

ERIN G. MENZIES PLUER, PhD, EI

Global Water Security Center
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EDUCATION

Cornell University, Ithaca, NY

Ph.D. Environmental Engineering 2016 – 2019

*Crossing Scales and Fields to Examine Agricultural Land Management and Water Quality:
Incorporated Woodchips as a Restoration Strategy and the Ways Farmers Know*

M.S. Environmental Engineering 2013 - 2016

*A Limitation of the Predictive Capacity of the SWAT Model: Modeling P Losses from Dairy Manure
Spreading Schemes in Temperate Climates*

University of Vermont, Burlington, VT

B.S. Environmental Engineering 2006 - 2010

University of New Hampshire, Eco Quest, New Zealand

Semester Abroad – Restoration Ecology and Environmental Policy 2008

PROFESSIONAL EXPERIENCE

Global Water Security Center at the University of Alabama

Environmental Data Scientist 2023 - present

Contribute to multiple projects involving the design, implementation, and integration of datasets and data processing workflows. I assist in planning and implementing future development and innovation for the projects and collaborate on the acquisition, processing, validation, quality control, and exploratory analysis of multiple complex datasets. I develop engaging tabular and graphical data summaries and create visualizations to communicate my findings to relevant stakeholders.

US Agency for International Development, Bureau for Resilience and Food Security (USAID/RFS)

AAAS Science & Technology Policy Fellow 2020 - 2022

Advanced progress toward global food security goals through inclusive, sustainable, and climate smart, agriculture-led economic growth in the Bureau for Resilience and Food Security. I built capacity and fostered networks of information exchange to support sustainable intensification and acted as a liaison for my office to foment interdisciplinary solutions to complex and interrelated problems. I collaborated with international partners, including Feed the Future Innovation Labs and CGIAR centers to implement food security and resilience programming.

The University of Waterloo

Post-Doctoral Fellow 2019 - 2020

Quantified soluble nutrient loss potential from agricultural fields experiencing high rates of erosion in collaboration with local conservation authorities and stakeholders. I also examined farmer perspectives on adoption of best management practices.

Engineers in Action, Bridges to Prosperity

Cornell University Supervisor 2019

Supervised a group of undergraduate students from Cornell during a pedestrian bridge build in the Kingdom of eSwatini. Provided guidance and support with cross-cultural communication and adjustment to life with our host family

Farmer to Farmer, Partners of the Americas

Water Quality and Wastewater Management Specialist

2016

Consulted as a volunteer in the Dominican Republic as part of a USAID project to reduce the environmental impacts of banana packing facilities on local water resources to build climate resilience

Cornell University

Graduate Research Fellow

2013 - 2019

Conducted interdisciplinary graduate work focused on the impact of fertilizers on water quality in agricultural settings. I utilized a diverse array of tools to improve our understanding of biogeochemical cycling of nutrients and the implications for surface water quality. I am committed to stakeholder, particularly farmer, engagement in the research process.

United States Peace Corps Ecuador

Sustainable Agriculture Volunteer

2011 - 2013

Designed and implemented a number of small community development projects in the sector of sustainable agriculture all of which were anchored in non-traditional education

English Instructor

2011 - 2013

Developed syllabi, taught classes, and administered grades to Elementary school aged children in public school as well as at a language academy in Ecuador

University of Vermont

Undergraduate Research Assistant

2009 - 2010

Investigated the impacts of cedar salt marshes on human health

TEACHING AND VOLUNTEERING

Cornell University

BEE 4940 Course Instructor

2018 - 2019

Developed and taught a short course titled "Intro to R" aimed at undergraduates interested in learning to code for research. Offered both in person and online 17 students, 25 students respectively.

4H Career Explorations Workshop Volunteer

2017

Aided in organizing and executing a hands-on workshop aimed at engaging students involved in 4H in environmental engineering.

BEE 2510 Graduate Teaching Assistant

2016

Acted as the graduate TA for Intro to Environmental Engineering. Managed 3 undergraduate TA's, held office hours, and developed and graded assessments.

Expanding your Horizons Workshop Volunteer

2013 - 2017

Aided in organizing and executing a hands-on workshop aimed at engaging middle school girls in science and engineering.

Cornell Translator Interpreter Program Volunteer

2013 - 2016

Acted as a Spanish language translator or interpreter in the Ithaca community. I have been called to translate or interpret by schools, advocacy groups, law enforcement, and others.

Enviro-mentor

2013 - 2016

Acted as a resource and mentor to undergraduate students at Cornell interested in environmental science.

Team Mentor, LATA 4011, Experience Latin America Ecuador Edition

2014

Aided with project development and advised on cross cultural communication and language skills

University of Vermont

Subject Area Tutor

2008 - 2010

Aided students with their study of Calculus and Physics. Provided them with study skills and facilitated the development of the unique skills required to be successful in math and physics.

LANGUAGE PROFICIENCY

English - Native Speaker

Spanish - Fluent

Italian - Advanced Proficiency

French - Intermediate Proficiency

PUBLICATIONS AND PRESENTATIONS

Menzies Puer, E.G., Robinson, D.T., Meinen, B.U., Macrae, M.L., 2020. Pairing soil sampling with very-high resolution UAV imagery: An examination of drivers of soil and nutrient movement and agricultural productivity in southern Ontario. *Geoderma* 379, 10.

<https://doi.org/10.1016/j.geoderma.2020.114630>

Menzies Puer, E.G., Schneider, R.L., Puer, W.T., Morreale, S.J., Walter, M.T., 2020. Returning degraded soils to productivity: Water and nitrogen cycling in degraded soils amended with coarse woody material. *Ecological Engineering* 157, 105986. <https://doi.org/10.1016/j.ecoleng.2020.105986>

Schneider, R., Morreale, S., Li, Z., **Menzies Puer, E.**, Kurtz, K., Ni, X., Wang, C., Li, C., Van Es, H., 2020. Restoring soil health to reduce irrigation demand and buffer the impacts of drought. *Front. Agr. Sci. Eng.* 7, 339. <https://doi.org/10.15302/J-FASE-2020348>

Hassanpour, B., Riazi, S.F., **Menzies Puer, E.G.**, Geohring, L.D., Guzman, C.D., Steenhuis, T.S., 2020. Biochar acting as an electron acceptor reduces nitrate removal in woodchip denitrifying bioreactors. *Ecological Engineering* 149, 105724. <https://doi.org/10.1016/j.ecoleng.2020.105724>

Menzies Puer, E.G., Schneider, R.L., Morreale, S.J., Liebig, M.A., Li, J., Li, C.X., Walter, M.T., 2020. Returning Degraded Soils to Productivity: an Examination of the Potential of Coarse Woody Amendments for Improved Water Retention and Nutrient Holding Capacity. *Water Air Soil Pollut* 231, 15. <https://doi.org/10.1007/s11270-019-4380-x>

Menzies Puer, E.G., Knighton, J.O., Archibald, J.A., Walter, M.T., 2019. Comparing Watershed Scale P Losses from Manure Spreading in Temperate Climates across Mechanistic Soil P Models. *Journal of Hydrologic Engineering* 24, 04019009.

[https://doi.org/10.1061/\(ASCE\)HE.1943-5584.0001774](https://doi.org/10.1061/(ASCE)HE.1943-5584.0001774)

Knighton, J., **Menzies Puer, E.**, Prestigiacomo, A. R., Effler, S. W., & Walter, M. T., 2017.

Topographic wetness guided dairy manure applications to reduce stream nutrient loads in Central New York, USA. *Journal of Hydrology: Regional Studies*, 14, 67-82. DOI: 10.1016/j.ejrh.2017.11.003

DiLorenzo, J., Zhang, R., **Menzies, E.**, Fisher, K., Foster, N., 2016. Incremental forest: a DSL for efficiently managing filestores. *ACM Press*, pp. 252–271. doi:10.1145/2983990.2984034

Oral Presentations

Menzies Puer, E.G., Leonard, L., Walter, M.T. 2018. Local Knowledge: Farmers' Perspectives on Waste, Water, and Ways of Knowing. Oral, Rural Sociological Society Annual Meeting 2018, Portland, OR.

Menzies, E.G., Schneider, R.L., Walter, M. T. 2017. Returning Degraded Soils to Productivity: Nutrient Losses from Directed Fertilization of Woodchip Amended Soils. Oral, International Meeting of the American Society of Agricultural and Biological Engineers 2017, Spokane, WA.

Poster Presentations

Menzies Puer, E.G., Schneider, R.L., Walter, M.T. 2018. Scaling the Impacts of Restoration: Evaluation of Water and Nitrogen Budgets in Degraded Sandy Soils with Incorporated Woodchips

and Fertilizer Additions. Poster, Fall Meeting of the American Geophysical Union 2018, Washington, D.C.

Menzies Puer, E.G., Schneider, R.L., Leonard, L., Walter, M.T. 2018. Returning Degraded Soils to Productivity: Investigating Mechanisms of Increased Water and Nutrient Retention in Woodchip Amended Soils. Poster, International Meeting of the American Society of Agricultural and Biological Engineers 2018, Detroit, MI.

Menzies Puer, E.G., Leonard, L., Schneider, R.L., Walter, M.T. 2018. Ways of Knowing: Farmers' Perspectives on Waste, Water, and Ways of Knowing. Poster, International Meeting of the American Society of Agricultural and Biological Engineers 2018, Detroit, MI.

Menzies, E.G., Schneider, R.L., Walter, M.T. 2016. Reducing Nutrient Losses with Directed Fertilization of Degraded Soils. Poster, Fall Meeting of the American Geophysical Union 2016, San Francisco, CA

Menzies, E.G. and Walter, M. T. 2015. Modeling Phosphorus Losses from Seasonal Manure Application Schemes. Poster, International Meeting of the American Society of Agricultural and Biological Engineers 2015, New Orleans, LA.

Menzies, E.G. and Walter, M. T. 2015. Modeling Phosphorus and Sediment Transport in the Cayuga Lake Watershed. Poster, Fall Meeting of the American Geophysical Union 2014, San Francisco, CA.

GRANTS AND AWARDS

Engaged Graduate Student Grant	2018
CSBC IGERT Traineeship	2017
Spencer Research Grant	2016
CSBC IGERT Research Grant	2016
National Science Foundation Graduate Research Fellowship	2014
Foreign Language and Area Studies Fellowship- Intermediate Italian	2014
Engineering Intern- Vermont FE Exam	2010

PROFESSIONAL AFFILIATIONS

American Geophysical Union
American Society of Agricultural and Biological Engineers
Soil Science Society of America
Tau Beta Pi, Engineering Honor Society
Chi Epsilon, Civil Engineering Honor Society
Alpha Epsilon, Agricultural Engineering Honor Society
The Order of the Engineer
American Association for the Advancement of Science