LAUREN C. BREZA, Ph.D.

Soil Scientist – Postdoctoral Research Associate
United States Department of Agriculture | Agricultural Research Service
Pronouns: she/her/hers

EDUCATION

2021 Ph.D., Natural Resources and Earth System Science,
Concentration: Earth and Environmental Science
University of New Hampshire, Durham.
Dissertation: *The fate of organic nitrogen cycling in agroecosystems: drivers and outcomes.*
Advisor: Dr. A. Stuart Grandy

2016 M.S., Ecology and Evolutionary Biology, Ecosystem Genetics,
University of Tennessee, Knoxville.
Thesis: *Urbanization as a strong evolutionary force.*
Advisor: Dr. Joseph K. Bailey

2011 B.Sc., Ecology and Evolutionary Biology.
University of Tennessee, Knoxville.
Thesis: *Within and between population variation in plant traits predict ecosystem functions associated with a dominant plant species.*
Advisors: Drs. Aimee Classen and Nathan Sanders

PROFESSIONAL APPOINTMENTS

2022-Present **Soil Scientist, Postdoctoral Research Associate**
Soil Microbiology Lab, PI: Dr. Kristin Trippe
Forage Seed and Cereal Research Unit, USDA-ARS, Corvallis, OR
Project lead on investigating the impact of subsurface drianage on soil carbon, micrbial processes, and microbial community structure in the Willamette Valley.

2016-2021 **Ph.D. Student**
Soil Biogeochemistry Lab, Natural Resources and Earth System Science
University of New Hampshire, Durham, NH
NSF-GRFP fellow, graduate research assistant, and teaching assistant. Independently led research, developed novel isotopic assay for quantifying gross rates of protein depolymerization, mentored undergraduate students, and actively involved with university organizations and service.

2013-2015 **M.S. Student**
Ecosystem Genetics Lab, Ecology and Evolutionary Biology
University of Tennessee, Knoxville, TN
NSF-GRFP fellow and teaching assistant. Independently led research, employed an evolutionary model (SURFACE) to complete a phylogenetic meta-analysis, and involved with university organizations and service.

2012-2013 **Lab Technician**
Ecosystem Ecology Lab, Ecology and Evolutionary Biology
University of Tennessee, Knoxville, TN
Organized lab and field work, maintained instrumentation, data management.

2010-2011 **Post-Bachelor Intern**

Environmental Sciences Division
Oak Ridge National Laboratory, Oak Ride, TN
Performed routine lab and field work, data management.

2010 **Undergraduate Intern**
Biosciences Division
Oak Ridge National Laboratory, Oak Ridge, TN
Greenhouse management and maintained experimental plant populations.

2006-2010 **Undergraduate Researcher**
Ecosystem Ecology Lab, Ecology and Evolutionary Biology
University of Tennessee, Knoxville, TN
Performed routine lab and field work.

SCIENTIFIC FELLOWSHIPS

2024	*Postdoctoral Fellow* National Institute of Food and Agriculture Funding delivery anticipated: 9/1/2024.	$225,000
2013-2017	*Fellow*, National Science Foundation Graduate Research Fellowship Program	$126,000
2009	*Fellow*, University of Tennessee Office of Research Undergraduate Research Fellowship	$2,000
2008	*Fellow*, University of Notre Dame, GLOBES Program Research Experience for Undergraduates Fellowship	$4,500

OTHER AWARDED SCHOLARSHIPS AND HONORS

2021	ASA-CSSA-SSSA International Annual Meeting, Student competition: 1st place Soil Biology & Biochemistry, 2nd place conference wide. Oral and poster presentation.	$1,400
2019	University of New Hampshire, NRESS Program Student Support Funds	$800
2018	University of Utah, IsoCamp NSF Participant Award	$1,450
2016	University of New Hampshire, Graduate School Conference Travel Grant	$200
2013-2014	University of Tennessee, Ecology and Evolutionary Biology Chancellor Funds	$1,700
2011	University of Tennessee, Ecology and Evolutionary Biology Outstanding Undergraduate	

RESEARCH EXPERIENCE

Projects with a leading role:

Fall 2024 *The impact of meadowfoam on bioavailable nitrogen accumulation in grass seed cropping systems.* USDA-NIFA funded project, PI: Dr. Lauren Breza

2022-2024 *Soil carbon response to subsurface drainage in the Willamette Valley.* USDA funded project, PIs: Drs. Kristin Trippe and Jennifer Moore

2016-2021 *The fate of organic N in agroecosystems*. UNH dissertation. Funded by NSF GRFP to Dr. Lauren Breza. Additional funding to Drs. Stuart Grandy and Timothy Bowles.

2013-2015 *Urbanization as a strong evolutionary force.* UTK master's thesis project. Funding by NSF GRFP to Dr. Lauren Breza. Additional funding to Dr. Joseph Bailey

Projects with a supporting role:

2017 Crop diversification and climate resilience in agroecosystems. PI: Dr. Timothy Bowles.

2017 Microbial communities regulate nitrogen use efficiency in agricultural soils. Master's thesis of Bennett Thompson, PI: Dr. Stuart Grandy

2013 Plant genetic divergence along a Hawaiian chronosequence. PhD Dissertation of Dr. Liam Muller, PIs: Drs. Jennifer Schweitzer, Joseph Bailey.

2011-2012 Response of peatlands to climate change at ORNL SPRUCE experiment. PIs: Drs. Richard Norby, Colleen Iverson

2011-2012 Root response to CO_2 enhancement at ORNL FACE site. PIs: Drs. Richard Norby, Colleen Iverson

2009-2011 Plant trait variation in *Soildago altissima*. PIs: Drs. Aimee Classen, Lara Souza

2008 Butterfly range distributions in response to climate change. PI: Dr. Jessica Hellmann

2008 Sexual selection and speciation in *Drosophila spp*. PI: Dr. Christine Boake

2006-2008 Investigated interactions between gall midge and *Solidago altissima* PIs: Drs. Nathan Sanders, Gregory Crutsinger

TEACHING EXPERIENCE

2024, Winter **Invited Lecture.** Biology of Soil Ecosystems (455/555). OSU. *Tile drainage systems and soil carbon stocks: insights from the Willamette Valley.* 30 students.

2023, Winter **Invited Lecture.** Biology of Soil Ecosystems (455/555). OSU. *The fate of organic nitrogen in agroecosystems.* 20 students.

2021, Spring TA, Introductory Biology: Evolution, Biodiversity, and Ecology College of Life Science and Agriculture, UNH

2020, Fall TA, Soil Ecology, 30 students, studio class with flipped classroom model Assisted Drs. Serita Frey and Alexandra Contosta with development of field and lab exercises, guided the student-led inquiry process. College of Life Science and Agriculture, UNH

2016, Spring TA, Introductory Biology: Evolution, Biodiversity, and Ecology, 50 students across two sections College of Life Science and Agriculture, UNH

2015, Fall TA, Organismal and Ecological Biology, 60 students across two sections College of Arts & Sciences, UTK

2015, Sum. Instructor on Record, General Ecology Lab, 30 students,
Co-developed summer lab and field-based ecology course
College of Arts & Sciences, UTK

2014, Spring TA, Introduction to Biodiversity, 60 students across two sections
College of Arts & Sciences, UTK

2013, Fall TA, Introduction to Biodiversity, 60 students across two sections
College of Arts & Sciences, UTK

ACADEMIC PUBLICATIONS

https://orcid.org/0000-0003-3953-4168

Breza, L.C. and A.S. Grandy. (2024) Quantifying the effects of soil amendments on nitrogen transformations in agroecosystems: A meta-analysis. To be submitted in spring 2024 to: *Frontiers in Agronomy.*

Breza, L.C., Moore, J.M., Tomasek, A., Trippe, K.M. (2024) Soil carbon stocks response to tile drainage in the Willamette Valley. *In prep*. To be submitted in spring 2024 to: *Agriculture, Ecosystems, and the Environment*

Breza, L.C., A.B. Daly, T.M. Bowles, J. Schnecker, and A.S. Grandy. (2024) The fate of ^{15}N across different soil nitrogen pools in response to soil management and residue quality. *In prep*. To be submitted in spring 2024 to: *Biology and Fertility of Soils.*

Breza, L.C., M. Mooshammer, T.M. Bowles, V.L. Jin, M. Schmer, and A.S, Grandy. (2023) Complex crop rotations improve organic nitrogen cycling. *Soil Biology and Biochemistry.* DOI: 10.1016/j.soilbio.2022.108911

Mueller, L.O., **L.C. Breza**, M.A. Genung, C. Giardina, N.E. Stone, L. C. Sidak-Loftis, J.D. Busch, D.M. Wagner, J.K. Bailey, J.A. Schweitzer. (2017) Ecosystem consequences of plant genetic divergence with colonization of new habitat. *Ecosphere*. DOI: 10.1002/ecs2.1743

Breza, L.C., L. Souza, N.J. Sanders, and A.T. Classen. (2012) Within and between population variation in plant traits predict ecosystem functions associated with a dominant plant species. *Ecology and Evolution*. DOI: 10.1002/ece3.223

Kuebbing S., M.A. Rodriguez-Cabal, D. Fowler**, L.C. Breza**, J.A. Schweitzer, J.K. Bailey. (2012) Resource availability and plant diversity explain patterns of invasion of an exotic grass. *Journal of Plant Ecology.* DOI: 10.1093/jpe/rts018

EXTENSION PUBLICATIONS

Breza, L.C., Moore, J.M., Tomasek, A., Trippe, K.M. (2024) Soil carbon stocks response to subsurface drainage in the North Willamette Valley. *Seed Production Research at Oregon State University*. *In Review.*

Breza, L.C., Moore, J.M., Tomasek, A., Trippe, K.M. (2022). The effect of subsurface drainage in grass seed fields on soil carbon stocks. *Seed Production Research at Oregon State University*. 2022:15-19.

CONFERENCE PRESENTATIONS AND INVITED TALKS

Breza, L.C., J. Moore, A. Tomasek, K. Trippe. 2024. Soil carbon and drainage: competing hypotheses. Conservation Drainage Network Annual Meeting, Columbus, OH, USA. **Invited Talk.**

200 in attendance.

Breza, L.C. Tile drainage systems and soil carbon stocks: insights from the Willamette Valley. 2023. Coffee and Zoom with Dr. Christy Tanner. Oregon State. University Extension. **Invited Talk.** 30 in attendance.

Breza, L.C., J. Moore, A. Tomasek, K. Trippe. 2023. Exploring the Link Between Tile Drainage Systems and Soil Carbon Stocks: Insights from the Willamette Valley. ASA, CSSA, SSSA, International Annual Meeting, St. Louis, MO, USA.

Moore, J.M, K. Trippe, **L.C. Breza.** 2023. What's all the flux about? The effect of tile drainage on greenhouse gas emissions in a PNW grass seed system. ASA, CSSA, SSSA, International Annual Meeting, St. Louis, MO, USA.

Breza, L.C., J. Moore, A. Tomasek, K. Trippe. 2023. Is subsurface drainage a drain on soil carbon? Ecological Society of America Annual Meeting, Portland, OR, USA.

Breza, L.C., M. Mooshammer, T.M. Bowles, V.L. Jin, M. Schmer, A.S. Grandy. 2020. Complex crop rotations improve organic N cycling. ASA-CSSA-SSSA International Annual Meeting, Virtual meeting, USA. *Oral and poster presentation*. Student competition: 2nd placeconference wide, 1st place Soil Biology & Biochemistry Division.

Breza, L.C., M. Mooshammer, T.M. Bowles, V.L. Jin, M. Schmer, A.S. Grandy. 2019. Crop diversity and nitrogen application influences rates of gross protein depolymerization. Ecological Society of America annual meeting, Louisville, KY, USA.

Breza, L.C., J.A. Schweitzer, J.K. Bailey. 2014. Fragmentation drives selection in a model system. University of Kentucky, Annual Spring Symposium in Ecology, Evolution and Behavior. Lexington, KY. USA.

Breza, L.C., L. Souza, and A.T. Classen. 2010. Intra-specific variation in ecosystem function of an old-field system. Association of Southeastern Biologists Annual Meeting, Asheville, NC, USA.

MENTORSHIP

OSU, Undergraduate Research Assistants (2022-Present) – Ari Anders, Elizabeth Hillard, Christian Lessey, Alejandra Ramirez, Marco Roberto, Jaiden Sakamoto, Riley Stonebrink,

Hayleigh Hildebrand – Undergraduate Research Assistant (2020-2021), UNH
Senior Capstone: How does agricultural management affect the distribution of organic N into different soil pools?
1st place at the UNH Undergraduate Research Conference

Taylor Hennas – Undergraduate Research Assistant (2019), UNH
Senior Capstone: Global Meta-Analysis of Nitrogen Cycling Dynamics in Agricultural Soils

Bethany Balsted – Undergraduate Research Assistant (2018), UNH
Senior Capstone: Comparing Amino Acid Sample Recovery for Heated vs. Non-heated N_2 Reduction (An Amino Acid Method)

Myrilla Hartkopf – Undergraduate Research Assistant (2017), UNH

Heiler Meek – Undergraduate Research Assistant (2015), UTK

SERVICE AND OUTREACH

2024	Special Session Organizer, ASA-CSSA-SSSA International Annual Meeting
2023	Symposium Moderator, ASA-CSSA-SSSA International Annual Meeting
2022, 2023	OSU Hyslop Field Day, Extension Demonstration
2019-2020	NREN Senator, Graduate Student Senate, UNH
2018-2019	ESA Soil Ecology Section, Graduate Student Board Member
2017	Organized visiting scientist seminar for UNH NREN department.
2016-2018	Co-coordinator, Women in Science, Student Organization, UNH
2013-2015	Slow Food Tennessee Valley, Board Member, Knoxville, TN
2013-2015	Appalachian Mountain Bike Club, Volunteer Trail Builder, Knoxville, TN
2009-2010	EEB Departmental Chair, Dean's Student Advisory Committee, College of Arts & Sciences, UTK
2009-2010	President and founder, Ecology and Evolutionary Biology Academic Club Undergraduate Organization, UTK

PROFESSIONAL AFFILIATIONS

2019-present	Soil Science Society of America, Sections: Soil Biology and Biochemistry
2017-present	Ecological Society of America, Sections: Agroecology, Biogeosciences, Soil Ecology

SUPPLIMENTARY TRAINING

Workshops and Courses

2023	OSU Bioinformatics Workshop, Oregon State University, Virtual
2023	DayCent modeling workshop, USDA ARS Fort Collins, CO
2018	IsoCamp two-week stable isotope course, University of Utah, Salt Lake City, UT