

Ariana E. Sutton-Grier

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Research Interests

Ecosystem ecology, biogeochemistry, biodiversity and ecosystem function, wetland restoration, climate change

Education

- 2008 Ph.D. in Ecology. Nicholas School of the Environment, **Duke University**, Durham, North Carolina. (Professor Curtis Richardson, adviser)
- 2000 Honors B.S. in Environmental Science, *Summa Cum Laude*. Honors B.A. in International Studies, *Summa Cum Laude*. **Oregon State University**, Corvallis, Oregon (Professors Jane Lubchenco and Bruce Menge, Honors Thesis advisers)
- 1997-1998 Direct Exchange Study Abroad Program, **Université Jean Moulin III**, Lyon, France

Appointments

- 2010-Present AAAS Science and Policy Fellow, National Oceanic and Atmospheric Administration, Office of Habitat Conservation
- 2009-Present NSF FIRST IV (Faculty Institutes for Reforming Science Teaching) Postdoctoral Scholar
- 2008-2010 Smithsonian Fellow, Smithsonian Environmental Research Center
- 2007-2008 American Association of University Women (AAUW) Doctoral Fellow
- 2003-2006 National Science Foundation (NSF) Graduate Fellow

Publications

* Denotes undergraduate or post-baccalaureate mentee

Sutton-Grier, A.E., M.A. Kenney, C.J. Richardson. 2010. Examining the relationship between ecosystem structure and function using structural equation modeling: A case study examining denitrification potential in restored wetlands. *Ecological Modelling*. 221:761-768.

*McGill, B.M., **A.E. Sutton-Grier**, and J. P. Wright. 2010. Plant trait diversity buffers variability in denitrification potential over changes in season and soil conditions. *PLoS One* 5(7): e11618. doi: 10.1371/journal.pone.0011618.

Smith, Z. and **A. E. Sutton-Grier**. 2010. Making the Most of Your Postdoc. *The Chronicle of Higher Education*. Published online July 16, 2010.

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*Unghire, J.M., **A.E. Sutton-Grier**, N. Flanagan, and C. Richardson. 2010. Spatial Impacts of Stream and Wetland Restoration on Riparian Soil Properties in the North Carolina Piedmont. *Restoration Ecology* (In Press).

Sutton-Grier, A.E., M. Ho, and C.J. Richardson. 2009. Organic amendments improve soil conditions and denitrification in a restored riparian wetland. *Wetlands*. 29:343-352.

Kenney, M.A., **A.E. Sutton-Grier**, R. Smith, and S. Gresens. 2009. Benthic macroinvertebrates as indicators of water quality: the intersection of science and policy. *Terrestrial Arthropod Reviews*. 2(2): 99-128.

Freidenburg, T.L., B.A. Menge, P.M. Halpin, M. Webster, and **A.E. Sutton-Grier**. 2007. Cross-scale variation in top-down and bottom-up control of algal abundance. *Journal of Experimental Marine Biology and Ecology*. 347:8-29.

Sutton-Grier, A.E. and M.A. Kenney. 2005. Recruiters and Academia: A Class Act. *Nature*. 436: 886.

Sutton-Grier, A. E., J. Pahl, M. Ho, and C.J. Richardson. 2005. Compost Use in Urban Restored Wetlands. *BioCycle Journal of Composting and Organics Recycling*. October 2005: 40-41.

B. In Review

Sutton-Grier, A.E. and J.P. Megonigal. Plant species traits regulate methane production in freshwater wetland soils.

Sutton-Grier, A.E., J.K. Keller, *R. Koch, C.C. Gilmour, and J.P. Megonigal. Electron donors and acceptors influence rates of decomposition in tidal marshes.

Sutton-Grier, A.E., J. Wright, B. McGill, and C. Richardson. Environmental conditions influence the plant functional diversity effect on denitrification potential.

Sutton-Grier, A.E., J. Wright, and C. Richardson. Plant trait diversity enhances riparian nitrogen removal.

Grants Received

- Women Evolving Biological Sciences (WEBS) Symposium travel grant funding from the National Science Foundation ADVANCE program. (2010)
- National Postdoctoral Association "National Summit on Gender and the Postdoctorate." Conference travel funding from the National Science Foundation ADVANCE program. (2010)
- American Association of University Women American Fellowship. (2007-2008)
- National Science Foundation Doctoral Dissertation Improvement Grant. "The role of plant functional diversity in regulating nitrogen removal in a restored riparian wetland." (2005-2008)
- National Science Foundation Graduate Research Fellowship. (2003-2006)
- Society of Wetland Scientists Student Research Grant. (2005)
- FORWARD to Professorship Washington, D.C. (Focus on Reaching Women for Academics, Research, and Development). Conference travel funding from the National

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- Science Foundation ADVANCE leadership award. (2007)
- Sigma Xi Annual Conference Travel Grant Award. (2006)
- Oregon State University Research Innovation, Scholarship, Creativity Undergraduate Incentive Program Grant. (1999)

Professional Experience

Smithsonian Fellow, Smithsonian Environmental Research Center (2008-2010)

Post-doctoral Researcher: Examining competition between iron-reducing and methane-producing microbes in tidal freshwater marshes to understand wetland greenhouse gas emissions and nutrient cycling.

Wetland Ecology, Biogeochemistry, and Restoration, Duke University (2002-2008)

Research Assistant: Conducted research examining how wetland restoration techniques, including organic matter amendments and plant species diversity, affect the restoration of wetland ecosystem functions. Designed and established a biodiversity experiment in Duke Forest. Performed soil and plant analyses including denitrification enzyme potential, available nitrogen, total nitrogen, and loss on ignition carbon.

Forest Biogeochemistry, Boston University (2000-2002)

Laboratory Manager: Performed nutrient analyses including Potential Net Nitrogen Mineralization, Microbial Biomass, and Total Kjeldhal Nitrogen and Phosphorous to determine element cycling in forest soil and plant samples. Assisted in the development of a ^{15}N isotope dilution technique to measure gross rates of ammonium and nitrate production and consumption. Collected data on delta ^{13}C values in leaves to compare water use efficiencies. Trained undergraduate workers in lab activities, maintained safe, clean lab environment.

Coastal Intertidal Ecology, Oregon State University (Summer 1999)

Research Assistant: Implemented a research project studying herbivores and algal abundance. Gathered data at low tides, analyzed photos using Adobe Photoshop and Image Analyst.

Honors and Awards

- American Association of University Women American Fellowship (2007-2008)
- 10th International Symposium on Wetland Biogeochemistry “Best Student Presentation” (2007)
- National Science Foundation Graduate Research Fellowship (2003-2006)
- Oregon State University Waldo Cummings Outstanding Senior Award (2000)
- OSU College of Science Outstanding Woman in Science Scholarship (1999)
- Oregon State University Oregon Laurels Scholar (1996-2000)

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Teaching Experience

Front Royal Smithsonian National Zoological Park (2010)

Guest Instructor:

- Global Carbon Cycle, Climate Change, and Wetlands

Adjunct Faculty, Goucher College Biology Department (Fall 2009)

Instructor: Co-designed and taught BIO 240 “Ecology and Evolution.” Implemented the course with a focus on a learner-centered classroom, active learning, and alignment of learning objectives with course assignments and assessments. Received excellent student evaluations.

NSF-Sponsored Faculty Institutes for Reforming Science Teaching (FIRST IV) Postdoctoral Workshop in Biology Teaching and Learning (2009-2011)

Scholar: Attending annual workshops on teaching focused on how to design a course based on student learning objectives (“backwards design”) using best-practice teaching approaches and implemented these techniques in “Ecology and Evolution” at Goucher College (Fall 2009).

Duke University Women’s Studies Department and Nicholas School of the Environment and Earth Sciences (2005)

Instructor: Co-designed and co-taught a multidisciplinary course about gender and the environment entitled “Feminism and Ecology” with Melissa Kenney. Implemented the course with a focus on student involvement using active learning techniques such as role-plays, discussions, and small-group activities. Received excellent student evaluations.

Duke University Nicholas School of the Environment and Earth Sciences (2006-2008)

Guest Instructor:

- Wetland Ecology and Management
- Wetland Restoration

Duke University Graduate School (2008)

The College Teaching Practicum: Developed four teaching demonstrations using different visual aids and active learning techniques that were recorded followed by a critical self-evaluation of each demonstration. Also observed and evaluated teaching presentations by peers.

Duke University Nicholas School of the Environment and Earth Sciences (2002/03 and 2006/07)

Teaching Assistant: Wetland Ecology and Management and Wetland Restoration Responsibilities included lecturing, developing course materials including problem sets and exams, grading of assignments and exams, and assisting with field trips and classroom logistics. Received excellent student evaluations.

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Duke University Graduate School (2005-2006)

Preparing Future Faculty: Worked with two mentors, Professors Janice Swab and Elizabeth Wolfinger, at Meredith College to learn more about faculty life, responsibilities, and teaching. Guest lectured in the senior research seminar class.

Presentations

A. Invited Seminars

Sutton-Grier, A.E., J. Wright, and C.J. Richardson. 2007. "Plant Functional Diversity and the restoration of riparian wetland ecosystem function." Participant in the Biodiversity and Ecosystem Restoration Symposium at the annual Ecological Society of America conference. San Jose, California.

Sutton-Grier, A.E., C.J. Richardson, and G.L. Bruland. 2007. "The Importance of Soil Processes for Effective Wetland Restoration." Keynote Address at Radford University's 2nd Annual Wetland Symposium. Radford, Virginia.

Sutton-Grier, A.E., C.J. Richardson, and G.L. Bruland. 2006. "Understanding Soil Processes: The Next Frontier of Wetland Restoration." World Congress of Soil Science conference. Philadelphia, Pennsylvania.

Sutton-Grier, A.E., M. Ho, J. Pahl, and C.J. Richardson. 2005. "Compost Use in Urban Restored Wetlands." BioCycle Southeast Conference meeting. Charlotte, North Carolina.

Sutton-Grier, A.E. 2006, 2007. "TA Survival Skills: Getting the most out of your Teaching Assistantship." Invited panelist for Duke University Teaching IDEAS workshop.

B. Presentations

Sutton-Grier, A.E. and J. Patrick Megonigal. 2010. "Plants rule, Microbes Drool: Plant trait effects on greenhouse gas production." Society of Wetland Scientists conference, Salt Lake City, Utah.

Sutton-Grier, A.E., A. Bullock, J. Keller, C. Gilmour, and J.P. Megonigal. 2009. "Plant impacts on competition between tidal marsh microbes." Ecological Society of America conference, Albuquerque, New Mexico.

Sutton-Grier, A.E., A. Bullock, J. Keller, C. Gilmour, and J.P. Megonigal. 2009. "Tidal marsh metabolism: 'C' how they run." Society of Wetland Scientists conference, Madison, Wisconsin.

Sutton-Grier, A.E., J.Wright, S. Qian and C.J. Richardson. 2008. "Plant functional diversity and nitrogen removal in a restored riparian wetland." Society of Wetland Scientists meeting, Washington, D.C.

Sutton-Grier, A.E., J.Wright, S. Qian and C.J. Richardson. 2007. "Plant Functional Diversity: A good Predictor of Denitrification and Plant Biomass Nitrogen?" 10th International Symposium on Wetland Biogeochemistry. Annapolis, Maryland.

Sutton-Grier, A.E., J.Wright, S. Qian and C.J. Richardson. 2006. "The role of plant species and functional diversity in the restoration of riparian wetland ecosystem functions."

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Ecological Society of America conference. Memphis, Tennessee.

Sutton, A. E., D. Bradbury and A. C. Finzi. 2001. "Landscape-scale Variation in Soil Resources: Implications for Forest Composition." Ecological Society of America meeting, Madison, Wisconsin.

C. Posters

Sutton-Grier, A.E., M. Ho and C. J. Richardson. 2005. "Organic Matter Amendments and Water Availability Regulate Soil Biogeochemistry, Plant Survival and Diversity in an Urban Restored Wetland Ecosystem." Ecological Society of America meeting, Montreal, Quebec.

Sutton-Grier, A. E., M. Ho and C. J. Richardson. 2005. "The Role of Organic Matter Amendments in Regulating Soil Biogeochemistry in an Urban Restored Wetland Ecosystem." Society of Wetland Scientists meeting, Charleston, South Carolina.

Sutton-Grier, A. E., G. L. Bruland and C. J. 2004. "Pre-Restoration Characterization of Spatial Soil Variability in a Piedmont Floodplain Riparian Wetland in North Carolina." Ecological Society of America meeting, Portland, Oregon.

Professional Development and Service

A. Mentoring Activities

- Mentor for three NSF-sponsored REU students as they designed, analyzed and presented the results of independent research projects. 2008-2010.
- Girl Scouts of America "STEM Career Day" at the Smithsonian. I was interviewed by twenty middle school girls (in groups of 2-3) sharing my experiences as an ecologist. 2010.
- Durham Women and Math Mentor for two 8th grade girls. We participated in multiple field trips to explore how science and math influence our daily lives and career opportunities (including sewage treatment to basketball games). 2008.
- Duke University Graduate and Professional Women's Network Advisory Board. I organized events for professional development for graduate students including events about how to run a scientific laboratory and tips to improve negotiating skills. 2006-2008.
- Mentor for two independent research projects (one Master's student). Both mentees have papers in press (see Unghire et al. 2010 and McGill et al. 2010 above). 2007-present.
- Duke University Women in Science and Engineering Event Organizer. I planned events for graduate students including how to network and how to have productive professional relationships. 2007-2008.
- PBS Dragonfly TV "SciGirls" Mentor. I was the wetlands expert and mentor for three middle school girls on a kids' science TV show while they performed wetland biodiversity surveys and explored what it was like to be an ecologist. (see my mentor profile at <http://pbskids.org/dragonflytv/scientists/scientist56.html>). 2006.
- Group Leader for N.C. State "Expanding Your Horizons" Math and Science Conference for 8th grade girls. I mentored middle school girls as they explored career options in math, science, and engineering, including running an interactive, hands-on workshop about how wetland soils improve water quality. 2004, 2005, 2007.

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B. Other Service Activities

- Co-organizer and participant in the NSF-Sponsored workshop “Frontiers in Exploration of the Critical Zone II: The Geobiology of Weathering and Erosion.” Washington, D.C., 2009
- Member of the National Sigma Xi Diversity Committee (2008-present)
- Symposium Organizer. Biodiversity and Restoration in a Changing World. Ecological Society of America Annual Meeting, San Jose, 2007. Co-Organizers: Justin Wright and Roberto Lindig-Cisneros
- Events Committee Chair of the Duke Chapter of Sigma Xi (2005-2008)
- Duke Representative at the National Conference on Graduate Student Leadership, 2007
- Duke University Commencement Committee (2006)
- Wetland Educator for the North Carolina Museum of Life and Science. I taught kids and adults what makes wetlands unique habitats and ecosystems using interactive activities. (2005-2006)
- Duke University, Nicholas School of the Environment and Earth Sciences, New Building Committee (2004-2006)

C. Reviews for Scientific Journals

- Ecological Applications
- Biogeochemistry
- Journal of the North American Benthological Society
- Soil Science Society of America
- Nutrient Cycling in Agroecosystems
- Aquatic Botany
- Chemosphere
- Science of the Total Environment

D. Professional Organizations and Affiliations

- American Association for the Advancement of Science
- Ecological Society of America
- Society of Wetland Scientists (SWS)
SWS Women in Wetlands Section Committee Member (2008-present)
- Sigma Xi Scientific Research Society

Articles and T.V. Specials featuring my research

- Public Broadcasting (PBS) Dragonfly TV “Wetlands of North Carolina” Kids’ science show, Spring 2007 (see <http://pbskids.org/dragonflytv/show/wetlands.html>)
- Duke Magazine “Plant Manager,” July-August 2006
- News and Observer, Raleigh, NC. “Duke scholars work to restore wetlands-on campus” Aug. 22, 2005