

CURRICULUM VITAE

Emily S. Bernhardt
3313 French Family Science Building, Box 90338
Department of Biology
Duke University
Durham, NC 27708
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919-660-7318

EDUCATION:

1996, B.S., Biology, minor in Chemistry, University of North Carolina, Chapel Hill, NC

2001, Ph.D., Ecology and Evolutionary Biology, Cornell University, Ithaca, NY
Gene E. Likens and Barbara L. Peckarsky, graduate advisors

RESEARCH INTERESTS:

Effects of global change (urbanization, N deposition, rising CO₂) on the biogeochemistry of streams and soils, restoration ecology, interactions between carbon and nitrogen cycling, long-term change in stream ecosystems, urban ecology

RESEARCH AND PROFESSIONAL EXPERIENCE / AFFILIATIONS:

2004-Present, Assistant Professor, Department of Biology, Duke University

2006-Present, Faculty Affiliate, Division of Biological Sciences, University of Montana

2005-Present, Secondary Appointment, Division of Environmental Science & Policy, Nicholas School of the Environment and Earth Sciences, Duke University

2002-2004 Postdoctoral Fellow, Departments of Entomology & Biology, University of Maryland, College Park (with Margaret A. Palmer)

2001-2002 Postdoctoral Fellow, Nicholas School of the Environment and Earth Sciences, Duke University (with William H. Schlesinger)

AWARDS AND FELLOWSHIPS:

2008 Outstanding Postdoctoral Mentor Award, Duke University Postdoctoral Association

2005 NSF CAREER Award

2004 Hynes Award for New Investigators from the North American Benthological Society

2002 Wildco Award for Best Oral Presentation from the North American Benthological Society

1996-2000 NSF Doctoral Fellowship

1992-1996 Coffey Foundation Scholarship

1992 NC Merit Award

PROFESSIONAL MEMBERSHIPS:

- Ecological Society of America (ESA)
- North American Benthological Society (NABS)
- American Institute of Biological Sciences (AIBS)
- American Geophysical Union
- American Society of Limnology and Oceanography

PUBLICATIONS:

Underline denotes mentored graduate student or postdoctoral associate

In Review

1. Phillips, R.P., **E.S. Bernhardt** and W.H. Schlesinger. *In Review*. Effects of elevated CO₂ and N availability on root exudation in loblolly pine (*Pinus taeda* L.) seedlings.
2. Wiesner, M.R., G.V. Lowry, K. Jones, M.F. Hochella, R.T. DiGiulio, E. Casman, and **E.S. Bernhardt**. *In Review*. Viewpoint. Decreasing uncertainty in assessing environmental exposure, risk and ecological implications of nanomaterials. Environmental Science and Technology

In Press

1. Wright, J.P., A. Symstad, J.M. Bullock, K. Engelhardt, L. Jackson and **E.S. Bernhardt**. *In Press*. Restoring biodiversity and ecosystem function: will an integrated approach improve results? Ch. # in The Disentangled Bank: The Ecological and Social Implications of Human Impacts on Biodiversity. Naeem, Bunker et al. (eds).
2. Ardón, M. and **E.S. Bernhardt**. *In press*. Restoring Rivers and Streams. Encyclopedia of Life Sciences. A20148.

Published

1. Phillips, R.P., Y. Erlitz, R. Bier, and **E.S. Bernhardt**. 2008. A new approach for capturing soluble root exudates in forest soils. Functional Ecology 22: 990-999.
2. **Bernhardt, E.S.** and W.H. McDowell. 2008. Twenty years apart: comparisons of DOM uptake during leaf leachate releases to Hubbard Brook Valley streams 1979 vs. 2000. JGR Biogeosciences 113, G03032. doi:10.1029/2007JG000618
3. *Invited Review*: **Bernhardt, E.S.**, L.A. Band, C. Walsh and P Berke. 2008. Understanding, managing and minimizing urban impacts of surface water nitrogen loading. Annual Review of Conservation and the Environment. Annals of the New York Academy of Sciences, 1134: 61-96
4. Poole, G.C., S.J. O'Daniel, K.L. Jones, **E.S. Bernhardt**, A.M. Helton, J.A. Stanford, W.W. Woessner, and B.R. Boer. 2008. Hydrologic Spirals: Conceptualizing the Hydrologic Template of Stream and River Ecosystems. River Research and Applications. 24: 1018-1031.
5. Craig, L.S., M.A. Palmer, D.C. Richardson, S. Filoso, **E.S. Bernhardt**, B.P. Bledsoe, M.W. Doyle, P.M. Groffman, B.A. Hassett, S.S. Kaushal, P.M. Mayer, S.M. Smith, and P.R. Wilcock. 2008. Stream restoration strategies for reducing river nitrogen loads. Frontiers in Ecology and the Environment. 6, doi:10.1890/070080
6. Fierer, N., J.L. Morse, S. Berthrong, **E.S. Bernhardt**, R.B. Jackson. 2007. The landscape-level biogeography of stream bacterial communities. Ecology 88: 2162-2173.
7. Warren, D.R., **E. S. Bernhardt**, R. O. Hall, Jr., G.E. Likens. 2007. Forest age, woody debris, and nutrient dynamics in headwater streams of the White Mountains, NH. Earth Surface Processes and Landforms 32: 1154-1163.

8. Palmer, M.A., J.D. Allan, J.L. Meyer, and **E.S. Bernhardt**. 2007. River Restoration in the United States in the 21st Century. Restoration Ecology. 15: 472-481.
9. **Bernhardt, E.S.**, E.B. Sudduth, M.A. Palmer, J.D. Allan, J.L. Meyer, G. Alexander, J. Follstad-Shah, B. Hassett, R. Jenkinson, R. Lave, J. McFall, L. Pagano. 2007. Restoring Rivers one Reach at a Time: Results from a survey of U.S. river restoration practitioners. Restoration Ecology. 15:482-493.
10. Sudduth, E.B., J.L. Meyer, **E.S. Bernhardt**. 2007. Stream restoration practices in the southeastern US. Restoration Ecology. 15: 573-583.
11. Hassett, B.A., M.A. Palmer and **E.S. Bernhardt** 2007. Evaluating stream restoration in the Chesapeake Bay watershed through practitioner interviews. Restoration Ecology. 15:563-572.
12. Kondolf, G.M., S. Anderson, R. Lave, L. Pagano, A. Merelender, **E.S. Bernhardt**. 2007. Two Decades of River Restoration in California: Trends in Implementation and Reporting. Restoration Ecology. 15: 516-523.
13. Follstad-Shah, J.J., C.N. Dahm, S.P. Gloss, **E.S. Bernhardt**, and D.A. Price. 2007. River and riparian restoration in the Southwest: Results of the National River Restoration Science Synthesis Project. Restoration Ecology 15: 550-562.
14. **Bernhardt, E.S.** and M.A. Palmer. 2007. Restoring streams in urbanizing landscapes. Freshwater Biology 52: 738-751.
15. **Bernhardt, E.S.**, S.E. Bunn, D.D. Hart, B. Malmqvist, T. Muotka, R.J. Naiman, C. Pringle, M. Reuss, and B. van Wilgen. 2006. Perspective: The challenge of ecologically sustainable water management. Water Policy. 8:475-479. ***authors alphabetical*
16. Schlesinger, W. H., **E. S. Bernhardt**, E. H. DeLucia, D. S. Ellsworth, A. C. Finzi, G. R. Hendrey, K. S. Hofmockel, J. Lichter, R. Matamala, D. Moore, R. Oren, J. S. Phippen, and R. B. Thomas. 2006. The Duke Forest FACE experiment: CO₂ enrichment of a loblolly pine forest. *in*. J. Nösberger, S. P. Long, R. J. Norby, M. Stitt, G.R.Hendrey, and H.Blum, (editors). Managed Ecosystems and CO₂ Case Studies, Processes, and Perspectives. Springer-Verlag, Heidelberg Berlin. ***except for 1st author, authors alphabetical*
17. Jenkinson, R., K. Barnas, J. Braatne, **E.S. Bernhardt**, M. Palmer, J.D. Allan, and the National River Restoration Science Synthesis. 2006. Stream restoration databases and case studies: a guide to information resources and their utility in advancing the science and practice of restoration. Restoration Ecology. 14: 177-186.
18. Palmer, M.A. and **E.S. Bernhardt**. 2006. Hydroecology and river restoration: ripe for research and synthesis. Water Resources Research . **Vol. 42: W03S07**
19. **Bernhardt, E.S.**, J. Barber, J.S. Phippen, L.A. Taneva, J. Andrews, and W.H. Schlesinger. 2006. Long-term effects of free air CO₂ enrichment (FACE) on soil respiration. Biogeochemistry 77:91-116
20. Schlesinger, W.H., K.H. Reckhow, and **E.S. Bernhardt**. 2006. Global change: the nitrogen cycle and rivers. Water Resources Research 42: W03S06.

21. Hassett, B., M.A. Palmer, **E. S. Bernhardt**, S. Smith, J. Carr, and D. Hart. 2005. Status and Trends of River and Stream Restoration in the Chesapeake Bay Watershed. Frontiers in Ecology and the Environment 5: 259-267.
22. **Bernhardt, E.S.**, M.A. Palmer, J.D. Allan, R. Abell, G. Alexander, S. Brooks, J. Carr, S. Clayton, C. Dahm, J. Follstad Shah, D.L. Galat, S. Gloss, P. Goodwin, D.H. Hart, B. Hassett, R. Jenkinson, S. Katz, G.M. Kondolf, P.S. Lake, R. Lave, J.L. Meyer, T.K. O'Donnell, L. Pagano, E. Sudduth. 2005. River Restoration in the United States: A national synthesis. Science 308:636-637.
23. **Bernhardt, E.S.**, G.E. Likens, R.O. Hall, Jr., D.C. Buso, S.G. Fisher, T.M. Burton, J.L. Meyer, W.H. McDowell, M.S. Mayer, W.B. Bowden, S.E.G. Findlay, K.H. Macneale, R.S. Stelzer, W.H. Lowe. 2005. Can't See the Forest for the Stream? The capacity of instream processing to modify terrestrial nitrogen exports. BioScience 52:219-230.
24. Palmer, M.A., **E.S. Bernhardt**, J.D. Allan, P.S. Lake, G. Alexander, S. Brooks, J. Carr, S. Clayton, C. Dahm, J. Follstad Shah, D.L. Galat, S. Gloss, P. Goodwin, D.H. Hart, B. Hassett, R. Jenkinson, G.M. Kondolf, R. Lave, J.L. Meyer, T.K. O'Donnell, L. Pagano, P. Srivastava, E. Sudduth. 2005. Standards for Ecologically Successful River Restoration. Journal of Applied Ecology 42: 208-217.
25. Palmer, M.A., **E.S. Bernhardt**, E.A. Chornesky, S.L. Collins, A.P. Dobson, C.S. Duke, B.D. Gold, R. Jacobson, S. Kingsland, R. Kranz, M.J Mappin, M.L. Martinez, F. Micheli, J.L. Morse, M.L. Pace, M. Pascual, S. Palumbi, O.J. Reichman, A.L. Simons, A. Townsend, and M.G. Turner. 2005. Ecological Science and Sustainability for the 21st Century. Frontiers in Ecology. 3: 4-11
26. Likens, G.E. D.C. Buso, B. Dresser, **E.S. Bernhardt**, R.O. Hall, Jr., K.H. Macneale, and S.W. Bailey. 2004. Experimental alkalization of a stream ecosystem, Restoration Ecology, 12: 419-428.
27. King J.S., P.J. Hanson, **E.S. Bernhardt**, P. DeAngelis, R.J. Norby, and K.S. Pregitzer. 2004. A multi-year synthesis of soil respiration responses to elevated atmospheric CO₂ from four forest FACE experiments. Global Change Biology 10: 1027-1042.
28. Palmer, M.A., **E.S. Bernhardt**, E.A. Chornesky, S.L. Collins, A.P. Dobson, C.S. Duke, B.D. Gold, R. Jacobson, S. Kingsland, R. Kranz, M.J Mappin, M.L. Martinez, F. Micheli, J.L. Morse, M.L. Pace, M. Pascual, S. Palumbi, O.J. Reichman, A.L. Simons, A. Townsend, and M.G. Turner. 2004. Ecology for a crowded planet. Science 304 (5675): 1251-1252
29. **Bernhardt, E.S.** and G.E. Likens. 2004. Controls on algal biomass in heterotrophic streams. Freshwater Biology 49: 14-27.
30. **Bernhardt, E.S.**, G.E. Likens, D.C. Buso, and C.T. Driscoll. 2003. Instream uptake dampens the effect of major disturbance on watershed nitrogen export. Proceedings of the National Academy of Science 100 (18): 10304-10308 {Correction published April 20 2004. *PNAS* 101 (16): 6327-6327}
31. Houlton, B.Z., C.T. Driscoll, T.J. Fahey, P.M. Groffman, G.E. Likens, **E.S. Bernhardt** and D. Buso. 2003. The effects of ice storm damage on the biogeochemical cycle of a northern hardwood forest ecosystem—linking an exogenous perturbation to nutrient loss and acidification of drainage water. Ecosystems 6 (5): 431-443

32. Aber, J., **E.S. Bernhardt**, F. Dijkstra, R.H. Gardner, K.H. Macneale, W.J. Parton, S.T.A. Pickett, D.L. Urban, and K.C. Weathers. 2003. Standards of practice for review and publication of models: Summary of Discussion. Chapter 11 in C.D. Canham, J.J. Cole, and W.K. Lauenroth (Eds.) The Role of Models in Ecosystem Science. Princeton University Press, Princeton, NJ. ***except for 1st author, authors alphabetical*
33. **Bernhardt, E.S.** 2002. Lessons from kinetic releases of ammonium in streams of the Hubbard Brook Experimental Forest (HBEF). Verhandlungen Internationale Vereinigung Limnologie. 28: 429-433.
34. **Bernhardt, E.S.** and G.E. Likens. 2002. DOC enrichment alters nitrogen dynamics in a forest stream. Ecology. 83(6): 1689-1700.
35. **Bernhardt, E.S.**, R.O. Hall and G.E. Likens. 2002. Whole-system estimates of nitrification and nitrate uptake in streams of the Hubbard Brook Experimental Forest. Ecosystems 5: 419-430.
36. Flecker, A.S., B.W. Taylor, **E.S. Bernhardt**, J.Hood, W.K. Cornwell, S.H. Cassat, and M.J. Vanni. 2002. Interactions between herbivorous fishes and limiting nutrients in a tropical stream ecosystem. Ecology. 83(7): 1831-1844.
37. Hall, R.O. Jr., **E.S. Bernhardt** and G.E. Likens. 2002. The effect of transient storage zone size on nutrient uptake efficiencies in streams of the Hubbard Brook Experimental Forest. Limnology and Oceanography. 47 (1): 255-265.
38. Hall, Robert O., K.H. Macneale, **E.S. Bernhardt**, G.E. Likens and M. Field. 2000. Stream ecosystem response to a two-month calcium and pH manipulation. Freshwater Biology 46: 291-302.

PROFESSIONAL SERVICE:

- *Pro bono* consulting, Great Dismal Swamp Mitigation Bank (2005-ongoing); Southern Environmental Law Center (2008-ongoing)
- *Expert witness* for plaintiff during preliminary injunction hearing Ohio Valley Environmental Coalition et al. vs. US Army Corps of Engineers et al. (Fall, 2008, Charleston, WV) – evaluated compensatory mitigation plan and potential for cumulative impacts
- Ecological Society of America: Visions Committee (2002-2003); Publications Committee (2003-present); Secretary of the ESA Biogeosciences Section (2006-2008)
- North American Benthological Society Executive Committee (2002-2004); Journal of the North American Benthological Society (JNABS) assessment committee (2006-2007); Distinguished Service Award committee (2008-2009)
- Biogeochemistry Panel for evaluation of the Consortium of Universities for Advancement of Hydrologic Science, Incorporated (CUASHI) Hydrological Measurement Facility (2005-2006)
- Editorial Board, Freshwater Ecology Series, University of California Press (2007-ongoing)
- Habitat Priorities Committee, Environmental Defense (2006)
- *Grants panelist*: NSF Doctoral Dissertation Improvement Grant panel (2007); NC Water Resources Research Institute (2004); American Association of University Women Fellowships Panelist (2003)
- *Reviewer for*: Aquatic Conservation, Biogeochemistry, BioScience, Ecology, Ecological Applications, Ecology Letters, Ecosystems, Environmental Management, Environmental Science and Technology, Geophysical Research Letters, Hydrobiologia, JGR Biogeosciences, Journal of Applied

Ecology, Journal of the American Water Resources Association, Journal of the North American Benthological Society, Limnology and Oceanography, PNAS, Soil Science Society of America Journal, Water Resources Research.

- *Ad hoc Proposal Review*: National Science Foundation Ecosystems (5), RUI (1), LTRB(2), and Ecology (1) panels. Department of Energy National Institutes for Climate Change Research (NICCR) program (8).

UNIVERSITY SERVICE:

- Duke University Department of Biology committee service: Graduate Affairs (2004-2007), Performance Review (2005-2007), Junior Faculty representative, Steering Committee (2006), Seminar Series Co-coordinator (2006-2007), Departmental Retreat Organizer (2008)
- Duke University Program in Ecology service: UPE Executive Committee (since Fall 2004), UPE Seminar Coordinator (since Fall 2005), Oosting Lecture Organizer (2005,2006)
- Science Advisory Board, Center for the Environmental Implications of Nanotechnology (CEINT)
- Provost's working group, *Water Resources Science, Engineering, and Policy* (Fall 2005)
- Duke Forest Scientific Advisory Committee (since Fall 2007))
- Ad hoc faculty committee, *Global water initiative* (Spring 2008)
- Executive Committee, Duke University Center on Global Change (since Spring 2006)
- Harvey W. Smith Chair – member of search committee (2006-2007) – Nicholas School
- Watershed Hydrologist search committee, Nicholas School (2009)

TEACHING:

Current:

Duke: UPE 301: Ecosystem Ecology module for incoming UPE PhD students, Fall 2006

Duke: BIO 116: Ecology and Evolutionary Biology (with J.H. Willis), Duke University, Spring semesters, Spring 2006, 2007

Duke: BIO/EOS 272: Biogeochemistry: An analysis of global change, Duke University, Fall semesters, Fall 2005, 2006, 2007 Spring 2009

NC School of Science and Math (residential public highschool): development and testing of a course in Aquatic Ecology with NCSSM faculty (funded by NSF Career proposal), Fall 2006, 2007. Guest lectures and Two Field Lab Exercises Annually.

Past:

2001 Stream Ecology, Rocky Mountain Biological Laboratory summer field course

1997-98 Introductory Biology Laboratory, Cornell University

ADVISING:

Current Ph.D. Advisees:

Jennifer Morse, Ph.D. candidate (2004 -); EPA STAR Fellow

Elizabeth Sudduth, Ph.D. candidate (2005 -); EPA STAR Fellow

Alison Appling, Ph.D. candidate (2006-); EPA STAR Fellow

Brian Lutz, Ph.D. candidate (2007-); NSF Graduate Research Fellow

Current Postdoctoral Associates:

Marcelo Ardon, NSF Minority Postdoctoral Fellow (PhD UGA 2006)

Jennifer Follstad-Shah, NSF Bioinformatics Postdoctoral Fellow (PhD UNM 2006)

Ben Colman, (PhD, UCSB, 2009)

Past Postdoctoral Associates

Richard Phillips, 2005-2008, *currently* Assistant Professor, Department of Biology, Indiana University

Masters of Environmental Management Students:

MP Supervisor: Peter Cada (May '07); Hayes Neely (May '08)

MP Assistantship Advisor: Jean Lee (2006/2007); David Palange (2007/2008); Emily Adams and Alicia Burtnor (2008/2009)

Undergraduate Honors Thesis Advising

Hayes Neely, B.S. Biology with Distinction, '06

Shankar Mundluru, B.S. Biology with Distinction '08

Michelle Lotker, B.S. Biology with Distinction and B.A. Documentary Studies '08

Jacquelyn Burmeister, planned B.S. Biology with Distinction '09

Graduate Committee Minor Member

Duke University: Sean Berthong (Jackson lab); Julie DeMeester (Richter lab); Jason Jackson (Vilgalys/Richter labs); Eileen Thorsos (Jackson lab); Siyi Wang (Wright lab); Andrew Procter (Jackson lab); Meg Mobley (Richter lab); Roxolana Kashuba (Reckhow lab); YoonKyung Cha (Reckhow lab)

External: Adam Riggsbee (Ph.D. 2006, UNC School of Public Health); Melanie Small (M.S. 2006 UNC Department of Geography, PhD continuing); Christy Violin (PhD, UNC Ecology Curriculum); Erick Hester (PhD. 2008, UNC Ecology curriculum); Lindsay Dubbs (PhD, UNC School of Public Health); Ashley Helton (PhD, UGA Institute of Ecology)

Recent and Current Undergraduate Researchers:

Andrew Golterman (Biology '07, research technician summer 2006);

Nikos Lesios (Biology '09, research technician, 2006-ongoing);

Jacqueline Burmeister (Biology '09, Howard Hughes Undergraduate Research Fellow 2006, Independent Research, 2007-ongoing);

Huma Daewoo (Biology '07, Independent research, 2006);

Grace Shih (Biology '08, Research technician 2006; Independent Research, Spring 2007);

Shankar Mundluru (Biology '08, Independent Research, 2007-ongoing);

Charles Colbert (Biology '10, research technician 2006-ongoing; NSF REU Fellow, summer 2007);

Shaena Montenari (UNC Marine Sciences '09, NSF REU Fellow, summer 2007)

Michelle Lotker (Biology '08, Independent Research, Academic year 2007-2008)

Recent High School Research Interns:

Nora Hannapel, Durham School of the Arts, June-August 2006

Ellery Wiebe, Durham School of the Arts, June-August 2007

RESEARCH SUPPORT:

Past:

- Environmental Protection Agency AWPPG Program: National River Restoration Science Synthesis (2005-2007), Bernhardt (PI)
- NC WRI: Restoring Biogeochemical Functions in Degraded Urban Stream Ecosystems (2006–2007), Bernhardt (PI)
- NC Department of Environment and Natural Resources. “Restoring Biogeochemical Functions in Degraded Urban Stream Ecosystems” (supplement to NC WRI proposal), Bernhardt (PI)
- Packard Foundation, National River Restoration Science Synthesis: Phase II (2005-2008), M. Palmer (PI)

- NC Department of Environment and Natural Resources. “Biogeochemical consequences of NC’s largest wetlands mitigation bank”, Bernhardt (PI)
- Department of Energy, FACTS-1 Renewal Grant (2004-2007), R. Oren & A. Finzi (PIs)
- NC WRRI: “Biogeochemical consequences of NC’s largest wetlands mitigation bank”(April 1, 2007-March 30, 2008) Bernhardt & Ardon (co-PIs)

Current

- National Science Foundation, Ecosystems Panel, “CAREER: Potential for the recovery of biogeochemical function in degraded stream ecosystems” (2006-2011), Bernhardt (PI)
 - >REU Supplement Request, 2007
 - >ROA Supplement Request, 2008 (with Dr. A Moore, Guilford College)
- Unrestricted gift in support of research, Great Dismal Swamp Mitigation Bank
- Gordon and Betty Moore Foundation, The Salmonid Rivers Observatory Network (SaRON): Relating Habitat Quantity and Quality to Salmon Productivity for Pacific Rim Rivers (subcontract to Bernhardt from University of Montana’s Flathead Lake Biological Station)
- Department of Energy, National Institute of Climate Change Research Coastal Research Program, “Farm fields to wetlands: biogeochemical consequences and climate feedbacks due to sea level rise in coastal plain agricultural landscapes”. Bernhardt (PI)
- USDA, Soil Processes Panel. “Rhizosphere priming effects on soil N availability: the role of root exudates in coupling ecosystem C and N cycles under elevated CO₂”. 2008-2010. Phillips (PI, through U Indiana) with Bernhardt (coPI) and Finzi (coPI, BU).
- National Science Foundation and U.S. Environmental Protection Agency, Center for Environmental Implications of Nanotechnology. 2008-2013. Wiesner (PI, Duke Engineering), Bernhardt – lead investigator for Ecosystems component of center research.
- NC WRRI, Assessing the impacts of watershed development history and levels of hydrologic alteration on stream ecosystem health in the NC Piedmont. Dean Urban, Duke NSOE (PI), Bernhardt (coPI)

Other Support for Bernhardt lab members

- EPA STAR Graduate Fellowship to Ph.D. student Jennifer Morse. 2005-2008.
- EPA STAR Graduate Fellowship to Ph.D. student Elizabeth Sudduth. 2005-2008.
- EPA STAR Graduate Fellowship to Ph.D. student Alison Appling. 2008-2011.
- NSF Bioinformatics Postdoctoral Fellowship to Jennifer Follstad-Shah. 2007-2008.
- NSF Graduate Research Fellowship to Ph.D. student Brian Lutz. 2007-2009.
- NSF Minority Postdoctoral Fellowship to M. Ardon, 2008-2009.

INVITED TALKS:

Invited Speaker, Second International Symposium on Riverine Landscapes, Storforssen, Sweden, “*Restoring streams in an urbanizing world*” August 2004.

Invited Speaker, River Restoration Symposium, American Geophysical Union and North American Benthological Society joint meetings, New Orleans, “*River restoration in the United States*” May 2005

Invited Speaker, Gordon Conference on Catchment Science, Colby College, Maine “*River Restoration in the United States: the Challenge of Restoring Reaches to Manage Catchments*” July 2005

Symposium Organizer and Speaker, Watershed Ecosystem Symposium, Ecological Society of America, Montreal “*Uplands to streams: Key challenges to integrating watershed subcomponents*” August 2005.

Invited Speaker, River Restoration Symposium, American Geophysical Union, San Francisco, “*River Restoration in the United States: the Challenge of Restoring Reaches to Manage Catchments*” December 2005.

Invited Keynote Speaker, Opening Symposium of the Catchment Science Centre, University of Sheffield, UK “*River Restoration in the United States: the Challenge of Restoring Reaches to Manage Catchments*” February 2006.

Invited Speaker, Presentation to the Science Advisory Board and the Board of Trustees of Environmental Defense, San Francisco, CA “*River Restoration in the United States: the Challenge of Restoring Reaches to Manage Catchments*” February, 2006.

Invited Speaker, SESSION: Interactions Between Watershed Characteristics, Stream Dynamics, and Water Quality, American Geophysical Union, Washington, D.C., “*Propagation and dissipation of watershed biogeochemical signals in stream networks*” May 2006.

Invited Keynote Address, Montana River Center Symposium: Assessing Stream Restoration Success: Developing Sustainable Ecological and Physical Systems. “*Ecological Systems and Renaturalization Success*” September 2006.

Invited Keynote Speaker, 2006 North Carolina Stream Restoration Institute Conference, Charlotte, NC. “*Evaluating Restoration Effectiveness - Lessons from a National Synthesis*” October 2006.

Invited Plenary Speaker, Third International Symposium on Riverine Landscapes, Brisbane, Australia, Global change and river-floodplain ecosystems. “*Can we put urban streams together again? The potential for restoring and redesigning degraded urban streams to provide critical ecosystem services*” August 2007.

Invited Speaker, Second Symposium on Urbanization and Stream Ecology, Salt Lake City, UT. “*Do we understand what’s broken? Current and future challenges to restoring urban streams*” May 2008.

Invited Keynote Speaker, American Water Resources Association Summer Specialty Conference, Riparian Ecosystems and Buffers, Virginia Beach, VA. “*Old Approaches and New Challenges to Restoring River and Floodplain Ecosystems*” July 2008

INVITED SEMINARS:

Dartmouth College, Department of Biology, Fall 2009.

University of Wyoming, Department of Zoology, Fall 2008, *Graduate Student Association .Invited Speaker*

University of Georgia, Odum School of Ecology, Fall 2007 *Graduate Student Association Invited Speaker*

Eastern Carolina University, Department of Geology, Fall 2007

Utah State University, Ecology Center, Spring 2007 *Graduate Student Association Invited Speaker*

Virginia Tech, Department of Biology, Spring 2007

University of North Carolina Greensboro, Department of Biology, Fall 2006

Flathead Lake Biological Station, Polson, MT, Summer 2006

Cornell University, IGERT Program in Biogeochemistry & Biocomplexity, Spring 2006

North Carolina State University, Botany Department, Fall 2005
University of North Carolina, Chapel Hill, Curriculum in Ecology, Fall 2004
Appalachian Laboratory, Frostburg, MD, Fall 2003
University of Maryland, College Park, Department of Entomology, Fall 2002
Duke University, Durham, NC, Program in Ecology & Department of Biology Fall 2001, Spring 2003
University of Montana, Department of Biology, Spring 2003
UC Irvine, Departments of Biology and Earth & Environmental Science, Spring 2003
UC Santa Barbara, Department of Ecology and Evolution, Spring 2003
Washington State University, Departments of Biology, Geology and Environmental Science, Spring 2003
URI, Department of Natural Resources, Fall 2002
Institute of Ecosystem Studies, Millbrook, NY, Fall 2002

RECENT ('07-'09) CONTRIBUTED PRESENTATIONS FROM BERNHARDT LAB:

***Lab members are indicated by bold text*

- **Morse, J.L., M. Ardón, E.S. Bernhardt**, M.W. Doyle, and G.C. Poole. 2007. *Predicting Patterns of and Limits to Denitrification Following Conversion of Former Agricultural Lands to Forested Wetlands*. 10th International Symposium on Wetland Biogeochemistry: Frontiers in Biogeochemistry. Annapolis, MD.
- ****Invited talk: Ardón, M., Morse, J.L., E.S. Bernhardt**, and M.W. Doyle. 2007. *How do we quantify trade-offs between various wetland ecosystem costs and benefits?* 10th International Symposium on Wetland Biogeochemistry: Frontiers in Biogeochemistry. Annapolis, MD.
- **Hassett, B.A., E.S. Bernhardt, E.B. Sudduth and P. Cada**. 2007. *Nitrogen cycling across an urbanization gradient*. 55th Annual Meeting of the North American Benthological Society, Columbia, SC.
- ****Invited talk: Sudduth, E.B., P. Cada, B.A. Hassett, and E.S. Bernhardt**. 2007. *Escaping the urbanization cycle or expensive landscaping? Assessing ecosystem functional responses to natural channel design projects in urban catchments*. 55th Annual Meeting of the North American Benthological Society, Columbia, SC.
- **Cada, P., E.B. Sudduth, B.A. Hassett, and E.S. Bernhardt**. 2007. *Can we restore stream ecosystem structure in urban catchments? Potential recovery through stream restoration* 55th Annual Meeting of the North American Benthological Society, Columbia, SC.
- ****Invited talk** : Violin, C., **E.B. Sudduth** and **E.S. Bernhardt**. 2007. *Can Reach Scale Restoration Ameliorate Watershed Scale Degradation? Macroinvertebrate Community Responses to Urbanization and Urban Restoration*. 55th Annual Meeting of the North American Benthological Society, Columbia, SC.
- **Appling, A.P., E.S. Bernhardt**, G.C. Poole, J.S. Kimball and J.A. Stanford 2007 *An Agent-Based Model of Floodplain and Aquifer Biogeochemistry*. 55th Annual Meeting of the North American Benthological Society, Columbia, SC
- **Follstad Shah, J., E.S. Bernhardt**, A. Huryn and H.M. Valett. 2007. *The metabolic theory of ecology: Insights from stream ecosystems*. 55th Annual Meeting of the North American Benthological Society, Columbia, SC
- **Morse, J.L., M. Ardon, E.S. Bernhardt**, M.W. Doyle and G.C. Poole. 2007 *Predicting Patterns of and Limits to Denitrification Following Conversion of Former Agricultural Lands to Forested Wetlands*. 55th Annual Meeting of the North American Benthological Society, Columbia, SC

- **Bernhardt, E.S., B.A. Hassett, E.B. Sudduth and P. Cada** 2007. *Propagation and dissipation of watershed signals along the river continuum: geomorphic, hydrologic and biogeochemical recovery trajectories of an urban stream*. 55th Annual Meeting of the North American Benthological Society, Columbia, SC
- **Burmeister, J.D., R.P. Phillips and E.S. Bernhardt**. 2007. *The effects of organic acids on soil microbial activity and nutrient availability in a forest soil*. Ecological Society of America Meeting, San Jose, CA
- **Ardón, M., J.L. Morse, E.S. Bernhardt,** and M.W. Doyle. 2007. *Biogeochemical consequences of hydrological restoration of a 400-ha former agricultural field*. Ecological Society of America Meeting, San Jose, CA
- **Bernhardt, E.S.,** B.J. Roberts, P.J. Mulholland, and E.N.J. Brookshire. 2007. *Dissolved organic nitrogen losses from forested watersheds across the southern Appalachians*. Ecological Society of America Meeting, San Jose, CA
- **Phillips, R.P. and E.S. Bernhardt**. 2007. *Towards A Rhizocentric View: The Importance of Root Exudation in Forests Exposed to Elevated CO₂*. Ecological Society of America Meeting, San Jose, CA
- **Sudduth, E.B., P. Cada, B.A. Hassett, C. Violin and E.S. Bernhardt**. 2007. *Restoration as Experimental Manipulation: Is channel structure or watershed condition more important in predicting ecosystem function in urban streams?* Ecological Society of America Meeting, San Jose, CA
- **Cada, P., E.B. Sudduth, B.A. Hassett, and E.S. Bernhardt**. 2007. *Testing the 'Field of Dreams' Hypothesis: Stream Restoration Effects on Physical Structure*. NC Water Resources Research Institute Annual Conference, Raleigh, NC.
**Peter was awarded 2nd prize from among student presentations at this conference
- **Follstad Shah, J., E.S. Bernhardt,** R.O. Hall, A. Huryn, P.J. Mulholland, B.J. Roberts, R.L. Sinsabaugh, H.M. Valett. 2008. *Challenges and opportunities presented by stream ecosystems for testing and refining metabolic theory*. 56th Annual Meeting of the North American Benthological Society, Salt Lake City, UT.
- **Hassett, B.A., E.S. Bernhardt, E.B. Sudduth**. 2008. *Longitudinal nitrogen dynamics along a recovering urban stream*. 56th Annual Meeting of the North American Benthological Society, Salt Lake City, UT.
- **Bernhardt, E.S.,** C. Colbert, S. Wang, **E.B. Sudduth, B.A. Hassett,** S.S. Kaushal. 2008. *Effects of watershed urbanization on carbon and nitrogen cycling in stream sediments*. 56th Annual Meeting of the North American Benthological Society, Salt Lake City, UT.
- **M.S. Wright, J.L. Morse,** J. Gannon, B.K. Ellis, G.C. Poole, A.M. Helton, **E.S. Bernhardt,** and J.A. Stanford. 2008. *Linking microbial community structure to biogeochemical function in floodplain ecosystems*. 56th Annual Meeting of the North American Benthological Society, Salt Lake City, UT.
- **M. Ardon, S. Montanari, J.L. Morse,** M.W. Doyle, **E.S. Bernhardt**. 2008. *Phosphorus retention processes in a large-scale wetland restoration project under a changing climate*. 56th Annual Meeting of the North American Benthological Society, Salt Lake City, UT.
- **E.B. Sudduth, B.A. Hassett,** C. Violin, and **E.S. Bernhardt**. 2008. *Effects of urbanization on surface and buried leaf litter dynamics in North Carolina Piedmont streams*. 56th Annual Meeting of the North American Benthological Society, Salt Lake City, UT.
- **S. Wang, M.D. Wallenstein, E.S. Bernhardt,** and J.P. Wright. 2008. *Linking structure and function: Consistent shifts in denitrifying bacteria communities in polluted urban streams*. 93rd Annual Meeting of the Ecological Society of America, Milwaukee, WI.
- **J.L. Morse, M. Ardón, and E.S. Bernhardt**. 2008. *Linking trace gas emissions and hydrologic variability in coastal plain wetlands under contrasting land uses*. 93rd Annual Meeting of the Ecological Society of America, Milwaukee, WI.

- **J.L. Morse, M. Ardón, and E.S. Bernhardt.** 2008. *Predicting the fate of nitrogen and the impact on water quality and greenhouse gas emissions from sea level rise and wetland restoration.* Lindbergh Foundation Annual Meeting, Atlanta, GA.
- **J.L. Morse, M. Ardón, M. Doyle, G. Poole, and E.S. Bernhardt.** 2008. *Scaling up gas flux measurements to annual and landscape scales.* NSF Riparian Zones Workshop, Indianapolis, IN. S.
- **J.L. Morse, M. Ardón, and E.S. Bernhardt.** 2008. *Linking trace gas emissions and hydrologic variability in coastal plain wetlands under contrasting land uses.* 93rd Annual Meeting of the Ecological Society of America, Milwaukee, WI.
- **R.P. Phillips, A. Finzi, J.D. Burmeister and E.S. Bernhardt.** 2008. *Rhizo-accelerated mineralization and priming in a loblolly pine forest exposed to elevated CO₂.* Joint meeting of Geological and the Soil Science Societies of America
- ****Invited talk E.S. Bernhardt and E.B. Sudduth.** 2008. *Propagation and dissipation of watershed signals along the river continuum: recovery trajectories in urban streams.* Annual NC Water Resources Research Institute Conference. Raleigh, NC.
- ****Invited talk E.S. Bernhardt.** 2008. *Uncertainty in Goal Setting and Uncertainty in Project Outcomes: Challenges to Achieving Ecological Improvements through River Restoration.* Stream Restoration in the Southeast: Advancing the Science and Practice. Asheville, NC.
- **E.B. Sudduth, C. Violin, B. Hassett, E.S. Bernhardt.** 2008. *Restoring Ecosystem Functions to Restore Water Quality.* Stream Restoration in the Southeast: Advancing the Science and Practice. Asheville, NC.
- **A.P. Appling, E.S. Bernhardt, J.S. Kimball, G.C. Poole, and J.A. Stanford.** 2008. *Water and nutrient sources for floodplain trees: Model-based inference.* American Geophysical Union Fall Meeting, San Francisco, CA.
- **A.P. Appling, E.S. Bernhardt, and J.A. Stanford.** 2009. *Succession Matters: Vegetation and Denitrification on an Alluvial Floodplain.* American Society of Limnology and Oceanography, Nice, France.
- **B. Lutz, P.J. Mulholland, B.J. Roberts and E.S. Bernhardt.** 2009. *Biogeochemical controls on the export of dissolved organic nitrogen from forested watersheds.* American Society of Limnology and Oceanography, Nice, France.