

Elisabeth B. Ward

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EDUCATION

Ph.D.	2023
Yale University, School of the Environment, New Haven, CT New York Botanical Garden, The Bronx, NY Dissertation Chair: Dr. Mark Bradford	
Master of Forest Science	2018
Yale University, School of the Environment, New Haven, CT	
B.S. (Honors)	2013
Brown University, Department of Biological Sciences, Providence, RI Concentration: Human Biology—Ecosystems, Evolution, and the Environment	

PROFESSIONAL APPOINTMENTS

Assistant Agricultural Scientist II	2023-present
The Connecticut Agricultural Experiment Station, New Haven, CT	
Greenhouse Manager	2019-2023
Yale University, School of the Environment, New Haven, CT	
High School Program Manager	2017-2018
Urban Resources Initiative, New Haven, CT	
Research Assistant	2018
Laboratory of Dr. Sara Kuebbing, University of Pittsburgh, Pittsburgh, PA	
Planting Crew Supervisor	2016-2017
Urban Resources Initiative, New Haven, CT	
Horticulturist	2014-2016
Stonecrop Gardens, Cold Spring, NY	
Conservation Land Management Intern	2013-2014
Bureau of Land Management, Las Cruces, NM Chicago Botanical Garden, Highland Park, IL	
Research Assistant	2012-2013
Laboratory of Dr. Johanna Schmitt, Brown University, Providence, RI	
Research Assistant	2012-2013
Laboratory of Dr. Christopher Neill, Marine Biological Laboratory, Woods Hole, MA	

PEER-REVIEWED PUBLICATIONS [*graduate student, **undergraduate student]

2024

Welker, L.**, **E. B. Ward**, M. A. Bradford, and K. M. Ferraro. 2024. Plant functional type shapes nitrogen availability in a regenerating forest. *Plant and Soil*. (doi.org/10.1007/s11104-024-06483-3)

2023

Ward, E. B., A. Polussa, and M. A. Bradford. 2023. Depth-dependent effects of ericoid mycorrhizal shrubs on soil carbon and nitrogen pools are accentuated under arbuscular mycorrhizal trees. *Global Change Biology* **29**: 5924-5940. (doi.org/10.1111/gcb.16887)

Bradford, M. A., G. F. Veen, E. M. Bradford, K. R. Covey, T. W. Crowther, N. Fields, P. T. Frankson, J. González-Rivero, F. V. Jevon, S. E. Kuebbing, S. McBride, J. E. Mohan, E. E. Oldfield, A. M. Oliverio, A. Polussa, C. Steinrueck, M. S. Strickland, **E. B. Ward**, C. Wepking, and D. S. Maynard. 2023. Coarse woody debris accelerates the decomposition of deadwood inputs across temperate forest. *Biogeochemistry* **164**:489-507. (doi.org/10.1007/s10533-023-01045-8)

Ferraro, K.M.*, L. Welker, **E. B. Ward**, O. J. Schmitz, and M. A. Bradford. 2023. Plant mycorrhizal associations mediate the zoogeochemical effects of calving subsidies by a forest ungulate. *Journal of Animal Ecology* **92**: 2280-2296. (doi.org/10.1111/1365-2656.14002)

2022

Ward, E. B., M. C. Duguid, S. E. Kuebbing, J. L. Lendemer, and M. A. Bradford. 2022. The functional role of ericoid mycorrhizal plants and fungi on carbon and nitrogen dynamics in forests. *New Phytologist* **235**: 1701-1718. (doi.org/10.1111/nph.18307)

2021

Ward, E. B., M. C. Duguid, S. E. Kuebbing, J. L. Lendemer, R. J. Warren, and M. A. Bradford. 2021. Ericoid mycorrhizal shrubs alter the relationship between tree mycorrhizal dominance and soil carbon and nitrogen. *Journal of Ecology* **109**: 3524-3540. (doi.org/10.1111/1365-2745.13734)

Ward, E. B., D. A. Doroski, A. J. Felson, R. A. Hallett, E. E. Oldfield, S. E. Kuebbing, and M. A. Bradford. 2021. Positive long-term impacts of restoration on soils in an experimental urban forest. *Ecological Applications* **31**: e02336. (doi.org/10.1002/eap.2336)

Bradford, M. A., S. A. Wood, E. T. Addicott, E. P. Fenichel, N. Fields, J. González Rivero, F. V. Jevon, D. S. Maynard, E. E. Oldfield, A. Polussa, **E. B. Ward**, and W. R. Wieder. 2021. Quantifying microbial control of soil organic matter dynamics at macrosystem scales. *Biogeochemistry* **156**: 19-40. (doi.org/10.1007/s10533-021-00789-5)

Carpenter, R.**, **E. B. Ward**, J. Wikle, M. C. Duguid, M. A. Bradford, and M. S. Ashton. 2021. Soil nutrient recovery after shelterwood timber harvesting in a temperate oak-hardwood forest: Insights using a twenty-five-year chronosequence. *Forest Ecology and Management* **499**: 119604. (doi.org/10.1016/j.foreco.2021.11964)

2020

Ward, E. B., C. C. Pregitzer, S. E. Kuebbing, and M. A. Bradford. 2020. Invasive lianas are drivers of and passengers to altered soil nutrient availability in urban forests. *Biological Invasions* **22**: 935-955. (doi.org/10.1007/s10530-019-02134-2)

Manuscripts submitted or in revision:

Polussa, A., **E. B. Ward**, M. A. Bradford, and Angela M. Oliverio. In revision. A common ericoid shrub modulates the diversity and structure of fungal communities across an arbuscular to ectomycorrhizal tree dominance gradient. *FEMS Microbiology Ecology*.

ACADEMIC AWARDS & SCHOLARSHIPS

Shortlisted for the Harper Prize	2021
Annual award for the best paper by an early career researcher in <i>Journal of Ecology</i>	
Student Marshal , Yale University Commencement	2018
Lewis B. Cullman Fellowship	2018-2023
Annual tuition and stipend scholarship for the joint Yale School of the Environment and New York Botanical Garden doctoral program	
Merit Research Scholarship , Yale School of the Environment	2016-2018
Annual scholarship for top candidates for the Masters program showing promise for significant contributions to research in the community	
Departmental Honors , Brown University, Department of Biological Sciences	2013
Sigma Xi Scientific Honor Society , Brown University Chapter	2013
Thomas J. Watson Memorial Scholarship , Watson Foundation	2009-2013
Annual tuition scholarship	

RESEARCH GRANTS & FELLOWSHIPS**2024**

Forest Stewardship Program, USDA Forest Service and CT DEEP	\$50,000
Forest Ecosystem Monitoring Cooperative Grant, University of Vermont	\$15,756
Forest Ecosystem Monitoring Cooperative Grant, University of Vermont	\$25,000

2023

Forest Ecosystem Monitoring Cooperative Grant, University of Vermont	\$57,500
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2022

Cullman Fellowship Research Grant, Yale School of the Environment	\$5,000
Kohlberg-Donohoe Research Fellowship, Yale School of the Environment	\$5,000
Conference Travel Award, Yale School of the Environment	\$500

	Matching funds grant, Yale Analytical and Stable Isotope Center	\$740
2021		
	Kohlberg-Donohoe Research Fellowship, Yale School of the Environment	\$5,000
2020		
	Botany in Action Fellowship, Phipps Conservatory and Botanical Gardens Named Paula Sculley Scholar by the Garden Club of Allegheny County	\$5,000
	Greller Graduate Student Research Award, Torrey Botanical Society Award for the Conservation of Local Flora and Ecosystems in New York City	\$1,000
	Kohlberg-Donohoe Research Fellowship, Yale School of the Environment	\$4,497
	Doctoral Pilot Grant, Yale Institute for Biospheric Studies	\$3,000
2019		
	Botany in Action Fellowship, Phipps Conservatory and Botanical Gardens Named Paula Sculley Scholar by the Garden Club of Allegheny County	\$5,000
	Research grant, Yale Institute for Biospheric Studies	\$5,000
	Kohlberg-Donohoe Research Fellowship, Yale School of the Environment	\$3,683
2018		
	Hixon Fellowship, Hixon Center for Urban Ecology, Yale School of the Environment	\$7,000
	Masters Research Grant, Yale Institute for Biospheric Studies	\$2,000
	Conference Travel Award, Yale School of the Environment	\$500
2012		
	Karen T. Romer Undergraduate Research Award, Brown University	\$3,000

TEACHING

Instructor, Yale University

Ecosystem Science Module at Yale-Myers Forest	2019, 2020, 2021
Field course for incoming Masters students focused on the principles of forest ecosystem ecology, sampling design, and stand dynamics	

Teaching Fellow, Yale University

Forest Dynamics	2021, 2022
Invasive Species Seminar	2020
Ecosystem Measurements for Conservation and Restoration	2019
Ecosystems and Landscapes	2018, 2019
Ecosystem Science Module	2017, 2018
Forest Ecosystem Health and Climate Change	2017

CONFERENCE PRESENTATIONS, SEMINARS, & WORKSHOPS

Plant Ecology Guest Lecture, Connecticut College, New London, CT (Virtual)	2024
Invited lecture: "Competitive dynamics between native and non-native plants in response to forest disturbances"	
The New York Botanical Garden, The Bronx, NY	2023
Invited seminar: "Linking plant mycorrhizal associations to soil organic matter dynamics in forests: The role of ericoid mycorrhizal plants and fungi"	
Wesleyan University, Middletown, CT	2023
Invited guest lecture in Forest Ecology: "Plant mycorrhizal associations and their effects on carbon and nitrogen dynamics in forests"	
Forest Dynamics Guest lecture, Yale University, School of the Environment, New Haven, CT	2023
Invited lecture: "Using plant mycorrhizal associations to link forest composition to carbon and nitrogen dynamics"	
Tree Warden School, New Haven, CT	2023
Presented lecture and led guided walk on tree identification	
Master Woodland Managers program, North Madison, CT	2023
Led field tour on silviculture and forest stand dynamics	
Masters' orientation program, Yale University, School of the Environment, New Haven, CT	2023

- Invited talk and panel presentation: "Managing for forest ecosystem health and resiliency in Connecticut" 2023
- Ecological Society of America Annual Meeting, Portland, OR 2023
Contributed talk: "Depth-dependent effects of tree and shrub mycorrhizal associations on soil carbon and nitrogen pools in a temperate forest"
- American Geophysical Union Fall Meeting, Chicago, IL (Virtual) 2022
Invited talk: "The functional role of ericoid mycorrhizal plants and fungi on soil organic matter dynamics in forests"
- Ecological Society of America Annual Meeting, Montreal, QC 2022
Contributed talk: "The functional effects of ericoid mycorrhizal shrubs on soil carbon and nitrogen across gradients of tree mycorrhizal dominance in forests"
- Summer Seminar Series, Yale-Myers Forest, Eastford, CT 2022
Invited seminar: "Beyond the surface: the unseen side of mountain laurel and its effects on forest development"
- Confluence Seminar Series, Yale School of the Environment, New Haven, CT 2022
Contributed talk: "Linking plant-fungal associations to carbon and nitrogen dynamics in forests"
- Guest lecture, Forest Dynamics, Yale School of the Environment, New Haven, CT 2021
Invited lecture: "Fungal associations and forest dynamics"
- Guest lecture, Fungal Ecology seminar, Yale School of the Environment, New Haven, CT 2021
Invited lecture: "Introduction to mycorrhizal ecology"
- Guest lecture, Invasive Species seminar, Yale School of the Environment, New Haven, CT 2020
Lecture: "What characteristics make habitats invisable? Case study on forest disturbance, soil resource availability, and understory plant invasions"
- Peek Behind the Petals, Phipps Conservatory and Botanical Gardens, Pittsburgh, PA (Virtual) 2019
Invited seminar: "Invasive plants and soil: passengers or drivers of changing conditions?"
- Peek Behind the Petals, Phipps Conservatory and Botanical Gardens, Pittsburgh, PA 2019
Invited seminar: "Impacts of invasive plants on soil properties in forested ecosystems: implications for ecological restoration"
- Annual Research Conference, *Yale School of the Environment*, New Haven, CT 2019
Poster: "Impacts of co-occurring invasive plants on soil nutrient availability in a managed hardwood forest"
- Society of American Foresters Annual Meeting, Portland, OR 2018
Contributed talk: "Species-specific effects of invasive vines on soil nutrient availability in urban forests"
- Annual Research Conference, Yale School of Forestry & Environmental Studies, New Haven, CT 2018
Contributed talk: "Species-specific effects of invasive vines on soil nutrient availability in urban forests"
- Ecological Society of America Annual Meeting, Minneapolis, MN 2013
Poster: "Effects of suburbanization on carbon storage and woody plant communities"
- Annual Research Colloquium, Department of Biological Sciences, Brown University, Providence, RI 2013
Poster: "Effects of suburbanization on carbon storage and woody plant communities"
- Student Research Symposium, Marine Biological Laboratory, Woods Hole, MA 2013
Poster: "Effects of suburbanization on carbon storage and woody plant communities"
- Symposium, Department of Ecology and Evolutionary Biology, Brown University, Providence, RI 2013
Poster: "Herbarium specimens as tools to observe phenological change in New England over a 150-year period"
- Semester in Environmental Science Symposium, Marine Biological Laboratory, Woods Hole, MA 2011
Oral presentation: "Impacts of suburbanization on carbon stocks and plant diversity"

REPORTS, POPULAR ARTICLES, & SCIENCE COMMUNICATION

- Connecticut Soil Action Plan, Connecticut Council on Soil and Water Conservation In preparation
Lead author of the "Forest Soils" chapter through the Soil Health Committee
- Interview and feature, Yale School of the Environment Annual Report 2023
- Interview and feature, *The Cutting Edge*, A publication of the Connecticut Professional Timber Producers Association, Inc. 2023
- Interview and feature, Connecticut Tree Protection Association newsletter 2023

Blog post, <i>Journal of Ecology</i> blog Blog post summarizing my work “Ericoid mycorrhizal shrubs alter the relationship between tree mycorrhizal dominance and soil carbon and nitrogen”	2022
Article, <i>The Overstory, The Forest School, Yale School of the Environment</i> , New Haven, CT “What Can Mountain Laurel Tell Us About Forest Soil Carbon?”	2021
Interview, <i>Phipps Conservatory and Botanical Garden</i> , Pittsburgh, PA Participant in “Interview a Scientist” event attended by 100 middle and high school students interested in learning about plant science	2019, 2020
Radio interview, “Herbs in Action” series, <i>The Saturday Lights Brigade</i> , Pittsburgh, PA	2019, 2020
Video interview, <i>Phipps Conservatory and Botanical Garden</i> , Pittsburgh, PA Video highlighting my research on display in the tropical forest conservatory	2019
Newspaper article, <i>Paprika!</i> , <i>Yale School of Architecture</i> , New Haven, CT “For Urban Trees, More is More”	2016

OTHER PROFESSIONAL SERVICE

Forest Health Committee , Northeast-Midwest State Foresters Alliance Connecticut Representative	2024-present
Forest Ecosystem Monitoring Cooperative , University of Vermont Connecticut State Coordinator	2023-present
Master Woodland Managers program Program partner	2023-present
National Beech Leaf Disease Working Group	2023-present
South Health Committee , Connecticut Council on Soil and Water Conservation	2023-present
Search Committee , Spatial Modeling of Vector-Borne Diseases Department of Entomology, The Connecticut Agricultural Experiment Station	
Yale Forests Research Committee , Yale School of the Environment	2018-2023
Stonecrop Gardens Board of Directors	2018-2023
Grant reviewer for: University of Connecticut Competitive McIntire-Stennis Award (2023)	
Journal reviewer for: <i>FEMS Microbiology Ecology</i> , <i>Fungal Ecology</i> , <i>Journal of Ecology</i> , <i>New Phytologist</i> , <i>Biological Invasions</i> , <i>Ecology and Evolution</i> , <i>Ecological Indicators</i>	

SKILLS

Botanical: Advanced knowledge of Northeastern U.S. flora (forests, grasslands, wetlands, horticultural plants)
Technical: Geographic Information Systems (ArcGIS; QGIS), remote sensing (ENVI), statistical programming (R)

PROFESSIONAL MEMBERSHIPS

Society of American Foresters, Ecological Society of America, American Geophysical Union, Society for Ecological Restoration, Torrey Botanical Society