

KELLY MICHELE COBURN
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EDUCATION

Ph.D., Agricultural and Resource Economics, University of California, Davis, 2009
M.S., Resource Economics and Policy, University of Maine, 2004
B.A. with High Distinction, Economics (Minor in Mathematics), University of Virginia, 2001

PROFESSIONAL EXPERIENCE

Visiting Researcher, Bureau d'Economie Théorique et Appliquée, 2021-2022
Visiting Researcher, Chaire Economie du Climat, Paris Dauphine University, 2021
Associate Professor, Virginia Tech, Forest Resources and Environmental Conservation, 2019-present
Affiliated Faculty, Virginia Tech, Agricultural and Applied Economics, 2019-present
Assistant Professor, Virginia Tech, Forest Resources and Environmental Conservation, 2013-2019
Assistant Professor, Boise State University, Economics, 2009-2013
Graduate Research and Teaching Assistant, University of California, Davis, 2005-2009
Research Associate, University of Maine, Resource Economics and Policy, 2005
Graduate Research and Teaching Assistant, University of Maine, 2002-2004
Legislative Analyst, Maine State Office of Policy and Legal Analysis, 2003-2004

AWARDS

Sören Wibe Prize, Journal of Forest Economics, 2020
Best Publication in Natural Resources, Inst. for Operations Research and the Management Sciences, 2020
Outstanding Doctoral Dissertation Award, Agricultural and Applied Economics Association, 2010
Gordon A. King Outstanding Dissertation Award, University of California, Davis, 2009
Outstanding Master's Thesis Award, Agricultural and Applied Economics Association, 2005
Master's Thesis Award of Merit, Northeastern Agricultural and Resource Economics Association, 2005
Provost's Fellowship, University of Maine, 2002

RESEARCH

Publications

Refereed Journal Articles

- Cobourn, K.M., X. Ji, S. Mooney, and N.F. Crescenti. 2021. "The effect of prior appropriation and water right portfolios on agricultural land-allocation decisions," *American Journal of Agricultural Economics*, doi:10.1111.ajae.12254.
- Ordway, E.M., A.J. Elmore, S. Kolstoe, J.E. Quinn, R. Swanwick, M. Cattau, D. Taillie, S.M. Guinn, K.D. Chadwick, J.W. Atkins, R.E. Blake, M. Chapman, K.M. Cobourn, T. Goulden, M.R. Helmus, K. Hondula, C. Hritz, J. Jensen, J.P. Julian, Y. Kuwayama, V. Lulla, D. O'Leary, D.R. Nelson, J.P. Ocon, S. Pau, G.E. Ponce-Campos, C. Portillo-Quintero, N.G. Pricope, R.G. Rivero, L. Schneider, M. Steele, M.G. Tulbure, M.A. Williamson, and C. Wilson. "Leveraging the NEON Airborne Observation Platform for socio-environmental systems research," *Ecosphere*, 12(6): e03640, doi:10.1002/ecs2.3640.
- Gil, Y., K. Cobourn, E. Deelman, C. Duffy, R.F. da Silva, A. Kemanian, C. Knoblock, V. Kumar, S. Peckham, L. Carvalho, Y.Y. Chiang, D. Garijo, D. Khider, A. Khandelwal, M. Pahm, J. Pujara, V. Ratnakar, M. Stoica, and B. Vu. 2021. "Artificial intelligence for modeling complex systems: taming the complexity of expert models to improve decision making," *ACM Transactions in Interactive Intelligent Systems (TiiS)*, in press.
- Ladwig, R., P.C. Hanson, H.A. Dugan, C.C. Carey, Y. Zhang, L. Shu, C.J. Duffy, and K.M. Cobourn. 2021. "Lake thermal structure drives inter-annual variability in summer anoxia dynamics in a

- eutrophic lake over 37 years,” *Hydrology and Earth System Sciences (HESS)*, 25(2): 1009-1032, doi: 10.5194/hess-25-1009-2021.
- Ji, X. and K.M. Cobourn. 2020. “Weather fluctuations, expectation formation, and short-run behavioral responses to climate change,” *Environmental and Resource Economics*, 78: 77-119.
- Maneta, M., J. Kimball, M. He, N. Silverman, B. Chaffin, B. Maxwell, S. Ewing, K. Cobourn, X. Ji. 2020. “A satellite-driven hydro-economic model to support agricultural water resources management,” *Environmental Modelling and Software*, 134: 104836, doi: 10.1016/j.envsoft.2020.104836.
- Schons do Valle, S.Z., G.S. Amacher, K.M. Cobourn, and H. Gundimeda. 2020. “Can efficiency gains in the wood processing industry conserve forests in developing countries? The case of the Andhra Pradesh forest products sector,” *Forest Products Journal*, 70(4): 409-415, doi: 10.13073/FPJ-D-20-00021.
- Henson, V.R., K.M. Cobourn, K.C. Weathers, C.C. Carey, K.J. Farrell, J.L. Klug, M.G. Sorice, N.K. Ward, and W. Weng. 2020. “A practical guide for managing interdisciplinary teams: lessons learned from coupled natural and human systems (CNHS) research,” *Social Sciences*, doi: 10.3390/socsci9070119.
- Stachelek, J., W. Weng, C.C. Carey, A.R. Kemanian, K.M. Cobourn, T. Wagner, K.C. Weathers, P. Soranno. 2020. “Granular measures of agricultural land-use influence lake nitrogen and phosphorus differently at macroscales,” *Ecological Applications*, doi: 10.1002/eap.2187.
- Sorice, M., L. Fitchett, K. Cobourn, K. Boyle, J. Klug, K. Weathers. 2020. “Pathways to enhanced lake integrity: a framework to assess effectiveness of local lake associations,” *Lakes & Reservoirs: Science, Policy and Management for Sustainable Use*, doi: 10.1111/lre.12308.
- Weng, W., K.J. Boyle, C.C. Carey, K.M. Cobourn, H.A. Dugan, K.J. Farrell, P.C. Hanson, N.K. Ward, and K.C. Weathers. 2020. “Coupling natural and human models in the context of a lake ecosystem: Lake Mendota, Wisconsin, USA,” *Ecological Economics*, doi: 10.1016/j.ecolecon.2019.106556.
- Schons do Valle, S.Z., G.S. Amacher, K.M. Cobourn, and C. Arantes. 2020. “Benefits of community fisheries management to individual households in the floodplains of the Amazon River in Brazil,” *Ecological Economics*, doi: 10.1016/j.ecolecon.2019.106531.
- Wurster, P.M., M. Maneta, S. Begueria, K. Cobourn, B. Maxwell, N. Silverman, S. Ewing, K. Jencso, P. Gardner, J. Kimball, Z. Holden, X. Ji, and S.M. Vicente-Serrano. 2020. “Characterizing the impact of climatic and price anomalies on agrosystems in the northwestern United States,” *Agricultural and Forest Meteorology*, doi: 10.1016/j.agrformet.2019.107778.
- Ward, N.K., L. Fitchett, J.A. Hart, L. Shu, J. Stachelek, W. Weng, Y. Zhang, H. Dugan, A. Hetherington, K.J. Boyle, C.C. Carey, K.M. Cobourn, P.C. Hanson, A.R. Kemanian, M.G. Sorice, and K.C. Weathers. 2018. “Integrating economic and socio-cultural processes into coupled human-freshwater models facilitates representation of short and long-term feedbacks,” *Ambio*, doi: 10.1007/s13280-018-1136-6.
- Wade, C.M., K.M. Cobourn, G.S. Amacher, and E. Hester. 2018. “Groundwater pumping decisions and land subsidence in the southern Chesapeake Bay region of Virginia,” *Water Resources Research*, doi: 10.1029/2017WR022133.
- Elbakidze, L., H.D. Vinson, K.M. Cobourn, G. Taylor. 2018. “Efficient water allocation and binding hydrologic externalities,” *Resource and Energy Economics* 53: 147-161.
- Siriwardena, S., K.M. Cobourn, and G.S. Amacher. 2018. “Potential for cooperative bargaining to manage the spread of emerald ash borer with mixed public and private land ownership,” *Journal of Forest Economics* 32C: 72-83.
- Cobourn, K.M., C.C. Carey, K.J. Boyle, C. Duffy, H.A. Dugan, K.J. Farrell, L. Fitchett, P.C. Hanson, J.A. Hart, V.R. Henson, A.L. Hetherington, A.R. Kemanian, L.G. Rudstam, L. Shu, P.A. Soranno, M.G. Sorice, J. Stachelek, N.K. Ward, K.C. Weathers, W. Weng**, and Y. Zhang. 2018. “From concept to practice to policy: modeling coupled natural and human systems in lake catchments,” *Ecosphere* 9(5): e02209.

- Cobourn, K.M., G.S. Amacher, and R.G. Haight. 2018. "Cooperative management of invasive species: a dynamic Nash bargaining approach," *Environmental and Resource Economics*, doi: 10.1007/s10640-018-0238-8.
- Chance, E.W., K.M. Cobourn, and V.A. Thomas. 2018. "Trend detection for the extent of irrigated agriculture in Idaho's Snake River Plain, 1984-2016," *Remote Sensing*, 10(1): 145.
- Ji, X., and K.M. Cobourn. 2018. "The economic benefits of irrigation districts under prior appropriation doctrine: an econometric analysis of agricultural land-allocation decisions," *Canadian Journal of Agricultural Economics*, doi:10.1111/cjag.12165.
- Chance, E.W., K.M. Cobourn, V.A. Thomas, B. Dawson, A.N. Flores. 2017. "Normalized Difference Moisture Index method for identifying irrigated areas in the Snake River Plain, Idaho," *Remote Sensing*, 9: 546.
- Cobourn, K.M. 2015. "Externalities and simultaneity in surface water-groundwater systems: challenges for water rights institutions," *American Journal of Agricultural Economics*, 97(3): 786-808.
- Ghosh, S., K.M. Cobourn, and L. Elbakidze. 2014. "Water banking, conjunctive administration, and drought: the interaction of water markets and prior appropriation in southeastern Idaho," *Water Resources Research*, 50(8): 6927-6949.
- Cobourn, K.M., E.R. Landa, G.E. Wagner. 2014. "Of silt and ancient voices: water and the Zuni land and people," *National Center for Case Study Teaching in Science*.
- Elbakidze, L., and K.M. Cobourn. 2013. "Economic foundations for interdisciplinary modeling in water resources management," *Journal of Contemporary Water Research and Education*, 152: 32-41.
- Cobourn, K.M., R.E. Goodhue, and J.C. Williams. 2013. "Managing a pest with harvest timing: implications for crop quality and price," *European Review of Agricultural Economics*, 40(5): 761-84.
- Mooney, S., D.L. Young, K.M. Cobourn, and S. Islam. 2013. "Multidisciplinary research: implications for agricultural and applied economists," *Journal of Agricultural and Applied Economics*, 45(2): 187-202.
- Cobourn, K.M., H.J. Burrack, R.E. Goodhue, J.C. Williams, and F.G. Zalom. 2011. "Implications of simultaneity in a physical damage function," *Journal of Environmental Economics and Management*, 62(2): 278-289.
- Cobourn, K.M., and N.F. Crescenti. 2011. "The implications of surface-ground water hydrology for optimal conjunctive management," *Western Economics Forum*, 10(2): 50-63.

Book Chapters

- Schons, S.Z., G.S. Amacher, K.M. Cobourn, N. Shinde, and H. Gundimeda. In press. "Incentives for rural households to establish tree cover on agricultural land in Andhra Pradesh, India" in *Environment and Development Economics: Essays in Honour of Rabindra N. Bhattacharya*, ed. A. Acharyya.
- Cobourn, K.M., L. Elbakidze, and S. Ghosh. 2016. "Conjunctive water management in hydraulically connected regions in the western U.S." in *Competition for Water Resources: Experiences and Management Approaches in the U.S. and Europe*, eds. J. Ziolkowska and J. Peterson.

Other Refereed Publications

- Scott, S., K. Cobourn, J. Munsell, K. Stephenson, and B. Strahm. "Incorporating agroforestry into water quality trading: evaluating economic-environmental tradeoffs," in Proceedings of the XXV IUFRO World Congress, Curitiba, Brazil, September 29-October 5, 2019.
- Munsell, J., B. Addlestone, K. Cobourn, B. Strahm, K. Trozzo, S. Scott, A. Beck. "Agroforestry and phosphorus credit trading in the USA's Chesapeake Bay Watershed," in Proceedings of the 4th World Congress on Agroforestry, Montpellier, France, May 20-22, 2019.
- Garijo, D., D. Khider, V. Ratnakar, Y. Gil, K. Cobourn, E. Deelman, C. Duffy, R.F. da Silva, A. Kemanian, C. Knoblock, V. Kumar, S. Peckham, Y.Y. Chiang, A. Khandelwal, M. Pham, J. Pujara, M. Stoica, K. Tayal, B. Vu, D. Feldman, L. Shu, A. Dabrowski, D. Hardesty-Lewis, S. Pierce. "An intelligent interface for integrating climate, hydrology, agriculture, and socioeconomic models," in Intelligent User Interfaces 2019 Companion. Marina del Ray, CA, March 17-20, 2019.

- Gil, Y., K. Cobourn, E. Deelman, C. Duffy, R.F. da Silva, A. Kemanian, C. Knoblock, V. Kumar, S. Peckham, L. Carvalho, Y.Y. Chiang, D. Garijo, D. Khider, A. Khandelwal, M. Pahm, J. Pujara, V. Ratnakar, M. Stoica, and B. Vu. "MINT: model integration through knowledge-powered data and process composition," in 9th International Congress on Environmental Modelling and Software, eds. M. Arabi, O. David, J. Carlson, and D.P. Ames, Fort Collins, CO, June 24-28, 2018.
- Cobourn, K.M., G.S. Amacher, and R.G. Haight. "Cooperative management of invasive species: a dynamic Nash bargaining approach," in *Forest Economics and Policy in a Changing Environment: How Market, Policy, and Climate Transformations Affect Forests*, Proceedings of the 2016 Meeting of the International Society of Forest Resource Economics, Raleigh, NC, April 3-5, 2016.
- Cobourn, K.M. 2011. "Incentives for individual and cooperative management of a mobile pest: an application to the olive fruit fly in California," *American Journal of Agricultural Economics* (proceedings), 93(2): 652.
- Cobourn, K.M. 2005. "Environmental conservation on agricultural working land: assessing policy alternatives using a spatially heterogeneous land allocation model," *American Journal of Agricultural Economics* (proceedings), 87(5): 1337-1338.
- Cobourn, K.M. 2005. "Environmental conservation on agricultural working land: assessing policy alternatives using a spatially heterogeneous land allocation model," *Agricultural and Resource Economics Review* (proceedings), 34(2): 289-290.

Other Publications

- Henson, V.R., K.M. Cobourn, C.C. Carey, K.J. Boyle, M.G. Sorice, N.K. Ward, and K.C. Weathers. 2019. "Closing the human-nature feedback loop: understanding people's responses to changing lakes," *LakeLine* 39(3): 35-38.
- Cobourn, K.M., E.C. Knoesen, H.J. Burrack, R.E. Goodhue, J.C. Williams, and F.G. Zalom. 2014. "Olive fruit fly: timing the harvest to manage the pest," *ARE Update*, 17(6): 5-8. University of California Giannini Foundation of Agricultural Economics.
- Cobourn, K.M. 2012. Book Review of *The Economics and Politics of Climate Change*, eds. D. Helm and C. Hepburn, *Journal of Natural Resources Policy Research*, 4(4): 293-294.

Manuscripts in Review

- Ji, X., K.M. Cobourn, and W. Weng. "The effect of climate change on irrigated agriculture: water-temperature interactions and adaptation in the western U.S."
- Lauffenburger, Z.H., M. Maneta, K. Cobourn, K. Jencso, B. Chaffin, A. Crockett, B. Maxwell, and J. Kimball. "Application of a satellite-driven hydro-economic model to assess climate change impacts on Montana's water resources, agricultural production, and farm revenues."
- Weng, W., K.M. Cobourn, A.R. Kemanian, K.J. Boyle, Y. Shi, J. Stachelek, and C. White. "Quantifying co-benefits of water quality policies: an integrated assessment model of land and nitrogen management."

Working Papers

- Cobourn, K.M., G.S. Amacher, and L. Elbakidze. "Bargaining for recharge: an analysis of cooperation and conjunctive surface water-groundwater management."
- Schons do Valle, S.Z., G.S. Amacher, and K.M. Cobourn. "Farmer incentives to establish tree cover on agricultural land in the state of Andhra Pradesh, India."
- Scott, S., K.M. Cobourn, J. Munsell, B. Strahm, and K. Stephenson. "Agroforestry and water quality trading markets: economic efficiency gains from differentiated credits for nitrogen reductions."
- Xu, Y., K.M. Cobourn, D.J. Bosch, and G.S. Amacher. "Nutrient credit banking with uncertainty."

Sponsored Research

External Awards

- Alexander, K., J.A. Bock, M. Ponder, and K.M. Cobourn. National Science Foundation, Dynamics of Integrated Socio-Environmental Systems. "CNH2-L: Human waste and its role in creating integrated socioenvironmental systems at the urban-wilderness continuum in Africa: humans, wildlife, domestic

- animals, and microbes.” Award period: 2020-2024. Total: \$1,599,576.
- Stephenson, S.K., E.M. Bock, K.M. Cobourn, and Z.M. Easton. USDA National Institute of Food and Agriculture. “Development and evaluation of market-like pay-for-performance programs to address legacy nutrients.” Award period: 2019-2022. Total: \$499,627.
- Gil, Y., K.M. Cobourn, E. Deelman, C. Duffy, A. Kemanian, C. Knoblock, V. Kumar, and S. Peckham. DARPA World Modelers Program. “MINT: Model INTEgration through knowledge-rich data and process composition.” Award period: 2017-2021. Total: \$13,000,000 (Cobourn portion: \$419,911).
- Cobourn, K.M., K. Boyle, C. Carey, C. Duffy, and P. Hanson. National Science Foundation, Dynamics of Coupled Natural and Human Systems, “CNH-L: Linking land-use decision making, water quality, and lake associations to understand human-natural feedbacks in lake catchments.” Award period: 2016-2020. Total: \$1,799,931.
- Maneta, M., K.M. Cobourn, S. Ewing, W.P. Gardner, K. Jencso, J. Kimball, and B. Maxwell. USDA National Institute of Food and Agriculture. “Understanding the hydrologic and socioeconomic impacts of water use and resource allocation in agricultural regions under different climate and policy scenarios.” Award period: 2016-2020. Total: \$497,894.
- Wynne, R., V. Thomas, G.S. Amacher, and K.M. Cobourn. NASA ROSES Land-Cover Land-Use Change Program. “Spatiotemporal drivers of fine-scale forest plantation establishment in village-based economies of Andhra Pradesh.” Award period: 2017-2020. Total: \$599,997.
- Cobourn, K.M., and A. Flores. NASA ROSES Land-Cover Land-Use Change Program for Early Career Scientists. “Water institutions and agricultural land-use change across the western US.” Award period: 2013-2017. Total: \$239,000.
- Boyle, K.J., K.M. Cobourn, A. McCoy, and E. Wiseman. USDA Forest Service. “A national study of the effects of tree canopy, diversity and health on property values.” Award period: 2014-2017. Total: \$84,593.
- Amacher, G.S., and K.M. Cobourn. USDA Forest Service Northern Research Station. “Biological invasions in a management mosaic: the cost of coordination failure and the value of information.” Award period: 2013-2015. Total: \$24,987.
- Walsh, D.B., L.C. Lavine, F.G. Zalom, and K.M. Cobourn. USDA National Institute of Food and Agriculture, Pest Management Alternatives Program. “Costs and benefits of managing spider mite resistance on western us perennial specialty crops.” Award period: 2013-2015. Total: \$199,293.
- Cobourn, K.M. National Aeronautics and Space Administration, Idaho Space Grant Consortium, Research Seed Grant Program. “Agricultural land-use decisions in response to uncertain water availability and institutional constraints.” Award period: 2012-2014. Total: \$79,738.
- Cobourn, K.M. US Geologic Survey, Idaho Water Resources Research Institute, 104(b) Program. “Modeling dynamic feedback between surface and groundwater systems: implications for the economics of conjunctive management.” Award period: 2010-2012. Total: \$30,375.

Internal Awards

- Cobourn, K.M. + Policy Research Supplement (Fellowship), Policy Destination Area, Virginia Tech. “Community partnerships to address a harmful algal bloom in Lake Anna, Virginia.” Award period: 2019-2020. Total: \$8,000.
- Cobourn, K.M., and V.A. Thomas. Institute of Critical Technology and Applied Science, Junior Faculty Collaboration Program. “Identifying the effects of climate change on irrigated agriculture using remote sensing and geospatial water rights data.” Award period: 2014-2016. Total: \$60,000.
- Cobourn, K.M., A.N. Flores, and J. Pierce. National Science Foundation, Idaho EPSCoR. “The influence of changes in the timing of snowmelt on dryland crop yields in Idaho.” Award period: 2012-2013. Total: \$31,016.
- Cobourn, K.M. and L. Elbakidze. National Science Foundation, Idaho EPSCoR. “The use of remote sensing to develop a real-time water market in Idaho.” Award period: 2012-2013. Total: \$76,000.

Flores, A.N., V. Sridhar, K.M. Cobourn, and J. Pierce. National Science Foundation, Idaho EPSCoR.

“What impact do land use/land cover dynamics have on land surface hydrologic modeling?” Award period: 2011-2013. Total: \$82,566.

Mooney, S., K.M. Cobourn, and S. Islam. Boise State University College of Business and Economics.

“Multidisciplinary research in applied economics: practitioner attitudes and institutional impediments, journal content, and demand for job skills.” Award period: 2011. Total: \$14,000.

Presentations

Invited Presentations

Modeling feedbacks between coupled natural-human systems in lake catchments.” Headwaters Lecture, Water Resources Science Twin Cities Seminar, October 30, 2020.

The economics of land-use transitions from agriculture to forest crops: a cross-sectional survey of households in Andhra Pradesh. NASA LCLUC Southeast Asia Research Initiative Meeting, New Delhi, India, November 2019.

Challenges in water quality policy. XXV IUFRO World Congress, Curitiba, Brazil, October 2019.

Integrating science, technology, and policy to address Montana’s water management challenges. Water for Agriculture Symposium, Missoula, MT, May 2019.

Economic modeling of farmer adaptation to changes in water availability. Water for Agriculture Symposium, Missoula, MT, May 2019.

Project management in ecology and related sciences. Ecological Society of America Early Career webinar series, February 2019.

Do water policies encourage or impede agricultural adaptation to climate variability? Integrating hydrology, remote sensing, and economics to model farmer decision-making in irrigated and dryland agriculture. American Geophysical Union, Washington, DC, December 2018.

Agro-economic modeling in lake catchments. Lake Sunapee Protective Association, Sunapee, NH, May 2018.

Modeling coupled natural and human systems in lake catchments. Lake Sunapee Protective Association, Sunapee, NH, May 2018.

Invited researcher panel: the evolving ecosystem of scientific publishing. National Academy of Sciences Journal Summit, Washington, DC, March 2018.

Bargaining for natural resource management. Department of Geography, Virginia Tech, February 2018.

Cooperative management of invasive species: a dynamic Nash bargaining approach. Morrison School of Agribusiness, Arizona State University, February 2018.

Building portable agro-economic models to study food insecurity. Information Sciences Institute, University of Southern California, January 2018.

The effect of prior appropriation and water right portfolios on agricultural land-allocation decisions. Economics of Water and Energy, San Diego, CA, March 2017.

Surface water rights and land-allocation decisions: a fractional multinomial logit analysis using field-scale remote sensing data. Department of Agricultural, Food, and Resource Economics, Michigan State University, October 2016.

Surface water rights and land allocation decisions: a fractional multinomial logit analysis using field-scale remote sensing data. National Aeronautics and Space Administration, Land-Cover and Land-Use Change Program Webinar, June 2016.

Surface water rights and land allocation decisions: a fractional multinomial logit analysis using field-scale remote sensing data. Western Agricultural Economics Association/Canadian Agricultural Economics Society Joint Annual Meeting, Victoria, British Columbia, June 2016.

Bargaining for recharge: an analysis of cooperation and conjunctive surface water-groundwater management. Allied Social Science Association Annual Meeting, San Francisco, CA, January 2016.

Cooperative management of invasive species: emerald ash borer in the Twin Cities. Department of Forest Resources and Environmental Conservation, Virginia Tech, December 2015.

- Cooperative management of invasive species: a dynamic Nash bargaining approach. Baker Center for Public Policy, University of Tennessee, Knoxville, November 2015.
- Conjunctive administration of surface and groundwater rights: lessons from Idaho's Eastern Snake River Plain. Western Water Conference, Salt Lake City, UT, October 2015.
- Water rights and agricultural land-use change in the western US. National Aeronautics and Space Administration, Land-Cover and Land-Use Change Conference, University of Maryland, April 2015.
- Prior appropriation water rights and land allocation decisions in irrigated agriculture. Department of Civil and Environmental Engineering, Virginia Tech, April 2015.
- The effect of appropriative water rights on land-allocation decisions in irrigated agriculture. Food and Resource Economics Department, University of Florida, March 2015.
- The effect of groundwater pumping and irrigation technology on surface water-groundwater connectivity: challenges for conjunctive water rights administration. Resources for the Future, November 2014.
- Prior appropriation water rights and climate change adaptation: using remote sensing data to evaluate long-run changes in land and water use in the Eastern Snake River Plain. Agricultural and Applied Economics Association Annual Meeting, Minneapolis, MN, July 2014.
- Water rights, climate change, and agricultural land use in the Snake River Basin. National Aeronautics and Space Administration, Land-Cover and Land-Use Change Conference, Rockville, MD, April 2014.
- Optimal surface water-groundwater management: the importance of hydrology and irrigation technology. Department of Agricultural Economics, University of Nebraska, Lincoln, November 2013.
- Externalities and simultaneity in surface water-groundwater systems: challenges for water rights institutions. Department of Agricultural and Applied Economics, Virginia Tech, September 2013.
- Externalities and simultaneity in surface water-groundwater systems: challenges for water rights institutions. Forest Resources and Environmental Conservation, Virginia Tech, May 2013.
- Water institutions and agricultural land-use change in the western U.S. National Aeronautics and Space Administration, Land-Cover and Land-Use Change Conference, Rockville, MD, April 2013.
- Is groundwater pumping to blame for declining surface water flows? an empirical analysis of water use externalities in the Snake River Plain. Department of Agricultural Economics and Economics, Montana State University, October 2012.
- Agricultural land-use decisions in response to uncertain water availability and institutional constraints. National Aeronautics and Space Administration, Ames Research Center, October 2012.
- When does ecological sustainability ensure economic sustainability? an integrated analysis of thresholds in semi-arid western rangelands. American Geophysical Union, San Francisco, CA, December 2011.
- The economics of climate change, water scarcity, and agricultural production. Agricultural Affairs Committee, Idaho Senate, March 2011.
- Valuing nonmarket goods & services: the role of economics in addressing natural resource problems. Department of Geosciences, Boise State University, November 2009.
- The role of harvest timing in pest management: a bioeconomic model of olive fruit fly infestation. Department of Agricultural Economics and Rural Sociology, University of Idaho, November 2009.
- Incentives for individual and cooperative management of a mobile pest: the olive fruit fly in California. US Department of Agriculture Economic Research Service, Program of Research on the Economics of Invasive Species Management (PREISM), Washington, DC, October 2009.
- Implications of simultaneity in pest damage functions. Department of Economics, Boise State University, February 2009.
- Pests and agricultural commodity losses: evaluating alternative approaches to damage function estimation. Seminar in Human Behavior and Environmental Policy, University of California, Davis, November 2008.
- Encouraging cooperation between commercial producers and residential users of an invasive species host: designing collective pest management institutions for the olive fruit fly in California. US Department of Agriculture Economic Research Service, Program of Research on the Economics of Invasive Species Management (PREISM), Washington, DC, October 2008.

Designing effective pest management institutions in the presence of producer heterogeneity and treatment externalities. Department of Agricultural and Resource Economics, University of California, Davis, 2008.

Pests and agricultural commodity losses: evaluating alternative approaches to damage function estimation. Department of Agricultural and Resource Economics, University of California, Davis, 2008.

Encouraging cooperation between commercial producers and residential users of an invasive species host: designing collective pest management institutions for the olive fruit fly in California. US Department of Agriculture Economic Research Service, Program of Research on the Economics of Invasive Species Management (PREISM), Washington, DC, October 2007.

The impact of conservation security payments on the California rice industry. Agricultural Issues Center, University of California, Davis, June 2007.

Modeling integrated crop and livestock production systems. Iowa State University, Ames, IA, October 2004.

A study of the use of Maine-produced foodstuffs in public institutions. Maine State Legislature, May 2004.

Green payments for a multifunctional agriculture. Department of Resource Economics and Policy, University of Maine, December 2004.

Conference Presentations

Simulating Emerging Water Markets: A Scalable Undergraduate Teaching Tool in Policy and Economics. Agricultural and Applied Economics Association Annual Meeting, July 26-28, 2020

Incorporating agroforestry into water quality trading: evaluating economic-environmental tradeoffs. Proceedings of the XXV IUFRO World Congress, Curitiba, Brazil, October 2019.

Water policies and adaptation to climate variability. Universities Council on Water Resources, Salt Lake City, UT, June 2019.

Managing interdisciplinary teams: lessons learned from coupled natural and human systems modeling in lake catchments. Universities Council on Water Resources Annual Meeting, Salt Lake City, UT, June 2019.

Modeling coupled natural and human systems in lake catchments reveals feedbacks among land-management decisions, water quality degradation, and altered property values. American Geophysical Union, Washington, DC, December 2018.

Coupling Cycles and economic optimization modeling to predict nitrogen leaching in the Lake Mendota catchment, WI, USA. 3rd Coupled Natural and Human Systems Workshop, Sunapee, NH, May 2018.

Coupled natural and human dynamics of lake catchments. 3rd Coupled Natural and Human Systems Workshop, Sunapee, NH, May 2018.

Groundwater pumping policy to limit economic damages from land subsidence. Soil and Water Conservation Society Annual Meeting, Madison, WI, July-August 2017.

Bargaining for recharge: an analysis of cooperation and conjunctive surface water-groundwater management. Soil and Water Conservation Society Annual Meeting, Madison, WI, July-August 2017.

Coupling Cycles and economic optimization modeling to predict crop rotations in the Lake Mendota catchment, WI, USA. 2nd Coupled Natural and Human Systems Workshop, Madison, WI, May 2017.

Modeling and analysis of lake catchment CNHS. 2nd Coupled Natural and Human Systems Workshop, Madison, WI, May 2017.

Science foundations for model coupling in lake catchment CNHS. 1st Coupled Natural and Human Systems Workshop, Mountain Lake, VA, May 2016.

Economic optimization modeling for coupled natural human systems modeling. 1st Coupled Natural and Human Systems Workshop, Mountain Lake, VA, May 2016.

Externalities and simultaneity in surface water-groundwater systems: challenges for water rights institutions. World Congress of Environmental and Resource Economists, Istanbul, Turkey, June 2014.

- Is Groundwater pumping to blame for declining surface water flows? an empirical analysis of water use externalities in the Snake Plain. International Water Resource Economics Consortium, Stockholm, Sweden, August 2012.
- An empirical analysis of surface and groundwater use externalities on the Eastern Snake River Plain. Western Agricultural and Resource Economics Association Annual Meeting, Park City, UT, June 2012.
- Is groundwater pumping to blame for declining surface water flows? an empirical analysis of water use externalities in the Snake River Plain. Association of Environmental and Resource Economists Annual Meeting, Asheville, NC, June 2012.
- Property rights for interrelated surface and groundwater resources and dynamic returns to conjunctive management. American Economic Association Annual Meeting, Chicago, IL, January 2012.
- Modeling dynamic feedback between surface and groundwater systems: implications for the economics of conjunctive management. Agricultural and Applied Economics Association Annual Meeting, Pittsburgh, PA, July 2011.
- Multidisciplinarity in agricultural economics and trends in publishing. Agricultural and Applied Economics Association Meeting, Pittsburgh, PA, July 2011.
- Multidisciplinarity in agricultural economics and trends in publishing. Western Agricultural Economics Association Meeting, Banff, Alberta, June 2011.
- Modeling dynamic feedback between surface and groundwater systems: implications for the economics of conjunctive management. Association of Environmental and Resource Economists Annual Workshop, Seattle, WA, June 2011.
- Agricultural production decisions and the welfare effects of changes in the level and timing of snowmelt in the western U.S. Agricultural and Applied Economics Association Annual Meeting, Denver, CO, July 2010.
- Implications of simultaneity in pest damage functions. 4th World Congress of Environmental and Resource Economists, Université du Québec à Montréal, Montreal, QC, June-July 2010.
- A coupled econometric and remote-sensing model of land-use change in response to uncertain water availability and the allocation of water rights. Pacific Northwest Climate Science Conference, Portland State University, Portland, OR, June 2010.
- The role of harvest timing in pest management: grower response to infestation by the California olive fruit fly. Agricultural and Applied Economics Association Annual Meeting, Milwaukee, WI, July 2009.
- Pests and agricultural commodity losses: evaluating alternative approaches to damage function estimation. Agricultural and Applied Economics Association Annual Meeting, Orlando, FL, July 2008.

TEACHING AND MENTORING

Teaching Recognition

Honored faculty member, Boise State University Top Ten Scholar, George Fenton, 2012

Honored faculty member, College of Business and Economics Outstanding Graduate, Eric Schuler, 2012

Current Teaching

FREC/WATR 5464G: Advanced Water Resources Policy and Economics (3cr, graduate, Fall)

AAEC/FREC/WATR 4464: Water Resources Policy and Economics (3cr, undergraduate, Fall)

FREC 4434: Natural Resource Policy (3cr, undergraduate, Spring)

FREC 5014: Research Ethics and Integrity (1cr, graduate, Fall)

FREC 5884: Advanced Natural Resource Economics (3cr, graduate, Fall odd years)

Past Teaching

Econometrics, Boise State University (undergraduate)

Quantitative Methods in Economics, Boise State University (undergraduate)

Interdisciplinary Modeling in Water and Climate, New Mexico State University (graduate)

Optimization Modeling, Virginia Tech (graduate)

Forest Resources and Environmental Conservation Seminar, Virginia Tech (graduate)

Current Graduate Students (*denotes chair or co-chair)

Ao, Yufei, Ph.D. Civil and Environmental Engineering, Virginia Tech

Ferris, William, Ph.D. Agricultural and Applied Economics, Virginia Tech

Kinz, Sarah*, M.S. Forest Resources and Environmental Conservation, Virginia Tech

Wang, Haoyu, M.S. Forest Resources and Environmental Conservation, Virginia Tech

Yao, Zhenyu, Ph.D., Agricultural and Applied Economics, Virginia Tech

Completed Graduate Students (*denotes chair or co-chair)

Abnousi, Vartan Kesiz, Ph.D. Agricultural and Applied Economics, Virginia Tech, 2021

Beck, Adam*, M.S. Forest Resources and Environmental Conservation, Virginia Tech, 2020

Steele, Jason, Ph.D. Forest Resources and Environmental Conservation, Virginia Tech, 2020

Swedberg, Kristen, M.S. Agricultural and Applied Economics, Virginia Tech, 2020

Zhang, Zeya*, Ph.D. Agricultural and Applied Economics, Virginia Tech, 2020

Scott, Samuel*, M.S. Forest Resources and Environmental Conservation, Virginia Tech, 2019

Weng, Weizhe*, Ph.D. Agricultural and Applied Economics, Virginia Tech, 2019

Xu, Yuelu, Ph.D. Agricultural and Applied Economics, Virginia Tech, 2019

Ji, Xinde*, Ph.D. Forest Resources and Environmental Conservation, Virginia Tech, 2018

Chance, Eric*, M.S. Forest Resources and Environmental Conservation, Virginia Tech, 2017

Schons do Valle, Stella, Ph.D. Forest Resources and Environmental Conservation, Virginia Tech, 2017

Cohen, Jed, Ph.D. Agricultural and Applied Economics, Virginia Tech, 2016

Siriwardena, Shyamani*, Ph.D. Forest Resources and Environmental Conservation, Virginia Tech, 2016

Wade, Christopher*, M.S. Forest Resources and Environmental Conservation, Virginia Tech, 2016

Xu, Weibin, Ph.D. Agricultural and Applied Economics, Virginia Tech, 2016

Murray, Erin*, M.S. Geosciences, Boise State University, 2015

Dawson, Blaine*, M.S. Geosciences, Boise State University, 2014

Cohen, Jed, M.S. Agricultural and Applied Economics, Virginia Tech, 2013

Vinson, Hannah, M.S. Agricultural Economics and Rural Sociology, University of Idaho, 2013

Beebe, Gretchen*, M.S. Mathematics, Boise State University, 2012

Undergraduate Research and Honors Theses Directed

Bhattacharai, Grishma, Summer Research Fellow, Virginia Tech and Hollins University, 2019

Pullen, Sarah, Research Assistant, Boise State University, 2014

Turk, Zachary, Honors thesis, Boise State University, 2013

Beran, Lucas, Research Assistant, Boise State University, 2013

Fenton, George, Honors thesis, Boise State University, 2012

Schuler, Eric, Honors thesis, Boise State University, 2012

Vanderlugt, Blair, McNair Fellow, Boise State University, 2011

Postdoctoral Fellows Trained

Ji, Xinde, Forest Resources and Environmental Conservation, Virginia Tech, 2018-2019

Hetherington, Amy, Biology, Virginia Tech, 2016

Ghosh, Sanchari, Economics, Boise State University, 2012-2013

Xu, Wenchao, Economics, Boise State University, 2010-2012

Other Personnel Directed

Henson, V. Reilly, Project Manager, Virginia Tech, 2017-2019

SERVICE AND LEADERSHIP

Professional Leadership

President, Universities Council on Water Resources, 2021-2022

President-Elect, Universities Council on Water Resources, 2020-2021
Editorial Council, Journal of Agricultural and Resource Economics, 2018-2021
Board of Directors, Universities Council on Water Resources, 2016-2021
Officer, Land, Water and Environmental Economics Section, Agricultural and Applied Economics Association, 2018-2021
External Advisory Panel, New Hampshire-Maine-Rhode Island NSF EPSCoR RII Track-2 Collaborative Award “New England Sustainability Consortium: The Future of Dams,” American Association for the Advancement of Science, 2015-2020
Chair, Outstanding Dissertation Award Committee, Agricultural and Applied Economics Association, 2016-2018
Officer (chair, chair-elect, and secretary/treasurer), Committee on Women in Agricultural Economics, 2010-2015
Idaho EPSCoR Economics and Policy Science Team Lead, “Water Resources in a Changing Climate,” 2011-2013

Other Professional Service

Universities Council on Water Resources: Conference Planning Committee; Warren A. Hall Award Committee; Outstanding Dissertation Committee; Strategic Planning Team; Student Events Planning Lead; Poster Session Organizer and Judge
Agricultural and Applied Economics Association: Selected Presentations Committee; Natural Resource Economics Selected Presentations Topic Lead; Selected Presentations Reviewer; Outstanding Doctoral Dissertation Committee; Sylvia Lane Mentorship Award Committee
Promotion and Tenure Reviews: University of British Columbia; University of Missouri; University of Montana
Proposal review panels: NSF Dynamics of Coupled Natural and Human Systems; NSF Interdisciplinary Research in Hazards and Disasters; USDA NIFA National Integrated Water Quality Program; USDA NIFA Water for Food Production Systems; USDA Methyl Bromide Transition Program
Ad-hoc proposal reviews: AAAS Second Century Stewardship Research Fellowship; California Department of Food and Agriculture; NSF EPSCoR; NSF Big Data Regional Innovation Hubs; New York Sea Grant; Virginia Agricultural Experiment Station; Water Resources Research Institute of the University of North Carolina; Wyoming Agricultural Experiment Station
Journal reviews: *Agriculture, Ecosystems, & Environment*; *American Journal of Agricultural Economics*; *Applied Economic Perspectives and Policy*; *Canadian Journal of Agricultural Economics*; *Ecological Economics*; *Environmental and Resource Economics*; *European Economic Review*; *European Review of Agricultural Economics*; *Hydrology and Earth Systems Science*; *Journal of Agricultural and Resource Economics*; *Journal of the American Water Resources Association*; *Journal of Contemporary Water Research and Education*; *Journal of Development Studies*; *Journal of Economic Entomology*; *Journal of Environmental Economics and Management*; *Journal of Forest Economics*; *Journal of Natural Resources Policy Research*; *National Center for Case Study Teaching in Science*; *Nature Climate Change*; *Water Resource Economics*; *Water Resources Research*

Professional Meetings and Workshops Led

Technical Program Chair, “Water. Place. People.” Universities Council on Water Resources/National Institutes for Water Resources 2020 Water Resources Conference, Minneapolis, MN, June 2020 (cancelled).
Session organizer and moderator, “Communicating research to support public trust in science and evidence-based policy,” Agricultural and Applied Economics Association Annual Meeting, Atlanta, GA, July 2019.
Session organizer, “Operational satellite-based remote sensing products to support agricultural adaptation to drought,” Universities Council on Water Resources/ National Institutes for Water Resources 2019 Conference, Snowbird, UT, June 2019.
Organizer and lead, 4th Coupled Natural and Human Systems Workshop, Asheville, NC, May 2019.

Organizer and moderator, “Career conversations for students: early career networking event,”
Universities Council on Water Resources Annual Meeting, 2018

Track session organizer, “Investigating feedbacks between human and natural systems in freshwater lake
catchments,” Universities Council on Water Resources Annual Meeting, 2018

Panel organizer, “People and freshwater lake catchments,” Universities Council on Water Resources
Annual Meeting, 2018

Planning committee, Universities Council on Water Resources Annual Meeting, 2017-2018

Organizer, Coupled Natural and Human Systems Modeling in Lake Catchments 3rd Annual Workshop,
Lake Sunapee Protective Association, Sunapee, NH, 2018

Organizer, Coupled Natural and Human Systems Modeling in Lake Catchments 2nd Annual Workshop,
University of Wisconsin, Madison, WI, 2017

Organizer and moderator, “Joint organized symposium: water management and economic benefits,”
Western Agricultural Economics Association/Canadian Agricultural Economics Society Joint Annual
Meeting, 2016

Organizer, Idaho agriculture and remote sensing field tour and workshop, Boise, Twin Falls, and
American Falls, ID, 2016

Organizer, Coupled Natural and Human Systems Modeling in Lake Catchments 1st Annual Workshop,
Mountain Lake, VA, 2016

Organizer and moderator, “Economics and policy modeling,” Idaho Established Program to Stimulate
Competitive Research Annual Meeting, 2012

Organizer and moderator, “Women in academic training and professional careers: identifying and
analyzing factors impacting success,” Committee on Women in Agricultural Economics Track
Session, Agricultural and Applied Economics Association Annual Meeting, 2012

Organizer and moderator, “Water rights: historical perspectives and emerging issues,” Allied Social
Science Associations Annual Meeting, 2012

Organizer and moderator, “Multidisciplinarity in agricultural economics: practitioner attitudes,
publishing, and the job market,” Committee on Women in Agricultural Economics Track Session,
Agricultural and Applied Economics Association Annual Meeting, 2011

Organizer and moderator, “Joint organized symposium: Are we meeting new demands? Professional
skills and multidisciplinary research collaboration,” Western Agricultural Economics
Association/Canadian Agricultural Economics Society Joint Annual Meeting, 2011

Organizer and moderator, “The economics of land and water use,” New Mexico Established Program to
Stimulate Competitive Research Tri-State Consortium, 2011

Organizer and moderator, Idaho Established Program to Stimulate Competitive Research Springboard
Day, 2010

University, College, and Department Service

Graduate Program Director, Forest Resources and Environmental Conservation, 2020-present

Global Change Center Advisory Committee, 2019-present

Faculty Senate representative, 2018-present

Graduate Water Degree Committee, 2016-present

Graduate Affairs Committee, 2015-present

Search Committee, Biometrics, 2019-2020

Search Committee, CNRE Director of Diversity and Inclusion, 2019-2020

Undergraduate Affairs Committee, 2016-2018

Organizer, Seminar in Environmental and Resource Economics, 2013-2018

Policy Strategic Growth Area Stakeholder Advisory Committee, 2016-2017

Search Committee, International Forest Economics and Management, 2016-2017

Search Committee, Department Head, Agricultural and Applied Economics, 2016-2017

Search Committee, Human Dimensions of Fish and Wildlife Conservation, 2015-2016

Search Committee, Ecohydrological Modeling and Informatics, 2013-2014

September 5, 2021

Promotion and Tenure Committee, Boise State University, 2010-2013
Scholarship Committee, Boise State University, 2010-2013
Search Committee, Water Resources Engineering, Boise State University, 2010-2011