

MO 12 Soil Survey: News and Views

 **MLRA Soil Survey Region 12**

Fall 2011

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Additional photos of the tour
can be viewed at:

<https://picasaweb.google.com/JimTurenne/2011NortheastPedologyTour>

MO Leader's Message

By Dave Hvizdak, MO-12 Team Leader

Greetings! Hope all is well and everyone made it through their performance appraisal unscathed.

Many of you have completed, or are in the process of completing, your final Initial or Extensive Revision soil survey. To that, I congratulate you on this significant soil survey milestone and thank you for your hard work.

I would like to commend all of you in your effort to complete the field portion of the Rapid Carbon Assessment by the end of the fiscal year. I would like to extend a special commendation to Maggie Payne who did an extraordinary job of coordinating the project in MO-12 and maintaining good quality control. I appreciate the support all of you gave her in her effort.

The next immediate task at hand will be to complete the general soil survey evaluations and develop your long range plans. As a reminder, prior to posting the long range plans to the national SharePoint and to NASIS, they all need to be reviewed by the board of directors and signed. Kristie Wiley will be available for any who would like an English edit of their long range plan before presenting to the board.

In the coming year, you will be hearing plans from Soil Survey Division concerning regionalizing the soil survey structure and accelerating phase 1 of MLRA updates. These issues are being pursued to address potential future budget reductions.

What "regionalizing" will entail has yet to be determined—a special committee is being set up to look into this. One of the things they will be looking into is "how can we structure the soil survey program to retain its current strengths while enhancing its scalability." They will also be looking into technical soil service delivery.

The "acceleration" plan will be an aggressive 3-year project to "harmonize" those data map units that can be combined without major correlation or field work—the proverbial low hanging fruit. The goal in the "acceleration" or "harmonization" plan is to drastically reduce the number of active DMUs and begin establishing consistent data across soil survey areas. The thought is to implement this project along the same structure as the rapid carbon project with one person within each MO coordinating the effort among the soil survey offices. The procedures for the "harmonization" plan are being developed by two separate teams with separate charges.

To add to the challenges ahead are rumblings I'm hearing from some folks concerning retirement. Those who plan to retire this fiscal year, I applaud your dedicated service. We all aspire to reach this point in our career some day with good health and great satisfaction in our professional accomplishments. To those not in this boat, there may or will be opportunities to be had across the country.

Enjoy the fine articles published in this newsletter. Activities such as the ones presented here are what give our jobs true value.

Enjoy the upcoming holiday season!

2011 National Cooperative Soil Survey Conference

By Jim Turenne, Rhode Island State Soil Scientist

Approximately 100 people attended the 2011 National Cooperative Soil Survey Conference in Asheville, North Carolina during the week of May 21-26. The weather was very hot with daytime temperatures in the 90s all week. Even on top of Mount Mitchell, highest elevation east of the Mississippi, temperatures were in the 80s! A field trip to the US Forest Service Coweeta Hydrologic Lab, a long-term ecological research site, was held on Sunday, May 22. Topics for the tour included geomorphology, ecological site descriptions (ESD), soil formation and interpretations. The main conference kicked off Monday with welcomes from the North Carolina State Conservationist, North Carolina State University representatives, and the Asheville Cooperative Extension Director. Following were talks from the Soil Survey Division leaders including Mike Golden and Doug Lawrence. Tony Jenkins gave the report for the 2010 Northeast meeting in PA. Committee meetings and talks were held the majority of Monday and Tuesday, featuring new technology, research, standards, and interpretations. The subaqueous soil committee was included with the interpretations committee. Proposals discussed during the subaqueous meeting included adding a Terric subgroup to Wassists, and including Histic epipedons with Wassents (instead of calling them Inceptisols). Other topics regarding subaqueous soils and interpretations were also discussed. Other talks of interest to the Northeast featured ESDs, rapid carbon, raster soil data, technology advances, and urban soil interpretations.



Rhode Island State Soil Scientist Jim Turenne and Maine State Soil Scientist Tony Jenkins atop of Mount Mitchell.

The field tour on Wednesday took the group to the top of Mount Mitchell where the formation and geology of the mountain range was discussed. Several soil pits were explored, Andic soil properties/taxonomy were discussed, and more talk on EDSs were featured. A tour of the Biltmore Estate and Viticulture followed in the afternoon with an evening social at the Biltmore Estate. The field tour was excellent and well organized.

On Thursday, Robert Long, MLRA Soil Survey Office Leader for 12-5, received the 2011 Soil Scientist of the Year Award. Earlier in the day Robert gave a talk on the Essex County, VT soil survey, which is a totally digital soil survey utilizing Lidar and ArcSIE. Congratulations Robert!

Overall the conference was excellent. A lot of hard work goes into planning these conferences and Roy Vick and his staff put on a great tour and conference. The town of Asheville was a beautiful location—and since it won the microbrew capital of 2011, the nightlife was also very enjoyable.

The 2012 Northeast Regional Cooperative Soil Survey Conference will take place June 18-21 in Orono, Maine and we plan a good show of Maine soils and hope for a good turnout. We will be staying within walking distance of some great food and recreation, as well as fishing and canoeing possibilities on the lovely Penobscot River.

Copies of the 2011 conference presentations can be found at: http://soils.usda.gov/partnerships/ncss/conferences/2011_national/agenda.html



Connecticut Soil Scientist Receives Distinguished Award

By Carolyn Miller, Visual Information Specialist, Connecticut

Thousands of soil scientists have contributed to the National Cooperative Soil Survey Partnership's effort to map all soils throughout the U.S. To that effort, NRCS Chief Dave White has recognized those who have individually mapped one million acres with a certificate and specially designed lapel pin ... and Connecticut has reason to celebrate ... our own Donald Parizek is a recipient!

Parizek has logged many miles in both the air and on the ground on his quest to the million acres, including a detail to the Alaska wilderness. In 2002, Parizek had the opportunity to fulfill one of his childhood dreams ... an adventure in Alaska when he received a call from Mike Mungoven, project leader for the Western Interior Rivers Soil Survey. Mungoven offered him a berth on the soil survey crew and Parizek readily accepted.

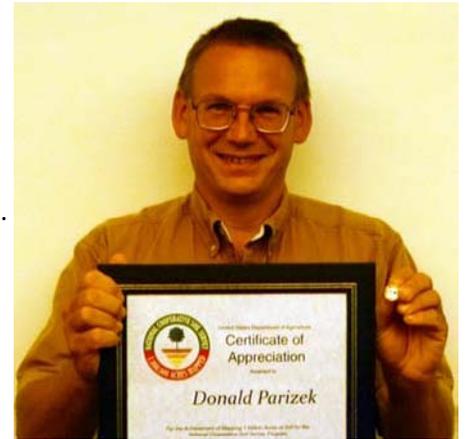
The Western Interior Rivers Soil Survey is a remote 9.7 million acre survey in southwest Alaska that encompasses portions of the state's two largest rivers—the Yukon and the Kuskokwim. The mostly non-glaciated area is home to 14 bush villages ranging in size from a handful of people, to more than 500.

The crew arrived in Homer, Alaska, in early June 2002 and spent a week acquiring and checking equipment before they headed to the bush. From there they flew to Aniak where they were introduced to the "bear of a thousand parts" (the Alaskan mosquito, which became the bane of their existence for the duration of the field season). From there they travelled approximately 60 miles to the village of Crooked Creek where they set up camp. During the course of the short field season, the group moved three more times.

The crew generally worked six days a week, taking Sundays off to rest and wash clothes in the river. Weather varied from a sweltering 80 degrees to cool and rainy 50s. Because of the short season, the group worked rain or shine in days that provided plenty of light (the sun rose at 6 AM and did not set until well after midnight).

That summer, the crew mapped and documented five soil orders on the soil survey. The information gained in this region is important for residents of these small villages to assist them in planning roads, housing, landfills, airstrips, on-site septic systems, and water supplies. The area's all important timber resources can also be better managed with baseline soil survey information.

Parizek says he is proud of his work on the Western Interior Rivers Soil Survey Project, and had no idea it would lead him to the accomplishment of having mapped 1 million acres ... and he's already looking forward to the next million. ■



Donald Parizek

Soil Science Institute

By Mary Jo Kimble, MLRA Soil Survey Office Leader, Maine

During the month of June, The National Soil Survey Center sent 16 soil scientists of various career positions to the Soil Science Institute. The Institute is held every other year in odd years. We arrived in Manhattan, Kansas (The Little Apple) the week of June 6th. This is an area of Northeastern Kansas which falls primarily within the Flint Hills. It was a beautiful rolling hills area with crops, cattle and many school activities, as this is where Kansas State University (KSU) is located. KSU is where our classroom activities were held. We were all grateful for the availability of this beautiful campus, and for the hospitality shown by KSU staff. The campus also had many attractions for us to visit, including an insect museum, a creamery offering free samples of ice cream, and The Beach Museum of Arts.

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Students traversing the research plots on the North Agronomy Farm.



Calcium built up in a petrogenic carbonate horizon in a Kansas soil.

We began our stay with a small orientation of Throckmorton Hall Plant and Science Center which houses departments that include Agronomy and Soils. All of our classes were held in this building. Our core instructor was Mickey Ransom, professor of Agronomy. He was an excellent teacher and a joy to listen to. He was very knowledgeable and was anxious to help all of us with everything from homework assignments to where the best restaurants were in town. We had several instructors—and all were experienced in their field of study. We had an opening PowerPoint presentation from Michael Golden, director of the Soil Survey Division. It was very interesting to hear his thoughts on soil survey and its future.

Our first week was spent learning about soil fertility, soil testing, and pedology. We had two field trips during the week and were able to visit an archeological site that was active, and test the soils for nitrogen on the North Agronomy Farm. On Saturday, we had an all day field trip to several areas in Kansas, including a visit to a Kansas castle called Coronado Heights. This is a hillside fortification thought by some to be the northern most limits of the explorations of the Spanish adventurer Coronado's search for gold in 1541. A small piece of chain mail body armor from that period that was found in the vicinity lends at least a little credibility to the story. The castle on Coronado Heights was constructed of native stone in 1936 by the Works Progress Administration (WPA). It sits high on a hill overlooking many acres of Kansas farm land, creating a fantastic view. We also went to several other sites that were equally as interesting.

The second week we had soil quality measurements, soil chemistry, and soil biology. We were able to grow our own fungi, actinomycetes, and bacteria on a growth medium in the laboratory. We observed thin sections of soil through the microscope and were able to identify different minerals. It was amazing to see the variety of colors and shapes of minerals not normally seen by the naked eye. Professor Ransom has done extensive studies of soil micromorphology and had several thin slices of soil for us to look for minerals and pores; much more can be described by careful description of thin-sections made of the soil with the aid of a petrographic polarizing light microscope. The soil can be impregnated with an epoxy resin, but more commonly with a polyester resin and sliced and ground to 0.03 millimeter thickness and examined by passing light through the thin soil plasma. I thought quartz was the most fascinating of them all. During the second week, we went to an original grass prairie called The Rannell's Pastures where the prairie has been studied and managed in different ways for the past 60 years. It was fascinating to learn how the prairie reacts to fire and the different grasses and forbs that grow in a natural prairie area. To this day, they purposely start controlled fires each year to bring back the native grasses.

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Research area on The Konza.



The third week we studied soil physics, heavy metals in the soil, and hydric soils and their properties. We went to a nature conservancy area called The Konza. It is a representative site of the native tall grass prairie in the Flint Hills of eastern Kansas. This was another fascinating place. They have bison roaming and cattle grazing in some areas. Part of the management research on The Konza involves the study of grazing by native herbivores. To that end, one of the research units has approximately 300 bison on it. It is also used as a research area for numerous projects and it is still guarded as a native tall grass prairie. It is a wonderful area and has given KSU an awesome place to research many of the concerns and problems of our changing atmosphere.

We had a delicious dinner and enjoyed the atmosphere of the west before returning to Manhattan. We learned about land applications of manure, phosphorous, and nitrogen. We did several exercises on figuring the amount of these nutrients needed to be applied under different conditions. We viewed many open pits and saw many different calcic and gypsic horizons. We were also able to view widespread, deeply buried paleosols that formed in terrace fills of large-stream alluvial fans, and in draws. During our last week, we were fortunate to have Larry West from the National Soil Science Center come and speak with us about the Rapid Carbon Assessment project and other projects that may be in the future.

During our evening hours, we often gathered and did group homework assignments and networked among ourselves. This was also a good learning experience as we were able to establish new acquaintances and learn how soil survey is going in other states. All in all, it was a great experience—one that I think all soil scientists would appreciate. ■

Congratulations to the University of Rhode Island Soil Judging Team—National Champs!

By Jim Turenne, Rhode Island State Soil Scientist

The University of Rhode Island (URI) soil judging team won 1st place at the 2011 Collegiate National Soils Contest which was held in Bend, Oregon. This was the first time a team from New England has taken the “Stanley Cup” of soils! Two team members, Amanda Padula and Mike Buckless, placed 2nd and 3rd respectively in the individual competition. They are both URI seniors and are working as lab assistants for the Rapid Carbon Assessment Project (RaCA). At last year’s competition in Texas, URI’s Jill Phillips (who is now a soil scientist technician working on the RaCA) won 1st place in the individual competition—so look for some excellent future soil scientist to come out of URI! Go Rhody!

To read about the 2011 national competition visit: <http://cels.uri.edu/news/nSoilchamps.aspx>. ■



The 2011 US Soil Judging Champions—Team URI: L-R Amanda Padula, Cassie Nutter-Upham, Jillian Phillips, Dr. Mark Stolt (coach), Ben Berry, Mike Buckless, Jonathan Bakken (asst. coach), and Brett Still (asst. coach)

MO-12 Rapid Carbon Assessment Update

By Maggie Payne, MO-12 Rapid Carbon Assessment Coordinator

After one year of dedicated field work by all soil scientists throughout the region, the field sampling for the Rapid Carbon Assessment in MO-12 is complete as of the end of September 2011. Throughout the region, 380 sites have been visited, 1,900 pedons have been described, and about 10,000 horizons have been sampled.

The work now shifts to completing the laboratory analysis and getting all data uploaded to NASIS. Pedon and field data entry is being carried out by the field sampling teams with assistance from Nikki Thibault from Amherst, MA and should be completed by the end of the calendar year.

Sample preparation and analysis is being carried out at the pedology laboratory at the University of Rhode Island where Dr. Mark Stolt has agreed to provide space and equipment for the project. Dr. Stolt has received funding from the National Soil Survey Center for student assistants that have been trained on the processing and analyzing of the samples. Four student workers have been hired through the University of Rhode Island and are providing approximately 40 hours of work per week in total. Rhode Island NRCS has hired Jill Phillips as a part-time soil science technician to assist with the lab work. Jill started in July and will be working 20 hours a week on lab analysis for the following year (RI NRCS is providing the funding for Jill's work).

In processing, all samples are weighed for bulk density, air dried, and sieved to remove coarse fragments. Samples are then scanned with the VNIR Spectrometer, and subsamples are oven dried to determine moisture content in order to calculate the bulk density measurements. After analysis, selected samples are sent to the National Soil Survey Center to be archived or analyzed. Total hands-on time in the lab is estimated at 6 to 8 hours per site (usually 25 to 30 samples). This includes laying samples out to dry, transferring samples back to bags, weighing, crushing and sieving, subsampling, oven drying, scanning, labeling, packaging, and shipping the samples. The remaining samples are being archived in Amherst, MA.

We have completed 20 percent of the lab work required for this project to date and with continued university and NRCS support, plan to finish by the March 30th deadline. If you have any questions about the project, please contact maggie.payne@ri.usda.gov.



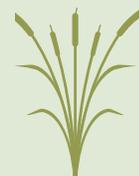
University of Rhode Island Hosts the Northeast Regional Soil Judging Competition

By Kristie Wiley, MO-12 Editor

During the week of October 4-7, University of Rhode Island hosted the Northeast Regional Soil Judging Contest at the beautiful 2,300 acre W. Alton Jones Campus. The contest is an annual event, which allows students to practice describing and interpreting soils at different schools each year in the Northeast. The top three schools from each region then go on to compete in a national event. This year, students practiced describing soils formed in glacial parent materials, and then competed in individual and group judging events. The 2012 national competition will be held in West Virginia this spring. ■



Michaela Cashman (URI senior) and Jill Phillips (NRCS soil scientist technician) sieve and weigh soil samples as a part of the lab analysis for the Rapid Carbon Assessment Project.



2011 Northeast Regional Pedology Tour

By Marissa Theve, Connecticut Soil Scientist and
Jim Turenne, Rhode Island State Soil Scientist

During the week of August 9-11, the University of Rhode Island Laboratory of Pedology and Soil Environmental Science hosted the 2011 Northeast Graduate Student Pedology Field Tour in CT and RI. These tours have rotated throughout the region every other year since 1985. The tour was organized by Dr. Mark Stolt, Professor of Pedology and Soil-Environmental Science, University of Rhode Island Department of Natural Resources Science along with assistance from Rhode Island NRCS and MLRA Soil Survey Office 12-6 in Tolland, CT. In attendance were professors and their graduate students from various universities in the region including University of Rhode Island, University of Maryland, Pennsylvania State University, West Virginia University, Virginia Tech, University of Massachusetts, and Bridgewater State. Thirty-seven students, faculty, and NRCS soil scientists participated in the field tour.

The first day began at the Wadsworth Estate in Middletown, Connecticut, where data collected by UMASS and the New England Hydric Soil Technical Committee on the problem hydric soils that developed in red parent materials of the Connecticut Valley (MLRA 145) were viewed relative to the red parent material soils. The focus of the discussion at this site was the comparison of the new F21 vs. TF-2 hydric indicators and how to use Eh meters, IRIS tubes, and Alpha dye to document reducing conditions (presented by Dr. Martin Rabenhorst, University of Maryland). The second stop was at the Hain Pit in South Windham, CT to observe and discuss the formation of ice wedge casts. These features are vertical wedge shaped features formed during the periglacial climate found in New England after retreat of the Wisconsin glacialiation. After lunch, we visited the drumlin catena soils (Paxton-Woodbridge-Ridgebury-Whitman) at Horsebarn Hill at the University of Connecticut. The principle discussion was on the classification of soils formed in lodgement tills with Cd horizons (Ridgebury). Should these be endo or epiaquic? The consensus was to reclassify Ridgebury back to Epi! The final stop was at George Washington Forest in Gloucester, Rhode Island where participants had the chance to see soils formed from ice contact deposits, meltout till, dense till and organic soil materials. An interesting note on this stop was that all four soil orders (Ent, Incept, Hist, Spods) could be found within 200 feet of one another. The day ended around 7 PM!

Day two included a subaqueous and coastal soils overview at Ninigret Pond in Charlestown, Rhode Island, where participants learned about the origins of subaqueous soils, development of landscape definitions and taxonomy, and how the soils are mapped, including a demonstration of vibracore techniques. Several subaqueous soil cores collected from the pond were examined and their morphology, chemistry, and horizonation were discussed. This stop also featured information about the RI Map-Coast partnership and the Coastal Zone Soil Survey of RI. Both state conservationists from RI and CT attended this stop along with Kip Kolesinskas, CT State Soil Scientist. Next the group visited the famous Charlestown end moraine to look at the unique soils formed on the moraine along with discussion on the formation of end moraines in New England. Afternoon sites included the Galilee salt marsh restoration project (largest coastal restoration site in RI), soils developed in dredge HTM, and a scenic soil cut at Black Point in Narragansett, RI of a Rainbow series developed in loess over carboniferous till overlying Permian aged granite. The final stop (evening stop) was a tour of a RI hops farm (organized by a former pedology graduate student).

Day three of the tour focused on a range of the topics including vernal pool hydrology, Histosols, freshwater subaqueous soils, carbon sequestration in soils, riparian zone soil morphology and associated processes, loess, eskers, and a soil organic carbon determination contest—but most importantly, the pedology picnic at Alton Jones campus.



RI State Conservationist Pooh Vongkhamdy observes a Nagunt Series soil core from Ninigret Pond.

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Dr. Mark Stolt and Dr. Martin Rabenhorst with graduate students standing at the sub-aerial/subaqueous line, Ninigret Pond, RI.

This three-day soil medley was cram-packed with comradery, technical discussions, and thoughtful insight, and will no doubt be the inspiration for many interagency and university collaborations in the future. Some concepts of particular interest include changes to Taxonomy to accommodate subaqueous and inundated subaerial soils, water table detection in soils with red parent materials, partnerships with the aquaculture community, and detecting the presence of sulfidic materials on tidal marshes. Hopefully some of these ideas will inspire the graduate students to combine forces with NRCS in the future so that we can increase our scientific knowledge and help to make better long-term management decisions. Dr. Mark Stolt did an excellent job organizing the tour and his students dug some pretty nice soil pits (what many thought were dug by a backhoe). ■

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Photographs should be e-mailed as a separate jpeg attachment. Please include a caption for each photo submitted.

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