

ERIC C. EDWARDS

September 2023

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ACADEMIC APPOINTMENT

- 2023- Associate Professor, Dept. of Ag and Resource Economics, North Carolina State Univ.
- 2018-23 Assistant Professor, Dept. of Ag and Resource Economics, North Carolina State Univ.
- 2014-18 Assistant Professor, Dept. of Applied Economics, Utah State Univ.

OTHER AFFILIATIONS

- 2022- Senior Research Fellow and Co-Director Graduate Fellows Program, PERC

EDUCATION

- 2014 Ph.D., Economics and Environmental Science, Univ. of California, Santa Barbara
- 2008 M.B.A., Simon Graduate School of Business, Univ. of Rochester
- 2005 B.S., Mathematics, Univ. of Idaho

PUBLICATIONS

Research (Peer-Reviewed)

1. Sanchez, L., Edwards, E.C., Leonard, B. Paper Water, Wet Water, and the Recognition of Indigenous Property Rights. In press at ***Journal of the Association of Environmental and Resource Economists***.
2. Edwards, E.C., Hassett, A., Sutherland, S.A. Teaching Elasticity of Demand and Marginal Analysis Using Water Utility Pricing. In press at ***Applied Economics Teaching Resources***.
3. Edwards, E.C., Fiszbein, M. and Libecap, G.D. 2022. Property Rights to Land and Agricultural Organization: An Argentina-United States Comparison. ***Journal of Law & Economics***, vol. 65(S1), pp.1-33
4. Sutherland, S.A. and Edwards, E.C. 2022. The Impact of Property Rights to Fish on Remote Communities in Alaska. ***Land Economics***, vol. 98(2), pp. 239-253.
5. Edwards, E.C. and Smith, S.M. 2021. Water Storage and Agricultural Resilience to Drought: Historical Evidence of the Capacity and Institutional Limits in the United States. ***Environmental Research Letters***, vol. 16, 124020.
6. Edwards, E.C. and Guilfoos, T. 2021. The Economics of Groundwater Governance Institutions Across the Globe. ***Applied Economic Perspectives and Policy***, vol. 43(4), pp. 1571-1594. [2022 AAEP Best Article Award]
7. Sanchez, L., Edwards, E.C., and Leonard, B. 2020. The Economics of Indigenous Water Claim Settlements in the American West. ***Environmental Research Letters***, vol. 15, 094027.

8. Go, D.H., Edwards, E.C., and Oladi, R. 2020. Predator-Prey Interaction in a Bi-Resource Economy and the Role of Free Trade. **Resource and Energy Economics**, vol. 61, 101174.
9. Ge, M., Edwards, E.C. and Akhundjanov, S.B. 2020. Irrigation Investment on an American Indian Reservation. **American Journal of Agricultural Economics**, 102(4), pp.1083-1104. [AAEA Quality of Research Discovery, Honorable Mention; AARES 2022 Quality of Research Discovery Award – Early/Mid-Career Researchers]
10. Edwards, E.C. and Null, S.E. 2019. The Cost of Addressing Saline Lake Decline and the Potential for Water Conservation Markets. **Science of the Total Environment**, vol. 651 Part 1, pp. 435-442.
11. Edwards, E.C., Cristi, O., Edwards, G., and Libecap, G.D. 2018. An illiquid market in the desert: Estimating the cost of water trade restrictions in northern Chile. **Environment and Development Economics**, vol. 23 no. 6, pp. 615-634.
12. Edwards, E.C. and Smith, S.M. 2018. The Role of Irrigation in the Development of Agriculture in the United States. **Journal of Economic History**, vol. 78 no. 4, pp. 1-39.
13. Ayres, A.B., Edwards, E.C. and Libecap, G.D. 2018. How Transaction Costs Obstruct Collective Action: Evidence from California's Groundwater. **Journal of Environmental Economics and Management**, vol. 91, pp. 46-65.
14. Edwards, E.C., Bosworth, R.C., Adams, P., Baji, V., Burrows, A., Gerdes, C., Jones, M. 2017. Economic Insight from Utah's Water Efficiency Supply Curve. **Water**, 9, 214.
15. Edwards, E.C. 2016. What Lies Beneath? Aquifer Heterogeneity and the Economics of Groundwater Management. **Journal of the Association of Environmental and Resource Economists**, vol. 3 no. 2, pp. 453-91.
16. Grafton, R.Q., Libecap, G.D., Edwards, E.C., O'Brien, R.J., and Landry, C. 2012. Comparative Assessment of Water Markets: Insights from the Murray-Darling Basin of Australia and the Western USA. **Water Policy**, 14 no. 2, pp. 175-93.

Working Papers

1. Edwards, E.C. and Thurman, W. Creating American Farmland: Institutional Evolution and the Development of Agricultural Drainage. NBER Working Paper No. 30081 (revisions requested at Journal of Economic History).
2. Huezo, L. Jones, D., Edwards, E.C., and Sharara, M. Manure Nutrient Cycling in U.S. Animal Agriculture Basins – A North Carolina Case Study (revisions requested at Journal of Environmental Quality).
3. Edwards, E.C., O'Grady, T., and Jenkins, D. The Effect of Government Ownership on Oil and Gas Drilling and Production. CEnREP Working Paper No. 19-017 (under review).
4. Ge, M., Akhundjanov, S.B., Edwards, E.C., and Oladi, R. Left in the Dust? Environmental and Labor Effects of Rural-Urban Water Sales. CEnREP Working Paper No. 21-001 (under review).
5. Alghamdi, F.M., Edwards, E.C., and Berglund, E.Z. Dynamic Pricing Framework for Water Demand Management Using Advanced Metering Infrastructure Data (under review).
6. Abman, R., Edwards, E.C., Hernandez-Cortes, D. Water, Dust, and Environmental Justice: The Case of Agricultural Water Diversions (under review).
7. Edwards, E.C., Hendricks, N.P., and Sampson, G.S. The Capitalization of Incomplete Property Rights to the Groundwater Commons (under review).

8. Edwards, E.C. and Sutherland, S.A. The Shadow of Hetch Hetchy: The National Park Service and the Bureaucracy of Preservation (manuscript in preparation).
9. Edwards, E.C., Fell, H., Kern, J. and Hutchens, A. The Role of Markets and Technology in Power Plants' Drought Responses (manuscript in preparation).

Extension

1. Edwards, E.C., Sutherland, S.A., Beck, S., and Wilson, E. 2023. Submerged Aquatic Vegetation in the Albemarle-Pamlico Estuary: Causes of Decline and Economic Importance. **NC State Extension Publication** AG-949.
2. Burnett, I. and Edwards, E.C. 2022. The Economics of the Emerging PFAS Problem. **NC State Economist**, NC State University College of Ag and Life Science, Fall 2022.
3. Harrison, J., Vorhees, L., Humphrey, C., O'Driscoll, M., Iverson, G., Bowden, J., Edwards, E., Burnett, I., Hill, K. Climate Change and Onsite Wastewater Treatment Systems in the Coastal Carolinas. **Report to the NOAA Climate Program Office** (NOAA-OAR-CPO-2019-2005530).
4. Burnett, I. and Edwards, E.C. 2022. Coastal Onsite Wastewater Treatment Systems: Prioritizing Investment through Marginal Abatement Cost Curves. **NCSU Extension Research Report**.
5. Edwards, E. and Sutherland, S. 2022. Does Environmental Review Worsen the Wildfire Crisis? How environmental analysis delays fuel treatment projects. **PERC Policy Brief**, May 2022.
6. Sanchez, L., Leonard, B., and Edwards, E.C. 2022. Beyond "paper" water: The complexities of fully leveraging tribal water rights. **Center for Indian Country Development Policy Discussion Papers**.
7. Sutherland, S.A. and Edwards, E.C. 2021. 'Oh, I'll Keep 'em Out': Good fences make good ranchers. **PERC Reports**, Property and Environment Research Center, 40(2) pp. 10-13.
8. Edwards, E.C. and Leonard, B. 2021. Our Land, Our River? Property rights to water in the American West. **PERC Reports**, Property and Environment Research Center, 40(2) pp. 14-17.
9. Edwards, E.C. 2021. The Economic Impact of North Carolina's Shellfish Mariculture Industry. **N.C. State Extension Factsheet**.
10. Edwards, E.C. 2021. North Carolina's Wild Caught Commercial Seafood Industry. **N.C. State Extension Factsheet**.
11. Edwards, E.C., Sutherland, S.A., Dumas, C, Hitchens, A., Oshagbemi, Y. 2021. North Carolina's Wild Caught Fishing Industry Economic Impact Assessment. **N.C. Sea Grant Report**.
12. Edwards, E.C. and Sutherland, S.A. 2021. The Contribution of Wild-Caught Seafood to NC's Economy. **NC State Economist**, NC State University College of Ag and Life Science, Spring 2021.
13. Branan, R., Edwards, E.C., Hutchens, A., and Sutherland, S.A. 2019. How North Carolinians Benefit from Water Pollution Credit Trading. **NC State Economist**, NC State University College of Ag and Life Science, Fall 2019.
14. Edwards, E.C., Sutherland, S.A., and von Haefen, R.H. 2019. Should I Stay or Should I Go? Coal Ash in North Carolina. **NC State Economist**, NC State University College of Ag and Life Science, Winter 2019.
15. Edwards, E.C. and Sutherland, S.A. 2019. A Guide to Municipal Water Conservation Pricing in Utah. **Utah State University Numbered Extension Publication**, Applied Economics/2019-01pr (peer reviewed).

16. Ayres, A. and Edwards, E.C. 2018. Groundwater depletion, contracting costs, and the determinants of successful collective action. **UNESCO Global Water Forum**. URL: globalwaterforum.org/2018/10/30/groundwater-depletion-contracting-costs-and-the-determinants-of-successful-collective-action/
17. Edwards, E.C. 2016. Summary: An Illiquid Market in the Desert. **UNESCO Global Water Forum**. URL: globalwaterforum.org/2016/08/31/an-illiquid-market-in-the-desert/
18. Edwards, E.C. 2014. Summary: What lies beneath? Aquifer heterogeneity and the economics of collective action. **UNESCO Global Water Forum**. URL: globalwaterforum.org/2014/04/28/

Book Chapters

1. Edwards, E.C. and Thurman, W.N. 2023. The Economics of Climatic Adaptation: Agricultural Drainage in the United States. **Gary Libecap and Ariel Dinar eds. American Agriculture, Water Resources, and Climate Change**. National Bureau of Economic Research and University of Chicago Press.
2. Edwards, E.C., Fiszbein, M. and Libecap, G.D. 2023. The Colonial Origins of Diverse Property-Rights to Land and the Long-Term Economic Implications in North and South America. **Ernst Nordtveit ed. The Changing Role of Property Law; Rights, Values, and Concepts**. Edward Elgar, Northampton, MA, pp. 54-80.
3. Edwards, E.C. and Leonard, B. Contracting and the Commons: Linking the Insight of Gary Libecap and Elinor Ostrom. 2020. **M. Hansen, R. Simmons, and C. Harmer eds. The Environmental Optimism of Elinor Ostrom**, Center for Growth and Opportunity, Logan, UT, pp. 149-172. (peer-reviewed)
4. Edwards, E.C. and Libecap, G.D. 2015. Water Institutions and the Law of One price, **R. Halvorsen and D.F. Layton eds. Handbook on the Economics of Natural Resource**, Edward Elgar Publishing, pp. 442-473.

Other Publications

- Edwards, E. 2020. Institutional and Organizational Analysis: Concepts and Applications. By Eric Alston, Lee Alston, Bernardo Mueller, and Tomas Nonnenmacher. Cambridge: Cambridge University Press, 2018. Pp. 406. \$78.91, hardcover. **Journal of Economic History**, 80(3), 926-927.
- Edwards, E.C. and Sutherland, S.A. 2017. Lobbying. Lobbying. Fathali M. Moghaddam ed. **SAGE Encyclopedia of Political Behavior**, SAGE Publications, Inc. Thousand Oaks, CA, pp. 448-451.
- Edwards, E.C. 2016. Book Review: Chasing Water: A Guide for Moving from Scarcity to Sustainability. **Water Economics and Policy**, 2(2).

TEACHING

North Carolina State:

- ARE 495: Environmental Markets and Entrepreneurship (Undergraduate), S23, SU23
- ARE 590: Environmental Markets and Entrepreneurship (Masters and PhD), S23, SU23
- ARE 495: Water Economics (Undergraduate), S19, S20, S21, S22
- ARE 590: Water Economics (Masters and PhD), S19, S20, S21, S22
- ARE 336: Intro. to Resource and Environ. Economics, F18, SU20, SU21, SU22

Utah State:

APEC 1600: Natural Resources and American Economic Institutions, S17, F17, S18

APEC 5560: Natural Resource and Environmental Economics, S18

APEC 6500: Resource Economics (Masters), S15, S16, S17, S18

APEC 7500: Resource Economics (PhD), F14, S17

APEC 7950: Graduate Seminar, F15, S16, F16, S17, F17, S18

Univ. of California, Santa Barbara:

ESM 279: Fin. Mgmt. & Envr. Acct. (Masters), S13, S14; visiting: S15, S16

PRESENTATIONS

- 2023 University of Wyoming Dept. of Economics, University of California Davis Dept. of Ag and Resource Economics, Iowa State University Dept. of Economics, SWISLR Seminar (virtual), University of Nevada Dept. of Economics, University of California San Diego, San Diego State University, Colorado School of Mines
- 2022 Allied Social Science Association (ASSA) Annual Meeting; National Bureau of Economic Research (NBER), Perspectives on Water Resources, Climate Change, and Agricultural Sustainability Conference (virtual); Minneapolis Federal Reserve Bank, Center for Indian Country Development (CICD) Author's Conference; NC Agricultural Water Management Meeting; NC State Executive Farm Management Program; Osher Lifelong Learning Institute; Outer Banks Leadership Forum; NC State Geospatial Forum; Western North Carolina Water Quality Conference; North Carolina Coastal Conference; NC Extension Annual Conference; University of Rhode Island; Maryland Crop Management School
- 2021 Montana State University Department of Economics (virtual); NC Division of Marine Fisheries Commercial Fishing Resource Fund Committee Meeting (virtual); NC Sea Grant Monthly Meeting (virtual); Feast Down East (virtual); NBER, Development of the American Economy, Spring Meeting (virtual); NC Oyster Trail (virtual); Carolina Region Empirical Economics Day; Carbon Accounting in Land Development Webinars (x2); North Carolina Grains Agronomic Program Team Meeting (virtual); Penn State Energy and Environmental Economics and Policy Seminar (virtual), SWELL: Seminar for Water Economics Online (virtual); 56th NC Irrigation Society Conference; Iowa State Economics Department Seminar (virtual); Human-Water Systems Monthly (virtual); Workshop on Carbon Markets, Conservation Practices, and Ag. Labor, Extension Annual Conference (virtual); CICD Research Summit (virtual); ARE Discussions Webinar, University of California Berkeley (virtual).
- 2020 ASSA Annual Meeting: Association of Environmental and Resource Economists (AERE) Session; University of Wisconsin Department of Agricultural and Applied Economics; NC State Department of Civil, Construction, Environmental Engineering; Kansas State University; Mountain West Economic History Conference; WRRRI Annual Conference (virtual); Seminar for Water Economics Online (virtual); Southern Economic Association AERE Session (virtual); ARE Agent Training (3 presentations, virtual); NC State Executive Farm Management Program
- 2019 Western Washington University; Utah State University, Center for Growth and Opportunity; North Carolina Society of Farm Managers and Rural Appraisers; North Carolina Water Resources Research Institute Annual Meeting; The Workshop in

- Environmental Economics and Data Science (TWEEDS), University of Oregon; Carolina Region Empirical Economics Day (CREED), UNC-Chapel Hill; AERE Summer Conference, Sponsored Session; Workshop on the Ostrom Workshop, Indiana University; NBER Summer Institute: Development of the American Economy; NCSU Department of Biological and Ag. Engineering; Native Waters on Arid Lands Tribal Summit; North Carolina Extension Conference; Workshop on Renewing Indigenous Economies, Hoover Institution at Stanford University; NC State Global Change Seminar; American Geophysical Union Annual Conference
- 2018 Utah State University Civil and Environmental Engineering Spring Seminar; Pressing Issues in Public Land Management Workshop, Las Vegas, NV—Invited Speaker; Workshop on Renewing Indigenous Economies, Hoover Institution at Stanford University; Triangle Resource and Environmental Economics Seminar, RTI International, Durham, NC; Symposium on Natural Resource Governance for Young Scholars, Ostrom Workshop at Indiana University
- 2017 ASSA Annual Meeting: AERE Session; University of Florida; North American Association of Fisheries Economists (NAAFE) Forum; “The Challenge of Balancing Competing Demands for Water,” Maui, HI—Keynote Speaker; University of Utah; AERE Summer Conference, Sponsored Session; Society for Institutional & Organizational Economics (SIOE) Annual Conference; University of Alaska Fairbanks College of Fisheries and Ocean Sciences; Occasional Workshop in Environmental and Resource Economics; iUTAH All-Hands Meeting and Symposium; Native Waters on Arid Lands: Third Annual Tribal Summit
- 2016 University of Utah; Washington State University; Western Economics Association International (WEAI) Annual Meeting; USU Plant, Soils, and Climate Seminar
- 2015 SIOE Annual Conference; WEAI Annual Meeting; NAAFE Forum; “Energy, the Environment, and Regulatory Policy” conference, Logan, UT—Invited Speaker; Weber State University; Montana State University
- 2014 Heartland Environmental and Resource Economics Workshop, University of Illinois; Water Markets Design Workshop, UC Santa Barbara—Invited Participant; Penn State University; University of Illinois; University of Oklahoma; Colorado State University
- 2013 WEAI Annual Conference—Presenter, AERE Session, CU Environmental and Resource Economics Workshop—Presenter, UCSB Environmental Politics Conference—Presenter
- 2012 All-University of California Conference in Energy and Environmental Economics, CU Environmental and Resource Economics Workshop, American Geophysical Union Fall Meeting
- 2011 “Priming California’s Water Market Pump” Workshop Participant, International Water Conference at Cornell University—Poster

COMPETITIVE GRANTS

- 2021 North Carolina Department of Justice: “A Framework to Enhance North Carolina Natural Resources Through Sustainable Manure Nutrient Cycling and Export.” Co-PI, \$ 268,342, January 2022 – March 2024.
- 2019 NOAA COCA/SARP: “Wastewater Infrastructure Tipping Points: Prioritizing Implementation of Climate Adaptation Plans in Decentralized Systems.” Co-PI, \$296,709, September 2019-August 2021.

- North Carolina Division of Marine Fisheries Commercial Fishing Fund: “Economic Impact Analysis of North Carolina’s Commercial Fisheries.” Co-PI, \$378,960, September 2019-August 2020
- 2018 Utah Agricultural Experiment Station Extension Water Initiative Grant. “Conserving Utah’s Water via Markets: Alternatives for Sustaining Agriculture, Urban Growth, and the Environment.” Co-PI, \$33,988, July 2018-December 2019.
- 2017 Utah Agricultural Experiment Station Extension Water Initiative Grant. “The Potential for Water Conservation through Rate Changes: Economic Analysis and Implementation.” Co-PI, \$19,451, July 2017-June 2018.
- 2016 Utah Agricultural Experiment Station Seed Grant: “Building Utah State's Capabilities in Water, Climate, and the Economy.” PI, \$40,000, July 2016-18.
- 2015 U.S. Department of Agriculture’s Agriculture and Food Research Initiative: “Native Waters on Arid Lands,” Co-PI, USU funding \$327,805 (grant total \$4.5 million), July 2015-2020.
- USU Office of Research and Graduate Studies Research Catalyst Grant: “A Unifying Framework for Environmental Markets: A Case Study of the Bear River Development.” PI, \$19,684, July 2015-16.
- USU Office of Research and Graduate Studies Research Assistantships RFP: “Integrating ecological, economic, and social components to improve effectiveness of landscape restoration.” Co-PI, no direct funding, August 2015-2017.
- 2014 NSF Dissertation Improvement Grant: “Doctoral Dissertation Research in Economics: Institutional Adaptation to a Heterogeneous Common Pool Resource: Management of the Critical High Plains Aquifer in Kansas,” Co-PI, \$15,288, February 2014-2016.
- 2011-12 UCE³ Mini-Grant: Trading Energy for Water: Desalinization and Firm Behavior in Northern Chile with Gary Libecap. Graduate Assistant, \$16,400.

AFFILIATED GRANTS

- 2019 Western Association of Agricultural Experiment Station Multistate Research Project W4190; no direct funding, November 2019-present.
- 2016-18 NSF Research Traineeship Program. “Graduate Climate Adaptation Research that Enhances Education and Responsiveness of science at the management-policy intersection.” Collaborator—grad student and course development support.
- 2015-17 University of California Multi-campus Research Programs and Initiatives: Legal and Economic Data and Analysis of Environmental Markets; funded for travel; May 2015-Dec. 2016.
- 2014-17 NSF EBSCOR grant: Innovative Urban Transitions and Aridregion Hydro-Sustainability (iUTAH); collaborator, summer salary totaling \$21,465, GSR funding of \$23,000, July 2014-17.
- 2014-19 Western Association of Agricultural Experiment Station Multistate Research Project W3190: Management and Policy Challenges in a Water-Scarce World; no direct funding, November 2014-October 2019

FELLOWSHIPS AND AWARDS

- 2022 AARES Quality of Research Discovery EMCRS Award

- 2022 *Applied Economic Perspectives and Policy* Best Article Award
- 2021 Property and Environment Research Center: Impact Fellow
- 2021 AAEA Quality of Research Discovery (Honorable Mention)
- 2019 Property and Environment Research Center: Lone Mountain Fellow
- 2016 Society for Institutional and Organizational Economics: Ronald H. Coase Dissertation Award, First Runner-up
- 2014 Property and Environment Research Center: Lone Mountain Fellow
- 2013 Property and Environment Research Center: Summer Graduate Fellow
- 2010-12 Decker's Outdoor Corporation Fellow
- 2009-10 UC Santa Barbara Emil Steck, Jr. Fellow
- 2009-14 University of California Regents Special Fellow

SERVICE

- 2021- Co-Editor, *Resource and Energy Economics*
- 2021- Board Member, North Carolina Water Resources Association
- 2020- Editorial Board, *Land Economics*
- 2019-23 Triangle Resource and Environmental Economics (TREE) Seminar Coordinator
- 2017-18 The Economics of Property Rights and the Environment Seminar Coordinator
- 2016-18 Utah State Applied Economics Seminar Coordinator
- Referee: *Agricultural Economics, Agricultural Water Management, American Journal of Agricultural Economics (5), Applied Economic Perspectives & Policy, Australian Journal of Agricultural and Resource Economics, Conservation Letters, Ecological Economics (2), Economic Dynamics and Control, The Economic History Review, Environment and Development Economics, Institutional Economics (2), Journal of Law and Economics, Journal of the American Water Resources Association, Journal of Agricultural and Resource Economics (2), Journal of the Association of Environmental and Resource Economists (4), Journal of Environmental Economics and Management (4), Land Economics (2), Marine Resource Economics; Nature: Food; Public Choice (2), Resource and Energy Economics, Strategic Behavior and the Environment, Sustainability, Science, Water (2), Water Resources and Economics, Water Resources Research, Natural Resource Modeling, American Agricultural Economics Association Annual Meeting (3)*

STUDENTS SUPERVISED

Advisor

- Andrew Hutchens, PhD Economics (2024)
- Judson Griffin, MS Economics 2022, NCSU
- Muyang Ge, PhD Economics 2019, USU
- Kyle Eager, MS Applied Economics 2017, USU

Committee Member

- Richard Li, PhD Economics (2023)
- Hemant Kumar, PhD Civil Engineering (2023)
- Cade Karrenberg, PhD Civil Engineering (2025)

Iain Burnett, MS Economics 2023, NCSU
Lucas Ford, PhD Civil Engineering 2023, NCSU
Nicole Karwowski, PhD Agricultural and Applied Economics 2023, UW-Madison
Leslie Sanchez, PhD Agriculture, Food and Environment 2022, Tufts University
Morgan DiCarlo, PhD Civil Engineering 2022, NCSU
Faisal Alghamdi, MS Civil Engineering 2022, NCSU
Daniyar Zhumadilov, PhD Economics 2021, NCSU
Grant Patty, MS Economics 2018, USU
Dong Hun Go, PhD Economics 2018, USU
Alexandra Naumenko, PhD Economics 2019, NCSU
Ryan Barnes, PhD Economics 2016, USU