

C.V.

Justin M. Conley
Environmental and Molecular Toxicology
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Education

North Carolina State University - Ph.D. Environmental Toxicology 2014
Dissertation: *Toxicity of selenium and total dissolved solids at the base of aquatic food webs: Assessing the causes of biological impairment resulting from mountaintop mining-valley fill coal mining*
Advisor: Dr. David Buchwalter

University of Tennessee at Chattanooga - M.S. Environmental Science 2007
Thesis: *Spatial and temporal analysis of pharmaceutical concentrations and chitobiase activity in the upper Tennessee River*
Advisor: Dr. Sean Richards

Warren Wilson College - B.S. Biology, Environmental Science 2004
Thesis: *The presence and concentration of aldicarb in juvenile American alligators from three contrasting Florida lakes*
Advisor: Dr. John Brock (co-advisor: Dr. Louis Guillette)

Honors and Awards

First Place, Student Platform Presentation, Carolinas SETAC Annual Meeting 2013
EPA STAR Fellowship Recipient (\$126,000) 2011
SETAC/ICA Chris Lee Award for Metals Research (\$5,000) 2011
Best Oral Presentation in Applied Research, NABS/SFS Annual Meeting 2011
Provost Student Research Award, UTC Provost Committee (\$1,000) 2007
Outstanding Graduate Student, Dept. of Biological and Environmental Sciences - UTC 2007
Best Oral Presentation, Graduate Research Symposium – UTC 2007
Outstanding Graduate Research Award, Sigma Xi – UTC 2007

Research Interests

Aquatic ecotoxicology, Bioaccumulation, Selenium, Total dissolved solids, Environmental effects of resource extraction, Teratogenesis, Endocrine disruption, PPCPs

Research Positions

Research Associate *May 2014 – present*. North Carolina State University, Department of Biological Sciences, Environment and Molecular Toxicology Program, Raleigh, NC.

Graduate Research Assistant *August 2008 – May 2014*. North Carolina State University, Department of Environmental and Molecular Toxicology, Raleigh, NC.

Research Associate *January 2008 – August 2008*. University of Tennessee at Chattanooga, Department of Biological and Environmental Sciences, Chattanooga, TN.

Graduate Research Assistant *January 2006 – December 2007*. University of Tennessee at Chattanooga, Department of Biological and Environmental Sciences, Chattanooga, TN.

Wildlife Field Technician *May – August 2005 and May – August 2004*. University of Tennessee at Knoxville, Department of Forestry, Wildlife, and Fisheries, Knoxville, TN

Marine Lab Technician *June 2002 – August 2002*. Institute of Marine Science, University of North Carolina at Chapel Hill, Morehead City, NC.

Undergraduate Researcher *August 2001 – May 2003*. Warren Wilson College, Asheville, NC.

Teaching Experience and Training

Introduction to Environmental Research (BIO 165 Co-Instructor) *July – August 2013*. Reaching Incoming Student Enrichment program funded by Howard Hughes Medical Institute (HHMI-RISE). North Carolina State University, Raleigh, NC.

Teaching in College (EAC 786 course participant) *August – December 2012*. North Carolina State University, Raleigh, NC.

Fundamental in Teaching (workshop participant) *March 2012*. North Carolina State University, Raleigh, NC.

Invited lecturer in Environmental Toxicology *August 2013, 2012, 2011*. North Carolina State University, Raleigh, NC.

Graduate Teaching Assistant *January – May 2006, August – December 2006*. University of Tennessee at Chattanooga, Department of Biological and Environment Sciences, Chattanooga, TN.

Environmental Education Instructor *August – December 2004*. Mountain Trail Outdoor School, Hendersonville, NC.

Undergraduate Students Advised

Shaneice Mitchell (North Carolina State University) Toxicity of bicarbonate to early life stage *Centroptilum triangulifer* larvae 2011

Kenya Pierre (North Carolina State University) Toxicity of sulfate to early life stage *Centroptilum triangulifer* larvae 2011

Keeley Wharton (North Carolina Central University) Response of *Centroptilum triangulifer* to binary mixtures of common anions and cations 2010

Nick Cariello (Stanford University) Full life cycle exposure to high total dissolved solids waters with mountaintop mining ionic signatures to *Centroptilum triangulifer* 2009

Manuscripts in Peer-reviewed Journals (*denotes undergraduate student co-author)

Conley, J., Watson, A., Xie, L., Buchwalter, D., 2014. Dynamic selenium assimilation, distribution, efflux, and maternal transfer in Japanese medaka fed a diet of Se-enriched mayflies. *Environmental Science & Technology*, 48: 2971-2978.

Kunz, J., **Conley, J.**, Buchwalter, D., Kemble, N., Wang, N., Norberg-King, T., Ingersoll, C., 2013. Use of reconstituted waters to evaluate effects of elevated major ions associated with mountaintop mining of coal on freshwater invertebrates. *Environmental Toxicology and Chemistry*, 32(12): 2826-2835.

Conley, J., Funk, D., Hesterberg, D., Hsu, L-C., Kan, J., Liu, Y-T., and Buchwalter, D., 2013. Bioaccumulation and biotransformation of SeO₃ versus SeO₄ exposed periphyton and subsequent toxicity to the mayfly *Centroptilum triangulifer*. *Environmental Science & Technology*, 47: 7965-7973.

Conley, J., Funk, D., Cariello, N.*, and Buchwalter, D., 2011. Food rationing affects dietary selenium bioaccumulation and life cycle performance in the mayfly *Centroptilum triangulifer*. *Ecotoxicology*, 20(8): 1840-1851.

Conley, J., Funk, D., and Buchwalter, D., 2009. Selenium bioaccumulation and maternal transfer in the mayfly *Centroptilum triangulifer* in a life-cycle, periphyton-biofilm trophic assay. *Environmental Science & Technology*, 43: 7952-7957.

Conley, J., Schorr, M., Hanson, M., Symes, S., and Richards, S., 2009. Is ambient chitinase activity a monitoring tool for impacts on secondary production in lotic systems? *Canadian Journal of Fisheries and Aquatic Sciences*, 66: 1274-1281.

Conley, J., Symes, S., Schorr, M. and Richards, S., 2008. Spatial and temporal analysis of pharmaceutical concentrations in the upper Tennessee River basin. *Chemosphere*, 73: 1178-1187.

Smith, M.B., **Conley, J.**, Nelson, C., and Gaudin, T.J., 2008. First record of the water shrew, *Sorex palustris*, from Graham County, North Carolina. *Journal of the North Carolina Academy of Science*, 124(2): 61-62.

Conley, J., Symes, S., Kindelberger, S., and Richards, S., 2008. Rapid liquid chromatography – tandem mass spectrometry method for the determination of a broad mixture of pharmaceuticals in surface water. *Journal of Chromatography A*, 1185: 206-215.

Book Sections

Conley, J. and S. Richards, 2013. Environmental Teratogenesis. In Féraud, JF and Blaise, C (Eds.), Vol. 1 of *Encyclopedia of Aquatic Ecotoxicology*, p. 457-466. Springer.

Conley, J. and S. Richards, 2008. Teratogenesis. In Jorgensen, SE and Fath, BD (Eds.), *Ecotoxicology*, Vol. 5 of *Encyclopedia of Ecology*, p. 3528-3536, Oxford: Elsevier.

Platform presentations

- 2013 **Conley, J.**, Funk, D., Buchwalter, D. Toxicity of elevated total dissolved solids and dietary selenium to aquatic insects using *Centroptilum triangulifer* as a model organism. Society for Freshwater Science. May 19-23, Jacksonville, FL.
- 2013 **Conley, J.**, Funk, D., Hesterberg, D., Hsu, L-C., Kan, J., Liu, Y-T., Buchwalter, D. Selenite versus selenate: Investigating the role of dissolved selenium speciation in a basal aquatic food web microcosm. Water Resources Research Institute Annual Conference. March 20-21, Raleigh, NC.
- 2013 **Conley, J.**, Funk, D., Hesterberg, D., Hsu, L-C., Kan, J., Liu, Y-T., Buchwalter, D. Selenite versus selenate at the base of freshwater food webs – What’s the difference? Carolinas SETAC. March 7-9, Raleigh, NC.
- 2011 **Conley, J.** Toxicity of MTM-VF contaminants using *C. triangulifer* as a model organism. Stroud Water Research Center. Invited speaker. December 19. Avondale, PA.
- 2011 **Conley, J.**, Funk, D., and Buchwalter, D. Food rationing affects dietary selenium bioaccumulation and life cycle performance in the mayfly *Centroptilum triangulifer*. Society of Environmental Toxicology and Chemistry. November 13-17. Boston, MA.
- 2011 **Conley, J.**, Funk, D., and Buchwalter, D. Selenium at the base of aquatic food webs – insights from laboratory-based bioaccumulation studies with periphyton and the mayfly *Centroptilum triangulifer*. TVA-Kingston Fly Ash Release Environmental Research Symposium. August 2. Harriman, TN.
- 2011 **Conley, J.**, Funk, D., and Buchwalter, D. *Centroptilum*, selenium, and TDS – Understanding the relative toxicities of chemical stressors associated with mountaintop removal to mayflies. North American Benthological Society. May 26. Providence, RI.
- 2011 **Conley, J.**, Funk, D., and Buchwalter, D. Food rationing affects dietary selenium bioaccumulation and performance in a mayfly (*Centroptilum triangulifer*) life cycle assay. Society of Environmental Toxicology and Chemistry, Carolinas Regional Chapter. March 25. Boone, NC.
- 2010 **Conley, J.** What killed all the mayflies? NCSU Department of Environmental and Molecular Toxicology Seminar Series. November 23. Raleigh, NC.
- 2010 **Conley, J.**, Funk, D., and Buchwalter, D. Selenium induced teratogenesis – Are insects susceptible to malformations as well? Society of Environmental Toxicology and Chemistry. November 7-12. Portland, OR.
- 2010 **Conley, J.**, Cariello, N., and Buchwalter, D. Preliminary investigations of TDS toxicity and sulfate trafficking in mayflies. Society of Environmental Toxicology and Chemistry. November 7-12. Portland, OR.

- 2009 **Conley, J.**, Funk, D., and Buchwalter, D. Selenium bioaccumulation and maternal transfer in the mayfly *Centroptilum triangulifer* in a life-cycle, periphyton-biofilm trophic assay. Society of Environmental Toxicology and Chemistry. November 19-23. New Orleans, LA.
- 2007 **Conley, J.**, Symes, S., Kindelberger, S., and Richards, S. Spatial and temporal analysis of pharmaceutical and chitobiase concentrations in the Tennessee River. Society of Environmental Toxicology and Chemistry. November 11-15. Milwaukee, WI.
- 2007 **Conley, J.** Pharmaceutical concentrations in the Tennessee River. Graduate Research Day, University of Tennessee at Chattanooga. March 15. Chattanooga, TN.

Poster presentations

- 2012 **Conley, J.**, Funk, D., Hesterberg, D., Hsu, L-C., Kan, J., and Buchwalter, D. Bioaccumulation and biotransformation of SeO_3 versus SeO_4 exposed periphyton and subsequent toxicity to the mayfly *Centroptilum triangulifer*. Society of Environmental Toxicology and Chemistry. November 14. Long Beach, CA.
- 2012 **Conley, J.**, Funk, D., Hesterberg, D., Hsu, L-C., Kan, J., and Buchwalter, D. Dissolved selenium speciation (selenite versus selenate) affects uptake and biotransformation in freshwater periphyton. SETAC World Congress. May 23. Berlin, Germany.
- 2010 **Conley, J.**, Funk, D., Hesterberg, D., Buchwalter, D. Assessing selenium dynamics at the base of aquatic food webs: Application of a novel periphyton-mayfly test system. NC State University Graduate Research Symposium. March 10. Raleigh, NC.
- 2010 **Conley, J.**, Funk, D., Hesterberg, D., Buchwalter, D. Assessing selenium dynamics at the base of aquatic food webs: Application of a novel periphyton-mayfly test system. TVA-Kingston Fly Ash Release Environmental Research Symposium. March 11-12. Harriman, TN.
- 2008 Kindelberger, S., **Conley, J.**, Richards, S., Symes, S. Photolytic breakdown of trace level pharmaceuticals in the environment. American Chemical Society. April 6-10. New Orleans, LA.
- 2006 **Conley, J.**, Kindelberger, S., Symes, S., Richards, S. Rapid ultra performance liquid chromatography-tandem mass spectrometry method for the determination of pharmaceuticals in aquatic matrices. Society of Environmental Toxicology and Chemistry. November 5-9. Montreal, Quebec.

Consulting Experience

- 2012 Conley, J. Evaluation of selenium in biotic and abiotic ecosystem components of the upper Blackfoot River Watershed. Prepared for Greater Yellowstone Coalition, 162 North Woodruff Avenue, Idaho Falls, ID 83401. online available:
http://www.greateryellowstone.org/uploads/Justin_Conley_report_1.pdf

Media Public Relations

- 2014 Manning, S. Researchers find small traces of pharmaceuticals in Tennessee River. WATE.com ABC affiliate, March 12.
- 2013 Maynard, M. Soaking it up: Conley doing his best to clean up Kentucky waterways. Ashland Daily Independent, March 20.
- 2012 Featured guest on Mystery Roach – 88.1 FM WKNC, December 15.
- 2011 Maynard, M. A STAR scientist in the making. Ashland Daily Independent, September 26.
- 2008 Gregory, L. Testing for drugs in Tennessee River system under way. Chattanooga Times Free Press, September 7.
- 2008 Gregory, L. UTC scientists study whether toxins contribute to underweight births in Chattanooga area. Chattanooga Times Free Press, July 6.

Professional Affiliations

Society of Environmental Toxicology and Chemistry (SETAC)
Society for Freshwater Science (SFS, formerly NABS)

Ad-hoc Peer Reviewer

Aquatic Toxicology
Chemosphere
Ecotoxicology
Ecotoxicology and Environmental Safety
Electrophoresis
Environmental Pollution
Environmental Science & Technology
Environmental Toxicology & Chemistry
Science of the Total Environment
Talanta
Water, Air, & Soil Pollution