

Christopher Walter – Curriculum Vitae

Postdoctoral Research Associate
West Virginia University
Web: chriswalter.info
Email: cwalte12@mail.wvu.edu

Education

- 2020-pres. **M. S. Candidate, Analytics** (expected graduation summer 2022)
Georgia Institute of Technology
- 2016 **Ph.D. Biology**
West Virginia University
- 2007 **B.S. Environmental Studies**
Shepherd University

Research Appointments

- 2020-pres. **Postdoctoral Research Associate**
West Virginia University
Modeled the effects of pollution on carbon cycling in temperate deciduous forests across America
- 2016-2020 **Postdoctoral Research Associate**
University of Minnesota
Investigated coupled soil carbon and nitrogen cycling in response to global change in grasslands across America
- 2011-2016 **Graduate Research Assistant**
West Virginia University
Examined the effects of nitrogen deposition on forest nutrient cycling and plant communities
- 2009-2011 **Research Assistant**
The University of Montana
Tested the effect of habitat similarity on the transferability of habitat suitability models of rare forest plants
- 2009-2011 **Spatial Analyst and Cartographer**
Montana Department of Natural Resources and Conservation
Developed a statewide habitat conservation plan for endangered species, and built a GIS database for public trust lands

2007-2009 **Research Technician**
United States Geological Survey
Created habitat suitability models for a rare forest plant and investigated riverine fish kill and intersex events

Teaching Appointments

2011-2016 **Graduate Teaching Assistant**
West Virginia University
Taught ten courses, including biological statistics, biology senior capstone, environmental biology, and introductory biology

2010 **Teaching Assistant**
The University of Montana
Instructed students in vector analysis in geographic information information systems and introductory spatial modeling

Educational Outreach

2019 **Research Mentor**
Cedar Creek Ecosystem Science Reserve Long-Term Ecological Research
Directed an undergraduate research project focusing on grassland response to multiple global change factors

2015-2016 **Nature Interpreter**
West Virginia University Arboretum
Guided nature programs and hikes on topics including identifying wildflowers, trees, and general forest science

2011-2016 **Research Mentor**
Fernow Experimental Forest Long-Term Research in Environmental Biology
Guided seven undergraduates through independent research projects, focusing on ecosystem ecology and biogeochemistry

2013-2015 **Research Mentor**
EnvironMentors
Mentored high school students in research projects focused on both local and global environmental issues

Publications

**** Indicates undergraduate collaborator**

- 2019 **Walter, C. A.**, Burnham, M. B., Adams, M. B., McNeil, B. E., Deel, L. N., and Peterjohn, W. T. Nitrogen availability decreases the severity of snow storm damage in a temperate forest. *Forest Science* 66: 58-65
- 2018 Carrara, J. E., **Walter, C. A.**, Hawkins, J. S., Peterjohn, W. T., Averill, C., and Brzostek, E. R. (2018) Interactions among plants, bacteria, and fungi reduce extracellular enzyme activities under long-term N fertilization. *Global Change Biology* 24: 2721-2734
- Gilliam, F. S., **Walter, C. A.**, Peterjohn, W. T., and Adams, M. B. (2018) Nitrogen dynamics in mineral soil of a central Appalachian hardwood forest during a quarter century of whole-watershed nitrogen additions. *Ecosystems* 21: 1489-1504
- 2017 **Walter, C. A.**, Adams, M. B., Gilliam, F. S., and Peterjohn, W. T. (2017) Non-random species loss in a forest herbaceous layer following nitrogen addition. *Ecology* 98: 2322-2332
- 2016 **Walter, C. A.**, ****Raiff, D. T.**, Burnham, M. B., and Gilliam, F. S., Adams, M. B., and Peterjohn, W. T. (2016) Nitrogen fertilization interacts with light to increase *Rubus* spp. cover in a temperate forest. *Plant Ecology* 217: 421-430
- Gilliam, F. S., Billmyer, J. H., **Walter, C. A.**, and Peterjohn, W. T. (2016) Effects of excess nitrogen on biogeochemistry of a temperate hardwood forest: Evidence of nutrient redistribution by a forest understory species. *Atmospheric Environment* 146: 261-270
- Gilliam, F. S., Welch, N. T., Phillips, A. H., Billmyer, J. H., May, J. D., Peterjohn, W. T., Fowler, Z. K., **Walter, C. A.**, Burnham, M. B., and Adams, M. B. (2016) Twenty-five-year response of the herbaceous layer of a central Appalachian hardwood forest to chronically elevated nitrogen deposition. *Ecosphere* 7: 1-16
- 2015 **Walter, C. A.**, Burnham, M. B., Gilliam, F. S., and Peterjohn, W. T. (2015) A reference-based approach for estimating leaf area and cover in the forest herbaceous layer. *Environmental Monitoring and Assessment* 187: 1-9

- 2012 Smith, D. R., Lei, Y., **Walter, C. A.**, and Young, J. A. (2012) Incorporating predicted species distribution in adaptive and conventional sampling designs. In R. A. Gitzen, J. J. Milspaugh, A. B. Cooper, D. S. Licht (Eds.), *Design and Analysis of Long-Term Ecological Monitoring Studies* (pp. 381-396). New York, NY. Cambridge University Press
- In revision Deel, L. N., McNeil, B. E., **Erazo, D. A., **Heimerl, T. Z., **Walter, C. A.**, Chandler, J. C., Peterjohn, W. T., and Adams, M. B. Forest damage from the early snowfall of Superstorm Sandy differs by tree size, species, and landscape position.
- In preparation **Walter, C. A.**, Hobbie, S. A., ... et al. Root turnover increases with nitrogen fertilization in American grasslands. (Expected submission in Oct. 2020)
- Carrara, J. E., Hawkins, J. S., **Walter, C. A.**, and Brzostek, E. R. Belowground carbon allocation in ectomycorrhizal trees as an indirect pathway for nitrogen to change soil microbial communities. (Expected submission in Aug. 2020)
- **DeLancey, L. M., **Walter, C. A.**, Hobbie, S. A., ... et al. Soil conditions moderate respiration response to chronic nitrogen addition (Expected submission in Sept. 2020)

Fellowships and Awards

2011-2016	West Virginia University Academic Affairs Research Grant	\$ 4,200
2016	West Virginia University Graduate Productivity Award	\$ 1,000
2015	Earl Core Memorial Biology Fellowship	\$ 3,600
2014	David Blaydes Biology Fellowship	\$ 2,500
2013	Eberly College Morrissey-Ropp Scholarship	\$ 2,200
2011	Fernow Graduate Research Fellowship	\$ 35,000
2009	U. S. Geological Survey / IAP Service Award	\$ 700

Media

- 2019 Eschner, K. "The 'life support system of the biosphere' is in peril". *Popular Science* June 19, 2019
- 2018 Schlesinger, B. "Diversity". *Translational Ecology* May 17, 2018

Presentations

Invited Seminars

- 2019 *Nutrient Network and the greening of planet earth.* Cedar Creek Ecosystem Science Reserve Research Symposium. East Bethel, MN, June 17, 2019
- 2018 *Carbon and nutrient coupling: a critical climate science gap.* Cedar Creek Ecosystem Science Reserve Science Meeting. Saint Paul, MN, April 13, 2018
- Nitrogen pollution: more relevant than ever.* Marshall University Biology Department. Huntington, WV, April 5, 2018
- What can ecology teach us about environmental issues?* Regis University Biology Department. Denver, CO, March 21, 2018
- 2017 *Does nitrogen availability affect storm damage in forests?* National Science Foundation Novus Research Collaboration Network: Integrating across temporal scales to understand disturbances and their biogeochemical impacts. Hubbard Brook Experimental Forest, North Woodstock, NH, September 28, 2017
- 2016 *Testing the mechanisms for species loss in a forest herbaceous layer under experimental acidification.* Fernow Experimental Forest Cooperators Meeting, Morgantown, WV, January 29, 2016
- Appalachian hardwood forests: stand to forest scale ecosystem studies at the Fernow Experimental Forest.* Forest Seminar Series, U. S. Forest Service Morgantown Laboratory, Morgantown, WV, January 20, 2016
- 2014 *The legacy of nitrogen deposition in Central Appalachia.* U. S. Forest Service Timber and Watershed Laboratory, Parsons, WV, July 14, 2014
- 2013 *Mapping forest disturbance after Super Storm Sandy.* Fernow Experimental Forest Cooperators Meeting, Morgantown, WV, January 15, 2013

Contributed Presentations

- 2020 *Continental-scale plant allocation and composition changes in response to nutrient addition.* (Submitted Abstract) The 2020 Ecological Society of America Annual Meeting. Salt Lake City, UT

- 2019 *Nitrogen addition lowers root biomass and increases root turnover in American grasslands.* The 2019 Ecological Society of America Annual Meeting. Louisville, KY
- 2016 *Nitrogen additions decrease species richness through competitive exclusion in a hardwood forest herbaceous layer.* The 2016 Ecological Society of America Annual Meeting. Fort Lauderdale, FL
- 2015 *A handy method for estimating the cover of forest herbs.* The 2015 Ecological Society of America Annual Meeting. Baltimore, MD
- 2014 *Does nitrogen fertilization increase stand resistance to storm damage?* The 2014 Ecological Society of America Annual Meeting. Sacramento, CA
- 2013 *A Pie lover's paradise: forest canopy openings and nitrogen fertilization cause a differential increase in wild blackberry (*Rubus spp.*) cover.* The 2013 Ecological Society of America Annual Meeting. Minneapolis, MN
- 2012 *Using tree rings to assess the role of biological demand in the variability of stream nitrate concentrations at the Fernow Experimental Forest, West Virginia.* The 2012 Ecological Society of America Annual Meeting. Portland, OR
- 2011 *Spatial Transferability of Rare Plant Species Distribution Models within the Nez Perce National Forest.* The 2011 Association of American Geographers Annual Meeting. Seattle, WA
- 2010 *Spatial Interactions between Watershed Geology, Hydrology and Fluvial Geomorphology in Headwater Streams in Shenandoah National Park, Virginia.* The 2010 Association of American Geographers Annual Meeting. Washington, DC

Service

College and Institution Level

- 2017-2018 **UMN College of Biological Sciences Postdoctoral Advisory Committee**
Served as an advocate for postdocs across the college, providing career and social opportunities as well as a voice in matters affecting postdocs
- 2015-2016 **WVU Core Arboretum Cartographer**
Served as a GIS specialist for the WVU Arboretum, creating databases and updating maps, as well as surveying property boundaries
- 2011-2014 **WVU Biology Graduate Student Association Member and President**

Advocated for graduate students within, and beyond, the Biology Department and provided career, social, and mentorship opportunities for students

- 2012-2014 **WVU Biology Department Colloquium Committee**
Organized the department colloquium, including inviting and hosting seminar speakers from across the country
- 2003-2006 **Shepherd University Environmental Club Member and Officer**
Oversaw the implementation of a university recycling program, was awarded funds to create a fleet of biodiesel campus vehicles, and organized field trips
- 2000-2003 **Bel Air High School Environmental Club Member and Officer**
Organized outing and events for students, created and built a campus nature trail, and oversaw the school's recycling program

Undergraduate Directed Research Mentorship

- 2019 **Sara Crader** – BS candidate at University of Minnesota
Partitioning the effects of CO₂ and nitrogen deposition on observed grassland productivity increases across long-term ecological research sites
- 2014 **Dara Erazo** – BS, West Virginia University
Species-specific differences in damage from an early snowfall in temperate forest tree stands
- Ty Heimerl** – BS, West Virginia University
Spatial patterns of tree damage across a temperate forest after an early-season snowfall
- Rachel Arrick** – MS, Marshall University
How tree species and leaf chemistry affect in-stream litter decomposition
- 2013 **Lilian Hill** – MS, Penn State University
The effects of nitrogen fertilization on soil microbial biomass and extracellular enzyme activity
- Devon Raiff** – Bushland restoration technician, Sydney, Australia
Interactions between light, nitrogen fertilization, and species diversity in the forest herbaceous layer
- 2012 **Ross Whitehead** – PhD, University of Maryland
The role of nitrogen amendments in fine-root biomass, soil organic horizon thickness, and respiration

2011

Joe Hilgenberg – Research technician at Organic Technologies, OH
*The effects of nitrogen fertilization on soil respiration
in a central Appalachian forest*

Peer Reviewer

Biogeochemistry, BioScience, Ecology, Journal of Ecology, Ecosphere,
Ecosystems, Forest Ecosystems, New Phytologist, Plant and Soil, Science of
the Total Environment, Soil Biology and Biochemistry, U. S. Forest Service