Matthew A. Nieland

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Professional Preparation

2023 - current	Postdoc	University of Massachusetts Amherst	Soil Ecology
2018 - 2023	Ph.D.	Kansas State University	Biology
2014 - 2018	B.S.	Morningside University (formerly Morningside College)	Biology
2014 - 2018	B.A.	Morningside University	Chemistry

Appointments

2024 - current	USDA-NIFA Postdoctoral Fellow, Stockbridge School of Agriculture, University of Massachusetts Amherst (UMass)
2023 - current	Postdoctoral Research Associate, Stockbridge School of Agriculture, UMass
2018 - 2023	Graduate Research Assistant, Division of Biology, Kansas State University (KSU)
2018	Summer Research Technician, Division of Biology, KSU
2017	Research Experience for Undergraduates Intern, Division of Biology, KSU

Publications in preparation

5. ***Nieland, M. A.**, *Wu, A., Palmer, C. A., Siller, A., Hashemi, M., and Keiser, A. D. "Termination management alters nitrogen release from cover crop decomposition." *In prep* for Agriculture, Ecosystems & Environment. Submission expected in 3 months.
4. Zaret, M. M., Akley, E. K., Bookout, B., Broderick, C. M., Dea, H., Figge., J., Hawkins, J., Htoo, Z. W., Kailer, E., **Nieland, M. A.**, Nieves-Otero, P., Pandey, A., Richardson, C., Wanithunga, I., Wilson, E. J., Vega Anguino, N., and Zeglin, L. H. "Bison grazing and prairie fire shape soil microbial community diversity and assembly." *In revision* for Ecology. Re-submission expected in 3 months.
3. **Nieland, M. A.**, Blair, J. M., Taylor, J. H., and Zeglin, L. H. "Persistent plant and microbial community states after ceasing chronic fertilization." *In prep* for Ecology Letters. Submission expected in 2 months.
2. Ajowele, J. A., Zaricor, M., Cappelli, S. L., Terry, R. S., Liang, M., Parker-Smith, M., Broderick, C. M., Pehim Limbu, S., Young, M., Linabury, M., **Nieland, M. A.**, Brenneman, R., Zaret, M. M., and Darst, A. "Multiple community properties drive ecosystem resistance and resilience to extreme climate events across mesic grasslands." *In prep* for Ecology Letters. Submission expected in 1 month.
1. Gewirtzman, J., Keiser, A. D., **Nieland, M. A.**, Palmer, C. A., Pan, C., Patel, V., Caylor, K., and Forbes, E. "Low-cost autonomous chambers enable high spatial and temporal resolution in measuring soil CO_2 emission across landscapes." *In prep* for Methods in Ecology and Evolution. Submission expected in 1 month.

*Shared first-authorship

Publications

5. **Nieland, M. A.** and Keiser, A. D. 2025 "Using ecological restoration to disentangle the mechanisms and longevity of soil functional legacies. *Functional Ecology* DOI: 10.1111/1365-2435.70123
4. **Nieland, M. A.**, Lacy, P., Allison, S. D., Bhatnagar, J. M., Doroski, D. A., Frey, S. D., Greaney, K., Hobbie, S. E., Kuebbing, S. E., Lewis, D. B., McDaniel, M. D., Perakis, S. S., Raciti, S. M., Templer, P. H., Shaw, A., Sprunger, C. D., Strickland, M. S., Vietorisz, C., Ward, E. B., and Keiser, A. D. 2024. "Nitrogen Deposition Weakens Soil Carbon Control of Nitrogen Dynamics Across the Contiguous United States." *Global Change Biology* DOI: 10.1111/gcb.70016
3. **Nieland, M. A.** and Zeglin, L. H. 2024. "Plant and microbial feedbacks maintain soil nitrogen legacies in burned and unburned grasslands." *Journal of Ecology* DOI: 10.1111/1365-2745.14386
2. **Nieland, M. A.**, Carson, C. M., Floyd, V., and Zeglin, L. H. 2024. "Product-inhibition feedbacks, not microbial population level tradeoffs or soil pH, regulate decomposition potential under nutrient eutrophication." *Soil Biology and Biochemistry* DOI: 10.1016/j.soilbio.2023.109247
1. **Nieland, M. A.**, Moley, P., Hanschu, J., and Zeglin, L. H. 2021. "Differential Resilience of Soil Microbes and Ecosystem Functions Following Cessation of Long-Term Fertilization." *Ecosystems* DOI: 10.1007/s10021-021-00633-9

Published Datasets

4. **Nieland, M. A.**, Lacy, P., Allison, S. D., Bhatnagar, J. M., Doroski, D. A., Frey, S. D., Greaney, K., Hobbie, S. E., Kuebbing, S. E., Lewis, D. B., McDaniel, M. D., Perakis, S. S., Raciti, S. M., Templer, P. H., Shaw, A., Sprunger, C. D., Strickland, M. S., Vietorisz, C., Ward, E. B., and Keiser, A. D. 2024. "Nitrogen Deposition Weakens Soil Carbon Control of Nitrogen Dynamics Across the Contiguous United States." *Dryad* DOI: 10.5061/dryad.g79cnp611
3. **Nieland, M. A.** and Zeglin, L. H. 2023. "PCN01 Plant and soil carbon and nitrogen pool data from the Belowground Plot Experiment at Konza Prairie." *Environmental Data Initiative* DOI: 10.6073/pasta/cb24fd55a0102723882ad33ed3f787b9
2. **Nieland, M. A.** and Zeglin, L. H. 2023. "SEA01 Soil extracellular enzyme activity data from the Belowground Plot Experiment." *Environmental Data Initiative* DOI: 10.6073/pasta/caff8cde33a6dca2b007e85b5c4a4000
1. **Nieland, M. A.** and Zeglin, L. H. 2023. "OMS01 Microbial and soil data in the Belowground Plot Experiment at konza prairie since 2017." *Environmental Data Initiative* DOI: 10.6073/pasta/41f0e5aa1781e722e7922aaaa6b57143

Grants and Fellowships

2024	USDA National Institute of Food and Agriculture Bioenergy, Natural Resources, and Environment (BNRE) Postdoctoral Fellowship "Evaluating integrated land restoration to improve belowground ecosystem health of US Midwest croplands"	$225,000
2023	Biology Graduate Student Association (BGSA) Finishing Grant, KSU	$165
2022	BGSA Travel Grant, KSU	$500
2022	Graduate Student Council Travel Award, KSU	$600
2022	Arts & Sciences Research Travel Award, KSU	$400
2022	Kansas Natural Resources Conference Registration (KNRC) Fee Waiver Scholarship	$200
2021	BGSA Research Grant, KSU	$500
2019	Science Communication Fellowship, Sunset Zoo, Manhattan, KS	
2019	Arts & Sciences Research Travel Award, KSU	$400

Awards

2023	Chris Edler Award for Outstanding Research on Konza, KSU
2021	Ecology and Evolution Biology (EEB) Grad Students on Parade: Best Presentation Style, KSU
2021	Graduate Student Award for 2020 Prescribed Fire Season, Konza Prairie Biological Station
2020	EEB Grad Students on Parade: Best Overall Presentation, KSU
2019	EEB Grad Students on Parade: Best Science Content, KSU
2018	Summa Cum Laude, Morningside University (MU)
2018	Morningside Honors, MU
2018	Provost Award in Natural and Mathematical Sciences, MU
2018	Faculty Award in Biology, MU
2018	Biology and Chemistry Service Award, MU

Teaching

Soil Ecology (STOCKSCH 622 - UMass)	Fall 2023*, Fall 2024*
OEB Ecology Core Course (OEB 617 - UMass)	Fall 2023
Ecology (BIOL 529 - KSU)	Fall 2022
Ecology Lab (BIOL 632 - KSU)	Spring: 2021, 2022†, 2023†
General Microbiology Lab (BIOL 455 - KSU)	Fall: 2018, 2019, 2020, 2021 Spring: 2019, 2020

*Guest lecturer
†Instructor of record

Mentoring

Henri Schuette (Honors Undergrad - UMass)	2024-2025
Sara Sadeghi (Grad - UMass)	Summer 2024
Aiden Martin (Undergrad - UMass)	Spring-Summer 2024
Rachel Shurtz (Undergrad - KSU)	Fall 2022
Clara Mayfield (High School and Undergrad - Manhattan High School and Carleton College)	Summer: 2019, 2020
Brett Nave (Undergrad - KSU)	2018-2019

Invited Seminar

2021 **Nieland, M. A.** "Reversing global change: Can fire help prairie ecosystem recovery from increased nitrogen availability?" Biological Sciences Department, Emporia State University. Emporia, KS, USA

Contributed Presentations (Oral)

2025 **Nieland, M. A.**, Baer, S. G., and Keiser, A. D. "Persistence of soil functional legacies across a grassland restoration chronosequence." ESA Annual Meeting. Baltimore, MD, USA

2023 **Nieland, M. A.** and Zeglin, L. H. "Burning does not shape grassland soil microbial diversity recovery from chronic nitrogen fertilization." ESA Annual Meeting. Portland, OR, USA

2022 **Nieland, M. A.** and Zeglin, L. H. "Burning decreases grassland sensitivity, and increases resilience, to nitrogen fertilization." ESA Joint Meeting with Canadian for Ecology and Evolution. Montréal, QC, CA

2022 **Nieland, M. A.** and Zeglin, L. H. "Burning Decreases Tallgrass Prairie Sensitivity, and Increases Resilience, to Chronic Supplemental Nitrogen." KSU Division of Biology Annual Graduate Student Research Forum. Manhattan, KS, USA

2022 **Nieland, M. A.**, Moley, P., Hanschu, J., Freeman, K., and Zeglin, L. H. "Fire influences tallgrass prairie recovery from nitrogen fertilization." KNRC. Manhattan, KS, USA

2021 **Nieland, M. A.**, Floyd, V., Carson, C. M., and Zeglin, L. H. "Above- and belowground responses to increased N and P availability from chronic fertilization and fire suppression." ESA Annual Meeting. Virtual

2021 **Nieland, M. A.**, Floyd, V., Carson, C. M., and Zeglin, L. H. "Belowground Responses to Increased Nitrogen and Phosphorus Availability from Chronic Fertilization and Fire Suppression." KSU Division of Biology Annual Graduate Student Research Forum. Virtual

2020 **Nieland, M. A.**, Moley, P., Allenbrand, J. H., Hanschu, J., and Zeglin, L. H. "Differential recovery of soil microbial functional groups and ecosystem functions following cessation of chronic fertilization." ESA Annual Meeting. Virtual

2019 Burgin, A. J., Zeglin, L. H., **Nieland, M. A.**, Kelly, M. C., and Hanschu, J. "Whole river estimates of denitrification in response to a large-scale nitrogen enrichment of the Kansas River (USA)." Society of Freshwater Science (SFS) Annual Meeting. Salt Lake City, UT, USA

2019 Zeglin, L. H., Hanschu, J., Burgin, A. J., Kelly, M. C., Overstreet, E., and **Nieland, M. A.** "Large river microbial community structure and function is affected by inputs of a fertilizer-enriched inoculum." SFS Annual Meeting. Salt Lake City, UT, USA

2018 Moley, P., Hanschu, J., **Nieland, M. A.**, and Zeglin, L. H. "Differential responses of N-cycling soil microbial functional groups to cessation of chronic fertilization." ESA Annual Meeting. New Orleans, LA, USA

Contributed Presentations (Poster)

2020 Nave, B., **Nieland, M. A.**, Mueller, E., and Zeglin, L. H. "Does chronic nitrogen fertilization affect soil microbial tradeoffs?" Society for the Advancement of Chicanos/Hispanics and Native Americans in Science (SACNAS) National Diversity in STEM Digital Conference. Virtual

2020 Nave, B., **Nieland, M. A.**, Mueller, E., and Zeglin, L. H. 2020. "Does chronic nitrogen fertilization affect soil microbial tradeoffs?" ESA Annual Meeting. Virtual

2019 **Nieland, M. A.**, Moley, P., Hanschu, J., and Zeglin, L. H. "Differential recovery of N-cycling soil microbial functional groups following cessation of chronic fertilization." ESA Annual Meeting. Louisville, KY, USA

2018 Burgin, A. J., Kelly, M. C., Hanschu, J., **Nieland, M. A.**, and Zeglin, L. H. "Linking the Presence and Function of Denitrification Genes to Whole River Estimates of Denitrification in Response to a Large-Scale Enrichment of the Kansas River (USA)." American Geophysical Union. Washington, DC, USA

2018 **Nieland, M. A.**, Moley, P., Hanschu, J., and Zeglin, L. H. "Fire history causes differential recovery of N-cycling soil microbes from chronic fertilization." LTER All Scientists' Meeting. Pacific Grove, CA, USA

Service

Peer Review

New Phytologist (1 review)
Ecosphere (1 review)
Ecosystems (1 review)
Geoderma (1 review)
Freshwater Biology (1 review)
Journal of Vegetation Science (1 review)
Environmental Science and Pollution Research (1 review)

Professional Service

2023	BGSA Research/Travel Grant Committee
2022	BGSA President
2022 - 2023	BGSA Reform Committee
2021 - 2024	External Evaluator, Independent Review Board at MU
2020	BGSA Graduate Affairs Committee Student Representative
2019 - 2020	BGSA Manual Sales Coordinator
2019	KSU Division of Biology Communications Workshop
2019 - 2022	Fire Crew Volunteer, Konza Prairie Biological Station

Outreach

2024	Guest Speaker, Research and Extension Experiences for Undergraduates at UMass, Talk titled "Soil Life: What lives beneath our feet?"
2022	Guest Speaker, The SSTEM Project at MU
2021	Career Panelist, Alumni Nights for Pre-Professional Health Club at MU
2020	Girls Researching our World, Office for the Advancement of Women in Science and Engineering at KSU
2017, 2020	Science Saturday, Sunset Zoo