD.

6. Drohan (PA) and co-PIs presented numerous talks on their Fertilizer Forecaster project, which strives to use restrictive layer modeling to identify potential wet soils on the landscape. Patrick organized a field tour that highlighted soils and landscapes their project is focusing on. This tour was run in cooperation with the Pennsylvania USDA-NRCS, the Conewago Creek Initiative, and the Pennsylvania Assoc. of Prof. Soil Sci. Patrick gave several talks in 2012 and 2013 on his wet soils work with shale-gas development.
7. Galbraith (VA) gave several webinars: Wetland Training Availability Webinar, presented in cooperation with Wetland mapping Consortium and Assoc. State Wetland Managers. (Presented May 15, 2013; posted at: <http://aswm.org/news/webcasts-a-presentations>); Wetland Mapping Consortium: National SURRGO Wetland Soils Project Webinar, presented in cooperation with Wetland mapping Consortium and Assoc. State Wetland Managers. (Presented February 26, 2013; posted at: <http://aswm.org/news/webcasts-a-presentations>) and maintained the Wetland Mapping Consortium web site and information exchange site. <https://scholar.vt.edu/portal/site/9c21338c-48e4-4055-8a2d-6464887a859b>
8. Lin (PA) helped organize the 2nd international conference on hydrogeology <http://www2.ufz.de/hydrogeology2012/hydrogeology/home.html> .

2013 Field Tour Overview - Marty Rabenhorst presented an overview of the upcoming Graduate Student Field Trip, highlighting a number of key issues that fit within the NE1038 objectives.

Research Activities

Committee member updates were organized around the project's themes.

I: Hydrology, Hydrologic Function, and Hydric Soil Indicators for Problem Soils and Systems

A: Hydric Soil Indicators for Problem Soils and Systems

1. Hydric Soil Field Indicators Developed for use in Mid-Atlantic Barrier Island Landscapes (Rabenhorst)
2. Mesic Spodic Indicator (Stolt)
3. Shallow Spodic Indicator (Vasilas, presented by Stolt)
4. Red Parent Material Indicator (Stolt)
5. Remapping soils of the northern Appalachians to improve delineation of hydric soils and near-hydric soils. (Drohan)

Discussion and next steps

- a. Based on Marty's talk, several new indicators will be developed for Mid-Atlantic barrier island landscapes.
- b. Discussion of the mesic spodic indicator focused on the potential role of fulvic and humic acids in affecting soil color and low Fe concentrations in soils.
- c. Plans were to continue to monitor spodic and red-parent material hydric soils and develop indicators.
- d. Drohan's work may improve mapping of hydric soils in forested areas of Pennsylvania. Field validation is underway this summer. Discussion also focused on how this methodology was different from the current harmonization and soil boundary join work now being conducted by the USDA-NRCS Soil Survey.

B: Methodology and Standards

1. Comparison between the Munsell Soil-Color Charts and the Globe Soil Color Books (Thompson)
2. Update on color standards used in Hydric Soil Field Indicators (Rabenhorst)
3. Inconsistencies and Applications in Describing and Identifying Organic Soil Materials (Stolt)

4. Monitoring water levels in clayey wetlands (Galbraith)
5. Seamless hydric soil data for use in mapping wetlands (Galbraith)

Discussion and next steps

- a. Much discussion took place in regards to the quality and kinds of soil color chips (and how they are made), and the different color books used today.
- b. John Galbraith noted that the new Globe book (now in development) might be ~\$70. This book would be a more affordable soil color book than the X-Rite version. The new Globe book will apparently not compromise on the number of chips (in comparison to the X-Rite version).
- c. Much discussion occurred on the description and identification of organic soil materials. Several attendees had not been aware of some of the technical details embedded in the definitions of various organic soil materials.

C: Hydrology and Hydrologic Function

1. Geophysical modeling to predict surface and subsurface flow patterns contributing to runoff generation; implications for anthropogenic and periglacial landscape reconstruction. (Drohan)
2. Decreases in hydrologic function across historic conventional vs. unconventional gas development in the northern Appalachians. (Drohan)

Discussion and next steps

- a. Discussion on Drohan's geophysical modeling focused mostly on how well this effort might improve soil survey data in Pennsylvania, and be used to calculate historic erosion.
- b. Del Fanning had several questions on shale-gas disturbance effects on soils and who else might be studying disturbance effects.

II: Subaqueous Soils

1. Coastal Acidification (Stolt)

Discussion and next steps

- a. Del Fanning had several questions on rates of acidification and several points about the importance of sulfides in acidification.

III: Soil Organic Carbon

1. Improved mapping of soil organic C at regional and national scales: harmonization, disaggregation, and uncertainty estimation. (Thompson)
2. Carbon crediting for coastal wetlands and soil science contributions to socio-ecological system resilience (Needelman)
3. Soil Carbon Decomposition and Soil Carbon Stocks in Restored and Natural Wetlands on the Delmarva Peninsula. (Rabenhorst)
4. Soil Organic Carbon Sequestration in Estuarine Subaqueous Soils (Stolt)
5. Carbon sequestration in salt marshes (Needelman)
6. Colloid Mobilization and Biogeochemical Cycling of Organic C in Wetlands (Vasilas)

Discussion and next steps

- b. Discussion in this session focused partly on what harmonization might get us in terms of a final soil survey product. Some concerns were raised in terms of the accuracy of the final product, especially if there may be initial problems in development of the mapping model for an area, which are carried through in harmonization. Jim felt such problems could be caught in the process and the resulting soil survey improved because of this error identification. A comparison of the

ESD techniques being used by Drohan to those of Jim Thompson at WVU could be a useful study, especially in terms of identifying poorly mapped areas that may encompass wet soils.

- c. The session's focus on soil carbon stocks yielded much discussion, especially around Brian Needleman's research linking socio-ecological systems. NIFA project representative Ray Knighton thought this angle might be especially fundable in the future. Ray Knighton also felt that this was a novel approach for linking the science to issues affecting the public directly.

USDA-NIFA Representative Ray Knighton and SAES Administrative Advisor Jon Wraith provided comments on our meeting and project.

- a. Under the new guidelines for federal funding from Congress, there is a risk that the focus of a multistate project could be viewed as duplicative of proposals we submit for grant funding if the concepts in the proposals overlap with that of multistate project. This is in part because Congress believes we receive direct research support funding through our experiment stations, rather than (mostly) faculty salary to support our multistate research efforts. One solution may be to write relatively broad objectives.
- b. Potential funding for carbon related work in our project could come from AFRI Foundational Programs; the NIFA Director is moving additional money to these programs relative to recent years. Additional funding could also come from the USDA and other climate change programs.
- c. The AFRI budget may go up a little, depending on final congressional budget.
- d. Sequestration and failure to pass Agricultural Appropriations or the Farm Bill has reduced experiment station annual funding by 6-8% this year.
- e. Social sciences may become a bigger focus of future research.

A meeting of NE1038 participants to plan the final report and proposal for the new project will take place at the SSSA meeting in Tampa.

Jim Thompson (West Virginia University) volunteered to host the 2015 Graduate Student Pedology Field Tour.

The meeting was adjourned at 4:30 pm.

Minutes recorded by Patrick Drohan.