

Jason K Hawes

Purdue University—Ecological Sciences & Engineering Interdisciplinary Grad. Prog.

Specialty: Natural Resources Social Science

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Education

- Expected MS Ecological Sciences and Engineering, Natural Resources Social Science—August '19
Advisor: Zhao Ma Committee Members: David Yu, Morey Burnham, Zoe Nyssa
Thesis research focusing on Eastern Snake Plain water rights agreement, its effect on economic and social outcomes, and agricultural adaptation to the resulting water scarcity. Findings are expected to indicate pathways and effectiveness of Idaho agricultural adaptation in the face of climate change. Thesis expected to contain three chapters analyzing adaptation and decision making from multiple methodological perspectives.
- BS Environmental and Ecological Engineering, Purdue University—May '17—Final GPA: 3.73
Minor: Environmental Policy and Politics, Natural Resources and Environmental Science

Publications and Presentations

Publications:

- Hawes, J. K., Conkling, E. N., Casteloes, K. S., Brazeau, R. H., Salehi, M., & Whelton, A. J. (2017). Predicting Contaminated Water Removal From Residential Water Heaters Under Various Flushing Scenarios. *Journal - American Water Works Association*, 109(8), E332–E342.
- Alwang, A., Busse, M., Caprio, A., Fenton, M., Hawes, J., Kanach, A., McElfresh-Sutton, A. (2017) Water Supply in Developing Countries: A Reflective Essay. *Purdue Journal of Service Learning*, 4(1).
- Hawes, J. K., Erwin, A., McWherter, B., Nixon, R., Popovici, R., Rathjen, M., & Ma, Z. (2019). A Review of Grassroots Global Governance. *Society & Natural Resources*, 0(0), 1–3.
<https://doi.org/10.1080/08941920.2019.1602239>

Publications In-Preparation:

- Hawes, J.K., Burnham, M., Hillis, V., Running, K., Ma, Z. Agricultural Vulnerability to Enforced Water Scarcity: A Case Study in Southeastern Idaho. Projected Submission: Spring 2019
- Hawes, J.K., Busse, M., Singh, S., & Blatchley, E.R. Comparative Life Cycle Assessment of Direct and Indirect Solar Water Disinfection Processes in Developing Countries. Projected Submission: Summer 2019
- Hawes, J.K. Ma, Z., Burnham, M., Yu, D. Agent-Based Modeling as an Exploratory Tool in Agricultural Adaptation? A Case Study in Policy-driven Water Scarcity. Projected Submission: Summer 2019
- Hawes, J.K. Ma, Z., Burnham, M., Nyssa, Z. Revisiting Agricultural Adaptation Decision-making: Lessons learned from the Eastern Snake Plain Water Rights Settlement. Projected Submission: Summer 2019
- Hawes, J. K., Caprio, A., Domenech, J., Johnson, B., Kanach, A., LeMaster, P.B., Payne, L. International Service Learning for Water Security: Comparing literature, practitioner conceptualization, and case study implications. Projected submission: Spring 2020
- Hawes, J.K. Ma, Z., Steele, D., Johnson, D., Burnham, M., ... Integration of the Social and Natural

Sciences: A Review of the NSF Coupled Natural-Human Systems Program. Projected Submission: Summer 2020

Invited Presentations:

- Hawes, JK, Kanach, A. How we got here: A look back at the historical motivations and trends shaping the Water Supply in Developing Countries team. Course: CE 597.
- Hawes, JK. Safe Water in Developing Countries: Rethinking Water Supply from the Lab to Las Canas. September 2016. Presentation to the Environmental and Ecological Engineering External Advisory Council, Purdue University.
- Ma, Z, Hawes, JK, Clarke, M, Nixon, R, Domenech, J. Introduction to Natural Resources Social Science. October 2017. Course: Introduction to Natural Resources and Environmental Science.
- Schirm, V, Hawes, JK, Russel, M. Introduction to Deep Leadership and Applying for International Scholarships and Grants. September 2018. Course: EEE 290, Professional Development Seminar.

Selected Presentations:

- Hawes, JK, Zhao Ma, David Yu, and Morey Burnham. Using empirically-grounded agent-based modeling to assess decision-making theories for farmer adaptation to water scarcity. International Symposium on Society and Resource Management, 19 June 2018, Snowbird, UT. Oral Research Presentation.
- Hawes, JK, Zhao Ma, David Yu, and Morey Burnham. Understanding farmer adaptation to water scarcity and climate change: Improving decision-making in agent-based models of coupled natural and human systems. American Association of Geographers, Annual Conference, 11 April 2018, New Orleans, LA. Oral Research presentation.
- Hawes, JK, Whelton, AJ. Premise Plumbing Decontamination: New Lessons from the Field and Purdue University's Pilot-Scale Testing Facility. Water Quality Technology Conference, 15 Nov, 2016, Indianapolis, IN. Oral Research Presentation.
- Hawes, JK, Whelton, AJ. Water Heater Cleaning Following Chemical Contamination Incidents: Examining Effectiveness and Evaluating a Recent Model. AWWA Annual Conference and Exposition, 22 June 2016, Chicago, IL. Oral Research Presentation.
- Hawes, JK, Caprio, A, Busse, M. Water Supply in the Dominican Republic. Innovation for International Development Lab Exposition, 1 April, 2017. Awarded Top Poster Presenter.
- Hawes, JK, Blatchley, E. Direct and Indirect UV Disinfection: Life Cycle Impacts for Use in Developing Countries. Summer Undergraduate Research Fellowship Symposium, 4 August, 2016. Awarded Top Oral Research Presentation.
- Coleman, J, Hawes, JK, Whelton, AJ. Implications of pH and Temperature for Water Quality Impacts in PEX pipes. AWWA Annual Conference and Exposition, 22 June 2016, Chicago, IL. Oral Research Presentation.
- Hawes, JK, Ma, Z., Yu, D., Burnham, M. Theory-Driven Agent-Based Modeling. SESYNC Annual Symposium, June 2018. Poster Research Presentation by Zhao Ma.

Fundraising and Grant History (as lead author only – inquire for more complete grant-writing history)

Purdue Climate Change Research Center Travel Grant—Purdue Clim. Chng. Res. Center—Nov. 2018

Blosser Environmental Travel Grant – Purdue University – Nov. 2018

Anderson Rotary Club – Project Supplemental Support Grant – Anderson, IN Rotary Club – August 2018

Purdue Climate Change Research Center Travel Grant—Purdue Clim. Chng. Res. Center—Nov. 2017

Andrews Environmental Travel Grant—Purdue University—Nov. 2017

Hydrologists Helping Other Grant: *sought on behalf of Water in the Dominican Republic team*—Purdue University, Department of Earth, Atmospheric, and Planetary Sciences—March 2017

Purdue Service Learning Grant: *sought repeatedly on behalf of Water in the Dominican Republic team*—Purdue University, Center for Instructional Excellence – Received six times between 2015 and 2018

Academic Leadership Experience

Ecological Sciences and Engineering Symposium – Co-Chair – Fall 2017 to Present – Responsibilities: Oversee and facilitate the planning, design, and implementation of an annual symposium for interdisciplinary environmental scholars, includes oversight of a budget exceeding \$10,000

Organized Session – Lead Author and Organizer – ISSRM 2019 – Session title: Examining multi-scalar adaptation to social-ecological change in food-energy-water systems (FEWS) - Responsibilities: Plan and facilitate an organized session at the 2019 edition of ISSRM, the annual meeting for the International Association for Society and Natural Resources

International Association for Society and Natural Resources (IASNR) Student Affairs Committee – Professional Development Committee – Fall 2017 to Present – Responsibilities: Support planning and execution of annual student professional development seminar at IASNR annual meeting (ISSRM)

Water in the Dominican Republic Service Learning Project – Project Manager (Spring 2017) and Design Lead (Spring 2016 - Spring 2018) – Responsibilities as Project Manager: Generation of reports to funders, coordination of internal reports between committees and leadership, planning and execution of committee meetings, and development of semester plans. Responsibilities as Design Lead: Many of the above management tasks at the sub-team level, in addition to responsibility for ultimate design decisions, in-country design and installation coordination, and team R&D planning and assessment

Employment History (sorted by both recency and relevance)

Graduate Research Assistant —Human Dimension of Natural Resources Lab—Forestry and Natural Resources as member of Ecological Science and Engineering Interdis. Grad. Program, Purdue University—May 2017 to Present—Advisor: Zhao Ma

- Primary research focus: Investigating the social and cognitive dimensions of water scarcity adaptation among farmers in the Eastern Snake River Plain of Idaho. Conducting three primary projects in collaboration with researchers at Idaho State University and Purdue: 1) Parameterization of agent-based modeling using social cognitive theory and secondary data in the context of adaptation in agriculture, 2) Qualitative investigation of adaptation decision making and the role of tradeoffs in decision making, and 3) Characterization of the vulnerability of farmers to sudden onset water scarcity and analysis of the drivers of such vulnerability.

Undergraduate Research Assistant —Summer Undergraduate Research Fellowship: Functionality and Life-Cycle of Analysis of Four Direct and Indirect UV Disinfection Technologies for Use in Developing Countries — June 2016 to July 2017

Dr. Ernest “Chip” Blatchley—Purdue University

- Led Life-Cycle Analysis (LCA) portion of two-part project researching the functionality and environmental and economic sustainability of UV disinfection technologies in developing countries. To assess life cycle impacts, conducted LCA using existing functionality data. Currently continuing work in a volunteer capacity, conducting lab- and pilot-scale testing to determine true functionality of four direct and indirect UV disinfection systems.

Undergraduate Research Assistant—Biocide Degradation of HDPE pipe, Leaching of Contaminants from PEX pipe, and Pilot-Scale Decontamination of Premise Plumbing Systems— September 2014 to January 2017

Dr. Andrew Whelton—Purdue University

- Premise Plumbing Decontamination: Led project laying foundation for science-based premise plumbing flushing guidance. First publication focused on premise plumbing flow-rate analysis and pilot-scale tests of flushing fully contaminated water heaters to determine flushing time required to make a premise plumbing system safe for use after large-scale drinking water contamination events. Analyzing model presented by Casteloes in journal of the Royal Society of Chemistry. Results presented at AWWA Annual Conference and Exhibition, (ACE) 2016 and published in Journal AWWA, August 2017.
- Role of Water Temp. and pH in PEX Drinking Water Quality Impacts: Co-led PEX pipe exposure experiment to identify and determine concentrations of leachates from drinking water pipe. Results presented at AWWA ACE, 2016.
- Biocide Induced Aging of HDPE Cooling Water Pipe: Private Report Submitted (January 2016): Constructed and operated HDPE pipe loop to investigate the effects of bromine and chlorine on cooling tower plumbing systems.

Sustainability Intern—Clerical work and research in Sustainability at the University Level—March 2015 to July 2016 – Global Sustainability Institute – Dr. Ron Turco—Purdue University

- Review of the Developing Paradigm in University Sustainability Programs: Review of present-day University Sustainability Programs (USPs), a general term to describe the various forms of programs teaching, promoting, and researching sustainability at the university level. The review analyzed the unique features and interactions of teaching, research, community outreach, and campus improvement within USPs. USPs vary in structure from academic colleges to on-campus institutes, and the goal of the review was to weigh these and other differences to offer background for the creation of USPs at Purdue and other universities. Reviews for in-house use at Global Sustainability Institute.

Assistant Environmental Technician—Hazardous Chemical and Biological Waste Collection, Treatment, and Disposal—Purdue University Radiological and Environmental Management—January 2017 to August 2017

Summer Intern—Design Engineering—May 2014 to August 2014
LMC Workholding, Logansport, IN

Summer Intern—Robotics Research and Development—June 2013 to August 2013
Myers Spring Company, Logansport, IN

Methodological and Software Expertise

Levels of expertise divided into categories of Basic, Moderate, and Advanced. “Basic” refers to familiarity with the tool or method equivalent to expertise approximately resembling an introductory course. “Moderate” refers to familiarity and skill with the tool or method beyond that which is gained through an introductory workshop or course, most often due to experience gained through research or involvement in a team project requiring creative application of the tool or method. “Advanced” refers to extensive application of the method or tool in a research context, requiring expertise beyond that which is traditionally associated with the tool or method (e.g. implementation of multiple imputation in R or generation of novel decision-making algorithms in Agent-Based modeling). Further details provided under each item as necessary and examples of work available upon request.

Methodological Expertise:

- Quantitative Social Science:
 - Household survey development – Advanced
 - Experience in developed and developing settings
 - Fuzzy Cognitive Modeling – Moderate
 - Delphi Consensus Method – Basic
 - Advanced statistical analysis – Multiple Imputation, Linear Regression, Structural Equation Modeling, Cluster Analysis, Descriptive Analysis – Experience varies by method
- Qualitative Social Science:
 - Semi-structured interviews – Advanced
 - Development and execution
- Computational Social Science:
 - Agent-based modeling – Advanced
- Systematic Literature Review – Moderate
- Workshop Design and Implementation – Moderate
- Analytical Environmental Chemistry – Moderate
 - Methods development and use experience with LCMS, Spectrophotometry, Organic Carbon analysis, and traditional field-based water testing techniques.
- Field Ecology – Basic
 - Sampling, surveying, and taxonomy methods developed in advanced population ecology coursework – no formal research experience

Software Expertise:

- R – Statistical Analysis – Advanced
- NetLogo – Agent-Based Modeling – Advanced
- Microsoft Office Suite (including Word, PowerPoint, Excel, Publisher, and Access) – Advanced
- Slack – Project Communication – Advanced
- NVivo – Qualitative Content Analysis – Moderate to Advanced
- Basecamp – Project Management – Moderate
- ArcGIS (Pro) – Spatial Analysis – Moderate
- Stata – Statistical Analysis – Moderate
- MATLAB – Computational Analysis – Moderate
- Rayyan – Abstract Review – Moderate
- WordPress – Website Design – Moderate
- Adobe Creative Suite (including InDesign, Photoshop, and Illustrator) – Graphic Design – Moderate

- Stella – Systems Modeling Platform – Basic
- Leximancer – Automated Content Analysis – Basic

Awards and Honors

Chappelle Fellow—Purdue University—March 2017

- Awarded to a small group of graduate applicants from Purdue University, the Charles C. Chappelle Award is selected on the basis of character, intellectual ability, and promise of degree attainment.

Black and Veatch, Building a World of Difference Award Winner—American Water Works Association—June 2016

- Awarded to one student nationally, the Building a World of Difference Award recognizes academic and research achievement in the drinking water field.

Outstanding Senior Student—Purdue University, Division of Environmental and Ecological Engineering—April 2017

I2D Expo Top Poster Presenter—Purdue University, Innovation for International Development—April 2017

Summer Undergraduate Research Fellowship Top Research Presenter—Purdue University—August 2016

Beering Scholar—Purdue University—April 2013

- Awarded to between 8 and 10 incoming freshmen, the Steven C. Beering Award honors academic achievement, service to community, and other exceptional performance prior to entering the University.

Eagle Scout—Boy Scouts of America—October 2012

Volunteer Service

Bucket 100 & Cover Indiana Rider—Charity bike tours benefitting Habitat for Humanity—Purdue University—October 2013 to Present

Wabash River Enhancement Corporation – Volunteer for Rain garden and rain barrel installation, as well as annual cleanups and water testing – May 2015 to Present

Boiler Out—Purdue International Volunteer Organization—Purdue University—May 2016 to May 2017

Engineering Projects in Community Service (EPICS)—Columbian Park Zoo and Aerospace Education Teams—Purdue University—August 2013 to December 2014

Special Olympics Coach (Basketball and Track)—Cass County—May 2011 to December 2013

Other Leadership Experience

Student Sustainability Council Vice-President—Fall 2015 to Spring 2017

- Oversee the organization and management of large-scale sustainability-themed events on Purdue's campus.

First Year Engineering Student Advisory Council President - Fall 2015 to Fall 2016 (FYESAC Treasurer Fall 2014-Fall 2015)

- Redefined and restructured organization to better benefit First Year Engineers participating and the Purdue FYE program.
- Created a program emphasizing the development of leadership and professional skills early in their college careers.

Paint Crew Advisory Board (Men’s Basketball Student Section)—Fall 2014 to Spring 2017

- Lead an organization of 2,800 students in supporting the Purdue Men’s Basketball team.

Beering Scholar Newsletter Editor and Coordinator—Spring 2013 to Spring 2017

- Coordinated, edited, and designed a semi-annual newsletter to be distributed to alumni and donors associated with the Beering Scholar Student Association

Undergraduate Extracurricular Involvement

**Purdue Student Sustainability Council
Engineers for a Sustainable World
Beering Scholar Student Association
Paint Crew Advisory Board**

**Boiler Green Initiative
Purdue Honors Engineering Learning Community
Society of Environmental & Ecological Engineers
First Year Engineering Student Advisory Council**

**References available upon request for all listed experiences and expertise.