

Dr. Rebecca Bourgault

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Education

May 2014: *Ph.D. in Plant and Soil Science*, University of Vermont; Advisor: Dr. Donald Ross; Dissertation title: Hydopedology of Podzols at Hubbard Brook, New Hampshire; Conducted field work (soil description/sampling), soil extractions and trace metal analysis (ICP-OES), soil carbon/organic matter (CN, FTIR), thin section observation/SEM-EDS analysis, synchrotron techniques, mineralogical analyses (XRD), multivariate statistics, geospatial analysis/geostatistics; Trained/managed four undergraduate assistants

December 2008: *M.S. in Natural Resource Sciences (Pedology)*, University of Maryland, College Park; Advisor: Dr. Martin Rabenhorst; Thesis title: Multi-Scale Pedologic Investigation of Manganiferous Soils in the Maryland Piedmont; Conducted field work, laboratory chemical analyses, mineralogical analysis, thin section preparation and observation, physical methods, soil extractions and trace metals (AAS), statistical analysis, geospatial analysis/geostatistics

May 2005: *B.S. with Honors in Environmental Science and Policy*, Concentration in Soil, Water, and Land Resources, University of Maryland, College Park; Graduated magna cum laude; Honors thesis title: Seasonal and Site Effects on Reduction of Iron from IRIS (Indicator of Reduction in Soils) Tubes

Experience

Aug. 2019 to Present: *Assistant Professor*, Dept. of Environmental, Geographical, and Geological Sciences, Bloomsburg University, Bloomsburg, PA; Design and teach courses in Soil Science, Advanced Soil Science, Introduction to Environmental Science, Wetlands, Independent Study in Wetland Delineation; Coach of the Bloomsburg University Soil Judging Team; Conduct research in soil health involving undergraduate students; Provide service to the University through University Forum appointment and volunteer work

Aug. 2016 to May 2019: *Assistant Professor*, Dept. of Landscape Architecture and Environmental Science, Delaware Valley University, Doylestown, PA; Designed and taught courses in: Sustainability, Environmental Geology, Soils, Field Soil Morphology, Soil Classification, Soil Fertility & Fertilizers, Hydric Soils & Wetland Delineation, and Applied Toxicology & Risk Assessment; Advised students in the Environmental Science program; Collaborated on a research project with the Bucks County Conservation District; Served as advising faculty member for the Soil Judging Club; Provided service to the University through assessment of student learning outcomes, committee appointments (including Core Curriculum Committee), and volunteer work

Sept. 2016 to Present: *Owner*, Bourgault Environmental Consulting Services, LLC; Provide high-intensity soil survey and wetland delineation services to clients; pursuing certification as a Pennsylvania Sewage Enforcement Officer

Aug. 2015 to June 2016: *Science Teacher*, East Longmeadow High School, East Longmeadow, MA; Taught courses in Biology and Honors Biology according to MA state standards, including Inclusion classes working with special education students; Developed and taught course in Environmental Science; Collaborated with science department to develop inquiry-based labs for assessment of student learning outcomes

Aug. 2014 to May 2015: *Lecturer*, Dept. of Biology, Sacred Heart University, Fairfield, CT; Developed and taught graduate courses in Env. Sampling & Analysis and Wetland Delineation and undergraduate course in Environment & Sustainability; Taught undergraduate laboratories and discussions in ecology and biology

Aug. 2013 to Dec. 2013: *Instructor*, Johnson State College, Johnson, VT; Developed and taught course in Soil Science, including lectures and field/ laboratory exercises

Aug. 2012 to Dec. 2012: *Lecturer*, University of Vermont, Burlington, VT; Developed and taught course in Soil Morphology, Classification, and Land Use; Managed a Graduate Teaching Assistant

Aug. 2009 to Dec. 2011: *Teaching Assistant*, University of Vermont, Burlington, VT; Taught laboratory and field sessions for Introduction to Soil Science; Developed and co-taught Soil Morphology, Classification, and Land Use; Received Outstanding Graduate Teaching Assistant Award, College of Agriculture and Life Sciences

May 2009 to Aug. 2009: *Research Technician*, EPSCoR streams project, University of Vermont, Burlington, VT; Mentored a McNair Scholar and two students from Universidad Metropolitana in Puerto Rico on stream corridor soil sampling, GIS, and laboratory analyses

Jan. 2007 to Dec. 2007: *Laboratory Manager*, University of Maryland Pedology Lab, College Park, MD; Trained and managed undergraduate laboratory assistants; Maintained safety protocols and daily operations

Jan. 2005 to May 2005: *Undergraduate Teaching Assistant*, University of Maryland, College Park, MD; Taught laboratory sessions in Soil Chemistry

May 2003 to May 2004: *Undergraduate Research Assistant*, University of Maryland, College Park, MD; Independently carried out sampling and nutrient analysis of groundwater, stream water, and soils from dairy farms

Awards and Achievements

2020: Received a \$10,000 Start-Up Grant from Bloomsburg University (Internal Competitive Grant) to conduct a pilot study in soil health in regenerative agriculture at a farm in Catawissa, PA

2013: *First Place*, Pedology Student Oral Presentation Competition, Soil Sci. Soc. of America International Annual Meetings, 3-6 Nov., Tampa, FL

2012: *Outstanding Graduate Teaching Assistant*, College of Agriculture and Life Sciences, University of Vermont

2007: *Graduate Student of the Year*, Department of Environmental Science and Technology, University of Maryland, College Park

2005: *Northeast Branch of Soil Science Society of America Outstanding Senior Student*

2004: *Mid-Atlantic Association of Professional Soil Scientists Scholarship*

2004: *Second Place Individual*, Northeast Regional Soil Judging Contest, Wilmington, OH

2003: *Third Place Individual*, Northeast Regional Soil Judging Contest, Kingston, RI

Publications and Selected Presentations

Bailey, S., D. Ross, N. Perdrial, M. Jercinovic, J. Webber, and R. Bourgault. 2019. Determination of Primary Mineral Content and Calcium Sources in Forest Soils using Electron Probe Microanalysis Mapping and Cluster Analysis. *Soil Sci. Soc. Am. J.* doi:10.2136/sssaj2019.07.0231

Bourgault, R., D. Ross, S. Bailey, K. McGuire, and J. Gannon. 2017. Redistribution of soil metals and organic carbon via lateral flowpaths at the catchment scale in a glaciated upland setting. *Geoderma* 307:238-252.

Gannon, J., K. McGuire, S. Bailey, R. Bourgault, and D. Ross. 2017. Lateral water flux in the unsaturated zone: a mechanism for the formation of spatial soil heterogeneity in a headwater catchment. *Hydrological Processes* 31:3568-3579.

Ishee, E., D. Ross, K. Garvey, R. Bourgault, and C. Ford. 2015. Phosphorus Characterization and Contribution from Eroding Streambank Soils of Vermont's Lake Champlain Basin. *J. Env. Qual.* 44:1745-1753.

Bourgault, R., D. Ross, and S. Bailey. 2015b. A Response to "Comment on 'Chemical and Morphological Distinctions between Vertical and Lateral Podzolization at Hubbard Brook' by Bourgault et al." *Soil Sci. Soc. Am. J.* 79:1818.

Bourgault, R., D. Ross, and S. Bailey. 2015a. Chemical and morphological distinctions between vertical and lateral podzolization at Hubbard Brook. *Soil Sci. Soc. Am. J.* 79:428-439.

Bourgault, R., D. Ross, S. Bailey, T. Bullen, and K. McGuire. 2013. Hydropedology of Podzols at Hubbard Brook, NH. *Soil Science Society of America International Annual Meetings*, Nov. 3-6, Tampa, FL.

Ross, D., R. Bourgault, and S. Bailey. 2013. Hydropedologic Influence on Soil Manganese Distribution, Form and Reactivity Near Seeps in a Forested Catchment. *Soil Science Society of America International Annual Meetings*, Nov. 3-6, Tampa, FL.

Bourgault, R., D. Ross, S. Bailey, and T. Bullen. 2013. Hydropedology in Action: Chemical Evidence for Lateral Development of Podzols at Hubbard Brook, NH. Gordon Research Conference in Catchment Science: Interactions of Hydrology, Biology, and Geochemistry, Jun. 16-21, Andover, NH.

Bourgault, R. R. and M. C. Rabenhorst. 2012. Manganiferous Soils in Maryland: Regional Extent and Field-Scale Electromagnetic Induction Survey. *Soil Sci. Soc. Am. J.* 76:2128-2135.

Bourgault, R., D. Ross, S. Bailey, K. McGuire, and P. Brousseau. 2012. Hydropedology of Podzols at Hubbard Brook, NH. Soil Science Society of America International Annual Meetings, Oct. 21-24, Cincinnati, OH.

Bourgault, R., D. Ross, S. Bailey, P. Brousseau, J. Gannon, K. McGuire, and T. Bullen. 2012. Landscape-Scale Pedogenic Relationships between Soil Carbon and Secondary Metal Oxides in Hubbard Brook Podzols, Northeastern US. *Mineralogical Magazine*, 76(6): 1501.

Bourgault, R. R. and M. C. Rabenhorst. 2011. Genesis and Characterization of Manganiferous Soils in the Eastern Piedmont, USA. *Geoderma* 165:84-94.

Bourgault, R., D. Ross, S. Bailey, K. McGuire, and P. Brousseau. 2011. A Catchment-Scale Hydropedological Approach to Understanding Variations in Soil Genesis and Chemistry at Hubbard Brook, NH. Soil Science Society of America International Annual Meetings, Oct. 16-19, San Antonio, TX.

Rabenhorst, M. C., R. R. Bourgault, and B. R. James. 2008. Iron Oxyhydroxide Reduction in Simulated Wetland Soils: Effects of Mineralogical Composition of IRIS Paints. *Soil Sci. Soc. Am. J.* 72:1838-1842.

Bourgault, R., and M. Rabenhorst. 2007. Multi-Scale Pedologic Investigation of Highly Manganiferous Soils in the Maryland Piedmont. Soil Science Society of America International Annual Meetings, Nov. 4-8, New Orleans, LA.

Blank (Bourgault), R., and M. Rabenhorst. 2006. Pedogenesis of Highly Ferromanganiferous Soils in the Maryland Piedmont. Soil Science Society of America International Annual Meetings, Nov. 12-16, Indianapolis, IN.

Professional Memberships

Soil Science Society of America

Pennsylvania Association of Professional Soil Scientists

Mid-Atlantic Association of Professional Soil Scientists