Roles of the National Cooperative Soil Survey Partnership

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The National Cooperative Soil Survey Partnership spans well over a century extending back into the late 1890's. Over the year's soil survey functions have changed but this strong partnership of cooperation has not diminished. The partnership is a strong alliance of federal, regional, and state agencies, universities, local units of government, conservation organizations, as well as private consultants. Each brings their own unique and valuable part to play in the National Cooperative Soil Survey Program.

NRCS is charged with the lead role of the National Cooperative Soil Survey Program and maintains the standards and interpretations for all users. While NRCS is charged with the lead role there are restraints that limit the agency to perform soil mapping only on private lands and on Native American Lands unless the Economy Act is used to provide reimbursement for soil mapping.

While private consultants play a large role in making order one soil surveys they are leading the way for farmers to do more "precision farming" and performing detail on-site investigations. Consulting soil scientists are particularly interested in the utilization of NCSS standards, especially for describing and classifying soils. The role of the Agricultural Experiment Stations as state university partners is very significant to the National Cooperative Soil Survey Program and will be discussed in more detail.

Federal, State, and Local units of government have continually proven to be excellent partners to help bear the burden of funding or accelerating the soil mapping by contributing resources to initial or update soil surveys. Local units of government such as county commissioner's court, or Soil and Water Conservation Districts usually have a small area in mind to complete the initial soil mapping or possibly to improve older soil mapping. Our federal partners such as the National Park Service, the Bureau of Land Management, the US Forest Service, Department of Defense, and Bureau of Indian Affairs and others have offered a strong and lasting partnership in getting much of the soil mapping done on their lands.

State government entities usually have a larger vision for trying to complete soil survey coverage for their entire state. Examples are the Ohio Department of Natural Resources, the Washington Department of Natural Resources and the Missouri Department of Natural Resources who have contributed staff soil scientists to assist with completion of the initial inventory. Partnerships with state government entities also help obtain mapping imagery, DOQ's or other digital layers such as LiDAR, as well as provide cooperative efforts to digitize soil surveys as part of our SSURGO efforts.

One of the primary roles of the NRCS is to work with cooperators to establish research priorities to support the soil survey mission. These are discussed and approved through the regional and national conference committees every two years.

In 1995 NRCS restructured into 18 MLRA Soil Survey Region Offices their role is to provide Quality Assurance that includes NASIS data and SSURGO layers and to approve correlation decisions for each of the 146 MLRA Soil Survey Offices. They supervise a small staff of Soil Data Quality Specialists, Editors, and GIS Specialists that ensures the soil survey data meets NCSS standards. Each of the 18 MLRA Region Office Leaders has a co-lateral duty as the State Soil Scientist.

One of the many roles of the State Soil Scientist is the CO-02 Soil Program Manager and they prepares budgets, staffing plans, and locations of MLRA Soil Survey Offices. They supervise the MLRA Soil Survey Leaders, the Assistant State Soil Scientist and usually the Resource Soil Scientists. They are the primary contact for NCSS Leadership in their state. They are responsible for State Technical Guide including eFOTG. They are members of the MLRA Soil Survey Management Team (For each of 146 offices) and they work in consultation to prioritize soil survey projects within the Long Range Plan. They host or Co-Host Annual State Soil Survey Work Planning Conferences and they work closely with other specialists in the State to ensure that soil information meets their needs and the needs of the various programs.

In 2006 NRCS continued the restructure of field soil scientists from 255 temporary soil survey project offices into 146 long term MLRA Soil Survey Areas. They typically are grouped into similar geographic areas for operations, special studies for maintenance and enhancements of the database. The role of the MLRA Soil Survey Leader is for Quality Control for all aspects of making a soil survey. This including NASIS and SSURGO at the local level to make sure the soil survey is done according to NCSS Standards. Typically the MLRA Soil Survey Leader supervises one to five staff who works on approved soil survey projects. The MLRA Soil Survey Leader ensures that all soil mapping, documentation and data population is completed in a timely matter with scientific consistency. They lead the effort in developing MLRA Soil Survey Project Plans, including research projects, within the Long Range Plan for their MLRA Soil Survey Area. They lead the MLRA Technical Team for their MLRA Soil Survey Area with input from other specialists such as MO-SDQS, Resource Soil Scientist, NCSS Cooperators and others.

The role of the Resource Soil Scientist is to provide quality technical soil services for their area or zone for NRCS programs and to make on-site investigations for various needs. They test the NASIS database and make recommendations for improving data. They develop new soil interpretations and helps customers understand the interpretations and they provide direct support to NRCS field offices and the general public for soil technical information.

The National Soil Survey Center is led by Dr. Robert Ahrens located at Lincoln Nebraska. Their role is to maintain the Soil Survey Standards such as the National Soil Survey Handbook, Soil Survey Manual, Soil Taxonomy and other guidance. They provide training and maintain existing and new Soil Interpretations from data in soil data mart. They promote the use of Technical Soil Services and technical assistance. The

NSSC has Research Soil Scientists as liaisons that support special studies by the 146 MLRA Soil Survey Staffs.

The National Leaders are liaisons to NCSS Regional Conferences. Dr. Karl Hipple supports the South Region; Dr. Chris Smith supports the Northeast Region, Dr. Bob Ahrens and Dr. Larry West support the North Central Region and Dr. Craig Ditzler supports the West Region Conference. Maxine Levin from our National Headquarters Office has overall coordination of the Regional and National Conferences.

Te role of the Regional Technology Centers located at Portland, Oregon, Ft. Worth, Texas and Greensboro, North Carolina are technology delivery to the states primarily to the state soil scientists and their technical direction comes from the National Leader for Technical Soil Services.

World Soil Resources is led by Dr. Hari Eswaran from Washington DC. Their role is to assess global land degradation, particularly desertification, and identifies activities that address them. They promote land management and agricultural practices that maintain soil productivity, protect water quality, and ensure food security. They collaborate with foreign institutions to develop standards and procedures in conducting soil surveys; to classify soils; maintain databases of world soil information; and disseminate technical and scientific information of interest to the international soil community.

The role of National Cartographic and GIS Center at Ft. Worth, Texas is to support NCSS with digital GIS layers and to print soil surveys; it is led by Tommie Parham as Director. They assist with review, certification, archival of digital data such as STATSGO, SSURGO, LiDAR, and DEM's. They support the data warehouse and data marts for delivery of SSURGO, plants, climate, DOQ's, DRG's etc; and they develop tools for GIS and GPS and develop business solutions.

The role of National Geospatial Development Center is to develop software and other database applications that increase efficiency for soil scientists. It is located at Morgantown, West Virginia and Jon Hempel is Co-Director from NRCS with Dr. Jim Thompson as Co-Director from WVU. Jon is also the Chair of Soil Business Area Analysis Group (SBAAG) and they define priorities for soil business analysis. They are responsible for the development of the geospatial integration of NASIS and SSURGO.

The Agricultural Experiment Stations as State University partners perform soil research and make that research applicable to mainstream users within and outside of government. The main emphasis areas can be grouped into 5 primary areas of support.

1) Education and mentoring
2) Soil Research by professors or by graduate students
3) Participate at National, Regional or State Work Planning Conferences
4) University Soil lab data analyses (historic or current)
5) Support MLRA Soil Survey Offices with "Planning and Action"

First we look to you as teachers and educators to challenge the best and brightest to become soil scientists. We look to the high school and university educators to mentor the next generation of pedologists with the best skills they will need for soil chemistry, soil physics, soil fertility, soil classification and mineralogy, soil mechanics and soil biology to name a few. We also look to you to recommend outstanding individuals for employment in the NCSS. We depend upon your wisdom and conveyance of knowledge during our Soil Science Institute that has rotated among many universities over the years. Today we are relying on many universities as we educate another group of soil scientists as we prepare for doing MLRA geographic updates at the Soil Geomorphology Institute. We depend on you to train our pedologists at State and National Soil Judging contests. This is the real fertile ground of becoming a soil scientist. You are preparing the leaders in soil science for the future by leading them to earn college degrees with a bachelor, masters, or doctoral degrees in one form or another in Agronomy, Soil Science or closely aligned disciplines.

Second we look to you for soil research that supports the mission of the National Cooperative Soil Survey. You assist NCSS to identify studies or problems and provide solutions that benefit the end user.

A few research examples are:

- In the West, Dr. Toby O'Geen, University of California at Davis has been leading efforts with the cooperators on "Benchmark Soilscapes" to predict Effects of Climate Change in the western states.
- In the Northeast Dr. Marty Rabenhorst University of Maryland and Dr. Mark Stolt University of Rhode Island have been leading the efforts to classify and interpret subaqueous soils.
- In the Southwest Dr. Curtis Monger, New Mexico State University, and Dr. Wayne Hudnall, Texas Tech University have worked with the NSSC to better describe, classify and interpret gypsiferous soils.

A few areas of research that we need you to be involved with are: digital soil mapping; use of raster soil survey information for soil interpretations; innovative interpretative uses of Decision Support Systems; resource management models, new customer-driven interpretations for gypsiferous and gypseous soils; measurements for soil quality and dynamic soil properties; use of remote sensing information, high resolution DEM and hyper spectral imagery; and better defined Ksat methods. The NCSS program has and will continue to move forward on findings from our University and Research partners.

Third is to have you involved with the Regional and National NCSS Conferences and be active on committees such as standards, interpretations, and on the planning and steering committees. Encourage your graduate students as well to give input to these forums. We want you to assist or lead educational soil tours that showcase your work or research. This forum allows you to report research results to others in the scientific community and report on other studies you are doing in soil survey. This includes research funded by other sources such as National Science Foundation.

Fourth several NCSS partners have soil characterization laboratories that provide valuable and needed chemical and physical soil analyses. We continue to invite you to share your lab data into a corporate soil database that is available as we start the MLRA update process.

Fifth is the support you provide to the National Cooperative Soil Survey Program by supporting the newly established MLRA Soil Survey Offices. You are invited to attend progress field reviews and to attend and assist with describing and sampling soils. You are already active with state work planning conferences where users of data report on soil survey and land use activities and allows others to contribute to future plans for improving the soil survey data. Mostly to have you involved with input on what to study or improve in each of the 146 MLRA Soil Survey Long Range Plans.

We need your help to identify the "Big Picture" for studies on Benchmark soils. At state work planning conferences your input is needed to identify graduate students that can assist with research. When appropriate assist with projects that involve Soil Quality and Dynamic Soil Properties. You also assist in testing or evaluating current soil interpretation criteria and/or developing new interpretations.

The NCSS Advisory Group is a representation of cooperators across the country with varying amounts of experience and ideas. They are Toby O'Geen, Mary Collins, Joey Shaw, Mickey Ransom, Jim Thompson, Curtis Monger, Dick Arnold, and Larry Wilding. This group talks about future issues that we must prepare for and carry out during the next generation. For the last 100 plus years the NCSS has strived to be ahead of the curve by providing soil erosion units, land capability units, prime farmland soils, highly erosive soils, and hydric soils. This advisory group is telling me we must prepare for soil quality, and things that are "Green" due to climate change.

How do we begin collecting data for Soil Quality on the National level? This constitutes a shift from our traditional role in providing static soil characteristic data to support Soil Taxonomy placement. This will also provide some of the data needed to make land management interpretations. Our approach should be to collect dynamic soil properties on benchmark soils by land use/management and ecological sites.

We are entering an exciting time for the NCSS partnership. With the establishment of our 146 MLRA Soil Survey Offices we will work together to enhance consistency of soils information across county and state lines. We are at a point where we can make concerted efforts in collecting and understanding dynamic soil properties across the landscape. By pulling together the knowledge, skills, and expertise of the people in all our institutions we can truly provide society with the information it needs on soil potential and limitations so that we can make decisions that protect our soil resource for future generations. We "All Have a Role in Soil Survey for Today and Tomorrow".

Thank You