

The Wetlands Programs at Virginia Tech

2/30/2007 Dr. John M. Galbraith

INTRODUCTION

The Wetland Science and Stream Ecology Program at Virginia Tech can be summarized in the following topic areas: [faculty](#), [adjunct faculty](#), [courses](#), [advanced research capabilities](#), [affiliated partners](#), and [memberships in wetland groups](#) (see details in resumes). Because Virginia Tech is the land-grant college in Virginia, we have faculty and staff across the state delivering instruction, conducting research, delivering information through extension and outreach programs, publications, and through service to the Commonwealth. Faculty and their staff who work with wetland science and stream ecology are experienced and capable and have a proven track record of working cooperatively with other state agencies and institutions. This document points out those experiences and affiliations. As a group, we offer our capabilities and services to regulatory programs, scientific advisory committees, and research consortiums across the state. We hope to continue existing cooperative relationships and to develop new partnerships.

Faculty at Virginia Tech

There are 11 or more faculty who teach courses related to wetlands and stream ecology at Virginia Tech in Blacksburg. The following table summarizes their wetland teaching activities.

College	Department	Name (linked to their resume)	Wetland and Stream Ecology Courses Taught
Natural Resources	Forestry	W. Mike Aust	FOR 4374 : Forested Wetlands
Natural Resources	Fisheries and Wildlife Science	Jim Parkhurst	FIW 4534 : Ecology & Management of Wetland Systems
Agricultural and Life Sciences	Crop and Soil Environmental Sciences	W. Lee Daniels	CSES 4854 : Wetland Soils and Mitigation CSES 5854† : Adv. Wetland Soils and Mitigation
Agricultural and Life Sciences	Crop and Soil Environmental Sciences	John M. Galbraith	CSES 4854 CSES 5854†
Agricultural and Life Sciences	Biological Systems Engineering	Tess M. Wynn	BSE 3305 : Land & Water Resources Engineering BSE 5984#: Advanced Topics in Land and Water Resources Engineering BSE 5984#: Stream Restoration.
Agricultural and Life Sciences	Biological Systems Engineering	William Cully Hession	BSE 5984 : Fluvial Geomorphology
Agricultural and Life Sciences	Biological Systems Engineering	Brian L. Benham §	BSE 5324 : TMDL Development and Implementation
College of Natural Resources	Forestry	Stephen H. Schoenholtz	Planned: Watershed Processes, Ecology and Management of Forest Soils, or Water Quality and Forest Land Use

Science	Statistics	Eric P. Smith	STAT 5605,6: Biometry STAT 5504: Multivariate Methods STAT 3616: Biological Statistics
Science	Biological Sciences	Jack R. Webster	BIOL 3114: Field and Lab Ecology BIOL 4004: Freshwater Ecology BIOL 5034: Ecosystem Dynamics
Science	Biological Sciences	Robert H. Jones	BIOL 2804 : Ecology BIOL 5024 : Population & Commun. Ecology BIOL 4314 : Plant Ecology

† An on-line version is in development as part of an on-line M.S. degree.

In development stage.

§ Director, [Center for TMDL and Watershed Studies](#)

Dr. Stephen Schoenholtz has been hired a new director of the Virginia Watershed Resources Research Center starting summer 2006. The information below is from his tenure at Oregon State University.

Adjunct faculty of Virginia Tech that are involved in wetland sciences:

[Ralph W. Tiner](#) - Adjunct @ US F&W Service and University of Massachusetts

[Michael J. Vepraskas](#) - Adjunct @ North Carolina State University

[James E. Perry, III](#) - Adjunct @ Virginia Institute of Marine Science

Associated professional partners

1) Richard Whittecar – serves on numerous graduate committees at Virginia Tech.

- [G. Richard Whittecar](#) Associate Professor, Old Dominion University
- rwhittec@odu.edu Ph.D., University of Wisconsin, Madison (1979)
- Interests: Geomorphology and hydrology of estuarine, fluvial, and palustrine wetlands

2) Robert Atkinson – former Virginia Tech student and professional wetland delineation associate of Dr. Daniels and Dr. Galbraith.

- [Dr. Robert Atkinson Home Page](#) - Associate Professor, Christopher Newport University
- atkinson@cnu.edu - Ph.D. Virginia Tech, B.S., M.S. James Madison University
- Asst Director for the Center for Environmental Studies at VT (a position held for 4 years while concurrently during a post doc under John Cairns).
- Interests: Wetlands Ecology and Restoration

3) [Dr. Patrick J. Megonigal](#)

Research Biogeochemist
Smithsonian Environmental Research Center (SERC)
Smithsonian Institution, PO Box 37012, MRC 540
Washington, D.C. 20013-7012
megonigalp@si.edu

4) R. Harold Jones

- [R. Harold Jones](#) - US Army COE, Norfolk District (retired). Currently a private consultant, wetland training partner, Sigma Consultants, Inc. Virginia Beach, VA)

5) Other wetland scientists in Virginia:

- Dr. Woodward S. Bousquet, Chair of Environmental Studies Program
Shenandoah University
1460 University Drive
Winchester, Virginia 22601
(540) 665-5461
wbousque@su.edu
- [Donald E. Weller](#)
Smithsonian Environmental Research Center (SERC),
647 Contees Wharf Rd., Edgewater, MD 21037-0028
443-482-2214, Fax 443-482-2380, Email: wellerd@si.edu
- [Dennis F. Whigham](#)
Smithsonian Environmental Research Center (SERC),
P.O. Box 28, Edgewater, MD 21037
Phone: 443-482-2226, Fax: 443-482-2380, Email: Whighamd@si.edu

Advanced Research Capabilities

Centers and Institutes associated with wetland or stream ecology research or training

[Conservation Management Institute](#) (CMI)

[Center for Environmental Applications of Remote Sensing](#) (CEARS)

[Virginia Water Research Resources Center](#) (VWRRC)

[Center for TMDL and Watershed Studies](#) (CT&WS)

[Powell River Project](#) (PRP)

Course Descriptions: [Return to Table](#)

CSES 4854: WETLAND SOILS AND MITIGATION. Available Fall 2007. (An on-line version is in development as part of an on-line M.S. degree. <http://www.online.cals.vt.edu/masters/>).

Wetland soils as components of natural landscapes: biogeochemistry, hydrology, geomorphology, hydric soil indicators, and classification. Soil and hydrologic factors important to wetland delineation and jurisdictional determination. Mitigation of wetland impacts with emphasis on restoration and creation. Use of constructed wetlands for acid mine drainage treatment. Pre: 3114 or 3134 or 3304. (3H, 3C) I Odd

CSES 5854: ADVANCED WETLAND SOILS Available Fall 2007. (An on-line version is in development as part of an on-line M.S. degree. <http://www.online.cals.vt.edu/masters/>).

Hydric soil identification and delineation, wetland water budgets, restoration of damaged wetlands, and creation of compensation wetlands. Utilization of advanced soil information systems and GIS/GPS in wetlands study. Constructed wetlands for water treatment. Mandatory 3-day field trip. May not be taken after CSES/ENSC 4854. Pre: 4124 or 4134 or FOR 4374. (3H, 3L, 4C) I, Odd.

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Curriculum Vitae

John M. Galbraith

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Awards

- Harry A. McDonald Award for Excellence in Teaching, Dept. Soil, Crop, and Atmospheric Sciences, Cornell University. 1997.

Education

- Ph. D. Cornell University 1997 Soil Science, Agronomy, Geomorphology
- M.S. Texas Tech University 1983 Range Science
- B.S. Texas Tech University 1978 Range and Wildlife Management

Research (35%) and teaching (65%) interests

- Research - Soil carbon sequestration; mined-land reclamation; urban and wetland soils; GIS; remote sensing; and decision-support software development
- Teaching - Wetland soils, soil survey and taxonomy, soil description and interpretation, geomorphology, and GIS applications

Professional appointments

- Associate Professor, Crop and Soil Environmental Sciences, Virginia Tech, Blacksburg, VA, 2005-present
- Assistant Professor, Crop and Soil Environmental Sciences, Virginia Tech, Blacksburg, VA, 1999-2005
- Post-Doctoral Associate, Soil and Water Science, University of Florida, Gainesville, FL, 1998-1999
- Post-Doctoral Associate, Crop, Soil, and Atmospheric Science, Cornell University, Ithaca, NY, 1997-1998
- Research Support Specialist, Crop, Soil, and Atmospheric Science, Cornell University, Ithaca, NY, 1990-1997
- Supervisory Soil Scientist, USDA-SCS, Havre, MT, 1987-1990
- Soil Scientist, USDA-SCS, Pearsall and Kenedy, TX, 1983-1987
- Range Conservationist, USDA-SCS, Menard and Andrews, TX, 1977-1979

Publications (refereed journal articles since 2004) * indicates student author

- Galang*, J., C.Zipper, S. Prisley, J. Galbraith, and P. Donovan. 2006. Evaluating Terrestrial Carbon Sequestration Options for Virginia. *Env. Mngmnt.* Accepted May 15, 2006.
- Casselman*, C.N., T.R. Fox, Burger, J.A., Jones, A.T., and J.M. Galbraith. 2006. Effects of silvicultural treatments on survival and growth of trees planted on reclaimed mine lands in the Appalachians. *For. Ecol. and Mngmnt.* Accepted 5 Dec 2005.
- Burdt*, A.C., J.M. Galbraith, and J.P. Magonigal. 2006. CO₂ efflux rates by land-use treatment in wet flats of Southeast Virginia. *Wetl. Ecol. and Mngmnt.* ISSN:0923-4861 (Paper) 1572-9834 (Online). Volume 14(2):133 – 145.
- Burdt*, A.C., J.M. Galbraith, and W.L. Daniels. 2005. Land-Use Effects on Growing Season Length Indicators in Southeastern Virginia Wet Flats. *Soil Sci. Soc. Am. J.* 69:1551-1558.
- Ward*, D.J., J.A. Spotila, G.S. Hancock, and J.M. Galbraith. 2005. New constraints on the late Cenozoic incision history of the New River, Virginia. *Geomorphology.* 72:54-72.

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- Showalter*, J.M., J.A. Burger, C.E. Zipper, and J.M. Galbraith. 2005. Influence of physical, chemical, and biological mine soil properties on white oak growth. Submitted to Annual Meeting of the 26th West Virginia Surface Mine Drainage Task Force and 22st Am. Soc. of Mining and Reclamation. June, 19-23 2005. Breckenridge, CO.
- Orndorff, Z.W., W.L. Daniels, and J.M. Galbraith. 2005. Morphology and properties of mineral sands mine soils in southeastern Virginia. Proceedings of Annual Meetings of the 26th West Virginia Surface Mine Drainage Task Force and 22st Am. Soc. of Mining and Reclamation. June, 19-23 2005. Breckenridge, CO. Published by ASMR, 3134 Montavesta Rd., Lexington, KY 40502.
- Jones*, A.T., J.M. Galbraith, and J.A. Burger. 2005. Development of a forest site quality classification model for mine soils in the Appalachian coalfield region. Proceedings of Annual Meetings of the 26th West Virginia Surface Mine Drainage Task Force and 22st Am. Soc. of Mining and Reclamation. June, 19-23 2005. Breckenridge, CO. pp. 523-539.
- Haering, K.C., W.L. Daniels, and J.M. Galbraith. 2005. Mapping and classification of Southwest Virginia mine soils. *Soil Sci. Soc. Am. J.* 69:463-472.
- Haering, K.C., W.L. Daniels, and J.M. Galbraith. 2004. Appalachian mine soil morphology and properties: Effects of weathering and mining method. *Soil Sci. Soc. Am. J.* 68:1315-1325.
- Galbraith, J.M., N.D. Stone, G.E. Groover, F.A. Bruce, Jr., and G.B. Benson. 2004. Training professionals in use of Pasture Land Management System (PLMS) decision support system. *J. Extension* 11 p. Vol. 42, article 5.
- Miller*, J.O., J.M. Galbraith, and W.L. Daniels. 2004. Organic carbon content and variability in frigid Southwest Virginia mountain soils. *Soil Sci. Soc. Am. J.* 68:194-203.
- Amichev*, B.Y., and J.M. Galbraith. 2004. A revised methodology for estimation of forest soil carbon from spatial soils and forest inventory datasets. *Envir. Mgmt.* Vol. 33, Supplement 1. pp. S74-S86.

Publications (summary)

- 16 refereed journal articles
- Six edited book chapters
- Seven refereed conference proceeding articles
- 12 papers in editor-reviewed journals and conference proceedings
- Three USDA-NRCS-reviewed soil surveys

Competitive grants (selected and summary)

- Department of Energy. \$494,400. Co-principal Investigator with five others. Restoring sustainable forests on Appalachian mined lands for wood products, renewable energy, carbon sequestration, and other ecosystem services. 2002 to 2005
- Virginia Department of Transportation and Virginia Transportation Research Council. \$325,239. Co-principal Investigator with one other. Effects of soil amendments and other practices upon the success of VDOT non-tidal wetland mitigation efforts. 2002 to 2005
- Maryland Department of the Environment (Sub-contracted from US EPA). \$245,000. Co-principal Investigator with two others. Improved identification, delineation, and functional assessment of Piedmont wetlands. 2002 to 2005
- Summary: Principal- or co-investigator on 9 competitive grants totaling \$1,294,573 since arriving at Virginia Tech.

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Recent Papers (slideshows) and posters presented at professional meetings (35 total. Students*)

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- a. Vasilas, L., R. Spagnolo, B. Vasilas, M.C. Rabenhorst, and J.M. Galbraith. 2006. Mid-Atlantic Hydric Soils Committee: Bridging the Soil Science and Wetland Science Communities. 18th World Congress of Soil Science. Philadelphia, PA. July 9-15, 2006. poster
- b. Hernandez, L.A., R.K. Shaw, S. Fischer, and J.M. Galbraith. 2006. Soils of New York City. 18th World Congress of Soil Science. Philadelphia, PA. July 9-15, 2006. poster
- c. Galbraith, J.M. and C. Ditzler. 2006. Future Activities of the International Committee for Anthropogenic Soils (ICOMANTH). 18th World Congress of Soil Science. Philadelphia, PA. July 9-15, 2006. Slideshow and poster.
- d. Galbraith, J.M. and C. Ditzler. 2006. New Terms for Describing Human-altered and Transported Soils. 18th World Congress of Soil Science. Philadelphia, PA. July 9-15, 2006. Slideshow and poster.
- e. Galbraith, J.M. and C. Ditzler. 2006. The International Committee for Anthropogenic Soils (ICOMANTH) Publishes a Second CD-ROM. 18th World Congress of Soil Science. Philadelphia, PA. July 9-15, 2006. Slideshow and poster.
- f. Pantaleoni*, E., J.M. Galbraith, and R. Wynne. 2006. Mapping wetland vegetation using ASTER sensor in a CART model. An. Meeting of the Am. Soc. Agr. Indianapolis, IN.
- g. Sandy*, A.E., J.M. Galbraith, S. Prislely, J. Campbell, W.L. Daniels. 2006. Environmental and digital data analysis of the National Wetland Inventory (NWI) landscape position classification system. An. Meeting of the Am. Soc. Agr. Indianapolis, IN. Slideshow.
- h. Galbraith, J.M., J. Baker, and W.L. Daniels. 2006. Northeast Cooperative Soil Survey Conference VAES Report. Northeast Coop. Soil Surv. Conf. Proceedings. Publ. on CD-ROM. NCSSC Meeting, Bordentown, NJ. (Lead author is first.)
- i. Galbraith, J.M., and P.F. Donovan. 2005. Density of road crossings and drainage of wetlands in suburban and rural Virginia. 8th An. Wetlands and Watersheds Workshop. Atlantic City, NJ. Slideshow.
- j. Pantaleoni*, E., R. Wynne, and J.M. Galbraith. 2005. Logit model for predicting wetlands location using ASTER and GIS. Invited paper. An. Meeting of the Am Soc. Photogrametry and Rem. Sens., Reno, NV. Slideshow.
- k. Sandy*, A.E., J.M. Galbraith, P.F. Donovan, and R. Tiner. 2005. Development of automated coding descriptors for the National Wetland Inventory. An. Meeting of the Am. Soc. Agr. Salt Lake City, UT.
- l. Pantaleoni*, E., J.M. Galbraith, P.F. Donovan, and R. Tiner. 2005. Correlating National Wetland Inventory Data with recent satellite imagery. An. Meeting of the Am. Soc. Agr. Salt Lake City, UT.
- m. J.M. Galbraith, P.F. Donovan, A.E. Sandy*, and E. Pantaleoni*. 2005. Using digital elevations and models to enhance stream network maps in Virginia. An. Meeting of the Am. Soc. Agr. Salt Lake City, UT. Slideshow.
- n. Pantaleoni*, E., and J.M. Galbraith. 2005. Use of ASTER sensor images for mapping forested and non-forested wetlands in Virginia (Developing a Remote Sensing Model for Predicting Wetland Location). 26th An. Meeting of the Soc. Wetland Sci. Charlotte, NC.

- o. Sandy*, A.E., and J.M. Galbraith. 2005. National Wetlands Inventory Resource Inventory and correlation to landscape characteristics. 26th An. Meeting of the Soc. Wetland Sci. Charlotte, NC.
- p. Galbraith, J.M., and P.F. Donovan. 2005. Density of road crossings and drainage networks in suburban and rural Virginia. 8th Wetlands Regulatory Workshop. Oct. 2005. Atlantic City, NJ. Slideshow. (Lead author is first.)
- q. Daniels, W.L., G.R. Whittecar, J.M. Galbraith, and P.J. Thomas. 2005. Hydric soil-landscape relationships in Virginia. 26th Annual Meeting of the Society of Wetland Scientists. Charlotte, NC. Slideshow.

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Other sponsored research (summary)

- Principal- or co-investigator on 4 grants totaling \$74,700 since arriving at Virginia Tech.

Scholarly achievements

- Omicron Delta Kappa - [The National Leadership Honor Society](#) Since 1977
- Phi Kappa Phi - Academic Honorary Society Since 1978
- Gamma Sigma Delta - Honor Society of Agriculture Since 2002
- Sigma Xi - The Research Society of North America Since 2004
- Phi Beta Delta - Honor society recognizing scholarly achievement in international education Since 2004

Professional Certifications

- Virginia Certified Professional Soil Scientist Since 2004
- Virginia Professional Wetland Delineator Since 2005

Invited talks (summary)

- Invited speaker for Oral Symposium 1.0B - Soil Change in Anthropocene. 18th World Congress of Soil Science. Victor Targulian and Hari Eswaran, convenors. Philadelphia, PA. 2006.
- Keynote speaker – 2nd International Conference for Soil Classification, Petrozavodsk, Karelia, Russia. 2004
- Opening speaker – Special session on urban soil management at the American Society of Agronomy national meeting in Denver, CO. 2003

Courses taught (100% involvement unless otherwise indicated)

- Soil Description and Interpretation
- Soil Interpretation Using GIS and DSS
- Soil Survey and Taxonomy
- Wetland Soils and Mitigation (co-instructor, 33%)
- Advanced Wetland Soils and Mitigation (co-instructor, 33%)
- Advanced Soil Interpretation Using GIS and DSS

Student advising (summary)

- On three doctoral and eight master's committees
- Currently the major advisor for one doctoral and two master's degree candidates
- Advisor to 15 undergraduates
- On advisory committee to two successful master's degree candidates and one successful doctoral degree candidate

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Diversity initiatives or contributions (selected)

- Six of eight graduate student advisees have been female
- About 50% of the Soil Judging Team members have been female
- Advised CSES African-American student Crystal Lamb on selection of her Ronald E. McNair Scholars Program project for financially disadvantaged, first-generation college students of any race or ethnicity

Outreach and professional service (summary, arranged by date)

- Member of one international, four national, four regional, five state, one university, and two departmental committees 1998-present
- Associate Editor for Divisions S-10 and S-5. Soil Sci. Soc. Am. J. 2005-2007
- Associate Editor for the Southern Region. Soil Survey Horizons (published by the American Society of Agronomy) 2002-2006

Associations and society memberships (arranged alphabetically, appointed positions indicated)

- Affiliated Faculty – Conservation Management Institute, Center for Geospatial Information Technologies, Center for Environmental Applications of Remote Sensing
- International Union of Soil Scientists (formerly ISSS) 1977-present
- North American Colleges and Teachers of Agriculture 1999-present
- Soil Science Society of America 1977-present
 - Elected Chair, Div. S-5 (Pedology) 2006-2007
 - Soil Geomorphology Committee 2002-present
 - Northeast Region - Research Needs Committee 2000-present
 - Northeast Region – Standards and Procedures/Soil Tax. Committee 1996-present
- Society of Wetland Scientists 2000-present
- Virginia Association of Professional Soil Scientists 1999-present
- Virginia Association of Wetland Professionals 2000-present

State level

- Invited to Chesapeake Bay Preservation Act Guidance Policy Board Meeting, Richmond, VA as scientific advisor by Joan Salvati, Director, Div. of Chesapeake Bay Local Assistance. Jan. 2007.
- Appointed by the Virginia Department of Professional and Occupational Regulation to serve with a group of "subject matter experts" to develop 80 new soil survey, GIS, GPS, and remote sensing questions, and review 100 test questions for Virginia's revised Certified Professional Soil Scientist Exam Question Data Bank. Richmond, VA. 2006.
- Appointed member of Ad-Hoc Committee on Chesapeake Bay Preservation Act Guidance by Joan Salvati, Director, Div. of Chesapeake Bay Local Assistance. 2005-6.
- Appointed by the Virginia Governor's Office as soil scientist representative for The Board for Professional Soil Scientists and Wetland Professionals. 2004-2007.
- Appointed as the Virginia State liaison to the Soil Science Society of America-Smithsonian Soils Exhibition Project to develop a permanent soil monolith display at the Smithsonian Institution in Washington, DC. Since 2002.
- Appointed by the Virginia Department of Professional and Occupational Regulation to serve with a group of "subject matter experts" to develop 20 test questions for Virginia's new Wetland Delineator Certification Program. 2003.
- Assistant Virginia Soil Survey Liaison to USDA-NRCS. Since 1999.

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W. Lee Daniels

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Professor of Environmental Soil Science
Department of Crop & Soil Environmental Sciences
Virginia Polytechnic Institute and State University
Blacksburg, Virginia 24061 - 0404
540-231-7175 (W) 540 - 961 - 1226 (H)
540-231-7630 (F) wdaniels@vt.edu

Education

B.S. Forestry	VPI & SU	1978
M.S. Soil Genesis	VPI & SU	1980
Ph.D. Forest Soils & Geomorph.	VPI & SU	1985

Honors and Recognition

- Outstanding Ph.D. Candidate Award, VPI & SU Sigma Xi Science Society (1985)
- Governor's Advisory Committee on Mined Land Reclamation in Virginia (1985 - 1993)
- President, Virginia Association of Professional Soil Scientists (1988)
- President, American Society for Surface Mining and Reclamation (1990)
- Reclamation Researcher of the Year, Amer. Soc. for Surface Mining and Rec. (1993)
- USEPA National First Place Research Award for Biosolids Utilization (2000)

Areas of Specialization and Expertise

- Restoration of disturbed lands including areas disturbed by mining, road building, waste disposal, urbanization and erosion. Extensive experience in mine reclamation and wetlands restoration.
- Geochemistry of near-surface weathering reactions and their influence on soil solution, leachate chemistry, and runoff water quality, including lab simulations and field verification.
- The influence of land application of wastes on soil properties, geochemical weathering reactions, and water quality. Extensive experience with municipal and industrial sludges and ash materials.
- Soil geomorphology and landscape analysis with particular emphasis on the relationships among surficial geology, hydrology, soil patterns and long-term landscape evolution processes.
- Screening and evaluation of industrial/municipal waste streams for utilization as soil amendments.

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Recent Wetlands and Geomorphology-Related Publications of W. Lee Daniels

Daniels, W.L., M.H. Genthner, and R.L. Hodges. 1992. Soil development in sandy tailings derived from mineral sands mining in Florida. pp. 37-47 In: Proc., 1992 Annual Meeting of the Am. Soc. for Surf. Mining and Reclam., Duluth, MN., Published by IRRB, Chisolm, MN.

Daniels, W.L., L.W. Zelazny, M.M. Alley and K.C. Haering. 1992. The development of restoration strategies for prime farmlands disturbed by surface mining in the Coastal Plain of the eastern USA. pp. 183-190 In R.E. Dunker et al., (Ed.) Proc. of the 1992 National Symp. on Prime Farmland Reclamation. Dept. of Agronomy, Univ. of Ill, Urbana.

Atkinson, R.B., W.L. Daniels and J. Cairns Jr. 1996. Ontogeny of accidental wetland and hydric soil development in surface mined landscapes. p. 516-528 In: Daniels, W.L., J.A. Burger, and C.E. Zipper (eds.). Proc., 1996 Annual Meeting of the Amer. Soc. For Surface Mining and Rec., Knoxville, TN, May 18-23, 1996. Virginia Tech Research Division, Powell River Project, Blacksburg.

Atkinson, R.B., W.L. Daniels and J. Cairns, Jr. 1998. Hydric Soil Development in Depressional Wetlands: A Case Study from Surface Mined Landscapes. p. 170 -182 In: S.K. Majumdar, W.W. Miller and F.J. Brenner (eds.). Ecology of Wetlands and Associated Habitats. Pennsylvania Academy of Science, Philadelphia.

Whittecar, G.R. and W. L. Daniels. 1999. Use of hydrogeomorphic concepts to design created wetlands in southeastern Virginia. Geomorphology 31: 355-371.

Stolt, M.H., M.H. Genthner, W.L. Daniels, V.A. Groover and S.M. Nagle. 1998. Quantifying Fe, Mn, and carbon fluxes in palustrine wetlands. p. 25-42 In: M.L. Rabenhorst et al. (Eds.), Quantifying Soil Hydromorphology. SSSA/ASA Special Publication, Amer. Soc. Agron., Madison, WI.

Genthner, M.H., W.L. Daniels, R.L. Hodges and P.J. Thomas. 1998. Redoximorphic features of the seasonal high water Beginning, Upper Coastal Plain, Virginia. p. 43-60 In: M.L. Rabenhorst et al. (Eds.), Quantifying Soil Hydromorphology. SSSA/ASA Special Publication, Amer. Soc. Agron., Madison, WI.

R.I. Barnhisel, R.G. Darmody, and W.L. Daniels (eds.). 2000. Reclamation of Drastically Disturbed Lands. American Soc. Agron. Mono. #41, Madison WI. 1082 p.

A full list of publications (150+) is available upon request. [Return to Beginning](#)

W. Michael Aust

Professor

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Department of Forestry, College of Natural Resources

Virginia Polytechnic Institute and State University

Blacksburg, Virginia 24061

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RESEARCH ACTIVITIES

- Forested wetland and riparian zone ecology, management, restoration.
- Effects of forest operations on soil and hydrologic processes, water quality, site productivity.
- Development and application of forestry management practices for protection of water and site quality.
- Total funding for 30+ wetland/hydrology research projects since 1989 = \$2.6 million+.
- 75+ professional/technical publications.

TEACHING ACTIVITIES

- **Undergraduate**
 - Forested Wetlands (Spring Semesters) (graduate credit also)
 - Forest Soils and Hydrology (co-taught) (Fall Semesters) (graduate credit also)
 - Forest Boundaries and Roads (Spring Semesters)
 - Responsible for approximately 3-5 days of Forestry Field Camp
 - Average student teaching overall evaluation since 1989 = 3.7/4.0
- **Graduate**
 - Co-teach on-line graduate class (Forest Ecology and Management for Secondary Educators).
 - Ten M.S. and two Ph.D. students have completed forest soil-hydrology-wetland research projects under my direction since 1989.
 - One Ph.D. and four M.S. students are currently working on wetland/riparian projects.
 - Served as graduate committee member for 50+ M.S. and Ph.D. programs in five departments.

EDUCATION

- 1989 Ph.D. Forestry (Soils and Hydrology), North Carolina State University.
Research emphasis: Timber harvesting effects on forested wetlands.
- 1985 M.S. Forestry (Bottomland Hardwood Silviculture), Mississippi State University.
Research emphasis: Silviculture of bottomland hardwoods. (Outstanding Graduate Student Award)
- 1982 B. S. Forestry, Mississippi State University. (Outstanding Senior Award)
- 1979 A.S. Forest Technology, East Mississippi Junior College

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PROFESSIONAL EMPLOYMENT HISTORY

Professor, May 2004-Present, Industrial Forest Operations / Forest Biology, Department of Forestry, College of Natural Resources, Virginia Polytechnic Institute and State University, Blacksburg, Virginia.

Associate Professor, May 1995 - Present, Industrial Forest Operations / Forest Biology, Department of Forestry, College of Natural Resources, Virginia Polytechnic Institute and State University, Blacksburg, Virginia.

Assistant Professor, October 1989 - May 1995, Industrial Forest Operations / Forest Biology, Department of Forestry, College of Forestry and Wildlife Resources, Virginia Polytechnic Institute and State University, Blacksburg, Virginia.

Graduate Research Assistant, June 1985 - October 1989, Hardwood Research Cooperative, Department of Forestry, College of Forest Resources, North Carolina State University, Raleigh, North Carolina.

Research Technician, February 1985 - June 1985, Department of Forestry, School of Forest Resources
Mississippi State University, Mississippi State, Mississippi.

Graduate Research Assistant, January 1983 - February 1985, Department of Forestry, School of Forest Resources, Mississippi State University, Mississippi State, Mississippi.

Forester (part-time), October 1980 - December 1982, Silva Services Forestry Consultants, Starkville, Mississippi.

Forest Technician (part-time), September 1982 - December 1982, Department of Forestry, School of Forest Resources, Mississippi State University, Mississippi State, Mississippi.

Forestry Intern (based on 3-state academic competition), May 1982 - August 1982, St. Regis Paper Co.
Jacksonville, Florida.

Forest Technician (part-time), May 1981 - May 1982, Department of Forestry, School of Forest Resources, Mississippi State University, Mississippi State, Mississippi.

Forester and Crew Leader, April 1979 - August 1980, Pomeroy and McGowin Forest Consultants
Monticello, Arkansas.

Self-Employed Logger (part-time), West Alabama and East Mississippi 1977-1978.

HONORS AND AWARDS

<u>Year</u>	<u>Award</u>
2004	Forest Resource Assoc., Appalachian Techn. Div. Technical Writing Award, First Place
2003	Selected by University Honorarifics Committee as Virginia Tech SCHEV award candidate
2003	College of Natural Resources Curriculum Club Award for Teaching Excellence
2002	Virginia Tech Alumni Award for Excellence in Teaching
2000	University Certificate of Teaching Excellence Award
2000	University Fellow for Institute for Distance and Distributed Learning
2000	College of Natural Resources Curriculum Clubs Outstanding Faculty Award
1999	Gamma Sigma Delta Award of Merit for Teaching
1997	College of Natural Resources Outstanding Faculty Award

- 1993 APA Best Technical Paper Award
1992 Research nominated for President's Environment and Conservation Challenge Award
1991 Best Presentation Award, National Meeting, Soil Science Society of America, S-7 Div.
1984 Outstanding Graduate Student Award, School of Forest Resources, Mississippi State University
1982 Outstanding Undergraduate Student Award, School of Forest Resources, Mississippi State University

HONORARY AND PROFESSIONAL ORGANIZATIONS

- American Society of Agronomy (1989) Society of Wetland Scientists (1987)
Council on Forest Engineering (1988) Soil Science Society of America (1989)
Gamma Sigma Delta (1984) Southern Forest Hydrology Group (1988)
Sigma Xi (1987) Southern Hardwood Group (1980)
Society of American Foresters (1980) - Certified Forester Virginia Forestry Association (1989)
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SELECTED PUBLICATIONS IN MAJOR RESEARCH AREAS

Forested Wetlands/Riparian Areas

- Aust, W.M., M. D. Tippett, J.A. Burger, W.H. McKee, Jr. 1995. Compaction and rutting during harvesting affect better drained soils more than poorly drained soils on wet pine flats. *Southern Journal of Applied Forestry* 19(2):72-77.
Aust, W.M., R. Lea, J.D. Gregory. 1991. Removal of floodwater sediments by a clearcut tupelo-cypress wetland. *Water Resources Bulletin* 27(1):111-116.
Aust, W.M., R. Lea. 1991. Site temperature and organic matter in a disturbed forested wetland. *Soil Science Society of America Journal* 55(6):1741-1746.
Aust, W.M., R. Lea. 1992. Comparative effects of aerial and ground logging on soil properties in a tupelo-cypress wetland. *Forest Ecology and Management* 50:57-73.
Aust, W.M., T.W. Reisinger, J.A. Burger, B.J. Stokes. 1993. Soil physical and hydrologic changes associated with logging a wet pine flat with wide-tired skidders. *Southern Journal of Applied Forestry* 17(1):22-25.
Giese, L.A., W.M. Aust, C.C. Trettin, R. Kolka. 2000. Spatial and temporal patterns of carbon storage and species richness in three South Carolina coastal plain riparian forests. *Ecological Engineering* 15 (1): 157-170.
Giese, L.A.B., W.M. Aust, R.K. Kolka, and C.C. Trettin. 2003. Biomass and carbon pools of disturbed riparian forests. *Forest Ecology & Mgt* 180(1-3): 493-508.
Harms, W., W. M. Aust, and J. A. Burger. 1998. Wet Flatwoods. Chapter 9. p. 421-444. In: W. Conner and M. Messina (eds.) *Southern Forested Wetlands Ecology and Management*. CRC Press - Lewis Publishers. 616 p.
Hauser, J.W., W.M. Aust, J A. Burger, S. M. Zedaker. 1993. Rotation-age effects of site preparation on plant diversity and productivity in wet pine flats. *Forest Ecology and Management* 61:109-126.

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Forest Soils

- Miwa, M. W.M. Aust, J.A. Burger, S.C. Paterson, E.A. Carter. 2004. Wet-weather timber harvesting and site preparation effects on coastal plain sites: a review. *Southern Journal of Applied Forestry*. 28(3): 137-151.
- Xu, Y.-J., J.A. Burger, W.M. Aust, S.C. Patterson, M. Miwa, D.P. Preston. 2002. Changes in surface water Table depth and soil physical properties after harvest and establishment of loblolly pine (*Pinus taeda* L.) in Atlantic coastal plain wetlands of South Carolina. *Soil and Tillage Research* 63: 109-121.

Forestry Best Management Practices

- Aust, W.M. 1994. Comparison of forested wetland best management practices for states in the southern Appalachian region. *Water, Air, and Soil Pollution* 77 (3/4): 457-468.
- Aust, W.M. and C.R. Blinn. 2004. Forestry best management practices for timber harvesting and site preparation in the eastern United States: an overview of water quality and productivity research during the past 20 years. *Water Air and Soil Pollution Focus Journal* 4 (1): 5-36.
- Aust, W.M., R. Visser, T. V. Gallagher, T. Roberts, and M. Poirot. 2003. Cost of six different stream crossing options in the Appalachian area. *Southern Journal of Applied Forestry* 27(1): 66-70.
- Aust, W.M., R.M. Shaffer, J.A. Burger. 1996. Benefits and costs of forestry best management practices in Virginia. *Southern Journal of Applied Forestry* 20(1): 23-29.
- Aust, W.M., S. H. Schoenholtz, T.W. Zaebst, B.A. Szabo. 1997. Recovery status of a baldcypress-tupelo wetland seven years after harvesting. *Forest Ecology and Management* 90: 161-169.
- Hood, S.M., S.M. Zedaker, W.M. Aust, D.W. Smith. 2002. Soil erosion in Appalachian hardwoods: using the universal soil loss equation (USLE) to compare the impacts of different harvest methods. *Northern Journal of Applied Forestry*. Accepted August 30, 2001.
- Shaffer, R. M., H. L. Haney, E. G. Worrell, W. M. Aust. 1998. Forestry BMP implementation costs for Virginia. *Forest Products Journal* 48(9):27-29.
- Wynn, T.M., S. Mostaghimi, J.W. Frazee, P.W. McClellan, R.M. Shaffer, W.M. Aust. 2000. Effects of forest harvesting best management practices on surface water quality in the Virginia Coastal Plain. *Transaction of the American Society of Agricultural Engineers*. 43(4): 927-936.

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James A. Parkhurst

Associate Professor of Wildlife

Wildlife Extension Specialist

B.S., Univ. of Massachusetts (1974)

M.S., Univ. of Rhode Island (1977)

Ph.D., The Pennsylvania State Univ. (1989)

<http://www.cnr.vt.edu/fisheries/wwwmain.html>

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Academic Interests:

Wildlife damage management; wetlands and wetland wildlife ecology; habitat management and manipulation

Courses Taught:

Vertebrate Pest Management (FIW 4454) ; Ecology and Management of Wetland Systems (FIW 4534) ; Program Coordinator for Virginia Coverts Project

Professional Achievements:

Certified Wildlife Biologist; The Wildlife Society; Center for Human-Wildlife Conflict Resolution (currently in development, in cooperation with the Conservation Management Institute)

Recent Activites:

My academic program is geared toward the study of a teaching about the relationships and interactions between wildlife and human populations. Specifically, I use knowledge and experience gained from such study to develop practical applications to maintain or enhance wildlife populations while, at the same time, trying to ensure that wildlife and humans can coexist in relative harmony. Obviously, this goal presents interesting challenges: how does one maintain, increase or diversify wildlife populations when confronted with an evergrowing array of complaints on human-wildlife conflicts. Certainly, these are challenges that must be met and issues our students must be prepared to deal with. The essence of my program can best be summarized by examining it as reflected through the tripartite mission of the University: outreach, teaching, and research.

Applicability of Stakeholder Theory for Designing Conservation Strategies for Watershed Management in North Mexico (1997 - 2004) (with Dr. Steve McMullin)

"In cooperation with colleagues at the University of Chihuahua, the impacts of 14 agrarian-based communities that border the Laguna de Babicora, a 200,000-ha watershed and wetland complex in west-central Chihuahua, Mexico, were examined. This laguna provides primary wintering grounds for sandhill cranes, white-fronted geese, and Mexican ducks in addition to many of the needs of these communities. A conservation and management planning protocol that promotes stakeholder involvement and accounts for improvements in agricultural practices, water use, and environmental education was developed.

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Selected Recent Publications:

Helfrich, L. A., R. J. Neves, and J. A. Parkhurst. 2003. Sustaining America's Aquatic Biodiversity: A Teacher's Guide. Virginia Cooperative Extension Publ. 420-532. 70pp.

Kays, J.S., G.R. Goff, P.J. Smallidge, W.N. Grafton, and J.A. Parkhurst, editors. 1998. Proceedings of the Natural Resources Income Opportunities on Private Lands Conference, April 5-7, 1998, Hagerstown, MD. University of Maryland Cooperative Extension Service, College Park, MD 275pp.

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ADJUNCT FACULTY

**Ralph W. Tiner
Vita**

University Address

Department of Plant, Soil, and Insect Sciences
Stockbridge Hall
University of Massachusetts
Amherst, MA 01003

Home Address

P.O. Box 612
Leverett, MA 01054

Federal Agency Address

U.S. Fish and Wildlife Service
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Education

University of Connecticut, B.A. Biology (1970)
College of Liberal Arts & Sciences
Storrs, CT

University of Connecticut, M.S. Marine Biology (1974)
Marine Science Program
Storrs, CT

Harvard University, M.P.A. Environmental Policy and Public Agency Management (1981)
Kennedy School of Government
Cambridge, MA

University of Massachusetts, Additional upper graduate level coursework
Department of Forestry and
Management, Amherst, MA

Professional Experience (Non-Federal)

- 1992-Present Adjunct Professor, Department of Plant & Soil Sciences, University of Massachusetts, Amherst, MA. Teaches courses in wetland delineation and classification, serves as advisor on graduate student committees, prepares reports on watershed assessments for restoration planning, and conducts applied research into wetland and watershed assessment. (Also teaches short courses for environmental professionals at Rutgers University and Ohio State University.)
- 1994 - 1996 Wetland Scientist, Massachusetts Wetlands Restoration & Banking Program, Executive Office of Environmental Affairs, Boston, MA. Provided scientific expertise to establish state's wetlands restoration program (a watershed-based program where potential wetland restoration sites are identified at the watershed-level and linked to possible watershed problems such as degraded water quality, floodprone areas, shoreline erosion, and fish/wildlife habitat loss/fragmentation.
- 1975 - 1977 Section Leader, Environmental Evaluations for South Carolina Wildlife and Marine Resources Department, Charleston, SC. Directed state review of state and federal permit applications for proposed construction activities in wetlands and coordinated an inventory of coastal wetlands.
- 1970 - 1975 Team Member, Tidal Wetlands Survey for the University of Connecticut, Biological Sciences Group, Storrs, CT. Mapped boundaries for regulatory purposes of the Connecticut tidal wetlands.

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Professional Experience (Federal Service)

- 1977 to Present Regional Wetland Coordinator, U.S. Fish and Wildlife Service Northeast Region, Hadley, MA. Directs the National Wetlands Inventory Program in the northeast-covering 13 states. Responsible for wetland mapping, trends analysis reporting, and conducting watershed and wetland assessments using remote sensing (aerial photo-interpretation techniques). Prepares numerous scientific reports on findings and presents results at various symposia, conferences, and workshops.

Professional Society Membership: Society of Wetland Scientists, Soil Science Society of America (past member), American Society of Photogrammetry and Remote Sensing (past member), Society of Soil Scientists of Southern New England (certified soil scientist).

Research: Four primary areas of interest: watershed assessment, soil-vegetation-hydrology interrelationships in wetlands and adjacent nonwetlands, intraspecies plant tolerances of wetness, and wetland trends analysis.

Other Notable Accomplishments: Served as wetland expert (2000-2002) on Fresh Waters Work Group by the Heinz Center for Science, Economics, and The Environment to help develop indicators for The State of the Nation's Ecosystems (2002): the first national report prepared by experts from the government, private sector, environmental organizations, and academia to produce information for decision-makers and the public on how the nation's ecosystems are changing.

Served as Associate Editor for WETLANDS - the Journal of the Society of Wetland Scientists. (2000-2002)

Publications

Books:

Tiner, R.W. (compiler). 2002. Watershed-based Wetland Planning and Evaluation: A Collection of Papers from the Wetland Millennium Event (August 6-12, 2000; Quebec City, Quebec, Canada). Association of State Wetland Managers, Berne, NY. 141 pp.

Tiner, R.W. 1999. Wetland Indicators: A Guide to Wetland Identification, Delineation, Classification, and Mapping. Lewis Publishers, CRC Press, Boca Raton, FL. 392 pp.

Tiner, R.W. 1999. In Search of Swampland: A Wetland Sourcebook and Field Guide. Rutgers University Press, New Brunswick, NJ. 264 pp.

Tiner, R.W. 1997. Winter Guide to Woody Plants of Wetlands and Their Borders: Northeastern United States. Institute for Wetland and Environmental Education and Research, Leverett, MA. 91 pp.

Tiner, R.W. 1993. Field Guide to Coastal Wetland Plants of the Southeastern United States. University of Massachusetts Press, Amherst. 328 pp.

Majumdar, S.K., F.J. Brenner, R.P. Brooks, and R.W. Tiner, Jr. (editors). 1989. Wetlands Ecology and Conservation: Emphasis in Pennsylvania. Pennsylvania Academy of Science. 395 pp.

Tiner, R.W., Jr. 1988. Field Guide to Nontidal Wetland Identification. U.S. Fish and Wildlife Service, Newton Corner, MA and Maryland Dept. of Natural Resources, Water Resources Administration, Annapolis, MD. Cooperative publication. 282 pp. + 198 color plates.

Tiner, R.W., Jr. 1987. A Field Guide to Coastal Wetland Plants of the Northeastern United States. University of Massachusetts Press, Amherst, MA. 296 pp.

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Book Chapters: (includes Encyclopedia contributions)

Tiner, R.W. 2002. Wetlands. In: R. Lal (editor). Encyclopedia of Soil Science. Marcel Dekker Publishers, Inc., New York, NY. pp. 1437-1442.

- Tiner, R.W. 1996. Technical Aspects of Wetlands: Wetland Definitions and Classifications in the United States. *In*: J. D. Fretwell, J.S. Williams, and P.J. Redman (Compilers). National Water Summary on Wetland Resources. U.S. Geological Survey, Reston, VA. Water-Supply Paper 2435. pp. 27-34.
- Short, H.L., J.B. Hestbeck, and R.W. Tiner. 1996. Chapter 16. Ecosearch: a new paradigm for evaluating the utility of wildlife habitat. *In*: R.M. DeGraff and R.I. Miller (editors). Conservation of Faunal Diversity in Forested Landscapes. Chapman & Hall, New York and London. pp. 569-594.
- Tiner, R.W. 1996. Chapter 8. Practical considerations for wetland identification and boundary delineation. *In*: G. Mulamoottil, B.G. Warner, and E.A. McBean (editors). Wetlands: Environmental Gradients, Boundaries, and Buffers. Lewis Publishers, CRC Press, Boca Raton, FL. pp. 113-137.
- Tiner, R.W. 1995. Wetland Restoration and Creation. *In*: W.A. Nierenberg (editor-in-chief). Encyclopedia of Environmental Biology. Volume 3. Academic Press, Inc., Harcourt Brace & Company, San Diego, CA. pp. 517-534.
- Tiner, R.W. 1993. Wetlands are ecotones - reality or myth *In*: B. Gopal, A. Hillbricht-Ilkowska, and R.G. Wetzel (editors). Wetlands and Ecotones: Studies on Land-Water Interactions. National Institute of Ecology and International Scientific Publications, New Delhi, India. pp. 1-15.
- Tiner, R.W. 1993. Wetland identification and delineation. *In*: M. Dennison and J. Berry (editors). Wetlands: Guide to Science, Law, and Technology, Noyes Publications, Park Ridge, NJ. pp. 153-198.
- Tiner, R.W. 1993. Problem wetlands for identification. *In*: M. Dennison and J. Berry (editors). Wetlands: Guide to Science, Law, and Technology, Noyes Publications, Park Ridge, NJ. pp. 199-212.
- Wilen, B.O. and R.W. Tiner. 1993. Wetlands of the United States. *In*: D. Whigham, D. Dykyjova, and S. Hejny (editors). Wetlands of the World: Inventory, Ecology, and Management. Volume I. Kluwer Academic Publishers, Dordrecht, Netherlands. pp. 515-636.
- Tiner, R.W., Jr. 1989. Recent trends in palustrine vegetated wetlands in the Chesapeake Bay region. *In*: Freshwater Wetlands and Wildlife. R.R. Sharitz and J.W. Gibbons (editors). U.S. Department of Energy, Office of Scientific and Technical Information, Oak Ridge, TN. DOE Symposium Series No. 61. pp. 791-800.
- Tiner, R.W., Jr. 1989. Chapter 1. Classification of wetland ecosystems. *In*: Wetlands Ecology and Conservation: Emphasis in Pennsylvania. Pennsylvania Academy of Science. pp. 9-14.

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Electronic copy available at: http://clic.cses.vt.edu/soils/Wetlands/Wetlands_VT_2007.pdf

Brooks, R.P. and R.W. Tiner, Jr. 1989. Chapter 10. Vascular plant communities in wetlands of Pennsylvania. In: Wetlands Ecology and Conservation: Emphasis in Pennsylvania. Pennsylvania Academy of Science. pp. 114-123.

Tiner, R.W., Jr. 1989. Chapter 20. Wetland boundary delineation. In: Wetlands Ecology and Conservation: Emphasis in Pennsylvania. Pennsylvania Academy of Science. pp. 231-248.

Tiner, R.W., Jr. 1989. Chapter 30. Current status and recent trends in Pennsylvania's wetlands. In: Wetland Ecology and Conservation: Emphasis in Pennsylvania. Pennsylvania Academy of Science. pp. 368-378.

Tiner, R.W., Jr. and B.O. Wilen. 1988. Chapter Twelve. Wetlands of the Delaware River Basin. In: Ecology and Restoration of the Delaware River Basin, S.K. Majumdar, E.W. Miller, and L.E. Sage (editors), Pennsylvania Academy of Science, Philadelphia, PA. pp. 186-201.

Tiner, R.W., Jr., W. Zinni, and K. Drake. 1987. Chapter 32. An Update of the U.S. Fish and Wildlife Service's National Wetlands Inventory Project. In: Atlantic White Cedar Wetlands, A.D. Laderman (editor), Westview Special Studies in Natural Resources and Energy Management, Westview Press, Inc., Boulder, CO. pp. 339-342.

List of other publications available from the author.

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Journal Articles: since 1999

Tiner, R.W. 2004. Remotely-sensed indicators for monitoring the general condition of "natural habitat" in watersheds: an application for Delaware's Nanticoke River watershed. Ecological Indicators 4 (2004): 227-243.

Tiner, R.W. 2003. Geographically isolated wetlands of the United States. Wetlands 23: 494-516.

Tiner, R.W. 2003. Estimated extent of geographically isolated wetlands in selected areas of the United States. Wetlands 23: 636-652.

Tiner, R.W. 2003. Ecological mapping in Meadowlands and the Hackensack watershed. New Jersey Flows IV(1): 4.

Tiner, R.W. 2002. Using remote sensing to assess natural habitat. In: Field Notes - The Hackensack Meadowlands Issue, December 2002. U.S. Fish and Wildlife Service, New Jersey Field Office, Pleasantville, NJ.

Tiner, R.W. 2002. Geographically isolated wetlands - highlights for New England. Association of Massachusetts Wetland Scientists Newsletter 40: 5-6.

- Tiner, R.W. 2002. Enhancing wetlands inventory data for watershed-based wetland characterizations and preliminary assessments of wetland functions. In: R.W. Tiner (compiler). Watershed-based Wetland Planning and Evaluation: A Collection of Papers from the Wetland Millennium Event (August 6-12, 2000; Quebec City, Quebec, Canada). Association of State Wetland Managers, Berne, NY. pp. 17-39.
- Tiner, R.W. 2002. Remotely-sensed natural habitat integrity indices for assessing the general ecological condition of watersheds. In: R.W. Tiner (compiler). Watershed-based Wetland Planning and Evaluation: A Collection of Papers from the Wetland Millennium Event (August 6-12, 2000; Quebec City, Quebec, Canada). Association of State Wetland Managers, Berne, NY. pp. 125-141.
- Tiner, R.W. 2000. An overview of wetland identification and delineation techniques, with recommendations for improvement. *Wetland Journal* 12(1): 15-22.
- Tiner, R.W. 1999. Restoring wetland and streamside/riparian buffers: an introduction. U.S. Fish and Wildlife Service, Ecological Services, Northeast Region, Hadley, MA. 9 pp. + attachments.

**Michael John Vepraskas
(Wetlands Related Items)**

Professor of Soil Science
North Carolina State University
Department of Soil Science
Box 7619
Raleigh, NC 27695-7619
E-Mail: michael_vepraskas@ncsu.edu

AREAS OF INTEREST: Wetland soils, saprolite, hydrology, and geochemistry

EDUCATION: B.S. Geology, University of Wisconsin-Madison, 1973.
M.S. Soil Science, University of Wisconsin-Madison, 1975.
Water Resources Management, University of Wisconsin-Madison, 1975.
Ph.D. Soil Science, Texas A & M University, 1980.

EMPLOYMENT RECORD:

1993-Present	Professor, Dept. of Soil Science, North Carolina State University.
1988_1989	Fulbright Scholar, Dept. of Soil Science and Geology, Agricultural University, Wageningen, The Netherlands.
1986_1993	Associate Professor, Dept. of Soil Science, North Carolina State University.
1980-1986	Assistant Professor, Dept. of Soil Science, North Carolina State University.

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RESEARCH PROJECTS (Since 1991)

1. Dynamics of Critical Soil Processes and Indicators of Hydric Soils in Created Wetlands. Project Leader. U.S. Army Corps of Engineers: \$100,000. 1991-1994.
2. Predicting Contaminant Transport Along Veins and Fractures Above the Water Beginning. Project Leader. Water Resources Research Institute. \$67,000. 1992-1994.
3. Preferential Movement of Water and Solute Through Soil/Saprolite Sequences. Co-Director. USDA-CSRS. \$117,000.
4. Methodology for Determining the Reducing Capacity of a Hydric Soil. Co-Director. U.S. Forest Service. \$37,000. 1992 -1994.
5. Estimating Historic Water Table Fluctuations Using Redoximorphic Features and a Hydrologic Model. EPA. \$100,000, 1995-1998.
6. Restoration of Hydrology and Water Quality Functions on Prior Converted Wetlands. Co-Principal Investigator. USDA-CSRS. \$299,358. 1994 to 1997.
7. Predicting Long-Term Wetland hydrology Using Hydric Soil Field Indicators”. Project Director. NC Water Resources Research Instit.,\$40,000. 1999-2001.
8. Methodology to Assess Soil, Hydrologic, and Site Parameters that Affect Wetland Restoration Success. Project Director. NC Dep. of Transportation, \$1,937,000. 2000-2006.
9. Wetland Restoration of North River Project. Co-Investigator. NC Wetland Restoration Program (Phase I), \$921,026. 2002-2005.
10. Assessment of Groundwater Flows at Juniper Bay and their Impact on the Surrounding Area. Co-Investigator. NC Dep. of Transportation, \$211,871. 2002-2005.
11. Evaluation of electromagnetic induction techniques to assess septic plumes and water Tablelevels in wetlands: Implications on wetland hydrology and wetland identification. Principle Investigator. US Forest Service, \$75,201. 2005-2006.
12. Phosphorus release from agricultural lands converted to wetlands. Co-investigator. NC Agric. Foundation, \$8,000. 2005-2006.
13. Soil productivity and nutrient management of mid-rotation sweetgum and sycamore SRWC plantations. Co-investigator. US Forest Service, \$81,500.

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COURSES TAUGHT:

Semester-Long Courses

1. "Principles of Soil Science", basic soils course for the 2-year Agricultural Institute, NCSU: Lectured and organized laboratories. 1981-1986, 1991.
2. "Soil Physical Properties and Crop Growth", introductory soil physics course, NCSU: 1991, 2003-2005.
3. "Soil Micromorphology", graduate level course on using the microscope to study soils, 1987.
4. "Soil Classification" undergraduate course teaching soil morphology, soil classification, and mapping techniques. Laboratory instructor 1994-present, Lecturer 1996.
5. "Wetland Soils" graduate and undergraduate course dealing with the morphology, chemistry, and hydrology of wetland soils. Taught annually since 1996.

Short-Courses

1. "Hydric Soils" An In-depth, Three-Part Short Course for Wetland Professionals", co-organizer and lecturer. A 4-day short course, taught twice each year since 1998.
2. "Advanced Hydric Soil Workshop", Sponsored by USDA-NRCS, this 5-day course is taught to personnel from the NRCS, Corps of Engineers, EPA, Forest Service, and Fish and Wildlife Service. I present lectures on redox chemistry, redoximorphic features, HGM modeling, interpreting redox and temperature data, and strategies for handling problem soils. I also lead a field exercise on installing and reading redox electrodes, wells, piezometers and thermocouples. It has been taught in: Lincoln, NE; Davis, CA; Amherst, MA; Greenville, NC; Coeur d' Alene, ID; Savannah, GA; Madison, WI (three times); Greenville, MS; Corvallis, OR, Toledo, OH, Houston, TX, Ellensburg, WA; Mt. Vernon, WA; and Nebraska City, NE.

Distance Learning

1. "Wetland Soils", a course for undergraduate and graduate students has been taught as an internet course (distance learning) since the January, 2000 semester. Students have come from the following states: NC, VA, PA, IN, WV, GA, OR, AK, and TN.
2. "Wetland Soils" and "Advanced Wetland Soils" were taught through Virginia Tech. University during the Spring semester, 2002 as distance learning courses. Twelve students were enrolled. These were listed as an official Virginia Tech courses through the Crop & Soil Environmental Sciences Dep.

GRADUATE STUDENT ADVISING:

Served as major advisor to seven M.S. students and two Ph.D. students. Committee member for 2 Ph.D. and 6 M.S. students.

UNDERGRADUATE ADVISING:

Advised over 50 students in the Agricultural Institute, and B.S. students in Conservation, Agronomy, Natural Resources, and Environmental Science.

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EDITORIAL SERVICE

1. Associate Editor, *Soil Science Society of America Journal*, Division S-5 (Pedology), 1992-1995, and Division S-10 (Wetlands), 1993-1998
2. Member of the Editorial Board (Associate Editor) of the journal *Geoderma*, published by Elsevier Scientific Publishers, Amsterdam, 1992+.
3. Associate Editor, *Wetlands*, 1999-2001.
4. Technical Editor, *Soil Science Society of America Journal*, Divisions S-5, S-9, and S-10, 1999-2005.
5. Co-Editor of the SSSA Special Publication entitled "Aquic Conditions and Hydric Soils: The Problem Soils", published in 1997
6. Co-Editor of the text entitled "Wetlands and Hydric Soils" published by Ann Arbor Press, Inc. in 2000
7. Editor for the SSSA Publication: "Guidelines for Analysis and Description of Regolith Materials" by G. Stoops, 2003

HONORS AND AWARDS:

- Elected to Gamma Sigma Delta, Phi Sigma, and Sigma Xi Honor Societies;
- Netherlands Ministry of Agriculture Fellowship (1988);
- Fulbright Scholar Award (1988) for sabbatical in the Netherlands;
- Elected President of the Soil Science Society of North Carolina, 1996.
- Received a "Certificate of Appreciation" from the USDA for work on the Field Indicators of Hydric Soils (1995).
- NCSU Agronomy Club "Outstanding Instructor Award, 1996;
- Gamma Sigma Delta's "Certificate of Merit", 1996.
- Licensed Soil Scientist in NC (No. 1012), 1996;
- Elected "Fellow" of the Soil Science Society of America, 2000.
- Elected "Fellow" of the American Society of Agronomy, 2001.
- Soil Science Applied Research Award, Soil Science Society of America, 2004.

ADJUNCT PROFESSORSHIPS:

Adjunct Professor of Geology, University of Tennessee, Knoxville, 2000-present.

Adjunct Professor of Soil Science, Virginia Tech. University, Blacksburg, VA, 2002-present.

REFEREED PUBLICATIONS: since 1996

1. Vepraskas, M.J. and S.W. Sprecher. 1997. Overview of aquic conditions and hydric soils. Chpt. 1. *In*: M.J. Vepraskas and S.W. Sprecher (eds.). *Aquic Conditions and Hydric Soils: The Problem Soils*. SSSA Spec. Pub. No. 50, SSSA and ASA, Madison, WI.
2. Vepraskas, M. J., J. L. Richardson, J. P. Tandarich, and S. J. Teets. 1999. Dynamics of hydric soil formation across of the edge of a created deep marsh. *Wetlands* 19(1):78-89.
3. Buol, S.W., A. Amoozegar, and M.J. Vepraskas. 2000. Physical, chemical, and morphological properties of some regoliths in North Carolina. *Southeastern Geology* 39(3&4):151-160.

4. Grimley, D.A. and M.J. Vepraskas. 2000. Magnetic susceptibility for use in delineating hydric soils. *Soil Sci. Soc. J.* 64:2174-2180.
5. Hayes, Jr., W. A. and M.J. Vepraskas. 2000. Morphological changes in soils produced when hydrology is altered by ditching. *Soil Sci. Soc. Am. J.* 64:1893-1904.
6. Lindbo, D.L., M. J. Vepraskas, and F.E. Rhoton. 2000. A field method for determining percent coated sand grains. *Soil Sci. Soc. Am. J.* 65:949-953.
7. Vepraskas, M.J., J.L. Richardson, J.P. Tandarich, and S.J. Teets. 2005. Dynamics of redox depletion formation under controlled flooding in created wetlands. *Wetlands* (In press).
8. He, X., M.J. Vepraskas, R.W. Skaggs, and D.L. Lindbo. 2002 Adapting a drainage model to simulate water table levels in Coastal Plain soils. *Soil Science Soc. Am. J.* 66:1722-1731.
9. He, X., M.J. Vepraskas, D.L. Lindbo, and R.W. Skaggs. 2003 A method to predict soil saturation frequency and duration from soil color. *Soil Science Soc. Am. J.* 67:961-969.
10. Vepraskas, M.J., X. He, D.L. Lindbo, and R.W. Skaggs. 2004 Predicting soil saturation frequency and duration using soil color in two toposequences. *Soil Science Soc. Am. J.* 68:1461-1469.
11. L. D. McKay, S.G. Driese, K. H. Smith, and M.J. Vepraskas. 2005. Hydrology and Pedology of saprolite formed from sedimentary rock, eastern Tennessee, U.S.A. *Geoderma* 126:27-45.
12. Vepraskas, M.J. 2005. Predicting contaminant transport along quartz veins above the water Table in a mica-schist saprolite. *Geoderma* 126: 47-57.
13. Ewing, J.M. and M.J. Vepraskas. 2005. Estimating primary and secondary subsidence in an organic soil 15, 20, and 30 years after drainage. *Wetlands* (In press).
14. Ewing, J.M., M.J. Vepraskas, and C.W. Zanner. 2005. Historical records of agricultural practices provide insight on hydrology and soils at wetland restoration sites. *Southeastern Geographer* 45(1):25-43.
15. Ewing, J.M. and M.J. Vepraskas. 2004. Chemical soil properties of a Carolina Bay wetland after 15, 20, and 30 years of drainage and agricultural production. *Wetlands* (In review)
16. Lees, B., J.M. Stucky, M.J. Vepraskas, and T.R. Wentworth. 2004. Vegetation of three reference Carolina Bays in relation to soils and hydrology. *Wetlands* (In review).
17. Vepraskas, M.J., R.L. Huffman, and G.S. Kreiser. 2005. Hydrologic models for altered landscapes. *Geoderma* (In press).
18. Szuch, R.P., J.G. White, M.J. Vepraskas, and J.M. Doolittle. 2005. Finding the Soil Surface in Ground-Penetrating Radar Profiles: the Lift Test. *Soil Survey Horizons* (In press).

19. Szuch, R.P., J.G. White, M.J. Vepraskas, and J.M. Doolittle. 2005. Application of ground penetrating radar to aid restoration planning for a drained Carolina Bay. *Wetlands* (In review).
20. Smith, H.C., M.J. Vepraskas, and W.H. Hudnall. 2005. Development of anaerobic conditions as a function of saturation, organic carbon, and temperature. *Wetlands* (In review).
21. Caldwell, P.V., A. A. Adams, C.P. Niewoehner, M.J. Vepraskas, and J.D. Gregory. 2005. Sampling device to extract intact cores in saturated organic soils. *Soil Sci. Soc. Am. J.* (In Press).

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BOOKS EDITED, BOOK CHAPTERS AND TECHNICAL BULLETINS:

1. Vepraskas, M.J. 1992. Redoximorphic features for identifying aquic conditions. *Tech. Bull.* 301, NC Agric. Res. Serv., Raleigh. Revised and reprinted 1994, 1996, 2000.
2. Vepraskas, M.J. 1994. Plant response mechanisms to soil compaction. Chap. 9. *In*: R.E. Wilkinson (ed.). *Plant Response Mechanisms to the Environment*. Marcel Dekker Publ. Co., New York.
3. Vepraskas, M.J. 1995. Predicting contaminant transport along veins and fractures in saprolite above the water Beginning. *Water Resources Res. Instit., Univ. of NC*, Report no. 296, Raleigh, NC.
4. Vepraskas, M. J. and S. W. Sprecher (eds). 1997. Aquic conditions and hydric soils: The problem soils. *SSSA Special Publication No. 50*, Soil Sci. Soc. Amer., Inc., Madison, WI.
5. Vepraskas, M.J. and S.W. Sprecher. 1997. Overview of aquic conditions and hydric soils. Chpt. 1. *In* Vepraskas, M. J. and S. W. Sprecher (eds.) *Aquic conditions and hydric soils: The problem soils*. *SSSA Spec. Pub. No. 50*, Soil Sci. Soc, Amer., Inc., Madison, WI.
6. Vepraskas, M. J. and S. W. Sprecher. 1997. Summary of problems in hydric soil evaluation. Chpt. 9. *In* M. J. Vepraskas and S. W. Sprecher (eds.) *Aquic conditions and hydric soils: The problem soils*. *SSSA Spec. Pub. No. 50*, Soil Sci. Soc, Amer., Inc., Madison, WI.
7. Richardson, J. L. and M. J. Vepraskas (eds.) 2000. *Wetland Soils: genesis, hydrology, landscapes, and classification*. Lewis Scientific Publ., Boca Raton, FL.
8. Vepraskas, M.J. and S.P. Faulkner. 2000. Redox chemistry of hydric soils. *In* J.L. Richardson and M. J. Vepraskas (eds.) 2000. *Wetland Soils*. CRC Press, Boca Raton, FL.
9. Vepraskas, M.J. 2000. Morphological features of seasonally reduced soils. *In* J.L. Richardson and M. J. Vepraskas (eds.) 2000. *Wetland Soils*. CRC Press, Boca Raton, FL

10. Watts, F.C., S.W. Sprecher, and M.J. Vepraskas. 2000. Formation of hydric soils and redoximorphic features. In V.W. Carlisle and G.W. Hurt (eds.) Hydric Soils of Florida Handbook, 3rd ed. Florida Assoc. Environ. Soil Scientists, Gainesville, FL.
11. Vepraskas, M.J., X.He, D.L. Lindbo, and R.W. Skaggs. 2002. Predicting Long-term wetland hydrology from hydric soil field indicators. Water Resources Res. Instit., Univ. of NC, Report no. XXX, Raleigh, NC.

TEACHING MANUALS:

1. Vepraskas, M. J. 1989. Introduction to soil micromorphology. Part 1 of the European Training course on Soil Micromorphology. Agricultural University, Wageningen, Netherlands.
2. Vepraskas, M.J. (Ed.). 1992. Part I. Introduction to Soil Micromorphology. Second Inter. Intensive Course on Soil Micromorphology. Wageningen Agric. Univ., The Netherlands.

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James E. Perry, III
Professor of Marine Science
B.S., Murray State University
Ph.D., College of William & Mary
Email: jperry@vims.edu
Phone: (804) 684-7388

1. Research Interests

Dr. Perry's primary research interests involve monitoring stress and long-term changes in vascular plant communities of tidal and non-tidal wetlands, and the relationship of those changes to changes in environmental parameters within watersheds. He is also involved in two international projects designed to examine the role of environmental conservation and sustainable development in several developing countries. The goals of the latter projects are to provide recommendations and guidelines for the establishment of environmental and development regulations and policies to the nations involved. The results of each are to be presented at pre-planned international symposia to be held in the sponsoring nations.

2. Current Projects

- Establishing methods for determining status of watersheds and the success of created and restored habitats;
- Ecological assessment of the status of existing natural resource impacts from off-road vehicles use of Cape Hatteras National Seashore;
- Vegetation dynamics and/or ecosystem stress (including role of invasive plant species on native habitat) in tidal wetlands;
- Life history, distribution and abundance, and threats to rare and/or endangered vascular plants.

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3. Selected Publications

Wetlands Research – since 1996

Selected refereed journal articles and refereed conference proceedings:

- Anderson, J.E. and **J.E. Perry**. 1996. Characterization of wetland plant stress using leaf spectral reflectance: an issue for wetland remote sensing. *Wetlands* 16(4):477-487. ([read the article](#))
- Atkinson, R.B., **J.E. Perry**, and J. Cairns, Jr. 2005. Stability in developing wetlands: vegetation response to drought in 20 year old wetlands. *J. of Wetlands Ecology and Management*. ([read the article](#))
- Atkinson, R.B., **J.E. Perry**, E. Smith, and J. Cairns, Jr. 1993. Use of created wetland delineation and weighted averages as a component of assessment. *Wetlands* 13(3):185-193. ([read the article](#))
- Atkinson, R.B., N.L. Botkin, and **J.E. Perry**. 1990. New county records collected in tidal wetlands of four coastal plain counties along the James River, Virginia. *Castanea* 55(1):56-64. ([read the article](#))
- DeBerry D.A. and **J.E. Perry**. In press (December, 2005). Obligate Draw Down Flora in Virginia. *Castanea*. ([read the article](#))
- DeBerry, D.A. and **J.E. Perry**. 2004. Comparison of early successional plant structure and composition in a created and natural non-tidal wetland. *Castanea* 69(3): 185-193. ([read the article](#))
- Friedrichs, C.T. and **J.E. Perry**. 2001. Tidal salt marsh morphodynamics. *Journal of Coastal Research Special Issue 27*: 7-38. ([read the article](#))
- Gottgens, J.F., **J.E. Perry**, R.H. Fortney, J.E. Meyers, M. Benedict, and B.E. Rood. (2001). The Parana-Paraguay Hidrovia: protecting the Pantanal with lessons from the past. *BioScience* 51(4):559-570. ([read the article](#))
- **Perry, J.E.** and R.B. Atkinson. 1997. Plant diversity along a salinity gradient: York and Pamunkey Rivers, Virginia. *Castanea* 62(2):112-118. ([read the article](#))
- **Perry, J.E.**, T. Barnard, J. Bradshaw, C. Friedrichs, K. Havens, P. Mason, W. Priest, and G. Silberhorn. 2001. Creating tidal salt marshes in the Chesapeake Bay. *Journal of Coastal Research Special Issue 27*: 170-192. ([read the article](#))
- **Perry, J.E.** and C.H. Hershner. 1999. Temporal changes in the vegetation pattern in a tidal freshwater marsh. *Wetlands* 19(1):90-99. ([read the article](#))
- **Perry, J.E.**, D.M.E. Ware, and A.M. Mueller. (1998). *Aeschynomene indica* L. (Fabaceae) in Virginia. *Castanea* 63(2):191-194. ([read the article](#))
- Slocum, K.R. and **J.E. Perry**. 2002. Remote coastal zone landscape characterization. *Proceedings of the Seventh International Conference: Remote Sensing for Marine and Coastal Environments*. Miami, FL, USA. ([read the article](#))
- Slocum, K. R., G. Wakefield, R. L. Fischer, M.V. Campbell, J.E. Anderson and **J.E. Perry**. 1999. Application of digital multispectral imagery to littoral zone soil and elevation modeling. *Third International Conference: Remote Sensing for Marine and Coastal Environments*. Miami, FL, USA. ([read the article](#))
- Spencer, D., **J.E. Perry** and G. Silberhorn. (2001). Clear-cut bottomland hardwood forests as reference sites for monitoring of created and restored wetlands. *Environmental Management* 27(4):301-312. ([read the article](#))

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Book sections:

- Perry, J.E. 2003. Invasive Species: the case of *Phragmites australis*. In: G.C. Ray and J. McCormick-Ray, Coastal-Marine Conservation: Science and Policy. Blackwell Science, UK. ([read the article](#))
- Perry, J.E. 2003. The Paraguay Paraná Hidrovía: Protecting the Pantanal. In: G.C. Ray and J. McCormick-Ray, Coastal-Marine Conservation: Science and Policy. Blackwell Science, UK. ([read the article](#))
- **Perry, J.E.** 2003. Tidal wetlands of the Chesapeake Bay. In: G.C. Ray and J. McCormick-Ray, Coastal-Marine Conservation: Science and Policy. Blackwell Science, UK. ([read the article](#))

Selected Technical Reports:

- DeBerry, D.A and **J.E. Perry**. 2000. An introduction to wetland seed banks. Wetlands Program Technical Report No. 00-2. College of William and Mary, Virginia Institute of Marine Science, Gloucester Point, VA, USA. ([read the article](#))
- DeBerry, D.A and **J.E. Perry**. 2000. Wetland seed banks: research in natural and created wetlands. Wetlands Program Technical Report No. 00-4. College of William and Mary, Virginia Institute of Marine Science, Gloucester Point, VA, USA. ([read the article](#))
- Goldberg, J., **J.E. Perry**, and J. Anderson. 1999. Remote sensing of natural areas: procedures and considerations for assessing vegetation composition change, land development, and erosion. Wetlands Program Technical Report No. 99-8. College of William and Mary, Virginia Institute of Marine Science, Gloucester Point, VA, USA. ([read the article](#))
- Goldberg, J., **J.E. Perry**, and J. Anderson. 1999. Remote sensing of natural areas: procedures and considerations for assessing stress and pollution. Wetlands Program Technical Report No. 99-6. College of William and Mary, Virginia Institute of Marine Science, Gloucester Point, VA, USA. ([read the article](#))
- Fagan, S.L. and **J.E. Perry**. 1998. United States v. Wilson: Muddy Waters in the Search for Wetlands Protection, Virginia Wetlands Newsletter, 13(3). College of William and Mary, Virginia Institute of Marine Science, Gloucester Point, VA, USA. ([read the article](#))
- Gottgens, J.F., R.H. Fortney, J.E. Meyers, **J.E. Perry**, and B.E. Rood. 1998. The Parana-Paraguay Waterway (Hidrovia) and its impact on the Pantanal of Brazil. Society of Wetlands Scientists Bulletin 15(3):12-19. ([read the article](#))
- Norris, L., **J.E. Perry** and K. Havens. 2002. A summary of methods for controlling *Phragmites australis*. TR-02-2. Virginia Institute of Marine Science, Gloucester Point, Virginia, USA. ([read the article](#))
- **Perry, J.E.** 2003. SWS Code of Ethics and the Professional Wetland Scientist. Society of Wetland Scientists Bulletin 20(2):19-23. ([read the article](#))
- **Perry, J.E.**, J.E. Anderson, and A.F. Theisen. 1998. An introduction to stressed habitats. Virginia Wetlands Newsletter, 13(2). College of William and Mary, Virginia Institute of Marine Science, Gloucester Point, VA, USA. ([read the article](#))
- **Perry, J.E.** 1997. Natural Heritage Resources Fact Sheet: Tidal Freshwater Marshes. Dept. Conservation & Recreation, Richmond, VA, USA. ([read the article](#))
- **Perry, J.E.**, J.G. Bradshaw, and K.J. Havens. 1992. Field Testing the Proposed Federal Wetlands Delineation Manual. TR-92-2. . Virginia Institute of Marine Science, Gloucester Point, VA, USA. ([read the article](#))

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4. Current Students

- David Bailey, MS 2007
- Douglas DeBerry, PhD 2007
- Azure Bevington, MS 2008

5. Past Students

- Davies, Sarah M.S. (2004) Thesis title: Temporal Changes in Vegetation Patterns at Sweet Hall Marsh, Chesapeake Bay National Estuarine Research Reserve, Virginia.
- Landry, Cynthia M.S.(2004) Thesis title: Assessing the Impacts of Off-road Vehicle Use on Populations of Ghost Crabs (*Ocypode quadrata*) at Cape Hatteras National Seashore, North Carolina.
- Roggero, Molly M.S. (2003) Thesis title: Ecosystem gas exchange in natural and created tidal salt marshes of Tidewater, Virginia.
- Wu-Stanhope, Jennifer M.S. (2003) Thesis title: Relationships between watershed characteristics and base flow nutrient discharges to eastern shore coastal lagoons, Virginia.
- Campana, Michael, M.S. (1999). Thesis title: The effect of common reed (*Phragmites australis*) invasion on nutrient flux, sedimentation, and plant species diversity in a tidal freshwater marsh.
- Goldberg Jason, M.S. (2000). Thesis title: Comparing remote sensing to traditional approaches of monitoring wetland vegetation in a tidal mitigation bank.
- Laird, Rosemary, M.S. (2001). Thesis title: Spatial and temporal variation in plant communities of three tidal salt marshes along the York River, Virginia.
- McKenney-Mueller, Amanda, M.S. (1998). Thesis title: Small mammal habitat use of two natural and two created wetlands in southeastern Virginia.
- Meyer Jill E., M.S. (2000). Thesis title: Accuracy of bottomland hardwood boundary delineations based on multispectral video images.
- Mountz, Elizabeth, M.S. (2002). Thesis title: Use of remote sensing to identify essential habitat for *Aeschynomene virginica* (L.) BSP, a threatened freshwater wetland plant.
- Slocum, Kevin, Ph.D. (2002). Thesis title: Coastal zone landscape classification using remote sensing and model development.
- Spencer, David, M.S. (1999). Thesis title: Early secondary succession in the bottomland hardwood forests of southeastern Virginia.

6. Courses Taught/Teaching

- MS 580/Enst 440-02 Asian Environmental Issues
- MS 527 Coastal Botany
- MS 579 Wetlands Ecology (w/ C. Hershner)

7. Faculty/Student Awards

- NOAA/NERRS Graduate Research Fellowship (Davies, 2003-2005)
- Knauss Fellowship (Mountz, 2001; Goldberg and Meyer, 2000)
- Virginia Space Grant Scholarship (Mountz, 2000)
- Society of Wetland Scientist Scholarship (Meyer, 1999)

8. Professional Memberships

- American Institute of Biological Sciences
- Appalachian Botanical Society
- Ecological Society of America
- Estuarine Research Association
- Society of Wetland Scientists

9. Collaborative/Interdisciplinary Efforts

- Establishment of a wetland research program in the Palaeocoastal Reserve, Tianjin, China (w/NOAA, Tianjin Univ.).
- Ecological processes in restored habitat for the Chinese alligator, Chongming Island, China (Wildlife Conservation Service).

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Tess M. Wynn

Assistant Professor

302 Seitz Hall, Blacksburg, VA 24061

Phone: 540-231-2454 Email: tesswynn@vt.edu

Area of Interest:

Stream and wetland restoration, watershed management, hydrology, low impact development

Degrees Obtained:

Ph.D. 2004 - Biological Systems Engineering, Virginia Tech.

M.S. 1995 - Civil Engineering, North Carolina State University.

B.S. 1992 - Agricultural Engineering, Virginia Tech.

Refereed Publications

Wynn, T.M. and S. Mostaghimi. 2005. The effects of vegetation and soil type on streambank erosion, southwestern Virginia, USA. *Journal of the American Water Resources Association*. (in press).

Wynn, T.M., S. Mostaghimi, J. Burger, A. Harpold, M. Henderson, and L.-A. Henry. 2004. Variation in root density along stream banks. *Journal of Environmental Quality*. 33: 2030-2039.

Wynn, T.M. and S. Mostaghimi. 2004. Effects of riparian vegetation on stream bank subaerial processes in southwestern Virginia, USA. *Earth Surface Processes and Landforms* (in press).

Lee, E.R., S. Mostaghimi and T.M. Wynn. 2002. A Model to Enhance Wetland Design and Optimize Nonpoint Source Pollution Control. *J AWRA* 38 (1): 17-32.

Wynn, T.M. and S.K. Liehr. 2001. Development of a constructed subsurface flow wetland simulation model. *Journal of Ecological Engineering*. 16:519-536.

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Electronic copy available at: http://clic.cses.vt.edu/soils/Wetlands/Wetlands_VT_2007.pdf

Wynn, T.M., S. Mostaghimi, J.W. Frazee, P.W. McClellan, R.M. Shaffer, and W.M. Aust. 2000. Effects of Forest Harvesting Best Management Practices on Surface Water Quality in the Virginia Coastal Plain. *Transactions of the ASAE* 43(4): 927-936.

Mostaghimi, S., T. M. Gidley (Wynn, T.M.), and R. A. Cooke. 1994. Different approaches for controlling sediment. *Journal of Soil and Water Conservation*. 49(6):615-621.

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Conference Proceedings

Wynn, T.M., S. Mostaghimi, J. Burger, A. Harpold, M. Henderson, and L.-A. Henry. 2003. Variation in root density along stream banks. Bizier, P. and P. DeBarry, eds. *ASCE World Water and Environmental Resources Congress 2003*. Philadelphia, PA. June 23-26, 2003.

Wynn, T.M., P. Burdette, and M. Seibert. 1997. The Monocacy River Watershed Water Quality Demonstration Project: A commitment to water quality. *Proceedings of the National Watershed Water Quality Symposium*. Washington, DC, December 1997. US EPA 625/R-97/008.

Wynn, T.M. and S.K. Liehr. 1996. Evaluation of a constructed subsurface flow wetland simulation model. *WEFTEC '96: Proceedings of the 69th Annual Conference and Exposition of the Water Environment Federation*. Dallas, TX. October 5-9, 1996.

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Robert H. Jones

Head, Department of Biological Sciences (0406)

Virginia Tech, Blacksburg, VA 24061

540-231-9514

rhjones@vt.edu

Current Research Interests:

- Population dynamics of tree seedlings in forest understories
- Nutrient foraging and root competition in early successional forests
- Restoration of upland hardwood communities in the southeastern US coastal plain.

Courses Taught:

- [BIOL 2804](#) Ecology: Undergraduate, 3 credits, no lab
- [BIOL 5024](#) Population & Community Ecology: Graduate, 4 credits, lab
- BIOL 4314 Plant Ecology: Undergrad/Grad, 4 credits, writing intensive

Education:

- Ph.D. Forest Ecology - SUNY-ESF Syracuse, 1986
- M.S. Forestry - Clemson University, 1981
- B.S. Forest Management - Clemson University, 1979

Current Graduate Students:

- Travis Belote
- Matt Dittler
- Verl Emrick

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Publications – since 1996

Neatrour, M.A., R.H. Jones, and S.W. Golladay. 2005. Correlations between soil nutrient availability and fine root biomass at two spatial scales in forested wetlands with contrasting hydrological regimes (in press)

Jones, R.H., S.L. Stokes, B.G. Lockaby and J.A. Stanturf. 2001. Vegetation responses to helicopter and ground based logging in blackwater floodplain forests. *Forest Ecology and Management* 139:215-226.

Jones, R.H., K.O. Henson and G.L. Somers. 2000. Spatial, seasonal, and annual variation of fine root mass in a forested wetland. *Journal of the Torrey Botanical Society* 127: 107-114.

Jones, R.H. and R.R. Sharitz. 1998. Woody plant seedling survival patterns in floodplain forest understories. *Journal of Ecology* 86: 574-587.

Jones, R.H., B.P. Allen and R.R. Sharitz. 1997. Why do early-emerging tree seedlings have survival advantages : a test using *Acer rubrum* (Aceraceae). *American Journal of Botany* 84: 1714-1718.

Pederson, N. P., R.H. Jones and R.R. Sharitz. 1997. Age structure and possible origin of old *Pinus taeda* stands in a floodplain forest. *Bulletin of the Torrey Botanical Society* 124: 111-123.

Lockaby, B.G., R.H. Jones, R.G. Clawson, S. Meadows, J. Stanturf, and F.C. Thornton. 1997. Influences of harvesting on functions of floodplain forests associated with low-order, blackwater streams. *Forest Ecology and Management* 90: 217-224.

Clawson, R.G., B.G. Lockaby and R.H. Jones. 1997. Amphibian responses to helicopter harvesting in forested floodplains of low order, blackwater streams. *Forest Ecology and Management* 90: 225-235.

Mou, P., R.J. Mitchell and R.H. Jones. 1997. Root distribution of two tree species under a heterogeneous nutrient environment. *Journal of Applied Ecology* 34: 645-656

Jones, R.H. 1997. Status and habitat of big trees in Congaree Swamp National Monument. *Castanea* 62: 22-31.

Jones, R.H., B.G. Lockaby and G.L. Somers. 1996. Effects of microtopography and disturbance on fine-root dynamics in wetland forests of low-order stream floodplains. *American Midland Naturalist* 136: 57-71.

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Stephen H. Schoenholtz

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Blacksburg, VA 24061
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Office: (540) 231-0711

EDUCATION

Virginia Polytechnic Institute and State University
Virginia Polytechnic Institute and State University
The Pennsylvania State University
The Pennsylvania State University

Ph.D. Forest Soils, May 1990
M.S. Forest Biology, March 1983
B.S. with Distinction Forest Science, May 1979
B.S. with Distinction Biology, May 1979

Research Interests & Activity

Forest management impacts on water and soil quality, restoration of degraded ecosystems, ecology and management of forested wetlands and riparian zones, biogeochemistry, criteria and indicators of sustainable forest management

PROFESSIONAL EXPERIENCE

Oregon State University, Corvallis, Oregon
Department of Forest Engineering
Position: *Professor*, July 2005 to present
Associate Professor, September 2001 to June 2005
Department of Crop and Soil Science
Position: *Adjunct Professor*, July 2005 to present
Adjunct Associate Professor, June 2003 to June 2005

Mississippi State University, Mississippi State, Mississippi
Department of Forestry
Position: *Adjunct Professor*, January 2002 to Present
Professor, July 2000 to December 2001
Associate Professor, July 1995 to June 2000
Assistant Professor, October 1990 to June 1995
Mississippi Water Resources Research Institute
Position: *Director*, January 2001 to August 2001

New Zealand Forest Research Institute, Rotorua, New Zealand
Soil and Site Productivity Research Group
Position: *Visiting Senior Research Fellow*, January 1998 to July 1998

GRADUATE STUDENTS SUPERVISED

Completed: 18 M.S., 2 Ph.D.

Electronic copy available at: http://clic.cses.vt.edu/soils/Wetlands/Wetlands_VT_2007.pdf

Current: 6 M.S., 3 Ph.D.

Courses (at Virginia Tech) – One graduate level course to be developed.

Selected Recent Publications

GRADUATE STUDENTS SUPERVISED

Completed: 18 M.S., 2 Ph.D.

Current: 6 M.S., 3 Ph.D.

GRANTSMANSHIP

Received over \$3,300,000 of research support through grants and contracts.

SELECTED REFEREED PUBLICATIONS

Dewey, J.C., S.H. Schoenholtz, J.P. Shepard, and M.G. Messina. Issues related to wetland delineation of a Texas bottomland hardwood forest. *Wetlands*. In press.

Burkett, V., R. Draugelis-Dale, H. Williams, and S. Schoenholtz. 2005. Effects of flooding regime and seedling treatment on early survival and growth of Nuttall oak. *Restoration Ecology* 13 (3):471-479.

Hayes, J.P., S.H. Schoenholtz, M. Hartley, G. Murphy, R.F. Powers, D. Berg, and S.R. Radosevich. 2005. Environmental consequences of intensively managed forest plantations in the Pacific Northwest. *Journal of Forestry* 103 (2):83-87.

Schoenholtz, S.H., J.A. Stanturf, J.A. Allen, and C.J. Schweitzer. 2005. Afforestation of agricultural lands in the Lower Mississippi Alluvial Valley: The state of our understanding. pp. 413-432. In L.H. Fredrickson, S.L. King, and R. M. Kaminski, eds. [Ecology and Management of Bottomland Hardwood Systems: The State of our Understanding](#). University of Missouri-Columbia. Gaylord Memorial Laboratory Special Publication No. 10. Puxico, MO.

Smiley, P. C. Jr., E. D. Dibble, and S. H. Schoenholtz. 2005. Fishes of first-order streams in north-central Mississippi. *Southeastern Naturalist*. 4(2):219-236.

Carroll, G.D., S.H. Schoenholtz, B.W. Young, and E.D. Dibble. 2004. Effectiveness of forestry streamside management zones in the Sand-Clay Hills of Mississippi: Early indications. *Water Air Soil Pollution: Focus* 4:275-296.

Schoenholtz, S.H. 2004. Impacts of forest management on water quality. pp. 377-388 in Burley, J., J. Evans, and J. Youngquist, eds. *Encyclopedia of Forest Sciences*. Elsevier Ltd., Oxford, U.K.

Schoenholtz, S.H., J.A. Stanturf, J.A. Allen, and C.J. Schweitzer. In press. Reforestation of agricultural lands in the Lower Mississippi Alluvial Valley: The state of our understanding. pp.

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xx. in Fredrickson, L. H., R. M. Kaminski, and S. L. King, eds. Ecology and Management of Bottomland Hardwood Systems: The State of our Understanding. Bottomland Hardwood System Symposium Steering Committee and University of Missouri-Columbia, Gaylord Memorial Laboratory, Puxico.

Stanturf, J., E. Gardiner, and S. Schoenholtz. 2003. Interplanting for bioenergy and riparian restoration in the southeastern United States. In Nicholas, Ian D., compiler. Proc. Short Rotation Woody Crops for Bioenergy. International Energy Agency Task 30 Conferences, 1-5 December 2003, Tauranga, New Zealand. Pp. 241-249.

Ice, G.G., and S.H. Schoenholtz. 2003. Understanding how extremes influence water quality: Experience from forest watersheds. Hydrological Science and Technology 19(1-4):99-107.

Schoenholtz, S.H. J.A. James, R.K. Kaminski, B.D. Leopold, and A.W. Ezell. 2001. Afforestation of bottomland hardwoods in the Lower Mississippi Alluvial Valley: Status and trends. Wetlands. 21:602-613.

Stanturf, J.A., S.H. Schoenholtz, C.A. Schweitzer, and J.P. Shepard. 2001. Achieving restoration success: myths in bottomland hardwood forests. Restoration Ecology. 9:189-210.

Schoenholtz, S.H., H. Van Miegroet, and J.A. Burger. 2000. A review of physical and chemical properties as indicators of forest soil quality: challenges and opportunities. Forest Ecology and Management. 138:335-356.

Smith, C.T., A.T. Lowe, M.F. Skinner, P.N. Beets, S.H. Schoenholtz, and S. Fang. 2000. Response of radiata pine forests to residue management and fertilization across a fertility gradient in New Zealand. Forest Ecology and Management. 138:203-223..

Lockaby, B.G., C.C. Trettin, and S.H. Schoenholtz. 1999. Effects of silvicultural activities on wetland biogeochemistry. Journal of Environmental Quality. 28(6): 1687-1698.

Londo, A.J., M.G. Messina, and S.H. Schoenholtz. 1999. Harvesting effects on soil carbon content and efflux in an East Texas bottomland. Soil Science Society of America Journal. 63:637-644.

Keim, R.F., and S.H. Schoenholtz. 1999. Functions and effectiveness of silvicultural streamside management zones in loessial bluff forests. Forest Ecology and Management. 118:197-210.

Stanturf, J.A., and S.H. Schoenholtz. 1998. Soils and Landforms. pp. 123-147. In Southern Forested Wetlands: Ecology and Management, M.G. Messina and W.H. Conner (eds.) CRC Press-Lewis Publishers, Boca Raton, FL.

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Area of Interest:

Fluvial Forms & Processes, Fluvial Morphology and Aquatic Ecosystem Linkages, Watershed Hydrology, Stream Restoration, Hydrologic/Water Quality Modeling, Uncertainty Analysis

Degrees Obtained:

Ph.D. 1995 - Biosystems Engineering, Oklahoma State University.
M.S. 1988 - Agricultural Engineering, Virginia Tech.
B.S. 1984 - Agricultural Engineering, Virginia Tech.

Refereed Publications

Sullivan, S.M.P., Watzin, M.C., and W.C. Hession. 2005. The belted kingfisher: assessing relationships between river geomorphology and biotic condition. *Ecological Applications* (accepted with revision, resubmitted).

DeWolfe, M.N., W.C. Hession, and M. Watzin. 2005. Streambank erosion: quantification and management in the Lake Champlain Basin, Vermont. *Journal of the American Water Resources Association* (accepted with revision, in progress).

Cianfrani, C., W.C. Hession, and D.M. Rizzo. 2005. Watershed imperviousness impacts on channel morphology: a multivariate statistical analysis. *Journal of the American Water Resources Association* (accepted with revision, in progress).

Hession, W.C., C. Cianfrani, and C.E. Goulden. 2005. Land cover mapping of Hovsgol National Park. *The Geology, Biodiversity and Ecology of Lake Hovsgol (Mongolia)*, Goulden, Sitnikova, Gelhaus, Boldgiv (eds.) (in press).

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Hession, W.C., M. McBride, and M. Bennett. 2000. A statewide nonpoint source pollution assessment methodology. *Journal of Water Resources Planning and Management (ASCE)* 126(3), 146-155.

Pizzuto, J.E., W.C. Hession, and M. McBride. 2000. Comparing gravel-bed rivers in paired urban and rural catchments of southeastern Pennsylvania. *Geology* 28, 79-82.

Hession, W.C., T.E. Johnson, D.F. Charles, D.D. Hart, R.J. Horwitz, D.A. Kreeger, J.E. Pizzuto, D.J. Velinsky, J.D. Newbold, C. Cianfrani, T. Clason, A.M. Compton, N. Coulter, L. Fuselier, B.D. Marshall, and J. Reed. 2000. Ecological benefits of riparian reforestation in urban watersheds: study design and preliminary results. *Environmental Monitoring and Assessment*, 63(1), 211-222.

Hession, W.C., D.E. Storm, C.T. Haan, S.L. Burks, and M.D. Matlock. 1996. A watershed-level ecological risk assessment methodology. *Water Resources Bulletin* 32(5), 1039-1054.

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Conference Proceedings

DeWolfe, M.N., W.C. Hession, and M.C. Watzin . 2004. Sediment and phosphorus loads from streambank erosion in Vermont, USA. in *Critical Transitions in Water and Environmental Resources Management*, G. Sehlke, D.F. Hayes, and D.K. Stevens (eds.), American Society of Civil Engineers, Reston, VA.

Hession, W.C., T.E. Johnson, D.F. Charles, R.J. Horwitz, D.A. Kreeger, B.D. Marshall, J.E. Pizzuto, and D.J. Velinsky. 2003. Ecological benefits of riparian reforestation in urban watersheds. in *Protection and Restoration of Urban and Rural Streams*, Clar, Carpenter, Gracie, and Slate (eds.), American Society of Civil Engineers, Reston, VA. (373-382).

Hession, W.C., M. McBride, J.E. Parsons, and K.H. Reckhow. 2001. Evaluation of the Water Quality Model EUTROMOD. in *Agricultural Non-point Source Water Quality Models: Their Use and Application*, Parsons, Thomas, Huffman (eds.), Southern Coop. Ser. Bul. no. 398. 200 pp. Download: [[Publication: PDF format](#)]

Hession, W.C . 2001. Riparian forest and urban hydrology influences on stream channel morphology: implications for restoration. in *Proceedings of the World Water and Environmental Resources Congress*, Phelps and Sehlke (eds.), American Society of Civil Engineers, Reston, VA. (cd-rom).

Hession, W.C. 1995. Using EUTROMOD with a GIS for establishing total maximum daily loads to Wister Lake, Oklahoma. in *Animal Waste and the Land-Water Interface*, Steele (ed.), Lewis Publishers, Boca Raton, LA. (215-222).

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Area of Interest:

Surface and groundwater water quality, Watershed management

Degrees Obtained:

Ph.D. 1995 - Agricultural Engineering, University of Tennessee.

M.S. 1990 - Agricultural Engineering, Texas A & M.

B.S. 1986 - Agricultural Engineering, Texas A & M.

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Refereed Publications

Kim, S.M., S.W. Park, T.I. Jang, B.L. Benham. 2006. Analysis of Wastewater Reuse Effects on Nutrient Loads from Paddy Field. *Journal of Environmental Science and Health, Part B-Pesticides, Food Contaminants, and Agricultural Wastes*. (in press).

Benham, B.L., J.H. Cunningham, K.M. Brannan, S. Mostaghimi, T.A. Dillaha, J. Pease and E.P. Smith. 2005. Development of Survey-like Assessment Tools to Assess Agricultural Best Management Practice Performance Potential. *Journal of Soil and Water Conservation*. 60(5): 251-259.

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Zeckoski, R.W., S. Mostaghimi, B. Benham, K. Brannan, T. Dillaha, C. Heatwole, S. Shah, R. Wagner, M.L. Wolfe, J. Wynn, and G. Yagow. 2003. A Program for Generating Fecal Coliform Inputs to HSPF. Proceedings of Total Maximum Daily Load (TMDL) Environmental Regulations II. Albuquerque, NM. Nov. 8-12, 2003. ASAE, St. Joseph, MI. 557 pp.

Benham, B.L., J. Blumenthal, R.B. Ferguson, G.W. Hergert, W.L. Kranz, C.A. Shapiro, W.B. Stevens, and C.D. Yonts. 2000. Crop response and nitrogen availability as a function of climate, variable-rate nitrogen application and every- and alternate- furrow irrigation.. Proceedings of the 4th Decennial National Irrigation Symposium. Ed. R.G. Evans, B.L. Benham, and T.P. Trooien, 501-522. ASAE, St. Joseph, MI.

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Benham, B.L. and C.R. Mote. 1995. Treating livestock waste with laboratory-scale constructed wetlands.. In: Versatility of Wetlands in the Agricultural Landscape: Proceedings of the International Symposium. Ed. K.L. Campbel, 635-646. ASAE, St. Joseph, MI.

- Books/Chapters

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Major Fields of Interest: Stream Ecology, Ecosystem Ecology, Ecological Modeling

Current Research:

1. Organic matter dynamics in streams
2. Nitrogen and phosphorus in streams
3. Stream ecosystem response to disturbance
4. River - floodplain interaction

Publications: ([Many of these publications are available in pdf format on the Coweeta web site](#))

Mulholland, P.J., E.R. Marzolf, J.R. Webster, D.R. Hart, and S.P. Hendricks. 1997. Evidence that hyporheic zones increase heterotrophic metabolism and phosphorus uptake in forested streams. *Limnology and Oceanography* 42:443-451.

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Wallace, J.B., S.L. Eggert, J.L. Meyer, J.R. Webster. 1997. Multiple trophic levels of a forest stream linked to terrestrial litter inputs. *Science* 277:102-104

Tank, J.L., J.R. Webster, E.F. Benfield, and R.L. Sinsabaugh. 1998. The effect of leaf litter exclusion on microbial enzyme activity associated with wood biofilms in streams. *Journal of the North American Benthological Society* 17:95-103

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- Wallace, J.B., S.L. Eggert, J.L. Meyer, J.R. Webster. 1999. Effects of resource limitation on a detrital-based ecosystem. *Ecological Monographs* 69:409-442.
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- Mulholland, P.J., J.L. Tank, D.M. Sanzone, W. Wollheim, B.J. Peterson, J.R. Webster, and J.L. Meyer. 2000. Nitrogen cycling in a forest stream determined by a ^{15}N tracer addition. *Ecological Monographs* 70:471-493.
- Meyer, J.L., C. Hax, J.B. Wallace, S.L. Eggert, and J.R. Webster. 2000. Terrestrial litter inputs as determinants of food quality of organic matter in a forest stream. *Verh. Internat. Verein. Limnol.* 27:1346-1350.
- Wallace, J.B., S.L. Eggert, J.R. Webster, and J.L. Meyer. 2000. Assessment of small woody debris dynamics in a headwater stream. *Verh. Internat. Verein. Limnol.* 27:1361-1365.
- Webster, J.R., J.L. Tank, J.B. Wallace, J.L. Meyer, S.L. Eggert, T.P. Ehrman, B.R. Ward, B.L. Bennett, P.F. Wagner, and M.E. McTammany. 2000. Effects of litter exclusion and wood removal on phosphorus and nitrogen retention in a forest stream. *Verh. Internat. Verein. Limnol.* 27:1337-1340.
- Benfield, E.F., J.R. Webster, J.J. Hutchens, J.L. Tank, and P.A. Turner. 2000. Organic matter dynamics along a stream-order and elevational gradient in a southern Appalachian stream. *Verh. Internat. Verein. Limnol.* 27:1341-1345.
- Mulholland, P.J., J.L. Tank, D.M. Sanzone, J.R. Webster, W. Wollheim, B.J. Peterson, and J.L. Meyer. 2000. Ammonium and nitrate uptake lengths in a small forested stream determined by ^{15}N tracer and short-term nutrient enrichment experiments. *Verh. Internat. Verein. Limnol.* 27:1320-1325.
- Peterson, B.J., W. Wollheim, P.J. Mulholland, J.R. Webster, J.L. Meyer, J.L. Tank, Marti, E., W.B. Bowden, H.M. Valett, A.E. Hershey, W.H. McDowell, W.K. Dodds, S.K. Hamilton, S.V. Gregory, and D.D. Morrall. 2001. Control of nitrogen export from watersheds by headwater streams. *Science* 292:86-90. [Return to Beginning](#)

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- Benfield, E.F., J.R. Webster, J.L. Tank, and J.J. Hutchens. 2001. Long-term patterns in leaf breakdown in streams in response to watershed logging. *International Review of Hydrobiology* 86:467-474.
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- Martin, L.A., P.J. Mulholland, J.R. Webster, and H.M. Valett. 2001. Denitrification potential in sediments of headwater streams in the southern Appalachian Mountains, USA. *Journal of the North American Benthological Society* 20:505-519.
- Thomas, S.A., H.M. Valett, J.R. Webster, P.J. Mulholland, C.S. Fellows, C.N. Dahm, and C.G. Peterson. 2001. Nitrogen retention in headwater streams: the influence of groundwater surface water interaction. *In: Optimizing nitrogen management in food and energy production and environmental protection: Proceedings of the 2nd International Nitrogen Conference on Science and Policy*. The Scientific World 1(S2):623-631.
- Tank, J.L., P.J. Mulholland, J.L. Meyer, W.B. Bowden, J.R. Webster, and B.J. Peterson. 2001. Contrasting food web linkages for the grazing pathway in three temperate forested streams using ^{15}N as a tracer. *Verh. Internat. Verein. Limnol.* 27:2832-2835.
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- Dodds, W.K., A.J. L., W.B. Bowden, S. Gregory, N.B. Grimm, S.K. Hamilton, A.E. Hershey, E. Mart, W.H. McDowell, J.L. Meyer, D. Morrall, P.J. Mulholland, B.J. Peterson, J.T. Tank, H.M. Valett, J.R. Webster, and W. Wollheim. 2002. N uptake as a function of concentration in streams. *Journal of the North American Benthological Society* 21:206-220. [Return to Beginning](#)
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addition experiments: Results from an inter-biome comparison study. *Journal of the North American Benthological Society* 21:544-560.

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McTammany, M.E., J.R. Webster, E.F. Benfield, and M.A. Neatrour. 2003. Longitudinal patterns of metabolism in a southern Appalachian river. *Journal of the North American Benthological Society* 22:359-370.

Webster, J.R., P.J. Mulholland, J.L. Tank, B.J. Peterson, W.R. Dodds, H.M. Valett, W.B. Bowden, C.N. Dahm, S. Findlay, S.V. Gregory, N.B. Grimm, S.K. Hamilton, S.L. Johnson, E. Marti, W.H. McDowell, J.L. Merriam, D.D. Morrall, J.L. Meyer, S.A. Thomas, and W.M. Wollheim. 2003. Factors affecting ammonium uptake in streams: an inter-biome perspective. *Freshwater Biology* 48:1329-1352. 

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Mulholland, P.J., H.M. Valett, J.R. Webster, S.A. Thomas, L.N. Cooper, S. Hamilton, and B.J. Peterson. 2004. Stream denitrification and total nitrate uptake rates measured using a field ^{15}N tracer addition approach. *Limnology and Oceanography* 49:809-820.

Dodds, W.K., E. Mart, J.L. Tank, J. Pontius, S.K. Hamilton, N.B. Grimm, W.B. Bowden, W.H. McDowell, B.J. Peterson, H.M. Valett, J.R. Webster, and S.V. Gregory. 2004. Carbon and nitrogen stoichiometry and nitrogen cycling rates in streams. *Oecologia* 140:458-467.

Payn, R.P., J.R. Webster, P.J. Mulholland, H.M. Valett, and W.K. Dodds. 2005. Estimation of stream nutrient uptake from nutrient addition experiments. *Limnology and Oceanography: Methods* 3:174-182.

Brookshire, J., H.M. Valett, S.A. Thomas, and J.R. Webster. 2005. Coupled cycling of dissolved organic nitrogen and carbon in a forest stream. *Ecology* 86:2487-2496.

Chaffin, J.L., H.M. Valett, J.R. Webster, and M. Schreiber. 2005. Influence of elevated As on leaf breakdown in an Appalachian headwater stream. *Journal of the North American Benthological Society* 24:553-568.

Ellison, A. M., M.S. Bank, A. A. Barker-Plotkin, B. D. Clinton, E.A. Colburn, K. Elliott, C.R. Ford, D.R. Foster, S. Jefts, B.D. Kloeppe, J.D. Knoepp, G.M. Lovett, J. Malloway, B. Mathewson, R. McDonald, J. Mohan, D.A. Orwig, N.L. Rodenhouse, W.V. Sobczak, K.A. Stinson, P. Snow, J.K. Stone, C.M. Swan, J. Thompson, B. Von Holle, and J.R. Webster. 2005. Loss of foundation species: consequences for the structure and dynamics of forested ecosystems. *Frontiers in Ecology and the Environment*, in press.

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Research areas:

- multivariate analysis
- multivariate graphics
- biological sampling and modeling
- ecotoxicology

Other activities:

Director of the [Statistical Consulting Center](#), Associate Editor: *Environmetrics* 1989 to present, *Journal of Agricultural, Biological and Environmental Statistics*, 1994 to present, Associate Editor, *Journal of the American Statistical Association, Applications and Case Studies*, 1998 to present, Editorial Collaborator, *Ecological and Environmental Statistics*, 1996 to present, Secretary, [The International Environmetrics Society \(TIES\)](#), 1994 to 2000, Chair elect: Environmental Statistics Section of the American Statistical Association (2001).

Selected Publications:

Smith, E.P., Robinson, T., Field, L.J., Norton, S.B. 2003. "Predicting Sediment Toxicity Using Logistic Regression: A Concentration-Addition Approach" *Environmental Toxicology and Chemistry*, 22(3): 565-575. [Adobe PDF](#)

Lipkovich, I., and Smith, E.P. 2003. Model Based Clustering. (DRAFT). [Adobe PDF](#)

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Research Interests

The carbon cycle is a powerful integrator of physiological function across levels of ecological complexity ranging from cells to ecosystems. I study the carbon cycle of upland and wetland ecosystems as a means of understanding their response to stressors such as flooding and climate change. Because plants are the major source of organic carbon in ecosystems and microbes are a major sink, my research encompasses both groups of organisms. I am interested in how the different forms of carbon produced by plants (e.g. carbohydrates, cellulose, lignin) influence microbial metabolism, the unique characteristics of the rhizosphere as an environment for microbial communities, and the interaction of these processes with physical variables such as flooding, salinity, and soil mineral composition. My research program currently has two primary components: feedbacks between climate change and terrestrial ecosystem function and plant-microbe interactions in the rhizosphere.

Current Research Projects

I am currently collaborating with Dr. Bert Drake of SERC to understand the effects of elevated carbon dioxide in the atmosphere on carbon sequestration and methane production in wetland ecosystems. We are particularly interested in the effects of an enhanced plant-carbon supply on microbial community composition and activity. Although they account for just 10% of the terrestrial surface, wetlands hold 30% of the global soil carbon pool, an amount equivalent to the carbon stored in all living vegetation. This work is funded by the Department of Energy.

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I am investigating the microbial ecology of the soil zone immediately surrounding plant roots (i.e. the 'rhizosphere'). The rhizosphere is 'hot spot' of microbial activity because plants are excellent sources of organic carbon (i.e. energy) and other resources that microbes require. A primary focus of my work is the influence of iron-oxidizing and iron-reducing bacteria on the cycling of this important element in wetlands. The work has involved isolating and characterizing iron-metabolizing bacteria using molecular techniques, and testing hypotheses about the nature of a rhizosphere-organized iron cycle. This work is funded by NSF.

Recent Publications

Neubauer, SC, D Emerson, and JP Megonigal. 2002. Life at the energetic edge: Kinetics of circumneutral iron oxidation by lithotrophic iron-oxidizing bacteria isolated from the wetland-plant rhizosphere. *Applied and Environmental Microbiology* 68: 3988-3995.

Vann, CD and JP Megonigal. 2003. Effects of Elevated CO₂ and Water Depth on Methane Emissions: Comparison of a Woody and Non-woody Wetland Plant Species. *Biogeochemistry* 63: 117-134

Darke, AK and JP Megonigal. 2003. Control of sediment deposition rates in two mid-Atlantic coast tidal freshwater wetlands. *Estuarine and Coastal Shelf Science* 57 (1): 255-268

Craft, C, P Megonigal, S Broome, J Cornell, R Freese, J Stevenson, L Zheng and J Sacco. 2003. The pace of ecosystem development of constructed *Spartina alterniflora* marshes. *Ecological Applications* (in press).

Weiss, JV, D Emerson, SM Backer and JP Megonigal. 2003. Enumeration of Fe(II)-oxidizing and Fe(III)-reducing bacteria in the root zone of wetland plants: Implications for a rhizosphere iron cycle. *Biogeochemistry* (in press).

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- Professional Interests:** Ecosystem and landscape ecology, modeling nutrient transport and cycling, ecological modeling, geographic information systems, remote sensing.
- Education:** B.A. 1974. Wabash College, Crawfordsville, IN. Biology major, chemistry minor.
Ph.D. 1985. Univ. of Tennessee, Knoxville, TN. Ecology major.
- Experience:** 1997-present. Quantitative Ecologist and Supervisor of GIS/RS Facility. SERC.
1992-1997. Quantitative Ecologist & Computer Center Director. SERC.
1983-1992. Research Associate. SERC.
1978-1983. Pre-doctoral fellow. Oak Ridge National Laboratory, Oak Ridge, TN.
- Relevant Activities:** 2003-present. Steering Committee, Chesapeake Community Modeling Project (CCMP).
2005-2007. Scientific and Technical Advisory Committee, Chesapeake Bay Program.

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Related publications

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- Baker, M. E., D. E. Weller, and T. E. Jordan. 2006. Mapping watershed boundaries using digital elevation data: implications for land cover analysis of nutrient discharge. *Photogr. Engin. Rem. Sens.* 72:159-168.
- Boesch, D. F., T. A. Cohn, K. N. Eshelman, T. J. Grizzard, J. M. Hamertt, K. L. Prestegard, K. W. Staver and D. E. Weller. 2005. Assessing progress and effectiveness through monitoring streams and rivers. Science and Advisory Committee of the Chesapeake Bay Program (STAC) Publication 05-005. Chesapeake Research Consortium, Edgewater, MD.
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Education: Wabash College, Crawfordsville, IN; B.A. in Biology, 1966
University of North Carolina, Chapel Hill, NC; Ph.D. in Botany, 1971

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Positions:

- Post-doctoral Fellow, University of North Carolina at Chapel Hill; Jan-Aug., 1971
- Assistant Professor, Rider College, Lawrenceville, NJ; Aug. 1971 – Sept. 1976
- Associate Professor, Rider College, Lawrenceville, NJ; Sept. 1976 – Dec. 1976
- Research Ecologist, Smithsonian Environmental Research Center, Edgewater, MD; Jan. 1977 – present
- Acting Assistant Director, Smithsonian Environmental Research Center, Edgewater, MD; 1981 - 1982
- Visiting Scientist, Utrecht University, The Netherlands; 1987 - 1988.
- Bullard Fellow, Harvard University, Petersham, MA; Jan. – July, 1998.
- Deputy Director, Smithsonian Environmental Research Center, Edgewater, MD; 2005 – present.

Current Professional and Social Activities

Board of Editors: Plant Species Biology, Wetland Ecology and Management
Board of Directors & Vice-Chair for Science: Maryland/DC Chapter of The Nature Conservancy

Board of Directors: The Wintergreen Nature Foundation

Science Advisor: Jug Bay Wetlands Sanctuary

Science Advisor: Chesapeake Wildlife Heritage

Member: IUCN Orchid Specialist Group

Member: National Technical Review Committee, U.S. Corps of Engineers

Member: Ecological Society of America, Botanical Society of America, Torrey Botanical Society, American Institute of Biological Sciences, Association of Southeastern Biologists

Recent Publications (total of almost 200 refereed articles and 6 edited books)

Barendregt, A., D.F. Whigham, P. Meire, A. Baldwin, and S. Van Damme. In press.

Wetlands in the tidal freshwater zone. In: J.T.A. Verhoeven, R. Bobbink, B.

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- McCormick, M.K., D.F. D. Sloan, and K. O'Malley. In press. Orchid-fungal fidelity: a marriage meant to last. *Ecology*.
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- Whigham, D.F. 2004. The ecology of woodland herbs in temperate deciduous forests. *Annual Review Ecology, Evolution and Systematics* 35: 583-621.
- McCormick, M.K., D.F. Whigham, and J. O'Neill. 2004. Mycorrhizal diversity in photosynthetic terrestrial orchids. *New Phytologist* 163: 425-438.

Recent and Current Collaborators

A. Barendrecht, *Utrecht Univ.*; M. Baker, *Utah State Univ.*; D. Bilkovic, Virginia Institute of Marine Sciences; M. Brinson, *East Carolina Univ.*; R. Brooks, *Pennsylvania State Univ.*; T. Bruns, *Univ. California Berkley*; M. Cable Rains, *Univ. South Florida*; B. Caldwell, *Oregon State Univ.*; A. Deller Jacobs, *State of Delaware*; C. Gallegos, *SERC*; I. Feller, *SERC*; K. Hershner, *Virginia Institute of Marine Sciences*; A. Hines, *SERC*; T. Jordan, *SERC*; S. Kawano, *Kyoto University*; M. Kentula, *U.S. EPA*; P. Kindelman, *Univ. South Bohemiac*; R. King, *Baylor Univ.*; K. Kitamura, *Forestry and Forest Products Research Inst.*; H. Kudoh, *Osaka Univ.*; C. Lovelock, *Univ. Queensland*; P. Marra, *NZP*; M. McCormick, *SERC*; P. Magonigal, *SERC*; D. Weller, *SERC*; Dag Inge Oien, *Norwegian Technology Univ.*; Tim Filley, *Purdue Univ.*; H. Rasmussen, *Danish Forest and Landscape Research Inst*; R. Rheinhardt, *East Carolina Univ.*; J. Shortle, *Pennsylvania State Univ.*; Lee Taylor, *Univ. Alaska*; K. Thornton, *FNS Associates*; J. Verhoeven, *Utrecht Univ.*; D. Wardrop, *Pennsylvania State Univ.*; M. Werger, *Utrecht Univ.*; D. Wijesinghe, *Sussex Univ.*; J. Willems, *Utrecht Univ.*

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