

John R. Olson

Desert Research Institute
Division of Hydrologic Sciences
755 E. Flamingo Road, Las Vegas, NV 89119
Office: 702-862-5384 Cell: 435-770-4533 Fax: 702-862-5427
email: john.olson@dri.edu

Google Scholar: <http://scholar.google.com/citations?user=5VfdMT8AAAAJ>
<http://www.researcherid.com/rid/B-3710-2009>

Research Interests

Stream ecology, bioassessment, biogeochemistry, aquatic ecosystem ecology, applications of spatial & macro ecology to aquatic systems, effects of scale on environmental research

Education

- Ph.D. (2012) Utah State University: Watershed Science
Dissertation Title: The influence of geology and other environmental factors on water chemistry and stream benthic invertebrate assemblages.
- M.S. (2002) Columbus State University: Environmental Science
Thesis Title: Using GIS and land use data to select candidate reference sites for stream bioassessment.
- B.A. (1986) University of California, Santa Barbara: Geography.

Professional Experience

- Maki Postdoctoral Fellow**
(2014- Present) Desert Research Institute – Division of Hydrologic Sciences:
Develop tools predicting aquatic species distributions using remote sensing and environmental DNA data.
- Senior Research Engineering Officer**
(2008 - Present) U.S. Army Reserve/U.S. Army Research Laboratory - Battlefield Environment Division, Computational and Information Sciences
Directorate: Coordinate atmospheric research efforts between military users and both university and DoD research institutions.
- Postdoctoral Fellow**
(2012- 2014) Utah State University – Department of Watershed Sciences:
Create nation-wide maps of geologic characteristics and empirically model natural water chemistry for establishing water chemistry baselines and nutrient criteria.
- Research Assistant**
(2002- 2012) Utah State University – Department of Watershed Sciences:
Improve understanding of the linkages between geology, water chemistry, and stream invertebrate assemblages and apply this to predict natural conditions to improve both water quality and biological assessments.
- Research Assistant**
(1999-2001) Columbus State University – Department of Environmental Science:
Ecoregion Reference Site Project, Phase II - Identification and characterization of stream bioassessment reference sites in Georgia.
- Acquisition Officer**
(1995-1999) U.S. Army Infantry Center - Project management and requirement establishment for body armor, eye protection, & parachute programs.

Infantry Officer
(1985-1995)
(2007-2008)

Various assignments, including: Commander responsible for planning & leading 220 man company through 2 deployments; Personnel & Logistics Officer responsible for all human resource & logistics planning and execution for 550 man battalion; Senior Advisor to Iraqi Army in northern Iraq advising the Iraqi Army on training, logistics, & administration; oversaw a \$21 million construction & supply budget.

Teaching Experience

Instructor
(2014)

Utah State University – Department of Watershed Sciences:
Fundamentals of Watershed Science (WATS 3700)

Instructor
(2012 – 2013)

Utah State University – Department of Watershed Sciences:
Biodiversity and Sustainability (WATS 1200)

Instructor
(2002 – 2006)

Utah State University – Department of Military Science: Advanced Tactics and Operations (MS 3020), Command and Staff Functions (MS 4010), and Officer Perspectives (MS 4020)

Teaching Assistant
(1999-2000)

Columbus State University – Department of Biology: Principles of Biology (BIOL 1215)

Teaching Assistant
(1999)

Columbus State University – Department of Environmental Science:
Ecological Methods (ENVS 6207)

Instructor
(1999-2001)

Columbus State University – Department of Military Science:
Wilderness Survival (ROTC 1215) & Leadership Values and Skills (ROTC 1216)

Publications

Journal Articles:

Vander Laan, J., C.P. Hawkins, **J.R. Olson**, and R.A. Hill. 2013. Linking land use, in-stream stressors, and biological condition to infer causes of regional ecological impairment in streams. *Freshwater Science* 32(3), 801–820.

Olson, J.R., and C.P. Hawkins. 2013. Developing site-specific nutrient criteria from empirical models. *Freshwater Science* 32(3), 719-740.

Olson, J.R., and C.P. Hawkins. 2012. Predicting natural base-flow stream water chemistry in the western United States. *Water Resources Research* WR011088.

Bennett, S.N., **J.R. Olson**, J.L. Kershner, and P. Corbett. 2010. Influence of propagule pressure and stream characteristics on introgression between native westslope cutthroat trout and introduced rainbow trout in British Columbia. *Ecological Applications* 20(1), 263–277.

Hawkins, C.P., **J.R. Olson**, and R.A. Hill. 2010. The reference condition: predicting benchmarks for ecological and water-quality assessments. *Journal of the North American Benthological Society* 29(1): 312–343.

Cao, Y., C.P. Hawkins, **J. Olson**, M.A. Kosterman. 2007. Modeling natural environmental gradients improves the accuracy and precision of diatom-based indicators. *Journal of the North American Benthological Society* 26(3): 566-585.

Hargett, E.G., J.R. Zumberge, C.P. Hawkins, and **J.R. Olson**. 2007. Development of a RIVPACS-type predictive model for bioassessments of wadeable streams in Wyoming. *Ecological Indicators* 7(4): 807-826.

Manuscripts in Review or Prep:

Olson, J.R., and C.P. Hawkins. *In revision*. An experimental assessment of the effects of low total dissolved solids on the survival and distribution of stream macroinvertebrates. Submitted to Functional Ecology.

Chen, K., **J.R. Olson**, C.P. Hawkins, J.J. Vander Laan, R.A. Hill, and B. Wang. *In prep*. The effect of distribution of reference sites on macroinvertebrate-based RIVPACS model and multimetric index development for stream biomonitoring. For submission to Freshwater Science.

Book Chapters:

Olson, J.R., D.L. Hughes, and M.P. Brossett. 2010. Comparison of bioassessment methods. Chapter 2 in Hughes, D.L., M.P. Brossett, J.A. Gore, and **J.R. Olson** (editors). Rapid bioassessment of stream health. CRC Press, Boca Raton, Florida.

Brossett, M.P., D.L. Hughes, **J.R. Olson**, and J.A. Gore. 2010. Rapid bioassessment materials and methods. Chapter 3 in Hughes, D.L., M.P. Brossett, J.A. Gore, and **J.R. Olson** (editors). Rapid bioassessment of stream health. CRC Press, Boca Raton, Florida.

Olson, J.R., D.L. Hughes, J.A. Gore, and M.P. Brossett. 2010. Candidate reference conditions. Chapter 4 in Hughes, D.L., M.P. Brossett, J.A. Gore, and **J.R. Olson** (editors). Rapid bioassessment of stream health. CRC Press, Boca Raton, Florida.

Hughes, D.L., **J.R. Olson**, M.P. Brossett, and J.A. Gore. 2010. Development of ecoregional and subcoregional reference conditions. Chapter 5 in Hughes, D.L., M.P. Brossett, J.A. Gore, and **J.R. Olson** (editors). Rapid bioassessment of stream health. CRC Press, Boca Raton, Florida.

Reports & Manuals:

Chinnayakanahalli, K., R. Hill, **J. Olson**, C. Kroeber, D.G. Tarboton, and C.P. Hawkins. 2006. The multi-watershed delineation tool: GIS software in support of regional watershed analyses, users manual. Department of Civil and Environmental Engineering and Department of Aquatic, Watershed, & Earth Resources, Utah State University.

Gore, J.A., **J.R. Olson**, D.L. Hughes, M. Brossett. 2004. Reference conditions for wadeable streams in Georgia with a multimetric index for the bioassessment and discrimination of reference and impaired streams. Georgia Department of Natural Resources, Atlanta, GA.

Hawkins, C.P., J.D. Ostermiller, M.R. Vinson, R.J. Stevenson, and **J.R. Olson**. 2003. Stream algae, invertebrate, and environmental sampling associated with biological water quality assessments field protocols. Department of Aquatic, Watershed, & Earth Resources, Utah State University.

Research Grants (total = \$323,864)

System for mapping and predicting species of concern, NASA Ecological Forecasting for Conservation and Natural Resource Management, \$199,000 (Awarded 2013 — principle investigator)

Modeling reference condition stream water chemistry for the conterminous United States, USGS \$124,864 (Awarded 2012 - research associate)

Awards

University Graduate Research Assistant of the Year (2010) – Utah State University Robins Award.

Best Student Methods Presentation (2006) - Annual Meeting of the North American Benthological Society, Anchorage, AK.

Presentations

Invited Presentations

Olson, J.R., and C.P. Hawkins 2014. Predicting water chemistry for the contiguous US: Models and their potential uses. USGS, Reston, VA.

Olson, J.R. 2013. Challenges and solutions to adapting geologic data for ecologic research. Webinar to USGS, Logan, UT.

Olson, J.R. 2013. Predicting natural stream water chemistry from geologic and environmental data. Desert Research Institute, Reno, NV.

Olson, J.R., and C.P. Hawkins. 2012. Predicting natural stream chemistry. Webinar to USEPA, Logan, UT.

Olson, J.R. 2012. Predicting natural, site-specific nutrient concentrations in western USA streams. Utah Department of Environmental Quality, Salt Lake City, UT.

Olson, J.R., and C.P. Hawkins. 2011. Predicting natural stream chemistry. Webinar to USGS, Logan, UT.

Presentations

Olson, J.R., and C.P. Hawkins. 2014. An empirical approach to predicting effects of climate change on stream water chemistry. 2014 Joint Aquatic Sciences Meeting, Portland OR.

Olson, J.R., and C.P. Hawkins. 2013. Field and laboratory experiments predict effects of total dissolved solids on the large-scale distribution of stream macroinvertebrates. Annual Meeting of the Society for Freshwater Science, Jacksonville, FL.

Olson, J.R., C.P. Hawkins, and J. Van Sickle. 2012. Developing site-specific water chemistry criteria by quantifying prediction error for non-parametric models of reference conditions. Annual Meeting of the Society for Freshwater Science, Louisville, KY.

Olson, J.R., and C.P. Hawkins. 2011. Predicting natural, site-specific nutrient concentrations in western USA streams. 2011 Spring Runoff Conference, Logan, UT.

Hawkins, C.P., J. Jin, R.A. Hill, and **J.R. Olson**. 2010. Response of stream invertebrates to predicted climate change in California. Annual Meeting of the North American Benthological Society, Santa Fe, NM.

Olson, J.R., and C.P. Hawkins. 2010. Predicting natural, site-specific nutrient concentrations in western USA streams. Annual Meeting of the North American Benthological Society, Santa Fe, NM.

Olson, J.R., and C.P. Hawkins. 2010. Predicting environmental reference conditions in streams from watershed geology. National Water Quality Monitoring Conference, Denver, CO.

Bennett, S.N., and **J.R. Olson**. 2009. Development of an index for assessing the role of propagule pressure on salmonid hybridization. Annual Meeting of the North American Benthological Society, Grand Rapids, MI.

Hawkins, C.P., N.K. Burbank, R.A. Hill, and **J.R. Olson**. 2009. The nature and consequences of systematic prediction errors in ecological assessments — or why it is inappropriate to be concerned about mice when there are tigers abroad. Annual Meeting of the North American Benthological Society, Grand Rapids, MI.

Olson, J.R., and C.P. Hawkins. 2009. Predicting environmental reference conditions in streams from watershed geology. 20th Annual Northwest Biological Assessment Workgroup, McCall, ID.

Cao, Y., C.P. Hawkins, and **J.R. Olson**. 2006. Sources of error in developing biotic indicators for diatom assemblages in Idaho streams. Annual Meeting of the North American Benthological Society, Anchorage, AK.

Olson, J.R., and C.P. Hawkins. 2006. Predicting stream water chemistry from geology: its utility in accounting for natural variation among sites in benthic invertebrate assemblage composition. Annual Meeting of the North American Benthological Society, Anchorage, AK.

Olson, J.R., and C.P. Hawkins. 2005. Influence of geology on benthic macroinvertebrate assemblages: a field experiment examining differences in fitness with water hardness. Annual Meeting of the North American Benthological Society, New Orleans, LA.

Rollins, S.L., R.J. Stevenson, C.P. Hawkins, K.M. Manoylov, **J.R. Olson**, and R.A. Hill. 2005. Predicting Diatom Assemblages in Minimally-Impacted Streams Using a New Hybrid Modeling Approach. Annual Meeting of the North American Benthological Society, New Orleans, LA.

Olson, J.R., and C.P. Hawkins. 2003. Influence of geology on benthic macroinvertebrate assemblages: osmoregulation as a possible mechanism. Annual Meeting of the North American Benthological Society, Athens, GA.

Olson, J.R., and J.A. Gore. 2001. Using GIS and landuse data to select candidate reference sites for stream bioassessment. Annual Meeting of the North American Benthological Society, La Crosse, WI.

Posters

Olson, J.R., and C.P. Hawkins. 2012. Modeling Natural Stream Nutrient Concentrations from Landscape Predictors. Fall Meeting of the American Geophysical Union, San Francisco, CA.

Olson, J.R., C.P. Hawkins and R.A. Hill. 2009. Deriving Continuous Measurements of Stream Environmental Gradients from Categorical Geologic Maps. Annual Meeting of the U.S. Regional Association of the International Association of Landscape Ecology, Snowbird, UT.

Hill, R.A., K. Chinnayakanahalli, **J.R. Olson**, C.P. Hawkins, and D.G. Tarboton. 2007. Rapid watershed delineation and characterization with the Multi-Watershed Delineation tool: GIS software in support of regional watershed analyses. Annual Meeting of the North American Benthological Society, Columbia, SC.

Chinnayakanahalli, K., D. G. Tarboton, **J.R. Olson**, R. Hill and C. Kroeber. 2006. A Tool to Delineate Watersheds and River Networks for Multiple Sites Spread over Large Digital Elevation Models. Hydrology Days, Colorado State University, Fort Collins.

Service

Reviewer for:

Freshwater Science, Environmental Management, Ecological Modelling, and Journal of Hydrology.

Committees:

Society for Freshwater Science Policy Committee

North American Benthological Society 2008 Annual Meeting Organizing Committee