

JAMES R. MELDRUM

Research Economist
Fort Collins Science Center
United States Geological Survey (USGS)

2150 Centre Ave. Building C
Fort Collins, CO 80526-8118
jmeldrum@usgs.gov | 970-226-9176

EDUCATION

- Ph.D. Environmental Economics (Env. Studies Program), University of Colorado Boulder, 2012
Dissertation: *Variability and efficiency in human-natural systems: Three essays connecting resilience and economics*
Committee: Nicholas Flores (chair); Craig Bond; Max Boykoff; Patricia Champ; Carol Wessman
- M.S. Environmental Economics (Env. Studies Program), University of Colorado Boulder, 2010
- B.S. Washington U. in St. Louis, Physics, 2nd major in Philosophy-Neuroscience-Psychology, 2005

PROFESSIONAL POSITIONS

Research Economist - US Geological Survey, Fort Collins Science Center, Social and Economic Analysis Branch (Fort Collins, CO). 2016 to present

PhD Research Associate - University of Colorado Boulder, Institute of Behavioral Science and Cooperative Institute for Research in Environmental Sciences (Boulder, CO). 2012-2016

Policy Analysis Intern - Strategic Energy Analysis Center, National Renewable Energy Laboratory (Golden, CO). 2011-2012

Graduate Research Assistant - Environment and Society Program, Institute of Behavioral Science, University of Colorado Boulder (Boulder, CO). 2009-2011

Graduate Teaching Assistant - Environment and Society Program, University of Colorado Boulder (Boulder, CO). 2007-2009

Engineering Physicist - Systems Group, Stereotaxis, Inc. (St. Louis, MO). 2005-2006

PROFESSIONAL AFFILIATIONS

Faculty Affiliate - Colorado State University, Department of Agricultural and Resource Economics (Fort Collins, CO). 2016 to present

Member - Wilderness Economics Working Group, Aldo Leopold Wilderness Research Institute. 2016 to present

Research Collaborator - University of Colorado Boulder, Cooperative Institute for Research in Environmental Sciences, Western Water Assessment (Boulder, CO). 2016 to present

Research Affiliate - University of Colorado Boulder, Institute of Behavioral Science, Environment and Society Program (Boulder, CO). 2016 to present

PUBLICATIONS IN REFEREED JOURNALS

Meldrum, J. (2016). Floodplain price impacts by property type in Boulder County, Colorado: Condominiums versus standalone properties. *Environmental and Resource Economics* 64(4): 725-750.

Meldrum, J. (2015). Comparing different attitude statements in latent class models of stated preferences for managing an invasive forest pathogen. *Ecological Economics* 120: 13-22.

Brenkert-Smith, H., **J. Meldrum**, and P. Champ (2015). Climate change beliefs and hazard mitigation actions: homeowners and wildfire risk. *Environmental Hazards* 14(4): 341-360.

Meldrum, J., P. Champ, H. Brenkert-Smith, T. Warziniack, C. Barth, and L. Falk (2015). Understanding gaps between the risk perceptions of wildland-urban interface (WUI) residents and wildfire professionals. *Risk Analysis* 35(9): 1746-1761.

Heath, G., **J. Meldrum**, N. Fisher, D. Arent, and M. Bazilian (2014). Life cycle greenhouse gas emissions from Barnett Shale gas used to generate electricity. *Journal of Unconventional Oil and Gas Resources* 8: 46-55.

Meldrum, J., P. Champ, T. Warziniack, H. Brenkert-Smith, C. Barth, and L. Falk (2014). Cost shared wildfire risk mitigation in Log Hill Mesa, Colorado: survey evidence on participation and willingness to pay. *International Journal of Wildland Fire* 23(4): 567-576.

Averyt, K., **J. Meldrum**, P. Caldwell, G. Sun, S. McNulty, A. Huber-Lee, and N. Madden (2013). Sectoral contributions to surface water stress in the conterminous U.S. *Environmental Research Letters* 8: 035046.

Yates, D., **J. Meldrum**, and K. Averyt (2013). The influence of future electricity mix alternatives on southwestern US water resources. *Environmental Research Letters* 8: 045005.

Yates, D., K. Averyt, F. Flores-Lopez, **J. Meldrum**, S. Sattler, J. Sieber, and C. Young (2013). A water resources model to explore the implications of energy alternatives in the southwestern US. *Environmental Research Letters* 8: 045004.

Yates, D., **J. Meldrum**, F. Flores-Lopez, and M. Davis (2013). Integrated impacts of future electricity mix scenarios on select southeastern US water resources. *Environmental Research Letters* 8: 035042.

Meldrum, J., S. Nettles-Anderson, G. Heath, and J. Macknick (2013). Life cycle water use for electricity generation: a review and harmonization of literature estimates. *Environmental Research Letters* 8: 015031.

Averyt, K., J. Macknick, J. Rogers, N. Madden, J. Fisher, **J. Meldrum**, and R. Newmark (2013). Water use for electricity in the United States: an analysis of reported and calculated water use information for 2008. *Environmental Research Letters* 8: 015001.

Meldrum, J., P. Champ, and C. Bond (2013). Heterogeneous nonmarket benefits of managing white pine blister rust in high-elevation pine forests. *Journal of Forest Economics* 19: 61-77.

TECHNICAL REPORTS AND RELATED PUBLICATIONS

Meldrum, J., C. Barth, P. Champ, H. Brenkert-Smith, L. Falk, and T. Warziniack (In press). Insurance and wildfire risk: what do we know? *Fire Management Today* 75(2).

Meldrum, J., L. Falk, J. Gomez, C. Barth, H. Brenkert-Smith, T. Warziniack, and P. Champ (2017). *Living with wildfire in Telluride Fire Protection District, Colorado*. Research Note RMRS-RN-75. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station: 30pp.

Meldrum, J., J. Gomez, L. Falk, C. Barth, H. Brenkert-Smith, T. Warziniack, and P. Champ (2016). *Survey Data Report: Town of Mountain Village, 2014*. 10pp. [Self-published "user-friendly" report requested by practitioner partners on research project.]

Meldrum, J., C. Barth, L. Falk, H. Brenkert-Smith, T. Warziniack, and P. Champ (2015). *Living with wildfire in Delta County, Colorado: cross-community comparisons*. Research Note RMRS-RN-67. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station: 33pp.

Meldrum, J., C. Barth, L. Falk, H. Brenkert-Smith, T. Warziniack, and P. Champ (2013). *Living with wildfire in Log Hill Mesa, Colorado*. Research Note RMRS-RN-66. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station: 34pp.

Rogers, J., K. Averyt, S. Clemmer, M. Davis, F. Flores-Lopez, P. Frumhoff, D. Kenney, J. Macknick, N. Madden, **J. Meldrum**, J. Overpeck, S. Sattler, E. Spanger-Siegfried, and D. Yates (2013). *Water-smart*

power: Strengthening the U.S. electricity system in a warming world. A report of the Energy and Water in a Warming World initiative. Cambridge, MA: Union of Concerned Scientists: 50pp.

Joint Institute for Strategic Energy Analysis (JISEA) (2012). Life cycle greenhouse gas emissions from Barnett Shale gas used to generate electricity. Chapter 1 in *Natural Gas and the Transformation of the U.S. Energy Sector: Electricity*. Logan, J., G. Heath, E. Paranhos, W. Boyd, K. Carlsion, and J. Macknick. NREL/TP-6A50-55538. Golden, CO: National Renewable Energy Laboratory: pp. 16-37. [**Contributing author**]

Meldrum, J., J. Macknick, and G. Heath (2012). *Water Use in Electricity Generation Technologies: A Life Cycle Perspective*. Palo Alto, CA: Electric Power Research Institute (EPRI): 33pp.

PUBLISHED ABSTRACTS AND PROCEEDINGS

Cohen, S., J. Macknick, A. Miara, C. Vorosmarty, K. Averyt, **J. Meldrum**, F. Corsi, A. Prousevitch, and I. Rangwala (2015). Water-constrained electric sector capacity expansion modeling under climate change scenarios. Abstract PA43A-1967 presented at the *2015 AGU Fall Meeting*, AGU, Dec 14-18, San Francisco, CA.

Newmark, R., S. Cohen, K. Averyt, J. Macknick, **J. Meldrum**, and P. Sullivan (2014). Evaluating the impacts of climate change on the operations and future development of the U.S. electricity system (invited). Abstract GC22A-01 presented at the *2014 AGU Fall Meeting*, American Geophysical Union (AGU), Dec 15-19, San Francisco, CA.

Averyt, K., D. Yates, and **J. Meldrum** (2014). Energy requirements by the water sector in the southwestern US: past, present, and future (invited). Abstract GC22A-05 presented at the *2014 AGU Fall Meeting*, AGU, Dec 15-19, San Francisco, CA.

Cohen, S, K. Averyt, J. Macknick, and **J. Meldrum** (2014). Modeling climate-water impacts on electricity sector capacity expansion. *Proceedings of the ASME Power 2014 Conference*. Jul 28-31, Baltimore, MD.

Macknick, J., **J. Meldrum**, S. Nettles-Anderson, G. Heath, and A. Miara (2014). Life cycle water use for photovoltaic electricity generation: a review and harmonization of literature estimates. *Photovoltaic Specialist Conference (PVSC), 2014 IEEE 40th*. Jun 8-13, Denver, CO.

Meldrum, J., J. Macknick, G. Heath, and S. Nettles-Anderson (2013). Life cycle water use for electricity generation: implications of the distribution of collected estimates. *Proceedings of the ASME Power 2013 Conference*. Jul 29-Aug 1, Boston, MA.

Meldrum, J., K. Averyt, J. Macknick, R. Newmark, J. Rogers, N. Madden, and J. Fisher (2013). Sensitivities of recent electricity generation water use findings to data updates and variability. *Proceedings of the ASME Power 2013 Conference*. Jul 29-Aug 1, Boston, MA.

Rogers, J., **J. Meldrum**, J. Macknick, K. Averyt, N. Madden, J. Fisher, and R. Newmark (2013). U.S. power plant water use: an analysis of reported and calculated water use data for 2008. *Proceedings of the ASME Power 2013 Conference*. Jul 29-Aug 1, Boston, MA.

Meldrum, J., K. Averyt, P. Caldwell, G. Sun, A. Huber-lee, and S. McNulty (2012). Sectoral vulnerabilities to changing water resources: current and future tradeoffs between supply and demand in the conterminous U.S. Abstract PA43A-1967 presented at the *2012 AGU Fall Meeting*, AGU, Dec 3-7, San Francisco, CA.

Meldrum, J., C. Bond, and P. Champ (2011). Valuing the forest for the trees: willingness to pay for white pine blister rust management. *The future of high-elevation, five-needle white pines in Western North America: Proceedings of the High Five Symposium*. RMRS-P-63. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station: 226-234.

Bond, C., P. Champ, **J. Meldrum**, and A. Schoettle (2011). Investigating the optimality of proactive management of an invasive forest pest. *The future of high-elevation, five-needle white pines in Western North America: Proceedings of the High Five Symposium*. RMRS-P-63. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station: 295-302.

GRANTS

- 2014 - 2017 **Co-PI:** "Is the whole greater than the sum of its parts? Homeowner wildfire risk mitigation, community heterogeneity, and fire adaptedness" (PI: P. Champ, US Forest Service). Joint Fire Science Program, New Science Initiative.
- 2013 - 2017 **Co-PI:** "Living with wildfire in Colorado" (PI: H. Brenkert-Smith, IBS at CU-Boulder). USDA, US Forest Service, Rocky Mountain Research Station.
- 2014 - 2015 **Co-PI:** "Living with wildfire in Delta County, Colorado" (PI: H. Brenkert-Smith, IBS at CU-Boulder). USDA, US Forest Service, Rocky Mountain Research Station.
- 2013 - 2014 **Named contributor:** "Climate-Water-Electricity: Evaluating how climate change affects water availability and the future of the U.S. electricity sector" (PIs: S. Cohen, NREL, and K. Averyt, CIRES at CU-Boulder). Joint Institute for Strategic Energy Analysis, Innovation Research Analysis Award.
- 2012 - 2013 **Unnamed contributor:** "Energy-Water Initiative" (PI: K. Averyt, CIRES at CU-Boulder). Union of Concerned Scientists.
- 2009 - 2012 **Unnamed contributor:** "Efficient management of white pine blister rust in high elevation ecosystems: a dynamic modeling approach" (PI: N. Flores, IBS at CU-Boulder). USDA, US Forest Service, Rocky Mountain Research Station.

HONORS AND AWARDS

- Selected participant: Belpasso International Summer School on Environmental and Resource Economics. Sept. 1-8, 2013. Belpasso, Sicily, Italy. DiGeSA (UNICT)-EAERE-FEEM. (2013)
- Graduate School Student Travel Grant, University of Colorado Boulder (2011)
- Environmental Studies Student Travel Grant, University of Colorado Boulder (2011)
- Environmental Studies Student Travel Grant, University of Colorado Boulder (2009)
- University Fellowship, University of Colorado Boulder (2009)
- Engineering Dean's Honorary Scholarship, Washington University in St. Louis (2001-2005)
- National Merit Finalist Scholarship, Air Products & Chemicals, Inc. (2001-2005)

CONFERENCE AND MEETING PRESENTATIONS

Economics

- Department of the Interior Economics Workshop (2017 Washington, D.C.)
- W-3133 Meeting: Benefits and Costs of Natural Resources Policies Affecting Public and Private Lands (2017 Carlsbad, CA; 2015 Pensacola, FL; 2013 Coeur d'Alene, ID)
- Association of Environmental and Resource Economists (AERE) Summer Conference (2016 Breckenridge, CO)
- Western Economic Association International (WEAI) Annual Conference (2014 Denver, CO)
- Western Agricultural Economics Association (WAEA) Annual Meeting (2014 Colorado Springs, CO)
- Belpasso International Summer School on Environmental and Resource Economics: Frontiers in Economics of Natural Hazards and Disaster Risk Reduction (2013 Belpasso, Sicily)
- CU Environmental and Resource Economics Workshop (2013 Vail, CO; 2011 Vail, CO; 2010 Vail, CO)
- W-2133 Meeting: Benefits and Costs of Natural Resources Policies Affecting Public and Private Lands (2011 Albuquerque, NM)
- World Congress of Environmental and Resource Economics (2010 Montreal, Canada)

Interdisciplinary and/or Applied

Colorado Wildland Fire Conference (2017 Pueblo, CO; 2015 Snowmass Village, CO)
ACES: A Community of Ecosystem Services Conference (2016 Jacksonville, FL)
Backyards & Beyond Wildland Fire Education Conference, National Fire Protection Association (2015 Myrtle Beach, SC; 2013 Salt Lake City, UT)
International Symposium on Society and Research Management (ISSRM) (2015 Charleston, SC)
Institute of Behavioral Science Research Symposium (2014 Boulder, CO)
ASME Power Conference (2013 Boston, MA)
AGU Fall Meeting (2012, San Francisco, CA)
CIRES Energy and Environment Initiative Workshop (2012 Boulder, CO)
Association for Environmental Studies and Sciences (AESS) Conference (2011 Burlington, VT; 2010 Portland, OR; 2009 Madison, WI)
Resilience 2011: Resilience, Innovation, and Sustainability (2011 Tempe, AZ)
High Five Symposium: The future of high-elevation, five-needle white pines in Western North America (2010 Missoula, MT)

INVITED PRESENTATIONS (SEMINARS, OUTREACH, ETC.)

USDA Forest Service, Southern Research Station Seminar, Research Triangle Park, NC (2017, 2014)
USGS Fire Science Community of Practice webinar (2017)
Front Range Fuels Treatment Partnership Roundtable meeting, Lakewood, CO (2017)
Interactions of Society and the Environment Seminar Series (ISESS), Fort Collins, CO (2016, 2011)
USGS, Sustaining Environmental Capital Initiative (SECI) In-Person Meeting, Reston, VA (2016)
USGS, Social and Economic Analysis Branch Seminar, Fort Collins, CO (2016)
International Water-Energy Nexus (IWEN) Working Group webinar (2015)
US Fish and Wildlife Service, Conservation Science Webinar Series (2015)
US Environmental Protection Agency (EPA) Seminar, Research Triangle Park, NC (2015)
CU-Boulder, *Social Surveys for Environmental Studies* guest lecture (2014, 2013)
Colorado Foundation for Water Education and Colorado Community Radio Stations, radio interview for series: *Connecting the Drops* (2014)
FireWise of Southwest Colorado meeting, Durango, CO (2013)
American Council for an Energy Efficient Economy (ACEEE)/Alliance for Water Efficiency (AWE) Water-Energy Research Work Group Meeting Webinar (2013)
West Region Wildfire Council meeting, Montrose, CO (2013)
Crawford County High School, 10th Grade Biology, Roberta, GA, internet interview (2012)
Western Water Assessment (WWA) Webinar Series, Boulder, CO (2012)
Investigating Careers in the Environment panelist, Boulder, CO (2012, 2011, 2010, 2009)
National Renewable Energy Laboratory, Strategic Energy Analysis Center seminar, Golden, CO (2012)
Central Rockies White Pine Health Meeting, Ft. Collins, CO (2011, 2010)
ENVS Colloquium Series, Boulder, CO (2011) (invited commentary on talk by M. Schellenberger)
USDA Forest Service, Human Dimensions Program Seminar, Missoula, MT (2010)
CU-Boulder, *Advanced Writing in Environmental Studies* guest lecture (2010)
ENVS Graduate Student Seminar Series, Boulder, CO (2010)

MEDIA COVERAGE (SELECTED)

Water-energy research: *Aspen Business Journal*, *Bloomberg BNA*, *climate.gov*, *ClimateWire*, *CNBC*, *Colorado Public Radio*, *The CT Mirror*, *EcoWatch*, *The Huffington Post*, *Mass.gov Energy Smarts*, *National Geographic Water Currents*, *Nature World News*, *Phoenix Business Journal*, *ScienceDaily*, *UPI*, *Windpower Engineering & Development*, *World Bank*

Wildfire risk mitigation research: *Colorado Public Radio*, *Boulder Daily Camera*, *The Denver Post*, *The Durango Herald*, *7NEWS Denver*, *KVNF Community Radio*, *Summit County Citizens Voice*

PROFESSIONAL SERVICE

Abstract Review

2016 Agricultural & Applied Economics Association (AAEA) Annual Meeting

Publication Review

2015 USDA Forest Service, Rocky Mountain Research Station

2015 National Renewable Energy Laboratory, Strategic Energy Analysis Center

2014 US Department of Energy, Office of Energy Efficiency and Renewable Energy

Proposal Review

2014 Mississippi-Alabama Sea Grant Consortium, Special Competition for the Resilient Communities and Economies Focus Area

Journal Peer Review

Ecological Economics, Energy Conversion and Management, Environmental & Resource Economics, Environmental Economics and Policy Studies, Environmental Science & Technology, Forests, International Journal of Wildland Fire, Journal of Agricultural Economics, Journal of Environmental Management, Journal of Forest Economics, Journal of the Association of Environmental and Resource Economists, Land Economics, Land Use Policy, Landscape and Urban Planning, Natural Hazards, Society & Natural Resources

PROFESSIONAL AFFILIATIONS

Association for Environmental Studies and Sciences (AESS)	Founding Member, 2008-present
Association of Environmental and Resource Economists (AERE)	Member, 2010-present
International Association for Society and Natural Resources (IASNR)	Member, 2015-present
America Economic Association	Member, 2017-present