

## Michelle A. Baker

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### Education

Ph.D. 1998 Biology, University of New Mexico, Albuquerque, NM  
B.S. 1992 Biology (with Honors), Lafayette College, Easton, PA

### Professional Appointments

2018- Associate Dean for Research and Faculty, College of Science, Utah State University  
2011 - Professor, Department of Biology, Utah State University  
2014 - 2018 Project Director and Principal Investigator, iUTAH EPSCoR  
2011 - 2014 Associate Head, Department of Biology, Utah State University  
1999 - 2011 Assistant then Associate Professor, Department of Biology, Utah State University  
1998 - 1999 NSF-NATO Postdoctoral Fellow, Centre d'Ecologie des Systèmes Aquatiques Continentaux, CNRS/Université Paul Sabatier, Toulouse, France

### Academic Interests

I study biological, chemical, and physical processes that affect water quality in streams and rivers. This is important because clean water is an ecosystem service upon which life depends, and water in the Intermountain West is an increasingly threatened resource. My work aims to understand and protect healthy freshwater ecosystems.

### Professional Affiliations

Society for Freshwater Science  
Society for the Advancement of Chicanos and Native Americans in Science  
Earth Science Women's Network

### Citations and Indices (Google Scholar, accessed 13 September 2019)

Citations	2698
h - index	27
i10 - index	39

### Awards

Pioneer of Progress Award in Science and Technology, 2017  
Governor's Medal for Science and Technology, 2015  
Faculty University Service Award, College of Science, Utah State University, 2015  
Researcher of the Year, College of Science, Utah State University, 2014  
Undergraduate Research Mentor of the Year. College of Science, Utah State University, 2013

Best Paper Award, Soil Science Society of America Annual Meeting, for Van Miegroet, H., J. Boettinger, and M. Baker "Soil organic quality in wildland soils: what is it and why is it important?" 2006

USU Mortar Board Top Professor, 2005

Hynes Award for New Investigators, An award recognizing excellence in benthic science for an influential paper published by a young scientist. The North American Benthological Society, 2001

NSF-NATO Postdoctoral Fellowship, 1998

Wildco Award for Best Oral Presentation by a Student in Basic Research, North American Benthological Society, 1998

Outstanding Student Presentation Award, Hydrology Section, American Geophysical Union Fall Meeting, 1996

Willis Roberts Hunt Prize, Awarded to the student showing most promise for a career in Biology, Lafayette College, 1992

### **Awards to Students**

Society for Freshwater Science Graduate Conservation Research Award to Rachel Buck (PhD student) 2019.

College of Science Zobell Scholarship to Rachel Buck (PhD student) 2019.

Society for Freshwater Science Presidential Endowment Award to Julie Kelso (Ph.D. 2018) 2015.

Presidential Doctoral Research Fellowship to Beth Ogata (Ph.D. student) 2013-2017.

Fellowship to Sam Hochhalter (M.S. 2009). Environmental Protection Agency-Science to Achieve Results Graduate Fellowship. 2008-2009.

James A. and Patty MacMahon Scholarship to Keli Goodman (Ph.D. 2010). 2008.

North American Benthological Society Presidential Endowment Award to Keli Goodman (Ph.D. 2010). 2007.

Fellowship to Keli Goodman (Ph.D. 2010). Inland Northern Research Alliance Subsurface Science Graduate Fellowship 2006-2008.

Fellowship to Christopher Arp (Ph.D. 2006). Environmental Protection Agency-Science to Achieve Results Graduate Fellowship. 2004-2006.

Outstanding Student Poster, Joint meeting of the North American Benthological Society and American Geophysical Union, for Myers, A.K., A.M. Marcarelli, C.D. Arp, W.W. Wurtsbaugh and M.A. Baker "Lake disruptions on sediment mobility and effects on benthic chlorophyll." May 2005.

Fellowship to Christopher Arp (Ph.D. 2006). Inland Northern Research Alliance Subsurface Science Graduate Fellowship 2002-2004.

## Peer Reviewed Publications

\* Graduate student co-author

‡ Undergraduate student co-author

§ Postdoc/post-MS co-author

- Jones, E.F.\* , N. Griffin‡, J.E. Kelso\*, G. Carling, **M.A. Baker**, and Z.T. Aanderud. In review. Stream microbial community structured by trace elements, headwater dispersal, and large reservoirs in sub-alpine and urban ecosystems. *Frontiers in Microbiology*.
- Kelso, J.E.\* , and **M.A. Baker**. In revision. Using experimental streams to constrain realistic estimates of DOM decay confirms elusive non-additive effects in freshwater ecosystems. *Freshwater Science*.
- Kelso, J.E.\* , and **M.A. Baker**. In revision. Organic matter is a mixture of terrestrial, autochthonous, and wastewater effluent in an urban river. *Frontiers in Environmental Science*.
- Reisinger, A.J.\* , J.L. Tank, R.O. Hall, E.J. Rosi, **M.A. Baker**, and L. Genzoli\*. In revision. Water column contributions to the metabolism and nutrient dynamics of mid-sized rivers. *Limnology and Oceanography*.
- Wologo, E\*, S. Shakil\*, S. Zolkos\*, S. Textor\*, S. Ewing, J. Klassen, R.G.M. Spencer, S.E. Tank, **M.A. Baker**, J.A. O'Donnell, K.P. Wickland, S.S.W. Foks, J.P. Zarnetske, J. Lee-Cullin, F. Liu, Y. Yang, P. Kortelainen, J. Kolehmainen, J.F. Dean, J.E. Vonk, R.M. Holmes, G. Pinay, M.M. Powell, J. Howe, R. Frei, B.W. Abbott. In revision. No evidence of water-column dissolved organic matter priming throughout Arctic and subarctic catchments but surprising compositional similarities across circumpolar regions. *Global Biogeochemical Cycles*.
- Garner, J., A.L. Porter, A. Leidolf, and **M. Baker**. 2018. Measuring and visualizing research collaboration and productivity. *Journal of Data and Information Science*. 3: 54-81. DOI: 10.2478/jdis-2018-04.
- Spackman Jones, A., Z.T. Aanderud, J.S. Horsburgh, D. Eiriksson, D. Dastrup, C. Cox, S. Jones, D.R. Bowling, J. Carlisle, G.T. Carling, and **M.A. Baker**. 2017. Designing and implementing a network for sensing water quality and hydrology across mountain to urban transitions. *Journal of the American Water Resources Association (JAWRA)*. DOI: 10/1111/1752-1688.12557.
- Ye, S.\* , A.J. Reisinger \* , J.L. Tank, **M.A. Baker**, R.O. Hall, E.J. Rosi, and M. Sivapalan. 2017. Scaling dissolved nutrient removal in river networks: a comparative modeling investigation *Water Resources Research* 53. DOI: 10/1002/2017WR020858.
- Brunson, M.R., and **M.A. Baker**. 2016. Translational training for tomorrow's environmental scientists. *Journal of Environmental Studies and Sciences* 6: 295-299.
- Hall, S.J. § , E. Ogata\*, S.R. Weintraub§, **M.A. Baker**, J.R. Ehleringer, C.I. Czimczik, and D.R. Bowling. 2016. Convergence in nitrogen deposition and cryptic isotopic variation across urban and agricultural valleys in northern Utah. *Journal of Geophysical Research-Biogeosciences* 121:2340-2355.
- Epstein, D.M. § , J.E. Kelso\*, and **M.A. Baker**. 2016. Beyond the urban stream syndrome: Organic matter budgets for diagnostics and restoration of an impaired urban river. *Urban Ecosystems* 19: 1-21.
- Hall, S.J. § , **M.A. Baker**, S.B. Jones, J.M. Stark, and D.R. Bowling. 2016. Contrasting soil nitrogen dynamics across a montane meadow and urban lawn in a semi-arid watershed. *Urban Ecosystems* 19: 1083-1101.

- Hall, S.J.<sup>§</sup>, S.R. Weintraub<sup>§</sup>, P.D. Brooks, **M.A. Baker**, G.J. Bowen, and D.R. Bowling. 2016. Stream water nitrogen inputs reflects groundwater across a snowmelt-dominated montane-to-urban watershed. *Environmental Science and Technology*. 50: 1137-1146.
- Hall, S.J.<sup>§</sup>, R. Hale<sup>§</sup>, **M.A. Baker**, D.R. Bowling, and J.R. Ehleringer. 2015. Riparian plant isotopes reflect anthropogenic nitrogen perturbations: Robust patterns across land use gradients. *Ecosphere*. 6(10):1-16.
- Kelso, J.E.\* and **M.A. Baker**. 2015. Filtering with a drill pump: an efficient and cost effective method to collect suspended sediment and filtrate. *Journal of the American Water Resources Association*. 1-7. DOI: 10.1111/1752-1688.12368
- Hall, R.O., J.L. Tank, **M.A. Baker**, E.J. Rosi-Marshall, and E.R. Hotchkiss\*. 2015. Metabolism, gas exchange, and carbon spiraling in rivers. *Ecosystems* DOI:10.1007/s10021-015-9918-1.
- Reisinger, A.J.\* , J.L. Tank, E.J. Rosi-Marshall, R.O. Hall, and **M.A. Baker**. 2015. The varying role of water column nutrient removal along river continua in contrasting landscapes. *Biogeochemistry* 125: 115-131.
- Hale, R.<sup>§</sup>, A. Armstrong\*, **M. Baker**, S. Bedingfield<sup>‡</sup>, C. Buahin\*, M. Buchert, T. Crowl, R.R. Dupont, J. Ehleringer, J. Endter-Wada, C. Flint, J. Grant, S. Hinnners, J. Horsburgh, D. Jackson-Smith, A. Jones, C. Licon, S. Null, A. Odame\*, D. Pataki, D. Rosenberg, M. Runburg, P. Stoker\*, C. Strong. 2015. iSAW: Integrating structure, actors, and water to study socio-hydro-ecological systems. *Earth Futures* DOI:10.1002/2014EF000295.
- Hotchkiss, E.R.\* , R.O. Hall, **M.A. Baker**, E.J. Rosi-Marshall, and J.L. Tank. 2014. Modeling priming effects on microbial consumption of dissolved organic carbon in rivers. *Journal of Geophysical Research -Biogeosciences* DOI:10.1002/2013JG002599.
- Hall, R.O., **M.A. Baker**, E.J. Rosi-Marshall, J.L. Tank, and J.D. Newbold. 2013. Solute specific scaling of inorganic nitrogen and phosphorus uptake in streams. *Biogeosciences* DOI:10.5194/bg-10-1-2013. (note an earlier version of this paper was published in *Biogeosciences Discussions*).
- Hall, R.O., **M.A. Baker**, E.J. Rosi-Marshall, and J.L. Tank. 2013. Solute specific scaling of inorganic nitrogen and phosphorus uptake in streams. *Biogeosciences Discussions*. 10:6671-6693.
- Epstein, D.M.\* , W.A. Wurtsbaugh, and **M.A. Baker**. 2012, Nitrogen partitioning and transport through a subalpine lake measured with an isotope tracer. *Limnology and Oceanography* 57:1503-1516.
- Goodman, K.J.\* , **M.A. Baker**, and W.A. Wurtsbaugh. 2011. Lakes as buffers of stream dissolved organic matter (DOM) variability: Temporal patterns of DOM characteristics in mountain stream-lake systems. *Journal of Geophysical Research- Biogeosciences*. DOI:10.1029/2011JG001709.
- Zarnetske, J.P.\* , R.D. Haggerty, S.M. Wondzell, and **M.A. Baker**. 2011. Labile dissolved organic carbon supply limits hyporheic denitrification. *Journal of Geophysical Research- Biogeosciences*. DOI:10.1029/2011JG001730.
- Washbourne, I.J.\* , C.L. Crenshaw\* and **M.A. Baker**. 2011. Dissimilatory nitrate reduction pathways in an oligotrophic aquatic ecosystem: spatial and temporal trends. *Aquatic Microbial Ecology* 65:55-64.
- Zarnetske, J.P.\* , R.D. Haggerty, S.M. Wondzell, and **M.A. Baker**. 2011. Dynamics of nitrate production and removal as a function of residence time in the hyporheic zone: a <sup>15</sup>N tracer study. *Journal of Geophysical Research- Biogeosciences*. 116, G01025 DOI:10.1029/2010JG001356.

- Covino, T.\*, B. McGlynn, and **M.A. Baker**. 2010. Separating physical and biological nutrient retention and quantifying uptake kinetics from ambient to saturation in successive mountain stream reaches. *Journal of Geophysical Research- Biogeosciences*. 115, G04010 DOI:10.1029/2009JG001263.
- Goodman, K.J.\*, **M.A. Baker**, and W.A. Wurtsbaugh. 2010. Mountain lakes increase stream cellulose decomposition potential. *Journal of the North American Benthological Society* 29:521-529.
- Latta, L.C.IV\*, **M.A. Baker**, T. Crowl, J.J. Parnell<sup>§</sup>, B. Weimer, D. DeWald, and M.E. Pfrender. 2010. Species and genotype diversity drive community and ecosystem properties in experimental microcosms. *Evolutionary Ecology*. DOI: 10.1007/s10682-010-9457-3.
- Hall, R.O. Jr., **M.A. Baker**, C.D. Arp\*, and B.J. Koch\*. 2009. Hydrologic control of nitrogen removal, storage and export in a mountain stream. *Limnology and Oceanography* 54:2128-2142.
- Baker, M.A.**, G.deGuzman<sup>‡</sup>, and J. D. Ostermiller. 2009. Differences in nitrate uptake among benthic algal assemblages in a mountain stream. *Journal of the North American Benthological Society* 28: 24-33.
- Biggs, M.A.\*, M.N. Gooseff, C.D. Arp\*, and **M.A. Baker**. 2009. Informing a stream transient storage model with two-storage zones to discriminate in-channel dead zones and hyporheic exchange. *Water Resources Research* 45: W00D27 DOI:10.1029/2008/WR006959.
- Marcarelli, A.M.\*, **M.A. Baker** and W.A. Wurtsbaugh. 2008. Is in-stream nitrogen fixation an important nitrogen source for benthic communities and stream ecosystems? *Journal of the North American Benthological Society* 27:186-211.
- Rothlisberger\*, J.D., **M.A. Baker**, and P.C. Frost. 2008. Effects of periphyton stoichiometry on mayfly excretion rates and nutrient ratios. *Journal of the North American Benthological Society* 27:497-508.
- Tank, J.L., E.J. Rosi-Marshall, **M.A. Baker**, and R.O. Hall, Jr. 2008. Are rivers just big streams? Using a pulse method to measure nitrogen demand in a large river. *Ecology* 89:2935-2945.
- Vinson, M.R. and **M.A. Baker**. 2008. Poor growth of rainbow trout (*Oncorhynchus mykiss*) fed New Zealand mud snails (*Potamopyrgus antipodarum*). *North American Journal of Fisheries Management* 28:701-709.
- Arp\*, C.D. and **M.A. Baker**. 2007. Discontinuities in stream nutrient uptake below lakes in mountain drainage networks. *Limnology and Oceanography* 52: 1978-1990.
- Arp\*, C.D., J.C. Schmidt, **M.A. Baker**, and A.K. Myers<sup>‡</sup>. 2007. Stream geomorphology in a mountain lake district: Sediment links, lake-modified hydraulics, and downstream lake effects. *Earth Surface Processes and Landforms* 32: 525-543.
- Myers<sup>‡</sup>, A.K., A.M. Marcarelli\*, C.D. Arp\*. **M.A. Baker**, and W. Wurtsbaugh. 2007. Disruptions of stream sediment size and stability by lakes in mountain watersheds: potential effects on periphyton biomass. *Journal of the North American Benthological Society* 26:234-245.
- Arp\*, C.D., M.N. Gooseff, **M.A. Baker**, and W. Wurtsbaugh. 2006. Surface-water hydrodynamics and regimes of a small mountain stream-lake ecosystem. *Journal of Hydrology*. 329:500-513.
- Mendelson, J.R. III, E.D. Brodie, Jr., J.M. Malone, M.E. Acevedo, **M.A. Baker**, N.J. Smatresk, and J.A. Campbell. 2005. Amphibian chytridomycosis in Guatemala: Decline of a cloud-forest frog fauna. *Revista en Biología Tropical- Journal of Tropical Biology* 54:991-1000.

- Van Miegroet, H., J.L. Boettinger, **M.A. Baker**, J. Nielsen<sup>‡</sup>, D. Evans<sup>‡</sup>, and A. Stum<sup>‡</sup>. 2005. Soil carbon distribution and quality in a montane rangeland-forest mosaic in northern Utah. *Forest Ecology and Management*. 220:284-299.
- Valett, H.M., **M.A. Baker**, J.A. Morrice, C.S. Crawford, M.C. Molles, C.N. Dahm, D.L. Moyer, and J.R. Thibault. 2005. The flood pulse in a semi-arid riparian forest: metabolic and biogeochemical responses to inter-flood interval. *Ecology* 86:220-234.
- Baker, M.A.** and P. Vervier. 2004. Hydrologic variability, organic matter supply, and denitrification in the Garonne River ecosystem. *Freshwater Biology*. 49:181-190.
- Dahm, C.N., **M.A. Baker**, D.I. Moore, and J.R. Thibault. 2003. Biogeochemistry of surface waters and alluvial ground waters in streams and rivers during drought. *Freshwater Biology* 48:1219-1231.
- Vervier, P., L. Roques, **M.A. Baker**, F. Garabetian and P. Auriol. 2002. Biodegradation of dissolved free simple carbohydrates in surface, hyporheic and riparian waters of a large river. *Archiv für Hydrobiologie* 153:595-604.
- Baker, M.A.**, H.M. Valett, and C.N. Dahm. 2000. Organic carbon supply and metabolism in a near-stream groundwater ecosystem. *Ecology* 81:3133-3148.
- Baker, M.A.**, C.N. Dahm, and H.M. Valett. 1999. Acetate retention and metabolism in the hyporheic zone of a mountain stream. *Limnology and Oceanography* 44:1530-1539.
- Valett, H.M., C.N. Dahm, M.E. Campana, J.A. Morrice, **M.A. Baker**, and C.S. Fellows. 1997. Hydrologic influences on groundwater-surface water ecotones: heterogeneity in nutrient composition and retention. *Journal of the North American Benthological Society* 16:239-247.
- Daehler, C.C., **M.A. Baker**, J. Merkle, and S.K. Majumdar. 1994. Elemental processing in leaf litter and sediments in an aquatic system: effects of anthropogenic pollution. *International Journal of Ecology and Environmental Sciences* 20:287-302.
- Baker, M.A.**, C.C. Daehler, and S.K. Majumdar. 1992. Heterotrophic bacteria and fungi associated with decomposing leaves submerged in a lake in Pennsylvania, USA. *International Journal of Ecology and Environmental Sciences* 18:1-15.
- Bobrin, B.D., R.K. Kang, **M.A. Baker**, G.S. Ahearn, C.C. Daehler, and S.K. Majumdar. 1992. In vitro cytotoxicity of carboplatin on human breast adenocarcinoma and normal fetal lung cells. *The Nucleus* 34:123-129.
- Majumdar, S.K. E.P. Daly, K.M. Kleemeyer, C.C. Daehler, and **M.A. Baker**. 1991. Genotoxic effects of gossypol acetic acid on cultured murine erythroleukemia cells. *Environmental and Molecular Mutagenesis* 18:212-219.

Book Chapters, Reports, and Proceedings (peer reviewed)

- Baker, M.A.** and C.G. Flint. In review. Social-ecological-technical misalignments threaten mountain water tower resilience in Utah, USA. U. Schockhoff, R.B. Singh, and S. Mal (eds). *Mountain Landscapes in Transition: Effects of Land Use and Climate Change*. Springer.
- Baker, M.A.** and J.R. Webster. 2017. Conservative and non-conservative solute dynamics. Pages 129-145 in G.A. Lamberti and R. Hauer (eds). *Methods in Stream Ecology*. Academic Press.
- Baker, M.A.**, C.D. Arp, K.J. Goodman, A.M. Marcarelli, and W.A. Wurtsbaugh. 2016. Stream-lake interactions: effects on stream ecosystem structure and function.

- Pages 321-348 in J.B. Jones and E.J. Stanley (eds.). Streams in a Changing Environment. Academic Press.
- Ostermiller, J.D., M. Schupryt, **M.A. Baker**, B. Neilson, E.B. Gaddis, A.J. Hobson\*, B. Marshall, T. Miller, D. Richards, N. von Stackelberg. 2015. Technical basis for Utah's nutrient strategy. Development of stressor-response models for Utah streams. Report for the state of Utah.
- 30 Authors including M.A. Baker. 2014. US EPA Expert Workshop: Nutrient Enrichment Indicators in Streams. Environmental Protection Agency, Office of Water. Washington, D.C. <http://www2.epa.gov/sites/production/files/2013-09/documents/indicatorsworkshop.pdf>.
- Wurtsbaugh, W.A., H.P. Gross and **M.A. Baker**. 2008. Lake landscapes buffer nutrient flux and algal production in mountain watersheds. Verh. Internat. Verein. Limnologie. Extended abstract, 1 p.
- Wurtsbaugh, W.A., **M.A. Baker**, H.P. Gross, and P.D. Brown<sup>‡</sup>. 2005. Lakes as nutrient "sources" for watersheds: a landscape analysis of the temporal flux of nitrogen through sub-alpine lakes and streams. Verh. Internat. Verein. Limnologie. 29:645-649.
- Baker, M.A.**, C.N. Dahm, and H.M. Valett. 2000. Anoxia, anaerobic metabolism biogeochemistry of the stream water- ground water interface. Pages 259-284 In J.B. Jones, Jr. and P.J. Mulholland (eds.) Streams and Ground Waters. Academic Press, San Diego.
- Baker, M.A.**, C.N. Dahm, H.M. Valett, J.A. Morrice, M.E. Campana, and G.J. Wroblecky. 1994. Spatial and temporal variation in methane distribution at the ground water- surface water interface in headwater catchments. Pages 29-37 In J.A. Stanford and H.M. Valett (eds.) Proceedings of the Second International Conference on Ground Water Ecology. AWRA, Herndon, VA.
- Baker, M.A.**, J. Merkle, and S.K. Majumdar. 1994. Implications of pollutants on diversity of aquatic bacteria and fungi. Pages 114-122 In S.K. Majumdar, F.J. Brenner, J.E. Lovich, J.F. Schalles, and E.W. Miller (eds.) Biological Diversity: Problems and Challenges. Pennsylvania Academy of Science, Philadelphia, PA.
- Wroblecky, G.J., M.E. Campana, C.N. Dahm, H.M. Valett, J.A. Morrice, K.S. Henry, and **M.A. Baker**. 1994. Simulation of stream-groundwater exchange and near-stream flow paths of two first order mountain streams using MODFLOW. Pages 187-198 In J.A. Stanford and H.M. Valett (eds.) Proceedings of the Second International Conference on Ground Water Ecology. AWRA, Herndon, VA.
- Miller, E.W., **M.A. Baker**, and S.K. Majumdar. 1992. Epilogue: United Nations sponsored 1992 Earth Summit in Rio de Janeiro- where do we go from here? Pages 551-554 In S.K. Majumdar, L.D. Kalkstein, B.M. Yarnal, E.W. Miller, and L.M. Rosenfeld (eds.) Global Climate Change: Implications, Challenges and Mitigation Measures. Pennsylvania Academy of Science, Philadelphia, PA.

#### **Other Articles and Reports** (not peer reviewed)

- Baker, M.A.**, S.J. Hochhalter\*, and E.J. Lytle<sup>‡</sup>. 2009. Final Report: research to inform nutrient endpoints in Spring Creek, Utah. Report to the Utah Division of Water Quality. 81 pages.
- Baker, M.A.**, S.J. Hochhalter\*, and E.J. Lytle<sup>‡</sup>. 2008. Research to inform nutrient endpoints in East Canyon Creek, Utah. Report to the Utah Division of Water Quality. 77 pages.

- Baker, M.A.** 2003. Improving quantitative understanding using spreadsheet models. *Ecology*. 83:3524-3525.
- Covich, A.P., **M.A. Baker**, R. Behneke, D.W. Blinn, L.M. Carter, J. Chambers, T.A. Crowl, J.P. Dobrowolski, C.P. Hawkins, C. Luecke, J. Miller, L.N. Poff, F.J. Rahel, J.C. Schmidt, S.Selby, A.L. Sheldon, M. Vinson, and F.H. Wagner. 2003. Natural Ecosystems II- Aquatic Ecosystems. Pages 185-205 in Wagner, F.H. (Ed.). Rocky Mountain/Great Basin Regional Climate Change Assessment. Report for the U.S. Global Change Research Program. Logan, UT.
- Baker, M.A.** 2001. Ecology readings from the University of Wisconsin. *Ecology*. 82(1):262.
- Weiler, C.S. and DIALOG III Participants. 2000. Perspectives on graduate education: Experience in aquatic science. *Bulletin of the American Society for Limnology and Oceanography*. 9(2):20-22.
- Baker, M.A.** 1998. Organic carbon retention and metabolism in near-stream groundwater. Ph.D. Dissertation, The University of New Mexico, Albuquerque.

### **Invited Conferences and Symposia**

- Enabling Interdisciplinary and Team Science: A Professional Development Program Presented by the American Institute of Biological Sciences (organizer). October 2019.
- SESYNC Working Group: Translational Ecology- A Pedagogical Approach to Integrate Natural and Social Sciences (co-organizer). September 2013 - 2016.
- United States Environmental Protection Agency. Workshop on Nutrient Indicators. Washington, DC. April 2013.
- Council on Undergraduate Research Posters on the Hill, Washington, DC. April 2004.
- Aquatic Ecosystems Workshop Group. Assessment of Climate Change Effects on Aquatic Ecosystems of the Great Basin-Rocky Mountain Region. February 2000.
- DIALOG III Conference for recent Ph.D. recipients in Limnology and Oceanography, St. George, Bermuda. October 1999.
- COST Action 67 (European Union) Management Committee - Chemodynamics and water quality protection in natural porous media. Castellon, Spain. November 1998.

### **Invited Presentations**

- Baker, M.A.** 2019. Research to improve Utah's waterscape. Research Landscapes, Salt Lake City, UT.
- Baker, M.A.** 2017. iUTAH: Exploring drivers of Utah's socio-eco-hydrosystem. Idaho EPSCoR Annual Meeting, Pocatello.
- Baker, M.A.** 2017. Hydroecology and conservative solutes. Mara Short Course in Stream Ecosystem Ecology, Narok, Kenya.
- Baker, M.A.** 2016. CLIFF: Collaborative learning and interdisciplinary freshwater foundations. Annual Meeting of the Society for Freshwater Science, Sacramento, CA.



- Baker, M.A.** 2015, 2017. Water and people: friends or foes? Science Unwrapped, Utah State University; Environmental Studies Symposium, Lafayette College, PA.
- Baker, M.A.** 2015. Incubating transformations and catalyzing change across Utah's research landscape. National Science Foundation, Arlington, VA.
- Baker, M.A.** 2015. Weaving the tale of Utah's water. Center for Women and Gender, Utah State University.
- Baker, M.A.** 2014. Lost in translation: adventures in applied ecosystem ecology and combat science. Department of Botany and Wyoming EPSCoR, University of Wyoming; Global Change and Ecosystems Center, University of Utah.
- Baker, M.A.** 2014. iUTAH: Science for Utah's water future. Utah Water Quality Task Force. Department of Environmental Quality; Salt Lake County Watershed Symposium.
- Baker, M.A.** 2014. Advanced biogeochemical sampling: nutrient spiraling and other fun things in the stream ecologist's toolbox. European Union-Marie Curie Interfaces Summer School, Leibniz Institute of Freshwater Ecology Inland Fisheries, Berlin.
- Baker, M.A.** 2013. iUTAH: Research opportunities in ecohydrology. Department of Watershed Sciences, Utah State University.
- Baker, M.A.** 2013. Applying tools from ecosystem ecology to water quality management: case studies from Utah. Department of Plant and Wildlife Sciences, Brigham Young University.
- Baker, M.A., J.D. Ostermiller, and M.R. Shupryt.** 2012. How can metrics from ecosystem ecology inform development of site-specific nutrient criteria for streams and rivers? Annual Meeting of the Society for Freshwater Science. Louisville KY.
- Baker, M.A.** 2011. Ceci n'est pas une pipe: understanding nutrient transport and removal processes in rivers. Global Change and Ecosystems Center, University of Utah.
- Baker, M.A.** 2011. Air and water quality concerns along the Wasatch Front: Science for sustainability. Sunrise Session sponsored by BlueCross BlueShield of Utah, Salt Lake City.
- Baker, M.A.** 2010. Rivulets to rivers: a journey down the continuum with atom Y. Department of Biology Seminar Series, Utah State University.
- Baker, M.A.** 2010. Understanding hydrologic transport and biogeochemical reaction (HTBR) in streams and lakes: challenges and opportunities. American Society for Limnology and Oceanography/North American Benthological Society Annual Meeting, Santa Fe, NM.
- Baker, M.A.** 2009. Nutrient dynamics in streams: known knowns, known unknowns, and why you should care. College of Natural Resources, Utah State University, Logan UT.
- Baker, M.A.** 2009. Biochemical oxygen demand in rivers. Jordan River Dissolved Oxygen Linkage Symposium, Salt Lake City, UT.
- Baker, M.A.** 2008. Plenary speaker. Nutrient processes in aquatic ecosystems. Utah Non-Point Source Pollution Annual Conference, Cedar City, UT.
- Baker, M.A.** 2006. Ecological basis for site-specific TMDL targets in Utah. EPA Region 8 Bioassessment Workshop. Utah State University.
- Baker, M.A.** 2005. Fluvial discontinua- influence on flowpaths and ecosystem processes. Stream Ecology Symposium. Idaho State University.

- Baker, M.A.** 2002. Ceci n'est pas une pipe- Understanding nutrient uptake and flux in stream ecosystems. Department of Biology. Utah State University.
- Baker, M.A.** 2001. Hydrologic linkages and ecosystem function. Department of Botany and Range Science, Brigham Young University.
- Baker, M.A.** 2001. Tricks of the trade: how to succeed in graduate school. Graduate Resources Committee Workshop. North American Benthological Society Annual Meeting, La Crosse, WI.
- Dahm, C.N. and **M.A. Baker**. 2000. Dissolved organic carbon dynamics and the groundwater and surface water interface. Geological Society of America 2000 Annual Meeting.
- Dahm, C.N. and **M.A. Baker**. 2000. Organic matter dynamics at the groundwater - surface water interface of a mountain stream. American Society of Limnology and Oceanography Aquatic Sciences Meeting, Copenhagen.
- Baker, M.A.** 2000. Beyond the riparian zone: Aquatic-terrestrial linkages in watersheds. Utah State University, Department of Fisheries and Wildlife, and Civil and Environmental Engineering.
- Baker, M.A.** 2000. How to begin teaching a course for the first time beginning with nothing...filling the void. Graduate Resources Committee Workshop. North American Benthological Society, Keystone, CO.
- Baker, M.A.** 1999. Organic carbon retention and metabolism in near-stream groundwater. DIALOG Symposium, American Society for Limnology and Oceanography, BBSR, St. George, Bermuda.
- Baker, M.A.** 1999. Role of hydrologic linkages in fluvial ecosystem structure and function. University of Washington Tacoma, Utah State University, University of New Hampshire.
- Baker, M.A.** 1998. Influence de l'hydrodynamique sur la structure et le fonctionnement des écosystèmes fluviaux: des ruisseaux aux grand cours d'eau. Centre d'Écologie des Systèmes Aquatiques Continentaux, Toulouse, France.
- Baker, M.A.** 1998. Influence of hydrologic linkages on fluvial ecosystem structure and function. School of Forestry and Environmental Studies, Yale University.

## Contracts and Grants

<b>US Geological Survey.</b> Southwest Climate Adaption Science Center (co-PI)	September 2018-2023 \$452,465
<b>National Science Foundation</b> Ecosystem Studies Program (DEB 17-54216) Collaborative Research: Rivers and the carbon cycle: a mechanistic basis for dissolved organic carbon removal (PI)	May 2018-2020 \$132,861
<b>National Science Foundation</b> Division of Graduate Education (DGE 16-33756) NRT: Graduate climate adaptation research that enhances education and responsiveness of science at the management-policy interface (Grad-CAREER) (senior personnel)	September 2016-2021 \$2,698,878

<b>Environmental Protection Agency</b> WPDG Region 8: Measuring nutrient dynamics to inform development of site-specific criteria for wetlands (PI)	October 2016-2019 \$215,447
<b>National Ecological Observatory Network</b> Contract for SF6 Analyses (PI)	October 2014-2019 \$72,250
<b>National Science Foundation</b> EPSCoR Track -1 (IIA 12-08732) iUTAH – innovative urban transitions and arid region hydro-sustainability (PI)	August 2012-2018 \$20,000,000
<b>South Valley Water Reclamation Facility</b> A preliminary organic matter budget for the Jordan River (PI)	May 2012-2014 \$227,500
<b>National Science Foundation</b> Ecosystem Studies Program (DEB 09-22153) Collaborative Research: Using empirical and modeling approaches to quantify the importance of nutrient spiraling in rivers (PI)	August 2009-2014 \$167,647
<b>Utah Department of Environmental Quality</b> Stream functional condition measures and a manual for nutrient criteria for Utah’s streams (PI)	May 2010-June 2013 \$75,855
<b>South Valley Water Reclamation Facility</b> Nutrient limitation of benthic algae in the Jordan River (PI)	June 2009- December 2009 \$31,089
<b>Utah Department of Environmental Quality</b> Research to develop tools for nutrient criteria for streams in Utah (PI)	December 2006 – June 2009 \$125,720
<b>National Science Foundation</b> Ecosystem Studies Program (DEB 05-19327) Collaborative Research: Landscape limnology of mountain watersheds: Nutrient retention and ecosystem stability in complex aquatic ecosystems (co-PI)	September 2005-2010 \$1,043,959 (plus REU supplements)
<b>National Science Foundation</b> Hydrological Sciences Program (EAR 04-09534) Collaborative Research: Controls on hyporheic nitrate retention- discriminating among transport, reaction rate, and substrate limitation (PI)	July 2004-2008 \$191,792
<b>National Science Foundation</b> Ecosystem Studies Program (DEB 01-32983) Influence of stream-lake interactions on nutrient transport and function of aquatic ecosystems (co-PI)	March 2002-2005 \$1,008,140 (plus REU supplements)
<b>National Science Foundation</b> NSF-NATO Postdoctoral Fellowship (DGE 98-04645)	September 1998-1999 \$37,900

## Teaching Experience

### Formal Courses

Biology 1010	Biology and the Citizen, 3 credits, 200-300 students, undergraduate non-majors. Spring semesters (2000-2005); Fall 2019
Biology/NR 2220	General Ecology, 3 credits, 80-120 students, undergraduate majors. (Spring semesters 2001-2014)
Biology 4750/6750	Special Topics, 2-3 credits, ca. 2-10 students, undergraduate and graduate majors. (content varies – past topics included Aquatic Biogeochemistry, Sustainability Science, Ecological Stoichiometry, Groundwater Ecology, Water-Earth-Biota, Interdisciplinary Research in Ecology and Hydrology, Women in Science).
Biology/PSC 6200	Terrestrial Biogeochemistry, 3 credits, 6 students (Fall 2017)
Biology 6960	Graduate Ecology, 5 credits, ca. 20 students, graduate ecology majors, team taught. Fall semesters (2001-2006)

### Student Mentoring

#### Graduate Student Funding

- \* EPA-STAR Fellow
- ‡ INRA Subsurface Science Fellow
- § Presidential Doctoral Research Fellow
- # NSF-NRT Fellowship

#### Major Professor for:

Christopher Arp\*‡ – Ph.D. 2006  
Maura Bozeman – M.S. Transferred to Yale  
Rachel Buck – Ph.D. in progress  
Joe Crawford – M.S. 2013  
Keli Goodman‡ – Ph. D. 2010  
Sam Hochhalter\* – M.S. 2009  
Julie Kelso – Ph.D. 2018  
Andrew Myers – M.S. 2008  
Elizabeth Ogata§ – Ph.D. in progress  
John Rothlisberger – M.S. 2004  
Ellie Smith-Eskridge# – M.S. in progress  
Matthew Schroer – M.S. 2014  
Suzan Tahir – Ph.D. in progress  
Scarlett Vallaire – M.S. 2013

#### Ph.D. Committees:

Matt Robson (2004)  
Tamara Scalley (2005)  
Amy Marcarelli (2006)  
Greta Burkart (2007)  
Toby Hooker (2009)  
Madeline Mineau (2010, Idaho State)  
John Olson (2012)  
Glenda Yenni (2013)  
Kit Wheeler (2014)  
Mitch Hogsett (2014, U of Utah)  
Gareth Hopkins (2015)  
Antra Boca (2017)  
Yussuf Jameel (2018, U of Utah)  
Anthony Melcher (2019)  
Erin Jones (current, BYU)  
Kristin Butcher (current)  
Amber Jones (current)  
Jack McLauren (current)

#### M.S. Committees:

Jess Gourley (2001)  
Cornelia Sawatzky (2001)  
Shannon Herstein (2004)  
Kathleen Pollett (2005)  
Chloe Tewksbury (2005)  
Jay Zarnetske (2006)  
Randy Goetz (2007)  
Ryan Lockwood (2009)  
Timothy Walsworth (2011)  
Nic Braithwaite (2011)  
Andrew Hobson (2013)  
Nathaniel Mouzon (2016)  
Bryce Mihalevich (2017)  
Scott Collins (2019, BYU)  
Leighton King (2019)

### Undergraduate Research

- \* Research Experience for Undergraduates (NSF funding supplement or iUTAH EPSCoR)
- ‡ USU Minority Science Fellow
- § USU Eccles Undergraduate Research Fellow

Norman Balls – 2005-2006  
Angie Benedetto\* – 2006-2009  
Eric Ruben Breton – 2014- 2016  
Camisha Booth – 2001  
Andrew Butterfield\* – 2014-2015  
Hayden Campbell\* – 2013-2015  
Lindsay Capito – 2015-2018  
Joe Crawford – 2008 – 2010  
Christian Davidson – 2019-  
Dominique Davis – 2019-

Ryan Davis – 2001  
Kim Dutter – 2009  
Hannah Fouts – 2017- present  
Jeff Fransden<sup>§</sup> – 2011- 2014  
Glen de Guzman<sup>\*‡</sup> – 2002-2003  
Lisa Jeffs\* – 2001- 2003  
Matt Jones – 2001  
Emily Liese – 2019 -  
Donald Long\* - 2015-2016  
Evan Lytle<sup>§</sup> – 2007-2009  
Andrew Myers\* – 2003-2005  
Julia Nielsen – 2001-2003  
Soo-Hyun Park – 2001-2002  
Jason Reed\* – 2008, 2010 – 2014  
Adair Schruhl – 2017-2018  
Autumn Slade – 2015-2017  
Brandon Spencer – 2000  
Lisa Tran – 2005-2006  
Desiree Wickwar\* - 2017  
Sandra Young\* – 2016

### **Professional Service**

Chair, Publications Committee, Society for Freshwater Science, December 2017-  
Member, Board of Directors, Society for Freshwater Science, December 2017-  
Society Representative for Planning the Second Joint Aquatic Sciences Meeting, 2015-  
Vice President (incoming, current, past), Society for Freshwater Science, June 2013-2016  
Associate Editor, Freshwater Science, January 2012-December 2017  
External dissertation examiner, Griffith University, Queensland, Australia, 2014  
Panelist, EPA Workshop on Nutrient Indicators, April 2013  
Associate Editor, Journal of the North American Benthological Society, June 2001-2011  
Member, Elections and Place Committee, North American Benthological Society, 1996-  
1997, 2007-2013  
Member, Program Committee, 2010 ASLO/NABS Joint Annual Meeting, 2008-2010  
Panelist, Geosciences Directorate, National Science Foundation, May 2005, March 2007-  
September 2008  
Panelist, Biological Sciences Directorate, National Science Foundation, February 2009,  
October 2009, April 2011, March 2012, October 2014, April 2017  
Chair, Special Sessions, Annual Meeting of the North American Benthological Society,  
2007-2008  
Member, Executive Committee, North American Benthological Society, June 2003-2006  
Graduate Resources Committee, North American Benthological Society, 1997-1998  
Peer review: Journal of the North American Benthological Society, Limnology and  
Oceanography, Biogeochemistry, Water Resources Research, Ecology, Freshwater  
Biology, Ecosystems, Hydrological Processes, Journal of Geophysical Research,  
BioScience, Biogeosciences, Proceedings of the National Academy of Science,  
Proceedings of the Royal Society B, and others.  
Ad hoc proposal review: National Science Foundation (EAR- Hydrologic Sciences, DEB-  
Ecosystem Studies, BE- Coupled Biogeochemical Cycles); Maryland Sea Grant;  
NIWR-USGS National Competitive Grants Program; European Union Young  
Investigator Award, Belgian Fund for Scientific Research.

## **University Service**

Member, Review Committee, D. Wynne Thorne Outstanding Faculty Research Award, 2018  
Ombudsperson, College of Science, 2016-2018  
Member, Promotion Advisory Committee (Biology, Civil and Environmental Engineering, Environment and Society, 3 faculty) 2013-2018  
Representative, Utah State University, Consortium of Universities for the Advancement of Hydrologic Science, Inc. 2011-  
Member, Tenure Advisory Committee (Biology, Civil and Environmental Engineering, Wildland Resources, Watershed Sciences; 12 faculty), 2005-2018  
Representative, College of Science, Graduate Council, 2011- 2018  
Member, Analytical/Environmental Chemistry Faculty Search Committee, 2016-2017  
Member, Ecology Center Advisory Committee, 2005-2017  
Co-Chair, Spring Runoff Conference Organization Committee, 2015-2016  
Chair, College of Science Water Cluster Hire Search Committee, College of Science 2015-2016  
Member, Watershed Modeler Search Committee, Department of Watershed Sciences 2015-2016  
Member, Ecologist Search Committee, Department of Biology 2014-2016  
Member, Central Promotion and Tenure Committee, 2012-2014  
Representative, College of Science Research and Graduate Advisory Committee, 2011-2014.  
Associate Head, Biology, October 2011 – 2014  
Representative, College of Science, USU Year of Water Steering Committee 2014-2015  
Chair, Tenure Advisory Committee (Biology), 2009-2015  
Member, Graduate Programs Committee (Biology), 2006-2010, 2011- 2014  
Representative, College of Natural Resources Strategic Planning Committee, 2011 -2012  
Co-Director, Graduate Studies (Biology), 2010-2011  
Chair, Ecology Center Director Search Committee, 2010-2011  
Member, Water Initiative University Advisory Committee, September 2003- 2011  
College of Science Representative, USU Vice Provost Advisory Council, 2008-2010  
Member, Women and Gender Research Institute Steering Committee, 2006-2010  
College of Science Representative, USU Sustainability Council, 2008-2009  
Member, Faculty Senate Ad Hoc Committee to Review the USU Faculty Code, 2008  
Member, College of Science Dean Search Committee, 2006  
Member, Post-tenure Review Committee (Biology), 2005  
Chair, Water Initiative Graduate Program Committee, 2004-2006  
Member, Water Initiative Laboratory Watershed Committee, September 2003-2006  
Undergraduate Research Mentor, Utah State Minority Science Fellows, 2002-2004  
Member, Hydrologist Search Committee, Department of AWER, 2005  
Member, Pre-Health Professions Committee, Department of Biology, 2001-2004  
Panelist, Scholars Day, Office of Admissions Interview Panel, 2004  
Member, Spatial Ecologist Search Committee, Department of Biology, 2004  
Member, Water Initiative Task Force for Utah State President Hall, 2002 -2003  
Member, Public Health Search Committee, Department of Biology, 2001

## **Community Service**

Member, Jordan River Technical Advisory Committee (Utah Department of Environmental Quality), 2009-  
Member, Technical Advisory Team, Lower Jordan River Flow Experiment, 2015-2017  
Expert Witness, Colorado Nutrient Rulemaking, March 2012  
Technical Advisor, Western Colorado Water Network (EPA Region 8), 2010- 2012

Expert Reviewer for EPA region 8, Montana Nutrient Rulemaking, 2009  
Research mentor, Undergraduate Posters on Capitol Hill (Salt Lake City), 2003, 2008,  
2011  
Research mentor for high school students in NASA sponsored Science Camp, USU, 2006  
Outreach - SciTech High School, Logan UT, 2006  
Research mentor, CUR Posters on the Hill in Washington DC, 2004