**JEFFREY DANIEL MUEHLBAUER**



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# **Expertise**

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

**Recent Awards & Recognitions**

CUAHSI Pathfinder Fellowship, 2010

Sigma Xi GiAR, 2010

NABS President’s Award, 2009

IGB Fellowship in Freshwater Science, 2011

Cary IES Ecosystem Ecology Course, 2010

UNC Royster Society Fellowship, 2007-2012

**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*.

**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.

**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, February 2010

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

**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

*Science volunteer*. 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.

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

*Peer-reviewer*. (≥1 each)

* Ecological: Ecology, Restoration Ecol., Can. J. Fish. Aq. Sci.
* Geophysical: WRR, L&O: Fluids and Env., River Res. & Appl., J. Am. Water Res. Assoc.

*Active Member*. (Join date)

* Ecological Society of America (SER). 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