

Elizabeth M. Bach

Ecosystem Restoration Scientist

Nachusa Grasslands

The Nature Conservancy

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<https://www.nature.org/en-us/about-us/who-we-are/our-people/elizabeth-bach/>

soilorganicmatters.org

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EDUCATION

2010-2014	Iowa State University	Ph. D. <i>Ecology & Evolutionary Biology</i>
2007-2009	Southern Illinois University Carbondale	Master of Science <i>Plant Biology</i>
2003-2007	Cornell College <i>Magna cum laude</i> Phi Beta Kappa	Bachelor of Arts (honors) <i>Biology</i> <i>Environmental Studies</i>

PROFESSIONAL EXPERIENCE

2018- present	Ecosystem Restoration Scientist	The Nature Conservancy – IL Nachusa Grasslands
2016-2018	Executive Director, Global Soil Biodiversity Initiative Postdoctoral Research Assistant I	Colorado State University
2014-2016	Postdoctoral Research Associate	Illinois Natural History Survey
2010-2014	Graduate Research Assistant Graduate Teaching Assistant Plant Science Institute Research Fellow	Iowa State University
2010	Land Management Research and Demonstration Intern	Neal W. Smith National Wildlife Refuge
2007-2009	NSF GK-12 Fellow Graduate Research Assistant Graduate Teaching Assistant	Southern Illinois University Carbondale

PEER-REVIEWED PUBLICATIONS

Published

- 36) Becker, E.; **Bach, E.M.**; Kleiman, B.; Barber, N. 2025. Overcoming barriers to restoration: post-restoration overseeding and topsoil disturbance improve native plant richness and diversity. *Restoration Ecology*. DOI: [10.1111/rec.70022](https://doi.org/10.1111/rec.70022)
- 35) Chakravorty, J.; Harrington, J.; **Bach, E.M.** 2024. Bison grazing in eastern tallgrass prairie does not alter plant diversity after five years. *Natural Areas Journal*. 44(4): 215-222 DOI: [10.3375/2162-4399-44.4.215](https://doi.org/10.3375/2162-4399-44.4.215)

- 34) Hogan, K.; Baker, K.; **Bach, E.M.**; Barber, N. 2024. Basal bark herbicide treatment of *Lonicera maackii* (Amur honeysuckle) is effective regardless of application timing, with limited nontarget effects on native plant diversity. *Ecological Solutions and Evidence*. 5: e12332 doi.org/10.1002/2688-8319.12332
- 33) Edmonds, D.; **Bach, E.M.**; Colton, A.; Jaquet, I.; Kessler, E.; Dreslik, M. 2024. Avoiding mortality: timing prescribed burns in ornate box turtle (*Terrapene ornate*) habitat. *The Journal of Wildlife Management*. 88:e22510 <https://doi.org/10.1002/jwmg.22510>
- 32) Yu, K.; van den Hoogen, J.; Wang, Z.; Averill, C.; Routh, D.; Smith, G.R.; Drenovsky, R.E.; Scow, K.M.; Mo, F.; Waldrop, M.P.; Yang, Y.; DeVries, F.; Bastida, F.; Baer, S.G.; **Bach, E.M.**; Garcia, C.; Wang, Q.; Ma, L.; Chen, B.; Ye, J.; Teurlinckx, S.; Heijboer, A.; Bradley, J.A.; Crowther, T.W. 2022. Soil fungal and bacterial biogeography is tied to the efficiency of decomposition at global scale. *Earth System Science Data*. 14:4339-4350 <https://doi.org/10.5194/essd-14-4339-2022>
- 31) James, J.; **Bach, E.M.**; Baker, K.; Barber, N.; Buck, R.; Shahrtash, M.; Brown, S. 2022. Herbicide control of the invasive Amur honeysuckle (*Lonicera maackii*) does not alter soil microbial communities or activity. *Ecological Solutions & Evidence* 3(3) <https://doi.org/10.1002/2688-8319.12157>
- 30) Rowland-Schaefer, E.G.; **Bach, E.M.**; Kleiman, B.P.; Jones, H.P. 2022. Mapping and quantifying 35 years of prescribed fire history at an Illinois tallgrass prairie restoration site using GIS. *Ecological Solutions & Evidence* <https://doi.org/10.1002/2688-8319.12144>
- 29) **Bach, E.M.**; Kleiman, B.P. 2021. Twenty years of tallgrass prairie restoration in northern Illinois, USA. *Ecological Solutions and Evidence* 2:e12101 <https://doi.org/10.1002/2688-8319.12101>
- 28) Raudabaugh, D.B.; Rivera, N.A.; Anchor, G.C.; **Bach, E.M.**; Miller, A.N.; Mateus-Pinilla, N.E. 2021. Preliminary Study of Cave Sample Storage Conditions on Fungal Community Diversity. *Diversity* 13:188 <https://doi.org/10.3390/d13050188>
- 27) Phillips, H.R.; **Bach, E.M.**; et al. 2021. Global data on earthworm abundance, biomass, diversity and corresponding environmental properties. *Scientific Data* 8(1): 1-12 doi: 10.1038/s41597-021-00912-z
- 26) Raudabaugh, D.B.; **Bach, E.M.**; Allen, J.M.; and Miller, A.N. 2021. Fungal communities of submerged fine detritus from temperate peatland and stream habitats. *Aquatic Microbial Ecology* 86:191-207 doi: 10.3354/ame01969
- 25) Scott, D.A.; **Bach, E.M.**; Du Preez, C.C.; Six, J.; Baer, S.G. 2021. Mechanisms influencing physically sequestered soil carbon in temperate restored grasslands in South Africa and North America. *Biogeochemistry* 156:131-143 doi: 10.1007/s10533-021-00774-y
- 24) Franco, A.; Gherardi, L.; de Tomasel, C.; Andriuzzi, W.; Ankrom, K.; **Bach, E.M.**; Guan, P.; Sala, O.; Wall, D.H. 2020. Root herbivory controls the effects of water availability on the partitioning between above and belowground grass biomass. *Functional Ecology* 34:2403-2410 doi: 10.1111/1365-2435.13661
- 23) Pischl, P.; Burke, S.V.; **Bach, E.M.**; Duvall, M.R. 2020. Plastome phylogenomics and phylogenetic diversity of endangered and threatened grassland species in the family Poaceae. *Ecology and Evolution*. 10:7602-7615 doi.org/10.1002/ece3.6484
- 22) **Bach, E.M.**; Fraser, T.D.; Ramirez, K.S.; Wall, D.H. 2020. Soil biodiversity integrates solutions for a sustainable future. *Sustainability*. 12: 2662. doi: 10.3390/su12072662
- 21) Thakur, M.; Phillips, H.R.P.; Brose, U.; De Vries, F.; Lavelle, P.; Loreau, M.; Mathieu, J.; Mulder, C.; van der Putten, W. Rillig, M.; Wardle, D.; **Bach, E.M.** et al. 2020 Toward an integrative understanding of soil biodiversity. *Biological Reviews*. 95:350-364 doi: 10.1111/brv.12567

- 20) Phillips, H.R.P.; Guerra, C.A.; Bartz, M.L.; Briones, M.J.I.; Brown, G.; Crowther, T.; Ferlian, O.; Gongalsky, K.; van den Hoogen, J.; Krebs, J.; Orgiazzi, A.; Routh, D.; Schwarz, B.; **Bach, E.M.** et al. 2019 Global distribution of earthworm diversity. *Science* 366: 480-485. doi: 10.1126/science.aax4851
- 19) Franco, A.L.C.; Gherardi, L.A.; de Tomasel, C.M.; Andriuzzi, W.S.; Ankrom, K.E.; Shaw, E.A.; **Bach, E.M.**; Sala, O.E.; Wall, D.H. 2019 Drought suppresses soil predators and promotes root herbivores in mesic, but not in xeric grasslands. *Proceedings of the National Academy of Science* 116:12883-12888. doi: 10.1073/pnas.1900572116
- 18) Upton, R.N.; **Bach, E.M.**; Hofmockel, K.S. 2019 Spatio-temporal microbial community dynamics within soil aggregates. *Soil Biology & Biochemistry* 132:58-68. doi: 10.1016/j.soilbio.2019.01.016
- 17) Choi, J.; **Bach, E.M.**; Lee, J.; Flater, J.; Dooley, S.; Howe, A.; Hofmockel, K.S. 2018 Spatial structuring of cellulase gene abundance and activity in soil. *Frontiers in Environmental Science*. 6:107. doi: 10.3389/fenvs.2018.00107
- 16) Upton, R.N.; **Bach, E.M.**; Hofmockel, K.S. 2018 Belowground response of prairie restoration and resiliency to drought. *Agricultural, Ecosystems, and Environment* 266:122-132 doi: 10.1016/j.agee.2018.07.021
- 15) **Bach, E.M.**; Narvaez-Rivera, G.; Murray, K.; Bauer, J.; Hofmockel, K.S. 2018. The dynamic life of arbuscular mycorrhizal fungal symbionts. *Ecology* 99: 978-980 doi: 10.1002/ecy.2096
- 14) **Bach, E.M.**; Williams, R.J.; Hargreaves, S.K.; Yang, F.; Hofmockel, K.S. 2018. Greatest soil microbial diversity found in micro-habitats. *Soil Biology & Biochemistry* 118:217-226 doi: 10.1016/j.soilbio.2017.12.018
- 13) Wahl, H.E.; Raudabaugh, D.B.; **Bach, E.M.**; Bone, T.S.; Luttenton, M.R.; Cichewicz, R.H.; Miller, A.N. 2018. What lies beneath? Fungal diversity at the bottom of Lake Michigan and Lake Superior. *Journal of Great Lakes Research* 44:263-270 doi: 10.1016/j.jglr.2018.01.001
- 12) **Bach, E.M.**; Wall, D.H. 2018. Trends in biodiversity: Soil organisms. in *Encyclopedia of the Anthropocene*, Simon Levin, editor. Elsevier Publishers.
- 11) Klopff, R.P.; Baer, S.G.; **Bach, E.M.**; Six, J. 2017. Restoration and management for high plant diversity enhances belowground ecosystem recovery from disturbance. *Ecological Applications* 27:355-362 doi: 10.1002/eap.1503
- 10) Muturi, E.J.; Kim, C.; Bara, J.; **Bach, E.M.**; Siddappaji, M.H. 2016. Culex pipiens and Culex restuans mosquitoes harbor distinct microbiota dominated by few bacterial taxa. *Parasites & Vectors* 9:18, doi:10.1186/s13071-016-1299-6
- 9) Riggs, C.E.; Hobbie, S.E.; **Bach, E.M.**; Hofmockel, K.S.; Kazanski, C.E. 2015. Nitrogen addition changes grassland soil organic matter decomposition. *Biogeochemistry* 125:203-219, doi:10.1007/s10533-015-0123-2
- 8) **Bach, E. M.**; Hofmockel, K.S. 2015. A time for every season: Soil aggregate turnover stimulates decomposition and reduces carbon loss in grasslands managed for bioenergy. *Global Change Biology Bioenergy* doi:10.1111/gcbb.12267
- 7) **Bach, E. M.**; Hofmockel, K. S. 2015. Coupled carbon and nitrogen inputs increase microbial biomass and activity in prairie bioenergy systems. *Ecosystems* 18:417-427, doi:10.1007/s10021-014-9835-8
- 6) Baer, S.G.; **Bach, E.M.**; Meyer, C.K.; DuPreez, C.; and Six, J. 2015. Belowground ecosystem recovery during grassland restoration: South African high veld compared to US tallgrass prairie. *Ecosystems* 18:390-403, doi: 10.1007/s10021-014-9833-x
- 5) Brown, K.; **Bach, E.**, Drijber, R.; Hofmockel, K.; Jeske, E.; Sawyer, J.; Castellano, M. 2014. A long-term nitrogen fertilizer gradient has little effect on soil organic matter in a high-intensity maize production system. *Global Change Biology* 4:1339-1350, doi: 10.1111/gcb.12519

- 4) **Bach, E.M.**, Hofmockel, K.S. 2014 Soil aggregate isolation method affects measures of intra-aggregate extracellular enzyme activity, *Soil Biology & Biochemistry* 69: 54-62, doi:10.1016/j.soilbio.2013.10.033
- 3) **Bach, E.M.**; Baer, S.G.; Six, J. 2012. Plant and soil responses to high and low diversity grassland restoration practices, *Environmental Management* 49: 412-424, doi:10.1007/s00267-011-9787-0
- 2) **Bach, E.M.**; Baer, S.G.; Meyer, C.K.; Six, J. 2010. Soil texture affects soil microbial and structural recovery during grassland restoration, *Soil Biology & Biochemistry* 42: 2182-2191, doi:10.1016/j.soilbio.2010.08.014
- 1) Baer, S. G.; Meyer, C.K.; **Bach, E.M.**; Klopff, R.P.; and Six, J. 2010. Contrasting ecosystem recovery on two soil textures: implications for carbon mitigation and grassland conservation. *Ecosphere* 1(1):art5, doi:10.1890/ES10-00004.1

Submitted, in review or revision

- Golba, C.K.; Adamovicz, L.; Allender, M.; **Bach, E.**; Davidson, Al.; Glowacki, G.; Graser, W.; McCabe, K.; Moorhead, K.; Thompson, D.; Towey, J.; King, R. *in revision*. Size-at-release, predator removal, and stress impact post-release survival of headstarted Blanding's turtles.
- Bloodworth, K.; Koerner, S.; Kazanski, C.; Ahlering, M.; Boyle, A.W.; Gora, S.; Guiden, P. Hamilton, R.; Helzer, C.; Obermeyer, B.; Twidwell, D.; Welti, E.; **Bach, E.M.** *in review* Fire frequency drives tradeoffs among conservation priorities in tallgrass prairie.

Reports & Policy Engagement (contributing author)

- | | | |
|------|---|--|
| 2020 | State of knowledge of soil biodiversity – Status, challenges, and potentialities
<i>Chapter 3 Contributions of soil biodiversity to ecosystem functions and services</i> | FAO, ITPS, GSBI, SCBD, and EC |
| 2019 | Global Assessment on Biodiversity & Ecosystem Services <i>Chapter 2 Nature</i> | Intergovernmental Panel on Biodiversity & Ecosystem Services |

Book chapters (contributing author)

- Yarwood, S.A.; **Bach, E.M.**; Busse, M.; Smith, J.E.; Callaham, M.A.; Chang, C.; Roy Chowdhury, T.; Warren, S.D. 2020. Forest and Rangeland Soil Biodiversity. In: *Forest and Rangeland Soils of the United States Under Changing Conditions*, Pouyat, R.V.; Page-Dumroese, D.S.; Patel-Weynand, T.; and Geiser, L.H. (eds). Springer International Publishing. pp. 75-97. doi: 10.1007/978-3-030-45216-2_5

AWARDED GRANTS & FELLOWSHIPS

Research Grants

- | | |
|------|---|
| 2024 | Linking microbial social interactions within soil aggregate communities to ecosystem C, N, and P cycling. National Science Foundation. Lipson, D. (PI, San Diego State University), Bach, E.M. (co-PI, The Nature Conservancy) , Kelly, S. (co-PI, San Diego State University), Xu, X. (co- San Diego State University), Sukumaran, J. (co-San Diego State University) |
| 2022 | Illinois database and preserve monitoring infrastructure. The Nature Conservancy Monitoring, Evaluation, and Learning Grant. Lemke, A.M.; Bach, E.M. ; Hagen, S. (co-PI, The Nature Conservancy) |
| 2015 | Plant and fungal community phenology in restored tallgrass prairie. Friends of Nachusa Grasslands Science Research Grant. Bach, E.M. (PI, Illinois Natural History Survey) , Miller, A.N. |

- 2014-2016 Plant phenology drives soil fungal communities and carbon storage in prairies. Illinois Natural History Survey. **Bach, E.M. (PI, Illinois Natural History Survey)**
- 2014 Understanding microbial contributions to soil aggregation and organic matter accumulation. Leopold Center for Sustainable Agriculture. Hofmockel, K.S., **Bach, E.M. (co-PI, Iowa State University)**
- 2013 Sequencing intra-aggregate fungal communities. Lois F. Tiffany Fellowship. **Bach, E.M. (PI, Iowa State University)**
- 2013 Professional Advancement Grant. Iowa State Graduate Student Senate. **Bach, E.M.**
- 2012 Effects of diversity on the prairie experience. Iowa Native Plant Society. Sullivan, L.S., Mortensen, B.D., **Bach, E.M.**
- 2012 The Everett Casey Nature Center and Reserve Reconstruction Project: Research experimentation and educational outreach. Iowa Living Roadway Trust Fund. Sullivan, L.S., Mortensen, B.D., **Bach, E.M.**, Hofmockel, K.S., Harpole, W.S.
- 2011 Professional Advancement Grant. Iowa State Graduate Student Senate. **Bach, E.M.**
- 2011 Soil Ecology Section Student Travel Award. Ecological Society of America. **Bach, E.M.**

Fellowships

- 2014-2016 Plant phenology drives soil fungal communities and carbon storage in prairies. Illinois Natural History Survey. **Bach, E.M.**
- 2010-2014 Plant Science Institute Fellow Iowa State University. **Bach, E.M.**
- 2008-2009 NSF GK12 Graduate Fellow Southern Illinois University Carbondale. **Bach, E.M.**
- 2007-2010 R. J. McElroy Foundation Graduate Fellow. **Bach, E.M.**

SUBMITTED GRANTS (*pending or not funded*)

- 2025 Collaborative Research: PACSP: Pragmatic strategies for restoring resistance: applying the RAD framework to invasive species management. National Science Foundation. Jones, H. ((co-PI, Northern Illinois University); **Bach, E.M. (co-PI, The Nature Conservancy)**); Barber, N. (co-PI, San Diego State University)
- 2024 Collaborative Research: Biodiversity, megaherbivores, ecosystem function and resilience of grazing systems on the Great Plains. National Science Foundation. Blake, S. (PI, St. Louis University); Sagan, V. (co-PI, St. Louis University); Bastille-Rousseau, G. (co-PI, Southern Illinois University); **Bach, E.M. (co-PI, The Nature Conservancy)**; Ratajczak, Z. (co-PI, Kansas State University)
- 2022 Collaborative Research: Biodiversity and ecosystem impacts of invasive legume control and adaptive management in grasslands. National Science Foundation. Barber, N. (PI, San Diego State University); Jones, H. (co-PI, Northern Illinois University; **Bach, E.M. (co-PI, The Nature Conservancy)**)
- 2022 Linking microbial social interactions within soil aggregate communities to ecosystem C, N, and P cycling. National Science Foundation. Xu, X. (PI, San Diego State University), **Bach, E.M. (co-PI, The Nature Conservancy)**, Kelly, S. (co-PI, San Diego State University), Lipson, D. (co- San Diego State University), Sukumaran, J. (co- San Diego State University)
- 2016 Microbial community structure and function in the deep critical zone. US Dept. of Energy. Stumpf, A. (PI, Illinois Geological Survey); Lin, Y (co-PI, Illinois Geological Survey).; **Bach, E.M. (co-PI, Illinois Natural History Survey)**; Druhan, J.; Kumar, P.
- 2016 Why soil matters: Physical and biological drivers of soil microbial communities and activities. L'Oreal USA for Women in Science Foundation. **Bach, E.M. (PI, Illinois Natural History Survey)**

- 2015 Enhancing resiliency of rural communities through sustainable integration of crops and cattle. USDA-NIFA Agriculture and Food Research Initiative. MacDonald, J. (PI, Iowa State University) et al.
- 2015 Management of stockpiled forage for winter grazing to enhance pasture forage and soil quality and profitability of beef cow-calf enterprises. North Central Region-Sustainable Agriculture Research & Education. Russell, J (PI, Iowa State University); Gunn, P.; Sellers, J.; Ensley, S.; **Bach, E.**; Hostetler, D.; Davis, R.
- 2015 Why soil matters: Physical and biological drivers of soil microbial communities and activities. L'Oreal USA for Women in Science Foundation. **Bach, E.M. (PI, Illinois Natural History Survey)**
- 2012 Integrating soil porosity, aggregation, and ecology to define soil microbial habitat. NSF-Doctoral Dissertation Improvement Grant. **Bach, E.M. (PI, Iowa State University)**, Hofmockel, K.S.
- 2011 Community connections: Linking soil habitat and soil microbial activity with ecosystem processes. EPA-Science to Achieve Results Fellowship. **Bach, E.M. (PI, Iowa State University)**

REVIEWING & EDITING

Topical/Associate Editor

Ecological Solutions and Evidence

Reviewer

Ecological Monographs, Ecological Restoration, Ecology Letters, Environmental Management, Environmental Microbiology, Frontiers in Microbiology, Functional Ecology, Geoderma, New Phytologist, Plant & Soil, Proceedings of the Royal Society B, Peer J, Rangeland Ecology & Management, Restoration Ecology, SOIL, Soil Biology & Biochemistry, Soil Tillage & Research, Soil Use & Management, Trends in Plant Science, Ecosphere, Natural Areas Journal, Nature Reports, Nature

Reports & Policy Engagement (expert reviewer)

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|------|--|--|
| 2017 | Assessment on Land Degradation & Restoration | Intergovernmental Panel on Biodiversity & Ecosystem Services |
| 2016 | U.S. National Framework on Soils | White House Office of Science & Technology Policy |
| 2016 | Global Land Outlook | United Nations Convention to Combat Desertification |
| 2016 | Opinion on the effects of plant protection products on in-soil organisms | European Food Safety Authority |

Grant Review Panels

Walder Foundation Biota Award, National Science Foundation (USA), Biodiversa (EU), Graduate Women in Science

TEACHING

Graduate Courses

- | | | |
|------|---|---------------------------|
| 2017 | Special Topic: Soil Ecology in the Anthropocene (1 semester, developed & co-taught) | Colorado State University |
| 2015 | Microbial Metagenomics (1 semester, developed & co-taught) | University of Illinois |

Undergraduate Courses

- | | | |
|------|--|-----------------------|
| 2013 | Plant Systematics (1 semester, lab instructor) | Iowa State University |
| 2011 | General Mycology (1 semester, lab instructor) | Iowa State University |

2008-2009	Introductory and advanced high school chemistry (2 semesters, lab developer and instructor)	Herrin High School, Herrin, IL
2007-2008	General Botany (1 semester, lab instructor)	Southern Illinois University Carbondale

Guest Lectures

2024	Environmental Science Capstone	North Central College
2023	Introduction to Biology Major	Northern Illinois University
2022	Intro to Geospatial Analysis	Northwestern University
2021	Restoration Ecology	Montana Tech University (virtual)
2021	Restoration Ecology	McHenry County Community College
2021	Restoration Ecology	University of Illinois Urbana-Champaign
2020	Environmental Sustainability	Creighton University
2020	Restoration Case Studies	Colorado State University
2020	Soil & Crop Sciences Senior Seminar	Colorado State University
2017	SOC323: Sociology of Environmental Governance	Colorado State University
2017		
2018		
2019	National Biodiversity Teach-In	Hosted by Elgin High School, Elgin, IL
2020		
2021		
2024		

INVITED TALKS (last 5 years)

2025	Long-term data and outcomes from the Nachusa Grasslands restoration <i>Severson Dells Snacking on Science – Rockford, IL</i>
2024	Long-term data and outcomes from the Nachusa Grasslands restoration <i>Loyola University, Chicago, IL</i>
2024	Long-term data and outcomes from the Nachusa Grasslands restoration <i>Wild Ones Rock River Valley – Rockford, IL</i>
2024	Restoring prairie soil habitats to rebuild biodiversity and ecosystem functioning <i>Native Prairie Restoration and Reclamation Workshop – Saskatoon, SK Canada</i>
2023	Long-term data and outcomes from the Nachusa Grasslands restoration <i>Prairie Reconstruction Initiative Winter Webinar</i>
2023	Long-term data and outcomes from the Nachusa Grasslands restoration <i>The Nature Conservancy Managing for Climate Resilience Workshop</i>
2022	Long-term data and outcomes from the Nachusa Grasslands restoration <i>Natural Areas Association Webinar</i>
2022	Long-term data and outcomes from the Nachusa Grasslands restoration <i>University of Kansas</i>
2022	Restoring soil habitats to rebuild biodiversity and ecosystem services <i>Montana Technical University</i>
2022	Long-term data and outcomes from the Nachusa Grasslands restoration <i>Illinois Natural History Survey</i>
2021	Soil carbon in natural and restored lands <i>Texas Native Plant Society</i>
2021	Soil carbon in natural and restored lands

- The Prairie Enthusiasts annual meeting, virtual event*
- 2021 Restoring soil habitats to rebuild biodiversity and ecosystem services
Cornell University, BESS Graduate Program Seminar
- 2020 First Global Soil Biodiversity Assessment: From Science to Policy
Global Soil Biodiversity Initiative, virtual event
- 2020 Soil carbon in natural and restored lands
Vital Lands Summit, Champaign, IL
- 2019 Restoring soil habitats to rebuild biodiversity and ecosystem services
Audubon Society, Peoria, IL

CONFERENCE PRESENTATIONS (last 5 years, *indicates presenter)

Oral presentation

- Spencer, L.; Nuccio, D.A.; Harvey, C.; **Bach, E.M.**, and Singh, P. 2024. Longitudinal Characterization of Intestinal Microbiome in Wild Bison in Illinois. ASM Microbe, Atlanta, GA, Jun. 2024.
- Bloodworth, K.; Koerner, S.; Kazanski, C.; Ahlering, M.; Boyle, A.; Gora, S.; Guiden, P.; Hamilton, R.; Helzer, C.; Obermeyer, B.; Twidwell, D.; Welti, E.; **Bach, E.M.** 2024. Fire frequency drives tradeoffs among conservation priorities in tallgrass prairies. Annual Meeting of Ecological Society of America, Aug 4-8, 2024. Long Beach, CA USA
- ***Bach, E.M.** 2024. Restoring and sustaining diverse plant communities and research collaborations at Nachusa Grasslands. Annual Meeting of Ecological Society of America, Aug 4-8, 2024. Long Beach, CA USA
- ***Bach, E.M.** 2023. Invasive plant species control with herbicide does not impact soil microbial biodiversity and activity. 3rd Global Soil Biodiversity Conference, 13-15, 2023. Dublin, Ireland
- ***Bach, E.M.** 2022. A seesaw approach to collaborative tallgrass prairie restoration at Nachusa Grasslands. Annual Meeting of Ecological Society of America, Aug 14-18, 2022. Montréal, Québec
- ***Bach, E.M.** 2022. Twenty years of tallgrass prairie restoration at Nachusa Grasslands. Nachusa Grasslands Science Symposium. April, 2022, virtual event
- Singh, P, Spencer, L, Ray, R, Seitz, J, Harvey, C, Carretero, PL, and **Bach, E.** (2022) Longitudinal study to identify factors important for Bison health. Friends of Nachusa Grassland Annual Science Symposium. April, 2022, virtual event
- Spencer, L, **Bach, E.** and Singh, P. 2022. Seasonal Variation of Enteric Parasites in Wild Bison. Friends of Nachusa Grassland Annual Science Symposium. April, 2022, virtual event
- ***Bach, E.M.** 2021. Soil biodiversity, sustainability, and the UN Decade on Restoration. Soil Science Society of America Annual Meeting, Nov. 7-10, 2021, Salt Lake City, UT
- ***Bach, E.M.** 2021. Exploring careers in ecology. Annual Meeting of the Ecological Society of America, Aug. 1-6, 2021, virtual event
- ***Bach, E.M.**; Fraser, T.; Ramirez, K.S.; Wall, D.H. 2021 Soil Biodiversity Supports Ecosystem Services to Achieve Global Sustainability. Annual Meeting of the Ecological Society of America, Aug. 1-6, 2021, virtual event
- Klatt Golba, C., Glowacki, G., King, R. B., Graser, B., Towey, B., **Bach, E.** (2021). Survival of Head-Started Blanding's Turtles at Multiple Restored Sites in Northern Illinois. 81st Annual Midwest Fish & Wildlife Conference. Virtual Meeting.
- Rowland, E.G.; Bach, E.M.; Kleiman B.; Jones, H.P. 2021. Beyond Burned and Unburned: A New Approach to Quantifying the Impacts of Prescribed Fire on Prairie Small Mammals. Midwest Fish and Wildlife Conference. Virtual Meeting.
- Rowland, E.G.; **Bach, E.M.**; Kleiman B.; Jones, H.P. 2020. Seeing the Big Picture: Spatial analysis and Landscape ecology at Nachusa Grasslands. FUSION Seminar, Northern Illinois University.

Poster presentation

- Bloodworth, KJ, **Bach, E**, Kazanski, C, Ahlering, M, Boyle, A, Guiden, P, Hamilton, B, Helzer, C, Obermeyer, B, Twidwell, D, Welti, E, Koerner, SE. 2023. Effects of fire frequency on shaping multiple response variables in tallgrass prairie: A meta-analysis approach. Friends of Nachusa Grassland Annual Science Symposium, April 22, 2023
- Golba, C., **Bach, E.M.**, Glowacki, G., Grasser, B., McCabe, K., Thompson, D., Towey, B. King, R. 2023. What matters for the survival of head-started Blanding's turtles? Friends of Nachusa Grassland Annual Science Symposium, April 22, 2023
- Bloodworth, KJ, **Bach, E**, **Kazanski, C**, **Ahlering, M**, Boyle, A, Guiden, P, Hamilton, B, **Helzer, C**, **Obermeyer, B**, Twidwell, D, Welti, E, Koerner, SE. (2022) The effect of fire frequency on shaping multiple ecosystem outcomes in tallgrass prairie. Friends of Nachusa Grassland Annual Science Symposium, April 23, 2022, virtual event.
- Spencer, L, **Bach, E**, and Singh, P. 2022. Seasonal Variation of Enteric Parasites in Wild Bison. ASM Microbe, Virtual, June, 2022, virtual event
- Spencer, L, Tyszka, H, **Bach, E**, and Singh, P. (2022) Survey of Enteric Parasites in Wild Bison at Nachusa Grasslands. PhiSigma Symposium, NIU, April, 2022, virtual event
- Spencer, L.; Singh, P.; **Bach, E.M.** 2021. Survey of Enteric Parasites in Wild Bison at Nachusa Grasslands. Friends of Nachusa Grassland Annual Science Symposium, April 24, 2021, virtual event.
- James, J.; Shahrtash, M.; Brown, S.; **Bach, E.M.**; Baker, K.; Barber, N. 2021. Herbicidal removal of Amur Honeysuckle only minimally affects soil borne microorganisms with no apparent functional deficits. Friends of Nachusa Grassland Annual Science Symposium, April 24, 2021 virtual event.
- ***Bach, E.M.**, Kleiman, W.K. 2020. Twenty years of conservation and restoration of tallgrass prairie diversity and identity at Nachusa Grasslands. British Ecological Festival of Ecology, Dec. 14-18, 2020, virtual event.
- ***Bach, E.M.**, Kleiman, W.K. 2020. Twenty years of conservation and restoration of tallgrass prairie diversity and identity at Nachusa Grasslands. Annual Meeting of the Ecological Society of America, Aug. 3-6, virtual event.

Panel Discussion

- Careers in ecological restoration. 2024. Annual Meeting of Ecological Society of America, Long Beach, CA USA
- Non-academic careers in conservation science. 2024. Chicago Botanic Gardens/Northwestern University Plant Science Program, Chicago, IL
- Stewardship and science in partnership: A panel discussion on building collaborations to strengthen our conservation outcomes. 2023. Wild Ones, Chicago, IL
- Soils in the Anthropocene: The Global Soil Biodiversity Initiative—Paving the Way Toward a Soil Biodiversity Observation Network (Soil BON). 2020. American Geophysical Union, virtual conference

CONFERENCES, SYMPOSIA & SIDE-EVENTS ORGANIZED

- | | | |
|--------------|---|---|
| 2018-current | Nachusa Grasslands Science Symposium
<i>Symposium organizer</i> | Friends of Nachusa Grasslands & The Nature Conservancy <i>Franklin Gove, IL</i> |
| 2024 | Organized Oral Session - Integrating across the academic-practitioner divide: Supporting basic and applied ecology researchers across their careers at Nachusa Grasslands Bach, E.M. ; | Annual Meeting of the Ecological Society of America <i>Long Beach, CA</i> |

	<i>Guiden, P.; Bruninga-Socular, B.; Barber, N.; Jones, H.</i>	
2022	Symposium - Early career perspectives on measuring success during the Decade on Restoration	Annual Meeting of the Ecological Society of America <i>Montréal, Québec, Canada</i>
2021	Symposium - Soil Biodiversity from Research to Policy and Practice: Observations and Paths Forward from the UN FAO Report Co-organizer	Soil Science Society of America Annual Meeting <i>Salt Lake City, UT</i>
2019	Global Advances and Gaps in Soil Biodiversity Bach, E.M.; Pereg, L.; Wall, D.H.	Soil Science Society of America International Meeting <i>San Diego, CA</i>
2018	Integrating Disciplines to Assess Global Soil Biodiversity Bach, E.M.; Wall, D.H.	Ecological Society of America Annual Meeting <i>New Orleans, LA</i>
2017	2 nd Global Soil Biodiversity Conference Conference co-organizer	Global Soil Biodiversity Initiative & Chinese Academy of Science <i>Nanjing, China</i>
2017	Integrating Microbial Silos to Enhance Ecosystem Services (Ignite session) Bach, E.M.; Hofmockel, K.S.	Ecological Society of America Annual Meeting <i>Portland, OR</i>
2017	From microbes to moles: Diversity in soils support resilience in ecosystem services (Symposium) Bach, E.M.; Wall, D.H.	Ecological Society of America Annual Meeting <i>Portland, OR</i>
2016	Mainstreaming soil biodiversity into global biodiversity (Side Event) Bach, E.M.; Wall, D.H.	United Nations Convention on Biodiversity <i>Cancun, Mexico</i>
2016	Soil Microbes in Ecological Restoration (Symposium) Bach, E.M.; Bauer, J.T.; Koziol, L.	Midwest-Great Lakes Chapter of the Society for Ecological Restoration Annual Meeting <i>Bloomington, IN</i>

LEADERSHIP & MENTORING

Professional society offices held

2022-current	The Nature Conservancy in Illinois – Justice, Equity, Diversity, and Inclusion committee	Plan and lead 3 diversity/inclusion events per year for all staff
2021	Natural Areas Association Journal Review Task-force	Contributed recommendations on the NAA journal
2017-2018	Soil Science Society of America Early Career Task-Force	Planning 2019 SSSA meeting
2015	Natural Areas Association Journal Review Task-force	Contributed recommendations on the NAA journal
2013-2014	Vic-President, Iowa State University EEOB Graduate Student Organization	Organized native plant sale
2011-2014	President (2013-2014), Vice President (2011-2012), Iowa State University Graduate Research in Ecology and Evolutionary Biology Student Organization	Organized Spring Symposium including local and invited speakers

Graduate Student Committees

2024-present	Amiri, Anahit	Southern Illinois University - Carbondale
2024-present	McKenzie, Cullen	Southern Illinois University - Carbondale
2023-present	Berk, Samantha	Northern Illinois University
2022-present	Schultze, Jennifer	Southern Illinois University - Carbondale
2021-present	Spencer, Laurie	Northern Illinois University
2021-present	Galloway, Emily	Miami University
2020-2022	Foster, Nick	Northern Illinois University
2018-2021	Pischl, Phyllis	Northern Illinois University
2018-2020	Bergquist, Kiersten	Southern Illinois University – Carbondale

Students mentored

2024-current	The Nature Conservancy, Nachusa Grasslands	Kamal Ehrlich (MSc student), Northern Illinois University – co-advised with Dr. Holly Jones
2023	The Nature Conservancy, Nachusa Grasslands	Elizabeth Becker (MSc student), San Diego State University <i>Summer Science Fellowship 2023</i>
2022	The Nature Conservancy, Nachusa Grasslands	Andrew Davies (MSc student), Northwestern Illinois University <i>Summer Science Fellowship 2022</i>
2021	The Nature Conservancy, Nachusa Grasslands	Nick Foster (MSc student), Northern Illinois University <i>Summer Science Fellowship 2021</i>
2020-present	The Nature Conservancy, Nachusa Grasslands	Kathryn Bloodworth, UNC-Greensborough, <i>prescribed fire meta-analysis</i>
2020	The Nature Conservancy, Nachusa Grasslands	Erin Rowland (PhD student), Northern Illinois University <i>Summer Science Extern 2020</i>
2019	The Nature Conservancy, Nachusa Grasslands	Jenn Simons (MSc student), University of Wisconsin-Madison <i>Summer Science Extern 2019</i>
2014-2016	Miller Mycology Lab, Illinois Natural History Survey, University of Illinois	Hannah Wahl (MSc student), Daniel Raudabaugh (PhD student)
2010-2014	Iowa State University Microbial Ecology Lab	Rachael Upton (PhD student), Cassie Wattenburger (MSc student), Giselle Narvaez-Rivera (undergraduate), Kira Murray (undergraduate), Elyssa McFarland (undergraduate), Erin Frankson (undergraduate), Sara Sheiding (undergraduate), Violeta Anguiano (undergraduate)
2008-2009	Baer Lab, Southern Illinois University Carbondale	Kim Elsenbroek (undergraduate)

Students supervised

2010-2014	Iowa State University Microbial Ecology Lab	11 undergraduate students
2008-2009	Baer Lab, Southern Illinois University Carbondale	7 undergraduate students

OUTREACH PRODUCTS & MEDIA APPEARANCES (last 5 years)

2024	Want to make a difference? Try working at an environmental non-profit organization Nature
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2024 <https://www.nature.com/articles/d41586-024-01257-4>
 In Illinois, a hot summer sprint to perform IVF on fringed orchids
 WBEZ Chicago Public Radio
<https://www.wbez.org/parks-nature/2024/07/02/nachusa-grasslands-illinois-eastern-prairie-fringed-orchid-pollination-platanthera-leucophaea>

2024 Dogs Lend Their Noses to Find Turtles for Science
 The Nature Conservancy
<https://www.nature.org/en-us/about-us/where-we-work/united-states/illinois/stories-in-illinois/dogs-advancing-turtle-science/>

2024 Setting prairies ablaze in springtime is key to restoring damaged ecosystems, conservationists say
 Chicago Tribune – April 2, front page
<https://www.chicagotribune.com/2024/03/28/illinois-prairie-restoration/>

2023 Perspective: Burn it down! Then watch it grow.
 WNIJ Northern Public Radio
<https://www.northernpublicradio.org/wnij-news/2023-04-25/perspective-burn-it-down-then-watch-it-grow>

2023 Scientist at Nachusa Grasslands doing work to preserve prairie
 WREX Rockford, IL – NBC affiliate
https://www.wrex.com/news/featured-reports/scientist-at-nachusa-grasslands-doing-work-to-preserve-the-prairie/article_ae84f006-c43b-11ed-957b-ebb997a5b40c.html?utm_medium=social&utm_source=twitter_13WREX&sf176103627=1

2023 Bison and prescribed burns are critical to health of tallgrass prairie
 WBEZ Chicago Public Radio
<https://www.wbez.org/stories/bison-and-prescribed-burns-are-critical-to-health-of-tall-grass-prairie/a7f51d7b-931d-4fe8-9256-0c212eb1b87e>

2022 Behind the scenes at Nachusa Grasslands
 Chicago Tribune – Oct. 18 front page
<https://www.chicagotribune.com/news/environment/ct-nachusa-grasslands-behind-the-scenes-20221018-ok5ccslaefaavpagiupbornwaa-story.html>

2022 Perspective: Volunteer for nature
 WNIJ Northern Public Radio
<https://www.northernpublicradio.org/wnij-news/2022-06-22/perspective-volunteer-for-nature>

2022 Perspective: A prescription for fire
 WNIJ Northern Public Radio
<https://www.northernpublicradio.org/wnij-news/2022-03-29/perspective-a-prescription-for-fire>

2021 YouTube video: Twenty years of tallgrass prairie restoration at Nachusa Grasslands
<https://www.youtube.com/watch?v=C131PiiHQcs>

2021 Bison: Conserving a species and an ecosystem – Webinar from The Nature Conservancy in Illinois
<https://www.facebook.com/TheNatureConservancyIllinois/videos/bison-conserving-a-species-and-an-ecosystem/472202997388970>

2021 The Applied Ecologist: Twenty years of tallgrass prairie restoration in Northern Illinois, USA
<https://appliedecologistsblog.com/2021/12/07/twenty-years-of-tallgrass-prairie-restoration-in-northern-illinois-usa/>

2021 Outdoor Illinois: Twenty years of plant monitoring at Nachusa Grasslands
<https://oi.wildlifeillinois.org/articles/twenty-years-of-plant-monitoring-at-nachusa-grasslands>

PROFESSIONAL ASSOCIATIONS

2024-present Natural Areas Association

2020-present British Ecological Society
2009-present Soil Ecology Society
2007-present Society for Ecological Restoration
2007-present Ecological Society of America