

Ryan Morrison

Education

- 2014 **PhD Civil Engineering (Distinction)**, *University of New Mexico*, Albuquerque, NM,
Department of Civil Engineering.
Dissertation title: Managing Complex Water Resource Systems for Ecological Integrity: Evaluating Tradeoffs and Uncertainty
- 2006 **MS Civil Engineering**, *Washington State University*, Pullman, WA,
Department of Civil and Environmental Engineering.
- 2004 **BS Civil Engineering**, *Washington State University*, Pullman, WA,
Department of Civil and Environmental Engineering.

Professional Experience

- 2016–Present **Assistant Professor**, *Colorado State University, Department of Civil and Environmental Engineering*, Fort Collins, CO.
- 2015–2016 **Research Environmental Engineer**, *United States Geological Survey, Fort Collins Science Center, Aquatic Sciences Branch*, Fort Collins, CO.
- 2014–2015 **Postdoctoral Fellow**, *Center for Water and the Environment, Dept. of Civil Engineering, University of New Mexico*, Albuquerque, NM.
- Fall 2014 **University Instructor (Hydrogeology – CE 541)**, *Dept. of Civil Engineering, University of New Mexico*, Albuquerque, NM.
Planned and delivered course lectures and instructed Hydrogeology course to undergraduate and graduate students
- Spring 2014 **Graduate Research Assistant**, *Dept. of Civil Engineering, University of New Mexico*, Albuquerque, NM.
Researched influence of system uncertainty on environmental flows in complex management systems
- Fall 2013 **University Instructor (Fluid Mechanics – CE 331)**, *Dept. of Civil Engineering, University of New Mexico*, Albuquerque, NM.
Planned and delivered course lectures and instructed Fluid Mechanics course to junior- and senior-level students
- Summer 2013 **Workshop Instructor (Hydraulic Modeling)**, *USAID/NSF Partnership for Enhanced Engagement in Research Science*, Dead Sea, Jordan.
Seminar presenter and workshop instructor for hydraulic modeling course. The workshop was co-organized by Al-albayt University, Jordan.

- 2011–2013 **Graduate Research Assistant (Hydro Research Fellow)**, *Dept. of Civil Engineering, University of New Mexico, Albuquerque, NM.*
- Researched influence of system uncertainty on environmental flows in complex management systems
 - Awarded \$94,000 grant from the Hydro Research Foundation based on my research proposal
- 2010 **Teaching Assistant**, *Dept. of Civil Engineering, University of New Mexico, Albuquerque, NM.*
 Instructed Fluid Mechanics Laboratory for approximately 40 junior- and senior-level students
- 2006–2010 **Water Resources Engineer**, *HDR Engineering, Inc., Portland, OR.*
- Managed private and municipal clients as a consulting engineer
 - Constructed numerous hydrologic and hydraulic models using HEC-RAS, HEC-ResSIM, HEC-HMS, XPSWMM, and ArcGIS
 - Earned Professional Engineering license
- 2005–2006 **Graduate Research Assistant**, *Dept. of Civil Engineering, Washington State University, Pullman, WA.*
 Studied turbulence flow characteristics inside a retrofitted culvert and the implications to upstream fish passage
- 2005 **Undergraduate Research Assistant**, *Dept. of Civil Engineering, Washington State University, Pullman, WA.*
 Assisted doctoral student in field and lab research on describing turbulence flow in cobble-bed rivers and implications to benthic organisms

Publications

- In Prep. Grantham, T. and **Morrison, R.R.** *Geomorphic alterations and ecological responses.* Freshwater Biology. In preparation.
- In Prep. Nardi, F., **Morrison, R.R.**, Annis, A., and Grantham, T. *A hydrogeomorphic approach for large-scale floodplain mapping.* Hydrology and Earth System Sciences. In preparation.
- In Prep. Gregory, A., **Morrison, R.R.**, and Stone, M.C. *Application of hydrodynamics model to the development of environmental flows in the semi-arid Rio Chama river basin, NM, USA.* Environmental Management. In preparation.
- In Review Stone, M.C., Byrne, C.F., and **Morrison, R.R.** *Evaluating the impacts of hydrologic alteration on floodplain connectivity.* Ecohydrology. In review.
- 2016 Harm Benson, M., Lippitt, C.D., **Morrison, R.R.**, Cosens, B., Boll, J., Chaffin, B.C., Fremier, A.K., Heinse, R., Kauneckis, D., Link, T.E., Scruggs, C., Stone, M., and Vanessa, V. 2016. *Five ways to support interdisciplinary work before tenure.* Journal of Environmental Studies and Science 6(2): 260-267. DOI: 10.1007/s13412-015-0326-9.
- 2015 **Morrison, R.R.** and Stone, M.C. 2015. *Investigating environmental flows for riparian vegetation recruitment using system dynamics modeling.* River Research and Applications 31(4):485-496. DOI: 10.1002/rra.2758.
- 2015 **Morrison, R.R.** and Stone, M.C. 2015. *Evaluating the impacts of environmental flow alternatives on reservoir and recreational operations using system dynamics modeling.* Journal of the American Water Resources Association (JAWRA) 51(1):33-46. DOI: 10.1111/jawr.12231.

- 2014 Harm Benson, M., Llewellyn, D., **Morrison, R.R.**, and Stone, M.C. *Water governance challenges in New Mexico's Middle Rio Grande Valley: a resilience assessment*. Idaho Law Review 51(1):195-228. Access URL: <http://www.uidaho.edu/law/law-review/articles>.
- 2014 **Morrison, R.R.** and Stone, M.C. 2014. *Spatially implemented Bayesian network model to assess environmental impacts of water management*. Water Resources Research 50(1):8107-8124. DOI: 10.1002/2014WR015600.
- 2013 **Morrison, R.R.**, Stone, M.C., and Sada, D. 2013. *Environmental response of a desert springbrook to incremental discharge reductions, Death Valley National Park, California, USA*. Journal of Arid Environments 99:5-13. DOI: 10.1016/j.jaridenv.2013.09.002.
- 2013 Harm Benson, M., **Morrison, R.R.**, and Stone, M.C. 2013. *A classification framework for running adaptive management rapids*. Ecology and Society 18:30. DOI: 10.5751/ES-05707-180330.
- 2009 **Morrison, R.R.**, Hotchkiss, R.H., Stone, M.C., Thurman, D., and Horner-Devine, A.R. 2009. *Turbulence characteristics of flow in a spiral corrugated culvert fitted with baffles and implications for fish passage*. Ecological Engineering 35(3):381-392. DOI: 10.1016/j.ecoleng.2008.10.012

Presentations

- 2016 **Morrison, R.** and Dong, Q. *Levee Presence and Wetland Areas within the 100-Year Floodplain of the Wabash Basin*. American Geophysical Union Fall Meeting. San Francisco, California. December 12–16, 2016.
- 2016 Stone, M., Byrne, C., and **Morrison, R.**, *Assessment of hydrologic alteration using floodplain connectivity metrics*. Ecological Society of America Annual Meeting 2016. Fort Lauderdale, Florida. August 7–12, 2016.
- 2016 Grantham, T., Nardi, F., **Morrison, R.**, and Annis, A. *A hydrogeomorphic approach for large-scale floodplain mapping*. American Water Resources Association Summer Speciality Conference: GIS and Water Resources IX. Sacramento, California. July 11–13, 2016.
- 2015 Stone, M., Byrne, C., and **Morrison, R.** *Working with natural processes to restore rivers and floodplains*. American Geophysical Union Fall Meeting. San Francisco, California. December 14–18, 2015.
- 2015 Hausner, M., Bailey Gaines, D., **Morrison, R.**, Sada, D., Gary Scoppettone, G., Stone, M., Suáez, F., Tyler, S., and Wilson, K. *Physical thresholds as ecological proxies in aquatic ecosystems*. American Geophysical Union Fall Meeting. San Francisco, California. December 14–18, 2015.
- 2015 Jaramillo, L., Stone, M., and **Morrison, R.** *Science-based policy for Himalayan rivers of Nepal*. AWRA Annual Water Resources Conference. Denver, Colorado. November 16–19, 2015.
- 2015 Stone, M. and **Morrison, R.** *Consideration of longitudinal and lateral connectivity when evaluating environmental flows*. 4th Biennial Symposium of the International Society for River Science. La Crosse, Wisconsin. August 23–28, 2015.
- 2015 Hausner, M., Sada, D., **Morrison, R.**, and Stone, M. *Integrating physical and ecological methods to assess changing spring-fed aquatic ecosystems*. Science for Parks, Parks for Science: The Next Century, Berkeley, California. March 25–27, 2015.

- 2014 Stone, M., **Morrison, R.**, and Samson, J. *Modeling of riparian ecohydrology in the Gila River*. American Society of Civil Engineers New Mexico Section Fall Conference, Albuquerque, New Mexico. September 12, 2014.
- 2014 Benson, M., Stone, M., Llewellyn, D., **Morrison, R.**, Cosens, B., Gunderson, L., and Allen, C. *Adaptive governance and social-ecological system resilience in New Mexico's Rio Grande Valley*. Association of Environmental Studies as Sciences Annual Meeting, New York, New York. June 11–14, 2014.
- 2014 **Morrison, R.R.** and Stone, M.C. *Evaluating flow scenario impacts on riparian vegetation recruitment using Bayesian network modeling*. Joint Aquatic Sciences Meeting. Portland, Oregon. May 18–23, 2014.
- 2013 **Morrison, R.R.**, Stone, M.C. and Sada, D.W. *Impacts of Discharge Reductions on Physical and Thermal Habitat Characteristics in a Desert Spring, Death Valley National Park, California, USA*. American Geophysical Union Fall Meeting. San Francisco, California. December 9–13, 2013.
- 2013 **Morrison, R.R.** and Stone, M.C. *Using system dynamics modeling to evaluate environmental flows in the Rio Chama, NM*. 58th Annual New Mexico Water Conference. Albuquerque, New Mexico. November 21–22, 2013.
- 2013 **Morrison, R.R.** *Evaluating tradeoffs of water resource management alternatives using system dynamics modeling*. Hydrovision International. Denver, Colorado. July 23–26, 2013.
- 2013 **Morrison, R.R.** and Stone, M.C. *Implementing environmental flows in complex water resource systems: the Rio Chama, New Mexico, USA*. 3rd Biennial Symposium of the International Society for River Science. Beijing, China. August 5–9, 2013.
- 2012 **Morrison, R.R.** *Optimizing hydropower benefits in reservoir operations on the Rio Chama, New Mexico*. Hydrovision International. Louisville, Kentucky. July 17–20, 2012.
- 2012 **Morrison, R.R.** and Stone, M.C. *Determining the hydrologic effects of water management efforts on the Rio Chama, New Mexico, using indicators of hydrologic alteration analyses*. Association of the Sciences of Limnology and Oceanography. Lake Biwa, Shiga, Japan. July 8–13, 2012.
- 2012 Harris, S., Harvey, M., Stone, M., **Morrison, R.**, Caplan, T., Gustina, G., and Harm Benson, M. *Flow optimization for geomorphic and ecological improvements in the wild and scenic reach of the Rio Chama, New Mexico*. World Environmental & Water Resources Congress, American Society of Civil Engineers. Albuquerque, New Mexico. May 20–24, 2012.
- 2011 **Morrison, R.R.**, Stone, M.C., and Sada, D.W. *Detecting impacts of climate change on arid land spring-fed aquifer systems. An example from a Death Valley National Park thermal spring*. The US Society for Irrigation and Drainage Professionals. Albuquerque, New Mexico. April 26–29, 2011.
- 2008 **Morrison, R.R.**, Hotchkiss, R.H., Stone, M.C., Thurman, D., and Horner-Devine, A.R. *Turbulence characteristics of flow in a spiral corrugated culvert fitted with sloped- and slotted-weir baffles*. World Environmental & Water Resources Congress, American Society of Civil Engineers. Honolulu, Hawaii. May 12–16, 2008.

- 2007 Thurman, D.R., Horner-Devine, A.R., **Morrison, R.R.**, and Hotchkiss, R.H. *Juvenile salmon passage in sloped-baffled culverts*. International Conference on Ecology and Transportation. Little Rock, Arkansas. May 20–25, 2007.
- 2006 **Morrison, R.R.**, Thurman, D.R., Compton, A.F., Hotchkiss, R.H., and Horner-Devine, A.R. *Turbulence characteristics of flow in a culvert with sloped-weir baffles*. World Environmental & Water Resources Congress, American Society of Civil Engineers. Omaha, Nebraska. May 21–26, 2006.
- 2006 Stone, M.C., Hotchkiss, R.H., and **Morrison, R.R.** *Turbulence observations in cobble-bed rivers*. World Environmental & Water Resources Congress, American Society of Civil Engineers. Omaha, Nebraska. May 21–26, 2006.
- 2006 Thurman, D.R., Horner-Devine, A.R., **Morrison, R.R.**, Hotchkiss, R.H., and Compton, A.F. *Hydrodynamics of juvenile salmon passage in sloped-baffle culverts*. World Environmental & Water Resources Congress, American Society of Civil Engineers. Omaha, Nebraska. May 21–26, 2006.
- 2005 Stone, M.C., Hotchkiss, R.H., and **Morrison, R.R.** *Periphyton scour from hydraulic disturbances*. World Environmental & Water Resources Congress, American Society of Civil Engineers. Anchorage, Alaska. May 15–19, 2005.

Technical Reports

- 2014 Gori, D., Cooper, M.S., Soles, E.S., Stone, M., **Morrison, R.**, Turner, T.F., Propst, D.L., Garfin, G., Switanek, M., Hsin-I, C., Bassett, S., Haney, J., Lyons, D., Horner, M., Dahm, C.N., Frey, J.K., Kindscher, K., Walker, H.A., and Bogan, M.T. 2014. *Gila River Flow Needs Assessment*. The Nature Conservancy. URL: <http://nmconservation.org/Gila/GilaFlowNeedsAssessment.pdf>.
- 2010 HDR Engineering, Inc. *Mill Creek Storage Feasibility Hydraulic Design Analysis*. Prepared for Stevens County Public Utility District, Washington.
- 2009 HDR Engineering, Inc. *Bonneville Dam Spillway and Stilling Basin Reconfiguration for Fish Passage Alternative Report*. Prepared for U.S. Corps of Engineers, Portland District.
- 2009 HDR Engineering, Inc. *The Dalles East Fish Ladder Auxiliary Water Backup System. Prepared for U.S. Corps of Engineers, Portland District*. Prepared for U.S. Corps of Engineers, Portland District.

Service Activities

Editorial Positions

- 2015–Present Associate Editor in Surface Hydrology,
Journal of the American Water Resources Association (JAWRA)

Peer Reviews

- 2015 Earth Surface Processes and Landforms
2011 Water Resources Research

Extramural Funding

- \$25,000 Southern Sandoval County Flood Control Authority, 2014 (co-PI)

- \$25,000 Middle Rio Grande Conservancy District, 2014 (co-PI)
- \$12,000 National Science Foundation, 2013 (co-authored)
- \$94,000 Hydro Research Foundation, 2011 (lead PI)

Professional Licenses

- 2010 Professional Engineering license (PE). Oregon state.

Honors and Awards

- 2014 Outstanding Graduate Student of the Year, University of New Mexico.
- 2013 Future Faculty Award, University of New Mexico.
- 2013 Graduate Dean's Dissertation Fellowship, University of New Mexico.
- 2011 Hydro Research Foundation Fellowship, University of New Mexico.
- 2011 American Society of Civil Engineers Freeman Fellowship, University of New Mexico.
- 2010 American Water Resources Associate New Mexico Chapter Scholarship, University of New Mexico.
- 2006 Harold P. Curtis Scholarship, Washington State University.

Professional Memberships

- American Society of Civil Engineers (ASCE)
- American Water Resources Association (AWRA)
- American Geophysical Union (AGU)
- International Society for River Science (ISRS)
- Society for Freshwater Science (SFS)