

# CURRICULUM VITAE

## CHRISTOPHER DOUGLAS BARTON

Department of Forestry  
University of Kentucky  
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### EDUCATION:

Ph.D. 1999. Soil Science, University of Kentucky  
*Dissertation:* Colloid Enhanced Transport and Desorption of Contaminants Through Macropores in Kentucky Soils, 159 p.

M.S. 1997. Plant and Soil Sciences, University of Kentucky  
*Thesis:* Water Quality and Mineralogical Attributes of a Constructed Wetland Treating Acid Mine Drainage, 181 p.

B.S. 1989. Centre College, Danville, Kentucky

### PROFESSIONAL EXPERIENCE:

Associate Professor of Forest Hydrology and Watershed Management, University of Kentucky, Department of Forestry, July 2008 to present. DOE: 75% research; 25% teaching.

Assistant Professor of Forest Hydrology and Watershed Management, University of Kentucky, Department of Forestry, January 2003 to June 2008. DOE: 75% research; 25% teaching.

Adjunct Professor, University of Louisville, Biology Department, January 2004 to present.

Adjunct Professor, South Carolina State University, Biology Department, January 2000 to 2006.

Research Hydrologist, USDA Forest Service, Southern Research Station, Center for Forested Wetland Research, Charleston, SC. Stationed at US DOE Savannah River Site, SC. January 2002 to January 2003.

Postdoctoral Research Soil Scientist, Southern Research Station, Center for Forested Wetland Research, Charleston, SC. Stationed at US DOE Savannah River Site, SC. February 1999 to January 2002.

Research and Teaching Assistant, University of Kentucky, September 1994 to January 1999.

Chemist and Field Technician, Fouser Environmental, Versailles, KY, January 1990 to June 1994.

## **CURRENT RESEARCH:**

C.D. Barton, C. Cotton and A.D. Karathanasis. 2011-2013. Evaluation of acidic atmospheric deposition and its influence on soil solution composition in the Daniel Boone National Forest. USDA Forest Service, \$50,267. Barton-PI

C.D. Barton. 2011-2012. Green Forests Work for Appalachia: Phase I Development and Deployment. Appalachian Regional Commission, \$300,000. Barton-PI.

R. Warner, C. Barton, C. Agouridis, J. Unrine. 2011-2012. Appalachian Research Initiative for Environmental Science. Virginia Tech. \$340,239 (\$53,357 sub award to Barton). Barton-co-PI and PI.

C.D. Barton and D.E. Fletcher. 2010-2013. Assessment of Structure, Function and Stability in a Gradient of Disturbed SRS Streams - Phase III. USDA Forest Service, Cooperative Research Grant, \$313,117. Barton-PI.

C.T. Agouridis, C.D. Barton, R.C. Warner, A.A. Gumbert, and S.F. Higgins. 2010-2013. Development and Implementation of Stream Restoration and Riparian Corridor Techniques for Enhancing Water Quality in the Cane Run Watershed. USDA NRCS, \$360,000. Barton co-PI and PI.

### ***Subprojects:***

1. C.T. Agouridis, R.C. Warner, C.D. Barton, and S.F. Higgins. Evaluating the Effectiveness of Weep Berm Systems for Treating Runoff from the Composting of Horse Muck: \$216,268.
2. C.D. Barton, C.T. Agouridis and S.F. Higgins. Control and Treatment of Runoff from a Muck Storage Pad using a Permeable Containment Basin and Phytotechnologies: \$109,782.
3. C.T. Agouridis, S.F. Higgins and C.D. Barton. Examining the Effects of Stream Restoration and Riparian Buffer Development on Water Quality of a Small Spring-fed Stream: \$15,428.

C.T. Agouridis, R.C. Warner, C.D. Barton and T.C. Dowdy. 2010-2012. Use of GIS and WATER Model to Identify and Delineate Stream Types in Eastern KY. USDA-National Institute of Food and Agriculture (NIFA), Precision Agriculture: Precision Resource Management, \$48,200. Barton co-PI.

B. Lee and C.D. Barton. 2010-2012. Determining Landscape Areas for Targeted Reforestation Efforts. USDA-National Institute of Food and Agriculture (NIFA), Precision Agriculture: Precision Resource Management, \$45,051. Barton co-PI.

C.D. Barton. 2011-2012. Continued Monitoring of American Chestnuts on Surface Mines in KY. The American Chestnut Foundation, \$5,000. Barton-PI.

D.E. Fletcher and C.D. Barton. 2010 – 2012. Stream System Field Condition Assessment at the Savannah River Site – Phase II. American Recovery and Revitalization Act (administered by USDOE), \$315,000 (\$56,024 subcontract to UK). Barton PI.

C.D. Barton. 2009 -2010. Long-Term Effects of Forestry Best Management Practices on Hydrology, Water Chemistry and Woody Debris in Three Appalachian Headwater Catchments. USDA Forest

Service, Cooperative Research Grant, \$14,000 (extension through 2012 and \$6,711 in additional funds). Barton-PI.

C.D. Barton, C.T. Agouridis and Z. Weese. 2010 – 2012. Characterization of Headwater Seep Wetlands in Southeastern Kentucky USDA CSREES, Precision Agriculture: Precision Resource Management, \$49,946. Barton PI.

C.D. Barton. 2010 – 2012. Characterization of Headwater Seep Wetlands at the Palk State Nature Preserve, Kentucky State Nature Preserve Commission, \$8,000. Barton PI.

C.D. Barton. 2009-2011. Enhancement of Disturbed Upper Coastal Plain Stream Systems: Establishing Restoration Criteria and Strategies for a Stream Mitigation Bank - Amendment. USDA Forest Service, Cooperative Research Grant, \$87,494. Barton-PI.

F. Hebbard, R. Paris, C.D. Barton, J. Skousen, B. McCarthy, J. Franklin, M. Jacobson and E. Shelman. 2008-2010. American Chestnut Restoration on Surface Mined Land in the Appalachian Region. Prime Sponsor: Department of The Interior, Office of Surface Mining Reclamation and Enforcement - Applied Science Program Cooperative Agreements: Coal Mining and Reclamation. \$200,000 (Subaward to Barton from the American Chestnut Foundation for \$25,000)

C.D. Barton, J.M. Lhotka, R.C. Warner, C.T. Agouridis, D.H. Graves and S. Fei. 2008-2010. Demonstrating Techniques for Establishing Woody Biomass Plantations on Surface Mined Lands as Feedstocks for Energy Production. Kentucky Research & Development Seed Grants Program. \$174,166. Barton co-PI.

J.J. Cox, C.D. Barton, and M.J. Lacki. 2007. Ecological Monitoring Initiative at Griffith Woods. USDA CSREES, Precision Agriculture: Precision Resource Management, \$66,262. Barton co-PI.

P.D.S. Guimaraes, J. Hartman and C.D. Barton. 2007-2008. Survey for *P. ramorum* in Kentucky Watersheds. USDA Forest Service, Cooperative Research Grant, \$21,000. Barton co-PI.

C.D. Barton. 2006-2009. Influence of Streamside Management Zone Protection on Hydrology and Water Quality in Forested Headwater Catchments of Eastern Kentucky. Commonwealth of Kentucky, SB 271 Funds, \$94,277. Barton-PI

C.D. Barton and C. Agouridis. 2006-2009. Evaluating Post-Mined Land Reforestation Through the Spatial Assessment of Soil Genesis. CSREES, Precision Agriculture: Precision Resource Management, \$65,242. Barton-coPI.

P.D.S. Guimaraes, J. Hartman and C.D. Barton. 2006-2007. Survey for *P. ramorum* in Kentucky Watersheds. USDA Forest Service, Cooperative Research Grant, \$10,000. Barton co-PI.

C.D. Barton. 2005-2008. Enhancement of Disturbed Upper Coastal Plain Stream Systems: Establishing Restoration Criteria and Strategies for a Stream Mitigation Bank. USDA Forest Service, Cooperative Research Grant, \$257,718. Barton-PI.

C.D. Barton and D.I. Imm. 2004-2005. Influence of Soil Physicochemical Properties on Hydrology in Carolina Bay Depression Wetlands. USDA Forest Service, Cooperative Research Grant, \$13,256. Barton-PI.

C.D. Barton, C.C. Rhoades and R.K. Kolka. 2004-2007. Hyporheic Zone Development and Water Quality Improvement in a Restored Riparian Area. USDA Forest Service, Cooperative Research Grant, \$100,080. Barton-PI. (extension through 2008).

C.D. Barton, J.W. Stringer, S.A. Grubbs and R.K. Kolka. 2003-2005. Effect of Riparian Zone Width and Disturbance on Water Quality and Stream Communities Following Forest Harvest in Eastern Kentucky Watersheds. Commonwealth of Kentucky, SB 271 Funds, \$185,172. Barton co-PI (\$22,000 extension through 2006).

C.D. Barton. 2005-2010. Evaluating Streamside Management Zone Effectiveness in Forested Headwater Catchments of Central Appalachia. University of Kentucky Agricultural Experimental Station - McIntire-Stennis Program. Barton-PI.

C. Agouridis, C.D. Barton, R. Warner. 2005-2010. Headwater Stream Restoration Project: University of Kentucky, Robinson Forest. Kentucky Mitigation Review Team: U.S. COE, U.S. Fish and Wildlife, U.S. EPA, KDOW, \$1,576,000. Barton co-PI.

D.H. Graves, C.D. Barton, J. Ringe, J. Stringer, R. Sweigard, R. Warner. 2002-2004. Carbon Sequestration on Surface Mine Lands. U.S. Department of Energy. \$1,000,000. Barton co-PI. (extended through 2006)

D.H. Graves, C.D. Barton, J. Ringe, J. Stringer, R. Sweigard, R. Warner. 2001-2004. Post-Mining Reforestation Demonstration Project I. USDA Forest Service. \$985,000. Barton co-PI.

D.H. Graves, C.D. Barton, J. Ringe, J. Stringer, R. Sweigard, R. Warner. Post-Mining Reforestation Demonstration Project II. 2002-2005. USDA Forest Service. \$985,000. Barton co-PI.

D.H. Graves, C.D. Barton, J. Ringe, J. Stringer, R. Sweigard, R. Warner. Post-Mining Reforestation Demonstration Project III. 2003-2006. USDA Forest Service. \$978,000. Barton co-PI.

D.H. Graves, C.D. Barton, J. Ringe, J. Stringer, R. Sweigard, R. Warner. Post-Mining Reforestation Demonstration Project IV. 2004-2007. USDA Forest Service. \$978,000. Barton co-PI.

D.H. Graves, C.D. Barton, J. Ringe, J. Stringer, R. Sweigard, R. Warner. Post-Mining Reforestation Demonstration Project V. 2005-2008. USDA Forest Service. \$490,000. Barton co-PI.

J.H. Grove, E.M. Pena, C.D. Barton and J.A. Thompson. Precision Management of Carbon Sequestration. 2005-2008. CSREES, Precision Agriculture: Precision Resource Management. \$74,999. Barton collaborator.

J.W. Stringer, C.D. Barton, T.P. McDonald and M.F. Smidt. Timber Harvesting Analysis Using GPS and GIS. 2004-2007. CSREES, Precision Agriculture: Precision Resource Management. \$133,909. Barton co-PI.

M.S. Coyne, C.D. Barton, E. D'Angelo, H. Rowe and S. Workman. Influence of Hydrology on Carbon Export by Riparian Vegetation. 2004-2007. Commonwealth of Kentucky, SB 271 Funds. \$99,640. Barton collaborator.

B.D. Lee, C.D. Barton and B. Kew. 2005-2008. Landscape Predictors of SVAP Scores in Robinson Forest: A Pilot Study. CSREES, Precision Agriculture: Precision Resource Management. \$21,332. Barton co-PI.

R.C. Warner, C. T. Agouridis, T.W. Sturm, D.H. Graves and C.D. Barton. 2005-2008. Alternatives for Restoring Headwater Streams via Sediment Pond Removal. Kentucky Department for Natural Resources. \$44,278. Barton co-PI.

***Other:***

Fulton, S., R. Burke, K. Fritz, B. Johnson and C.D. Barton. 2005-2006. EPA Regional Research Partnership: Surface Coal Mining Impacts on Headwater Stream Function. USEPA. Barton co-PI.

C.D. Barton, D. Marx, D.C. Adriano, Bon-Jun Koo, and L.A. Newman. 2000-2005. Establishment of a Forest to Control Hydrology and Acid Generation on a Landfill Containing Coal Combustion Waste. U.S. Department of Energy. Barton-PI.

C.D. Barton, R.R. Sharitz, D.D. DeSteven and D.I. Imm. 2000-2006. Restoration of Carolina Bay Depression Wetlands in South Carolina. USDA Forest Service. Barton-PI.

***Proposals Submitted:***

C.A. Agouridis, C.D. Barton, R.C. Warner and H. Jin. 2010-2013. Evaluating Hydrological, Water Quality, and Biological Responses to Headwater Stream Restoration on Eastern Kentucky Surface Mines. USEPA FY10 Region 04 Wetland Program Development Grants. \$427,464. Submitted 6/2010.

R.C. Warner, C.A. Agouridis, C.D. Barton. 2010-2013. Development and On-site Evaluation of Best Management Practices and Mining Techniques to Enhance Environmental Protection. USEPA FY10 Region 04 Wetland Program Development Grants. \$824,481. Submitted 6/2010.

**TEACHING AND ADVISING:**

***Graduate student advising:***

***Completed:***

Courtney Mastin, M.S. Forestry, 2010. Thesis: Preliminary evaluation of stream restoration and passive treatment technologies for the improvement of water quality on a surface mine in eastern Kentucky. *Currently*. Reclamation Specialist, USDI Office of Surface Mining.

Lee Moser, M.S. Forestry, 2009. Thesis: The effects of hardwood re-sprout control in hydrologically restored Carolina bay depression wetlands; Major Advisor. *Currently*. Hydrology Technician, USDA Forest Service, Daniel Boone National Forest.

Kathryn M. Ward, M.S. Earth and Environmental Sciences, 2009. Thesis: Influence of matrix geochemistry on *Phytophthora* detection on reforested mine lands in Appalachia; co-Major Advisor with Dr. Alan Fryar. *Currently*. Geologist, KY Division of Water.

Patrick Angle, Ph.D. Soil Science, 2008. Dissertation: Forest Establishment and Water Quality Characteristics as Influenced by Spoil Type on a Loose-Graded Surface Mine in Eastern Kentucky; Major Advisor. *Currently*. Soil Scientist/Forester, USDI Office of Surface Mining and Reclamation.

Jared Edwards, M.S. Plant and Soil Sciences, 2008. Thesis: Removal of manganese from Alkaline Mine Drainage Using a Bioreactor with Different Organic Carbon Sources; co-Major Advisor with Dr. Tasos Karathanasis. *Currently*. Stream Restoration Specialist, Stantec.

Sarah Hall, M.S. Forestry, 2007. Thesis: Topsoil Seed Bank of an Oak-Hickory Forest in Eastern Kentucky as a Restoration Tool on Surface Mines; Major Advisor. *Currently*: Assistant Professor, Berea College.

Tara Littlefield, M.S. Forestry, 2007. Thesis: Factors Controlling the Cycling and Distribution of Carbon on Reclaimed Minelands and Regenerating Clearcuts in Eastern Kentucky, co-Major Advisor with Dr. Mary Arthur. *Currently*: Botanist, Kentucky State Nature Preserves Commission.

Danielle Andrews, M.S. Plant and Soil Sciences, 2006. Thesis: Hyporheic Zone Development and Water Quality Improvement in a Restored Riparian Area; Major Advisor. *Currently*: Postdoctoral Research Scientist, Penn State University.

Alex Cherry, M.S. Forestry, 2006. Thesis: Hydrochemical Characterization of Ten Headwater Catchments in Eastern Kentucky, Major Advisor. *Currently*: Hydrologist, USGS.

Claudia Cotton, M.S. Forestry, 2006. Thesis: Developing a Method of Site Quality Evaluation for *Quercus Alba* and *Liriodendron Tulipifera* in the Eastern Kentucky Coal Field, Major Advisor. *Currently*: Soil Scientist, USDA Forest Service, Daniel Boone National Forest..

Sally Maharaj, M.S. Geology, 2006. Thesis: Distinguishing and Quantifying “New Carbon” From “Old Carbon” on Reclaimed Mine Sites Using Thermogravimetry: Method Development and Field Validation, co- Major Advisor with Dr. Harry Rowe. *Currently*: Chemist and Laboratory Supervisor, Kaizen Environmental Services Trinidad Limited.

***In Progress:***

Michael French, M.S. Forestry, Major Advisor.

Emma Witt, Ph.D. Soil Science, Major Advisor.

Catherine Hoy, M.S. Forestry, Major Advisor.

Hillary Otte, M.S. Forestry, Major Advisor.

Nik Eiche, M.S. Forestry, Major Advisor.

Richard Biemiller, Ph.D. Entomology, Major Advisor.

***Advisory Committee Member:***

David Lyons, M.S. Forestry, 2004

Jason Robinson, M.S. Plant and Soil Science, 2004

Julie Ter Beest, M.S. Forestry, 2005

Marty Acker, M.S. Forestry, 2006  
 Eric Fabio, M.S. Forestry, 2006  
 Brian Cook, M.S. Forestry, 2007  
 Adam Michels, M.S. Forestry, 2007  
 Jennifer Gentry, M.S. Biology (U of L), 2007  
 Timothy Taylor, M.S. Biosystems and Agricultural Engineering, 2007  
 Jarrod Miller, Ph.D. Soil Science, 2008  
 Luke Cecil, M.S. Forestry, 2009  
 Matt Weand, Ph.D. Soil Science, 2009  
 Oakes Routt, M.S. Biosystems and Agricultural Engineering, 2009  
 Josh Brinks, M.S. Forestry, 2010  
 David Parrott, M.S. Forestry, 2011  
 Erin Barding, Ph.D. Animal Science, 2011  
 Estifanos Haile, Ph.D., Geology, 2011  
 Kevin Devine, M.S. Forestry, 2011  
 Christopher Reeves, M.S. Forestry, in-progress  
 Meghan Langley, M.S. Biology (U of L), in-progress  
 Daniel Bowker, M.S. Forestry, in-progress  
 Josh Adkins, Ph.D. Entomology, in progress

***Post-doctoral scholars:***

Jarrod Miller. June 1, 2008 – March 15, 2009. Received Ph.D. degree in Soil Science from the University of Kentucky in 2008. Scientific area of emphasis: Environmental and Soil Chemistry. Currently, Research Soil Scientists, USDA-ARS, Florence, SC.

Bon Jun Koo. July 1, 2004 – June 30, 2005. Received Ph.D. degree in Soil and Water Science from the University of California, Riverside in 2002. Scientific area of emphasis: Environmental Biogeochemistry. Currently, Associate Professor, Natural and Physical Sciences Department, California Baptist University.

***Courses Taught:***

FOR 460G – Watershed Management, 3 credit hours.

<i>Semester</i>	<i># of Students</i>	<i>Course Evaluation<sup>†</sup></i> <i>(College Mean)</i>	<i>Teaching Evaluation<sup>†</sup></i> <i>(College Mean)</i>
Fall 2003	11	3.6 (3.3)	3.3 (3.4)
Fall 2004	23	3.2 (3.3)	3.4 (3.4)
Fall 2005	9	3.8 (3.3)	3.6 (3.4)
Fall 2006	19	3.8 (3.3)	4.0 (3.4)
Fall 2007	14	3.3 (3.3)	3.5 (3.4)
Fall 2008	16	3.5 (3.3)	3.6 (3.4)
Fall 2009	20	3.5 (3.3)	3.6 (3.4)
Fall 2010	21	3.4 (3.4)	3.3 (3.5)

<sup>†</sup> Scale 0 – 4.

FOR 480 – Integrated Forest Resource Management, 5-credit hours. Co-taught (50% responsibility) with Dr. Mike Lacki (03-06) and Dr. Tamara Cushing (07).

<i>Semester</i>	<i># of Students</i>	<i>Course Evaluation<sup>†</sup> (College Mean)</i>	<i>Teaching Evaluation<sup>†</sup> (College Mean)</i>
Spring 2003		<i>not rated</i>	<i>not rated</i>
Spring 2004	10	4.0 (3.2)	3.8 (3.4)
Spring 2005	14	3.9 (3.3)	3.9 (3.4)
Spring 2006	6	3.3 (3.3)	3.5 (3.4)
Spring 2007	13	<i>not rated</i>	<i>not rated</i>

† Scale 0 – 4.

FOR 770 – Environmental Monitoring and Data Acquisition, 1-credit hour.

<i>Semester</i>	<i># of Students</i>	<i>Course Evaluation<sup>†</sup> (College Mean)</i>	<i>Teaching Evaluation<sup>†</sup> (College Mean)</i>
Spring 2009	7	4.0 (3.3)	4.0 (3.4)

† Scale 0 – 4.

NRC 320 – Data Collection Techniques (NRC Summer Camp), 3 credit hours.

<i>Semester</i>	<i># of Students</i>	<i>Course Evaluation<sup>†</sup> (College Mean)</i>	<i>Teaching Evaluation<sup>†</sup> (College Mean)</i>
Summer 2009	10	<i>not rated</i>	<i>not rated</i>
Summer 2010	20	3.9 (3.4)	3.9 (3.5)

† Scale 0 – 4.

FOR 602 – Renewable Natural Resources in a Global Perspective, Fall, 2003, 2005, 2007, 2009. Responsible for three 50-min class equivalents.

ENV 491 – Soils and Hydrology, 4 credit hours; Summers 1999 - 2005. Responsible for half of the instruction. Operated by Savannah River Environmental Sciences Field Station and South Carolina State University.

PLS 366 – Fundamentals of Soil Science, 3 credit hours; Fall, 1998. Teaching Assistant for Course.

PLS 367 – Soil and Water Analysis, 2 credit hours; Fall, 1998. Teaching Assistant for Course.

### ***Undergraduate Advising:***

- Brian Murphy, UK, PLS Major. Working with KDNR on digitizing mining permit maps. Fall 2010.
- Adam King, UK, NRCM Major. Examined alternative techniques for restoring sediment ponds on surface mine lands. NRCM Internship: Spring 2007.

- Nick Baker, UK, NRCM Major. Examined hydrologic differences between created and natural ephemeral streams in Eastern Kentucky. NRCM Internship: Spring 2006. Presentation: N. Baker and D. Dale. 2006. Surface Coal Mining Impacts on Headwater Stream Functions. UK Showcase of Scholars; Lexington, KY. April 25.
- David Dale, UK, NRCM Major. Examined water quality differences between created and natural ephemeral streams in Eastern Kentucky. NRCM Internship: Spring 2006. Presentation: N. Baker and D. Dale. 2006. Surface Coal Mining Impacts on Headwater Stream Functions. UK Showcase of Scholars; Lexington, KY. April 25.
- Francis Lynch, University of the South, Math Major. Examined stream geomorphology in Robinson Forest. Presentation: Lee, B.P., C.D. Barton, R.A. Katho, and F. Lynch. 2006. Robinson Forest Stream Assessment. KY GIS Conference: Ft. Mitchell, KY. July 17.
- Forrest Miller, Centre College, Biology Major. Examined stream chemistry in Robinson Forest. Summer 2005.
- Emma Witt, NRCM Major. Examined hydrology in restored section of Wilson Creek, Bernheim Forest. NRCM Internship: Spring 2004.

Also mentored undergraduate students for senior or summer internships (3 from South Carolina State University, 1 from the University of South Carolina, 1 from University of North Carolina at Asheville, 2 from Tuskegee)

**PUBLICATIONS:** (underline indicates student, technician or postdoctoral fellow who participated under my supervision)

***Refereed Journal Publications:*** (*jif* = journal impact factor from Journal Citation Reports® 2007, published by Thomson Scientific)

Witt, E., **C.D. Barton**, J. Stringer, D. Bowker and R. Kolka. 2011. Evaluating best management practices for ephemeral channel protection following forest harvest in the Cumberland Plateau. Southern Journal of Applied Forestry (*Accepted for publication Feb. 2012*).

Moser, L. J., C. D. Barton and J. I. Blake. Control of hardwood regeneration in restored Carolina bay depression wetlands. To: Ecological Restoration (*Accepted for publication Feb. 2012*).

Jarrold Miller, **Christopher Barton**, Carmen Agouridis, Alex Fogle, Teri Dowdy and Patrick Angel. 2012. Evaluating Soil Genesis and Reforestation Success on a Surface Coal Mine in Appalachia. Soil Science Society of America Journal. DOI:10.2136/sssaj2010.0400; Posted online 20 Feb. 2012

Agouridis, C., P. Angel, T. Taylor, C. Barton, R. Warner, X. Yu and C. Wood. 2012. Water Quality Characteristics of Discharge from Reforested Loose-Dumped Mine Spoil in Eastern Kentucky. To: Journal of Environmental Quality. DOI:10.2134/jeq2011.0158; Posted online 5 Jan. 2012

Zipper, Carl; Burger, James; Skousen, Jeffrey; Angel, Patrick; **Barton, Chris**; Davis, Victor; and Franklin, Jennifer. 2011. Restoring Forests and Associated Ecosystem Services on Appalachian Coal Surface Mines. *Environmental Management*. 47: 751-765. DOI: 10.1007/s 00267-011-9670-z. (*jif* 1.408)

Andrews, D. M., **C. D. Barton**, R. K. Kolka, C. C. Rhoades and A. J. Dattilo. 2011. Soil and water characteristics in restored canebrake and forest riparian zones. *Journal of the American Water Resources Association*. 47(4): 772-784. DOI: 10/1111/j.1752-1688.2011.00555.x. (*jif* 1.618)

J. S. Brinks, J. M. Lhotka, **C. D. Barton**, R. C. Warner, and C. T. Agouridis. 2011. Effects of fertilization and irrigation on American sycamore and black locust planted on a reclaimed surface mine in Appalachia. *Forest Ecology and Management*. 261:640-648.

Fritz, Ken, Stephanie Fulton, Brent Johnson, **Chris Barton**, Jeff Jack, David Word, and Roger Burke. 2011. An assessment of cellulose filters as a standardized material for measuring litter breakdown in headwater streams. *Ecohydrology*. 4(3): 469-476. DOI: 10.1002/eco.128. (*jif* -1.719)

De Steven, Diane, Rebecca R. Sharitz, and **Christopher D. Barton**. 2010. Ecological outcomes and evaluation of success in passively restored southeastern depressional wetlands. *Wetlands*. 30: 1129 – 1140. DOI 10.1007/s13157-010-0100-4.

**Barton, C.D.**, M.E. French, S. Fei, K.A. Ward, R. Paris and P. Angel. 2010. Appalachian Surface Mines Provide a Unique Setting for the Return of the American Chestnut. *Solutions*. Published Online: July 20, 2010. 1(4).

Karathanasis, A. D., Edwards, J. D., and **C. D. Barton**. 2010. Manganese and sulfate removal from a synthetic mine drainage through pilot scale bioreactor batch experiments. *Mine Water and the Environment*. 29:144-153. DOI 10.1007/s10230-009-0095-3.

Koo, Bon Jun., Daniel E. Fletcher, Thomas G. Hinton, **Christopher D. Barton**, Mark R. Matsumoto, Amanda M. Teune, and Daniel I. Kaplan. 2010. Assessment of Stream Fish Mortality from Short-Term Exposure to Illite Clays used as an *In-Situ* Method for Remediating <sup>137</sup>Cs Contaminated Wetlands. *International Journal of Soil, Sediment and Water*. 3(2):1-15.

Fritz, Ken, Stephanie Fulton, Brent Johnson, **Chris Barton**, Jeff Jack, David Word, and Roger Burke. 2010. Do post-mining constructed channels replace structural and functional characteristics of headwater streams in the Eastern Coalfield of Kentucky?" *Journal of the North American Benthological Society*. 29(2):673–689. DOI: 10.1899/09-060.1(*jif* -2.360)

S.L. Hall, **C.D. Barton**, and C.C. Baskin. 2010. Topsoil seed bank of an oak-hickory forest in eastern Kentucky as a restoration tool on surface mines. *Restoration Ecology*. 18(6): 834-842. DOI: 10.1111/j.1526-100X.2008.00509.x (*jif* -1.612)

Andrews, D.A., **C.D. Barton**, S.J. Czapka, R.K. Kolka, and B.W. Sweeney. 2010. Influence of tree shelters on seedling success in an afforested riparian zone. *New Forests*. 39:157–167. DOI 10.1007/s11056-009-9161-8 (*jif* -0.845)

Taylor, T.J., C.T. Agouridis, R.C. Warner **C.D. Barton** and P. Angel. 2009. Hydrologic Characteristics of Loose-Dumped Spoil in the Cumberland Plateau of Eastern Kentucky. *Hydrological Processes* 23: 3372–3381 (DOI: 10.1002/hyp.7443)

S.L. Hall, **C.D. Barton**, and C.C. Baskin. 2009. Seed Viability in Stockpiled Topsoil on a Surface Mine in Appalachia. *Ecological Restoration*. 27(4): 381-383.

Conrad, P., R. Sweigard, V. Badaker, K. Hunt, D. Graves and **C.D. Barton**. 2009. Long-term changes in selected spoil characteristics on reforested surface-mined land. *Transactions of Society for Mining, Metallurgy and Exploration*. (*Accepted for publication 2/09*).

Edwards, J. D., **C. D. Barton**, and A.D. Karathanasis. 2009. Evaluating the Use of a Bioreactor Mesocosm for Manganese Removal in Alkaline Mine Drainage. *Water, Air and Soil Pollution*. 203: 267-275. DOI: 10.1007/s11270-009-0010-3 (*jif*-1.205)

Taylor, T.J., C.T. Agouridis, R.C. Warner and **C.D. Barton**. 2009. Runoff curve numbers for loose-dumped spoil in the Cumberland Plateau of Eastern Kentucky. *International Journal of Mining, Reclamation and Environment*. 23(2): 103-120. DOI: 10.1080/17480930802176389.

**Barton, C.D.**, D.A. Andrews and R.K. Kolka. 2008. Evaluating hydrologic response in restored Carolina bay wetlands using soil physicochemical properties. *Restoration Ecology*. 16 (4): 668-677. (*jif*-1.612)

Conrad, P.W., R. J. Sweigard, V. Badaker, D. H. Graves, and **C. D. Barton**. 2008. The impact of surface applied mulches on selected physical properties of reclaimed mountaintop removal sites. *International Journal of Mining, Reclamation and Environment*. 22 (3): 222-236.

Larkin, J.L., D.S. Maehr, J.J. Krupa, J.J. Cox, K. Alexy, D.E. Unger and **C.D. Barton**. 2008. Small mammal response to vegetation and spoil conditions on a reclaimed surface mine in eastern Kentucky. *Southeastern Naturalist*. 7(3): 401-412.

Handayani, I. P., M.S Coyne, **C.D. Barton**, and S. Workman. 2008. Soil carbon pools and aggregation following stream restoration in a riparian corridor: Bernheim Forest, Kentucky. *Journal of Environmental Monitoring and Restoration*. 4: 11-28.

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## **PROFESSIONAL PRESENTATIONS/ABSTRACTS:**

Eiche, N., and **C.D. Barton**. Long-term effectiveness of BMPs in eastern Kentucky. Society of American Foresters National Convention. Hawaii. November 2-6, 2011.

Williamson, T., J. Newson, C. Agouridis, **C. Barton**, R. Warner, J. Villines. Hydrologic Modeling of Ephemeral Stream Channels in Coal Region of Eastern Kentucky. ASA-CSA-SSSA Annual Conference; San Antonio, TX. October 16-19, 2011.

**Barton C.D.** Restoring Ecosystem Services on Surface Mines in Appalachia. Centre College Convocation; Danville, KY. October 18, 2011. (*invited presentation*)

**Barton C.D.** Restoring Ecosystem Services on Surface Mines in Appalachia. Midwest Ground Water Conference; Lexington, KY. September 20, 2011. *(invited presentation)*

**Barton C.D.** Green Forests Work for Appalachia. Presentation to Executive Staff of the Appalachian Regional Commission; Prestonsburg, KY. September 7, 2011. *(invited presentation)*

Otte, Hillary, **C.D. Barton** and C. Agouridis. Characterization of Headwater Seep Wetlands in Southeastern Kentucky. International Phytotechnology Society Conference “Putting Plants to Work where we Live, Labor, Breathe, and Play”. Portland, Oregon; September 13-16, 2011.

Dean E. Fletcher, Garrett K. Stillings, Michael H. Paller, and **Christopher D. Barton**. Legacy disturbances and restoration potential of Coastal Plain streams. American Fisheries Society Annual Conference. Little Rock, Arkansas; September 13, 2011.

**Barton C.D.** Green Forests Work for Appalachia. Presentation to Executive Staff of the Appalachian Regional Commission; Prestonsburg, KY. September 7, 2011. *(invited presentation)*

Hoy, C., **C. Barton** and C. Agouridis. Characterization of Headwater Seep Wetlands in Southeastern Kentucky. Joint Meeting of Society of Wetland Scientists, WETPOL (Wetland Pollutant Dynamics and Control) and Wetland Biogeochemistry. Prague, Czech Republic. July 3-8, 2011.

**Barton C.D.** Principles for Establishing Ecologically Successful Riparian Corridors. USEPA, USACOE, USDOJ Interagency Stream Mitigation Workshop; Lexington, KY. April 14, 2011. *(invited presentation)*

Dean E. Fletcher, Garrett K. Stillings, Michael H. Paller, and **Christopher D. Barton**. Legacy disturbances and restoration potential of Coastal Plain streams. 2011 Georgia Water Resources Conference; Athens, GA. April 11-13, 2011.

**Barton C.D.** Green Forests Work for Appalachia. Presentation to Executive Staff of the Appalachian Regional Commission; Washington, DC. April 7, 2011. *(invited presentation)*

**Barton C.D.** Restoring Ecosystem Services on Surface Mines in Appalachia. USEPA Brownfields Conference; Philadelphia, PA. April 5, 2011. *(invited presentation)*

**Barton C.D.** Central Appalachia in Transition and the Need for Economic Revitalization. 2011 Good Jobs, Green Jobs National Conference; Washington, DC. Feb. 8-10, 2011. *(invited presentation)*

**Barton C.D.** Restoring Ecosystem Services on Surface Mines in Appalachia. 2010 ASA-CSSA-SSSA Annual Meeting; Long Beach, CA. Nov. 1-4. *(invited presentation)*

E. L. Witt, **C. D. Barton**, J. W. Stringer and R. K. Kolka. Impact of Streamside Management Zone Width and Canopy Retention on Hydrologic Response Following Forest Harvest in Appalachian Headwater Streams. 2010 AWRA Annual Water Resources Conference; Philadelphia, PA, November 1-4, 2010

**Barton C.D.**, C. Agouridis, R. Warner, K. Ward and P. Angel. Effects of FRA on water quality. 2010 Joint Mining Reclamation Conference: ASMR, ARRI. Pittsburgh, PA. June 5-11, 2010 (*invited presentation*)

Mastin, C., C. Agouridis, **C.D. Barton** and R. Warner. Water Quality Response to Headwater Stream Restoration on a Head of Hollow Fill. 2010 Joint Mining Reclamation Conference: ASMR, ARRI. Pittsburgh, PA. June 5-11, 2010

**Barton C.D.**, D. Graves, C. Agouridis, R. Warner, J. Stringer and P. Angel. Reforestation of Surface Mines in Appalachia. 17<sup>th</sup> Central Hardwood Forest Conference. Lexington, KY. April 5-7, 2010 (*invited keynote presentation*)

Brinks, J., J.M. Lhotka and **C.D. Barton**. One year response of American sycamore (*Plantanus occidentalis*) and black locust (*Robinia pseudoacacia*) to granular fertilizer applications on a reclaimed surface mine in eastern Kentucky. 17<sup>th</sup> Central Hardwood Forest Conference. Lexington, KY. April 5-7, 2010.

Witt, E., **C.D. Barton**, J. Stringer, D. Bowker and R. Kolka. Evaluating best management practices for ephemeral channel protection following forest harvest in the Cumberland Plateau – Preliminary findings. 17<sup>th</sup> Central Hardwood Forest Conference. Lexington, KY. April 5-7, 2010.

D. Bowker, J. Stringer, **C.D. Barton**, and S. Fei. GIS and GPS analysis of mobile harvesting equipment and sediment delivery to streams during forest harvest operations on steep terrain. 17<sup>th</sup> Central Hardwood Forest Conference. Lexington, KY. April 5-7, 2010.

Patrick Angel, Carl E. Zipper, James A. Burger, and **Christopher Barton**. Restoring Forests on Coal-Mined Land: The Appalachian Regional Reforestation Initiative. Southern Regional Science Association's 49<sup>th</sup> Annual Meeting. Washington, DC. March 25-27, 2010.

**Barton C.D.**, C. Agouridis, R. Warner and P. Angel. Reforestation of Surface Mines in Appalachia. Environmental Protection Agency (webinar). Atlanta, GA. January 6, 2010 (*invited*)

Mastin, C., C. Agouridis, **C.D. Barton** and R. Warner. Recreating a Headwater Stream on a Head of Hollow Fill. Mid-Atlantic Stream Restoration Conference. Morgantown, WV. November 3-5, 2009.

**Barton C.D.** Reforestation of Surface Mines in Appalachia. Appalachian Regional Commission – Executive Staff. Washington, DC. November 18, 2009 (*invited*)

**Barton C.D.**, C. Agouridis, R. Warner and P. Angel. Reforestation of Surface Mines in Appalachia. Forum on Coal in Kentucky. Lexington, KY. November 5, 2009 (*invited*)

**Barton C.D.** Green Forest Works for Appalachia. United Nations Environmental Programme – Billion Tree Campaign Press Conference. New York, NY. Sept. 21, 2009 (*invited*)

Moser, L., and **C. Barton**. 2009. Carolina Bay restoration: Control of undesired hardwood competitors. Society of Wetland Scientists Annual Conference. Madison, WI. June 21 -26, 2009.

DeSteven, D., B. Sharitz and **C. Barton**. 2009. Evaluating success in passively restored depressional wetlands. Society of Wetland Scientists Annual Conference. Madison, WI. June 21 -26, 2009.

Witt, E., **C. Barton**, R. Kolka, D. Bowker and J. Stringer. Evaluating Best Management Practices for Ephemeral Channel Protection during Forest Harvest in the Cumberland Plateau-Preliminary Findings. 2009 ASABE Annual International Meeting. Reno, Nevada. June 21 – June 24, 2009

Agouridis, C., **C.D. Barton** and R. Warner. 2009. Recreating a Headwater Stream on a Head of Hollow Fill. Geomorphic Reclamation and Natural Stream Design at Coal Mines- Technical Forum. Bristol, VA. April 28-30, 2009. (*Invited*)

Warner, R., C. Agouridis and **C.D. Barton**. 2009. Modeling sediment loss on geomorphic regarded forest lands in Kentucky. Geomorphic Reclamation and Natural Stream Design at Coal Mines- Technical Forum. Bristol, VA. April 28-30, 2009. (*Invited*)

**Barton, C.D.**, B.J. Koo, S. Maharaj and D. Graves. 2008. Carbon Sequestration on Reforested Mine Lands in the Appalachian Region of the United States. 5<sup>th</sup> International Phytotechnologies Conference. Nanjing, China. October 22-25, 2008. (*Invited Keynote Presentation*)

Koo, B.J., D. Fletcher, T. Hinton and **C.D. Barton**. Assessment of Stream Fish Mortality from Short-Term Exposure to Illite Clays used as an *In-Situ* Method for Remediating <sup>137</sup>Cs Contaminated Wetlands. 24th Annual International Conference on Soils, Sediments and Water. University of Massachusetts at Amherst. October 20-23, 2008.

French, M. E., **C. D. Barton**, D. Graves, P. N. Angel, and F. V. Hebard. 2007. Direct-seeding versus containerized transplantation of American chestnuts on loose mine spoil in the Cumberland Plateau. USEPA and National Groundwater Association Remediation of Abandoned Mine Lands Conference. Denver, CO. October 2-3, 2008.

Roger Burke, Ken Fritz, Brent Johnson, Stephanie Fulton, and Christopher Barton. 2008. Impact of Mountaintop Mining/ Valley Fill on the Stable Carbon Isotopic Composition and Concentration of Dissolved Organic Carbon and Dissolved Inorganic Carbon in Headwater Streams. The 6th International Conference on Applications of Stable Isotope Techniques to Ecological Studies. Honolulu, Hawaii. August 25-29, 2008.

Reeves, C., J. Stringer, C. Barton and C. Agouridis. 2008. Sedimentation rates of temporary skid trail headwater stream crossings. Addressing Forest Engineering Challenges of the Future. Proceedings of the 31<sup>st</sup> Annual Meeting of the Council on Forest Engineering. Charleston, SC June 25-28.

Angel, P.N., **C.D. Barton**, R.C. Warner, C. Agouridis, T. Taylor, and S.L. Hall. Tree Growth, Natural Regeneration and Hydrologic Characteristics of Three Loose-Graded Surface Mine Spoils in Kentucky. 2008 National Meeting of the American Society of Mining and Reclamation, Richmond, VA, New Opportunities to Apply Our Science. June 14-19, 2008.

**Barton, C.D.**, D. Marx, R. Sweigard and W. Barton. Evaluating Spoil Amendment Use and Mycorrhizal Inoculation on Reforestation Success in the Eastern and Western Kentucky Coalfields. 2008 National Meeting of the American Society of Mining and Reclamation, Richmond, VA, New Opportunities to Apply Our Science. June 14-19, 2008.

Adank, K.M., **C.D. Barton**, M.E. French and P. DeSa. Occurrence of Phytophthora on Reforested Loose-Graded spoils in Eastern Kentucky. 2008 National Meeting of the American Society of Mining and Reclamation, Richmond, VA, New Opportunities to Apply Our Science. June 14-19, 2008.

Reeves, C., J. Stringer, C. Barton and C. Agouridis. 2008. Sediment delivery from temporary stream crossing technologies. Society of American Foresters 2007 National Convention; Portland , Oregon October 23-27.

Angel, P., **C.D. Barton**, R. Warner, C. Agouridis, S. Hall, R. Sweigard and D. Graves. 2007. Tree growth on loose-graded surface mine spoil in Kentucky. Society of American Foresters 2007 National Convention; Portland , Oregon October 23-27.

C. Cotton, **C.D. Barton** and D. Graves. 2007. Growth response of two tree species on reclaimed minelands in eastern Kentucky. Society of American Foresters 2007 National Convention; Portland , Oregon October 23-27.

Taylor, T., C. Agouridis, R. Warner, **C. Barton**, D. Graves and P. Angel. 2007 Hydrologic and water quality characteristics of loose-graded mine spoil. Society of American Foresters 2007 National Convention; Portland , Oregon October 23-27.

Taylor, T., C. Agouridis, R. Warner, **C. Barton**, D. Graves and P. Angel. 2007 Curve numbers for forested watersheds and loose-graded mine spoil. Society of American Foresters 2007 National Convention; Portland , Oregon October 23-27.

Hall, S.L., **C.D. Barton** and C. Baskin. 2007. Seed Banks as restoration tools on surface-mined lands in central Appalachia. Society of American Foresters 2007 National Convention; Portland , Oregon October 23-27.

R. Sweigard, K. Hunt, V. Badaker, D. Graves and **C. Barton**. 2007. Physical characteristics of root growth media on reclaimed mine land and its effect on reforestation. Society of American Foresters 2007 National Convention; Portland , Oregon October 23-27.

**Barton, C.D.**, C. Agouridis and R. Warner. 2007. Recreating a headwater stream system on a head-of-hollow fill. Mid-Atlantic Stream Restoration Conference; Cumberland, Maryland November 6-8.

Edwards, J., **C.D. Barton** and A.D. Karathanasis. 2007. Removal of Mn from an Alkaline Mine Drainage Using a Bioreactor with Different Organic Carbon Sources. ASA-CSSA-SSSA Annual Meeting; New Orleans, LA. Nov. 4-8.

Hall, S.L., **C.D. Barton** and C. Baskin. 2007. Soil Seed Banks as Catalysts for Succession on Surface-mined Lands in Central Appalachia. 92<sup>nd</sup> Annual Meeting of the Ecological Society of America. San Jose, CA. August 5-10.

**Barton, C.D.** 2007. Carbon Sequestration by Forests on Reclaimed Mines. 2007 Mined Land Reforestation Conference. Abingdon, VA, August 7-8. (*Invited*)

Warner, R., **C. Barton** and C. Agouridis. 2007. Mining and Mine Reforestation: Influences on Watershed Hydrology. 2007 Mined Land Reforestation Conference. Abingdon, VA, August 7-8. (*Invited*)

Adank, K.M., **C.D. Barton**, M. E. French, and P. B. de Sá. 2007. Survey of *Phytophthora* on Reclaimed Mine Land Spoils. 2007 Mined Land Reforestation Conference. Abingdon, VA, August 7-8.

French, M. E., **C. D. Barton**, D. Graves, P. N. Angel, and F. V. Hebard. 2007. Direct-seeding versus containerized transplantation of American chestnuts on loose mine spoil in the Cumberland Plateau. 2007 Mined Land Reforestation Conference. Abingdon, VA, August 7-8.

Agouridis, C. T., **C. D. Barton**, R.C. Warner, D.A. Bidelspach, G.D. Jennings, R. Osborne, and J.W. Marchant. 2007. Design of a Headwater Stream System for a Head-of-Hollow Fill. 2007 Mined Land Reforestation Conference. Abingdon, VA, August 7-8. (*Invited*)

Fritz, K., S. Fulton, B. Johnson, **C. Barton**, J. Jack, D. Word, and R. Burke. 2007. Do Post-Mining Constructed Channels Replace Functional Attributes of Headwater Streams? Proceedings: North American Benthological Societies 55<sup>th</sup> Annual Meeting, Columbia SC, June 3-7.

Michels, A., **C. D. Barton**, T. Cushing, P. Angel, R. Sweigard, and D. Graves. 2007. Evaluation of Low Spoil Compaction Techniques for Hardwood Forest Establishment on an Eastern Kentucky Surface Mine. 2007 National Meeting of the American Society of Mining and Reclamation, Gillette WY, June 2-7.

French, M.E., **C.D. Barton**, D. Graves, P.N. Angel, and F.V. Hebard. 2007. Evaluation of Mine Spoil Suitability for the Introduction of American Chestnut Backcrosses in the Cumberland Plateau. 2007 National Meeting of the American Society of Mining and Reclamation, Gillette WY, June 2-7.

Angel, P.N., **C.D. Barton**, R.C. Warner, C. Agouridis, R.J. Sweigard, and D.H. Graves. 2007. Tree Growth and Natural Regeneration on Loose-Graded Brown and Gray Sandstone and Mixed Sandstone/Shale Surface Mine Spoils in Kentucky: Preliminary Findings. 2007 National Meeting of the American Society of Mining and Reclamation, Gillette WY, June 2-7.

Andrews, D.M., **C.D. Barton**, R.K. Kolka, and C.C. Rhoades. 2006. Hyporheic zone development and water quality improvement in a restored riparian area. Annual Conference of the Geological Society of America, Philadelphia, PA. October 22-25.

Angel, P.N., D.H. Graves, **C.D. Barton**, R.C. Warner, P.W. Conrad, R.J. Sweigard and C. Agouridis. 2006 Surface Mine Reforestation Research: Evaluation of Tree Response to Low Compaction Reclamation Techniques. National Meeting of the Society of American Foresters. Pittsburgh, PA. October 25-29.

Agouridis, C.T., R.C. Warner, **C.D. Barton**, D.A. Bidelspach, G.D. Jennings, J.W. Marchant, and R. Osborne. 2006. Promoting a Paradigm Shift in Head-of-Hollow Fill Design through Public

Education. Abstract for Stream Restoration in the Southeast: Accomplishments and Opportunities, Charlotte, NC, October 2-5.

Agouridis, C.T., R.C. Warner, **C.D. Barton**, D.A. Bidelspach, G.D. Jennings, J.W. Marchant, and R. Osborne. 2006. Design of a Headwater Stream System for a Head-of-Hollow Fill. Abstract for Stream Restoration in the Southeast: Accomplishments and Opportunities, Charlotte, NC, October 2-5.

Kolka, R.K., D.M. Andrews, **C.D. Barton** and C.C. Rhoades. 2006. Vegetation establishment, hyporheic zone and soil development, in a restored stream/riparian area. International Conference on Forests and Waters in a Changing Environment. Beijing, China. August 8-10.

Hall, S.L., and **C.D. Barton**. 2006. From icon to upstart: Seed banks as restoration tools on surface-mined lands. 91st Annual Meeting of the Ecological Society of America. Memphis, TN. August 5-8.

Cherry, A., **C.D. Barton**, J. Stringer, and R.K. Kolka. 2006. Effects of federal environmental protection acts on “pristine” streams in eastern Kentucky. Soil and Water Conservation Society Annual Conference; Keystone, Colorado. July 22-26.

Lee, B.P., **C.D. Barton**, R.A. Katho, and F. Lynch. 2006. Robinson Forest Stream Assessment. KY GIS Conference: Ft. Mitchell, KY. July 17.

Maharaj, S., **C.D. Barton**, S.M. Rimmer, H. Rowe and A.D. Karathanasis. 2006. Distinguishing and quantifying “new carbon” from “old carbon” on reclaimed mine sites using thermogravimetry: Method development. Conference on Carbon Capture and Sequestration. Alexandria, VA. May 8-11.

**Barton, C.D.**, B.J. Koo, S. Maharaj and D.H. Graves. 2006. Soil carbon accumulation rates on minelands in Appalachia. Conference on Carbon Capture and Sequestration. Alexandria, VA. May 8-11.

**Barton, C.D.**, D.M. Andrews and R.K. Kolka. 2006. Influence of soil physicochemical properties on hydrology and restoration response in Carolina bay wetlands. International Conference on Hydrology and Management of Forested Wetlands. American Society of Agricultural and Biological Engineers, New Bern, NC. April 8-12.

Littlefield, T., **C.D. Barton**, and M.A. Arthur. 2006. Carbon and Nutrient Dynamics in Reforested Mine Sites within the Eastern Kentucky Coal Fields. National Meeting of the American Society of Mining and Reclamation, and the 7th ICARD. St. Louis MO. March 26-29.

Angel, P.N., D.H. Graves, **C.D. Barton**, R.C. Warner, P.W. Conrad, R.J. Sweigard and C. Agouridis. 2006 Surface Mine Reforestation Research: Evaluation of Tree Response to Low Compaction Reclamation Techniques. National Meeting of the American Society of Mining and Reclamation, and the 7th ICARD. St. Louis MO. March 26-29.

Cotton, C., **C.D. Barton** and D.H. Graves. 2006. A comparison of *Quercus Alba* and *Liriodendron Tulipifera* growth on reforested minelands and naturally regenerating forest. National Meeting of the American Society of Mining and Reclamation, and the 7th ICARD. St. Louis MO. March 26-29.

Maharaj, S., **C.D. Barton**, S.M. Rimmer, H. Rowe and A.D. Karathanasis. 2006. Distinguishing and quantifying “new carbon” from “old carbon” on reclaimed mine sites using thermogravimetry: Field validation. National Meeting of the American Society of Mining and Reclamation, and the 7th ICARD. St. Louis MO. March 26-29.

Taylor, T., C. Agouridis, **C. Barton**, and R. Warner. 2006. Hydrologic and Water Quality Characteristics of Loose-Dumped Mine Spoil. National Meeting of the American Society of Mining and Reclamation, and the 7th ICARD. St. Louis MO. March 26-29.

**Barton, C.D.**, B.J. Koo, S. Maharaj and D.H. Graves. 2006. Carbon sequestration on minelands in Appalachia. National Meeting of the American Society of Mining and Reclamation, and the 7th ICARD. St. Louis MO. March 26-29.

Cotton, C., and **C.D. Barton**. 2006. Developing a method of site quality evaluation for *Quercus alba* and *Liriodendron tulipifera* in the eastern Kentucky coalfields. 15<sup>th</sup> Central Hardwood Forest Conference; Knoxville, TN. February 27 – March 1.

Maharaj, S., **C.D. Barton**, S.M. Rimmer, H. Rowe and A.D. Karathanasis. 2005. Development of a rapid assessment method for quantifying carbon sequestration on reclaimed coal mine sites. American Geophysical Union Fall Meeting; San Francisco, CA. Dec. 5-9.

**Barton, C.D.**, B.J. Koo and D.H. Graves. 2005. Carbon sequestration on surface mine lands. ASA-CSSA-SSSA Annual Meeting; Salt Lake City, UT. Nov. 6-10.

Andrews, D.M., **C.D. Barton**, R.K. Kolka and C.C. Rhoades. 2005. Hyporheic zone development in a restored riparian area. ASA-CSSA-SSSA Annual Meeting; Salt Lake City, UT. Nov. 6-10.

Koo, B.J., T.G. Hinton and **C.D. Barton**. 2005. Assessment of fish mortality from short-term exposure to illite clays used as an *in-situ* method for remediating Cs<sup>137</sup> contaminated wetlands. ASA-CSSA-SSSA Annual Meeting; Salt Lake City, UT. Nov. 6-10.

**Barton, C.D.**, P.N. Angel and P. Rothman. 2005. The Appalachian region reforestation initiative. The American Chestnut Foundations 22<sup>nd</sup> Annual Meeting; Lexington, KY. Oct. 28-30.

Ter Beest, J., **C.D. Barton**, D. Maehr and J. Larkin. 2005. What are elk doing to our forests? The Wildlife Society Conference; Madison, WI. September 29.

Littlefield, T., **C.D. Barton**, and M. Arthur. 2005. Carbon and nutrient dynamics in regenerating forests within the eastern Kentucky coal field. 90<sup>th</sup> Annual Meeting of the Ecological Society of America; Montreal, Canada. August 7-12.

Cherry, A., **C.D. Barton**, J. Stringer, and R.K. Kolka. 2005. Evaluating the effectiveness of streamside management zones in forested head water streams of Appalachia: Calibration phase. Soil and Water Conservation Society Annual Conference; Rochester, New York. July 30- Aug 4.

Ter Beest, J., **C.D. Barton**, D. Maehr and J. Larkin. 2005. Effects of a restored elk population on soils, vegetation and water quality in eastern Kentucky. Soil and Water Conservation Society Annual Conference; Rochester, New York. July 30- Aug 4.

Cotton, C., **C.D. Barton**, D. Graves, and P. Angel. 2005. Reforestation of Surface Mined Lands in the Appalachian Coal Fields, USA. The Thin Green Line-Symposium on Reforestation; Thunder Bay, Canada. July 26-28.

Andrews, M.D., and **C.D. Barton**. 2005. Using soil physicochemical data to predict hydrologic response in restored depression wetlands. Society of Wetland Scientists 26<sup>th</sup> Annual Meeting; Charleston, SC. June 5-10.

Angel, P.N., **C.D. Barton**, D. Graves, R. Sweigard and R. Warner. 2005. Improved Methods for the Establishment of Forests on Surface Mined Lands. American Society of Mine Reclamation Annual Conference; Breckenridge, CO. June 13-16.

**Barton, C.D.**, and M.D. Andrews. 2004. Using soil physicochemical data to predict hydrologic response in restored depression wetlands. Society for Ecological Restoration- Coastal Plain Chapter Meeting; Raleigh, NC. March 25-27.

**Barton, C.D.**, D. Graves, R. Sweigard, R. Warner. 2004. Carbon sequestration and mineland reforestation. 3rd Annual Carbon Capture and Sequestration Conference; ExchangeMonitor Publications 2004; Washington, DC. May 3-5.

Hitchcock, D.R., and **C.D. Barton**. 2004. Tritium phytoremediation at the Savannah River Site, SC USA: Water Management, remediation, and hydrologic research. The 6<sup>th</sup> Int. Conf. On Hydrosience and Engineering (ICHE-2004), May 30-June 3, Brisbane, Australia.

Koo, Bon-Jun, D.C. Adriano, **C.D. Barton**, and L.A. Newman. 2003. Biogeochemistry of heavy metals in the rhizosphere of pine seedlings (*Pinus taeda* L.) grown on amended coal combustion waste. ASA-CSSA-SSSA Annual Meeting, Denver, CO. Nov. 2-6, 2003.

Koo, Bon-Jun, D.C. Adriano, **C.D. Barton**, and R.M. Danker. 2003. Use of trees to remediate coal combustion waste sites: plant growth, bioavailability of heavy metals, and water quality. ASA-CSSA-SSSA Annual Meeting, Denver, CO. Nov. 2-6, 2003.

**Barton, C.D.**, D. Marx, D.C. Adriano, Bon-Jun Koo, and L.A. Newman. 2003. Establishment of a forest to control hydrology and acid generation on a landfill containing coal combustion waste. ASA-CSSA-SSSA Annual Meeting, Denver, CO. Nov. 2-6, 2003.

Wein, Gary, Mark Amidon, **Chris Barton**, Cassie Bayer, Bob Blundy, Robin Brigmon, Carl Fliermans, Michael Heitkamp, Tom Hinton, Dan Kaplan, Pam McKinsey, Gary Mills, Lee Newman, Mark Phifer, Kim Powell, Tracy Punshon, Beth Richardson, Greg Rucker, Frank Sappington, Anja Schank, Steve Serkiz, and Bruce Schappell. Monitored Natural Remediation at U.S. Department of Energy's Savannah River Site, South Carolina. 2003. Ecological Society of America Annual Meeting. Savannah, GA. August, 2003.

De Steven, D., R.R. Sharitz, J.H. Singer, & **C.D. Barton** 2003. "Vegetation response in experimental restorations of Southeastern Coastal Plain depression wetlands." Oral paper, Society of Wetland Scientists Annual Meeting, New Orleans, LA, June 2003.

**Barton, C.D.** E, McDonald, S. Mockenhaupt and R. Rowell. Applying phytoremediation and bioremediation to brownfield sites. EPA Brownfield 2002 Conference. Charlotte, NC. November, 2002.

Aburime, S.A., J.C. Seaman, T.S. Steenhuis and **C.D. Barton**. Determination of contaminant flow paths in the vadose zone by model analysis. ASA, CSSA & SSSA 94th Annual Meeting. Indianapolis, IN. November, 2002.

Hitchcock, D.R., K.T. Rebel, **C.D. Barton**, J.S. Seaman, S.H. Rhia and J.I. Blake. Estimating efficiencies of tritium phytoremediation at the Savannah River Site. 18<sup>th</sup> Annual International Conference on Contaminated Soils, Sediments and Water. Amherst, MA. October 2002.

**Barton, C.D.**, R.R. Sharitz, D.D. DeSteven and D.I. Imm. Restoration of Carolina bay depression wetlands in South Carolina, USA. Nanjing International Wetlands Symposium. Nanjing, China. September 2002.

Kolka, R.R, **C.D. Barton**, C.C. Trettin and E.A. Nelson. An assessment framework for restored forested wetlands. Nanjing International Wetlands Symposium. Nanjing, China. September 2002.

De Steven, D., R.R. Sharitz, J.H. Singer, and **C.D. Barton** 2002. "Experimental restoration of Southeastern Coastal Plain depression wetlands." Poster, Ecological Society of America Annual Meeting, Tucson, AZ, August 2002.

**Barton, C.D.** and A.D. Karathanasis. A method for estimating soil macroporosity using thin section and dye tracer images. ASA, CSSA & SSSA 93<sup>rd</sup> Annual Meeting. Charlotte, NC. October, 2001.

Paddock, L.S., C.S. Romanek, **C.D. Barton**, J.C. Seaman and M. Denham. Geochemistry of an abandoned fly ash/reject coal pile landfill: Implications for remediation. ASA, CSSA & SSSA 93<sup>rd</sup> Annual Meeting. Charlotte, NC. October, 2001.

**Barton, C.D.**, D.C. Adriano, F. Seay, and D. Marx. Evaluating techniques for establishing a vegetative cover on an acidic reject coal basin. American Society for Surface Mining and Reclamation 18<sup>th</sup> Annual National Conference. Albuquerque, NM. June 3-7, 2001.

De Steven, D., **C.D. Barton**, R.R. Sharitz, & J.H. Singer 2001. "A large-scale experiment for restoration of depression wetlands in South Carolina." Oral paper, Association of Southeastern Biologists Annual Meeting, New Orleans, LA, April 2001.

Singer, J.H., **C.D. Barton**, R.R. Sharitz, and D. DeSteven. Evaluating techniques for restoring 16 depression wetlands in South Carolina. Annual Meeting of the Society of Wetland Scientist. Chicago, IL. May 28-June 1, 2001.

Thompson, Y.L., A.D. Karathanasis, and **C.D. Barton**. Soil morphology, redox relationships, and hydrological regimes of seasonally inundated wetlands in western Kentucky. ASA, CSSA & SSSA 92<sup>nd</sup> Annual Meeting. Minneapolis, MN. November, 2000.

**Barton, C.D.**, and J.H. Singer. Evaluating hydrogeomorphic characteristics in disturbed depression wetlands and predicting restoration response using topographic attributes. Annual Meeting of the Society of Wetland Scientist. Quebec, Canada. June 5-9, 2000.

**Barton, C.D.** Treatment of acid mine drainage using passive treatment systems. Bioengineering Symposium. Augusta, GA. July 20, 1999.

**Barton, C.D.**, and A.D. Karathanasis. Colloid-enhanced desorption of zinc in soil monoliths. ASA, CSSA & SSSA 91<sup>st</sup> Annual Meeting. Salt Lake City, UT. October 31-November 4, 1999.

**Barton, C.D.**, J.H. Singer, C.C. Trettin, and R.K. Kolka. Dissolved organic carbon distribution and water quality attributes in a restored bottomland forest. ASA, CSSA & SSSA 91<sup>st</sup> Annual Meeting. Salt Lake City, UT. October 31-November 4, 1999.

Singer, J.H., **C.D. Barton**, C.C. Trettin, R.R. Sharitz, and R.K. Kolka. Techniques for the restoration of isolated depression wetlands in South Carolina.. ASA, CSSA & SSSA 91<sup>st</sup> Annual Meeting. Salt Lake City, UT. October 31-November 4, 1999.

**Barton, C.D.**, and A.D. Karathanasis. Colloid-facilitated transport of atrazine and zinc through soil monoliths. ASA, CSSA & SSSA 90<sup>th</sup> Annual Meeting. Baltimore, MD. October 18-22, 1998.

**Barton, C.D.**, and A.D. Karathanasis. Aerobic and anaerobic metal attenuation processes in a constructed wetland treating acid mine drainage. ASA, CSSA & SSSA 89<sup>th</sup> Annual Meeting. Anaheim, CA. October 26-31, 1997.

**Barton, C.D.**, and A.D. Karathanasis. Speciation and stability of minerals forming in a constructed wetland treating acid mine drainage. Joint meeting of the Eastern Section-American Association of Petroleum Geologist and The Society for Organic Petrology. Lexington, KY. September 29, 1997.

**Barton, C.D.**, and A.D. Karathanasis. Ameliorative design to improve the efficiency of constructed wetlands treating AMD in the Rock Creek watershed, Project close-out. Kentucky Nonpoint Conference. Lexington, KY. September 16, 1997.

**Barton, C.D.**, and A.D. Karathanasis. Renovation of a failed constructed wetland treating high metal load acid mine drainage. ASA, CSSA & SSSA 88<sup>th</sup> Annual Meeting. Indianapolis, IN. November 2, 1996.

Thompson, Y.L., **C.D. Barton**, and A.D. Karathanasis. Redox, hydrology and morphological characteristics of hydric soils in western Kentucky. ASA, CSSA & SSSA 88<sup>th</sup> Annual Meeting. Indianapolis, IN. November 2, 1996.

## **MEETINGS, PRESENTATIONS, CONSULTATION**

Barton, C.D., Panelist: Coal Mining and Reclamation. Governor's Conference on Energy and the Environment. Lexington, KY. September 27, 2011.

Trees and Water Quality Workshop. November 9, 2011. UK Arboretum. Instructors: Chris Barton, and Dave Lenard. 18 attendees.

Riparian Buffer Restoration Workshop. October 19 and October 21, 2010; April 19, 2011 and October 5, 2011. UK Arboretum. Instructors: Carmen Agouridis, Chris Barton, Amanda Gumbert, and Jim Lempky. 20, 24, 23 and 19 attendees, respectively.

Organized the 4<sup>th</sup> Annual Conference for the Appalachian Region Reforestation Initiative held August 4-6, 2009 at the Jenny Wiley State Park in Kentucky. There were 210 registered participants. Research activities at Robinson Forest, Starfire Mine and the Bent Mountain mine were visited during the conference.

Organized the 24<sup>th</sup> Annual Central States Forest Soils Conference held in Hazard, KY October 12-14, 2004. There were 92 registered participants from 7 states in attendance. Research activities at Robinson Forest, Robinson Substation at Quicksand, and the Starfire mine were highlighted and visited during the conference.

Mineland Reforestation presentations - Numerous tours have been conducted on our Starfire Mine research site in Perry Co. and the Bent Mt. site in Pike Co. with over 2000 in attendance representing various state and federal agencies, coal companies, forest industries, teachers and citizens. A group of selected tours are listed below:

- Mined Land Reclamation Research: Reforestation, Hydrology, Water Quality and Stream Restoration. Presentation for the KY Governors Scholars, Starfire Mine and Guy Cove, July 8, 2011. 22 attendees.
- Mined Land Reclamation Research: Reforestation, Hydrology, Water Quality and Stream Restoration. Presentation for the USEPA, Starfire Mine and Guy Cove, April 20, 2010. 16 attendees.
- Mined Land Reclamation Research: Reforestation, Hydrology and Water Quality. Presentation for the Kentucky Future Farmers of America, Bent Mountain Mine, May 11, 2006. 135 attendees.
- Mined Land Reclamation Research: Reforestation, Hydrology and Water Quality. Presentation for the Senator Mitch McConnell's Staff, Bent Mountain, December 14, 2005. 20 attendees.
- Mined Land Reclamation Research: Reforestation, Hydrology and Water Quality. Presentation for the Appalachian Regional Reforestation Initiative Members, Bent Mt. Mine, August 10, 2005. 25 attendees.
- Mined Land Reclamation Research: Reforestation, Hydrology and Water Quality. Report for U.S. Fish and Wildlife Service and Office of Surface Mining Terrestrial Carbon Sequestration and Appalachian Regional Reforestation Initiative Workshop, Hazard, KY, June 21, 2006. 44 attendees.
- Mined Land Reclamation Research: Hydrology and Water Quality. Presentation for the Federal Office of Surface Mining Inspectors, Bent Mt. Mine, July 12, 2005. 41 attendees.
- Congressional Staff Visit to Robinson Forest – Presentations on Mineland Reforestation were highlighted; April 14-16, 2004.

Robinson Forest SMZ project - A group of selected tours are listed below:

- Presentation for KY Farm Bureau; Oct. 27 and December 1, 2011.
- Presentation for Native American group from Montana: Robinson Forest; June 7, 2011, 12 participants.
- Presentation for RCARS Field Day: Robinson Forest; October 2, 2010, 42 participants.
- Presentation to USDA Silviculture Group: Robinson Forest; April 16, 2010, 33 participants.
- Presentation to Kentucky Governor's Scholars Program: Robinson Forest; July, 2009, 20 participants.
- Presentation to Eastern KY Chapter of the Society of American Forests: Robinson Forest; May, 2009, 21 participants.
- Presentation to Southern States BMP Board: Robinson Forest; October, 2007, 34 participants.
- Presentation to Kentucky Chapter of the Society of American Foresters: Robinson Forest; October, 2007, 12 participants.
- Presentation to Kentucky Wood Industry Association: Robinson Forest; July, 2006, 65 participants.
- Presentation to Kentucky Chapter of Soil and Water Conservation Society: Robinson Forest; April, 2006, 20 participants.
- Presentation to Kentucky BMP Board. Clayhole, KY; October, 2003, 14 participants.
- Presentation to Southern States BMP Board. Clayhole, KY; September, 2003

Carolina Bay Restoration Project – Presentation to Savannah River Research Advisory Committee. Aiken, SC; February, 2007; February, 2005 and November, 2003.

## **SERVICE AND RECOGNITION**

### ***Editorship, reviewer service:***

Associate Editor, International Journal of Phytoremediation, 2005 - present.

Associate Editor, International Journal of Mining, Reclamation and Environment, 2007 - present.

Associate Editor, Journal of Environmental Monitoring and Restoration, 2002 – present.

Manuscript Reviewer:

- Water, Air and Soil Pollution
- International Journal of Phytoremediation
- International Journal of Mining, Reclamation and Environment
- Journal of Environmental Monitoring and Restoration

- Environmental Geochemistry and Health
- USDA Forest Service, General Technical Report
- Journal of Environmental Quality
- Soil Science Society of America Journal
- Forest Science
- Ecological Engineering
- Journal of Hydrology
- Environmental Engineering and Geoscience
- Restoration Ecology
- Journal of Applied Ecology
- Geoderma
- Canadian Journal of Forest Research
- Hydrologic Processes
- Ecohydrology
- Forest Ecology and Management
- Wetlands
- Journal of the American Water Resources Association
- Southern Journal of Applied Forestry
- New Forests

Moderator:

Forest Hydrology Session: 17<sup>th</sup> Central Hardwood Forest Conference. Lexington, KY. April 5-7, 2010.

Session 23: Carbon Equivalent Landscapes: Setting the Agenda and Implementing the Details. 10<sup>th</sup> National Conference on Science, Policy and the Environment. National Council for Science and the Environment. Washington, DC. January 20-22, 2010.

Session VI: Genes and New Frontiers. 5<sup>th</sup> International Phytotechnologies Conference. Nanjing, China. October 22-25, 2008.

Session E: Mountain Top Removal and Valley Fill. Mid-Atlantic Stream Restoration Conference. Cumberland, Maryland November 6-8, 2007.

***National Proposal Review Panels:***

USGS National Institutes for Water Resources Grants Program. 2009.

EPA STARS Scholarship Review Panel, Aquatic Systems and Ecology. 2005. Washington D.C.

USDA CSREES National Research Initiative Competitive Grants Program. 2005

NOAA Sea Grant Proposal Review. 2003, 2007.

***Committees:***

US Army Corps of Engineers, HGM Validation Project Delivery Team, Validate HGM Guidebook for High Gradient Ephemeral & Intermittent Streams in WV & KY, 2011-2013.

University of Kentucky Agriculture Faculty Council, 2009-2011.

Barnhart Fund for Excellence Committee, 2009-2011.

Steering Committee Member, UK Natural Resource Conservation and Management Academic Program, 2008 – present.

Committee on Research and Policy, Kentucky Water Resources Institute, 2004-2007, 2008-present.

Steering Committee Member, Precision Agriculture and Natural Resources, 2004-2006.

Appalachian Region Reforestation Initiative's Science Team, 2004-present. Co-team Leader 2007 - present.

University of Kentucky Representative, Consortium of Universities for the Advancement of Hydrological Sciences, 2003 - present.

UK Department of Forestry, Research Committee (chair), 2010 – present.

UK Department of Forestry, Graduate Program Committee, 2003 - 2005, 2006 – 2008, 2010-2011.

UK College of Agriculture, Robinson Forest Committee, 2003 - present.

US DOE Savannah River Site, Wetland and Aquatic Issues Task Group, 1999-2003.

US DOE Savannah River Site, D-Area CERCLA/RCRA Integration Team, 1999-2003.

US DOE Savannah River Site, Monitored Natural Attenuation and Phytoremediation Task Group, 2000-2002.

***Awards:***

- Association of Public and Land-Grant Universities; Exemplary Program Award; UK Mined Land Reforestation Project; 2011.
- United States Department of Interior; 2011 Presidential Migratory Bird Federal Stewardship Award; Appalachian Regional Reforestation Initiative; 2011.
- University of Kentucky, College of Agriculture; High Impact Research/Extension Program Award; Streamside Management Zone Effectiveness Project; 2010.
- United States Department of Interior, Cooperative Conservation Award; Appalachian Region Reforestation Initiative; 2007.
- United States Forest Service, Regional Forester's Award for Natural Resource Stewardship; Carolina Bay Restoration Project; 2006.
- University of Kentucky, Commonwealth Collaborative; 2005.

- United States Department of Agriculture, Forest Service; Southern Regional Forester's Cost Cutter - Entrepreneur Award, SRS Phytoremediation Program; 2000.
- United States Department of Agriculture, Forest Service; Southern Regional Forester's Seamless Government Award, Savannah River Environmental Sciences Field Station Establishment; 1999.
- Savannah River Environmental Sciences Field Station; Excellence in Teaching Award, 1999.
- Kentucky Research Challenge Trust Fund Fellowship; Graduate student fellowship, 1998.
- Soil Science Society of America; Division S6 (soil and water conservation) Graduate Student Award, 1997.
- United States Department of Agriculture Forest Service; Certificate of Appreciation Award, 1996.
- Louis S. Ison Graduate Student Scholarship; University of Kentucky, 1994.

***Awards by Graduate Students:***

- American Society of Mine Reclamation, Memorial Scholarship; Received by Katy Adank, 2008.
- KY EPSCoR, Research Enhancement Grant; Received by Katy Adank, 2007.
- American Society of Mine Reclamation, 3<sup>rd</sup> Place Oral Presentation; Received by Michael French, 2007.
- American Society of Mine Reclamation, Memorial Scholarship; Received by Tara Littlefield, 2006.
- American Society of Mine Reclamation, Memorial Scholarship; Received by Claudia Cotton, 2006.
- Soil Science Society of America, Graduate Student Presentation Award, Honorable Mention; Received by Danielle Andrews, 2005.
- American Association of Petroleum Geologists: Graduate Student Assistance Award; Received by Sally Maharaj, 2005.
- American Society of Mine Reclamation: Best Graduate Student Poster Presentation; Received by Patrick Angel, 2005.
- Society of Wetland Scientists: Honorable Poster Presentation; Received by Danielle Andrews, 2005.
- Soil and Water Conservation Society: Best Graduate Student Poster Presentation; Received by Alex Cherry, 2005.

***Community Service:***

- Youth Soccer Coach, 2007 – 2008.
- Board of Directors, UK Spindletop Hall, Inc, 2006 – 2010.
- Committee Member, Reforest the Bluegrass, 2003-2005.

- Youth Basketball Coach, 2006 – 2007.

***Professional Organizations:***

- American Water Resources Association
- Soil Science Society of America
- American Society for Surface Mining and Reclamation
- American Chestnut Foundation