Christopher Walter – Curriculum Vitae

Postdoctoral Research Associate
West Virginia University
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Education

2021-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 biomas 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