

Curriculum Vitae

Dr. Arica Crootof

January 2024

Associate Professor of Environmental Sustainability
Department of Environmental Sciences
The University of Montana Western
710 S. Atlantic Steet Dillon, MT 59725

Phone: (518) 229-7764

Email: arica.crootof@umwestern.edu

Department Website: <https://www.umwestern.edu/department/environmental-sciences/>

Personal Website: [acrootof@wordpress.com](http://acrootof.wordpress.com)

As a professor, I focus on experiential learning opportunities where students explore human-environment interactions and practice environmental stewardship throughout the Greater Yellowstone and High Divide regions.

As a scientist, I examine the human-dimensions of water and energy resources in mountain river basins and I work to advance science education and communication.

EDUCATION

- 2019 Ph.D. School of Geography and Development
University of Arizona, Tucson, AZ
Dissertation: *Nepal's Hydropower Boom and its Implications for Water Resources: Challenges and opportunities at the intersection of food and energy production in the Gandaki River Basin*
Minor: Natural Resources
Graduate Certificate: College Teaching
- 2011 M.S. Hydrology
University of Nevada, Reno, NV
Thesis: *Assessing Water Resources in Khorezm, Uzbekistan for the Development of Aquaculture*
- 2007 B.A. Environmental Science
Colorado College, Colorado Springs, CO
Thesis: *Human Impact of Suspended Sediment Loads in Mountain Streams of Puerto Rico*

PROFESSIONAL EXPERIENCE

Academic Positions

- 2022 - Present Associate Professor of Environmental Sustainability, The University of Montana Western, Environmental Sciences Department, Dillon, MT
- 2018 – 2022 Assistant Professor of Environmental Sustainability, The University of Montana Western, Environmental Sciences Department, Dillon, MT

Research Experience

- 2023 – 2024 Principal Investigator, Montana Water Center, Faculty Seed Grant: *Understanding Irrigator Decision-Making to Design for Drought in the Upper Missouri Headwaters*
- 2022 – 2023 Principal Investigator, Montana National Science Foundation (NSF), EPSCoR CREWS Workforce Development Seed Funding Award: *Promoting Community Resilience Through Understanding: Connecting Science to Communities in the Upper Clark Fork Watershed*
- 2019 – 2022 Principal Investigator, Montana National Science Foundation (NSF), EPSCoR CREWS Workforce Development Seed Funding Award: *Promoting Community Resilience Through Understanding: Social Perceptions of Water Quality and Contamination in the Upper Clark Fork River Watershed*
- 2017 Graduate Research PhD Fellow, International Centre for Integrated Mountain Development (ICIMOD), Kathmandu, Nepal
- 2017 Graduate Research Associate, Udall Center for Studies in Public Policy, University of Arizona, Lloyd's Register Foundation (LRF): *International Water Security Network*
- 2015 – 2016 Graduate Research Associate, Udall Center for Studies in Public Policy, University of Arizona, NSF: *Strengthening resilience of arid region riparian corridors: Ecohydrology and decision making in the San Pedro River and Rio San Miguel watersheds*
- 2015 – 2016 Graduate Research Associate, Udall Center for Studies in Public Policy, University of Arizona, Consultative Group for International Agricultural Research (CGIAR): *The irrigation-hydropower nexus in the Ganges headwaters*
- 2009 – 2011 Graduate Research Assistant, Department of Natural Resources and Environmental Science, University of Nevada, Reno, NSF: *Investigating pesticide contamination in small lakes in Khorezm, Uzbekistan*

2006 Researcher, NSF Research Experience for Undergraduates (REU), The Water Center, Colorado State University, NSF: *CNH: Modeling Complex Interactions of Overlapping River and Road Networks in a Changing Landscape* in Luquillo Mountains, Puerto Rico

Teaching Experience, Instructor of Record, University of Montana Western

100 – 200 Environmental Sustainability
Level Environmental Sustainability (online)
 Sustaining Water Resources
 Natural Resources Conflict Resolution
 Environmental Interpretation

300 – 400 Environmental Remote Sensing and GIS
Level Environmental Education
 Environmental Policy
 Sustainable Natural Resources Management
 Human Dimensions of Global Change
 Topics in Environmental Sustainability

Teaching Experience, Instructor of Record, University of Arizona

EVS/GEOG 304: Water, Environment, and Society
EVS 260: Environmental Studies: Ideas and Institutions (online)
GEOG 170: Introduction to Physical Geography (online)

Consulting Experience

2011 – 2014 *Project Hydrologist II*, Lidstone and Associates, Inc., Fort Collins, CO
Coordinated interdisciplinary water resources management and development projects that included surface and groundwater quality monitoring, stream restoration, and uranium mine permitting, monitoring, and reclamation

PUBLICATIONS

Refereed Journal Articles

Ptak, T., **Crootof, A.**, Harlan, T., & Kelly, S. (2022). Critically evaluating the purported global “boom” in small hydropower development through spatial and temporal analysis. *Renewable and Sustainable Energy Reviews*, 163(April), 112490.
<https://doi.org/10.1016/j.rser.2022.112490>

Crootof, A., Shrestha, R., Albrecht, T., Ptak, T., & Scott, C. A. (2021). Sacrificing the local to support the national: Politics, sustainability, and governance in Nepal’s hydropower paradox. *Energy Research & Social Science*, 80, 102206.
<https://doi.org/https://doi.org/10.1016/j.erss.2021.102206>

Albrecht, T*, **A. Crootof***, and C.A. Scott (2018) The water-energy-food nexus: A systematic review of methods for nexus assessment. Invited review for *Environmental Research Letters*, 13(4). <https://doi.org/10.1088/1748-9326/aaa9c6>

* *These authors contributed equally to this work*

Won Best Review Award for 2018 by Editorial Board, *Environmental Research Letters*

Rosen, M.R., **A. Crootof**, L. Reidy, L. Saito, B. Nishnonov, and J. Scott (2018) The origin of shallow lakes in the Khorezm Province, Uzbekistan, and the history of pesticide use around these lakes. *Journal of Paleolimnology*, 159(2), 201-219.

<https://doi.org/10.1007/s10933-016-9914-2>

Kelly-Richards, S., N. Silber-Coats, **A. Crootof**, D. Tecklin, and C. Bauer (2017) Governing the transition to renewable energy: A review of impacts and policy issues in the small hydropower boom. *Energy Policy*, 101, 251-264.

<https://doi.org/10.1016/j.enpol.2016.11.035>

Mills-Nova, M., S. Borges, **A. Crootof**, and B. Thapa (2016) Bringing the hydro-social cycle into climate change adaptation planning: lessons from the mountain water towers of the Andes. For “Mountains” Special Issue of the *Annals of the American Association of Geographers*, 107(2), 393–402. <http://dx.doi.org/10.1080/24694452.2016.1232618>

Crootof, A., N. Mullabaev, L. Saito, L. Atwell, M.R. Rosen, M. Bekchonova, E. Ginatullina, J. Scott, S. Chandra, B. Nishonov, J.P. Lamers, and D. Fayzieva (2015) Hydroecological condition and potential for aquaculture in lakes of the arid region of Khorezm, Uzbekistan. *Journal of Arid Environments*, 117, 37-46.

<https://doi.org/10.1016/j.jaridenv.2015.02.012>

Book Chapters

Scott, C.A., **A. Crootof**, S. Kelly-Richards (2016) The urban water-energy nexus: Drivers and responses to global change in the ‘urban century’. In H. Hettiarachchi, R. Ardakanian (eds.) *Environmental Resource Management and the Nexus Approach: Managing Water, Soil, and Waste in the Context of Global Change*, Springer, Berlin

Scott, C.A., **A. Crootof**, B. Thapa, R.K. Shrestha (2016) The water-energy-food nexus in the Ganges Basin: Challenges and opportunities. In L. Bharati, V. Smakhtin, B.R. Sharma (eds.) *The Ganges River Basin: Status and Challenges in Water, Environment and Livelihoods*, Earthscan, London

Popular Writing

Crootof, A. [Rivers of Caution: What Dams in the Himalayas Tell Us About Energy and Justice](#) (2017) Terrian.org: A Journal of the Built + Natural Environments

Crootof, A. A photo essay of the water-energy-food nexus in the Himalayas (2017) International Water Security Network (IWSN) Blog:

<http://www.watersecuritynetwork.org/a-photo-essay-of-the-water-energy-food-nexus-in-the-himalayas/>

Crootof, A. Ph.D. Research in Nepal Part 1: Packing for Nepal (2017) International Water Security Network (IWSN) Blog: <http://www.watersecuritynetwork.org/ph-d-research-in-nepal-before-and-after-part-1/>

GRANTS, FELLOWSHIPS & AWARDS

Grants

2023	Montana Water Center Faculty Seed Grant (\$18,678)
2022	Montana NSF EPSCoR CREWS Seed Funding Award (\$7,431)
2022	UMW Development Funds (\$1,116)
2022	UMW Foundation, Experiential Learning Grant (\$2,850)
2021	Montana NSF EPSCoR CREWS Supplemental Seed Funding (\$5,000)
2021	UMW Development Funds, Green River Field Institute Course (\$2,800)
2020	UMW Foundation, Experiential Learning Grant (\$2,040)
2019	Montana NSF EPSCoR CREWS Seed Funding Award (\$10,000)
2019	Effectively Communicating Science Workshop-Expert Witness Training Academy, Mitchell Hamline School of Law, with funding from the Paleoclimate Program at the National Science Foundation (NSF) (all expenses paid)
2018	Sustainable Development Goals Travel Grant, Univ. of Arizona (\$2,000)
2018	Graduate and Professional Student Council Travel Grant, Univ. of Arizona (\$750)
2017	U.S. Borlaug Fellow Research Grant in Global Food Security, USAID (\$20,000)
2016	Graduate and Professional Student Council Travel Grant, Univ. of Arizona (\$750)
2016	Grad Student Travel Grant, Institute of the Environment, Univ. of Arizona (\$500)
2015	SESYNC Socio-Environmental Synthesis Research Proposal Writing Workshop Travel Grant (all expenses paid)
2015	Graduate and Professional Student Council Travel Grant, Univ. of Arizona (\$750)
2007	Expedition Grant, Ritt Kellogg Memorial Fund (\$4,500)

Fellowships

2023	Energy Expansion Research Cohort, Second Nature (\$10,000)
2023	NSF-RIVER Field Studies Scholar (\$4,000)
2018	School of Behavioral Sciences Summer Dissertation Fellowship (\$5,000)
2017	Confluentcenter Fellowship, Univ. of Arizona (\$5,000)
2016	Renewable Energy Network Summer Fellowship, Univ. of Arizona (\$5,000)
2016	Carson Scholar Fellow, Univ. of Arizona (\$5,000)
2006	NSF-REU Summer Fellow (\$3,000)

Awards

2019	Best Review Article by Editorial Board <i>Environmental Research Letters</i> (£300)
------	---

2018	Scholarship Award for WaterSmart Innovations Conference (all expenses paid)
2018	Student Research Award, AAG Water Resources Specialty Group (\$200)
2018	Student Research Award, AAG Energy & Environment Specialty Group (\$500)
2018	Student Research Award, AAG Mountain Geography Specialty Group (\$500)
2011	High Impact Award in Dept. of Hydrologic Sciences, Univ. of Nevada, Reno
2011	Student Poster Award, Nevada Water Resources Association (NWRA) (\$250)
2007	Distinguished Service Award in Environmental Science, Colorado College

PRESENTATIONS

Papers Presented

Crootof, A. (2022) *Designing Collaborative Projects to Create Usable Science*
Water in the West: Towards Convergent Solutions for Water Security, Montana State University, May 2022

Crootof, A. (2022) *Rivers of Caution and Promise: Opportunities in Nepal's hydropower Boom* American Association of Geographers (AAG) Annual Meeting, Remote, February 2022

Crootof, A. (2021) *Survey Results: Public Use and Perceptions of the Warm Springs Ponds, MT.* Clark Fork Stakeholder Meeting, Remote, September 2021

Crootof, A. (2021) *Restoring the Upper Clark Fork: Integrating Public Perceptions of the Warm Springs Ponds & Conducting Collaborative Research for Successful River Restoration.* American Fisheries Society, Montana Chapter Meeting, Remote, March 2021

Crootof, A. (2020) *Designing Collaborative Research: Understanding Public Perceptions of the Warm Springs Ponds to Inform Reclamation Needs.* Institute on Ecosystems, Montana State University Rough Cut Seminar Series. September 2020

Crootof, A. (2018) *The Transformative Power of Nepal's Hydropower Boom on Water Resources.* American Association of Geographers (AAG) Annual Meeting, New Orleans, LA, April 2018

Crootof, A. (2017) *Interventions and Interactions: Understanding Coupled Human-Water Dynamics for Improved Water Resources Management in the Himalayas* (H44F-003-258094). American Geophysical Union (AGU) Fall Meeting, New Orleans, Louisiana, Dec 2017

Crootof, A. (2016) *A Social-Ecological Systems Perspective on Small Hydropower in the Indian Himalayas.* American Association of Geographers (AAG) Annual Meeting, Chicago, IL, March 2016

Crootof, A. (2016) *Renewable Energy Transitions: Small Hydropower Development in the Indian Himalayas*. Arizona Student Energy Conference, Annual Meeting, Flagstaff, AZ, September 2016

Crootof, A., N. Mullabaev, L. Saito, L. Atwell, M.R. Rosen (2015) *Hydroecological Condition and Potential for Aquaculture in Lakes of the Arid Region of Khorezm, Uzbekistan*. Association of American Geographers (AAG) Annual Meeting, Chicago, April 2015

Crootof, A., L. Saito, M. Rosen, E. Marchand, B. Nishonov, J. Lamers, D. Fayzieva (2011) *Assessing water resources in Khorezm, Uzbekistan for the development of aquaculture*. American Society of Limnology and Oceanography Ocean Sciences Meeting. San Juan, Puerto Rico. Feb 2011

Crootof, A., L. Lassaline, and C. Fitzgerald (2011) *Students Educating Students: International Water Development Through Education*. American Society for Limnology and Oceanography Ocean Sciences Meeting, San Juan, Puerto Rico. Feb 2011

Posters Presented

Crootof, A*., T. Albrecht*, and C.A. Scott (2017) *The Water-Energy-Food Nexus: Advancing Innovative, Policy-Relevant Methods* (GC21F- 299223). American Geophysical Union (AGU) Fall Meeting, New Orleans, Louisiana, Dec 2017
* *These authors contributed equally to this work*

Rosen MR, L. Saito, L. Reidy, **A. Crootof,** J. Scott, B. Nishonov (2015) *The origin of shallow lakes in Khorezm, Uzbekistan*. International Limnology Congress 2015. Reno, Nevada. June 2015

Crootof, A., L. Saito, M. Rosen, E. Marchand, B. Nishonov, J. Lamers, D. Fayzieva (2011) *Assessing water resources in Khorezm, Uzbekistan for the development of aquaculture*. Nevada Water Resources Association Conference. Reno, Nevada. Feb 2011

Crootof, A., L. Saito, E. Marchand, M. Rosen, J. Scott, B. Nishonov B. J. Lamers (2010) *Determining the fate of organochlorine pesticides in Khorezm, Uzbekistan*. Nevada Water Resources Association Annual Conference. Las Vegas, Nevada. March 2010

Panels

Crootof, A. (2022) Organizer, *Innovations in socio-hydrology – Integrating and engaging with Knowledge Pluralities in Mountain River Basins*, American Association of Geographers (AAG) Annual Meeting, Remote, February 2022

Crootof, A. (2018) Panelist, *Small Hydropower in Policy and Practice*. American Association of Geographers (AAG) Annual Meeting, New Orleans, LA, April 2018

SERVICE & OUTREACH

American Association of Geographers (AAG)

2022 – Present Secretary, Energy & Environment Specialty Group
Diversity, Equity & Inclusion Committee
Energy & Environment Conference Committee

University of Montana Western

2023 – Present Chair, Department of Environmental Sciences
2018 – Present Faculty Advisor, Terra Verde Club
2022 – Present Faculty Advisor, RMS Rivers Studies Leadership Certificate
2018 – Present Faculty Representative, International Committee
Chair/Co-Chair, 2020 – Present
2019 – 2023 Faculty Representative, Faculty Senate
Secretary, 2020 – Present
2022 – 2023 Faculty Representative, Faculty Development Committee
2018 – 2023 Faculty Representative, Orientation Committee
2019 – 2020 Faculty Representative, Steering Committee

Dillon, Montana

2019 – Present Southwest Montana Rural Advisory Council (RAC), U.S. Forest Service
2019 Southwest Montana Collaborative Committee on Public Lands with
Efficient Public Collaboration, Potlatch, ID