**JEFFREY DANIEL MUEHLBAUER**



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# **Expertise**

*Stream Ecology*. Aquatic and riparian community ecology, food webs, multivariate statistics and ordination, aquatic macroinvertebrates, stable isotope analysis, aquatic biogeochemistry, leaf decomposition.

*Hydrology & Geomorphology*. Geomorphic surveys, in-stream hydraulics, sediment transport (incipient motion analysis), modeling (HEC-RAS).

*Restoration & Urbanization*. Stream and wetland compensatory mitigation, dam removal, ecological monitoring, effects of urbanization and restoration on aquatic ecosystems.

*Research Logistics*. Design and implementation of multi-year, international and domestic fieldwork in both remote and densely-populated regions, small and large-group undergraduate mentoring and leadership, oversight of simultaneous projects, lab management.

**Education**

Ph.D. Ecology *(In Progress)*. University of North Carolina at Chapel Hill (2013)

M.S. Ecology. University of North Carolina at Chapel Hill (2010)

B.S. Biology & Chemistry. Northern Arizona University (2007)

Ecology Emphasis, with Honors, *Summa cum laude.* 4.0 GPA.

**Research & Employment**

*University of North Carolina*. Chapel Hill, NC. Advisor: Dr. Martin W. Doyle

* University Fellow (2007–2012), Geography/Ecology TA/RA (2008–Pres.)

*Leibniz Institute of Freshwater Ecology & Inland Fisheries (IGB)*. Berlin, Germany. Collaborators: Drs. Klement Tockner, Michael T. Monaghan, Martin T. Pusch

* Visiting Fellow (2011)

*Northern Arizona University*. Flagstaff, AZ. Advisor: Dr. Jane C. Marks

* Research Associate, Department of Biology (2003–2007)

*Ecological Restoration Institute*. Flagstaff, AZ. *Director: Dr. Peter Z. Fulé*

* Assistant Crew Leader (2006), Research Assistant (2004–2007)

*Duke University*. Durham, NC. Director: Dr. Christopher B. Newgard

* Chemist/Geneticist Intern (2005)

**Peer-Reviewed Publications**

7) Riggsbee, J.A., Doyle, M.W., Julian, J.P., Manners, R., Muehlbauer, J.D., Sholtes, J. & Small, M.J. (*In Press*) Influence of aquatic and semi-aquatic organisms on channel forms and processes. In: *Treatise on Geomorphology* (Eds J. Schroder & E. Wohl). 11 pp. Vol. 9. Academic Press, San Diego.

6) Muehlbauer, J.D. & Doyle, M.W. (2012) Knickpoint effects on macroinvertebrates, sediment, and discharge in urban and forested streams: Urbanization outweighs micro-scale heterogeneity. *Freshwater Science (formerly Journal of the North American Benthological Society)* 31:282-295*.* [DOI: 10.1899/11-010.1](http://dx.doi.org/10.1899/11-010.1)

5) Muehlbauer, J.D., Duncan, J. M. & Doyle, M.W. (2011) Benign use of salt slugs on aquatic macroinvertebrates: Measuring discharge with salt during an aquatic ecology study. *River Research & Applications.* [DOI: 10.1002/rra.1546](http://dx.doi.org/10.1002/rra.1546)

4) Muehlbauer, J.D., Doyle, M.W. & Bernhardt, E.S. (2011) Macroinvertebrate community responses to a dewatering disturbance gradient in a restored stream. *Hydrology and Earth System Sciences* 15:1771-1783. [DOI: 10.5194/hess-15-1771-2011](http://dx.doi.org/10.5194/hess-15-1771-2011)

3) Fuller, R.L., Griego, C., Muehlbauer, J.D., Dennison, J. & Doyle M.W. (2010) Response of stream macroinvertebrates in flow refugia and high-scour areas to a series of floods: A reciprocal replacement study. *Journal of the North American Benthological Society (now Freshwater Science)* 29:750–760. [DOI: 10.1899/09-107.1](http://dx.doi.org/10.1899/09-107.1)

2) Muehlbauer J.D., LeRoy C.J., Lovett J.M., Flaccus K.K., Vlieg J.K. & Marks J.C. (2009) Short-term responses of decomposers to flow restoration in Fossil Creek, Arizona, USA. *Hydrobiologia* 618:35–45*.* [DOI: 10.1007/s10750-008-9545-3](http://dx.doi.org/10.1007/s10750-008-9545-3)

1) Joseph, J.W., Odegaard, M.L., Ronnebaum, S.M., Burgess, S.C., Muehlbauer, J., Sherry, A.D. & Newgard, C.B. (2007) Normal flux through ATP-citrate lyase or fatty acid synthase is not required for glucose-stimulated insulin secretion. *Journal of Biological Chemistry* 282:31592–31600. [DOI: 10.1074/jbc.M706080200](http://dx.doi.org/10.1074/jbc.M706080200)

**Manuscripts In Review & In Prep**

8) Wang, H., Muehlbauer, J.D., Jiang, D.Q. & Zhang, Z.J. (In Review) Linking microorganism homeostasis with soil phosphorous in wetlands subjected to warming. *The International Society for Microbial Ecology (ISME) Journal*.

9) Muehlbauer, J.D., Collins, S.F., Doyle, M.W. & Tockner, K. (In Prep) How wide is a stream? The spatial extent of the “stream signature” in terrestrial food webs using meta-analysis. *For Ecology*.

10) Muehlbauer, J.D. & Doyle, M.W. (In Prep) Braided river floods as natural experiments for island biogeography, temporal succession, and intraguild predation theory. *For Ecology*.

11) Muehlbauer, J.D., Doyle, M.W. & Tockner, K. (In Prep) Geophysical controls on the spatial dynamics of river-to-land subsidies, based on global field analysis. *For Ecological Monographs*.

12) Clay, P.A., Muehlbauer, J.D. & Doyle, M.W. (In Prep) Channel braids affect macroinvertebrate communities more than tributary junctions. *For Freshwater Biology*.

13) Muehlbauer, J.D. & Doyle, M.W. (In Prep) Does biomonitoring length affect conclusions of restoration success? A 5-year stream/wetland case study. *For Restoration Ecology.*

**Theses & Outreach Publications**

Muehlbauer, J.D. (In Prep) “Stream signatures” and aquatic-terrestrial interactions in arthropod food webs. *Ph.D. Dissertation*, University of North Carolina at Chapel Hill.

Muehlbauer, J.D. (2010) Ecological heterogeneity in streams: geomorphic and hydrologic influences macroinvertebrate community structure. *M.S. Thesis*, University of North Carolina at Chapel Hill. 138 pp.

Muehlbauer, J.D. (2007) Getting all wet at the ERI: a study of how riparian restoration influenced the aquatic ecosystem in Fossil Creek, Arizona. *Ecological Restoration Institute Newsletter*, Spring 2007:3 pp.

Muehlbauer, J.D. (2004) Bridges, beer cans, and bulldozers: in search of answers along Abbey’s Road. *A Celebration of Ideas, NAU Honors Publication*, Fall 2004:14 pp.

**Major Conference Presentations (AS LEAD AUTHOR ONLY)**

8) Muehlbauer, J.D., Clay, P. & Doyle, M.W. (2012) Temporal succession and island biogeography in a braided river ecosystem following flash flooding: a bank-side community perspective. SFS.

7) Muehlbauer, J.D., Doyle, M.W & Tockner, K. (2011) Effects of river geomorphology on the spatial importance of aquatic energy flows into terrestrial food webs. AGU.

6) Muehlbauer, J.D., Tockner, K. & Doyle, M.W. (2011) “Stream signatures:” aquatic subsidy importance to terrestrial foodwebs with distance from the stream. NABS.

5) Muehlbauer, J.D. & Doyle, M.W. (2010) Does urbanization overcome micro-scale heterogeneity? Knickpoint effects on macroinvertebrates, sediment, and discharge in urban and forested streams. ASLO/NABS.

4) Muehlbauer, J.D., Bernhardt, E.S. & Doyle, M.W. (2009) Macroinvertebrate community responses to an experimental drought gradient on the outer coastal plain of North Carolina. NABS.

3) Muehlbauer, J.D. & Doyle, M.W. (2008) Knickpoint effects on habitat and the macroinvertebrate community. Stream Restoration in the Southeast Conference.

2) Muehlbauer, J.D., *et al.* (2007) Short-term effects of dam decommissioning and flow restoration in Fossil Creek. ESA/SER.

1) Muehlbauer, J.D., *et al.* (2005) Diversion dam reduces decomposition, fungal biomass and macroinvertebrate abundance and diversity (Poster). AGU/NABS.

**Invited, non-conference Presentations**

“Water, watersheds & people.” UNC special course on water issues, 2010

“Carbon dioxide” (for 200 children). Chapel Hill/Carrboro City Schools, 2009

**Teaching Experience**

*ENST 201: Environment & Society*. UNC, Chapel Hill, NC 8/2009–12/2009, 8/2012-Pres.

* Course for underclassmen on (inter)national environmental issues and policies
* Taught 3 recitation sections of ~20 students each; lectured, graded, led discussions

*ENST 698: Cistern Water Quality Capstone Course*. UNC, Chapel Hill, NC 1/2011–5/2011

* Provided guidance for 9-student undergraduate team in water quality sampling
* Facilitated data collection, analysis, and reporting as Graduate Research Consultant

*GEOG 442: River Processes*. UNC, Chapel Hill, NC 8/2010–12/2010

* Graduate/upper undergraduate 20-student class in fluvial geomorphology
* Lectured occasionally, prepared and graded assignments as Teaching Assistant

*GEOG 110: Environmental Systems*. UNC, Chapel Hill, NC 8/2008–12/2008, 1/2011–5/2011

* Freshman-level lecture class in geography, ~150 students
* Lectured occasionally, graded, and held office hours as Teaching Assistant.

*ECOL 569: Current Issues in Ecology*. UNC, Chapel Hill, NC 1/2009–5/2009

* First-year Ecology graduate core class on researching and publishing a paper
* Led discussions, graded, provided writing assistance as Teaching Assistant

*HON 399: Beyond the Bachelors*. NAU, Flagstaff, AZ 1/2006–5/2007

* Honors class for ~10 students considering graduate school
* Assisted with de novo course creation: Syllabus/scheduling/material development
* Designed, supervised, and maintained online class component as Teaching Assistant

**Grants & Recognitions**

*Society & Organizational Awards*

* Association for the Sciences of Limnology & Oceanography Travel Award, 2012 (*$500*)
* IGB (Berlin) Fellowship in Freshwater Science, 2011 (*~$6000*)
* CUAHSI Hydrology Pathfinder Fellowship, 2010 (*$5000*)
* Sigma Xi Grant in Aid of Research (GiAR), 2010 (*$800*)
* Cary IES Ecosystem Ecology Course, 2010
* North American Benthological Society President’s Award, 2009 (*$900*)
* Kirk Smith Ecological Restoration Institute Scholarship, 2005 (*$500*)
* Exchange Club Chapter and Regional Scholarships for Patriotism, 2003 (*$3,000*)
* Canon International Envirothon First Place in Aquatics Section, 2003
* Arizona Envirothon State Champions, 2003
* Eagle Scout, 2001

*University of North Carolina at Chapel Hill Awards*

* Royster Society Fellowship, UNC 2007-2012 (*~$200,000*)
* Graduate & Professional Student Federation Travel Award, 2009 (*$400*)

*Northern Arizona University Awards*

* Gold Axe Award (most prestigious undergraduate award given at NAU), 2007
* Bayless Biology Scholarship (highest GPA in Biology Department), 2007 (*$250*)
* Biology Senior Scholastic Award (outstanding undergraduate research), 2007 (*$250*)
* Chemistry Senior Scholar Award (outstanding departmental contribution), 2007 (*$250*)
* Provost’s Scholarship, 2003–2007 (*~$50,000*)
* Robert C. Byrd Arizona Scholarship, 2003–2007 (*$12,000*)
* Raymond Scoutmaster Scholarship, 2006 (*$500*)

**Professional Service & Synergistic Activities**

*Graduate Student President*. UNC Curriculum for the Environment & Ecology, 2012–Pres.

*Undergraduate Awards Committee*. Society for Freshwater Science, 2012–Pres.

*“Instars” Undergraduate Program Mentor*. Society for Freshwater Science, 2012

*Seminar Committee*. UNC Curriculum for the Environment & Ecology

* Chair 2011–2012; Member 2008–2009, 2010–2011

*Faculty Search Committee*. UNC Curriculum for the Environment & Ecology, 2011–2012

*Graduate Research Consultant*. UNC Cistern Water Quality Capstone, 2011

*Author English Help Volunteer*. Ecological Society of America, 2006–Pres.

*Peer-Reviewer*. (≥1 each)

* Ecological: Ecology, Restoration Ecology, Canadian Journal of Fisheries and Aquatic Sciences, Limnology and Oceanography: Fluids and Environments
* Geophysical: Water Resources Research, River Research & Applications, Journal of the American Water Resources Association

*“Science Expert.”* Chapel Hill Schools, NC Museum of Natural Science, NC State Fair, NC Division of Water Quality, NC Museum of Life & Science, Ravenscroft School. 2009–Pres.

*Envirothon Coach.* Sinagua (AZ) High School Envirothon team, 2006-2007

*Assistant Scoutmaster, Ropes Instructor & Trip Leader*. Boy Scouts of America, 2003–2007

*Conservation Volunteer & Organizer.* The Nature Conservancy, Sierra Club & Sierra Student Coalition, Society of Environmental Communicators, 2002-2007

*Chapter President/VP*. NAU Student Affiliates of the American Chemical Society, 2005–2007

*Active Member*. (Join date)

* Ecological Society of America (ESA), 2005
* American Geophysical Union (AGU), 2007
* Society for Freshwater Science (SFS), 2008
* Association for the Sciences of Limnology and Oceanography (ASLO), 2009
* Society for Ecological Restoration International (SER), 2005
* European Geophysical Union (EGU), 2011
* Sigma Xi, 2010
* Honor Society of Phi Kappa Phi, 2005