

Michael P. Strager

Education

- PhD – 2004 Natural Resource Economics, Division of Resource Management, West Virginia University, Morgantown, WV. Dissertation title: “Integrating Spatial Analysis and Decision Support Systems for Natural Resource Management.”
- MS - 1995 Agricultural and Resource Economics, Division of Resource Management, West Virginia University, Morgantown, WV. Thesis title: “Prioritizing Acid Mine Drainage Affected Watersheds for Reclamation: A Compromise Programming Approach.”
- BS - 1992 Agriculture Business Management, College of Agricultural Science, Pennsylvania State University, University Park, PA. Student research: “Small Fruit Grower Willingness to Adopt Alternatives to Chemical Controls.”

Professional Experience

- 2017 – present Professor
Division of Resource Economics and Management
- 2011 – 2017 Associate Professor
Division of Resource Management
- 2007 - 2011 Assistant Professor
Division of Resource Management
West Virginia University, Morgantown, WV
- 2006 Visiting Assistant Professor
Joint position with the Division of Resource Management and the Division of Forestry and Natural Resources, West Virginia University, Morgantown, WV
- 2004 - 2005 Landscape Scientist
Canaan Valley Institute, Thomas, WV
- 1999 - 2004 Research Coordinator
Natural Resource Analysis Center, West Virginia University, Morgantown, WV
- 1999 - 2003 Principal
Spatial Analytics LLC, Morgantown, WV
- 1995 - 1999 GIS Analyst
Natural Resource Analysis Center, West Virginia University, Morgantown, WV

Awards and Recognition

- 2016 Nominated for the American Water Resource Association 2016 Integrated Water Resources Management Award. The submitted project was titled “Integrated Water Resource Management to Ensure the Protection of Surface Water Supplied for West Virginia Residents.”

- 2016 Best Professional Poster, WV Association of Geospatial Professionals, Annual Conference for the poster titled “Terrestrial Vertebrate Species Distribution Modeling for the Mountaintop Removal Mining Region of Appalachia. Co-authored with Jacquelyn M. Strager.
- 2016 Nominated for a National Food and Agricultural Sciences Excellence in College and University teaching as part of the Association of Public and Land-grant Universities and American Association of State Colleges and Universities.
- 2016 Provided testimony as an expert witness for the West Virginia Department of Environmental Protection for work in response to the 2014 chemical spill in Charleston, WV in January of 2016. The final ruling by the WV Environmental Quality Board supported my scientific approach to delineating zones of critical concern above public water intakes.
- 2015 Protecting water resources research was featured in the Association of American Colleges and Universities national production of The Academic Minute posted in the earth science, ecology, and geology section and broadcast on public radio at <http://academicminute.org/2015/05/michael-strager-wvu-protecting-water-resources/>
- 2015 Spring Semester Faculty Development Leave
- 2015 West Virginia University Foundation Outstanding Teaching Award
- 2014 The paper titled “Combining RapidEye Satellite Imagery and LiDAR for Mapping of Mining and Mine Reclamation with A. Maxwell, T. Warner, and M. Pal was the recipient of the Talbert Abrams Award for best paper published in 2014 in Photogrammetry Engineering and Remote Sensing.
- 2014 Faculty Enhancement Grant Award, Kaye C. Daniel Faculty Development, Davis College of Agriculture, Forestry and Design, West Virginia University.
- 2014 Teaching Award, Davis College of Agriculture, Natural Resources and Design, West Virginia University.
- 2014 Teaching Award, Division of Resource Management, Davis College
- 2014 Research Award, Division of Resource Management, Davis College
- 2013 Teaching Award, Division of Resource Management, Davis College
- 2013 Research Award, Division of Resource Management, Davis College
- 2013 The paper titled “Hierarchical classification of stream condition: a house–neighborhood framework for establishing conservation priorities in complex river scapes” with G. Merovich, J. T. Petty, and J. B. Fulton was recognized as the spotlight article in the Journal of Freshwater Science.
- 2012 Recipient of a Davis-Michael Mid-Career Faculty Development Program Grant. Spatial Optimization.
- 2009 Research Award, Division of Resource Management, Davis College

- 2008 Accepted application in a Center for Spatially Integrated Science Workshop with \$1,200 travel stipend to attend *Geographically Weighted Regression* at Penn State University, University Park, PA, June 2008.
- 2006 Accepted application in a Center for Spatially Integrated Science Workshop with \$1,000 travel stipend to attend *GIS and Spatial Modeling for the Undergraduate Social Science Curriculum* at Ohio State University, Columbus, OH, June 2006.
- 1995 Outstanding Thesis Award from the College of Agriculture and Forestry 1995, Northeast Resource and Environmental Economics Thesis Representative from WVU.
- 1992 Graduate Research Assistantship, Division of Resource Management, College of Agriculture and Forestry, West Virginia University from Aug 92 through May 95.

Summary of Research Interests

My research interests are in using appropriate spatial and decision analysis techniques to aid in the analysis and management of natural resources. I have applied Geographic Information Systems, spatial analysis, and remote sensing for forestry, water quality, wildlife, recreation and conservation planning. Much of my work has resulted in the development of spatial decision support to aid in prioritizing areas, evaluating alternatives and examining trade-offs when managing natural resources.

External Research Grants

Project Title	Investigators (PI listed first followed by co-PIs)	Funding Period	Source
Quantifying the Success and Long-Term Ecological and Socioeconomic Benefits of Watershed-Scale AMD Remediation Efforts within West Virginia	M. Strager J. T. Petty E. Merriam P. Ziemkiewicz	Sept 2016 to Dec 2018	U.S. Department of the Interior Office of Surface Mining Reclamation and Enforcement
RII Track 1: Gravitational Wave Astronomy and the Appalachian Freshwater Initiative (Waves of the Future: Capacity Building for the Rising Tide of STEM in West Virginia (EPSCoR)	F. King D. Vesper E. Scime J. Anderson J. Skousen M. Strager L. Shin Lin and 12 others	Aug 2015 to July 2017	U.S. National Science Foundation - Experimental Program to Stimulate Competitive Research
Delineating Zones of Critical Concern for Source Water Protection in WV	M. Strager N. Zegre	July 2014 to Sept 2016	WV Bureau for Public Health
Stream Stats development for West Virginia: FY16 ongoing support	M. Strager J. Strager J. Fletcher	Sept 2015 to Sept 2016	U.S. Geological Survey
Geospatial Technical Assistance toward the Development and Implementation of a StreamStats Hydrologic Modeling Framework for West Virginia	J. Fletcher M. Strager	Sept 2014 to June 2016	U.S. Geological Survey

Updating Zones of Critical Concern for Source Water Protection in WV	M. Strager N. Zegre	July 2014 to June 2015	WV Division of Health and Human Resources Bureau for Public Health
Delineating Zones of Peripheral Concern to Protect Source Water in WV	M. Strager	Apr 2015 to Dec 2015	WV Division of Environmental Protection
Mapping Stream Corridor Characteristics in the Chesapeake Bay Watershed.	M. Strager	June 2014 to June 2015	U.S. Geological Survey
Developing Updated Hydrological Inputs for Streamstats in WV	J. Fletcher M. Strager	May 2013 to Dec 2015	U.S. Geological Survey
Mapping Fluvial Landforms in Floodplains Related to Ecosystem Functions	M. Strager	June 2013 to Dec 2014	U.S. Geological Survey
Development of the Watershed Futures Model Decision Support Tool	M. Strager	Apr 13 to June 2014	WV Water Research Institute
Value Added Data and Models for Streamflow calculations of WV Watersheds	S. Lamont M. Strager	Feb 2012 to Jun 2013	WV Department of Environmental Protection
Wetland Modeling in WV Phase II	M. Strager J. Strager	April 2012 to June 2013	WV Division of Natural Resources
Development of a Spatially Explicit Surface Coal Mining Predictive Model	M. Strager	Oct 2012 to Oct 2013	The Nature Conservancy
Predicting fire severity and impacts to ephemeral and intermittent streams after large-scale prescribed fire	M. Strager	Jan 2013 to Dec 2016	U.S. Forest Service
Impacts of Mountaintop Mining on Terrestrial Ecosystem Integrity	P. Wood M. Strager	Jan 2012 to Dec 2013	U.S. Geological Survey
Assessment and mining impacts on ecosystem health and diversity: Subtask 1 Landscape Characterization	M. Strager	Jan 2012 to Dec 2015	Appalachian Research Initiative for Environmental Science
Value Added Data and Models for Hydrological Analysis of WV Watersheds	M. Strager S. Lamont J. M. Strager	Jun 2011 to Dec 2013	WV Department of Environmental Protection
Wetland Inventory of West Virginia	M. Strager J. Strager	May 2011 to Jul 2011	WV Division of Natural Resources
Pilot Test the Ecological Approaches to Environmental Protection Developed Capacity Research Projects C-06(A) and C-06(B)	J. Anderson W. Veselka M. Strager H. Ghadimi L. Lin J. T. Petty T. Katzner D. Welsch T. Miller	Mar 2011 to May 2012	National Academy of Sciences Strategic Highway Research Program II
West Virginia Forest Regeneration Project: Pilot Assessment	D. McGill M. Strager E. Heitzman	Jan 2011 to Dec 2011	WV Division of Forestry
Appalachian Assessment of Natural Assets – Forests	F. Boettner M. Strager J. Deng K. Arano	Oct 2010 to Dec 2011	Appalachian Regional Commission
DNR-Based Population Demographics of Black Bears in Maryland	J. Edwards M. Strager	May 2010 to May 2012	WV Division of Natural Resources

	J.T. Petty		
A Hierarchical Alternative Futures Analysis for the Mountaintop Removal Valley Fill Mining Region of West Virginia	J. T. Petty M. Strager J. Futon P. Ziemkiewicz	Jun 2010 to Dec 2012	U.S. Environmental Protection Agency
Development of a Zone of Critical Concern Decision Support System for WV	M. Strager J. Fletcher	Apr 2010 to Jun 2011	WV Division of Health and Human Resources Bureau for Public Health
Kanawha River Basin Nutrient Trading Feasibility Assessment	R. Herd M. Strager A. Collins N. Zegre	Jun 2009 to Jun 2011	U.S. Environmental Protection Agency
Appalachian Assessment of Natural Assets – Water	J. Deng M. Strager R. Jackson J. Anderson T. Harris	Oct 09 – Sept 10	Appalachian Regional Commission
An Inventory and Recreational Analysis for Cheat Lake, WV	M. Strager C. Pierskalla	May 09 – Jun 10	Allegheny Energy
WCMS Development Maintenance and Training for FY 2009	J. Fletcher M. Strager J. Strager	Nov 08 – Jun 09	WV Department of Environmental Protection
Determining the Scale Dependency of Soil Quality Indicators and Specific EPIC Output Parameters for Selected BMP's Using Field and Map Information – Objective 1 – Areas of Concern	M. Strager	Jul 08 – Sep 09	Natural Resource Conservation Service
Decision Support System for Sage Grouse Management	M. Strager	Jul 08 – Sep 09	Natural Resource Conservation Service
Modeling Impacts of Produced Water from CBNG E&P Activities	J. Fletcher M. Strager C. Yuill, R. Eli	Apr 08 – Jan 10	U.S. Department of Energy
Using GIS Technology to Identify and Rank the Risk and Susceptibility of Sites in the Mid-Atlantic Area to the Emerald Ash Borer	M. Strager J. Strager J. McNeel	Sept 07- Dec 10	U.S. Forest Service
Development of a WCMS-HSPF Groundwater Model Component for Underground Mine Hydrologic Assessment	J. Fletcher R. Eli M. Strager	Sept 07 – Mar 09	Office of Surface Mining Reclamation and Enforcement
WCMS Low flow Calculations Update	J. Fletcher M. Strager	Jun 07- Dec 07	WV Department of Environmental Protection
West Virginia Wetland Inventory and Modeling Project	M. Strager C. Yuill P. Mazik	Jun 07- Dec 10	WV Division of Natural Resources
WV 244 – Strategies for Restoring West Virginia Streams Impaired by Historic Acid Mine Drainage: Technical Support of WVDEP Implementation of AML	R. Herd J.T. Petty M. Strager P Ziemkiewicz	May 07 – Nov 08	WV Department of Environmental Protection
Identifying and Delineation of Conservation Areas in Six WV Counties	M. Strager P. Mazik	Jun 07 – Dec 10	WV Division of Natural Resources

and Refinement and Customization of a Conservation Area GIS Tool to Assist in County-Level Planning			
Decision Support System for Sage Grouse Management	M. Strager	May 06 – Jun 09	Natural Resource Conservation Service
Development of a Habitat Restoration and Conservation Prioritization Tool for Songbirds and Mussels in the Appalachian Mountains	P. Wood M. Strager P. Mazik	Sept 06 – Dec 09	U.S. Geological Survey
WCMS Development, Maintenance and Training for FY 2007	J. Fletcher M. Strager J. Strager	Sep 06 – Jun 07	WV Department of Environmental Protection
Witness and Corner Tree Mapping for Identifying Pre-settlement Vegetation Conditions in the Monongahela National Forest, West Virginia	M. Strager	Jun 06 – May 08	US Forest Service
Effective Strategies for Reducing Nutrient Loads from the Opequon Creek Watershed	D'Souza A. Collins M. Strager	Jun 06 – Jun 09	U.S. Geological Survey
Visual Nature Studio Land Model Simulation and Analysis of the New River Gorge	M. Hasenmyer M. Strager	Sep 06 – Feb 07	National Park Service
Combining a Pairwise Comparison Approach and Statistical Analysis to Aid Land Conservation in the Northern Neck, Virginia	M. Strager	Feb 06 – Dec 06	U.S. National Park Service – Chesapeake Bay Program
Estimating Ambient Water Quality in AMD Impacted Watersheds and WCMS/Updates/Training	J. Fletcher M. Strager Cromwell J. Strager	Jan 06 – Jun 06	WV Department of Environmental Protection
Adapting a Landscape-Scale Predictive Model for Cerulean Warbler Abundance to the Central Appalachian Coalfields Region	P. Wood M. Strager J. Strager	Oct 04 – Jun 06	U.S. Fish and Wildlife Service
Determining the Scale Dependency of Soil Quality Indicators and Specific EPIC Output Parameters for Selected BMP's Using Field and Map Information	Pena-Yewtukhiw M. Strager	May 04 - Jun 09	Natural Resource Conservation Service
Invasive Species Mapping and Modeling for the Kiski-Conemaugh River Basin, PA	M. Strager C. Yuill	Apr 04 – Dec 05	U.S. Department of Agriculture Animal and Plant Health Inspection Service
A Hierarchical Watershed Classification System for Identifying Restoration Priorities and Impact Vulnerability in Mined Watersheds of the Mid-Atlantic Highlands	J. T. Petty M. Strager P Ziemkiewicz J. Stiles	Jan 04 – Jan 07	U.S. Environmental Protection Agency Science to Achieve Results
Wetland Vegetation Monitoring Study Along the Conemaugh River/Reservoir, PA	M. Strager J. Rentch C. Yuill	Aug 03 – Dec 06	U.S. Geological Survey
Parcel Prioritization for the Cacapon Watershed, West Virginia	M. Strager	Apr 02 – Sept 03	Canaan Valley Institute
Bureau of Mines Abandoned Mine Land and Watershed Modeling System	J. Fletcher M. Strager	Sept 00 – Jul 02	Maryland Department of Environment

	C. Yuill		
Wetland and Stream Mitigation Banking Program Feasibility Study	J. Anderson M. Strager J.T. Petty S. Kite R. Fortney	Oct 02 – Oct 07	WV Division of Highways
Parcel Prioritization for the Cacapon Watershed, WV	M. Strager R. Rosenberger	Dec 02 – Jul 03	Canaan Valley Institute
GIS Tools for Cumulative Hydrological Impact Assessment	J. Fletcher M. Strager R. Eli	Oct 01 – Jan 06	WV Department of Environmental Protection
Canaan Valley Institute Master Affiliation Agreement	J. Fletcher M. Strager J. Strager	Dec 01 – Dec 02	Canaan Valley Institute
GIS Technical Support for Managing Camp Dawson US Army Training Grounds	J. Fletcher M. Strager	Dec 00 – Jul 02	U.S. Army Corps of Engineers
Enhanced Decision Support for TMDLs	P. Ziemkiewicz M. Strager	Apr 00 – Dec 01	WV Department of Environmental Protection
GIS Spatial Modeling Support and Consultation	J. Fletcher M. Strager	Aug 00 – Aug 02	Canaan Valley Institute
Mountaintop Removal Mining and Land Use	C. Yuill M. Strager	Oct 99 – Jan 01	WV Legislature/Joint Committee on Government and Finance
Abandoned Mine Pool Flooding of the Pittsburgh, Ohio, and Irwin Pools	P Ziemkiewicz J. Fletcher J. Donovan M. Strager	Mar 99 – Oct 02	Parsons Infrastructure Technology Group

Publications

Peer reviewed journal articles or book chapters

40. **Strager, M. P.**, M. Thomas -Van Gundy, A. E. Maxwell. 2016. Predicting post-fire change in West Virginia, USA from remotely-sensed data. *Journal of Geospatial Applications in Natural Resources*. 1(2): 1-17.
39. Maxwell, A. E., T. Warner, **M. P. Strager**. 2016. Predicting palustrine wetland probability using random forest machine learning and digital elevation data-derived terrain variables. *Photogrammetric Engineering and Remote Sensing*. 82(6):437–447.
38. Merriam, E. R., Petty, J. T., **M. P. Strager**. 2016. Watershed planning within a quantitative scenario analysis framework. *Journal of Visual Experiments* (113), e54095, doi:10.3791/54095.
37. Tri, A. N., J. W. Edwards, **M. P. Strager**, J. T. Petty, C. W. Ryan, C. P. Carpenters, M. A. Ternent, P. C. Carr. 2016. Habitat use by American black bears in the urban-wildland interface of the Mid-Atlantic, USA. *Ursus*. 27(1):45-56.
36. Dhami, I., J. Deng, **M. P. Strager**, J. Conley. 2016. Suitability-sensitivity analysis of nature-based tourism using geographic information systems and analytic hierarchy process. *Journal*

of *Ecotourism*. pp. 1-28. doi:10.1080/14724049.2016.1193186. Available online at <http://dx.doi.org/10.1080/14724049.2016.1193186>.

35. **Strager, M. P.**, J. M. Strager, J. S. Evans, A. E. Maxwell, J. Dunscomb, B. Kreps. 2015. Combining a spatial model and demand forecasts to map future surface coal mining in Appalachia. *PLoS ONE* 10(6): e0128813. doi:10.1371/journal.pone.0128813.
34. Pitchford, J., **M. P. Strager**, A. Riley, L. Lin, and J. T. Anderson. 2015. Modelling streambank erosion potential using maximum entropy in a central Appalachian watershed. *Proceedings of the International Association of Hydrological Sciences* 367:122-127. Gottingen: Copernicus GmbH.
33. Maxwell, A. E., T. Warner, **M. P. Strager**, J. Conley. 2015. Assessing machine learning algorithms and image- and LiDAR-derived variables for GEOBIA classification of mining and mine reclamation. *International Journal of Remote Sensing*. 36(4):954-978. doi: 10.1080/01431161.2014.1001086.
32. Shultz, C., J. C. Hall, **M. P. Strager**. 2015. Production of wind energy and agricultural land values: Evidence from Pennsylvania. *Oil, Gas & Energy Quarterly*. 64(2): 267-274.
31. Merriam, E. R., J. T. Petty, **M. P. Strager**, A. E. Maxwell and P. F. Ziemkiewicz. 2015. Complex contaminant mixtures in multistressor Appalachian riverscapes. *Environmental Toxicology Chemistry*, 34(11):2603–2610. doi:10.1002/etc.3101.
30. Becker, A. D., P. B. Wood, **M. P. Strager**, C. Mazzarella. 2015. Impacts of mountaintop mining on terrestrial ecosystem integrity: identifying landscape thresholds for avian species in the central Appalachians, United States. *Landscape Ecology*. 30:339–356. DOI 10.1007/s10980-014-0134-8.
29. Merriam, E. R., J. T. Petty, **M. P. Strager**, A. E. Maxwell, and P. F. Ziemkiewicz, 2015. Landscape-based cumulative effects models for predicting stream response to mountaintop mining in multi-stressor Appalachian watersheds. *Freshwater Science*, 34(3): 1006-1019.
28. Maxwell, A. E., **M. P. Strager**, T. A. Warner, N. P. Zegre, C. B. Yuill. 2014. Comparison of NAIP orthophotography and RapidEye satellite imagery for mapping of mining and mine reclamation. *GIScience and Remote Sensing*. 51(3): 301-320. <http://dx.doi.org/10.1080/15481603.2014.912874>.
27. Anderson, J. T., R. L. Ward, J. T. Petty, J. S. Kite, and **M. P. Strager**. 2014. Culvert effects on stream and stream-side salamander habitats. *International Journal of Environmental Science and Development*. 5(3):274-281.
26. Maxwell, A. E., T. A. Warner, **M. P. Strager**, M. Pal. 2014. Combining RapidEye satellite imagery and LiDAR for mapping of mining and mine reclamation. *Photogrammetry Engineering and Remote Sensing*. 80(2): 179-189.
25. Sheehan, K. R., **M. P. Strager**, S. A. Welsh. 2013. Advantages of geographically weighted regression for modeling benthic substrate in two greater Yellowstone ecosystem streams. *Environmental Modeling & Assessment*. 18(2): 209-219. Doi:10.1007/s10666-012-9334-2.

24. Merovich, G. T., J. T. Petty, **M. P. Strager**, J. B. Fulton. 2013. Hierarchical classification of stream condition: a house–neighborhood framework for establishing conservation priorities in complex riverscapes. *Freshwater Science*. 32(3):874-891.
23. Wickham, J., M. Nicholson, W. Jenkins, P. Wood, D. Drunkenbrod, G. Suter, **M. P. Strager**, C. Mazzarella, W. Galloway, J. Amos. 2013. The overlooked terrestrial impacts of mountaintop mining. *Bioscience*. 63(5):335-348.
22. Maxwell, A. E., **M. P. Strager**. 2013. Assessing landform alterations induced by mountaintop mining. *Journal of Natural Science*. 5(2A): 229-237. doi:10.4236/ns.2013.52A034.
21. Maskey, V., **M. P. Strager**, C. Bernasconi. 2013. Managing a sustainable transportation system: exploring a community’s attitude, perception, behavior of the Morgantown Public Rapid Transit. *Journal of Management and Sustainability*. 3(2): 56-67.
20. Merriam, E. R., J. T. Petty, **M. P. Strager**, A. E. Maxwell, P. F. Ziemkiewicz. 2013. Scenario analysis predicts context-dependent stream response to landuse change in a heavily mined central Appalachian watershed. *Freshwater Science*. 32(4):1246-1259. doi: 10.1899/13-003.1.
19. Petty, J. T., **M. P. Strager**, E. M. Merriam, and P. F. Ziemkiewicz. 2013. Scenario analysis and the Watershed Futures Planner: predicting future aquatic conditions in an intensively mined Appalachian watershed. *Environmental Considerations in Energy Production*. Edited by J. R. Craynon. Society for Mining, Metallurgy, and Exploration, Inc. Englewood, CO.
18. **Strager, M. P.** 2012. Tools for watershed planning - development of a Statewide Source Water Protection System (SWPS). Water Resources Management and Modeling. ISBN 978-953-51-0246-5.
17. Thomas-Van Gundy, M., **M. P. Strager** and J. Rentch. 2012. Site characteristics for red spruce witness tree locations in the uplands of West Virginia. *Journal of the Torrey Botanical Society*. 139(4): 391-405.
16. Maxwell, A. E., **M. P. Strager**, C.B. Yuill, J. T. Petty. 2012. Modeling critical forest habitat in the South Central Appalachians USA. *International Journal of Ecology*, Focus Issue on Landscape Ecology. 2012(182683): 1-10, doi:10.1155/2012/182683.
15. Wu, J., **M. P. Strager**, J. Wang. 2011. A two-state GIS-based site suitability model for siting biomass-to-biofuel plants and its application in West Virginia, USA. *International Journal of Forestry Engineering*. 22(2): 28-38.
14. Merriam, E. R., J. T. Petty, G. T. Merovich, J. B. Fulton, **M. P. Strager**. 2011. Additive effects of mining and residential development on stream conditions in a central Appalachian watershed. *Journal of the North American Benthological Society*. 30(2):399-418.
13. **Strager, M. P.**, M. Thomas-Van Gundy, M. Metz. 2011. Mapping pre-settlement forest species with witness trees, *Journal of GIS in Forestry*. Jan, 15-16.

12. Petty, J. T., J. B. Fulton, **M. P. Strager**, G. T. Merovich, J. M. Stiles, P. F. Ziemkiewicz. 2010. Landscape indicators and thresholds of stream ecological impairment in an intensively mined Appalachian watershed. *Journal of North American Benthological Society*. 29(4):1292-1309.
11. **Strager, M. P.**, J. T. Anderson, J. Osbourne. 2010. A three-tiered framework to select, prioritize, and evaluate potential wetland and stream mitigation banking sites. *Wetlands Ecology and Management*. DOI 10.1007/s11273-010-9194-y.
10. **Strager, M. P.**, J. J. Fletcher, J. M. Strager, C. B. Yuill, R. N. Eli, J. T. Petty, S. J. Lamont. 2010. Watershed analysis with GIS: The Watershed Characterization and Modeling System software application. *Computers and Geosciences*. 36:970-976.
9. **Strager, M. P.**, J. T. Petty, J. M. Strager, J. Barker-Fulton. 2009. A spatially explicit framework for quantifying downstream hydrologic conditions. *Journal of Environmental Management*. 90:1854-1861.
8. Bernasconi, C. B., **M. P. Strager**, V. M. Maskey, M. Hasenmyer. 2009. Assessing the public preferences for design and environmental attributes of an urban automated transportation system. *Landscape and Urban Planning*. 90(3-4):155-167.
7. Poplar-Jeffers, I. O., J. T. Petty, J. T. Anderson, S. J. Kite, **M. P. Strager**, R. H. Fortney. 2009. Culvert replacement and stream habitat restoration: Implications from brook trout management in an Appalachian Watershed, USA. *Restoration Ecology*. 17(3):404-413.
6. Mynsberge, A. R., **M. P. Strager**, J. M. Strager, P. M. Mazik. 2009. Developing predictive models for freshwater mussels (*Mollusca: Unionidae*) in the Appalachians: limitations and directions for future research. *Ecoscience*. 16(3):387-398.
5. Wang, J., W. A. Goff, **M. P. Strager**. 2009. Using spatial features to review application, effectiveness, and compliance of forestry best management practices in West Virginia. *International Journal of Forest Engineering*. 20(2):36-46.
4. Morris, A. J., J. J. Donovan, **M. P. Strager**. 2008. Geospatial analysis of climatic and geomorphic interactions influencing stream discharge, Appalachian Mountains, USA. *Environmental Modeling and Assessment*. 14:73-84.
3. Deng, J., G. Walker, and **M. P. Strager**. 2008. Assessment of territorial justice using Geographic Information Systems: A case study of proximity of golf courses in Calgary, Canada. *Leisure*. 32(1):205-232.
2. **Strager, M. P.** and R. S. Rosenberger. 2007. Aggregating high-priority landscape areas to the parcel level: An easement implementation tool. *Journal of Environmental Management*. 82:290-298.

1. **Strager, M. P.** and R. S. Rosenberger. 2006. Incorporating stakeholder preferences for land conservation: weights and measures in spatial MCA. *Ecological Economics*. Vol. 57, pp 627-639.

Peer reviewed (non-journal articles or book chapters)

Cottrell, L., K. Viggiano, E. Murphy, E. Bowen, D. Lacombe, S Wilkinson, T. Harris, J. Strager, **M. P. Strager**. 2016. Best practices learned from the Choose to Change Project: Nutrition Education and Intervention for Preschool Children. USDA NIFA Poster Abstract. *Journal of Nutrition and Education Behavior*. 49(7): S115-S116.

Thomas-Van Gundy, M. A.; **M. P. Strager**. 2012. European settlement-era vegetation of the Monongahela National Forest, West Virginia. Gen. Tech. Rep. NRS-GTR-101. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northern Research Station. 39 p.

Thomas-Van Gundy, M. A., **M. P. Strager**. 2011. Site characteristics of American chestnut, oak, and hickory witness trees on the Monongahela National Forest, West Virginia. In: Fei, Songlin; Lhotka, John M.; Stringer, Jeffrey W.; Gottschalk, Kurt W.; Miller, Gary W., eds. Proceedings, 17th Central Hardwood Forest Conference; 2010 April 5-7; Lexington, KY; Gen. Tech. Rep. NRS-P-78. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northern Research Station: 208-218.

Mosely, K., J. W. Edwards, W. M. Ford, **M. P. Strager**. 2010. A multi-criteria decision making approach for management indicator species selection on the Monongahela National Forest, West Virginia. Res. Pap. NRS-12. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northern Research Station. 22 p.

Fletcher, J. J., Q. Sun, and **M. P. Strager**. 2001. Using GIS to Model Stream Water Quality and Acid Loading in West Virginia, Computer Applications in the Minerals Industries, Xie, Wany & Jiang (eds). Swets & Zeitlinger, Lisse, ISBN 90 5809 174 0.

Papers published in conference proceedings (peer reviewed abstract only)

Maxwell, A. E., **M. P. Strager**, C. Yuill, J. T. Petty, E. Merriam, C. Mazzarella. 2011. Disturbance mapping and landscape modeling of mountaintop mining using ArcGIS. Environmental Systems Research Institute Users Conference Proceedings.

Thomas-Van Gundy, M., **M. P. Strager**. 2010. Site Characteristics of American Chestnut, Oak, and Hickory Witness Trees on the Monongahela National Forest, West Virginia. Central Hardwoods Forest Conference Proceedings.

Mynsberge, J. M. Strager, **M. P. Strager**, P. M. Mazik. 2009. Predictive modeling of freshwater mussel species *Eliliptio-Dilatata* and *Elliptio Complanata* in the Appalachians. Freshwater Mollusk Conservation Society Conference Proceedings Paper, Baltimore MD.

Sharma, B., **M. P. Strager**, J. Wang. 2009. Fuzzy-logic approach to log-landing site assessment for forest harvest planning. Environmental Systems Research Institute Users Conference Proceedings Paper, Redlands, CA.

Strager, M. P., J. M. Strager, W. Ayersman. 2009. Assessing the potential risk of emerald ash borer (*Agrilus planipennis*) establishment and spread using GIS. International Forest Biosecurity Conference Popular Summary Paper, Rotorua, NZ.

Ayersman, W., **M. P. Strager**, J. M. Strager. 2009. Modeling emerald ash borer establishment and spread using GIS. Environmental Systems Research Institute Users Conference Proceedings Paper, Redlands, CA.

Flanigan, R. D., **M. P. Strager**, J. R. Brooks. 2008. Predicting species composition in an eastern hardwood forest with the use of digitally derived terrain variables within a GIS. Proceedings of the 6th Southern Forestry and Natural Resources GIS Conference.

Strager, M. P., V. Maskey, B. Gutta, R. Herd, J. Fulton, J. T. Petty, J. Stiles, J. Svetlik, P. Ziemkiewicz. 2008. A Hydrologically networked watershed model for evaluating AMD treatment scenarios. American Society of Mining and Reclamation, Proceedings.

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Environmental Management Software

The following systems were designed to aid in the management of water resources, perform landscape analysis, and help guide land conservation and planning.

WV Surface Water Time of Travel Tool, 2016

This system was developed for the WV Department of Health and the WV Department of Environmental Protection to allow users to query upstream travel times from surface water intake locations to analyze potential threats from spills to drinking water supplies. The framework was based on Strager (2012).

Fish Habitat Decision Support Tool, 2016

In collaboration with Downstream Strategies and Critigen, this decision support tool integrates spatial data, fish habitat models, and a prioritization model to allow alternative future scenarios to be run interactively. My role was to design and build the ranking tool and scenario analysis components as well as the cumulative hydrological analysis of watersheds. The foundation behind this tool was from Strager et al. (2009), Strager et al. (2010), and Merriam et al. (2015). Available at: <http://www.fishhabitattool.org/>.

Spatial Weights Land Conservation Tool, 2014

This analysis tool was created to easily incorporate user input for resource objectives and criteria preferences and output areas for land conservation for consensus building. The foundation behind this tool was from Strager and Rosenberger (2006) (2007).

Watershed Futures Modeler, 2013

This spatial decision support system runs within the GIS platform of ArcGIS and allows resource managers to interactively select segment level watersheds and run boosted regression trees modeling through the R statistical program. The results allow resource managers to determine water quality impacts from changing land cover and use patterns throughout a watershed. The Watershed Futures Modeler has been copy written.

Segment Level Watershed Conductivity Model, 2010

An ArcGIS extension for estimating instream conductivity as a result of mine disturbance. It was originally calibrated for the Coal River Watershed of West Virginia. It includes model output from boosted regression tree analysis.

Sage Grouse Decision Support System ArcGIS 9.x extension, 2009

Developed for the Natural Resource Conservation Service, this extension to ArcGIS allows analysts to input and combine raster datasets for prioritizing habitat corridors for Sage Grouse in Wyoming. It integrates the raster datasets with the Maxent Bayesian statistical model.

Overlay Analyst, 2009

This ArcGIS extension was developed for the WV Division of Natural Resources to prioritize and rank landscape areas for conservation. It allows users to aggregate and filter results as well as find multiple function areas that meet multiple objectives and criteria.

Cheat Lake Recreational Inventory System, 2009

Using ArcExplorer, this customized software program allows Allegheny Energy to inventory their leased property at Cheat Lake, WV and integrate a rating system for developing a water-based opportunity spectrum and carrying capacity analysis for better recreational management.

Mass Balance Accumulator ArcGIS 9 extension, 2008

An ArcGIS 9 extension currently in beta status to accumulate upstream attributes for segment-level watersheds and provide mass balance water quality analysis and acid mine drainage treatment cost. It was developed in collaboration with the WV Water Research Institute.

Spatial Compromise Programming ArcGIS 9 extension, 2006

This ArcGIS 9 extension was designed as an optimization tool for ranking spatial features with the compromise programming algorithm. It has been applied to county level parcel ranking for conservation planning and identifying high value landscape areas.

Watershed Characterization and Modeling System 8, 2004

Developed for the West Virginia Department of Environmental Protection Mining and Reclamation, Charleston, WV, this watershed modeling system provides hydrological analysis and water quality prediction tools for watershed managers throughout WV.

Cacapon and Lost River Modeling System, 2003

Developed for the Cacapon and Lost Rivers Land Trust and the Canaan Valley Institute, Thomas, WV, this GIS based application allows the Land Trust to evaluate parcels for easement acquisition for rural heritage, water quality, forestry, and agricultural conservation objectives.

St Mary's County Storm Water Management System, 2003

This modeling system integrates spatial data and engineering equations (TR-20 and TR-55) for urban storm water runoff management in St Mary's County, MD. It was developed for the US Army Corps of Engineers Baltimore District, MD.

The Landscape Analyst, 2002

Co-developed and designed with the Canaan Valley Institute, Thomas, WV, this ArcView 3 extension combines landscape ecology indices, water quality prediction tools, and a development model for prediction future growth patterns from urban areas.

Western Maryland Watershed Characterization and Modeling System, 2001

Developed for the Maryland Department of the Environmental, Bureau of Mines, Frostburg, MD, this watershed modeling system provides hydrological analysis and water quality prediction tools for watershed managers throughout Western MD.

Kiski-Conemaugh Forest Management and Analysis Tool, 2000

This ArcView 3 extension was designed to calculate landscape indicators including forest fragmentation, edge, and core areas for wildlife management and ranking watersheds for conservation. Developed for the Kiski-Conemaugh River Basin Alliance, Windber, PA.

Cumulative Hydrologic Impact Assessment Extension, 2000

Developed for the West Virginia Department of Environmental Protection, Mining and Reclamation, Charleston, WV, this watershed modeling system provides managers with tools to analyze potential mining permits and their effects throughout WV.

Kiski-Conemaugh Watershed Modeling System, 1999

Developed for the Kiski-Conemaugh River Basin Alliance, Windber, PA, this watershed modeling system provides hydrological analysis and water quality prediction tools for watershed managers in the Kiski-Conemaugh Watershed.

The Strategic Multi-Use Application and Remediation Tool, 1998

Developed for the West Virginia High Tech Consortium, Fairmont, WV, this system uses spatial locations of future road construction cut and fills and calculates volumetric results and the coal seams impacted. Results are presented in interactive 3D visualizations.

West Virginia Abandoned Mine Land Information System, 1996

Developed for the West Virginia Department of Environmental Protection, Mining and Reclamation, Nitro, WV, this management system provides query, update and retrieval of the spatial and tabular abandoned mine land information in WV.

Meadow River Wetlands Assessment and Ranking Model, 1995

Using parcel boundaries and landscape information in the Meadow River Watershed, this system prioritizes locations for wetland wildlife habitat using preference weights and input from the West Virginia Division of Natural Resources, Elkins, WV.

Invited Presentations at Scientific Meetings

99 since 2007, email if needed.

Summary of Teaching Interests

Much of my teaching interests parallel my research interests. My courses fundamentally focus on how to take spatial data and develop it into information and then to aid in decision making. I enjoy teaching applied problem solving courses using spatial technologies for natural resource management. My teaching philosophy is based on integrating the presentation of appropriate theory and techniques with applied problem solving for timely local and regional issues. All of the courses listed below except for ARE 629 and FOR 326 are original offerings I initiated.

Teaching Experience

RESM 445/545 Spatial Hydrology (taught 2014 – present)

This course is co-taught with Nicolas Zegre (10%) and focuses on advanced watershed analysis and hydrological modeling with GIS. The main part of the hydrological cycle that is analyzed includes the surface runoff and transport of water across the landscape in a fate transport advection conversion context.

RESM 540 Geospatial Modeling (formerly Spatial Statistics and Regression) (taught 2011 – present)

This course covers point pattern analysis, spatial autocorrelation, hot spot analysis, interpolation and kriging methods, and geographically weighted regression. It is an interdisciplinary graduate course which helps students analyze their spatial data.

ARE 629 Quantitative Methods (taught 2011 –2014)

This course focuses on applied decision science and optimization techniques to complement economic and policy analysis. We focus mainly on the mechanics of implementing

mathematical programming techniques to aid in decision-making most commonly known as management science or operations research.

RESM 575 Advanced Spatial Analysis (taught 2006- present)

An interdisciplinary course designed to develop advanced Geographic Information System (GIS) and spatial analysis skills while focusing on the use of natural resource and environmental data.

FOR 326 Remote Sensing of the Environment (taught 2006- present)

Undergraduate course introducing remote sensing technology with a focus on applications in forestry and land use management.

RESM 440 Foundations for Applied GIS (taught 2007 - present)

This introductory GIS course builds a foundation of necessary spatial and quantitative analysis methods by emphasizing acquisition, management, manipulation, and analysis of data for the solution of spatial problems. This course is designed to build confidence and familiarity in students with the use of GIS technology with timely and appropriate local applications.

RESM 441 Applied GIS for the Natural Sciences (taught 2007 - present)

The goal of this two credit course is to demonstrate the use of GIS to aid in environmental and natural resource management. The course builds on the foundations of GIS and covers methods to solve problems in forestry, wildlife management, watershed management, landscape ecology, and natural resources applications.

RESM 442 Applied GIS for the Social Sciences (taught 2007 -present)

The focus of this one credit course is to on GIS use in the social sciences. Specifically, the course introduces students to GIS analysis methods applied to problems in business and marketing, community planning and development, health care, crime analysis, environmental justice, recreation, and other applications.

RESM 640 GIS Use for Aquatic Resource Management (taught 2008 to 2012)

This course covers basic methods of aquatic ecosystem characterization and data collection using GIS. In addition, this course also focuses on integrating the analysis capabilities of a GIS with aquatic concepts and models to provide additional insights and information for management.

Program Development

WVU Graduate Certificate in GIS and Spatial Analysis (effective August 2016).

Coordinated with the WVU Department of Geology and Geography, the Graduate Certificate in GIS and Spatial Analysis was intended to augment the educational tracks of a wide number of students from across West Virginia University with the ability to analyze spatial data at an advanced level. The program provides advanced teaching, research and academic program support for the development of applications of GIS and spatial analysis across multiple disciplines. In addition to providing a more focused and deeper treatment of these skills, the certificate program provides recognition for mastery of these tools. I am currently serving as the Program Coordinator of this certificate in which I review all submitted plans of study. Twenty students are currently enrolled in the program.

National Conservation and Training Center

Working with the U.S. Fish and Wildlife Service at the National Conservation Training Center in Shepherdstown, WV the Center now offers over 20 different courses which are taught by

professionals (<https://training.fws.gov/courses/programs/geospatial-statistics/catalog.html>) that are on staff or sometimes brought in from across the country. I have offered courses in Advanced GIS, Watershed Analysis and Hydrological Modeling, and taught sections of the Species Distribution Modeling course at the NCTC as part of this program.

WVU Course Development

Course name and credits	Year approved by Faculty Senate	Developed in online format
RESM 440 Foundations of Applied GIS 3 credits	2016	2016
RESM 440 Foundations of Applied GIS 2 credits	2009	2015
RESM 441 Applied GIS: Natural Science 2 credits	2011	2015
RESM 442 Applied GIS: Social Science 2 credits	2011	
RESM 445/545 Spatial Hydrology 3 credits	2016	2016
RESM 540 Geospatial Modeling 3 credits	2015	2016
RESM 575 Spatial Analysis for Resource Management	2006	
RESM 640 GIS for Aquatic Resource Management	2011	
RESM 585 GIS and Spatial Analysis Project	2016	
FOR 326 Remote Sensing of the Environment		2016

Graduate Student Advising and Service on Committees

Since 2005 I have served on 153 graduate committees (69 PhD, 84 MS) across the University. On a yearly basis, I serve on an average of 16 Masters committees and 13 Doctoral committees from 20 different program areas. This is in addition to my own advisees (5 PhD, 12 MS) I have chaired or co-chaired. This is not only a function of the interdisciplinary importance of spatial data analysis, but also my willingness to help students and guide them through issues of data collection, management, and analysis.

Short Courses and Workshops:

Gunpowder Watershed Conservation Plan Workshop

Presented results and explanation for the Gunpowder Valley Conservancy survey and modeling approach to identify priority lands for easement acquisition. Workshop was held in Baltimore, MD and sponsored by the Chesapeake Bay Foundation. October 5, 2016.

Capital Region Land Conservation Strategic Planning Workshop

Responsible for leading a discussion of selecting evaluation criteria, weighting using the Analytical Hierarchy Process, and integrated them with spatial data for conservation planning. Workshop was held in Richmond, VA and sponsored by the Defenders of Wildlife. April 15-17, 2009.

Lower Shore Land Conservation Strategic Planning Workshop

Responsible for leading a discussion of selecting evaluation criteria, weighting using the Analytical Hierarchy Process, and integrated them with spatial data for conservation planning. Workshop was held in Salisbury, MD and sponsored by the Defenders of Wildlife. May 13-15, 2009.

Geostatistical Analyst Workshop

Invited Workshop Instructor for the 2009 National Fish and Wildlife Service GIS Workshop held at the National Conservation Training Center in Shepherdstown, WV. March 25, 2009.

Demonstration of GIS and Spatial Analysis in Fisheries and Aquatic Sciences

Organized workshop with Bill Fischer of Oklahoma State University for the Southern Division of American Fisheries Society Annual Meeting, Wheeling, WV, Mar 1-2, 2008.

Watershed Characterization and Modeling System (WCMS) Training Class

Two day training course covering watershed modeling and GIS hydrological concepts in the WCMS software, developed and taught for the West Virginia Department of Environmental Protection Mining and Reclamation, May 18-19, 2000, June 15-16, 2004, June 21-26, 2005, Nov 30, 2007.

Multi-Criteria Analysis for Land Use Planning: Theory and Techniques

Half day workshop covering basics of multi-criteria analysis and applications to land use planning integrating smart growth and stakeholder input. Developed for the Canaan Valley Institute Outreach and Highlands Action Program Team, July 22, 2004.

Cumulative Hydrological Impact Assessment ArcView 3 Extension Training Class

One day training course for analyzing impacts of potential mine permits in WV watersheds using the CHIA ArcView 3 GIS extension. Developed and taught for the West Virginia Department of Environmental Protection Mining and Reclamation WV, July 10, 2000.

Introduction to ArcView 3x for Natural Resource Management

As an authorized instructor for the ESRI based Introduction to ArcView 3x two day training course (exercises were rewritten to use West Virginia datasets), I have co-taught over 150 students since 1997.

Watershed Analysis and Hydrological Modeling

This course was offered as a one week 3 credit hour opportunity for US Fish and Wildlife Service personnel to extend their geospatial modeling capabilities to the area of watershed analysis and modeling with GIS. I first taught this course in October of 2014.

Professional Development

2016 GIS Support for Hydrologic and Hydraulic Modeling and Analyses day long workshop presented at the American Water Resources Association Annual Conference in Orlando, FL.

2015 Land Use Change Science: Lessons Learned from Applications of Using the Land Transformation Model day long workshop presented at the American Association of Geographers, Chicago Ill

2015 Terra Populus Training workshop at the Association of American Geographers in Chicago, Ill.

2015 Camtasia Software Training workshop sponsored by TechSmith and offered in Washington, DC.

2009 Ecological Modeling and Decision Support Systems two hour workshop taught by Keith Reynolds at the ESRI Users Conference, San Diego CA.

- 2009 Spatial Statistics I, Intro to Spatial Pattern Analysis taught by Kevin Johnston at the ESRI Users Conference, San Diego CA.
- 2009 Spatial Statistics II, Ordinary Least Squares and Geographically Weighted Regression taught by Kevin Johnston at the ESRI Users Conference, San Diego CA.
- 2008 Globally Weighted Regression week long workshop taught by Stewart Fotheringham, Chris Brundson, Martin Charlton at the Population Research Institute, The Pennsylvania State University
- 2007 Bayesian Statistics semester long workshop taught by Dr. Wayne Thogmartin from the USGS Upper Midwest Environmental Science Center.
- 2006 GIS and Spatial Modeling for the Undergraduate Social Science Curriculum, Spatial Perspectives on Analysis for Curriculum Enhancement, six day workshop, Ohio State University, Columbus, OH
- 2005 Quantitative Geospatial Analysis in GIS, GEOTEC one day conference workshop, Vancouver, BC
- 2003 Watershed and Water Quality Management, Penn State Land Analysis Laboratory, three day workshop, University Park, PA
- 2002 Advanced ArcGIS 8, ESRI Training Course, five day workshop, Thomas, WV
- 2001 Terrain Analysis, ESRI Users Conference, ½ day workshop, San Diego, CA
- 2000 GIS Hydro–Water Resources Object Model, ESRI Users Conference, ½ day workshop, San Diego, CA
- 2000 Fuzzy Logic and Applications in GIS, ESRI Users Conference, 1 day workshop, San Diego, CA
- 1999 Assessing the Accuracy of GIS Information Created from Remotely Sensed Data: Principles and Practices, 1 day workshop, ASPRS Workshop Portland, OR
- 1997 ESRI Authorized GIS Instructor for ArcView 3x
- 1996 Environmental Resources Imagery, GIS/LIS Conference, 1 day workshop, Denver, CO
- 1996 Avenue Programming, five day ESRI Training Course, Vienna, VA
- 1995 Customizing Arc/Info with AML, five day ESRI Training Course, Vienna, VA

Professional Activity / Service

Reviewer: Environmental Practice (Journal of the National Association of Environmental Professionals), Journal of Forest Science, Landscape Ecology, Journal of Environmental Management, Ecological Economics, Land Economics, Environmental Systems and Decisions, Forests, Transactions of the American Fisheries Society, Journal of Water Resources, International Journal of Geographical Information Science, Landscape and Urban Planning, Computers and Geosciences, Education Research Journal, US Geological Survey, Environment Development and Sustainability, Land Economics, Applied Geography.

- American Geophysical Union, Session Convener for Integrated Modeling and Optimization for Multicriteria Decision Making with Bradley Barnhart

- American Fisheries Society National Meeting, Organizing Committee for GIS Tract with Bill Fisher
- Southern Division of the American Fisheries Society Meeting GIS Symposium chair and organizer
- WV State GIS Steering Committee for Water Resources
- WV Hardwood Conference Organizing Team Member and Track Director
- Freshwater Fisheries and Climate Change Working Group, Member and participant in Climate Change project planning
- Proposal reviewer for the National Fish and Wildlife Foundation, Environmental Protection Agency, US Geological Survey, National Institutes for Water Resources
- Board of directors for the Mid-Atlantic Exotic Pest Plant Council representing WV
- WV Invasive Species Working Group committee for the Nature Conservancy

Professional Memberships

- American Geophysical Union
- American Water Resources Association
- American Fisheries Society
- WV Association of Geospatial Professionals

West Virginia University, Davis College and Division Service

- WVU Faculty Senate Curriculum Committee
- WVU Teaching and Learning Commons Faculty Associate
- WVU Foundation Outstanding Teaching Award selection committee
- WVU Faculty Celebration Event “Outstanding Tips from Outstanding Teachers”
- WVU Senate Grant reviewer
- WVU and Ohio State Environmental Researchers for Shale Gas Group
- WVU Extension Service GPS consultation for precision farming
- WVU Entrepreneur Student Challenge judge
- WVU Institute of Water Security and Science guest speaker
- Davis College Gamma Sigma Delta Honorary Society officer
- Davis College lecture selection committee
- Davis College Freshwater Planning committee
- Davis College Environmentors Judge for research projects (posters)
- Division Promotion and Tenure Committee 2016, 2014, 2013, 2012
- Division Energy Economics faculty search committee 2015 and 2014
- Division Natural Resource Economics PhD field exam or paper reviewer committee member 2016, 2013, 2011

Community Service

- Board member Friends of the Cheat
- Officer Cheat Lake Environment and Area Recreation