**JEFFREY DANIEL MUEHLBAUER**



Curriculum for the Environment & Ecology University of North Carolina- Chapel Hill

CB 3275

Chapel Hill, NC 27599

(919) 357-3870

jeffreym@unc.edu

http://www.unc.edu/~jeffreym



# **EDUCATION**

University of North Carolina-Chapel Hill (UNC), Chapel Hill, North Carolina

Doctor of Philosophy in Ecology (*In progress, expected completion 2013)*

University of North Carolina-Chapel Hill (UNC), Chapel Hill, North Carolina, May 2010

Masters of Science in Ecology

Northern Arizona University (NAU), Flagstaff, Arizona, May 2007

Bachelor of Science in Biology with an emphasis in Ecology

Bachelor of Science in Chemistry

Honors Program

GPA: 4.0; *Summa cum laude*

**RESEARCH & EMPLOYMENT**

Graduate Fellow, UNC Rivers Group (Dr Martin Doyle). Chapel Hill, NC 6/2007-Present

* Ph.D. research in development, to focus on foodweb responses to floodplain morphology/hydrology and the presence of lateral biological stream signatures on the terrestrial environment.
* M.S. thesis research focused on macroinvertebrate community, sediment, and hydrologic heterogeneity surrounding knickpoints in NC Piedmont as well as macroinvertebrate community responses to an experimental drought/rewetting at a wetland mitigation site on the NC Outer Coastal Plain.
* Spent one summer field season in Adirondacks measuring velocities and calculating shear stress during 4x-weekly recreational flood releases, identifying macroinvertebrate communities, and surveying river channels.
* Monitored (quarterly) macroinvertebrate community at a stream/wetland mitigation site from early restoration stages to current.
* Carried out suspended sediment monitoring above and below an urban stream restoration, from pre-restoration to current.
* Oversaw work of multiple undergraduate field assistants.
* Facilitated laboratory setup and management.

Research Associate, NAU Aquatic Ecology Lab (Dr Jane Marks). Flagstaff, AZ 8/2003-5/2007

* Measured aquatic ecosystem effects of a diversion dam in Fossil Creek, AZ.
* Designed an independent research project studying ecological impacts of dam decommissioning.
* Analyzed leaf litter decomposition, invertebrate abundance, and fungal biomass using a Before-After Control-Impact (BACI) design.

Research Assistant, Ecological Restoration Institute. Flagstaff, AZ 3/2004-5/2007

* Promoted to Assistant Crew Leader and supervised field research teams.
* Collected ecological field data during summer field seasons.
* Applied ecological, statistical, and basic scientific skills while working in a lab.

Intern, Duke University. Durham, NC 5/2005-8/2005

* Conducted biomedical/chemical research in an academic lab.
* Independently-researched enzymes affecting Diabetic β-cell function.

Ropes Instructor, BSA Camp Raymond. Parks, AZ 6/2003-8/2003

* Led Boy Scout patrols through outdoor physically and mentally challenging, team-building activities.

Americorps team, Northland Youth Conservation Corps. Flagstaff, AZ 6/2002-8/2002

* Worked with a team of other Americorps volunteers in invasive weed removal and forest restoration thinning projects.

**PEER-REVIEWED PUBLICATIONS**

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* **29**:750-760.

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*.*

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.*

Muehlbauer, J.D. & Doyle, M.W. (*Submitted*) Knickpoint effects on macroinvertebrates, sediment, and discharge in urban and forested streams: Urbanization outweighs micro-scale heterogeneity. *Submitted to the Journal of the North American Benthological Society.*

Jobe, R.T., Anton, A., Bidgood, E.P., Breckheimer, I., Caplow, S.C., Evans, B., Faestel, M., Muehlbauer, J.D., Palmquist, K., Seiter, S.A., Seymour, S.D., Tessel, S.M. & Moody, A. (*Submitted*) An assessment of the All-Taxa Biodiversity Inventory: Putting the science back in citizen-science. *Submitted to Ecological Applications.*

Muehlbauer, J.D., Doyle, M.W. & Bernhardt, E.S. (*In preparation*) Community responses to an experimental, spatio-temporal drought gradient. *In preparation for Ecology Letters*.

Muehlbauer, J.D., Duncan, J. & Doyle, M.W. (*In preparation*) Benign usage of salt tracers concurrent with aquatic ecology studies. *In preparation for Canadian Journal of Fisheries & Aquatic Sciences.*

**OTHER PUBLICATIONS**

Muehlbauer, J.D. (2010) Ecological heterogeneity in streams: Geomorphic and hydrologic influences on macroinvertebrate community structure. MS Thesis, UNC*.*

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. 3pp. Available at http://www.eri.nau.edu.

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.

Muehlbauer, J.D. (2004) Superhumans: Raskolnikov, Meursault, Napoleon, and Beyond. *A*

*Celebration of Ideas,* NAU Honors Publication Spring 2004: 10-12.

**PRESENTATIONS**

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 (Oral Presentation). North American Benthological Society (NABS); Santa Fe, NM.

Seiter, S., Jobe, R.T., Anton, A., Bidgood, E.P., Breckheimer, I., Caplow, S.C., Evans, B., Faestel, M., Muehlbauer, J.D., Palmquist, K., Seymour, S.D., Tessel, S.M., & Moody, A. (2009) The Great Smoky Mountains All-Taxa Biological Inventory: Lessons for sampling design, management, and citizen science (Poster). Ecological Society of America (ESA); Albuquerque, NM.

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 (Oral Presentation). North American Benthological Society (NABS); Grand Rapids, MI.

Fuller, R., Griego, C., Dennison, J., Muehlbauer, J.D. & Doyle, M.W. (2009) Response of stream macroinvertebrates in flow refugia and high scour areas to a series of floods: A reciprocal replacement study (Oral Presentation). North American Benthological Society (NABS); Grand Rapids, MI.

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

Muehlbauer, J.D., LeRoy, C.J., Lovett, J.M., Vlieg, J.K. Flaccus, K.K. & Marks, J.C. (2007) Short-term effects of dam decommissioning and flow restoration in Fossil Creek (Oral Presentation). Ecological Society of America (ESA)/Society for Ecological Restoration (SER) Joint Conference; San Jose, CA.

Muehlbauer, J.D., LeRoy, C.J., Lovett, J.M., Vlieg, J.K., Flaccus, K.K. & Marks, J.C. (2007) Short-term effects of diversion dam decommissioning and flow restoration on decomposition, fungal biomass, and the macroinvertebrate community in Fossil Creek, AZ, USA (Poster). Undergraduate Research and Design Day; NAU, Flagstaff, AZ.

Muehlbauer, J.D., Lovett., J.M., LeRoy, C.J., Vlieg, J.K., Flaccus, K.K., Bennett, S.E., Delaney, I.A., Jones, K.L., Norman, P.A., Patrick, M.M., Plichta, J.R. & Marks, J.C. (2005) Diversion Dam Reduces Decomposition, Fungal Biomass and Macroinvertebrate Abundance and Diversity (Poster). North American Benthological Society (NABS)/American Geophysicists Union (AGU) Joint Conference; New Orleans, LA. Undergraduate Research & Design Day; NAU, Flagstaff, AZ. Undergraduate Showcase; NAU, Flagstaff, AZ.

Muehlbauer, J.D. (2004) Bridges, Beer Cans, and Bulldozers: In Search of Answers along Abbey’s Road (Oral Presentation). Fall Honors Symposium; NAU, Flagstaff, AZ.

Muehlbauer, J.D. (2004) Superhumans: Raskolnikov, Meursault, Napoleon, and Beyond (Oral Presentation). Spring Honors Symposium; NAU, Flagstaff, AZ.

**TEACHING**

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

* Course for underclassmen on (inter)national environmental issues and policies
* Taught 3 recitation sections ~60 students; lectured, graded, led discussions.

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

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

GEOG 110: Environmental Systems. UNC, Chapel Hill, NC 8/2008-12/2008.

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

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

* Honors class for students considering graduate school
* Assisted with course creation process: Syllabus/schedule planning
* Designed, supervised, and maintained online (Blackboard) class component
* Served as Teaching Assistant.

**PROFESSIONAL AFFILIATIONS**

Student Member, American Society of Limnology and Oceanography (ASLO), 2009-Pres.

Student Member, North American Benthological Society (NABS), 2008-Present

Student Member, American Geophysicists Union (AGU), 2007-Present

Student Member, Ecological Society of America (ESA), 2005-Present

Student Member, Society for Ecological Restoration (SER), 2005-Present

Member, Honor Society of Phi Kappa Phi, 2005-Present

Chapter President & VP, Student Affiliates of the American Chemical Society (SAACS)

* Organized meetings and recruitment, planned service activities and professional development opportunities, 2003-2007.

**PROFESSIONAL SERVICE**

Author Help Volunteer, Ecological Society of America (ESA), 10/2006-Present

* Assist international ecologists with improving the English grammar and fluidity of their manuscripts prior to submission for peer-review.

Seminar Search Committee, UNC Curriculum in Ecology, 5/2008-5/2009,5/2010-Present

* Invited, coordinated, and hosted speakers for weekly seminar program.

Peer-reviewer: Journal of the American Water Resources Association, Water Resources Research

**COMMUNITY INVOLVEMENT**

Guest lecturer, Chapel Hill/Carrboro City Schools, 2009-Present

* Gave lectures and demonstrations on science to school children.

Eagle Scout & Assistant Scoutmaster, Boy Scouts of America (BSA), 1991-2007

* Mentored and instructed scouts in outdoor skills and character building.

Coordinator, Sierra Student Coalition (SSC), 2002-2007

* Directed students in environmental lobbying events and adventure outings.

Organizer, Society of Environmental Communicators (SEC), 2005-2007

* Facilitated planning and coordination of campus-wide Earth Day celebration.

Coach, Sinagua High School Envirothon team, 2006-2007

* Trained students in aquatic ecology, forestry, and climate change issues.

Volunteer, The Nature Conservancy, 2002-2005

* Assisted with service and ecological projects at Hart Prairie Nature Preserve.

**AWARDS & RECOGNITIONS**

Sigma Xi Grant in Aid of Research, 4/2010. $800

* To develop a method for studying aquatic-terrestrial foodweb subsidies.

CUAHSI Pathfinder Fellowship, 3/2010. $5000

* To support multi-site research in Hydrology.

Binghamton Symposium Student Travel Award, 10/2009. $75

* For travel to the Binghamton Geomorphology Conference in Blacksburg, VA.

NABS President’s Award, 5/2009. $900

* Endowment award for MS research proposal for an experimental drought study.

Graduate Professional Student Federation Travel Award, UNC, 4/2009. $400 (Declined)

* Applied for grant to attend 2009 NABS meeting (declined due to other funding)

Pogue Fellow, UNC, 8/2007-Present.

* Five-year fellowship tuition/assistantship within the University Fellows program.

Gold Axe Award, NAU, 4/2007

* University-wide award given to seniors who have exhibited strong scholastic achievement and extracurricular/community involvement while at NAU.

Bayless Biology Scholarship, NAU, 4/2007

* + Biology departmental scholarship awarded for completing a significant research project that is in preparation for publication in a peer-reviewed journal and presentation at a national conference.

Senior Scholastic Award, NAU, 4/2007

* + Biology Departmental award given to senior student with the highest GPA.

Senior Scholar Award, NAU, 4/2007

* + - Chemistry departmental award given to a senior student with strong scholastic achievement who has made a significant contribution to the Chemistry Department.

Raymond Scoutmaster Scholarship, NAU, 4/2006

* + - University-wide scholarship given to an NAU student who is active with the Boy Scouts of America.

Kirk Smith Scholarship, NAU, 4/2005

* + - Awarded by the Ecological Restoration Institute to outstanding Undergraduate Research Assistants.

Provost’s Scholarship, NAU, 8/2003-5/2007

* + - Four-year scholarship awarded to NAU students who graduated in the top two percent of their high school classes.

Exchange Club Chapter and Regional Scholarships, 5/2003 and 7/2003

* + - Scholarship given to the winner of chapter and region-wide essay competition on American patriotism.

First place in Aquatics section, Canon International Envirothon, Frederick, MD, 7/2003

* + - * Served as captain of five-person team; competition involved field and written tests.

State Champions, Arizona Envirothon, Casa Grande, AZ, 4/2003

* + - * Won all-around competition and individual competitions in aquatics, forestry, soils, wildlife, and agriculture involving field, written, and oral tests.