James S. Shortle

Distinguished Professor of Agricultural and Environmental Economics
Department of Agricultural Economics and Rural Sociology
Director, Environment and Natural Resources Institute
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Education

B.U.S., University of New Mexico, 1975
M.A., Economics, University of New Mexico, 1978
Ph.D., Economics, Iowa State University, 1981

Professional History

Director, Environment and Natural Resources Institute, Penn State University since 2005
Distinguished Professor of Agricultural and Environmental Economics, Penn State University since 2003
Department of General Economics, Wageningen University (NL) (1995)
Professor of Agricultural and Environmental Economics, Penn State University (1993 -2003)
Associate Professor, Agricultural Economics, Penn State University (1987-1993)
Visiting Professor, University College Dublin Environmental Institute (1990-1991)
Assistant Professor, Agricultural Economics, Penn State University (1981-1987)

Short Visits

Australian Centre for Agriculture and Law, University of New England (2007)

Professional Awards and Recognitions

Fulbright Scholar (1990-1991)
"Best Article" published in the *Journal of Agricultural Economics* (1994)
Research Award of Merit, Penn State Chapter, Gamma Sigma Delta (1999)
University Distinguished Professor, Penn State University (2003)
"Outstanding Article" published in the *Agricultural and Resource Economics Review* (2004)
Distinguished Alumnus, Department of Economics, University of New Mexico (2005)
Distinguished Service Award, NE Agricultural and Resource Economics Association (2007)
Economic and Social Research Council and the Social Science Research Council (UK) Transatlantic Fellow (2008)
Northeast Agricultural Economics Association, Director (1994-1997), President Elect (2002-2003), President (2003-2004), Past President (2004-2005)

Research Interests

Markets and economic incentives for ecosystem services/environmental management
Agriculture and environment
Water resource management
Climate change impacts on agriculture, ecosystems, and water resources

Teaching

Penn State - Agricultural, Environmental, and Regional Economics
Resource and environmental economics (graduate and undergraduate)
Microeconomic Theory (graduate)
Professional development colloquium (graduate)

Penn State - Policy Analysis Program
Environmental Policy Analysis (graduate)

Penn State – Human Dimensions of Natural Resources and Environment
Environmental Ethics (graduate)

University College Dublin
Resource economics and environmental economics (undergraduate)

Graduate Student Supervision

Melmed, J. State Mineral Taxation and the Demand for Pennsylvania Steam Coal. M.S., Agricultural Economics, 1984
Phillips, M. Impacts of Ozone Pollution on the U.S. Soybean Industry. M.S., Agricultural Economics, 1985
Kibler, V. M. The Effects of Imposing a Severance Tax on Pennsylvania Steam Coal: A Spatial Equilibrium Approach. M.S., Agricultural Economics, 1986 (Co-chair)
Akerman, M. K. The Economics of Nutrient Management under Uncertainty. M.S., Agricultural Economics, 1987
Waddington, D. The Benefits from Agricultural Land Preservation. M.S., Agricultural Economics, 1990
Huang, W. A Discrete Stochastic Programming Analysis of Optimal Fertilization Practices on Mixed Crop/Livestock Farms. M.S., the Agricultural Economics, 1991
Beccaris, J. Explaining State Expenditures on Nonpoint Pollution Control Programs. M.S., Agricultural Economics, 1992
Olsen, R. A Stochastic Model of Management of a Polluted Fishery. M.S., Economics/Operations Research, 1992
Tomas, P. Improving the Efficiency of Public Grazing Land Management. M.S., Policy Analysis, 1993
Wagner, J. An Economic Analysis of Ecotourism. M.S., Policy Analysis, 1993
Huang, W. Noncompliance and the Choice of Policies for Nonpoint Pollution Control. Ph.D. Agricultural Economics, 1994
Rodriguez, A. Effects of Public Policies on Natural Resource Use in Costa Rica: A CGE Analysis. Ph.D. Agricultural Economics, 1994

Comer, C. A Comparison of Alternative Nutrient Management Policies for Watershed Protection. M.S., Environmental Pollution Control, 1996

Abrahams, N. Value of Information and the Design of Environmental Policies for Agriculture. Ph.D. Agricultural Economics, 1997

Fuentes, A. Damage Cost Estimates for Particulate Exposure in Mexico City: An Analysis of Acute Health Impacts. M.S., Environmental Pollution Control, 1997

Heberling, M. Willingness to Pay to Avoid Climate Induced Change in Sport Fish Habitat. M.S., Agricultural Economics, 1997 (A. Fisher co-chair)

Horan, R. Conjunctive Management of Pollution and Fisheries. Ph.D., Agricultural Economics, 1997

Tsai, K. Optimal Base Definition and Rate Differentiation in Nonpoint Pollution Control. Ph.D., Agricultural Economics, 1997

Maynard, L. Determinants of Cleaner Technologies in the U.S. Bleached Kraft Pulp Industry. Ph.D., Agricultural Economics, 1998

Das, J. Designing Pollution Control Policies under Dynamic Revision Rule and Regulatory Commitment: A Principal Agent Approach. Ph.D., Agricultural Economics, 1999

Yang, G. Costs of Increased Climate Variability: Flood Risks in the Susquehanna River. Ph.D., Agricultural Economics, 1999

Yoshimura, H. Agriculture and the Environment: Fertilizer Demands and Their Policy Implications. M.S. Agricultural Economics. 1999

Bornstein, B. Impacts of Climate Change on the Chesapeake Bay Crab Fishery. Honors Thesis, Environmental and Renewable Resource Economics, 2000

Der Kinderen, D., Highway Impacts on Land Use, M.S., Environmental Pollution Control, 2000

Heberling, M. The Value of Stream Attributes and Fishing Sites. Ph.D., Agricultural Economics, 2000 (A. Fisher co-chair)

Balog, A. User Perspectives on Environmental Indicators for Aquatic Ecosystems: Results from Interviews with Water Quality Officials in the Mid-Atlantic States. M.S. Environmental Pollution Control. 2003

Molineros, J. Land Allocation Inefficiency in Four South American Countries: The Problem of Deforestation, M.S., Agricultural, Environmental, and Regional Economics, 2003

Ranjan, R. Four Essays in Environmental Economics on Carbon Management and Invasive Species Control, Ph.D., Agricultural, Environmental, and Regional Economics, 2003

Borisova, T. Coping with Uncertainty in Water Quality Management through Choices of Policy Instruments and Information Investments, Ph.D., Agricultural, Environmental, and Regional Economics, 2004

Cai, Y. Integrating Environmental and Socioeconomic Indicators of Quality of Life Assessment Using Data Envelopment Analysis. M.S., Agricultural, Environmental, and Regional Economics, 2004

Bae, J. The Welfare Consequences of Carbon Tax Reform in Open Economies: The Application of Computable General Equilibrium Model for Pennsylvania**,** Ph.D.**,** Agricultural, Environmental, and Regional Economics, 2005

Li, J. Designing Wetland Protection Strategies under Climate Change, M.S., Agricultural, Environmental, and Regional Economics, 2005

Kelly Ward (co-directed with Rich Ready). Optimal Inter-Temporal Management of a Renewable Resource: A Policy Analysis. PhD, Agricultural, Environmental, and Regional Economics, 2006.

Koel Ghosh. Three Essays on Environmental Decision Making under Uncertainty. PhD, Agricultural, Environmental, and Regional Economics, 2007.

Fernando Carriazo (co-directed with Rich Ready). Measuring (dis)amenities at the Urban Fringe in Bogotá. PhD,Agricultural, Environmental, and Regional Economics, 2007. Fernando won an Honorable Mention for the AAEA Outstanding Dissertation Award in 2007.

Erin Minihan. Impacts of Biofuels Production on Agricultural Land Use in Pennsylvania. MS, Agricultural, Environmental, and Regional Economics, 2007.

Zhen Wu. The Dynamics of Agricultural Adaptation to Climate Change. MAg, 2007.

Gaurav Ghosh. Three Essays on Pricing in Socially-Optimal Markets for Differentiated Goods. PhD, Agricultural, Environmental, and Regional Economics, 2009.

Nga Nguyen. A Stochastic Agent-based Market Model for Water Quality Trading Using Evolutionary Simulation Techniques. PhD, Agricultural, Environmental, and Regional Economics, 2009.

Simantee Banerjee. Payments for Ecosystem Service Schemes for Spatially Coordinated Land Management: an Experimental Economics Approach Study. PhD, Agricultural, Environmental, and Regional Economics, 2010.

Tom Wilson. Life Cycle Emissions and GHG Abatement Costs of Densified Switchgrass for Heat and Power. MS, Agricultural, Environmental, and Regional Economics, 2010.

Zach Kaufman. Agricultural Best Management Practice Adoption in Southeastern Pennsylvania Farms and Watersheds. MS, Agricultural, Environmental, and Regional Economics, 2011.

Debdatta Sengupta. The Environmental Kuznets Curve as a Stochastic Frontier. MS, Agricultural, Environmental, and Regional Economics, Expected Fall 2011.

Membership on Graduate Student Committees (All Penn State University)

Agricultural, Environmental, and Regional Economics	26
Agricultural and Biological Engineering	3
Civil and Environmental Engineering	2
Economics	5
Energy, Environmental, and Mineral Economics	6
Environmental Pollution Control	6
Forest Science	1
Geography	3
Parks and Recreation	1
Policy Analysis	2
Political Science	1
Statistics	1
Supply Chain Management	1

Journal Articles

Ghosh, G., J. Shortle, M. Ribaudo, 2011. Baseline Requirements Can Hinder Trades in Water Quality Trading Programs: Evidence from the Conestoga watershed. *Journal of Environmental Management*. 92: 2076- 2084.

Horan, Richard D. and James S. Shortle. 2011. Economic and Ecological Rules for Water Quality Trading. *Journal of the American Water Resources Association* (JAWRA) 47(1):59-69. DOI: 10.1111/j.1752-1688.2010.00463.x.

Lichtenberg, Erik, James Shortle, James Wilen, and David Zilberman. 2010. Natural Resource Economics and Conservation: Contributions of Agricultural Economics and Agricultural Economists, *American Journal of Agricultural Economics* 92(2), 469-486.

Braden, J.B., D. G. Brown, J. Dozier, P. Gober, S. M. Hughes,D. R. Maidment, S.L. Schneider. P. W. Schultz, J. S. Shortle, S.K. Swallow, and C.M. Werner. 2009. Social science in a water observing system. *Water Resources. Research*, 45, W11301, doi:10.1029/2009WR008216.

Schienke, E.W., N. Tuana, D. Brown, K. Davis, K. Keller, J. Shortle, M. Stickler, and S. Baum. 2009. The Role of the National Science Foundation Broader Impacts Criterion in Enhancing Research Ethics Pedagogy. *Social Epistemology*. 23: 3, 317 – 336.

Shortle, J.S., and R. D...Horan. 2008. The Economics of Water Quality Trading, *International Review of Environmental and Resource Economics*. 2(2):101-133. http:/dx.doi.org/10.1561/101.00000014.

Ranjan, R., L. Marshall, and J. Shortle. 2008. Optimal Renewable Resource Management in the Presence of Endogenous Risk of Invasion, *Journal of Environmental Management*. Vol. 89: 273-283.

Ward, K., R.C. Stedman, A.E. Luloff, J.S. Shortle, and J.C. Finley. 2008. Categorizing Hunters by Typologies Useful to Game Managers: A Latent-class Model. *Society and Natural Resources*. 21(3): 215-229.

Ranjan, R., and J. Shortle. 2007. The Environmental Kuznets Curve When the Environment Exhibits Hysteresis. *Ecological Economics.* 64:204-215.

Shortle, J. 2007. Economic Incentives for Managing Infectious Animal Disease: Discussion. *American Journal of Agricultural Economics*. 89(5):1239-1240.

Shortle, J.S., and R.D. Horan. 2006. Water Quality Trading. *Penn State Environmental Law Review. 14(2):231-250.*

Marshall, E., and J. Shortle. 2005. Using DEA and VEA to Evaluate Quality of Life in the Mid-Atlantic States. *Agriculture and Resource Economics Review*. 34(2):185-203.

Borisova, T., J. Shortle, R. Horan, and D. Abler. 2005. The Value of Information for Water Quality Management. *Water Resources Research*. 41, W06004, doi:10.1029/2004WR003576.

Horan, R.D., and J.S. Shortle. 2005. When Two Wrongs Make a Right: Second Best Point Nonpoint Trading. *American Journal of Agricultural Economics*. 87(2):340-352

Abrahams, N.A., and J. S. Shortle. 2004. Performance of Compliance Measures for Nitrate Nonpoint Pollution Control. *Agricultural and Resource Economics Review*. 33(1):79-90.

Horan, R.D., J. S. Shortle and D.G. Abler. 2004. Point-Nonpoint Trading Programs and Agri-Environmental Policies. *Agricultural and Resource Economics Review*. 33(1):61-78.

Abler, D.G., J.S. Shortle and A, Fisher. 2004. Climate Change and Pennsylvania Agriculture. *Penn State Law Review*. 12(1):117-125.

Abler, D.G., J.S. Shortle, J. Carmichael, and R.D. Horan. 2002. Climatic Change, Agriculture, and Water Quality. *Climatic Change*. 55; 339-359.

Horan, R., J. Shortle, and D. Abler. 2002. Nutrient Point-Nonpoint Trading in the Susquehanna River Basin. *Water Resources Research.* 38(5):8-1 - 8-13, 10.1029/2001WR000853.

Horan, R., D. Abler, J. Shortle, J. Carmichael. 2002. Probabilistic, Cost-Effective Point/Nonpoint Management in the Susquehanna River Basin. *Journal of the American*

Water Resource Association. 38:467-477.
Kennell, J., J. Lazo, A. Fisher, D. Epp, and J. Shortle. 2002. Perceptions and Values for Preventing Ecosystem Change: Pennsylvania Duck Hunters and the Prairie Pothole Region. *Land Economics*. 78:228-244.
Horan, R., J. Shortle, and D. Abler. 2002. Ambient Taxes Under m-Dimensional Choice Sets, Heterogeneous Expectations, and Risk-version. *Environmental and Resource Economics*. 21:189-2002.
Shortle, J., G. Yang, and K. Hsu. 2001. Future Climate Effects on Flood Risks. *Journal of the Taiwan Water Conservancy*. 49:68-96.
Maynard, L., and J. Shortle. 2001. Determinants of cleaner Technology Investment in the U.S. Bleached Kraft Pulp Industry. *Land Economics*. 77-561-576.
Shortle, J., and R. Horan. 2001. The Economics of Nonpoint Pollution. *Journal of Economic Surveys*. 15:255-290.
Yang, G., J. Shortle, and K. Hsu. 2000. When Risk-Averse Households Face Increased Flood Risks From Climate change. *Agriculture and Economics*. 24:59-94.
Benson, K., P. Kocagil, and J. Shortle. 2000. Climate change and health in the Mid-Atlantic Region. *Climate Research* 14:245-253.
Abler, D., J. Shortle, A. Rose, and D. Oladosu. 2000. Characterizing the Regional Economic Impacts of Climate Change. *Global and Planetary Change.* 25:67-81.
Horan, R., J. Hubroucak, J. Shortle, and E. Bulte. 2000. Green Accounting with Distributional Weights. *Environment and Development Economics.* 5:95-108.
Abler, D., and J. Shortle. 2000 Climate Change and Agriculture in the Mid-Atlantic Region. *Climate Research*.14:185-194.
Horan, R., J. Shortle, and E. Bulte. 1999 Renewable Resource Policy When Distributional Impacts Matter. *Environmental and Resource Economics.* 14:191-215.
Abler, D., R. Rodriguez, and J. Shortle. 1999 Trade Liberalization and the Environment in Costa Rica. *Environment and Development Economics.* 4:357-373.
Abler, D., A. Rodriguez, and J. Shortle. 1999 Parameter Uncertainty in CGE Modeling of Environmental Impacts of Economic Policies. *Environmental and Resource Economics*. 14(1):75-94.
Horan, R. D., J. S. Shortle, and D. G. Abler. 1999, Green Payments for Nonpoint Pollution Control, *American Journal of Agricultural Economics.* 81:1210-1215.
Horan R., and J. Shortle. 1999. Optimal Management of Multiple Renewable Resource Stocks with an Application to Minke Whales. *Environmental and Resource Economics*.13:435-458.
Weersink, A., J. Livenois, J. Shorgren, and J. Shortle. 1998. Economic Incentives for Pollution Control in Agriculture. *Canadian Public Policy.* 24:309-327.
Abler, D., A. Rodriguez, and J. Shortle. 1998. Labor Force Growth and the Environment in Costa Rica. *Economic Modeling*. 15:477-479.
Shortle, J., R. Horan, and D. Abler. 1998. Research Issues in Nonpoint Pollution Control. *Environmental and Resource Economics*. 11:571-585.
Horan, R., J. Shortle, and D. Abler. 1998. Ambient Taxes When Polluters Have Multiple Choices. *Journal of Environmental Economics and Management*. 36:186-199.
Kocagil, P., N. Demarteau, A. Fisher, and J. Shortle. 1998. The Value of Preventing Cryptosporidium Contamination. *Risk: Health, Safety and Environment*. 9:175-196.
Hanley, N., R. Faichney, J. Shortle, and A. Monroe. 1998. Economic and Environmental Modelling for Pollution Control in an Estuary. *Journal of Environmental Management*.

52:211-225.
Olsen, R., and J. S. Shortle. 1996. The Optimal Control of Emissions and Harvests under Uncertainty. *Environmental and Resource Economics*. 7:97-115.
Laughland, D., W. N. Musser, J. S. Shortle, and L. M. Musser. 1996. Construct Validity of Averting Cost Measures of Environmental Benefits. *Land Economics*. 72:100-112.
Abler, D. G. and J. S. Shortle. 1995. The Economic Performance of Alternative Agricultural Nonpoint Pollution Controls. *Oklahoma Law Review*. 48:427-447.
Fousekis, P., and J. S. Shortle. 1995. Investment Demand When Depreciation Is Stochastic. *American Journal of Agricultural Economics*. 77:990-1000.
Musser, W. N., J. S. Shortle, K. Kreahling, B. Roach, W. Huang, D. Beegle and R. H. Fox. 1995. An Economic and Environmental Analysis of the Pre-Sidedress Nitrogen Test for Pennsylvania Corn Production. *Agricultural Economics Review*. 17:25-35.
Abler, D. G. and J. S. Shortle. 1995. Technology as an Agricultural Pollution Control Strategy. *American Journal of Agricultural Economics*. 77:20-32.
Shortle, J. S., and A. S. Laughland. 1994. Impacts of Taxes to Reduce Agricultural Chemical Use When Farm Policy is Endogenous. *Journal of Agricultural Economics*. 45:3-14.
Laughland, A. S., L. M. Musser, W. N. Musser, and J. S. Shortle. 1993. The Opportunity Cost of Time and Averting Expenditures for Safe Drinking Water. *Water Resources Bulletin*. 29:291-299.
Abler, D. G. and J. S. Shortle. 1992. Potential for Environmental and Agricultural Policy Linkages and Reform in the European Community. *American Journal of Agricultural Economics*. 74:775-781.
Abler, D. G. and J. S. Shortle. 1992. Environmental and Farm Commodity Policy Linkages in the US and EC. *European Review of Agricultural Economics*. 19:197-217.
Abler, D. G. and J. S. Shortle. 1991. The Political Economy of Water Quality Protection from Agricultural Chemicals. *Northeastern Journal of Agricultural and Resource Economics*. 20:53-60.
McSweeny, W. T., and J. S. Shortle. 1990. Probabilistic Cost Effectiveness in Agricultural Nonpoint Pollution Control. *Southern Journal of Agricultural Economics*. 22:95-104.
Shortle, J. S. 1990. The Allocative Efficiency Implications of Abatement Cost Comparisons. *Water Resources Research*. 26:793-797.
Abler, D. G. and J. S. Shortle. 1989. Cross Compliance and Water Quality Protection. *Journal of Soil and Water Conservation*. 44:453-454.
Shortle, J. S., and W. N. Musser. 1989. The Optimal Quantity of Agricultural Land: Discussion. *Northeast Journal of Agricultural and Resource Economics*. 18:76-80.
Shortle, J. S., and W. T. McSweeny. 1989. Stochastic Prices and Technology: Comment. *American Journal of Agricultural Economics*. 71:813-816.
Dunn, J. W., and J. S. Shortle. 1989. Pricing Transportation by Weight and Volume. *Journal of the Transportation Research Forum*. 29:265-268.
McSweeny, W. T., and J. S. Shortle. 1989. Uncertainty and the Control of Nutrient Application Rates for Water Quality Protection in Intensive Livestock Areas. *Northeast Journal of Agricultural and Resource Economics*. 18:1-11.
Young, C. E., and J. S. Shortle. 1989. Economic Evaluation of the St. Albans Bay RCWP. *Journal of Soil and Water Conservation*. 44:64-67.
Dunn, J. W., and J. S. Shortle. 1988. Economics of Agricultural Nonpoint Pollution Control Policy: Theory and Practice. *Marine Resource Economics*. 5:259-270.

Findeis, J. L., V. K. Kibler, and J. S. Shortle. 1988. The Impacts of a Coal Severance Tax: A Spatial Equilibrium Approach. *Northeast Journal of Agricultural and Resource Economics*. 17:14-22.

Shortle, J. S., J. W. Dunn, and M. Phillips. 1988. Economic Assessment of Crop Damages Due to Air Pollution: The Role of Quality Effects. *Environmental Pollution*. 53:377-385.

Shortle, J. S., and K. D. Willett. 1987. A Computable Market Equilibrium Model with Markets for Transferable Discharge Permits. *Managerial and Decision Economics*. 8:263-270

Shortle, J. S. 1987. The Allocative Implications of Comparisons between the Marginal Costs of Point and Nonpoint Source Pollution Abatement. *Northeastern Journal of Agricultural and Resource Economics*. 17:17-23.

Shortle, J. D., and J. A. Miranowski. 1987. Intertemporal Soil Resource Use: Is It Socially Excessive? *Journal of Environmental Economics and Management*. 14:99-111.

Shortle, J. S., and J. W. Dunn. 1986. The Relative Efficiency of Agricultural Source Water Pollution Control Policies. *American Journal of Agricultural Economics*. 68:668-677.

Ribaudo, M. O., C. E. Young, and J. S. Shortle. 1986. Impacts of Water Quality Improvements on Site Visitation: A Probabilistic Modeling Approach. *Water Resources Bulletin*. 22:559-563.

Shortle, J. S., and S. E. Stefanou. 1986. Soil Conservation with Uncertain Revenues and Resource Supplies: Comment. *American Journal of Agricultural Economics*. 68:358-360.

Shortle, J. S., and K. D. Willett. 1986. The Incidence of Water Pollution Control Costs: Partial vs. General Equilibrium Computations. *Growth and Change*. 17:32-43.

Shortle, J. S., and J. A. Miranowski. 1986. Effects of Risk Perceptions and Other Characteristics of Farmers and Farm Operations on the Adoption of Conservation Tillage Practices. *Applied Agricultural Research*. 1:85-90.

Ribaudo, M. O., and J. S. Shortle. 1986. Agricultural Price, Quantity, and Welfare Impacts of Air Quality Improvements. *Northeastern Journal of Agricultural and Resource Economics*. 15:1-5.

Findeis, J. L., and J. S. Shortle. 1985. Tradeoffs between Severance Tax Revenues and Coal Mining Employment. *Northeastern Journal of Agricultural and Resource Economics*. 14:203-210.

Young, C. E., B. M. Crowder, J. S. Shortle and J. R. Alwang. 1985. Nutrient Management on Farms in Southeastern Pennsylvania. *Journal of Soil and Water Conservation.* 40:443-445.

Zinser, L. D., J. A. Miranowski, J. S. Shortle, and M. S. Monson. 1985. Effects of Rising Relative Energy Prices on Soil Erosion and Its Control. *American Journal of Agricultural Economics*. 67:558-562.

Epp, D. J., and J. S. Shortle. 1985. Agricultural Nonpoint Source Water Pollution Control: Mandatory or Voluntary? *Journal of Soil and Water Conservation*. 40:111-114.

Shortle, J. S. 1984. The Use of Estimated Pollution Flows in Agricultural Pollution Control Policy: Implications for Abatement and Policy Instruments. *Northeastern Journal of Agricultural and Resource Economics*. 13:277-284.

Young, C. E., and J. S. Shortle. 1984. Investments in Soil Conservation Structures: The Role of Operator and Operation Characteristics. *Agricultural Economics Research*. 36:10-15.

Findeis, J. L., and J. S. Shortle. 1983. Coal Mining Employment Impacts from Acid Rain Controls. *Journal of the Northeastern Agricultural Economics Council*. 12:53-58.

Shortle, J. S., and J. A. Miranowski. 1983. Dynamic vs. Static Models for Erosion Control Policy Research. *Journal of the Northeastern Agricultural Economics Council*. 12:7-12.

Book Chapters

Shortle, J., and J. Braden. Economics of Nonpoint Pollution. Forthcoming in the J. Shogren, et. al. Eds., *Encyclopedia of Energy, Natural Resource, and Environmental Economics.* Elsevier.

Braden, J., and J. Shortle. Agriculture and Environment. Forthcoming in the J. Shogren et. al. Eds., *Encyclopedia of Energy, Natural Resource, and Environmental Economics*. Elsevier.

Martin, P. and J. Shortle. 2010. Transactions Costs, Risks, and Policy Failure. In C.D. Soares, J.E. Miller, H. Ashiabor, L. Kreiser, and K. Deketelaere (Eds.), *Critical Issues in Environmental Taxation*. Oxford University Press.

Abler, D. J. Shortle, A. Rose, and D. Oladosu. 2009. Characterizing Regional Economic Impacts and Responses to Climate Change. In A. Rose Ed., *The Economics of Climate Change Policy: International, National, and Regional Mitigation Policies.* Cheltenham UK: Edward Elgar. (Reprinted from *Global and Planetary Change.* 23(2), 2000, 67-81.

Kamat, R., J. Shortle, and A. Rose. 2009. Global Climate Change and the Value of Solar Energy in U.S. Agriculture. In A. Rose Ed., *The Economics of Climate Change Policy: International, National, and Regional Mitigation Policies.* Cheltenham UK: Edward Elgar

Shortle, J., and R. Horan. 2007. The Economics of Nonpoint Pollution. In C. Mason and E. Bulte Eds., *Environmental Economics: Critical Concepts in the Environment Volume I Environmental Regulation and Policy*. Rutledge. (Reprinted from the *Journal of Economic Surveys*, 2002. This 4 volume series is described as bringing "… the best foundational and cutting-edge scholarship…" in environmental economics).

National Research Council Committee on Water Quality in the Pittsburg Region (2005). *Regional Cooperation for Water Quality Improvement in Southwestern Pennsylvania*. Washington DC: The National Aacdemies Press**.**

Shortle, J. 2004. The Allocative Efficiency Implications of Abatement Cost Comparisons. In S. Batie and R. Horan (Eds.), *Agri-Environmental Policy*. Ashgate Publishing. (Reprinted from *Water Resources Research* 26:793-797)

Shortle, J. and J. Dunn. 2004. The Relative Efficiency of Agricultural Source Water Pollution Control Policies. In S. Batie and R. Horan (Eds.), *Agri-Environmental Policy*. Ashgate Publishing. (Reprinted from *American Journal of Agricultural Economics* 68:668-677).

Weersink, A., J. Livenois, J. Shorgren, and J. Shortle. 2004. Economic Incentives for Pollution Control in Agriculture. In S. Batie and R. Horan (Eds.), *Agri-Environmental Policy*. Ashgate Publishing. (Reprinted from *Canadian Public Policy* 24:309-327).

Abler, D. G., and J. S. Shortle. 2004. Technology As An Agricultural Pollution Control Strategy. In S. Batie and R. Horan (Eds.), *Agri-Environmental Policy. Ashgate Publishing. (Reprinted from American Journal of Agricultural Economics* 77:20-32.

Horan, R., J. Hrubovcak, J. Shortle, and E. Bulte. 2003. Accounting for the Distributional Impacts of Policy in the Green Accounts. In C. Perrings and J Vincent (Eds.), *Natural Resource Accounting and Economic Development: Theory and Practice*. Cheltenham, UK: Edward Elgar. (Reprinted from *Environment and Development Economics* 5:95-108)

Shortle, J., and R. Horan. 2002. The Economics of Nonpoint Pollution Control. In N. Hanley and C. Roberts (Eds.), *Issues in Environmental Economics*. Oxford, UK: Blackwell Publishing. (Reprinted from the *Journal of Economic Surveys* 15:255-290.)

Shortle, J., and R. Griffin. 2001. Irrigated Agriculture and the Environment. In J. Shortle and R. Griffin (Eds.), *Irrigated Agriculture and the Environment*. Cheltenham UK: Edward Elgar.

Shortle, J., and J. Dunn. The Relative Efficiency of Alternative Agricultural Nonpoint Pollution Policies. In J. Shortle and R. Griffin (Eds.), *Irrigated Agriculture and the Environment*. Cheltenham, UK: Edward Elgar. Reprinted from the *American Journal of Agricultural Economics*.

Horan, R., J. Shortle, and D. Abler. Ambient Taxes When Polluters Have Multiple Choices. In J. Shortle and R. Griffin (Eds.), *Irrigated Agriculture and the Environment*. Cheltenham, UK: Edward Elgar. Reprinted from the *Journal of Environmental Economics and Management*.

Shortle, J., D. Abler, and M. Ribaudo. 2001. Agriculture and Water Quality: The Issues. In J. Shortle and D. Abler (Eds.), *Environmental Policies for Agricultural Pollution*. Walingford, UK: CAB International.

Horan, R., and J. Shortle. 2001. Environmental Instruments for Agriculture. In J. Shortle and D. Abler (Eds.), *Environmental Policies for Agricultural Pollution*. Walingford, UK: CAB International.

Ribaudo, M., and J. Shortle. 2001. Measuring the Benefits and Costs of Environmental Policies. In J. Shortle and D. Abler (Eds.), *Environmental Policies for Agricultural Pollutio*n. Walingford, UK: CAB International.

Abler, D., and J. Shortle. 2001. Decomposing the Effects of Trade on the Environment. In J. Shortle and D. Abler (Eds.), *Environmental Policies for Agricultural Pollution*. Walingford, UK: CAB International.

Horan, R., D. Abler, J. Shortle, and J. Carmichael. 2001. Probabilistic Cost-Effective Point/Nonpoint Nutrient Management in the Susquehanna River Basin. In D. Bosch (Ed.), *Proceedings of the Integrated Decision-Making for Watershed Management Symposium: Processes and Tools*. Virginia Polytechnic Institute and State University, Blacksburg, VA. VWRRC P7 2001.

Fisher, A., J. Shortle, R. O'Connor, and B. Ward. 2000. Engaging Stakeholder Participation in Assessing Regional Impacts from Climate Change: The Mid-Atlantic Regional Assessment. In *Climate Change Communication - Proceedings of an International Conference*. Environment Canada, University of Wterloo, and Climate Change Action Fund.

Fisher, A., J. Shortle, R. O'Connor, and B. Ward. 2000. Engaging Stakeholder Participation in Assessing Regional Impacts from Climate Change: The Mid-Atlantic Regional Assessment. In D. Scott, B. Jones, Jean Andrey, Robert Gibson, P. Kay, Linda Mortsch, and K. Warriner (Eds.). *Climate Change Communication Conference*. Kitchener-Waterloo, Ontario Canada.

Shortle, J. S., and D. G. Abler. 1999 Agriculture and the Environment. In J. Van der Berg (Eds.), *Handbook of Environmental and Resource Economics*, Cheltenham UK: Edward Elgar.

Shortle, J., R. Faichney, N. Hanley, and A. Monroe. 1999. Least-Cost Allocations for Probabilistic Water Quality Targets to Protect Salmon on the Forth Estuary. In S. Sorrell (Eds.), *Pollution For Sale: Emissions Trading and Joint Implementation*. Cheltenham UK:Edward Elgar.

Shortle, J. S. 1999. Efficient Nutrient Management Policy Design. In B. Gardner and C. Koch (Eds.), *Economics of Policy Options for Nutrient Management and Phiesteria*. Center for Agricultural and Natural Resource Policy, University of Maryland, College Park.

Abler, D., and J. Shortle. 1999. Decomposing the Effects of Trade on the Environment. In J. Antle, J. Lekakis, and G. Zanias (Eds.) *European Agriculture at the Crossroads: Competition and Sustainability*. Cheltenham UK: Edward Elgar.

Shortle, J., P. Kocagil, N. Demarteau, and A. Fisher. 1998. The Cost of Cryptosporidium Contamination of Drinking Water Supplies. *Source Water Protection Symposium*, American Water Works Association, San Francisco, CA, October.

Demarteau, N., A. Fisher, and J. Shortle. 1997. On the Cost of Illness Associated With Climate Change: A Case Study of Cryptosporidiosis in Lancaster Co. Pennsylvania. *Reprints of the 10th Conference on Applied Climatology*. Boston, MA: American Meteorological Society.

Shortle, J. S., and D. G. Abler. 1997. Nonpoint Pollution. In H. Folmer and T. Tietenberg (Eds.), *International Yearbook of Environmental and Resource Economics.* Cheatham: Edward Elgar.

Rodriguez, A., D. Abler, and J. Shortle. 1997. Indicadores Ambientales en un Modelo de Equibrio General Para Costa Rica. In V. Calvo, E. Figueroa, and J. Vargas (Eds.). *Medio Ambientales Latinoamérica: Desafíos y Propuestas*. San José, Costa Rica: Universidad de Costa Rica.

Abler, D. G., and J. S. Shortle. 1997. Modeling Environment and Trade Policy Linkages: The Case of US and EC Agriculture. In W. E. Martin and L. A. McDonald (Eds.) *Modeling Environmental Policy*, Dordrecht: Kluwer Academic Publishers.

Abler, D. G. and J. S. Shortle. 1997. Environmental Aspects of New Agricultural Technology. Invited paper in the Proceedings of *Global Agricultural Science Policy for the Twenty-First Century*. Melbourne: ICMS Pty Lts.

Shortle, J. 1996. Economic Incentives for Nutrient Pollution Control. In A. Weersink and J. Livernois (Eds.), *Exploring Alternatives: Potential Application of Economic Instruments to Address Selected Environmental Problems in Canadian Agriculture*. Ottawa: Agriculture and Agri-Food Canada.

Abler, D. G., A. G. Rodriguez, and J. S. Shortle. 1995. Natural Resource Implications for Agricultural Trade Liberalization. In G. H. Peters and D. D. Hedley (Eds.), Agricultural *Competitiveness: Market Forces and Policy Choice*. Aldershot, UK: Dartmouth.

Musser, W. N., L. M. Musser, D. S. Laughland and J. S. Shortle. 1995. Contingent Valuation Estimates for Local Public Water Decisions. In A. Dinar and L. Loehman (Eds.). *Water Quality/Quantity Disputes and Their Resolution*. Praeger.

Shortle, J. S. Environmental Federalism: 1995. The Case of US Agriculture. In J. R. Braden, H. Folmer and T. Ulen (Eds.), *Environmental Policy with Economic and Political Integration: The European Union and the United States*. Cheltenham, UK: Edward Elgar.

Shortle, J., and D. G. Abler. 1994. Incentives For Nonpoint Pollution Control. In T. Graham Tomasi and C. Dosi (Eds.) *The Economics of Nonpoint Pollution Control: Theory and Issues*. Dortrecht: Kluwer Academic Press.

Rodriguez, A. G., D. G. Abler, and J. S. Shortle. 1994. Trade Policy, Natural Resources, and the Environment: The Case of Costa Rica. In *International Environmental Management and National Policy: Symposium Papers*, Resource Policy Consortium.

Musser, W. M., J. S. Shortle, D. G. Waddington, and D. K. Israel. 1993. Benefits of Agricultural Land Preservation for Urban Populations in Pennsylvania. In *Urbanization and*

Development Effects on the Use of Natural Resources: Proceedings of a Regional Workshop. Southern Rural Development Center and the Farm Foundation.

Shortle, J. S. 1992. Pollution Control Policy Instruments: Options, Applications and New Directions. In J. Feehan (Ed.). *Environment and Development in Ireland*. Dublin: The Environmental Institute, University College Dublin.

Shortle, J. S., and D. G. Abler. 1992. The Political Economy of Nonpoint Pollution Control Design for Agriculture. In M. Loseby (Ed.). *The Environment and the Management of Agricultural Resources*. Brussels: European Association of Agricultural Economists.

Abler, D. G. and J. S. Shortle. 1991. Innovation and Environmental Quality: The Case of EC and US Agriculture. In F. Dietz, R. van der Ploeg and J. van der Straaten (Eds.), *Environmental Policy and the Economy*. Amsterdam: North-Holland.

Shortle, J. S., and J. W. Dunn. 1991. The Economics of Nonpoint Pollution. In N. Hanley (Ed.) *Farming and the Countryside: An Economic Analysis of External Costs and Benefits*, Wallingford, UK: CAB International.

Dunn, J., and J. Shortle. 1990. Agricultural Nonpoint Pollution Control in Theory and Practice. In J. H. Cumberland (Ed.), *Proceedings of the Third Annual Conference on the Economics of Chesapeake Bay Management*. Bureau of Business and Economic Research, University of Maryland.

McSweeny, W. T., and J. S. Shortle. 1990. Probabilistic vs. Deterministic Targets For Designating Agricultural BMPs. In J. H. Cumberland (Ed.), *Proceedings of the Fourth Annual Conference on the Economics of Chesapeake Bay Management*. Bureau of Business and Economic Research, University of Maryland.

Shortle, J. S., D. G. Abler, and J. C. Becker. 1989. The Political Economy of Groundwater Protection. In C. E. Bouchard (Ed.), *Nonpoint Water Quality Concerns: Legal and Regulatory Aspects*. St. Joseph, MI: American Society of Agricultural Engineering.

Sponsored Research

Center for Green Infrastructure and Stormwater Management (Co-PI). US Environmental Protection Agency. $2,173,026. 2011-2015.

Impacts of Climate Change in Pennsylvania Update. (PI). PA Department of Environmental Protection. $99,000. 2011-2012.

Building Capacity to Analyze the Economic for Reducing Agriculture's Nutrient Discharge into the Chesapeake Bay Watershed. (PI) USDA Office of the Chief Economist. $150,000. 2011-2012.

Research in Integrated Assessment Inter-Model Development, Testing, and Diagnostics (Co-PI). US Department of Energy. $2,000,000. 2010-2013.

Pennsylvania Stewardship Engagement Initiative: Improving Producer Involvement in Federal Conservation Policy (Pending) (Co-PI). Packard Foundation. $78,200. 2011-2012.

Conewago Creek Collaborative Conservation Initiative (Co-PI). National Fish and Wildlife Foundation. $750,000. 2009-2012.

Impacts of Climate Change in Pennsylvania (PI). PA Department of Environmental Protection. $197,000. 2009-2010.

Designing Markets for Ecosystem Services (PI). PSIEE Sustainability Seed Grant. $27, 375. 2010-2012.

Baseline Rules and Their Importance to Nonpoint Sources in Water Quality Trading Programs (PI). US Department of Agriculture. $30,000. 2007-2008.

Optimizing Markets for the Purchase Ecosystem Services from Agriculture: A Laboratory Experiment (PI). College of Agricultural Sciences Seed Grant. $10,000. 2007-2008.

Integrating Ethics Into Graduate Training in the Environmental Sciences (Co-PI). National Science Foundation. $285,549. 2005-2008.

National Needs Fellowship in Soil and Water Sciences (Co-PI). US Department of Agriculture. $138,000. 2006-2009.

Development and Demonstration of a BMP Performance Evaluation System in Agriculturally-Influenced Watersheds in the Mid-Atlantic Region (Co-PI). U.S. Department of Agriculture. $660,000. 2006-2009.

Improving Profitability and Performance of Dairy Manure Digesters (Co-PI). US Department of Agriculture. $462,110. 2005-2008.

USDA National Needs Fellowship in Soil and Water Sciences. (Co-PI). US Department of Agriculture. $138,000. 2005-2008.

Hydrologic Forecasting for Characterization of Non-linear Response of Freshwater Wetlands to Climatic and Land Use Change in the Susquehanna River Basin (Co-PI). $899,656. 2006 – 2009.

Development of a Habitat Conservation Plan for the Bog Turtle (Clemmys muhlenbergii) and other wetland species of concern in the Southern Portion of the Delaware West Recovery Unit, in Pennsylvania and Delaware. (Faculty Affiliate). Pennsylvania Fish and Boat Commission / U. S. Fish and Wildlife Service ($574,010). 2004-2006.

Workshop on Trade and the Environment (PI). U.S. Environmental Protection Agency. $25,000. 2004.

Review and Analysis of Market-Based Mechanisms to Reallocate Irrigation Water When Federal Decisions Create Shortfalls (PI). US Department of Agriculture $53,500. 2003-2006.

Consortium for Atlantic Regional Assessment (Co-PI). U.S. Environmental Protection Agency. $2,250,000. 2003-2006.

Review and Analysis of Market-Based Mechanisms to Reallocate Irrigation Water When Federal Decisions Create Shortfalls (PI). U.S. Department Of Agriculture. $53,500. 2003-2006.

Economic Effects of Pennsylvania's System of Local Taxation upon the Current and Future Viability of Pennsylvania Agriculture (Co-PI). Pennsylvania Department of Agriculture. $165,000. 2003-2005.

Ecological and Socioeconomic Indicators for Integrated Assessment of Aquatic Ecosystems of the Atlantic Slope (Co-PI). U.S. Environmental Protection Agency. $6,000,000. 2001-2005.

Mid-Atlantic Regional Assessment of Climate Change Impacts (Co-PI). U.S. Environmental Protection Agency. $1,623,000. 1998-2001.

Climate Change, Agriculture, and The Environment (Co-PI). University Corporation for Atmospheric Research. $30,000. 1999.

Agricultural Nonpoint Pollution Control: Policy Options and the Value of Information (Co-PI). U.S. Department of Agriculture. $62,485. 1998-2001.

Economic and Environmental Benefits of Watershed Restoration in Rural Communities (Co-PI). U.S. Department of Agriculture. $365,000. 1998-2001.

Pasture Research and Information Needs of NE Livestock Producers (Co-PI). U.S. Department of Agriculture. $40,000. 1997-1999.

Water Supply Impacts of Climate Change: Contamination Potential and Comparison of Prevention vs. Mitigation. (Co-PI). U.S. Environmental Protection Agency. $395,555. 1996-1999.

Methods for integrated Regional Assessment of Climate Change (Faculty Affiliate). National Science Foundation. $1,625,000. 1996-2001.

Water Resources Impacts of Climate Change (Co-PI). U.S. Environmental Protection Agency. $491,981. 1995-2000.

Improving Dairy Profitability in Pennsylvania (Co-PI). U.S. Department of Agriculture. 1994-1996.

Public Policies to Facilitate Sustained Economic Growth with Protection of Natural Resources and the Environment in Costa Rica (PI). Resources for the Future Small Grant Award. 1992-1994.

Water Quality and Induced Agricultural Research (Co-PI). U.S. Department of Agriculture. 1991-1993.

The Economics of the Pre-sidedress Nitrogen Test (PI). U.S. Environmental Protection Agency. 1990-1992.

Development and Implementation of a National Program of Low-Input Farming Systems Research and Education (Co-PI). U.S. Department of Agriculture. 1988-1990.

Economic Evaluation of the Vermont St. Albans Bay RCWP Project (PI). U.S. Department of Agriculture. 1985-1987.

Impacts of Public Acquisition of Land for Outdoor Recreation and Preservation of Natural Environments on Local Economic Development and the Fiscal Position of Local Governments (Co-PI). Western Pennsylvania Conservancy. 1983.

Effects of Solid Waste Disposal Sites on Community Development and Residential Property Values (Faculty Affiliate). Bureau of Solid Waste Management, Department of Environmental Resources, Commonwealth of Pennsylvania. 1982.

Invited Presentations

Human Dimensions of Ecological Indicators. Invited seminar for the US EPA Duluth Laboratory. Duluth MN. April 12, 2006.

Transactions Costs in Environmental Markets. Presented at the School of Commerce, University of South Australia, April 13, 2007.

Modeling Land-Environment Interactions. Rural Economy and Land Use Program. Sheffield University, UK, October 5, 2007.

Water Quality Trading. Alberta Environment, Edmonton, Alberta, October 30, 2008.

Design Markets for Point/Nonpont Water Quality Trading. Environmental Tools Network Seminar. University of Alberta, October 31, 2008.

Climate Change Impacts in Pennsylvania. Pennsylvania Association of Environmental Professionals Annual Conference. May 14, 2010.

Economic Impacts of Climate Change, for the PA Chamber of Business and Industry and Pennsylvania Environmental Council, Harrisburg, PA, 6/8/2010

Agriculture and the Chesapeake Bay, for the Pennsylvania Department of Agriculture, Agriculture Forum Panel, 7/11/2010

Climate Change and Human Health: Lessons from A US Case Study. Presented at the Climate Change and Global Public Health: Law, Justice and Governance conference, Bristol University, Bristol, UK, 2/9/2010. Sponsored by the World Universities Network.

Reforming Nonpoint Pollution Control Policy: The Good, the Bad, and the Ugly, University of Florida Water Institute Smallwood Distinguished Scholar Seminar, 3/4/201

Shortle, J., and B. Nagel. Designing Environmental Research Projects to Have Social Impact: Lessons from Climate Change and Water Quality Research Programs. Invited paper presented at the International Symposium on Environmental and Resource Management Policy, National Pintung University, Pintung Taiwan, October 2005.

Shortle, J., March 2003. The Theory of Performance Based Policy Instruments. Invited Presentation at the workshop on Performance Based Environmental Policies for Agriculture, sponsored by Shortle, J. April 2002. Climate Change and Agriculture. Invited presentation at the 2nd Annual Goddard Forum, Global Warming: Causes, Effects, and Mitigation Strategies for States and Localities. Penn State University, University Park, PA.

Marshall, E., and J. Shortle. February 2002. Urban Development Impacts on Ecosystems. Invited presentation at the Land Use Policy Workshop sponsored by the Northeast Center for Rural Development, Orlando, Fl

Shortle, J. June 2001. The Economics of Pollution Trading. Invited presentation, Pennsylvania Economics Association, Williamsport, PA

Abler, D., and J. Shortle. August 1997. Environmental Aspects of New Technology. Invited paper, Conference on Global Agriculture Science Policy for the Twenty-First Century, Melbourne, Australia

Abler, D., A. Rodriguez, and J. S. Shortle. August 1994. Trade Policy and the Environment: The Case of Costa Rica. Invited paper for the annual meeting of the International Agricultural Economics Association, Harare, Zimbabwe.

Shortle, J. S., and A. S. Laughland. April 1993. Impacts of Taxes to Reduce Agricultural Chemical Use When Farm Policy is Endogenous. Annual meeting of the Agricultural Economics Society, Oxford, UK. (Invited paper.)

Shortle, J. S. December 1991. Pollution Control Instruments: Options, Applications and New Directions. Presented at the conference Environmental Protection in Ireland: Issues and Opportunities, University College Dublin, Ireland. (Invited paper.)

Abler, D. G., and J. S. Shortle. September 1990. Evaluating Environmental Policies for Agriculture in the EC and US. Conference on Economics and the Environment, Tilburg University, Tilburg, The Netherlands. (Invited paper)

Shortle, J. S., and W. N. Musser. June 1989. The Optimal Quantity of Agricultural Land: Discussion. Invited paper at the 1989 Annual Meeting of the Northeast Agricultural and Resource Economics Association, University Park, PA.

Professional Service

Advisory Panels

American Farmland Trust
BMP Challenge Advisory Committee (since 2008)

Department of Energy
Member and Secretary, National Technical Advisory Committee National Initiative on Global Environmental Change (1998-2001)

National Research Council
Committee on Water Quality in Southwest Pennsylvania (2002-2005)
Committee on Science for EPA's Future (2011-2012)

Pennsylvania Department of Environmental Protection Agricultural Subcommittee for the Water Quality Trading (since 2006)

US Environmental Protections Agency Science Advisory Board
Panel on the Second Generation Model (2004-2006**)**
Member, Environmental Economics Advisory Committee (since 2008)
Panel on Hydrologic Fracturing (2010)

Reviewing Activities

Editorial Boards: *Environment and Development Economics*, *European Review of Agricultural Economics*

Conference Papers: American Agricultural Economics Association, European Association of Environmental and Resource Economists, World Congress of Environmental and

Resource Economists

Ad hoc Grant Applications: Illinois Water Resource Center, Land and Water Australia, Minnesota Sea Grant Program, National Oceanic and Atmospheric Administration, National Science Foundation, Social Sciences and Humanities Research Council (Canada), University of California Energy Biosciences Institute (EBI), University of Minnesota Mc Night Fellowship Program

Grant Application Review Panels: Pennsylvania USGS Water Center, US Environmental Protection Agency, National Science Foundation

Non-Profit Publishers: USDA CREEES Mid-Atlantic Water Quality Program, Purdue University Conservation Technology Information Center, Water Environment Foundation

Journals: Agricultural Economics, Agricultural and Resource Economics Agricultural and Resource Economics Review, American Economic Review, American Journal of Agricultural Economics, Canadian Journal of Agricultural Economics, Climate Change Letters, Climatic Change, Climate Research, Ecological Economics, Conservation Biology, Environment and Development Economics, Environmental Pollution, Environmental and Resource Economics, European Review of Agricultural Economics, Geo Journal, International Review of Environmental and Resource Economics, Journal of Agricultural Economics, Journal of the American Water Resources Association, Journal of Environmental Economics and Management, Journal of Environmental Management, Journal of Environmental Quality, Journal of Environmental Planning and Policy, Journal of Public Economic Theory, Journal of Water Resource Planning and Management, Land Economics, Marine Resource Economics, Resource and Energy Economics, Ricierche Economiche, Water Resources Research, Wetlands, and World Bank Economic Review

Professional Associations

Member various committee of the American Agricultural Economics Association, Northeast Agricultural and Resource Economics Associations