

**Office of the Chief
Weekly Report**

**Soil Science and Resource Assessment
Soil Science Division
August 13, 2013**

Deadline Reminders

None

Upcoming Meetings/Conferences

Visiting Haitian Scientists - Cochran Fellowship-Soil Survey Program Development
August 14-15, 2013 - SSD, Washington, DC
August 19-30, 2013 – NSSC, Lincoln, NE

Soil Science Division Update

Universal Soil Classification Working Group Meeting

The International Union of Soil Science Working Group on Universal Soil Classification held its third workshop to report on progress and discuss the development of the proposed Universal Soil Classification System. Working group members are associated with universities, research institutions, and government agencies from Australia, Brazil, China, the European Union, Germany, Hungary, Italy, Russia, Tanzania, Venezuela, and the United States. Jon Hempel and Thomas Reinsch participated from USDA-NRCS. The workshop was held parallel to the Brazilian Soil Science Congress. The focus points were to discuss the task group progress including: horizon nomenclature harmonization, diagnostic horizon studies, horizon classification system, global soil group centroid calculation, moisture and temperature regimes, anthropogenic soils, tropical soils, cold soils, salt affected soils, and hydromorphic soils. Most of the discussion centered on the process for calculating the global soil group, the data needs for additional calculations, and developing global soil groups. Strategic plans were developed to report on progress and proposals at the 20th World Congress of Soil Science in 2014 and target completion of 1st approximation for the 21th WCSS in 2018.



Professor Didas Kimaro explaining the Soil Classification systems used in Africa



Can you guess the classification of this profile?
(subgroup classification at the end of the update)

Universal Soil Classification Working Group Proposes Soil Taxonomy as International Union of Soil Science (IUSS) soil classification system

On behalf of the Universal Soil Classification Working Group, Jon Hempel, Chair of the Working Group, sent a letter to Professor Jae Yang, President of the IUSS, asking for the official IUSS endorsement of Soil Taxonomy as an internationally recognized system for soil classification.

The Universal Soil Classification Working Group is most interested in moving forward with the scientific improvement of the most recognized soil classification systems and endorsement of Soil Taxonomy from IUSS will have significant influence on the continued development of soil classification within the international community.

Final decisions on this issue will be made by the IUSS Council at the 20th World Congress of Soil Science in 2014 to be held in South Korea.

Interagency Erosion Workgroup Meeting Hosted at National Soil Survey Center

The Interpretations Branch, NSSC, hosted an erosion prediction coordination meeting in Lincoln, August 16-17, 2013. ARS participants included Chi-Hua Huang, Dennis Flanagan, Qiuju Wang, National Soil Erosion Lab, West Lafayette, IN; Seth Dabney, National Sedimentation Lab, Oxford, MS. NRCS participants included Michael Robotham, Linda Scheffe, Cathy Seybold, and via VTC/teleconference: Norm Widman, Giulio Ferruzzi, Deanna Peterson, Cleveland Watts, Al Averill, Luis Hernandez, Stephen Page, Jeff Hemenway, Sean Finn, Bob Sylvester, and other participants at local, state, and regional offices.

The Interagency Erosion Workgroup had previously identified the need to develop a new soil erodibility nomograph or to modify the existing nomograph to address soils which do not presently fit the existing nomograph. However, due to funding and other limitations causing the Workgroup to not have formal communication since 2004, the requested issues had not been addressed. In 2012, NRCS requested assistance from ARS in providing regional research on specific soils in SD and VT where local staff identified differences between the current K factor in the NASIS database and the results of the nomograph calculation. The ARS National Soil Erosion Lab performed several case studies and provided details of the findings. Decisions were made regarding the K values for the specific soils under question. A joint ARS NRCS coordination plan was developed to nationally address soil erodibility as well as other erosion prediction coordination issues and opportunities, including soil health and soil change. It was agreed that much was accomplished at this coordination meeting and every effort should be made to continue periodic face-to-face meetings in addition to teleconferences/live meetings. It is important that we continue to work together to provide scientifically sound yet practical soils information to our farmers and ranchers.

California State Soil Survey Conference

The California NRCS State office held a one-day state soil survey conference organized by Sid Davis, Assistant State Soil Scientist, in Davis, CA. Over 50 participants, the majority attending by teleconference, included soil survey office staff from multiple offices, representatives from the Bureau of Land Management, US Forest Service, National Park Service, universities, and the CA Department of Conservation. The group was welcomed by CA State Conservationist Carlos

Suarez, and Ed Tallyn, Senior Regional Soil Scientist. Susan Southard, NSSC, gave two short presentations, one previously given at the recent National Cooperative Soil Survey national conference by Dave Smith, Soil Survey Division (SSD) Director and one developed by Pete Biggam, Soil Resource Inventory Program Manager for the National Park Service (NPS). The SSD presentation provided an overview of the state of the soil survey program nationwide and provided an outline of priorities and future directions. The NPS presentation focused on the status of soil mapping of 19 NPS park units in the state, totaling 8.2 million acres. About half of NPS federal lands remain unmapped in California.

Each participant at the conference gave an overview of their soil survey operations and soil science activities. It was noted by Jim Weigand of the BLM that his agency is working with the soil interpretations staff from the NSSC on efforts to develop a new soil interpretation for prediction of habitat for a soil-dwelling fungus called *Coccidioides immitis*. The interpretation uses soil properties to predict areas where *Coccidioides immitis* fungal spores may be elevated. *Coccidioides immitis* can cause coccidioidomycosis or Valley Fever in susceptible humans and other animals, especially in times of drought.

Retaining Students and Supporting Instruction

Dr. Joel Brown, NSSC staff, has been invited by the faculty at New Mexico State University to assist in a project to improve the recruitment and retention of undergraduate majors in soil and environmental science. The grant “Retaining Students and Supporting Instruction in Science-Intensive Undergraduate Programs through Innovative Media”^{*} is intended to provide support to design videos to help students perform better in college by getting advice and hearing the experience of alumni and scientists in the field. Some of the multimedia products will be integrated into coursework, with quantitative test results compared to previous semesters. All modules are posted online for free use at ScienceofSoil.com.

^{*}Hispanic-Serving Institutions Education Grants Program, National Institute of Food and Agriculture, U.S. Department of Agriculture

Elkhorn ESD Project – Helena National Forest

NRCS and USFS personnel met for detailed field data collection the week of August 5, outside of Townsend, MT. The data collection was focused on higher elevation rangeland ecological sites in the Elkhorn Mountains on the Townsend Range District of the Helena National Forest (NF). The Elkhorn Mountains ESD project is a joint effort of the USFS Helena NF and the NRCS.

NRCS employees included Kirt Walstad, Bozeman State Office, and Craig Busskohl, NSSC along with USFS employees David Marr, Helena NF soil scientist, Jeff DiBenedetto, ecologist Custer/Gallatin NFs, Mary Manning, FS Region 1 Vegetation Ecologist, and several other USFS staff from the Helena NF. Other partners in the project include the Montana Natural Heritage Program based in Helena who participated with the data collection effort.



Next steps in the project area include moving into the forested areas once the rangeland ESDs have been sorted out and state and transition models developed for the ecological site descriptions. Various combinations and groupings of habitat types (vegetative communities) and soil resource units (the Helena has a roughly Order 4 soil resource inventory) are being considered for forest site concepts.

ND NRCS Hosts Soil Health Workshop for High School Agriculture



On August 7th, the North Dakota Natural Resources Conservation Service hosted the North Dakota Association of Agriculture Educators (NDAAE) at the Burleigh Co. Soil Conservation District Soil Health Demonstration farm at Menoken, ND. Wade Bott, NRCS North Dakota State Soil Scientist, led the workshop with soil health as its focus. The NDAAE group consisted of 70 agriculture educators from across North Dakota. Included were three breakout sessions led by NRCS soil scientists, with each focusing on an aspect of soil science: soil biology, soil chemistry, and soil physics. Educators had the opportunity to

learn about topics such as soil microbiology and carbon cycling, salt and sodium affected soils, and the formation and dynamics of soils through demonstration in a soil pit. As part of their annual teacher in-service professional development, these educators were presented hands-on activities and methods to incorporate soil science into their own curriculums. Building soil health concepts into society by teaching them to all age groups will be a key to wide spread adoption of soil health management systems.

Farmer's Market held at the NSSC

To promote Farmer's Market Week and to donate fresh produce to the Feds Feed Families (FFF) campaign, the first NRCS Farmer's Market was held Aug. 7th, 2013.



Gardeners were encouraged to bring their extra produce to "trade" for other produce. If someone didn't have produce to contribute, they could "trade" by bringing in non-perishable items for the FFF campaign barrels. 30 lbs of extra produce at the end of the day was contributed to the People's City Mission.

Fresh vegetables for trade at NSSC Farmers Market

NRCS-Crime Scene Investigations-GPR investigation in Rhode Island:

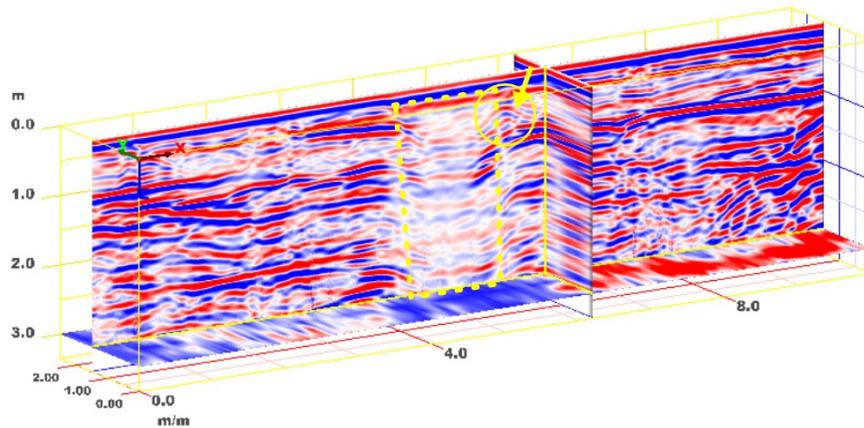
Though infrequent, it is not unusual for NRCS soil scientists who operate ground-penetrating radar (GPR) systems to become involved in forensic and crime scene investigations. The scientist's knowledge of soils and interpretive GPR skills are often indispensable to police in their search for clandestine burials. During the week of 29 July, at the request of the Director of the Rhode Island State Crime Laboratory and the Providence Police Department, a GPR investigation was conducted by Debbie Surabian (State Soil Scientist, Tolland, CT) and Jim Turenne (Soil Scientist, Warwick, RI) at a site where human skeletal remains had been found. The investigation site is located in the basement of a building that is currently undergoing reconstruction. During renovations of an elevator shaft, human skeletal remains were uncovered in an elevator pit, which had been filled with bricks and covered over with concrete during the early 1980's. Crime scene investigators wanted to know if there were additional clandestine burials beneath the concrete floor.

Both Debbie and Jim are experienced radar operators and have each assisted various police departments in the search for clandestine burials. Working in relatively urbanized states, these soil scientists are very familiar with human-altered or anthropogenic soils. Because of her unique skills and experiences, Debbie is often invited to lecture at the Henry C. Lee Institute of Forensic Science at the University of New Haven. In the present investigation, crime scene investigators wanted to use GPR to non-destructively reduce the search area and identify subsurface features that may represent additional victims buried in the basement.



In a matter of hours, three detailed GPR grid surveys were completed across the basement floor. While no recorded reflection pattern could be conclusively identified as a clandestine burial, these surveys did reveal a refilled trench under a portion of the basement's concrete floor. In the upper part and to one side of this trench, at a depth of about 50 cm, an anomalous reflection hyperbola was identified (see fence diagram). On further examination, it became evident that the concrete over this trench was a newer mix. Though results are inconclusive until verified, this subsurface feature is of interest to detectives and crime scene investigators who anticipate excavating this portion of the site.

The GPR survey was completed in this basement, which is located in Providence, Rhode Island.



An excavated and refilled trench is enclosed by segmented lines on this fence-diagram showing a cross-sectional view of the subsurface beneath a 2.5 by 10 m grid area. The circle and arrow highlights a suspected “anomaly” buried about 48 cm beneath the concrete floor of the basement.

Mystery Soil Profile Classification

Typic Palehumults

Personnel Highlights

Jon Hempel, Acting Program Manager detail completed, returning to NSSC Director

Pam Thomas, Acting Assist. Prgm. Manager detail completed, returning to SSS, South Carolina

Maxine Levin, SSD, beginning 120-day detail as Acting Program Manager.

Kenneth Scheffe, NSSC, beginning 120-day detail as Acting Assistant Program Manager.

Tony Rolfes, Asst. Director for Soil Science and Natural Resource Assessments and Nathan Jones, MLRA Party Leader have been selected for the soil scientist detail to participate in the Haiti Soil Survey Pilot Initiative.