

Richard T. Woodward

Curriculum Vita

November 2023

I. PERSONAL INFORMATION

Professor, Department of Agricultural Economics
Texas A&M University
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II. EDUCATION

Ph.D. University of Wisconsin, Madison
Major: Agricultural and Applied Economics
Degree Date: May 1997
Thesis Title: "Sustainability, Efficiency and Economic Analysis: A Macroeconomic Framework with Microeconomic Implications"

M.A. University of Wisconsin, Madison, WI
Major: Agricultural Economics
Degree Date: May 1994

B.A. Middlebury College, Middlebury, VT
Major: Economics
Thesis Title: "The Economics of Philanthropic Behavior"
Degree Date: April 1984
Honors: Cum Laude and Highest Honors in Department of Economics

III. EXPERIENCE

Current Position

Professor, 9/2010 - Present, Department of Agricultural Economics, Texas A&M University

IV. PUBLICATIONS

Books

Penson, John B., Jr., Oral Capps, Jr., C. Parr Rosson III and Richard T. Woodward. Introduction to Agricultural Economics, seventh edition. 2017. Upper Saddle River, New Jersey: Prentice Hall.

Refereed Journal Articles

Following the convention of Agricultural Economics, the seniority of authorship is indicated by the order of the names unless otherwise indicated. (* invited papers, ** editor reviewed, [±]graduate student author) SCImago Journal Ranks (SJR)

1. Backstrom, Jesse D. and Richard T. Woodward. “New Determinants of Recreation Site Choice: Valuing Onsite Characteristics and Diversity Aversion in Random Utility Models” Forthcoming, Jan. 2023. *Marine Resource Economics*: 0.956
2. Ogieriakhi, Macon[±] and Richard T. Woodward. “Understanding why farmers adopt soil conservation tillage: A systematic review.” *Soil Security* Forthcoming (Accepted October, 2022). <https://doi.org/10.1016/j.soisec.2022.100077>
3. Knappett, P. S. K., P. Farias, G. R. Miller, J. Hoogesteger Y. Li, I. Mendoza, R. T. Woodward, H. Hernandez, I. Loza, S. Datta, Y. Huang, G. Carrillo, T. Roh, D. Terrell. Forthcoming (June 2022). “A Systems Approach to Remediating Human Exposure to Arsenic and Fluoride from Over-exploited Aquifers.” *GeoHealth*. 6(7): 1-24 <http://dx.doi.org/10.1029/2022GH000592>. SJR: 1.178.
Selected for AGU Editor Highlight (2% chance) <https://eos.org/editor-highlights/protecting-childrens-health-can-benefit-the-economy>
4. Huang, Yu-Kai and Richard T. Woodward. 2022. “Spillover Effects of Grocery Bag Legislation: Evidence of Bag Bans and Bag Fees.” *Environmental and Resource Economics*. 81: 711–741. <https://doi.org/10.1007/s10640-022-00646-5>. SJR: 1.27
5. Earnhart, Dietrich, Sarah Jacobson, Yusuke Kuwayama and Richard T. Woodward. 2022. “Discretionary Exemptions from Environmental Regulation: Flexibility for Good or for Ill.” Forthcoming (Accepted, June 2022) *Land Economics*.
6. Wang, Ying., Woodward, Richard.T. & Liu, Jing-Yue. 2022. “The Impact of Exogenous Pollution on Green Innovation.” *Environmental and Resource Economics*. 81(1):1–24 (2022). <https://doi.org/10.1007/s10640-021-00614-5>. SJR: 1.27
7. Abbott, Joshua K., Daniel K. Lew, John C. Whitehead and Richard T. Woodward. 2022. “The Future of Fishing for Fun: Economics and Recreational Fisheries.” *Review of Environmental Economics and Policy*. 16 (2), 262-281. <https://doi.org/10.1086/720987> SJR: 4.923
8. Liu, Jing-Yue, Richard T. Woodward, and Yue-Jun Zhang. 2021. “Has Carbon Emissions Trading Reduced PM 2.5 in China?” *Environmental Science & Technology*, May, acs.est.1c00248. <https://doi.org/10.1021/acs.est.1c00248>. SJR: 2.704
9. Fei[±], Chengcheng, Kendra[±] M. Williamson, Richard T. Woodward, Juliana Rangel and Bruce A. McCarl. 2021. “Honey Bees, Almonds, and Colony Mortality: an Economic Simulation of the U.S. Pollination Market.” *Land Economics*. 97(3):688-703. SJR: 0.961

10. Bagnall, D. et al. 2020 “Common Ground: Insights from Farmers for Communicating Indicators of Soil Health in the Brazos River Watershed of Texas.” *Agrosystems, Geosciences & Environment*. DOI: 10.1002/agg2.20066. SJR: 0.312
11. Wilberg, Michael J., Richard T. Woodward, David Tomberlin and Pei Huang^{±1}. 2019. “Developing Precautionary Reference Points for Fishery Management Using Robust Control Theory: Application to the Chesapeake Bay Blue Crab *Callinectes sapidus* Fishery” *Marine and Coastal Fisheries*. 11:177-188. DOI: 10.1002/mcf2.10069. SJR: 0.864
12. Fujiwara, Masami, Jesse D. Backstrom[±] and Richard T. Woodward. 2018. “A coupled recreational anglers’ decision and fish population dynamics model” *PLOS ONE*. October 31, 2018. doi.org/10.1371/journal.pone.0206537. SJR: 1.023
13. Landon, Adam[±], Richard T Woodward, Gerard T Kyle and Ronald A Kaiser. 2018. “Evaluating the efficacy of an information-based residential outdoor water conservation program” *Journal of Cleaner Production*. 195(10):56-65. doi.org/10.1016/j.jclepro.2018.05.196. SJR: 1.886
14. Hua, Chunlin, Richard T. Woodward and Liangzhi You. 2017. “An Ex-Post Evaluation of Agricultural Extension Programs for Reducing Fertilizer Input in Shaanxi, China” *Sustainability* 9:566; doi:10.3390/su9040566. SJR: 0.581
15. Woodward, Richard T., David Newburn and Mariano Mezzatesta[±]. 2016. “Additionality and Reverse Crowding Out for Pollution Offsets in Water Quality Trading.” *Ecological Economics*. 128(1): 224-231. https://doi.org/10.1016/j.ecolecon.2016.05.001. SJR: 1.719
16. **Binder, Kyle[±], James W. Mjelde and Richard T. Woodward. 2016. “Price Interaction in State Level Renewable Energy Credit Trading Programs” *The Electricity Journal*. 29(4): 15-21. doi.org/10.1016/j.tej.2016.04.010. SJR: 0.616
17. Colin-Castillo, Sergio, and Richard T. Woodward. 2015. “Measuring the potential for self-governance: an approach for the community-based management of the common-pool resources.” *International Journal of the Commons*. 9(1):281–305. doi.org/10.18352/ijc.490. SJR: 0.787
18. Huang, Pei, Richard T. Woodward, Michael J. Wilberg and David Tomberlin. 2015. “Management Evaluation for the Chesapeake Bay Blue Crab Fishery: An Integrated Bioeconomic Approach” *North American Journal of Fisheries Management*. 35:216–228, 2015. (Selected as Best Paper Award in the North American Journal of Fisheries Management for 2015). 10.1080/02755947.2014.986342. SJR: 0.658
19. Woodward, Richard T., Amanda Stronza, Elizabeth Shapiro and Lee Fitzgerald. 2014. “Market-Based Conservation: Aligning Static Theory with Dynamic Systems”, *Natural Resources Forum*. 38(4): 235–247. doi.org/10.1111/1477-8947.12058. SJR: 0,555

20. Colin-Castillo, Sergio and Richard T. Woodward. 2014. “Propuesta Metodológica Para Medir El Potencial De Autogobierno” (A methodological proposal for measuring the potential for self governance). *Análisis Económico*, 29(70):57-71.
21. Woodward, Richard T. and David Tomberlin, 2014. “Practical Precautionary Resource Management Using Robust Optimization.” *Environmental Management*. 54(4): 828-839. SJR: 0.915
22. *Evans, David A. and Richard T. Woodward (senior authorship shared). 2013. “What Can We Learn from the End of the Grand Policy Experiment? The Collapse of the National SO₂ Trading Program and Implications for Tradable Permits as a Policy Instrument.” *Annual Review of Resource Economics*. 5:325–48. doi.org/10.1146/annurev-resource-091912-151835. SJR: 1.853
23. 华春林,陆迁,姜雅莉,理查德·伍德沃德, 2013. .农业教育培训项目对减少农业面源污染的影响--基于倾向评分匹配 (propensity score matching, PSM) 方法.农业技术经济,4:83-92.
24. Ghimire, Narishwar± and Richard T. Woodward. 2013. “Under and Overuse of Pesticides: An International Analysis.” *Ecological Economics*. 89(1):73-81. 10.1016/j.ecolecon.2013.02.003. SJR: 1,719
25. Mezzatesta, Mariano±, David Newburn and Richard T. Woodward.2013. “Additionality and the Adoption of Farm Conservation Practices” *Land Economics*. 89(4): 740–760. 10.3368/le.89.4.722. SJR: 0.972
26. Newburn, David and Richard T. Woodward. 2012. “An Ex Post Evaluation of the Great Miami Water Quality Trading Program.” *Journal of the American Water Resources Association*. 48(1): 156–169. DOI:10.1111/j.1752-1688.2011.00601.x. SJR: 0,979
27. Griffin, Wade. L and Richard T. Woodward. 2011. “Determining the Policy-Efficient Management Strategies in Fisheries using Data Envelopment Analysis (DEA).” *Marine Policy*. 35:496–507. SJR: 1,295
28. Woodward, Richard T. 2011 “Double Dipping in Environmental Markets” *Journal of Environmental Economics and Management*. 61(2):153-169 doi.org/10.1016/j.jeem.2010.07.004. SJR: 2.393
29. Freeman, Matthew A. ± and Richard T. Woodward. 2010. “Sequential License Buyback Auctions: An Experimental Analysis.” *Marine Resource Economics*. 25(4):355-372.
30. Blackman, Allen and Richard T. Woodward “User-Financing in a National Payments for Environmental Services Program: Costa Rican Hydropower” *Ecological Economics*. 69 (2010) 1626-1638. <https://doi.org/10.1016/j.ecolecon.2010.03.004>

31. Baker, Justin[±], W Douglass Shaw, David Bell[±], Samuel D. Brody, William Neilson, Mary Riddel and Richard Woodward. 2009. "Explaining Subjective Risks of Hurricanes and the Role of Risks in Intended Moving and Location Choice Models." *Natural Hazards*. 10(3):102-112.
32. Baker, Justin[±], W. Douglass Shaw, Mary Riddel and Richard Woodward. 2009. "Changes in Subjective Risks of Hurricanes as Time Passes: Analysis of a Sample of Katrina Evacuees." *Journal of Risk Research*.12(1): 59-74.
33. Moeltner, Klaus and Richard T. Woodward. 2009. "Meta-Functional Benefit Transfer for Wetland Valuation: Making the Most of Small Samples," *Environmental and Resource Economics*. 42(1):89-109.
34. Woodward, Richard T. and W. Douglass Shaw. 2008. "Allocating Resources in an Uncertain World: Water Management and Endangered Species" *American Journal of Agricultural Economics*. 90(3):593-605.
35. Nguyen, To N[±]. and Richard T. Woodward. 2008. "NutrientNet: An Internet-based Approach to Teaching Market-Based Policy for Environmental Management." *Journal of Economic Education*. 42(2):38-54.
36. Shaw, W. Douglass and Richard T. Woodward. 2008. "On Why Environmental and Resource Economists Should Care about Non-expected Utility Models." *Resource and Energy Economics* 30(January):66-89.
37. Nguyen, To N. [±], W. Douglass Shaw, Richard T. Woodward, Robert Paterson and Kevin Boyle. 2007. "An Empirical Study of Option Prices for Hunting Permits." *Ecological Economics* 63(August):476-484
38. Kim, Hwa Nyeon[±], W. Douglass Shaw, and Richard T. Woodward. 2007. "The Distributional Impacts of Recreational Fees: A Discrete Choice Model with Incomplete Data," *Land Economics*, 83 (November):561-574.
39. Nayga, Rodolfo M., Jr., Richard T. Woodward and Wipon Aiew. 2006. "Willingness to Pay for Reduced Risk of Food-borne Illness: A Non-Hypothetical Artefactual Field Experiment." *Canadian Journal of Agricultural Economics* 54(December):461-476.
40. Woodward, Richard. 2005. "Do Americans Desire Homogeneity? Evidence from Names from 1900–2000." *Economics Bulletin* 4(August 31):1-6.
41. *Woodward, Richard T. "Overview: Markets for the Environment." 2005. *Choices* 20(First Quarter):49-51.
42. Nayga, Rodolfo M. Jr., Richard Woodward and Wipon Aiew[±]. 2005. "Experiments on the Divergence between Willingness to Pay and Willingness to Accept: The Issue Revisited." *Economics Bulletin* 17(January):1-5.

43. Woodward, Richard T., Yong-Suhk Wui± and Wade L. Griffin. 2005. "Living with the Curse of Dimensionality: Closed-Loop Optimization in Large-scale Fisheries Simulation Model." *American Journal of Agricultural Economics* 87(February):48-60.
44. Aiew, Wipon±, Rodolfo M. Nayga, Jr. and Richard T. Woodward. 2004. "The Treatment of Income Variable in Willingness to Pay Studies." *Applied Economics Letters* 11(July):581-585.
45. Woodward, Richard T. and Wade L. Griffin. 2003. "A Theoretical and Empirical Analysis of Size and Bag Limits in Recreational Fisheries." *Marine Resource Economics* 18:235-45.
46. Gillig, Dhazn±, Richard T. Woodward, Teofilo Ozuna, Jr. and Wade L. Griffin. 2003. "Joint Estimation of Revealed and Stated Preference Data: An Application to Recreational Red Snapper Valuation." *Agricultural and Resource Economics Review* 32(October):209-221.
47. Woodward, Richard T. 2003. "Lessons About Effluent Trading from a Single Trade." *Review of Agricultural Economics* 25(Spring/Summer):235-245.
48. Woodward, Richard T. and Richard C. Bishop. 2003. "Sector-level Decisions in a Sustainability-constrained Economy." *Land Economics* 79(February):1-14. doi: 10.2307/3147100
49. Woodward, Richard T., Ronald A. Kaiser and Aaron-Marie Wicks±. 2002. "The Structure and Practice of Water-Quality Trading Markets." *Journal of the American Water Resources Association* 38(August):967-979. doi.org/10.1111/j.1752-1688.2002.tb05538.x
50. Woodward, Richard T. and Ronald A. Kaiser. 2002. "Market Structures for U.S. Water Quality Trading." *Review of Agricultural Economics* 24(Fall/Winter):366-383. 10.1111/1467-9353.00025
51. Woodward, Richard T. and Yong-Suhk Wui±. 2001. "The Economic Value of Wetland Services: A Meta-analysis." *Ecological Economics* 37(May):257-270. doi.org/10.1016/S0921-8009(00)00276-7
52. Woodward, Richard T., Wade Griffin, Dhazn Gillig± and Teofilo Ozuna. 2001. "The Welfare Impacts of Unanticipated Trip Limitations in Travel Cost Models." *Land Economics* 77(August):327-338.
53. Woodward, Richard T. 2000. "Sustainability as Intergenerational Fairness: Efficiency, Uncertainty and Numerical Methods." *American Journal of Agricultural Economics* 82(August):581-593. doi.org/10.1111/0002-9092.00048
54. Shively, Gerald, Richard Woodward and Denise Stanley. 1999. "Strategy and Etiquette for Graduate Students Entering the Academic Job Market." *Review of Agricultural Economics* 21(Fall):513-26.

55. Woodward, Richard T. and Richard C. Bishop. 1999. "Optimal-Sustainable Management of Multi-Species Fisheries: Lessons from a Predator-Prey Model." *Natural Resource Modeling* 12(Fall):355-377.
56. *Woodward, Richard T. and Richard C. Bishop. 1997. "How to Decide When Experts Disagree: Uncertainty-Based Choice Rules in Environmental Policy." *Land Economics* 73(November):492-507. DOI: 10.2307/3147241
57. *Woodward, Richard T. and Richard C. Bishop. 1995. "Efficiency, Sustainability and Global Warming." *Ecological Economics* 14(August):101-11.

Articles Not Refereed

1. Shaw, W. Douglass and Richard T. Woodward. 2007. "Three Ships that Pass in the Night: Risk, Ambiguity and the WTP/WTA Disparity." *Newsletter of the Association of Environmental Resource Economists*. (November).
2. Woodward, Richard T. 2000. "Market-Based Solutions to Environmental Problems: Discussion." *Journal of Agricultural and Applied Economics* 32(August):259-266.

Book Chapters

1. Bagnall, D.K., C.L.S. Morgan, R.T. Woodward and W.A. McIntosh. 2019. Approach to valuing soil ecosystem services with linking indicators. p. 19-26. In A.C. Richer-de-Forges et al. (ed.) *Global soil security: towards more science-society interfaces*. Taylor and Francis Group, London, England.
2. Woodward, Richard T. 2014. "Offsets." In *Encyclopedia of Environmental and Resource Economics*, Tim Haab and John Whitehead (eds.), pages 238-240.
3. Kim, Hwa Nyeon[±], Richard T. Woodward and Wade L. Griffin. 2009. "Can Transferable Rights Work in Recreational Fisheries?" in *Evolving Approaches to Managing Marine Recreational Fisheries*. D.R. Leal and V. Majaraj (eds.), Lanham, MD: Lexington Books.
4. Riechers, Robin, Wade Griffin and Richard Woodward. 2006 . "The Texas Inshore Bay and Bait License Buyback Program." in *Fisheries Buybacks*. Rita Curtis and Dale Squires (eds.), Ames, IA: Blackwell Publishing.
5. Woodward, Richard T., Griffin, Wade L. and Wui, Yong-Suhk[±]. 2005. "DPSIM Modelling: Dynamic Optimization in Large Scale Simulation Models." in *Applications of Simulation Methods in Environmental and Resource Economics*. R. Scarpa and A. Alberini (eds.), Chapter 14, pp. 275-294. Dordrecht, The Netherlands: Springer Publisher.
6. Bishop, Richard C. and Woodward, Richard T. 1999. "Sustainability, Economy and Environment." in *Environmental Economics: Theory, Application, and Policy*. D. Chapman (ed.), pp. 373-394. Reading MA: Addison Wesley.

7. Bishop, Richard C. and Richard T. Woodward. 1995. "Valuation of Environmental Amenities Under Certainty." in *Handbook of Environmental Economics*. Daniel W. Bromley (ed.), pp. 543-567. Oxford: Blackwell Publishers.

World Resources Institute Reports

1. Hammond, Allen L., Albert Adrianse, Eric Rodenburg, Dirk Bryant and Richard Woodward. 1995. "Environmental Indicators: A Systematic Approach to Measuring and Reporting on Environmental Policy Performance in Context of Sustainable Development." World Resources Institute, Washington, DC.
2. Cruz, Maria Concepcion, Carrie A. Meyer, Robert Repetto and Richard Woodward. 1992. "Population Growth, Poverty, and Environmental Stress: Frontier Migration in the Philippines and Costa Rica." World Resources Institute, Washington, DC.
3. Tropical Science Center and the World Resources Institute. 1991. "Accounts Overdue: Natural Resource Depreciation in Costa Rica." World Resources Institute, Washington, DC. (Woodward was the principal WRI representative on this research project and oversaw the research and writing of the final report in both English and Spanish).

Popular Press

Woodward, Richard and Ron Griffin. "Higher gas prices not the problem." Opinion piece published in the Bryan-College Station Eagle Newspaper, page A8, May 4, 2006.

*Woodward, Richard "Four things that you should know about the EPA Clean Power Plan." Written for TheConversation.com (<https://theconversation.com/four-things-that-you-should-know-about-the-epa-clean-power-plan-45677>) August 4, 2015.

Invited presentations

1. "The value of water quality to recreational anglers" Michael Black and Richard T. Woodward, Department of Agricultural Economics, North Dakota State University, September 20, 2019.
2. "Rights and Economic Instruments for Water Mgmt" (In Spanish) Keynote presentation at Gestión del agua por cuencas en América Latina: ¿Lejos de la meta? Mexico City, Mexico, October 1, 2018.
3. "Thoughts on AgES." Comments at the "Scientific Challenges to Operationalizing Payments for Agro-Ecosystem Services (PAGES)" Indianapolis Indiana, Nov. 14-15, 2017.
4. "Economic Drivers of Re-use and Recycling in the Development of the Circular Economy" Keynote presentation at the Conference on the Circular Economy. Southwest Univ. of Science and Technology, Miannyang, China, June 19, 2014

5. “Market-based Environmental Policies and Business Opportunities” Presentation to Master of Business Administration Students, Southwest Univ. of Science and Technology, Miannyang, China, June 22, 2014
6. “Robust Ecosystem-based Management of the Chesapeake Bay Blue Crab Fishery” with Michael Wilberg. Sustainable Fisheries Goal Implementation Team Executive Committee Meeting, December 4, 2013
7. “Additionality and the Adoption of Farm Conservation Practices” Presentation at the conference, “Agricultural markets for ecosystem services: greenhouse gases, conservation practice adoption, and behavioral responses” USDA-ERS, Farm Foundation, August 8, 2013, Washington, DC. Also presented at the World Resources Institute, February 25, 2013, Washington, DC and Southwest Univ. of Science and Technology, Miannyang, China, June 19, 2014
8. “Stacking of Environmental Services from Agriculture” Presentation at the conference, “Providing Environmental Services from Agriculture in a Budget-Constrained Environment” USDA-ERS, Farm Foundation, Resources for the Future, April 17-18, 2012, Washington, DC.
9. “Measuring additionality in federal and market-based conservation programs” Triangle Resource and Environmental Economics Seminar Series (NC State University, Duke University, and RTI International)
10. “How do Ecosystem Services Stack Up?” Panel at the annual Ecosystem Markets Conference, June 29-July 1, 2011, Madison, Wisconsin.
11. “Water Quality Trading: Where is it now? How far can it go?” (keynote speaker) Joint meeting of the International Water Resource Economics Consortium and the Linking Environment & Agriculture Research Network, Banff, Alberta, Canada. June 26-28, 2011.
12. “An Introduction to Water Quality Trading in the U.S.” Presentation to staff of the San Antonio River Authority, San Antonio, TX, January 24, 2011.
13. “How Far Can We Push Environmental Markets?” (keynote speaker) 10th Annual Heartland Environmental & Resource Economics Workshop, Champaign Illinois, October 17-18, 2010.
14. “Life after AAE: An Analysis of Wisconsin PhDs.” Presented at the Centennial of the Department of Agricultural and Applied Economics (AAE) at the University of Wisconsin-Madison, September 25, 2009.
15. “The Status and Structure of Water Quality Trading in the United States.” Presented to the Australian Department of the Environment and Water Resources, Canberra, Australia, December 4, 2007 and at a Water Quality Workshop, Department of Environment and Climate Change, New South Wales, Sydney, Australia, December 6, 2007.

16. "Observations and Econometrics in a Sequential Auction for Fishing Licenses." Economics and Environment Network Seminar, Australian National University, Canberra, Australia, November 27, 2007 and to the Office of Environmental Policy and Climate Change, Department of Sustainability and Environment, Victoria, Australia, November 26, 2007.
17. "Potential for Bundling and Trading Ecosystem Services, including Climate Benefits and Comparison to Water Quality Trading." Presented at "Modeling Ag-Forest Offsets and Biofuels in U.S. and Canadian Regional and National Mitigation." Sponsored by USEPA, USDA-Forest Service, Agriculture and Agri-Food Canada, Nicholas Institute for Environmental Policy Solutions and RTI International, Shepherdstown, WV, March 6-8, 2007.
18. "Can Transferable Rights Work in Recreational Fisheries," Hwa Nyeon Kim, Richard T. Woodward and Wade L. Griffin. Presentation at "Evolving Approaches to Managing Marine Recreational Fisheries." Sponsored by the Property and Environment Research Center and Environmental Defense. Emigrant, MT, October 5-8, 2006. Also presented at the meeting of the North American Association of Fisheries Economists, Merida, Mexico, March 27-30, 2006.
19. "The Safe Minimum Standard as Robust Control." Presentation at "Frontiers in Natural Resource Economics: A Symposium to Honor the Career of Richard C. Bishop." University of Wisconsin-Madison, WI, March 23-24, 2006.
20. "Can a Markets for Ecosystem Services Work?" Presentation at "A New Currency for Conservation: Markets and Payments for Ecosystem Services from Our Nation's Forests and Farms." Convened by American Forests, Winrock International, Southern Environmental Law Center, Environmental Defense-Center for Conservation Initiatives; and Innovative and Emerging Challenges Division, National Center for Environmental Economics, United States Environmental Protection Agency. Washington, DC, May 19, 2005.
21. "The Experience of The United States: The Case of the Lake Dillon." Technical Seminar on the Feasibility of the Application of Tradable Water Permits for Water Management in Chile, sponsored by the Interamerican Development Bank and the Government of Chile's National Environmental Commission, Santiago, Chile, November 13-14, 2003.
22. "Market Structures and Multiple Markets in Water Pollution Trading." Nelson A. Rockefeller Center Global Environment Seminar, Dartmouth College, Hanover, NH, November 7, 2003.
23. "Water Quality Trading: A Tale of 3 Programs." Presentation to the Electric Power Research Institute, Environment Sector Council Meeting, San Antonio, TX, September 12, 2003.

24. "Meta-analysis of the Economic Value of Wetlands: Lessons about Wetlands, Valuation, and Meta-analysis." Plenary session presentation at the Master-point International Colloquium on Meta-analysis in Economics, Amsterdam, The Netherlands, December 12-14, 2002.
25. "Fundamental Principles of Environmental Economics." Presentation to the district meeting of officials of the Texas Parks & Wildlife Association, Edna, TX, May 15, 2002.
26. "Defining Sustainability." First annual conference of TeXas Economists, April 10, 2002, Austin, TX. Related paper, "Sustainability and the Management of Groundwater Resources" available on TeXas Economists' Internet site.
27. "An Integrated Economic Analysis of Alternative Bycatch, Commercial, and Recreational Policies for the Recovery of Gulf of Mexico Red Snapper." Marine Fisheries Initiative (MARFIN) 13th Annual Conference, Tampa, FL, January 16-17, 2002.
28. "The Structures of U.S. Water-Quality Trading Markets." United States Environmental Protection Agency National Risk Management Research Laboratory, Cincinnati, OH. May 8, 2001.
29. "Panel Discussion: Values and the Aquatic Environment." Annual meeting of the Texas Chapter of the American Fisheries Society, San Marcos, TX, January 22, 2001.
30. "Ecological, Economic, and Policy alternatives for Texas rice agriculture." Presentation for the Rice/Soybean Commodity Conference of the Texas Farm Bureau State Leadership Conference, College Station, TX, February 2, 2000.
31. "Effluent Trading: The Future of Water Quality Regulation?" Presented in the Water Quality Issues and Program Opportunities session, Mark McFarland, Coordinator. Texas A&M University System Agriculture Program Conference, January 12, 2000, College Station, TX.

V. GRANTS AND CONTRACTS AWARDED

Grants

External - Funded

- 1 "Texas Climate-Smart Initiative" Howe, Julie et al, USDA. \$65 million. 2023-2027
- 2 "A Biological and Economic Analysis of the Effects on Recreational Fishing of Changes in Offshore Energy Rigs in the Gulf of Mexico." Pamela Plotkin (PI in name only, TX Sea Grant), Richard. T. Woodward (Co-PI, project leader), Rebekka Dudensing (Co-PI, AGECE), Masami Fujiwara (Co-PI, ECCB), Gerard Kyle (Co-PI, RWFM), Benny Gallaway (Co-PI, LGL Consulting), Nathan F. Putman (Co-PI, LGL Consulting), DOC-National Oceanic and Atmospheric Administration, 9/2021 – 8/2023, \$795,783.

- 3 “Gulf Coast CESU with Texas A&M AgriLife Research to as reduce tillage, crop rotation, covercropping, erosion control, and residue management” Julie Howe (PI, SCSC), David Anderson (Co-PI), Richard Woodward (Co-PI), Graham Lamb (Co-PI), Ashly Smith (Co-PI), USDA-Natural Resources Conservation Services, 9/2021-11/2023, \$250,000.
- 4 “Evaluation of western states’ aquatic invasive species public awareness campaigns for eliciting desired prevention behaviors.” Gerard Kyle (PI, RWFM), Richard T. Woodward (Co-PI), Western Regional Panel on Aquatic Nuisance Species. 7/2021 – 6/2022, \$79,800.
- 5 “Market Implications of Changes in Climate, Land Coverage and Annual Colony Mortality for U.S. Commercial Beekeeping Operations.” Juliana Rangel (PI, ENTO), Chengcheng Fei (Co-PI, AGEC), Richard T. Woodward (Co-PI), National Honey Board, \$29,406.
- 6 “Actionable Links between Soil Function, Ecosystem Services, and Stakeholder Perceptions to Overcome Barriers to Improved Soil Management” Christine Morgan (PI, SOCS), Srinivasulu Ale (Co-PI, BAEN), Alex McIntosh (Co-PI, SOCI), Richard T. Woodward (Co-PI). Agriculture and Food Research Initiative (USDA), 5/2018 – 4-2023. \$545,379
- 7 “Economic Valuation of Brown and White Shrimps as Forage Species in the Coastal Areas of Texas,” Masami Fujiwara and Richard T. Woodward (Co-PIs). Texas Sea Grant, 2/2014-1/2016, \$219,816.
- 8 “Robust Ecosystem-Based Management of the Chesapeake Bay Blue Crab Fishery,” Richard T. Woodward (PI)., Michael Wilberg, John Wiedenmann and David Tomberlin Maryland Sea Grant, July 1, 2011 - June 30, 2012. \$100,000.
- 9 “Additionality and the Adoption of Farm Conservation Practices” David Newburn, Richard T. Woodward and Michael S. Hand (ERS). \$32,716. 8/2010– 7/2011. USDA-ERS RRED Research Grants Program.
- 10 “Efficiency and Design Lessons from the Great Miami River Watershed Water Quality Credit Trading Program.” Richard T. Woodward (PI) and W. Douglas Shaw. 1/2008 - 1/2010. \$185,796. USEPA/Market Mechanisms and Incentives. (competitive).
- 11 “Economic Analysis of Red Snapper Bycatch Reduction Management Alternatives for Directed and Non-directed Fisheries.” Wade L. Griffin (PI) and Richard T. Woodward. \$190,158. 9/2006 - 8/2008. National Marine Fisheries Service under the Marine Fisheries Initiative Program (Marfin). (competitive)
- 12 “Perceived Risks and Willingness to Pay for Hurricane Protection” W. Douglass Shaw (PI), Samuel D. Brody (Landscape Architecture and Urban Planning), William Neilson (Economics), Mary Riddell (University of Nevada, Las Vegas) and Richard T.

Woodward. 2/2006 - 1/2007. \$96,638. National Science Foundation, Small Grants for Exploratory Research Proposal (competitive).

- 13 “Trading for Land-Based Environmental Services: Overlapping Opportunities and Challenges in Greenhouse Gasses and Water Quality.” Richard T. Woodward (PI) and Bruce McCarl. 2/2005 - 2/2007. \$25,779. U.S.E.P.A. Environmental and Resource Economics Workshops (competitive).
- 14 “Cost and Effectiveness of Sequential License Buyback Programs in the Gulf of Mexico’s Shrimp Fishery.” Richard T. Woodward and Wade L. Griffin (Co-PIs). 2/2004 - 1/2006. \$185,416. National Marine Fisheries Service under the Marine Fisheries Initiative Program (Marfin). (competitive)
- 15 “Bioeconomic Analysis of the Red Snapper Rebuilding Plan and Transferable Rights Policies in the Gulf of Mexico.” Wade L. Griffin and Richard T. Woodward (Co-PIs). 1/2003 - 12/2005. \$183,464. National Marine Fisheries Service under the Marine Fisheries Initiative Program (Marfin). (competitive)
- 16 “An Integrated Economic Analysis of Alternative Bycatch, Commercial, and Recreational Policies for the Recovery of Gulf of Mexico Red Snapper,” NOAA Marine Fisheries Initiative (MARFIN), Richard T. Woodward and Wade L. Griffin (Co-PIs) and Teofilo Ozuna, 1/1999 - 12/2001, \$147,649 (competitive).
- 17 “Effluent Trading: A Policy Review for Texas,” Texas Natural Resources Conservation Commission carried out in conjunction with the Center for Public Leadership Studies, George Bush School of Government and Public Service, Arnold Vedlitz (PI), Mark A. Fossett, Ronald A. Kaiser, Marty D. Matlock, and Richard T. Woodward, 5/1999 - 11/1999, \$121,069.

VI. SERVICE

Professional and Honorary Societies and Associations

Professional Societies and Associations Memberships

Agricultural and Applied Economics Association
 American Economics Association
 Association of Environmental and Resource Economists
 North American Association of Fisheries Economists

Editorial Responsibilities

Guest Editor, *Choices*, series of articles on “Markets for the Environment.” First Quarter, 2005, Volume 20(1).

Associate Editor, *Marine Resource Economics*, 2005- 2011.

Editorial Board, *Land Economics* (2009 – present)

Editorial Council, *Journal of Environmental Economics and Management* (2010 –2020)

Associate Editor, *Economics Bulletin*, (2011 – 2017)

Co-Editor, *Journal of Agricultural and Resource Economics* (2018 – 2020)

Editorial Board, *Soil Security* (2020 - present)