

JOSEPH N. SCHUSTER
Senior Scientist / Biologist
President and Soil Scientist
Ecological Resource Consultants, Inc.

AREAS OF SPECIALIZATION

- Restoration Ecology
- Soil Taxonomy/Soil Genesis and Morphology
- Soil and Natural Resource Mapping / Remote Sensing
- Disturbed Lands Evaluation/Mine Reclamation/Ecosystem Creation
- Soil Investigations / Soil Conservation
- Environmental Permitting
- Hydric Soil Investigation / Wetland Delineation
- Environmental Evaluations and Habitat Analysis
- Wetland Compensatory Mitigation
- Seasonal High Water Table Determinations

EDUCATION

Graduate Studies	1987	Soil Science	University of Florida
Undergraduate	1983	Wildlife Management (BS) And Soil Science	University of Maryland

EXPERIENCE SUMMARY

Mr. Schuster is a scientist with over 40 years experience in natural resource inventory, assessment and permitting. During his tenure with the Soil Conservation Service/USDA Natural Resource Conservation Service, he delineated over 250,000 acres of Florida soils while documenting land use, habitat quality, hydric soils, vegetation and other natural resource elements in 5 county soil survey areas and preparing soil interpretations for a variety of land uses including wastewater disposal, silviculture, agriculture, wildlife management and homesite development.

Mr. Schuster is a co-author of 5 soil surveys in the state of Florida, publications on the classification of Florida soils, 4 chapters in the Hydric Soils of Florida Handbook, and other technical soil publications. He has been tendered an expert in court cases ranging from mine reclamation, hydric soils and land use to homicide. He conducted quality reviews of detailed soil

surveys on over 100,000 acres of timberlands in southern Mississippi and a private soil survey of approximately 800,000 acres of timberlands in Mississippi and Louisiana; a 400,000 acre timberland soil survey in Arkansas; a 300,000 acre timberland survey in West Florida, Alabama, and Tennessee; a 55,000 acre timberland soil survey in Texas; and an 80,000 acre timberland soil survey in South Carolina.

Mr. Schuster is an expert in soil reclamation, having investigated reclaimed mining sites in the Central Florida Phosphate District under different reclamation management strategies. He has been advising the phosphate mining industry on soil reclamation for over 15 years and developed the soil reclamation strategy known as “Sand on Top”. He has investigated and recommended restoration and reclamation practices on large and small construction sites for roadways, airports, and other developments.

Mr. Schuster has conducted onsite investigations throughout Florida, the southeastern U.S. and Central America and researched wetland soils, tropical soils, and soils of arid regions for government agencies and the private sector. He has conducted investigations of reclaimed and non-reclaimed mine soils, onsite sewage treatment and disposal system failures, soil erosion and the effects of sediment discharges to wetlands, seasonal high-water tables, and impact of land use on environmental resources. Mr. Schuster has conducted hundreds of ecological assessments in north Florida ranging from estimation of wetland habitats, threatened and endangered species surveys, wetland delineations, habitat quality assessments and wetland functional assessments. Mr. Schuster reviews and edits environmental permit applications and subsequent permit challenges for a wide variety of development projects in the state of Florida.

Mr. Schuster is an expert in the identification and classification of soil morphology including hydric soil morphology. He has defended many thousands of miles of wetland jurisdictional boundaries throughout the state before both FDEP and US Army Corps regulators. He utilizes existing soil morphology to predict depths of excavation for wetland creation, and monitors soil morphological changes in created and enhanced wetlands. He investigates the genesis of soil morphology on drastically disturbed lands in rural, urban and industrial settings for the prediction of soil properties and land use interpretations. He investigates the effects of permitted and non-permitted sediment discharges to natural habitats and recommends remedial actions to mitigate for and/or restore soils and landscapes on impacted sites.

Mr. Schuster is an expert in native ecosystem restoration, mitigation to offset unavoidable impacts to jurisdictional wetlands, and protected species; and mitigation banking. As the Qualified Mitigation Supervisor (QMS), Mr. Schuster permits, plans, supervises, manages, and monitors all aspects of the restoration of native habitats on large and small projects. Some notable projects include the restoration of 9600 acres on the north bank of West Bay (Bay county, FL), and 850 acre restoration for a wetland mitigation bank in northern Bay county, FL (Sweetwater Mitigation Bank), a 2900 acre restoration site on the banks of East Bay at its eastern terminus in Gulf county (Horseshoe Creek Mitigation Bank), a 100 acre integrated beach mouse restoration site in a coastal community near Mexico Beach, and a 20 acre urban restoration site

to restore habitat for the endemic Panama City Crayfish in Panama City.

Mr. Schuster is a recognized authority on Florida and Southeastern U.S. soils and well-known public speaker. He has instructed classes and seminars on the principles of soil classification, description, and site investigation for the University of Florida, Florida A and M University, Florida State University, University of Wisconsin and Auburn University. He developed and implemented basic soils training for the Florida Onsite Sewage Program and Master Contractor Program, instructing over 500 persons in 4 years. He has coordinated Florida Association of Environmental Soil Scientists' Hydric Soils Workshops, and hosted the workshops in 1997, 2000, and 2007. Mr. Schuster has volunteered as a peer reviewer for the prestigious and authoritative Soil Science Society of America Journal. Mr. Schuster supervises and implements the professional certification of soil scientists in Florida, and is currently Vice President of the Florida Association of Environmental Soil Scientists

PROFESSIONAL HISTORY

Soil Scientist and President, Ecological Resource Consultants Inc., 1997 to present.

OSTDS Program Soil Scientist, State-wide soil scientist to Florida Department of Health, Onsite Sewage Program from USDA 1992 to 1996.

Soil Survey Party Leader, USDA-Soil Conservation Service, 1991 to 1992.

Soil Survey Project Scientist, USDA-Soil Conservation Service, 1983 to 1991.

Soil Scientist, Soil Consultants Inc., 1983.

Digital Cartographic Assistant, USDA-Soil Conservation Service, 1982 to 1983.

Laboratory Technician, University of Maryland Soil Testing Laboratory, 1981 to 1982.

Biologist, Human Sciences Research Inc, 1979 to 1980.

SELECTED PROJECT EXPERIENCE

Investigation and Analysis of Reclaimed Soils and Related Mine Reclamation Practices on Phosphate Sites in Central Florida. Conducted soil investigations at upland and wetland sites reclaimed for agricultural use or restored to native Florida ecosystems. Sampled soils using bucket augers, tiling spade, and backhoe pits to evaluate effects of pedogenesis on soil morphology in reclaimed soils. Described and classified morphology of reclaimed soils and conducted field evaluation of physical and chemical properties. Evaluated suitability of reclaimed soils for reclamation and/or restoration targets, wildlife habitat, and ecological

community. Developed innovative new strategies for creating natural soil horizons in reclaimed soils and presented those strategies at professional conferences.

Scientific Advisor and Expert Witness for Soils in Phosphate Mining Trial. Key expert witness in mine permit judicial challenge (Hardee County). Investigated and compared soil conditions on proposed mine site to soil conditions at reclaimed and restored mine sites. Prepared revised soil reclamation plan for the 4000 acre site. Worked with hydrologists to model post reclamation soil water tables across a landscape that ranged from floodplains, flatwoods, closed depressions and sandhills. Verified hydric status of soils for disputed boundaries. Developed strategies and exhibits for trial testimony. Prepared questions for deposition and cross examination of opposing soil science expert witness. Advised and coordinated soil opinions with other members of expert environmental team. Reviewed jurisdictional wetland lines and documented soil profiles along upland/wetland interface for testimony.

Areawide EIS Rebuttal for 1.3 Million Acre Central Florida Phosphate District. Provided detailed industry rebuttal for soils and wetland sections of court ordered independent areawide environmental impact statement (AEIS) for the area known as the Central Florida Phosphate District (CFPD). The CFPD and study area encompasses 1.32 million acres in 6 Florida counties. Corrected AEIS conclusions based upon erroneous digital soil survey data and incorrect assessments of published data. Challenged use of National Wetland Inventory and Soil Survey data to estimate percentage of wetlands in un-mined areas; habitat determinations based upon soil survey and other data sources; and effectiveness of modern soil reclamation practices including the “sand on top” method developed by Schuster. Authors amended AEIS sections based upon rebuttal.

Agent and QMS for Horseshoe Creek Mitigation Bank, Gulf County, Florida. Author of state and federal mitigation bank instruments for Horseshoe creek mitigation bank. ERC is near the completion of state and federal permitting for 3,000 acre mitigation bank located at the terminus of East Bay in eastern bay county and the urban rural interface of Panama City and the rural silvicultural district of Gulf County currently being converted from planted slash pine to permanent pasture on a regional scale. Supervised and conducted all phases of bank assessment and permitting including wetland functional assessment, habitat analysis, jurisdictional wetland delineation, historic plant communities, land use, wetland impacts including ditches, roads, and stream channelization and associated hydrologic restoration; historic spatial data analysis, reference site descriptions, monitoring protocols, cost estimates; oil, gas, and mineral rights surface waivers, conceptual burn plan, planting plans, and more. Ecological assessment included identification and mapping of plant communities, creating comprehensive lists of observed flora and fauna in wetlands including bottomland forest and embedded instream habitats, salt marsh, stringer swamp, wet flatwoods, wet prairie, and cypress dome; evaluated ecological complexity and surveyed for listed species. Conducted bird surveys and publishing as eBird survey data. Developed new randomized quantitative monitoring method to document restoration success without sacrificing qualitative trends compared to reference conditions. Conducted extensive baseline site investigations and reporting at micro and at the landscape scale by documenting a

multitude of variables at hundreds of locations at the bank. Conducted extensive reference site investigation and quantitative analysis offsite at locations in near pristine condition. Conducted hydrologic assessments based on hydric soils, hydrologic indicators and intensity of flood pulse cycles. Created a hydrologic restoration plan that includes measuring the response to hydrologic enhancement of hydrophytic vegetative and distribution, hydrologic indicators and hydric soil. Assessments included mapping the native plant communities, preparing a proposed stream restoration plan using FDEP procedures for stream condition index and habitat models; and conducting baseline monitoring and OHWL determination for the wetlands and stream. The goal of the mitigation bank is to protect coastal waters of Gulf of Mexico by restoring and preserving critical coastal habitat to improve flood storage, water quality and associated water resource values within the region.

Party Leader for Soil Survey of Gulf County, Florida. Planned, conducted, managed, and supervised all phases of the Soil Survey of Gulf County and assured that National Cooperative Soil Survey standards were met. Included tasks were air photo interpretation, delineation of landscape segments; investigation, identification, and inventory of soils in the field, classification of soils using Soil Taxonomy, providing technical direction to staff, collection of laboratory samples and analysis of data, documentation as profile descriptions, transects, and notes on site characterization; interpretation and compilation of field and researched data, preparation of interpretive tables, writing the soil survey manuscript and editing sections written by co-authors; scheduling progress of the project and maintaining schedules, ensuring quality of all aspects of the project, and providing soil survey data and useful interpretations of the data to persons of varied cultural and educational backgrounds. Re-correlated and recompiled older soil mapping to conform to project standards.

Project Scientist for Florida Soil Surveys. Mr. Schuster was a project soil scientist and co-author for Soil surveys of Citrus, Levy, and Franklin counties, Florida. During an 8 year period he mapped over 250,000 acres in Florida using air photo interpretation and fieldwork to delineate segments of the landscape that could be correlated with unique soil conditions including hydric soils and associated wetlands. Tasks included writing field descriptions, soil classification, documentation of environmental conditions, development of soil interpretations and writing and editing the soil survey manuscript. Volunteered to review Gulf County Soil Survey manuscript after leaving NRCS employment for private practice. Conducted hundreds of onsite investigations for units of government and the private sector throughout the state of Florida.

Soil Survey of 800,000 Acres of Southern Timberlands. Designed and conducted an order 2 soil survey on timberlands extending from Starkeville Mississippi to Baton Rouge Louisiana. Produced soil survey maps at 1:15,840 scale in varied geomorphic regions in soils formed from parent materials that included Pleistocene Loess and Terrace Deposits, Pliocene Fluvium, and both Consolidated and Unconsolidated Geologic Material. Conducted geologic and pedologic research for project support. Re-designed and modified mapping codes to accommodate soil and geologic conditions in the project area. Re-correlated and recompiled older soil mapping to conform to project standards.

Independent Investigation of Sediment Discharge and Effects to Wetlands, Surface Waters and Benthic Habitats in Northwest Florida. Identified and mapped extent of sediment discharge following a series of high intensity rainfall events and subsequent failure of stormwater infrastructure at the Northwest Florida Beach International Airport. Investigated sediment accumulation downstream in adjacent creeks and in West Bay. Conducted subaqueous soil investigations in benthic habitats and recent sediment accumulations in subaqueous and terrestrial soils. Used satellite imagery to show that the majority of sediment impacting West Bay in the referenced storm events and past storm events originated from the Choctawhatchee River and transport via the Intracoastal Waterway. Developed restoration and monitoring strategies for wetlands impacted by the sediment discharge. Presented reports to the Bay County Airport Authority and the Florida Department of Environmental Regulation.

Investigation and Restoration of Wetlands Impacted by Dredge Spoil Discharge. Evaluated, classified and mapped spatial extent of a coastal dredge spoil containment area failure and discharge to a forested wetland in Northeast Florida. Supervised the habitat mapping below several feet of sediment and quantitative habitat loss due to the discharge. Investigated effect of sediment on native habitats and recommended and supervised sediment removal practices and development and execution of the restoration plan.

Reconnaissance for Detailed Soil Survey on National Park Service Lands in Florida. Represented private sector contributors on team to investigate future soil survey activities on Big Cypress, Everglades National Park, and other NPS lands in Florida. Reviewed existing soil survey data and conducted field reconnaissance of access and soil conditions. Discussed proposals and methods for conducting a modern soil survey and discussed the suitability for use of progressive soil survey methods.

Panama City Crayfish Habitat Assessments. Using species range, known area occurrences, habitat quality, historic plant community correlation and soil expertise, assessed habitat potential and likely onsite species occurrences on numerous projects in Bay County, Florida including the Liberty residential subdivision on Star Avenue, the Jenks Avenue widening site, and the Tyndall Town Center site and adjacent properties in Callaway. Worked with ERC biologists to identify evidence of crayfish utilization and dip net sample. Provided consultation to ERC permitting staff during process of negotiating conservation measures with FWC and USFWS and/or incidental take permits as needed.

Development of Panama City Crayfish Population Monitoring and Analysis Protocol. Awarded competitive technical contract by Florida Fish and Wildlife Conservation Commission to develop statistically valid methodology for estimating populations of Panama City Crayfish. Unique methodology proposed targets sampling and data analysis for small, secretive animal populations where normal biostatistical procedures cannot be used. Working in collaboration with US Fish and Wildlife Service and FWC, this methodology will be used to monitor response of recovery actions such as translocations and re-establishment of extirpated populations.

Jenks Avenue Wetland and PCC Habitat Impact Permitting. Conducted wetland delineation, habitat characterization and mapping, PCC habitat suitability assessments and permitting to impact a portion of wetlands and PCC habitat. Negotiated mitigation of wetland and species impacts during permitting for the widening of Jenks Avenue. Wrote PCC habitat restoration plan and supervised implementation which included field consultation with USFWS and FWC.

Panama City Crayfish Grant Proposals (*pro bono*). Prepared several grant proposals as part of 3-member team including a Bay County professional engineer and a grant writing consultant. Conducted habitat analysis of proposed acquisition sites for habitat restoration, analysis of site conditions, spatial data analysis of multiple parameters, and prepared maps and management plans for the acquisition site. Solely composed entire environmental sections and proposed edits to other sections of the proposals.

Soil Consultation for Panama City Crayfish to FWC and USFWS. Provide consultation by email, telephone and in-person regarding the application of Core and Secondary soils. Analyzed occurrence dataset and associated soils. Provided opinions on the appropriate use of specific soil parameters in the NRCS SSURGO data, and importance of each parameter. Proposed changes to Core and Secondary Soils including downgrades, upgrades, deletions and additions to soil map unit status for PCC. Wrote and submitted white paper regarding soil survey opinions as they may affect habitat suitability for Panama City Crayfish.

Florida Habitat Assessments. Conducted natural resource assessments for over 1000 projects in the Florida Panhandle in the past 30 years. Estimated or delineated the extent of wetland habitat, mapped habitat quality, conducted threatened and endangered species surveys, identified and mapped ecosystem type, described ecosystem composition, and/or correlated ecosystem classification with soil conditions on over 400,000 acres of land located in Leon, Liberty, Wakulla, Calhoun, Franklin, Gulf, Bay, Walton, Okaloosa, Washington, Escambia and Santa Rosa counties, Florida. Supervised staff of scientists who conducted natural resource assessments for ERC and conducted quality control review of projects. Prepared reports, maps, and oral presentation for a variety of clients.

Creel Census for Saltwater Fishes in Delaware and Maryland. Conducted creel census for 2 summer periods at public and private sportfishing sites including headboats, charters, boat launches, and land sites. Conducted interviews of individual sportfishing persons, weighed and measured fish in each creel (possession of individual), identified fish to species, and tabulated data for biostatistical analyses.

Florida Soils Advisor to Collier County Florida Soil Survey Detail. Served for 4 months as Florida soils expert advisor to staff of 6 soil scientists detailed from northern states to complete the mapping of soils in Collier County. Correlated existing soil reconnaissance for Big Cypress and Everglades National Park to project map units. Provided training and orientation to the detailees on the unique soil conditions of South Florida. Mapped over 50,000 acres in 4 months.

Supervised Northwest Florida Water Management District Contracted Services. Project manager for ongoing ecological services to the district for a 3-year contract and additional 6 year contract extension ending on September 30, 2021 and awarded again for 3 years later in 2021. Supervised mitigation monitoring and reporting for NFWFMD lands including the Dutex Restoration Site (810 acres) and the Yellow River Ranch site (275 acres). ERC provides summaries of management success and recommendations for adaptive management strategies to accelerate the pace of restoration. ERC determined the OHWL for portions of the Sandhill Lakes Mitigation Bank to assist with planning of restoration strategies. Supervised precision invasive and undesirable eradication on district lands.

Quality Review of Private Soil Survey on 106,000 Acres of Southern Pineland. Designed and conducted review of previously contracted soil survey on planted pine tracts in two southern Mississippi counties. Selected map units of greatest geographic extent on pine convertible land and described soils and site conditions along transects of representative delineations for each of the targeted map units. Soil profiles were described at transect points using Soil Taxonomy and USDA methodology. Provided client with data summaries and analyses of transect data and described the types of error encountered during the investigation.

Florida STATSGO Coordinator and Representative to Florida Geographic Data Committee. Served as STATSGO coordinator for the USDA-Soil Conservation Service, providing assistance to State and private data users. Initiated development of a STATSGO data dictionary in cooperation with the state of Florida Geographic Data Committee and served as the USDA representative to the committee. Presented committee progress/status at Soil Science Society of America annual meeting in 1991.

1987 National Resource Inventory. Project scientist charged with data collection at over 1200 points in the central Panhandle of Florida using air photo interpretation, auxiliary maps and limited ground truthing. Determined land cover and use, percent cover, crop type, soil erosion, wetlands, prime farmland and other characteristics of natural resources on non-federal rural land in the targeted area.

Investigation of Permitted Sediment Discharge Effects to Adjacent Wetlands. Evaluated and mapped the extent of fine textured sediment accumulation from a permitted sediment discharge in Jacksonville Florida. The discharge resulted from a permitted tailwater discharge within specified turbidity levels however over a period of 12 years, a significant amount of fine textured sediment had accumulated. Supervised the habitat quality review of the impact site and determined the effect of the sediment accumulation on the wetland ecosystems. Created ecosystem creation plan to resolve compensatory issues in regulatory negotiations.

QA/QC for FDOT Project Data and Reports. Conducts quality assurance and quality control review of all major projects including over 50 FDOT district 3 environmental assessments. Reviews and edit reports, maps, and other documents for technical quality and effective

communication of assessment results.

Expert Soil Science Services to the State of Florida, Onsite Sewage Program. Served as staff soil scientist for the Florida Onsite Sewage Program staff and for the Environmental Health/Engineering Directors in each of Florida's 67 counties. Advised the state staff on technical issues concerning research, impact of soil properties on system performance, and language for Florida statutes and rules. Resolved site evaluation disputes as final soils technical arbitrator. Represented Onsite Program staff at meetings and conferences.

Onsite Sewage Treatment and Disposal Strategies for Puerto Viejo de Talamanca, Costa Rica. Inventoried existing environmental data and conducted onsite soil evaluations in the town of Puerto Viejo and throughout coastal Talamanca region for the Nature Conservancy and Costa Rican Non-Government Agencies. Evaluated system failures and proposed strategies for overcoming the limitations of soils in the region that are unsuitable for onsite disposal. Proposed low-cost filtration and treatment system using locally sourced earthen materials to overcome limitations of clayey soils with high water tables along the coast.

Development of Standards for Fill Material Used in the Construction of Absorption Fields in Florida. Documented Onsite Sewage Treatment and Disposal Systems failures likely caused by the quality of fill material and surveyed environmental specialists and soil scientists throughout Florida for input on causes of failure. Developed standards based on allowable contaminants of unsuitable soil and geologic materials and mineralogy of fill material. Developed recommendations and an instructional guide for evaluating fill material. Met with county health department supervisors, staffs, and contractors in areas mostly in south Florida where the impact of the recommendations would be greatest.

Soil Scientist Representative on Technical Review and Advisory Panel (TRAP) for Florida Onsite Sewage Program. Served as soil scientist representative to TRAP for three years along with representatives from industry representatives and others, advising Florida septic tank regulators on technical issues; reviews proposed rules and policies, critiques septic tank research, and proposes amendments to rules and policies.

Onsite Sewage Treatment and Disposal Failure Investigation and Analyses. Co-developed standard procedures for investigation of system failures. Investigated over 75 system failures in Florida and South Georgia and Alabama during a four year period, analyzed data, and proposed methods of repair. Investigations included excavation and examination of soils in the drainfield and adjacent areas, system user interviews, and verification of system component installation.

Development of Soils Educational and Testing Program for Environmental Specialists in Florida. Developed mandatory 2-day soils training program including manual, instructional activities, instructional presentation, examination and follow-up standardization via field examination. Implemented the program statewide to over 500 county health department staff and others involved in the permitting of onsite sewage treatment and disposal systems.

Forensic Soils Investigation and Expert Witness Testimony for a Murder Trial in Leon County, Florida. Analyzed soil material from the clothing of a murder suspect and using data from the Soil Survey of Leon County combined with knowledge of area soil conditions, eliminated most of the delineated search area from consideration. The next day, searchers located the body of the victim in the area suggested by Mr. Schuster. Mr. Schuster provided expert testimony concerning the correlation of soil material to a specific area in Leon County and similarities between the soil material on the suspect's clothing and soil material at the site where the victim's body was located.

Ground Penetrating Radar Investigation of Archaeological Sites on Santa Rosa Island, Florida. Conducted ground penetrating radar (gpr) investigation to locate potential cultural resource sites buried deeply below migrating dune sands. Selected transect locations based on parent material, soil morphology, and visible and predicted anthropic accumulations. Ground truthed reflections of anomalies using deep hand auguring. Successfully located numerous pre-european and early settlement artifacts at depths of 1 to 5 meters during field investigation. Classified deeply buried paleosols and distinguished anthropic features from non-anthropogenic horizons. Examined gpr data to estimate extent of cultural features within transect areas.

Seasonal High-Water Table and Inundation Assessment for State Road Bypass. Conducted environmental assessments for the segment of SR 77 from one mile south of the City of Wausau to one mile north of Wausau. Assessments included water table studies using soil and biological indices in the field to obtain depths to seasonal high saturation or seasonal high ground water table (SHGWT) and depth of seasonal inundation caused by ponding or flooding. Study resulted in a corrective re-alignment of the roadway segment to avoid millions of dollars in potential future water damage.

Surface Water Studies and Ecological Assessments for Tallahassee National Veterans Cemetery. Conducted analysis and mapping, wetland delineation and water table studies to determine feasibility and risk, and environmental permitting considerations of a veteran's facility including cemetery, clinic, and supporting facilities. Established boundaries for jurisdiction wetlands, ordinary high-water line of other surface waters that exceeded wetland boundaries, and estimated risk of facility placement on northern clay hills versus southern dry karst topography. Recommended avoidance of dry karst despite no evidence of ordinary high water within recorded history and excessively drained soils due to depressional geomorphology and nature of soil morphology. Conducted supporting listed species surveys and plant community identification for permitting.

PROFESSIONAL PUBLICATIONS

Colbert, Stephen, J.N. Schuster, et. al. 2001. Soil Classification and Survey for Southern Pine Management: Past, Present and Future. Proceedings of the Southern Forest Science Conference. November 2001.

- Mayer, Timothy G., and J.N. Schuster. 1995. A Comparison of Sources of Nitrogen and Phosphorus Loading in Florida. *Florida Journal of Environmental Health*. 152:28-32.
- Pilny, Paul E., C.T. Grantham and J.N. Schuster. 1988. Soil Survey of Citrus County, Florida. Soil Conservation Service, U.S. Department of Agriculture.
- Puckett, William E., J.N. Schuster and D. Stage. 1991. Developing Soils Databases Using Consensus Group Methodology. *Agronomy Abstracts*. American Society of Agronomy.
- Sasser, Leland D., K.E. Monroe and J.N. Schuster. 1994. Soil Survey of Franklin County, Florida. Soil Conservation Service, U.S. Department of Agriculture.
- Slabaugh, Douglas, A.E. Jones, W.E. Puckett and J.N. Schuster. 1996. Soil Survey of Levy County, Florida. Soil Conservation Service, U.S. Department of Agriculture
- Schuster, Joseph N. L.D. Day and M.E. Collins. 1985. A Dynamic Teaching Tool Using Ants to Illustrate Faunal Pedoturbation. *Agronomy Abstracts*. American Society of Agronomy.
- Schuster, Joseph N., M.E. Collins, and A. Fortenbaugh. 1986. Key to Histisols in Florida. Institute of Food and Agricultural Sciences, University of Florida.
- Schuster, Joseph N. and M.E. Collins. 1986. Key to Inceptisols in Florida. Institute of Food and Agricultural Sciences, University of Florida.
- Schuster, Joseph N. 1993. Using Sieves and Other Methods to Determine Particle Size in Florida Soils. *Florida Journal of Environmental Health*. 143:6-12.
- Schuster, Joseph N., K.E. Monroe, and L.D. Sasser. 2001. Soil Survey of Gulf County, Florida. Natural Resources Conservation Service, U.S. Department of Agriculture.
- Schuster, Joseph N. 1993. Florida Soils Manual for Environmental Specialists. Onsite Sewage Program Office, Florida Department of Health.
- Schuster, Joseph N. 2000. Soil Survey on Private Timberlands in the Southeastern United States. Proceedings of the Southern Regional Soil Survey Work Planning Conference. June 2000.
- Schuster, Joseph N. 2002. A Comparison of Soil Survey Models Used by Two Different Timberland Interests in the Southeastern United States. Proceedings of the Southern Regional Soil Survey Work Planning Conference. June 2002.

Schuster, Joseph N. 2006. New Strategies for Creating Natural Horizon Sequences in Reclaimed Soils. Florida Institute of Phosphate Research, 21st Annual Phosphate Conference, Lakeland, FL, October 2006.

Schuster, Joseph N. 2007. Soil Survey. Hydric Soils Handbook of Florida. Fourth Edition, March 2007.

Schuster, Joseph N. 2007. Soil Morphology. Hydric Soils Handbook of Florida. Fourth Edition, March 2007.

Schuster, Joseph N. 2007. The Soil Profile and Horizon Designations. Hydric Soils Handbook of Florida. Fourth Edition, March 2007.

Schuster, Joseph N. 2009. Excerpt Editor for Keys to Soil Taxonomy for Florida. Excerpt from Tenth Addition, 2006.

CERTIFICATIONS

SSSA Certified Professional Soil Classifier/Soil Scientist #21634.

Certified and Registered Soil Scientist, Florida #00001

Professional Geoscientist, State of Texas #12131

Registered Professional Soil Classifier, State of Alabama # 0055.

Registered Soil Classifier, State of Arkansas # 58

Qualified Florida Stormwater Inspector #21527

OTHER PROFESSIONAL ACTIVITIES

American Society of Agronomy

Soil Science Society of America

Society of Ecological Restoration

Florida Association of Environmental Soil Scientists, Past and Current Vice President

Florida Association of Environmental Soil Scientists Board of Examiners Chair

Council of Soil Science Examiners Past Member