Jacob S. Diamond

Research Interests

Watershed hydrology and biogeochemistry. Ecosystem ecology and ecohydrology. Feedbacks and self-organization. Analysis of environmental data.

Education

Ph.D. [Forest Ecohydrology], Virginia Tech — Expected: May 2019

M.S. [Ecohydrology], University of Florida — May 2013

Concentration in Hydrologic Science

Certificate in Wetland Science

B.S.E. [Environmental Engineering], University of Florida — May 2011

Appointments

Graduate Research Assistant — August 2015 – present

Virginia Tech, Blacksburg, VA

- Conducted research in dissertation topics and ancillary projects
- Conducted peer review of primary ecohydrologic research
- Taught classes to undergraduates and assisted in grading

Water Resources Specialist — August 2013 – August 2015

SWCA Environmental Consultants, Salt Lake City, UT

- Managed projects for local governments with budgets of $60k–100k
- Conducted hydrologic and geomorphic analyses of rivers, lakes, and wetlands including statistical flow analyses, water budgets, groundwater analyses, hydrogeomorphic impacts of dams, water rights analyses, and impacts of irrigation on annual flow metrics
- Developed water quality monitoring programs and watershed management plans, including EPA-based Implementation Plans (IPs) based on Total Maximum Daily Loads (TMDLs)
- Identified and modeled costs and expected pollutant load reductions from best management practices for IPs based on TDMLs
- Modeled hydrologic systems with QUAL2k, BATHTUB, R, and Excel for Environmental Assessments (EAs), Environmental Impact Statements (EIS's), TMDLs, and IPs
- Wrote, compiled, and edited technical reports including wetland 404 permits, Restoration Plans, EAs, EIS's, and sediment, nutrient, and pathogen TMDLs and IPs
- Conducted risk analysis for environmental disasters
- Presented TMDLs and watershed-based IPs to local stakeholders in public meetings
- Communicated complex scientific concepts and results to clients in clear, understandable language

Wetland Field Technician — June 2013 – August 2013

Utah Department of Environmental Quality, Salt Lake City, UT

- Assisted in creation of wetland quality sampling routine
- Collected wetland water quality, soil, and biological data
- Conducted in-situ nutrient uptake experiments

Graduate Teaching Assistant — August 2011 – May 2013

University of Florida, Gainesville, FL

- Conducted thesis research
- Taught classes to undergraduates and assisted in grading

Research Assistant, Ecohydrology Laboratory — August 2009 – May 2011

University of Florida, Gainesville, FL

- Analyzed water chemistry with spectrophotometer
- Analyzed soil for carbon and nutrients
- Conducted stream velocity profiles and tracer experiments in streams and rivers
- Assisted in stream metabolism, wetland evapotranspiration, and paired watershed studies
- Installed and programmed high temporal resolution in-situ meters

Published Journal Articles

Diamond, J.S.* and M.J. Cohen. (2018). Complex patterns of catchment solute-discharge relationships for coastal plain rivers. *Hydrological Processes, 32*(3), 388–401. doi: 10.1002/hyp.11424.

Diamond, J.S.*, D.L. McLaughlin, R.A. Slesak, A.W. D'Amato, and B.J. Palik. (2018). Forested *versus* herbaceous wetlands: Can management mitigate ecohydrologic regime shifts from invasive emerald ash borer? *Journal of Environmental Management, 222*(15), 436–446. doi: 10.1016/j.jenvman.2018.05.082.

Manuscripts Submitted for Publication or in Preparation

Diamond, J.S.*, D.L. McLaughlin, R.A. Slesak, J.H. Kim, K. Schafer, B. Ebel, M. Forrest, and K. McGuire. Pest hydrology: A review. *In prep.*

Diamond, J.S.*, J. Epstein, M.J. Cohen, D.L. McLaughlin, J. Duberstein, Y. Hsueh, and R. Keim. A little relief: Autogenesis and ecological functions of wetland microtopography. *In prep.*

Stovall, A., J.S. Diamond*, D.L. McLaughlin, and H. Shugart. Quantifying Wetland Microtopography with Terrestrial Laser Scanning. *In prep.*

McLaughlin D.L., J.S. Diamond*, C. Quintero, and M. J. Cohen. Wetland-Landscape Connectivity Thresholds and Flow Dynamics from High Frequency Stage Measurements. *In prep.*

Skills

- R
- GIS
- Excel
- Spanish (conversational)
- Environmental data analysis and visualization
- Geospatial and multivariate statistics
- Environmental systems and hydrologic modeling
- Project management
- Grant and proposal preparation
- Public outreach and presentation
- Study design and implementation
- Leadership and networking

Professional Organizations

Society for Freshwater Science	May 2018–Present
Association for the Sciences of Limnology and Oceanography	February 2018–Present
American Association for the Advancement of Science	January 2016–Present
Society of Wetland Scientists	June 2012–Present
American Geophysical Union	June 2012–Present

Academic Awards

ICTAS Doctoral Scholar Experiential Learning Grant ($500)	October 2017
William R. Walker Fellowship Award ($2,300)	July 2017
1st Place in Category, 2nd Overall NYU Policy Case Competition, *Team Leader*	April 2017
William J. Dann Fellowship ($12,000)	August 2015
Virginia Tech ICTAS Doctoral Scholar Award ($160,000)	August 2015
Virginia Tech Cunningham Doctoral Scholar Award ($138,000)	*not accepted*
Outstanding Presentation at the American Geophysical Union Conference	December 2012
1st Place National Water Env. Fed. Design Competition, *Team Leader* ($2,500)	December 2011
Graduate Assistantship to Master's Program at UF ($32,000)	August 2011
Gareth Kerr Environmental Engineering Memorial Scholarship ($1,000)	May 2010
Charles Poekert Environmental Engineering Alumni Scholarship ($500)	May 2009
UF-HHMI GATOR Undergraduate Research Program ($2,500)	May 2008

Teaching Experience

Guest Lecturer - Wetland Hydrology and Biogeochemistry	Spring 2018
Teaching Assistant - Forestry Field Methods	Spring 2017
Teaching Assistant - Watersheds and Water Quality	Fall 2016
Teaching Assistant - Forest Soil and Watershed Mgmt	Fall 2015
Teaching Assistant - Forest Water Resources	Spring 2013
Teaching Assistant - Environmental Science	Fall 2011
Upward Bound Summer School Teacher - Physics, Chemistry, Earth/Space Science, and Biology	Summer 2007

Conference Presentations

AGU Fall Meeting – *Small changes create big differences: A study on the importance of microtopography in wetlands*	December 2018
SFS Annual Meeting – *Self-organized microtopography in black ash wetlands is driven by hydrology*	May 2018
Workshop on the Future of Ash Forests – *Six year effects of simulated EAB mortality and harvesting on black ash ecohydrology*	July 2017
AGU Fall Meeting – *Emerald Ash Borer Threat Reveals Ecohydrologic Feedbacks in Northern U.S. Black Ash Wetlands*	December 2016
SWS Annual Meeting – *Vegetation controls hydrology in northern black ash wetlands*	May 2015

Posters

AGU Fall Meeting– *Wetland microtopographic structure and function revealed with terrestrial laser scanning*	December 2017
São Paulo School of Advanced Science on Climate Change – *Emerald ash borer simulation reveals ecohydrologic feedbacks in black ash wetlands*	July 2017
Gordon Research Conference: Catchment Science – *Emerald ash borer simulation reveals ecohydrologic feedbacks in black ash wetlands*	June 2017
ICTAS Doctoral Scholar Poster Session – *The black ash tree is a foundational species and ecosystem engineer*	April 2017
AGU Fall Meeting – *Concentration-discharge relationships for variably sized streams in Florida: Patterns and drivers in long-term catchment studies*	December 2012
Southeastern Ecology and Evolution Conference – *Use of $\delta^{15}N$ to Trace Sources of Nutrient Enrichment on Tree Islands in the Everglades, Fl*	May 2009

Seminars and Talks

Cross-Boundaries Biogeochemistry Flash Talk – *An ecology of mind*	April 2018
Forest Resources and Environmental Conservation Spring Seminar – *Terrestrial laser scanning reveals wetland microtopographic structure and function*	March 2018
Science on Tap Flash Talk – *Why do so many forested wetlands organize around a single primary producer?*	March 2017
Cross-Boundaries Biogeochemistry Flash Talk – *What are the rules of life?*	March 2017
Cross-Boundaries Biogeochemistry Flash Talk – *How do forested wetlands self-organize?*	November 2016
Forest Resources and Environmental Conservation Spring Seminar – *How do Hydrologic Feedbacks Drive Ecosystem Structure and Process in Forested Wetlands?*	April 2016
School of Natural Resources and Environment Spring Seminar – *Concentration-discharge relationships for streams and rivers in Florida: Patterns and drivers*	May 2013

Outreach and Volunteering

Gordon Research Seminar on Catchment Science Co-Chair	June 2019
R Data Wrangling and Graphics Workshop for Grad Students	October 2018
Tazewell County 4-H Students Virginia Tech Visit	April 2018
Blacksburg High School Science Outreach	December 2017
William Fleming High School Science Outreach	November 2017
Department Graduate Student Association President	August 2016–May 2017
Departmental Spring Seminar Series Organizer	November 2016–April 2017
Christiansburg Middle School Stormwater Day	April 2017
Tazewell County 4-H Students Virginia Tech Visit	April 2017

Peer Review

Wetlands
Journal of Hydrology
Hydrological Processes
Hydrology and Earth System Sciences