

Bonnie Michelle McGill

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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 (^u indicates undergraduate)

- McGill, BM.** Submitted. Water rich and thirsty: Bottom up and top down drivers of groundwater irrigation use in the upper Midwest. *Journal of Soil and Water Conservation*.
- McGill, BM,** MJ Foster^u, AN Pruitt^u, SG Thomas, ER Arsenault, J Hanschu, K Wahwahsuch, E Cortez^u, K Zarek^u, TD Loecke, and AJ Burgin. Forthcoming. A field guide to your first undergraduate research experience in an ecology lab. Planning to submit to *BioScience*.

Publications: *All first author publications are open-access.*

- McGill, BM,** Y Altchenko, SK Hamilton, SR Sylvester, and KG Villholth. 2019. Complex interactions between climate change, sanitation, and groundwater quality: a case study from Ramotswa, Botswana. *Hydrogeology Journal* 27(3):997-1015.
<https://doi.org/10.1007/s10040-018-1901-4>
- McGill, BM,** SK Hamilton, GP Robertson, and N Millar. 2018. The net carbon cost of agricultural intensification of row crops with groundwater irrigation in the Midwest US. *Global Change Biology* 24(12):5948-5960. <https://onlinelibrary.wiley.com/doi/full/10.1111/gcb.14472>
- 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.
<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.
<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. <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.
<http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0011618>

Reports and select presentations (*award, ^uundergraduate student)

Note: Upcoming invited talks will occur remotely with The Nature Conservancy Nebraska Water and Agriculture team in Oct. 2019, at Des Moines Water Works Citizen Water Academy in Nov. 2019 and University of Iowa Dept. of Geography and Sustainability Sciences in Spring 2020. I will be leading a

session at the American Geophysical Union in Dec. 2019 on Agrohydrology and giving a talk on my postdoctoral research in a separate session.

McGill, BM. 2019. Sociology Bootcamp for Ecologists—undergraduate workshop. Miami University Biology Department NSF REU program invited two-day speaker and presenter. Oxford, OH.

McGill, BM. 2019. The greenhouse gas cost of agricultural intensification with groundwater irrigation in a Midwest US row cropping system. Invited seminar at *Kansas State University* Dept. of Ecology and Evolutionary Biology. Manhattan, KS.

McDonough MacKenzie, C, S Kuebbing, RS Barak, M Bletz, J Dudney, BM **McGill**, MA Nocco, T Young, and R Tonietto. 2019. Letter to the Editor: We do not want to “cure plant blindness” we want to grow plant love. *Plants People Planet* 1:139-141. <https://doi.org/10.1002/ppp3.10062>

McGill, BM, KG Villholth. 2019. Improve water security planning by recognizing the whole system: How climate change and sanitation drive nitrate contamination of groundwater. *International Water Management Institute Water Policy Brief*. <http://conjunctivecooperation.iwmi.org/wp-content/uploads/sites/38/2019/05/Ramotswa-project-brief-Nitrates-and-Climate-change.pdf>

*Foster, MJ, TD Loecke, and BM **McGill**. 2018. Potential for subsurface drip irrigation to influence greenhouse gas emissions from irrigated systems. *Governor’s Water Conference*. Manhattan, KS.
***Best undergraduate poster**

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.
***Outstanding Student Paper Award, Hydrology Section**

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://conjunctivecooperation.iwmi.org/wp-content/uploads/sites/38/2019/02/Hydrogeology-Report-2017.pdf>

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**

Published datasets and methods

McGill, BM. 2019. Groundwater Chemistry and Water Table Depth Time Series in Ramotswa, Botswana. Dataset. USAID Development Data Library. <https://data.usaid.gov/d/qtsh-3hkd>.

McGill, BM. et al. 2018. The greenhouse gas cost of agricultural intensification with groundwater irrigation in a Midwest US row cropping system. Dataset and R code. KBS LTER Datasets. <https://lter.kbs.msu.edu/datasets/176>.

McGill, BM. and SK Hamilton. 2014. Installation of Decagon SIC20 Lysimeters for Soil Water Sampling. Protocol. KBS LTER Protocols. <https://lter.kbs.msu.edu/protocols/187>.

Hamilton, SK, BM **McGill**, and D Weed. 2019. Total Carbonates in Soil. Protocol. KBS LTER Protocols. <https://lter.kbs.msu.edu/protocols/189>.

Fellowships, grants, and awards

- 2018-20 [David H. Smith Conservation Research \(Postdoctoral\) Fellow](#). “Farming for a smaller Dead Zone: How agricultural conservation practices, artificial drainage, and climate change affect water quality in Iowa.” Lead PI. (\$200,000)
- 2017 Finalist, [iBiology.org](http://IBiology.org) Young Scientist Series.
- 2016-17 USAID Borlaug Fellowship – “Improving water security through managed aquifer recharge: Assessing water quality impacts in Botswana and South Africa.” Hosted by International Water Management Institute – Southern Africa. Lead PI. (\$15,533)
- 2016 American Meteorological Society Summer Policy Colloquium fellowship, Washington, DC.
- 2016-17 George H. Lauff grants for KBS summer research. (\$500 and \$2,000)
- 2014-15 KBS Long Term Ecological Research small grants (\$2,000 each)
- 2014 MSU Environmental Science & Policy Program Outstanding Service Award
- 2014 Porter Research Award (grant) for KBS graduate research, summer 2014 (\$500)
- 2014 Guest speaker at Marion Center Area High School (alma mater) commencement.
- 2013-2017 NSF Graduate Research Fellow. (\$132,000)
- 2012-13 MSU Environmental Science and Policy Program Fellow, Aug 2012 – May 2013
- 2006 Phi Beta Kappa, Kappa of Pennsylvania chapter.
- 2006 Baccalaureate student speaker, Washington & Jefferson College.
- 2005 Juror’s Prize at the California University of Pennsylvania intercollegiate undergraduate art exhibit.

- 2005 Phi Sigma, Nu Chapter, Biology Honor Society.
- 2005 [Sea Education Association](#) Presidential Scholarship.
- 2002-06 Washington & Jefferson College Presidential Scholarship.

Teaching and Mentoring Experience

- 2018 Mentor, KU undergrad woman. Poster title, “Potential for subsurface drip irrigation to influence greenhouse gas emissions from irrigated systems.” Won best undergraduate poster at the *2018 Governor’s Water Conference*. Manhattan, KS.
- 2016 Mentor, first generation woman NSF REU. Poster title, “Mobility of phosphate in soils among different land use types.” KBS Summer Undergraduate Symposium. Mentee is now pursuing a M.S. in oceanography at SCRIPPS.
- 2016 Mentor, first generation woman NSF REU. Poster title, “The effect of nitrogen fertilizer and irrigation on lime carbon sequestration.” KBS Summer Undergraduate Symposium.
- 2015 Mentor, first generation woman MSU undergraduate student. Poster title: “Digging deeper into soil carbonate and agricultural liming” presented at KBS Summer Undergraduate Symposium.
- 2014-15 Kellogg Biological Station Graduate K-12 Fellow (NSF K-12 program). Developed lesson plans and taught three sections of AP Biology once a week at a rural public HS.
- 2014 Invited seminar at the Kellogg Biological Station Academic Success Series on how to build a professional website for yourself or your lab.
- 2013 Teaching Assistant, Field Ecology & Evolution (ZOL440) – summer session at KBS.
- 2012-13 Teaching Assistant, Ecology (ZOL355) at MSU.
- 2004 Teaching Assistant, Botany Lab, Washington & Jefferson College.
- 2003-04 Teaching Assistant, Biology, Washington & Jefferson College.

Community Service (*Institutional diversity, equity, and inclusion efforts)

- 2019 Invited speaker at Izaak Walton League of America national conference. Des Moines, IA.
- 2019 Organizer, Smith Fellowship retreat including orientation for Class of 2019, explore career paths following the Smith Fellowship, Storytelling Workshop, and tour of prairie and agricultural conservation in northwest Iowa. Iowa Lakeside Lab, Milford, IA.
- 2019 *Organizer, training workshop on implicit bias at Kansas Biological Survey, University of Kansas, Lawrence, KS.
- 2019 *Invited presenter for the ESA SEEDS University of Kansas Chapter weekly meeting, Lawrence, KS.
- 2017- *[Skype a Scientist](#) – meet with rural classrooms (three so far) online to share my passion for science and answer students’ questions.
- 2018 Invited presenter at Raccoon River Watershed Association meeting: Panora, IA.
- 2018- Co-founder, developer, and logo designer for [PlantLoveStories.com](#) (@PlantLoveStory) a platform for increasing awareness of the importance of plants through sharing stories about how plants shape our lives.
- 2017-18 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](#).” Also see: Edwards, K. D., Miller, H. K., Johnson, W., Dauer, J., Covitt, B. A., Kohn, C., McGill, B., & Anderson, C. W. (2019). *Human Energy Systems*. Carbon TIME Project, Michigan State University <http://carbontime.bsos.org/human-energy-systems>

- 2018 *Co-founder, Culture and Inclusion Committee at Kellogg Biological Station, Michigan State University.
- 2017 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*, New Orleans, LA.
- 2015 *Organizer, seminar on “Microaggressions in the Workplace”, Kellogg Biological Station, Michigan State University.
- 2015 Organizer and moderator for MSU Environmental Science and Policy Program seminar series event: “Harmful Algal Blooms in the Great Lakes: An Interdisciplinary Discussion.”
- 2014-15 MSU Environmental Science and Policy Program Colloquium Series committee.
- 2013-18 Michigan Dept. of Environmental Quality Water Use Advisory Council & Technical Underpinnings work group: Participated as a member of the public and later as rep. of Kalamazoo River Watershed Council.
- 2014 MSU SciFest: Aquatic food web game at KBS LTER booth.
- 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.
- 2013-15 KBS LTER graduate group co-founder and co-chair.
- 2012- *AGua Blogua* : <https://bonniem.weebly.com/blog>, My science blog covering research and news at the intersection of agriculture, climate change and water issues.
- 2012-13 MSU Graduate Women in Science: mentor, Girls’ Math & Science Day volunteer.
- 2008-12 Eno River Association, Durham, NC.
- 2008-10 Durham Literacy Center, Durham, NC.
- 2009 The Jordan Child & Family Enrichment Center, Raleigh, NC.
- 2008 Women in Math and Science mentor, Durham, NC.

Scientific Illustrations

- Berend, K, K Haynes, and C McDonough MacKenzie. In Press. Featured Review: Common garden experiments as a dynamic tool for ecological studies of alpine plants and communities in northeastern North America. *Rhodora*.
- McDonough MacKenzie, C, RB Primack, and AJ Miller-Rushing. 2019. Trails as transects: phenology monitoring across heterogeneous microclimates in Acadia National Park, Maine. *Ecosphere*. <https://doi.org/10.1002/ecs2.2626>
- Roley, SS, C. Xue, SK Hamilton, JM Tiedje, and GP Robertson. 2019. Isotopic evidence for episodic nitrogen fixation in switchgrass (*Panicum virgatum* L.). *Soil Biology and Biochemistry* 129:90-98. <https://doi.org/10.1016/j.soilbio.2018.11.006>
- 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>

Professional Societies

- American Geophysical Union (2015 – present)
 Member, AGU Hydrology section Water Quality Technical Committee
 Soil and Water Conservation Society (2018 – present)
 Society for Conservation Biology (2018 – lifetime membership through Smith Fellowship)

Earth Science Women's Network (2019 – present)
Association for Women Geoscientists (2019 – present)
Society for Advancement of Chicanos/Hispanics and Native Americans in Science (SACNAS) (2019 – present)

Peer Reviewer

Earth's Future

Limnology and Oceanography

Geobiology

Science of the Total Environment

Proposal reviewer for NSF DEB CAREER (2019), National Fellowships Committee for *Sigma Delta Epsilon* Graduate Women in Science (2013, 2014).

Poster judge, MSU University Undergraduate Research and Arts Forum, 2013 & 2014

Research experience prior to Ph.D.

- 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.*