Melissa Pastore

Melissa.Pastore@usda.gov • 570-490-0878 • lispastore.weebly.com

EDUCATION

The University of Minnesota, St. Paul, MN

Ph.D. in Ecology, Evolution, and Behavior, August 2020

Cumulative GPA: 4.00

Dissertation title: Impacts of global changes on leaf-level physiology of plant functional groups and ecosystem

carbon storage

Advisors: Drs. Sarah Hobbie and Peter Reich

Villanova University, Villanova, PA

M.S. in Biology, Sep. 2015 Cumulative GPA: 3.97

Thesis title: Nitrogen retention and greenhouse gas mitigation of a brackish marsh under global change

Advisor: Dr. Adam Langley

The Pennsylvania State University, University Park, PA

B.S. in Biology, Ecology Option, May 2013

Cumulative GPA: 3.67

PROFESSIONAL APPOINTMENTS

Research Ecologist, USDA Forest Service Northern Research Station, Forest Inventory and Analysis	April 2023 – present
Research Assistant, University of New Hampshire	March 2023 – April 2023
Postdoctoral Associate, University of Vermont Rubenstein School of Environment and Natural Resources Gund Institute for Environment	Sep. 2020 – March 2023
Graduate Research/Teaching Assistant, University of Minnesota	Aug. 2015 – Aug. 2020
Graduate Research/Teaching Assistant, Villanova University	Aug. 2013 – Aug. 2015

PUBLICATIONS

Pastore, MA, Classen, AT, Frey, SD, English, ME, Rand, K, Adair, EC. Soil microbial legacies influence freeze-thaw responses of soil. *Functional Ecology (IF: 6.282)*. 37: 1055-1066 (2023). https://besjournals.onlinelibrary.wiley.com/doi/full/10.1111/1365-2435.14273.

Hudson, AR, Peters, DPC, Blair, JM, Childers, DL, Doran, PT, Geil, K, Gooseff, M, Gross, KL, Haddad, NM, **Pastore, MA**, Rudgers, JA, Sala, O, Seabloom, EW, Shaver, G. Cross-site comparisons of dryland response to climate change in the US Long-Term Ecological Research network. *BioScience (IF: 11.566)*. biab134 (2022). https://doi.org/10.1093/biosci/biab134.

Pastore, MA. Bringing the underground to the surface: Climate change stressors negatively affect plant growth, with contrasting above and belowground physiological responses. *Plant, Cell & Environment (IF: 7.947)*. 45: 2267-2270 (2022). https://onlinelibrary.wiley.com/doi/abs/10.1111/pce.14379.

Pastore, MA, Adair, EC, Classen, AT, D'Amato, AW, Foster, JR. Cold-air pools as microrefugia for ecosystem functions in the face of climate change. *Ecology (IF: 6.433)*. 103: e3717 (2022). https://esajournals.onlinelibrary.wiley.com/doi/abs/10.1002/ecy.3717.

PUBLICATIONS (Continued)

- **Pastore**, **MA**, Hobbie, SH, Reich, PB. Sensitivity of grassland carbon pools to plant diversity, elevated CO₂, and soil nitrogen addition over 19 years. *Proceedings of the National Academy of Sciences (IF: 12.779)*. 118: e2016965118 (2021). https://www.pnas.org/content/118/17/e2016965118.
- Reich, PB, Hobbie, SH, Lee, TD, Rich, R, **Pastore, MA**, Worm, K. Synergistic effects of four climate change drivers on terrestrial carbon cycling. *Nature Geoscience (IF: 21.531)*. 13: 787-793 (2020). https://www.nature.com/articles/s41561-020-00657-1.
- **Pastore, MA**, Lee, TD, Hobbie, SH, Reich, PB. Interactive effects of elevated CO₂, warming, reduced rainfall, and increased nitrogen on leaf gas exchange in five perennial grassland species. *Plant, Cell & Environment (IF: 7.947)*. 43: 1862-1878 (2020). https://onlinelibrary.wiley.com/doi/abs/10.1111/pce.13783?af=R.
- **Pastore, MA**, Lee, TD, Hobbie, SH, Reich, PB. Strong photosynthetic acclimation and enhanced water-use efficiency in grassland functional groups persist over 21 years of CO₂ enrichment, independent of nitrogen supply. *Global Change Biology (IF: 8.555)*. 25: 3031-3044 (2019). https://onlinelibrary.wiley.com/doi/10.1111/gcb.14714.
- Reich, PB, Hobbie, SH, Lee, TD, **Pastore, MA**. Unexpected reversal of C₃ vs C₄ grass response to elevated CO₂ during a 20-year field experiment. *Science (IF: 63.714)*. 360: 317-320 (2018). http://science.sciencemag.org/content/360/6386/317.abstract.
- *Science* published two technical comments that address the above Reich et al. 2018 article. Each appears with a response from Reich, Hobbie, Lee, and **Pastore** in *Science* 361: eeau8982 and eaau1300 (2018). http://science.sciencemag.org/content/361/6407/eaau8982.
 - http://science.sciencemag.org/content/361/6402/eaau1300.
- **Pastore, MA**, Megonigal, JP, Langley, JA. Elevated CO₂ and nitrogen addition accelerate net carbon gain in a brackish marsh. *Biogeochemistry (IF: 4.812)*. 133: 73-87 (2017). https://link.springer.com/article/10.1007/s10533-017-0312-2.
- **Pastore, MA**, Megonigal, JP, Langley, JA. Elevated CO₂ promotes long-term nitrogen accumulation only in combination with nitrogen addition. *Global Change Biology (IF: 13.211)*. 22: 391-403 (2016). https://onlinelibrary.wiley.com/doi/abs/10.1111/gcb.13112.
- McCormack, ML, Gaines, KL, **Pastore**, **MA**, Eissenstat, DM. Early season root production in relation to leaf production among six diverse temperate tree species. *Plant and Soil (IF: 4.993)*. 389: 121-129 (2015). https://link.springer.com/article/10.1007/s11104-014-2347-7.
- **Pastore, MA**. The impact of nitrogen eutrophication on Caribbean coral reefs: a review. *CONCEPT*. 37 (2014). https://concept.journals.villanova.edu/article/view/1725.

PRESENTATIONS AND POSTERS

Invited Seminars and Symposia:

National Carbon Convos/Carbon 101; hosted by USFS R&D and NFS. Sep. 26, 2023. Monthly Webinar.

Northeast Network of Mountain Observatories. June 22, 2023. Monthly Webinar.

University of New Hampshire, April 6, 2023. Earth Systems Research Center Spring Lunch Seminar.

INSPIRES Teacher Professional Learning Program, March 20, 2023. Guest Webinar.

Connecticut Agricultural Experiment Station, Dec. 19, 2022. CAES Seminar.

University of Michigan, March 16, 2022. Departmental Seminar.

Bloomsburg University, Nov. 19, 2021. Departmental Seminar.

University of Massachusetts Amherst, Nov. 8, 2021. Departmental Seminar.

Yale University, April 14, 2021. Departmental Seminar.

University of North Carolina Wilmington, March 25, 2021. Departmental Seminar.

Effects of sulfate geoengineering on ecosystems. Ecosystem Responses to Solar Radiation Management and Sulfate Geoengineering Interdisciplinary Symposium, St. Paul, MN. Nov. 1, 2019. Panelist.

PRESENTATIONS AND POSTERS (Continued)

Conference Presentations:

- Foster, JR, **Pastore**, **MA**, Rand, K, English, M, Finnerty, C, Adair, EC, Classen, A, King, D, Lutz, D, Nelson, S, D'Amato, A, Climatology of cold-air pooling for montane watersheds and forests of the Northeastern US from MODIS data. International Association for Landscape Ecology-North America Annual Meeting, Riverside, CA. March 2023. https://www.ialena.org/program2023.html.
- **Pastore, MA**, Lee, TD, Hobbie, SH, Worm, K, Reich, PB. Species richness impacts total soil carbon more than 19 years of CO₂ enrichment or soil nitrogen addition. Ecological Society of America, Virtual. August 2020. https://eco.confex.com/eco/2020/meetingapp.cgi/Paper/87690.
- Pastore, MA, Lee, TD, Hobbie, SH, Reich, PB. Photosynthesis over 21 of elevated CO₂ and nitrogen addition in four plant functional groups. Cedar Creek Ecosystem Science Reserve Symposium, St. Paul, MN. March 2019.
- **Pastore, MA**, Megonigal, JP, Langley, JA. Ecosystem nitrogen retention in response to 8 years of exposure to elevated CO₂ and nitrogen pollution. Ecological Society of America, Baltimore, MD. July 2015. https://eco.confex.com/eco/2015/webprogram/Paper56260.html.
- **Pastore**, **MA**, Megonigal, JP, Langley, JA. Nitrogen pollution reduced ¹⁵N retention in a brackish marsh. Smithsonian Environmental Research Center's Global Change Symposium, Bryn Mawr, PA. February 2015.
- **Pastore**, **MA**, Megonigal, JP, Langley, JA. Rising CO₂ levels and nitrogen pollution may affect the fate of nitrogen in marsh ecosystems. Smithsonian Environmental Research Center's Global Change Symposium, Edgewater, MD. February 2014.

Conference Posters:

- **Pastore, MA**, Classen, AT, D'Amato, AW, English, ME, Rand, K, Foster, JR, Adair, EC. Frequent and strong coldair pooling linked to temperate forest composition. American Geophysical Union, Virtual. January 2024. https://agu.confex.com/agu/fm23/meetingapp.cgi/Paper/1414308.
- Foster, JR, **Pastore**, **MA**, Adair, EC, Rand, K, English, M, Classen, A, D'Amato, AW. Below-canopy temperature inversions more common and persistent in temperate forests than land surface temperatures suggest. American Geophysical Union. December 2024. https://agu.confex.com/agu/fm23/meetingapp.cgi/Paper/1419151.
- **Pastore, MA**, Classen, AT, Adair, EC, D'Amato, AW, English, ME, Foster, JR, Rand, K, Adair, EC. Effects of cold-air pooling microclimates on species composition in New England Forests. Forest Ecosystem Monitoring Cooperative, Burlington, Vermont. December 2022.
- Pastore, MA, Classen, AT, Adair, EC, AT, D'Amato, AW, English, ME, Foster, JR, Rand, K, Adair, EC. The influence of cold-air pooling on species composition and ecosystem function in New England forests. Ecological Society of America, Montréal, Canada. August 2022. https://www.eventscribe.net/2022/ESA/fsPopup.asp?Mode=posterinfo&PosterID=502555.
- **Pastore, MA**, Classen, AT, Adair, EC, English, ME, Frey, SD, Rand, K, Adair, EC. Freeze-thaw responses of soil microbial communities from contrasting elevations. Ecological Society of America, Virtual. August 2021. https://programarchives.z20.web.core.windows.net/2021/Paper1767537.html.
- Hudson, A, Peters, D, Avolio, ML, Blair, J, Childers, DL, Collins, SL, Doran, PT, Evans, SE, Gooseff, MN, Grimm, NB, Knapp, A, Litvak, ME, **Pastore, MA**, Rudgers, J, Sala, O, Seabloom, EW, Shaver, GR, Haddad, N. A multisite synthesis of impacts of multi-year extreme events on dryland ecosystem resilience. American Geophysical Union, Virtual. December 2020. https://ui.adsabs.harvard.edu/abs/2020AGUFMSY044.08H/abstract.
- **Pastore, MA**, Lee, TD, Hobbie, SH, Reich, PB. The influence of climate change and environmental factors on leaf gas exchange responses to elevated CO₂ in five perennial grassland species. American Geophysical Union, San Francisco, CA. December 2019. https://ui.adsabs.harvard.edu/abs/2019AGUFM.B13H2606P/abstract.
- **Pastore, MA**, Lee, TD, Hobbie, SH, Reich, PB. Photosynthetic responses of 14 grassland species to 21 years of free-air CO₂ enrichment and nitrogen addition. Long-Term Ecological Research All Scientists' Meeting, Asilomar, CA. October 2018.
- **Pastore, MA**, Lee, TD, Hobbie, SH, Reich, PB. Photosynthetic responses of 14 grassland species to 20 years of free-air CO₂ enrichment and nitrogen addition. Ecological Society of America, New Orleans, LA. August 2018. https://eco.confex.com/eco/2018/meetingapp.cgi/Paper/73595.

PRESENTATIONS AND POSTERS (Continued)

Conference Posters (Continued):

Pastore, **MA**, Megonigal, JP, Langley, JA. Net greenhouse gas footprint of a brackish marsh under elevated CO₂ and nitrogen addition. Natural Resources Association of Graduate Students, St. Paul, MN. April 2016.

Pastore, **MA**, Megonigal, JP, Langley, JA. ¹⁵N label retention in a tidal marsh in response to elevated CO₂ and nitrogen addition. Society of Wetland Scientists, Providence, RI. June 2015.

INVITED WORKSHOPS

MRI EDCC WG & GEO Mountains UHOP Workshop 2023. The measurement of elevation dependent climate change: The Unified High Elevation Observation Platform (UHOP). Bern, Switzerland (virtual). June 26, 2023.

NSF Biodiversity on a Changing Planet (BoCP-Design) Workshop. Climate change and ecosystem functioning: reducing critical uncertainties about ecosystem acclimation. Park City, UT (virtual). May 22-25, 2023.

DOE Oak Ridge National Laboratory Workshop. Integrated Ecosystem Experiments to Advance Earth System Predictability. Oak Ridge, TN (virtual). March 21-24, 2022.

POPULAR PRESS AND MEDIA

Invited authorship:

Pastore, MA. "What's happening beneath our feet when it comes to climate change?" *Functional Ecologists*. Functional Ecology. Web blog post. (Feb. 2023). https://functionalecologists.com/2023/02/28/melissa-pastore-whats-happening-beneath-our-feet-when-it-comes-to-climate-change/.

Pastore, **MA**. "Marshes: Pollution Sponges of the Future." *Shorelines*. The Smithsonian Environmental Research Center. Web blog post. (Aug. 2014). https://sercblog.si.edu/marshes-pollution-sponges-of-the-future/.

Interviews:

Interviewed by Samia Bouzid. "Are valleys sheltered from climate change?" *SciShow* (7.53M subscribers). YouTube production. January 10, 2023. https://www.youtube.com/watch?v=lq2qEUDo97w.

Interviewed by Deane Morrison. "Grassland Biodiversity Emerges as Key Factor in Climate Crisis." *Office of the Vice President for Research Inquiry Blog and Newsletter*. University of Minnesota. Web blog post, Newsletter. May 22, 2021. https://research.umn.edu/inquiry/post/grassland-biodiversity-emerges-key-factor-climate-crisis.

Interviewed by Roland Pease. *BBC World Service: Science in Action*. Radio. April 26, 2018. https://www.bbc.co.uk/programmes/w3cswmp8 (begins 07:48).

Interviewed by Volker Mrasek. *Deustchlandfunk* and *Westdeutscher Rundfunk* (German Public Radio). Radio. April 20, 2018.

https://www1.wdr.de/mediathek/audio/wdr5/wdr5-leonardo-top-themen/audio-co-schadet-auch-pflanzen-100.html. https://www.deutschlandfunk.de/ueberraschender-klimaeffekt-pflanzen-reagieren-auf-mehr-co2.676.de.html?dram:article_id=416145.

FELLOWSHIPS AND GRANTS

University of Minnesota: Philip C. Hamm Graduate Scholarship in the Plant Sciences 2020 Darby and Geri Nelson Environmental Scholar Award 2019 College of Biological Sciences Travel Grant 2019 Donald and Elizabeth Lawrence Research Scholarship 2018 Carol H. and Wayne A. Pletcher Graduate Fellowship 2018 College of Graduate Students Travel Grant Award 2019, 2018 Howard Hughes Medical Institute Diversity & Inclusion Teaching Fellowship 2018, 2017 EEB Graduate Travel Award 2019, 2018, 2017 EEB Research Grant 2018, 2017, 2016 EEB Program Summer Fellowship 2018, 2017, 2016

FELLOWSHIPS AND GRANTS (Continued)

Villanova University:	
Biology Graduate Fellowship	2015
Biology Summer Research Fellowship	2015, 2014
Graduate Student Summer Research Fellowship	2014

TEACHING AND MENTORING

Biol 300	04/3004H: Foundations of Biol. II, Univ. of Minn.	Fall 2019
•	Independent instructor for two ecotoxicology-focused sections per semester	Spring 2019, Fall 2018,
•	~50 undergraduate students per semester	Spring 2017, Fall 2016

- Course structured as working research lab
- Mentored ~10 undergraduate student-led research projects per semester
- Trained students how to read primary literature, develop novel ideas, design/carry out experiments, troubleshoot, perform statistics, create figures, write scientific papers, and create/present scientific posters

EEB 4609W/5609: Ecosystem Ecology, Univ. of Minn.

Fall 2017

- Independent instructor for one undergraduate and one graduate discussion section
- ~25 students
- Guided students in writing scientific review papers and research grant proposals
- Assisted instructor (Dr. Sarah Hobbie) during lecture section

Biol 1961/1961H: Foundations of Biol. I, Univ. of Minn.

Spring 2016, Fall 2015

- Independent instructor for one ecotoxicology-focused lab section per semester
- ~25 undergraduate students per semester
- Trained students in basic lab skills, formulating novel scientific questions, experimental design, statistics, and writing research proposals

Bio 2105: General Biology, Villanova University

Spring 2015

- Independent instructor for two lab sections
- ~50 undergraduate students

MSE 2204: Human Physiology, Villanova University

Spring 2014

- Assistant to instructor (Dr. Phil Stephens) for two lab sections
- ~40 undergraduate students

Bio 3055: Animal Physiology, Villanova University

Spring 2014, Fall 2013

- Assistant to instructor (Dr. Phil Stephens) for two lab sections per semester
- ~40 undergraduate students per semester

Biol 427: Evolution, Penn State University

Fall 2012

- Assistant to instructor (Dr. Blair Hedges)
- ~150 primarily undergraduate students
- Created exams

Guest Lectures:

October 12, 2020. University of Vermont. Ecosystem Ecology (Instructor: Carol Adair). April 20, 2020. Macalester University. Ecosystem Ecology (Instructor: Christine O'Connell).

Mentorship:

Carissa Finnerty, Undergraduate student at the University of Vermont/Rubenstein Perennial Intern (2022) Anna Sherman, Undergraduate student at the University of Vermont/Rubenstein Perennial Intern (2021) Dara Coker, Undergrad. student at the Univ. of Wisconsin-Eau Claire/Cedar Creek Intern (2018-2020) Claire Houlihan, Undergraduate student at the University of Minnesota (2016-2018)

TEACHING AND MENTORING (Continued)

Mentorship (Continued):

Kelsey Ward, Undergraduate student at the University of Minnesota (2016-2018)

Valerie Gehn, Undergrad. student at the Univ. of Wisconsin-Eau Claire/Cedar Creek Intern (2017)

Graham Caron, High school student at Minnetonka High School (2017)

Amanda Donaldson, NASA Innovations in Climate Education-Tribal Gida (Our Earth Lodge) REU student (2016) Susan Webster, NASA Innovations in Climate Education-Tribal Gida (Our Earth Lodge) REU student (2016) Allen J. Butterfield, NASA Innovations in Climate Education-Tribal Gida (Our Earth Lodge) REU student (2016)

Emmanuel Okematti, Undergraduate student at the University of Minnesota (2016)

Isaac Johnson, Undergraduate student at the University of Minnesota (2016)

OUTREACH AND SERVICE, PROFESSIONAL DEVELOPMENT, AND HONORS

Outreach and Service:

Journal Review: Ecology, Ecology Letters, Plant, Cell & Environment, Journal of Ecology, Ecological Applications, Oikos, Ecosystems, Climatic Change, Ecosphere, Biogeochemistry, Biogeosciences, American Journal of Botany, Plant and Soil, AoB Plants, Journal of Geophysical Research Biogeosciences, Archives of Agronomy and Soil Science, Flora, Global Ecology and Conservation, Agricultural and Forest Meteorology, Science of the Total Environment, Resources, Conservation, & Recycling, CONCEPT Interdisciplinary Journal of Graduate Studies

Voice-over Talent for 'The Thinking Project' Nonprofit Group for K-12 Educators 2021 – present	
Narrating video lessons for K-12 students using Inquiry-Based Stress Reduction (thethinkingproject.org)	

Narrating video lessons for K-12 students using Inquiry-Based Stress Reduction (thethinkingproject.org)		
University of Minnesota Ecology Science Fair Served as judge for grade 4-12 student-driven investigations in ecology	2021	
Cedar Creek Ecosystem Science Reserve Outreach Led talks, field tours, and outreach activities for K-12 and beyond	2016 – 2019	
Midwest Coordinator for Science-Informed Leadership Communicated with constituents, organized resources enabling citizens to contact their	2017 – 2018 senators	
EEB Department Orientation Handbook Developer Developed orientation handbook and resource list for incoming graduate students	2017 – 2018	
EEB Department Graduate Student President Organized and oversaw graduate student meetings and departmental events	2016 – 2017	
Cedar Creek "Weaving Our Communities" Together REU Mentor Mentored research projects of Native undergraduates (funded through NASA NICE-T grant)	2016	
Gida (Our Earth Lodge) STEM Camps Led science lessons and experiments with K-12 Native (Ojibwe) students, connected les	2016 sons to Indigenous culture	
Chelsea Heights Elementary Science Fair Mentor Taught students experimental design and scientific method, helped students perform experimental design and scientific method.	2016 periments and create figures	
EEB Department Seminar Facilitator at the University of Minnesota	2015 – 2016	
Mifflinburg Intermediate School Outreach Designed and led science lessons and experiments for 5 th grade science education	2014 – 2015	
Professional Development:		
Introduction to R for Biologists (baseR) course, Utah State U./U. of Vermont/NCTC URGE (Unlearning Racism in the Geosciences) Program	2022 2021	

2020

2020

2015 - 2020

Teaching in Higher Education course, University of Minnesota

Designing and Delivering Online Learning Certification at Univ. of Minn.

Institute on the Environment's Boreas Leadership Program at Univ. of Minn.

OUTREACH AND SERVICE, PROFESSIONAL DEVELOPMENT, AND HONORS (Cont.)

Professional Development (Continued):

Emerge Bioscience Career Workshop Program 2019

Howard Hughes Medical Institute Diversity and Inclusion Training 2017 – 2018

College of Biological Sciences Classroom Writing Instruction Workshop 2015

Honors:

Society of Wetland Scientists Annual Meeting Best Poster Presentation Award 2015

PROFESSIONAL MEMBERSHIPS

American Geophysical Union	2019, 2023
Ecological Society of America	2015 - 2022
Society of Wetland Scientists	2015 - 2016

REFERENCES

Dr. Carol Adair, Associate Professor

Rubenstein School of Environment and Nat. Resources

University of Vermont 148 S. Prospect St. Burlington, VT 05401 (802) 656-2907 Carol.Adair@uvm.edu

Relationship: Postdoctoral Advisor

Dr. Aimée Classen, Professor

Ecology and Evolutionary Biology Department

University of Michigan

500 S. State St. Ann Arbor, MI 48109

(734) 763-4461

aclassen@umich.edu Relationship: Postdoctoral Advisor

Dr. Sarah Hobbie, Professor

Ecology, Evolution, and Behavior Department

University of Minnesota 1479 Gortner Ave.

St. Paul, MN 55108 (612) 625-6269

shobbie@umn.edu

Relationship: Ph.D. Advisor

Dr. Anthony D'Amato, Professor

Rubenstein School of Environment and Nat. Resources

University of Vermont

148 S. Prospect St.

Burlington, VT 05401

(802) 656-8030

anthony.damato@uvm.edu

Relationship: Postdoctoral Advisor

Dr. Peter Reich, Professor

Forest Resources Department University of Minnesota

1479 Gortner Ave.

St. Paul, MN 55108 (612) 624-4270

preich@umn.edu

Relationship: Ph.D. Advisor

Dr. Tali Lee, Professor

Biology Department

University of Wisconsin-Eau Claire

346 Phillips Science Hall Eau Claire, WI 54701

(715) 836-5087 leetd@uwec.edu

Relationship: Collaborator/Ph.D. Committee Member

Dr. Adam Langley, Associate Professor

Biology Department

Villanova University

800 E. Lancaster Ave.

Villanova, PA 19085

(610) 519-3102

adam.langley@villanova.edu Relationship: M.S. Advisor