

Bonnie Michelle McGill

Michigan State University

W. K. Kellogg Biological Station 3700 East Gull Lake Dr. Hickory Corners, MI 49060

Email: bonniemcgill@gmail.com

Website: <http://www.msu.edu/~mcgillbo>

Education

2012-18 Ph.D. Integrative Biology Dept. with a specialization in the Environmental Science and Policy Program, Michigan State University and the W. K. Kellogg Biological Station, Hickory Corners, MI.

2002-06 B.A. *Summa Cum Laude* Biology, Washington & Jefferson College, Washington, PA.

Publications forthcoming, submitted, in review, accepted

McGill, BM, Y Altchenko, PK Kenabatho, SR Sylvester, and KG Villholth. Accepted. Complex interactions among climate change, sanitation, and groundwater quality: A CHANS case study from Ramotswa, Botswana. *Hydrogeology Journal* special issue on Groundwater in Africa.

McGill, BM, SK Hamilton, GP Robertson, and N Millar. Accepted. The net carbon cost of agricultural intensification of row crops with groundwater irrigation in the Midwest US. *Global Change Biology*.

McGill, BM, SK Hamilton, GP Robertson, and B Basso. Forthcoming. Groundwater irrigation and inorganic carbon dissolution in a Midwest US cropping system.

McGill, BM. Forthcoming. Irrigation and liming decisions in a Midwest US agricultural CHANS.

Publications

Colman, BP, LA Arnaout, S. Anciaux, CK Gunsch, MF Hochella Jr., B. Kim, GV Lowry, **BM McGill**, BC Reinsch, CJ Richardson, JM Unrine, JP Wright, L Yin, and ES Bernhardt. 2013. Low concentrations of silver nanoparticles in biosolids cause adverse ecosystem responses under realistic field scenario. *PLoS ONE* 8(2): e57189. doi:10.1371/journal.pone.0057189.

<http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0057189>

Yin, L, BP Colman, **BM McGill**, JP Wright, and ES Bernhardt. 2012. Effects of silver nanoparticle exposure on germination and early growth of eleven wetland plants. *PLoS ONE* 7(10): e47674. doi:10.1371/journal.pone.0047674.

<http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0047674>

Sutton-Grier, AE, JP Wright, **BM McGill**, and CJ Richardson. 2011. Environmental conditions influence the plant functional diversity effect on potential

denitrification. *PLoS ONE* 6(2): e16584. doi:10.1371/journal.pone.0016584.
<http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0016584>

McGill, BM, Sutton-Grier AE, Wright JP. 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.
<http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0011618>

Reports and select presentations (* indicates awards)

McGill, BM, GP Robertson, B Basso, and SK Hamilton. 2018. Is irrigation warming the planet? The global warming impact of groundwater-fed irrigation on Michigan field crops. Oral presentation. *Global Change and Agroecosystems: Challenges and Opportunities*. East Lansing, MI.
***Best oral presentation**

McGill, BM, Y Altchenko, PK Kenabatho, SR Sylvester, and KG Villholth. 2017. “Complex interactions among climate change, sanitation, and groundwater quality: A case study from Ramotswa, Botswana.” Poster. *American Geophysical Union annual meeting*. New Orleans, LA.

McGill, BM and SK Hamilton. 2017. “Comparing carbon to carbon: Organic and inorganic carbon balances across nitrogen fertilization gradients in rainfed vs. irrigated Midwest US cropland”. Poster. *American Geophysical Union annual meeting*. New Orleans, LA.

McGill, BM. 2017. “My geoscience research and how it matters to you: Corn, climate, and classrooms.” Oral presentation in a Public Affairs session. *American Geophysical Union annual meeting*. New Orleans, LA.

Altchenko, Y, A Genco, K Pierce, R Woolf, G-J Nijsten, N Ansems, M Magombeyi, , G Ebrahim, J Lautze, K Villholth, N Lefore, R Modisha, S Baqa, BM **McGill**, P Kenabatho. 2017. Hydrogeology report on Resilience in the Limpopo Basin: The potential role of the transboundary Ramotswa aquifer. Pretoria, South Africa. International Water Management Institute. <http://tinyurl.com/n2j2olk>

McGill, BM and SK Hamilton. 2017. Agricultural liming, irrigation, and carbon sequestration. Poster. *International Long Term Ecological Research annual meeting*. Kruger National Park, South Africa.

***McGill, BM and SK Hamilton.** 2016. Carbon dioxide emissions and sequestration from agricultural liming and groundwater irrigation. Poster. *MSU Environmental Science and Policy Program annual “Fate of the Earth” symposium*. East Lansing, MI.

***Best poster**

***McGill, BM and SK Hamilton. 2015.** Agricultural liming, irrigation, and carbon sequestration. Poster. *American Geophysical Union annual meeting*. San Francisco, CA.

***Outstanding Student Paper Award, Hydrology section**

***McGill, BM and SK Hamilton. 2015.** The missing carbon link: Are ag lime and groundwater irrigation sequestering carbon? Poster. *NSF Long Term Ecological Research All Scientists Meeting*. Estes Park, CO.

***Student poster competition runner-up**

McGill, BM and SK Hamilton. 2015. The missing carbon link: Are ag lime and groundwater irrigation sequestering carbon? Poster. *Kellogg Biological Station Long Term Ecological Research All Scientists Meeting*. East Lansing, MI.

***McGill, BM and SK Hamilton. 2014.** Farming, coal mining, and limestone: Hidden interactions that affect atmospheric carbon dioxide and global change. *MSU Graduate Academic Conference*. Oral presentation. East Lansing, MI.

***Second place oral presentation**

Fellowships, grants, and awards

[David H. Smith Conservation Research \(Postdoctoral\) Fellow](#) class of 2018.

“Farming for a smaller Dead Zone: How agricultural conservation practices, artificial drainage, and climate change affect water quality in Iowa.” In collaboration with Drs. Amy Burgin and Terry Loecke at U. of Kansas and Dr. W. Dean Hively at USGS.

Finalist, iBiology.org Young Scientist Series <https://tinyurl.com/st9r6vu> spring 2017.

USAID Borlaug Fellowship – “Improving water security through managed aquifer recharge: Assessing water quality impacts in Botswana and South Africa.” Sept. 2016 – March 2017. Hosted by International Water Management Institute – Southern Africa.

NSF Graduate Research Fellow, 2013, 2015-2017

American Meteorological Society Summer Policy Colloquium fellowship, June 2016

George H. Lauff grant for KBS summer research, summers 2016 & 2017

Kellogg Biological Station NSF GK-12 Fellow, 2014-2015

KBS Long Term Ecological Research small grant, summers 2014 & 2015

MSU Environmental Science & Policy Program Outstanding Service Award – Nov. 2014

Porter Research Award (grant) for KBS graduate research, summer 2014

Guest speaker at Marion Center Area High School (alma mater) commencement, June 2014

MSU Environmental Science and Policy Program Fellow, Aug 2012 – May 2013

Phi Beta Kappa, Kappa of Pennsylvania chapter, May 2006
Baccalaureate student speaker, Washington & Jefferson College, Class of 2006
Juror's Prize at the California University of Pennsylvania intercollegiate
undergraduate art exhibit April, 2005
Phi Sigma, Nu Chapter, Biology Honor Society, March 2005
Sea Education Association Presidential Scholarship, fall 2005
Washington & Jefferson College Presidential Scholarship, 2002-2006

Community Service

Ecosystem ecology consultant for [Carbon TIME](#) a collaborative project developing K-12 learning progressions that lead to environmental science literacy. One of my products was a "[Storyline Reading: Learning from the Work of Bonnie McGill.](#)"
Co-founder, developer, and logo designer for [PlantLoveStories.com](#) a platform for increasing awareness of the importance of plants through sharing stories about how plants shape our lives.
Convener and chair of poster session on "Irrigation using Groundwater and its Effects on Aquifers, Nutrient Cycling, and Food Security". *American Geophysical Union annual meeting* Dec. 2017, New Orleans, LA.
Organizer and moderator for MSU Environmental Science and Policy Program seminar series event: "Harmful Algal Blooms in the Great Lakes: An Interdisciplinary Discussion", March 2015.
MSU Environmental Science and Policy Program Colloquium Series committee, 2014-2015.
Michigan Dept. of Environmental Quality Water Use Advisory Council & Technical Underpinnings work group: Participated as a member of the public in monthly meetings from May 2013 – 2017, 2017 – present as rep. of Kalamazoo River Watershed Council.
MSU SciFest 2014: Aquatic food web game at KBS LTER booth, April 2014.
MSU Museum "Darwin Discovery Day": Volunteer at the Graduate Women in Science table; developed and presented information about a modern female scientist, plate tectonics and paleo-ecology, February 2014.
KBS LTER graduate group co-founder and co-chair, September 2013 - 2015
AGua Blogua : <http://aguablogua.wordpress.com>, My science blog covering research and news at the intersection of agriculture, climate change and water issues, Nov. 2012 – present
MSU Graduate Women in Science: mentor, Girls' Math & Science Day volunteer; 2012 – 2013
Eno River Association, Durham, NC, 2008 – 2012
Durham Literacy Center, Durham, NC, 2008 - 2010
The Jordan Child & Family Enrichment Center, Raleigh, NC, spring 2009
Women in Math and Science, Durham, NC, spring 2008

Teaching Experience

Mentor, first generation female NSF REU – summer 2016. Poster title, “Mobility of phosphate in soils among different land use types.” KBS Summer Undergraduate Symposium 2016.

Mentor, first generation female NSF REU – summer 2016. Poster title, “The effect of nitrogen fertilizer and irrigation on lime carbon sequestration.” KBS Summer Undergraduate Symposium 2016.

Mentor, first generation female MSU undergraduate student– summer 2015; research poster title: “Digging deeper into soil carbonate and agricultural liming” presented at KBS Summer Undergraduate Symposium 2015.

Kellogg Biological Station Graduate K-12 Fellow (NSF K-12 program) –2014-2015, developed lesson plans and taught 3 sections of AP Biology once a week at a rural public high school.

Invited seminar at the Kellogg Biological Station Academic Success Series on how to build a professional website for yourself or your lab – March 2014

Teaching Assistant, Field Ecology & Evolution (ZOL440) – summer 2013 at KBS

Teaching Assistant, Ecology (ZOL355) – fall 2012, spring 2013 at MSU

Teaching Assistant, Botany Lab – fall 2004 at Washington & Jefferson College

Teaching Assistant, Biology – fall 2003, spring 2004 at Washington & Jefferson College

Research experience

2007-12 Lab manager, Wright Lab, Duke University, Durham, NC. *Research in Dr. Justin Wright’s community ecology lab focuses on the causes and consequences of changes in biodiversity with a primary focus on plant communities and biogeochemistry. While there I helped with writing and presenting research findings; independently carried out field and lab experiments (soil analyses, microbial ecology, plant traits, plant community composition surveys); and helped mentor undergraduate student research.*

2006-07 Plant ecology research assistant, Commonwealth of Dominica, West Indies and Clemson University, Clemson, SC. *Tropical plant ecology and invasive plant ecology and genetics in Dr. Saara DeWalt’s plant ecology lab.*

2005 NSF Research Experience for Undergraduates, Flathead Lake Biological Station, University of Montana, Polson, MT. *Investigated the nutrient limitation of algae in a floodplain of the Middle Fork of the Flathead River with mentors Drs. Emily Bernhardt, Ric Hauer, and Brian Reid.*

2004 Summer research assistant at Smithsonian Tropical Research Institute, Omar Torrejos National Park & Fortuna Forest Reserve, Panama. *Ecosystem-level effects of tadpoles on tropical mountain streams.*

Peer Reviewer

Geobiology

Science of the Total Environment

Journal of Microbial and Biochemical Technology

Proposal reviewer for National Fellowships Committee for *Sigma Delta Epsilon*,
Graduate Women in Science, 2013 and 2014.
Poster judge, MSU University Undergraduate Research and Arts Forum, 2013 &
2014

Scientific Illustrations

Burge, D. O. et al. (2013) Phylogeny of the plant genus *Pachypodium*
(Apocynaceae). *PeerJ* 1:e70 <http://dx.doi.org/10.7717/peerj.70>

See more of my art work on my website at [http://bonniem.weebly.com/science--
art.html](http://bonniem.weebly.com/science--art.html)