

# Stephanie N Kivlin

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## Professional Appointments

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Assistant Professor  
University of Tennessee, Knoxville, TN

January 2018-

Postdoctoral Researcher  
University of New Mexico, Albuquerque, NM  
Advisor: Jennifer Rudgers

August 2015-December 2017

Postdoctoral Researcher  
University of Texas, Austin, TX  
Advisor: Christine Hawkes

May 2012-August 2015

## Education

Ph.D. Ecology and Evolutionary Biology  
University of California - Irvine, Irvine, CA  
Advisor: Kathleen Treseder

May 2012

B.S. Microbiology and Ecology, Evolution, & Behavior  
University of Texas, Austin, TX  
Departmental Honors  
Thesis advisor: Christine Hawkes

December 2007

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## Research Grants and Fellowships

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\* Undergraduate student, † Graduate student, ‡ Postdoctoral Researcher

### Active Funding

2022-2027	\$3,585,809	NSF: Integrative Biology: <i>The potential for mutualism reorganization in the Anthropocene</i> . S. Kalisz (PI), <b>S.N. Kivlin (co-PI)</b> and N.G. Smith (PI). <i>UTK Share: \$2,332,789</i>
2021-2024	\$996,998	DOE: <i>Potential for advanced snowmelt timing and summer drought to decouple plant and mycorrhizal fungal phenology and biogeochemical cycling</i> . <b>S.N. Kivlin (PI)</b> , Co-PIs A.T. Classen (co-PI), P. Sorenson (co-PI), E.L. Brodie (co-PI), H. Steltzer (co-PI), D. Inouye (co-PI), and B.N. Sulman (co-PI). <i>UTK Share: \$566,576</i>

2021-2024	\$1,266,589	NSF Macrosystems Biology: <i>Linking plant and mycorrhizal fungal communities across scales</i> . S. Fei (PI), R. Phillips (co-PI), <b>S.N. Kivlin (co-PI)</b> , John Parker (co-PI), and Grant Domke (co-PI). <i>UTK Share: \$531,974</i>
2020-2022	\$22,791	NSF Supplemental Request: <i>Impacts of long-term warming on plant and microbial control of soil carbon cycling</i> . <b>S.N. Kivlin (PI)</b>
2019-2023	\$500,000	USDA: <i>Optimizing plant-soil microbial interactions through crop diversification to enhance sustainability in southeastern croplands</i> . S. Jagadamma (PI), J. Lee (co-PI), <b>S.N. Kivlin (co-PI)</b> , A. McClure (co-PI), L. Duncan (co-PI). <i>UTK Share: \$150,500</i>
2019-2022	\$190,345	NSF SG: <i>Impacts of long-term warming on plant and microbial control of soil carbon cycling</i> . <b>S.N. Kivlin (PI)</b> and L. Souza (co-PI) <i>UTK Share: \$178,500</i>
<b>Completed Funding</b>		
2021	\$692,495	NSF MRI: <i>Acquisition of an Illumina NovaSeq 6000 to support high-throughput sequencing collaborative research and integrated training</i> . F. Loeffler (PI), <b>S.N. Kivlin (co-PI)</b> , J. Beever (co-PI), M. Staton (co-PI), and S Ripp (co-PI).
2020	\$14,350	Texas Ecological Laboratory: <i>Characterizing interannual shifts in fungal leaf symbionts across environmental and biotic gradients in Texas grasslands</i> . <b>S.N. Kivlin (PI)</b>
2019	\$110,334	UTK SARIF: <i>Replacement of the EEB Bioinformatics Data Analysis Server</i> . E.P. Derryberry (PI), <b>S.N. Kivlin (co-PI)</b> , M. Papes (co-PI), and B. O'Meara (co-PI).
2019	\$12,944	Texas Ecological Laboratory: <i>Characterizing interannual shifts in fungal symbionts across environmental and biotic gradients in Texas grasslands</i> . <b>S.N. Kivlin (PI)</b>
2019	\$5,655	NIMBioS Working Group: <i>Creating a framework to interpret and model plant and mycorrhizal fungal traits at the global scale</i> . <b>S.N. Kivlin (PI)</b> , C. Iversen (co-PI), A.E. Zanne (co-PI).
2018	~\$55,000	DOE JGI: <i>Utilizing microbial functional response to follow soil carbon and nutrient cycling recovery and resilience following the November 2016 fire in the Great Smoky Mountains National Park</i> . K. Hughes (PI) and <b>S.N. Kivlin (co-PI)</b> .
2018	\$8,875	Texas Ecological Laboratory: <i>Characterizing arbuscular mycorrhizal fungi across environmental and biotic gradients in Texas grasslands</i> . <b>S.N. Kivlin (PI)</b>
2018	\$498	Breedlove, Dennis Award, UTK. <i>The effects of chronic urbanization and fire on belowground plant-fungal</i>

2018	\$294	<i>symbioses in the Great Smoky Mountains National Park.</i> V.R. Harpe* (PI) and <b>S.N. Kivlin (faculty advisor)</b>
2018	~\$55,000	Breedlove, Dennis Award, UTK. <i>The effects of chronic urbanization and fire on aboveground plant-fungal symbioses in the Great Smoky Mountains National Park.</i> J. Turner* (PI) and <b>S.N. Kivlin (faculty advisor)</b>
2018	~\$55,000	Department of Energy Joint Genomes Institute Community Science Program: <i>Plant-fungal symbiont decoupling affects soil carbon-degrading gene expression.</i> M. Mann <sup>†</sup> (PI), <b>S.N. Kivlin (co-PI)</b> , J.A.M Moore <sup>‡</sup> (co-PI) and J.A. Rudgers (co-PI).
2018	~\$55,000	DOE Joint Genomes Institute Community Science Program: <i>Microbial contributions to soil carbon storage under long-term warming.</i> <b>S.N. Kivlin (PI)</b> , J.A.M. Moore <sup>‡</sup> (co-PI), J. Harte (co-PI), and J.A. Rudgers (co-PI)
2018	\$3,500	RMBL Research Fellowship: <i>Connecting Microbial Composition Responses Observed in EcosystemS (MICROBES) to long-term soil carbon cycling under global change.</i> <b>S.N. Kivlin (PI)</b>
2015 - 2017	\$98,090	NIH: CETI Pilot Program <i>How does climate change alter the activities of pathogens and symbionts to affect host health?</i> J.A. Rudgers (PI), <b>S.N. Kivlin (co-PI)</b> , and M.E. Kazenel (co-PI)
2014 - 2017	\$829,482	NSF DEB <i>The potential for climate-induced disruption of plant-microbe symbioses along altitudinal gradients.</i> J.A. Rudgers (PI), D.L. Taylor (co-PI) <b>S.N. Kivlin (senior personnel)</b> , R.L. Sinsabaugh (co-PI), and J. Harte (co-PI).
2010 - 2012	\$111,000	EPA Science To Achieve Results Fellowship: <i>How well can fungi migrate under a changing climate?</i>
2009	\$2,500	UC Reserves System: Mildred Mathias Grant
2006 - 2007	\$1,000	University of Texas Co-op Society: Undergraduate research fellowship
2005	\$3,000	University of Texas Co-op Society: GOES Scholarship

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## Notable Awards

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2022	University of Tennessee, College of Arts and Sciences Mid-Career Research Award
2013	FESIN: Postdoctoral travel award
2011	ESA Microbial Ecology Section: Graduate travel award
2010	NSF Graduate Research Fellowship: Honorable mention
2009	NSF Graduate Research Fellowship: Honorable mention
2008	ESA Microbial Ecology Section: Undergraduate travel award

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## Publications

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\* Undergraduate student, † Graduate student, ‡ Postdoctoral Researcher

**Citations: 2937, h-index: 23, i10-index: 38**

### Manuscripts in review

Singh, S.<sup>†</sup>, M. Mayes, **S.N. Kivlin** and S. Jagadamma. How Birch effect differs in mechanisms and magnitudes due to soil texture. *Global Change Biology*

Lang, A.<sup>‡</sup>, E.A. LaRue, **S.N. Kivlin**, J. Edwards, R. Phillips, J. Gallion, N. Kong, J.D. Parker, M.K. McCormick, G. Domke, and S. Fei. Forest structural diversity is linked to soil microbial diversity. *New Phytologist*.

Hughes K.W., J.A. Franklin, J.A. Schweitzer, **S.N. Kivlin**, A. Case\*, M. Aldrovandi, P.B. Matheny, and A.N. Miller. Post-fire oak mycorrhizal associations are dominated by *Russula*, *Laccaria*, and *Thelephora/Tomentella* but not *Cortinarius*. *Fire Ecology*.

Roche, M.D.<sup>†</sup>, I. Pearse, H. Sofaer, G. Spyreas, **S.N. Kivlin**, and S. Kalisz. Mutualism disruption: Physiological mechanism of invasion impact is evident across heterogeneous environmental conditions and varying invasion intensity. *Ecography*

Trautwig A.N.<sup>†</sup>, M.R. Jackson<sup>†</sup>, **S.N. Kivlin**, and K.A. Stinson. Reviewing ecological implications of mycorrhizal fungal interactions in the Brassicaceae. *AOB Plants*

Aguilar-Trigueros, C.A., W.K. Cornwell, F. Krah, M.C. Rillig, N. Abrego, C.J. Andrew, C. Bassler, B. Chaudhary, J. Heilmann-Clausen, S. Hempel, H. Kauserud, **S.N. Kivlin**, J. Purhonen, A. Zanne, and J. Powell. Biogeographical drivers of offspring size and shape for an entire Kingdom. *PNAS*

### Published Manuscripts

(53) Wooliver, R.<sup>‡</sup>, **S.N. Kivlin**, and S. Jagadamma. 2022. Links among crop diversity, microbial diversity, and soil organic carbon: Mini review and case studies. *Frontiers in Microbiology* 13:854247.

(52) **Kivlin S.N.**, M. Mann<sup>†</sup>, J.S. Lynn<sup>†</sup>, M. Kazenel<sup>†</sup>, D.L. Taylor, and J.A. Rudgers. 2022. Grass identity shapes fungal symbiont composition across six steep altitudinal gradients. *ISME Communications* 2:1-11.

(51) Fei, S, **S.N. Kivlin**, G. Domke, I. Jo, E. LaRue, and R.P. Phillips. 2022. Impacts of global change on the coupling of plant and mycorrhizal fungal associations. *New Phytologist* 234:1960-1966.

(50) **Kivlin S.N.**, V.R. Harpe\*, J.H. Turner\*, J.A.M. Moore<sup>‡</sup>, L.C. Moorhead<sup>‡</sup>, K. K. Beals<sup>†</sup>, M.M. Hubert<sup>†</sup>, M. Papes, and J.A. Schweitzer. 2021. Arbuscular mycorrhizal fungal response to fire and urbanization in the Great Smoky Mountains National Park. *Elementa: Science of the Anthropocene* 9:00037.

(49) Gabor, C. **S.N. Kivlin**, J. Hua, N. Bickford, and T. Wright. 2021. Understanding organismal capacity to respond to anthropogenic change: Barriers and solutions. *Integrative and Comparative Biology* 61:2132-2144.

(48) Yaffar D.<sup>†</sup>, C.E. Defrenne<sup>‡</sup>, K.G. Cabugao<sup>‡</sup>, J. Child, N. Carvajal, **S.N. Kivlin**, and R.J. Norby. 2021. Root trait strategies related to phosphorus acquisition in five tropical species of Puerto Rico. *Frontiers in Forest Ecology* 4:698191.

(47) Singh, S.<sup>†</sup>, S. Jagadamma, J. Liang, **S.N. Kivlin**, J.D. Wood, G. Wang, C.W. Schadt, J.I. DuPont, P. Gowda, and M. Mayes. 2021. Soil moisture sensitivity on microbial processing of soil organic carbon in different textured soils. *Frontiers in Environmental Science* 9:682450.

(46) Singh S.<sup>†</sup>, M.A. Mayes, A. Shekoofa, **S.N. Kivlin**, S. Bansal, and S. Jagadamma. In press. 2021. The influence of field soil water variation on microbial mineralization of soil organic carbon. *Scientific Reports* 11:1-13.

(45) **Kivlin S.N.**, C.V. Hawkes, M. Papes, K.K. Treseder, and C. Averill. 2021. The future of microbial ecological niche theory and modeling. *New Phytologist* 231:508-511.

(44) **Kivlin S.N.**, A.P. Smith, B.N. Sulman, and E. Buscardo. 2021. Editorial: When and where do mycorrhizal fungi predict ecosystem biogeochemical cycles and recovery from disturbance? *Frontiers in Forests and Global Change* 4:33.

(43) Dickey, J.R.<sup>†</sup>, R. Swenie<sup>†</sup>, S. Turner<sup>†</sup>, C.C. Winfrey<sup>†</sup>, D. Yaffar<sup>†</sup>, A Padukone<sup>†</sup>, K. K. Beals<sup>†</sup>, K.S. Sheldon, and **S.N. Kivlin**. 2021. Do microorganisms obey macroecological rules? *Frontiers in Ecology and Evolution* 9:196.

(42) Defrenne, C.E.<sup>‡</sup>, E. Abs<sup>‡</sup>, A. Corderio<sup>†</sup>, L. Dietterich<sup>‡</sup>, M. Hough<sup>‡</sup>, J. Jones<sup>‡</sup>, **S.N. Kivlin**, W. Chen, D. Cusack, A. Franco, A. Khasanova, D. Stover and A.L. Romero-Olivares. 2021. The Ecology Underground Coalition: Building a collaborative future of belowground ecology and ecologists. *New Phytologist* 229:3058-3064.

(41) Bialic-Murphy, L.<sup>‡</sup>, N.G. Smith, P. Voothuluru<sup>‡</sup>, R. McElderry<sup>‡</sup>, M. Roche<sup>†</sup>, S. Cassidy<sup>†</sup>, **S.N. Kivlin**, and S. Kalisz. 2021. Invasion-induced root-fungal disruptions alter native plant physiology, carbon and nitrogen use efficiencies, and performance. *Ecology Letters* 24:1145-1156.

(40) Kalisz S., **S.N. Kivlin**, and L. Bialic-Murphy<sup>‡</sup>. 2021. Allelopathy is pervasive in invasive plants. *Biological Invasions* 23:367-371.

- (39) Roche M.<sup>†</sup>, I. Pearse, L. Bialic-Murphy<sup>‡</sup>, **S.N. Kivlin**, H. Sofaer, and S. Kalisz. 2021. Negative effects of an allelopathic invader on individual AM fungal plant species scale to community-level responses. *Ecology* 102:e03201.
- (38) Lyons, K.G., J.A. Rudgers, D.L. Taylor, **S.N. Kivlin**, M. Mann<sup>†</sup>, M. Lenihan\*, O. Royball\*, K. Carroll\*, and K. Keynoso\*. 2021. Culturable root endophytes under experimental warming and along elevational gradients in the Rocky Mountains. *Fungal Ecology* 49:101002.
- (37) Rudgers, J.A., M.E. Afkhami, L. Bell-Dereske<sup>‡</sup>, Y. A. Chung, K. Crawford, **S.N. Kivlin**, M. Mann<sup>†</sup>, and M. Nunez. 2020. Climate disruption of plant-microbe interactions. *Annual Reviews in Ecology, Evolution and Systematics* 51:561-586.
- (36) Kokkoris, V., P.M. Antunes, C. Fahey<sup>‡</sup>, J. Fordyce, **S.N. Kivlin**, Y. Lekberg and M.M. Hart. 2020. Covariation between plant and arbuscular mycorrhizal fungal communities: what is the evidence? *New Phytologist* 228:828-838.
- (35) **Kivlin, S.N.** 2020. Global mycorrhizal fungal range sizes vary within and among mycorrhizal guilds but are not correlated with dispersal traits. *Journal of Biogeography* 47:1994-2001.
- (34) Beals, K.K.<sup>†</sup>, J.A.M. Moore<sup>‡</sup>, **S.N. Kivlin**, S.L.J. Bayliss<sup>†</sup>, C.Y. Lumibao<sup>‡</sup>, L.C. Moorhead<sup>‡</sup>, M. Patel<sup>†</sup>, J.L. Summers<sup>†</sup>, I.M. Ware<sup>†</sup>, J.K. Bailey, and J.A. Schweitzer. 2020. Predicting plant-soil feedback in the field: competitive interactions affect growth more than stress or disturbance. *Frontiers in Ecology and Evolution* 8:191.
- (33) Hughes, K.W., A. Case\*, P.B. Matheny, **S.N. Kivlin**, R.H. Petersen, A.N. Miller, and T. Iturriaga. 2020. Secret lifestyles of the post-fire fungus *Sphaerospora*. *American Journal of Botany* 107:876-885. \*\* *Featured on cover*
- (32) Hawkes C.V., M. Shinada\*, and **S.N. Kivlin**. 2020. Historical climate legacies on soil respiration persist despite 4 years of extreme change in rainfall. *Soil Biology and Biochemistry* 143:107752. \*\* *Editor's Choice Article of the Year*
- (31) **Kivlin, S.N.** and C.V. Hawkes. 2020. Spatial and temporal turnover of soil microbial communities is not linked to function in a primary tropical forest. *Ecology* 101:e02985.
- (30) **Kivlin, S.N.**, S. Fei, S. Kalisz, and C. Averill. 2020. Microbial Ecology meets Macroecology: Developing a process-based understanding of microbial role in global ecosystems. *Bulletin of the Ecological Society of America* e01645.

- (29) Tipton, L.<sup>‡</sup>, G. Zahn<sup>‡</sup>, E. Datlof<sup>†</sup>, **S.N. Kivlin**, P. Sheridan, A.S. Amend, and N.A. Hynson. 2019. Fungal aerobiota communities are unaffected by environmental conditions over a thirteen-year time series from Mauna Loa Observatory. *Proceedings of the National Academy of Sciences* 116:25728-25733.
- (28) Averill, C., J.M.T. Bhatnagar, M. Dietz, W.D. Pearce, and **S.N. Kivlin**. 2019. Global imprint of plant mycorrhizal associations on plant nutrient use efficiency traits. *Proceedings of the National Academy of Sciences* 116:23163-23168.
- (27) Lynn, J.S.<sup>†</sup>, M.R. Kazenel<sup>†</sup>, **S.N. Kivlin**, and J.A. Rudgers. 2019 Context-dependent biotic interactions predict plant abundance across steep environmental gradients. *Ecography* 42:1600-1612.
- (26) Kazenel, M.R.<sup>†</sup>, **S.N. Kivlin**, J.S. Lynn<sup>†</sup>, D.L. Taylor, and J.A. Rudgers. 2019. Altitudinal gradients do not predict responses of plant symbionts to experimental warming. *Ecology* 100:e02740.
- (25) **Kivlin, S.N.**, M.R. Kazenel<sup>†</sup>, J.S. Lynn<sup>†</sup>, D.L. Taylor, and J.A. Rudgers. 2019. Plant identity influences foliar endophytes more than elevation in the Colorado Rocky Mountains. *Microbial Ecology* 78:688-698.
- (24) Sulman, B.N., E. Shevliakova, E.R. Brzostek, **S.N. Kivlin**, S. Malyshev, D.N.L. Menge, and X. Zhang. 2019. Diversity in nitrogen acquisition strategies enables enhanced terrestrial carbon storage. *Global Biogeochemical Cycles* 33:501-523.  
 \*\* Top 10 Downloaded Article of the Year
- (23) **Kivlin, S.N.**, R.A. Bedoya, and C.V. Hawkes. 2018. Heterogeneity in arbuscular mycorrhizal fungal communities may contribute to inconsistent plant-soil feedback in Neotropical rainforests. *Plant and Soil* 432:29-44.
- (22) Sulman, B.N., J.A.M. Moore<sup>‡</sup>, R. Abramoff, C. Averill, **S.N. Kivlin**, K. Georgiou, B. Sridhar, M. Hartman, G. Wang, W.R. Wieder, M.A. Bradford, Y. Luo, M. Mayes, E. Morrison, W.J. Riley, A. Salazar, J.P. Schimel, J. Tang, and A.T. Classen. 2018. Multiple models and experiments underscore large uncertainty in soil carbon dynamics. *Biogeochemistry* 141:109-123.
- (21) Lekberg, Y., J.D. Bever, R.A. Bunn, R.M. Calaway, M.M. Hart, **S.N. Kivlin**, J.N. Klironomos, B.G. Larkin, J.L. Maron, K.O. Reinhart, M. Remke, and W.H. van der Putten. 2018. Relative importance of competition and plant soil feedbacks, their context dependency and implications for coexistence. *Ecology Letters* 21: 1268-1281.
- (20) Russell, A.E., **S.N. Kivlin** and C.V. Hawkes. 2018. Tropical tree species effects on soil pH and biotic factors and the consequence for macroaggregate dynamics. *Forests* 9: 184.

- (19) **Kivlin, S.N.**, J.S. Lynn<sup>†</sup>, M.R. Kazenel<sup>†</sup>, K.K. Beals<sup>†</sup>, and J.A. Rudgers. 2017. Biogeography of plant-associated fungal symbionts in mountain ecosystems: A meta-analysis. *Diversity and Distributions* 23: 1067-1077.
- (18) Hawkes, C.V., B.G. Waring, J.D. Rocca, and **S.N. Kivlin**. 2017. Historical climate controls soil respiration responses to soil moisture. *Proceedings of the National Academy of Sciences* 114: 6322-6327.
- (17) Bell-Dereske, L.<sup>†</sup>, C. Vesbach, **S.N. Kivlin**, S.M. Emery, and J.A. Rudgers. 2017. A leaf endophyte alters belowground microbial communities in Great Lakes dunes. *FEMS Microbiology Ecology* 93: fix036.
- (16) **Kivlin, S.N.** and C.V. Hawkes. 2016. Tree species, spatial heterogeneity, and seasonality drive soil fungal abundance, richness, and composition in Neotropical rainforests. *Environmental Microbiology* 18(12): 4662-4673.
- (15) **Kivlin, S.N.** and C.V. Hawkes. 2016. Temporal and spatial variation of soil bacteria richness, composition, and function in a Neotropical rainforest. *PLoS ONE* 11(7): e0159131.
- (14) Ranelli, L.B.\* , W. Hendricks\*, J.S. Lynn<sup>†</sup>, **S.N. Kivlin**, and J.A. Rudgers. 2015. Biotic and abiotic predictors of fungal symbiont distributions in grasses of the Colorado Rockies. *Diversity and Distributions* 21: 962-976.
- (13) **Kivlin, S.N.** and K.K. Treseder. (invited) 2015. Initial phylogenetic relatedness of saprotrophic fungal communities affects subsequent litter decomposition rates. *Microbial Ecology* 69: 748-757.
- (12) **Kivlin, S.N.**, G.C. Winston, M.L. Goulden, and K.K. Treseder. (invited) 2014. Environmental filtering affects soil fungal community composition more than dispersal limitation at regional scales. *Fungal Ecology* 12: 14-25.
- (11) Rudgers, J.A., **S.N. Kivlin**, K.D. Whitney, M.V. Price, N.M. Waser, and J. Harte. 2014. Responses of high-altitude graminoids and soil fungi to 20 years of experimental warming. *Ecology* 95: 1918-1928.
- (10) **Kivlin, S.N.** and K.K. Treseder. (invited) 2014. Soil extracellular enzyme activities correspond with abiotic factors more than fungal community composition. *Biogeochemistry* 117: 23-97.
- (9) **Kivlin, S.N.**, B.G. Waring<sup>†</sup>, C. Averill<sup>†</sup>, and C.V. Hawkes. (invited commentary) 2013. Tradeoffs in microbial carbon allocation may mediate soil carbon storage in future climates. *Frontiers in Terrestrial Microbiology* 4: 261.
- (8) **Kivlin, S.N.**, S.M. Emery, and J.A. Rudgers. (invited) 2013. Fungal symbionts alter plant responses to global change. *American Journal of Botany* 100: 1445-1457.



- (7) Hawkes, C.V., **S.N. Kivlin**, J. Du\*, and V.E. Eviner. 2013. The temporal development and additivity of plant-soil feedback in perennial grasses. *Plant and Soil* 369: 141-150.
- (6) Worchel, E.R.<sup>†</sup>, H.E. Giauque<sup>†</sup>, and **S.N. Kivlin**. 2013. Fungal symbionts alter plant drought response. *Microbial Ecology* 65: 671-678.
- (5) Todd-Brown, K., F. Hopkins, **S.N. Kivlin**, J.M. Talbot, and S.D. Allison. 2012. A framework for representing microbial decomposition in coupled climate models. *Biogeochemistry* 109: 19-33.
- (4) **Kivlin, S.N.**, C.V. Hawkes, and K.K. Treseder. 2011. Global diversity and distribution of arbuscular mycorrhizal fungi. *Soil Biology and Biochemistry* 43: 2294-2303.
- (3) Treseder, K.K., **S.N. Kivlin**, and C.V. Hawkes. 2011. Evolutionary trade-offs among decomposers may constrain responses to nitrogen. *Ecology Letters* 14: 933-938.
- (2) Hawkes, C.V., **S.N. Kivlin**, J.D. Rocca, V. Huguet, M.A. Thomsen, and K.B. Suttle. 2011. Fungal community responses to precipitation. *Global Change Biology* 17: 1637-1645.
- (1) **Kivlin, S.N.** and C.V. Hawkes. 2011. Differentiating between effects of invasion and diversity: impacts of aboveground plant communities on belowground fungal communities. *New Phytologist* 189: 526-535

## Book Chapters

- (2) **Kivlin, S.N.** and J.A. Rudgers. 2019. Effects of warming on fungal leaf endophytes: impacts on physiology, species richness, and composition. In J. Mohan (Ed.) *Ecosystem Consequences of Soil Warming*. Elsevier.
- (1) **Kivlin, S.N.**, R. Muscarella, C.V. Hawkes, and K.K. Treseder. 2017. The predictive power of ecological niche models for global arbuscular mycorrhizal fungal biogeography. In L. Tedersoo (Ed.) *Biogeography of Mycorrhizal Symbiosis*. Springer-Verlag.

## Other Publications

- (1) Gabor, C. **S.N. Kivlin**, J. Hua, N. Bickford, and T. Wright. 2019. Understanding organismal capacity to respond to anthropogenic change: Barriers and solutions. NSF White Paper for Reintegrating Biology.

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## Invited Seminars and Conference Presentations

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Colorado State University, Biology Department, Fort Collins, CO	2023
North Carolina State University, Dept. of Plant and Microbiology	2022
The Global Soil Biodiversity Initiative. Remote	2022
International Conference on Mycorrhizas 11, Beijing, China. Remote	2022
International Union on Microbiomes, Rotterdam, Netherlands. Remote	2022
University of Texas, Austin, Dept. of Integrative Biology, Austin, TX	2022
Fifth Traits Workshop, Keynote Speaker, Knoxville, TN	2022
University of Montreal. Remote	2021
Swedish University of Agricultural Sciences. Remote	2021
DOE Watershed SFA All Hands Meeting. Remote	2021
ETH Zurich, Global Ecology Group. Zurich, Switzerland	2021
University of Hawaii, Manoa, Fungal Ecology Group. Manoa, HI	2021
Univ. of California, Riverside, Dept. of Plant Pathology. Riverside, CA	2020
Purdue University, Dept of Forestry. West Lafayette, IN	2020
Indiana University, Dept. of Biology. Bloomington, IN	2020
University of New Hampshire. Dept. of Natural Resources. Durham, NH	2019
Kellogg Biological Station. Hickory Corners, MI	2019
Army Research Laboratory. Adelphi, MD	2019
Ecological Society of America Conference. Louisville, KY	2019
ASM Meeting. San Francisco, CA	2019
University of Louisville, Department of Biology. Louisville, KY	2019
UTK Plant Research Council. Knoxville, TN	2019
SSSA International Soils Meeting. San Diego, CA	2019
Mississippi State University, Biological Sciences. Starkville, MS	2018
Trinity University, Department of Biology. San Antonio, TX	2017
Ecological Society of America Conference. Portland, OR	2017
University of Maryland, Department of Biology. College Park, MD	2017
University of Georgia, Department of Plant Biology. Athens, GA	2017
University of Tennessee, Ecology and Evolutionary Biology. Knoxville, TN	2017
Mycological Society of America Conference. Berkeley, CA	2016
University of Texas, Department of Integrative Biology. Austin, TX	2016
Baylor University, Department of Biology. Waco, TX	2013
Mycological Society of America Conference. Austin, TX	2013
Association for Tropical Biology and Conservation. San Jose, Costa Rica	2013
University of Texas -Tyler, Department of Biology. Tyler, TX	2012

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## Invited and Organized Symposia and Working Groups

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Linking macroecology and macroevolution. NSF-funded working Group: Co-organizer.	2022
Ecology Underground Live webinar to complete virtual Ecological	2020

Society of America meeting: Co-organizer.	
NIMBioS Plant-fungal trait working group: Organizer.	2020
Ecological Society of America: Co-organizer: Ignite Symposium: <i>Harnessing the data revolution to link soil ecology and Earth System Models.</i>	2020
American Society of Naturalists: Co-organizer: Keynote Symposium. <i>Predicting population persistence and coexistence in the Anthropocene</i>	2020
Ecological Society of America: Co-organizer: Symposium. <i>Understanding macroecological rules of microbial distributions and their consequences for ecosystems.</i>	2019
INTERFACE working group to integrate microbial composition into carbon cycling models. (invited)	2017
MPG Ranch working group to create a conceptual framework for plant soil feedback under global change. (invited)	2016
INTERFACE working group to integrate microbial composition into carbon cycling models. (invited)	2016
Ecological Society of America: Moderator and Co-organizer: organized oral session. <i>Contributions of plant-soil feedback to coexistence.</i>	2015
Enzymes in the environments Research Coordination Network <i>Linking microbial composition and ecosystem function.</i> (invited)	2012
Ecological Society of America: Co-organizer: organized oral session <i>Linking microbial function and soil moisture.</i>	2011

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## Teaching Experience

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Lecturer	Univ. Tennessee	Core Ecology (Graduate)	Fall 2022
Lecturer	Univ. Tennessee	Advanced Bioinformatics	Fall 2021
Lecturer	Univ. Tennessee	General Ecology	Fall 2020
Lecturer	Univ. Tennessee	Macroecology	Fall 2019, Sp 2020
Lecturer	Univ. Tennessee	Ecosystem Ecology	Spring 2018-2022
Lecturer	Univ. Tennessee	Ecosystem Ecology Lab	Spring 2018
Guest lecturer	Univ. Texas	Microbial Ecology	Spring 2013-2017
Teaching Assistant	Univ. CA-Irvine	Host-Parasite Coevolution	Fall 2010
Teaching Assistant	Univ. CA-Irvine	Organisms to Ecosystems	Spring 2009
Teaching Assistant	Univ. CA-Irvine	Field Ecology Methods	Winter 2009
Teaching Assistant	Univ. CA-Irvine	Intro to Scientific Writing	Fall 2009

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## Mentoring

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### Postdoctoral researchers

Jessica Moore (2018-2019), Leigh Moorhead (2018-2019), Lalasia Bialic-Murphy (2020), Rachel Wooliver (2020-), Joe Edwards (2022-), Hannah Shulman (2022-)

### Graduate Students

Abigail Ireland: co-advised with Karen Hughes (2020 -)

Caitlin Barnes: co-advised with Joe Bailey (2021-)

Tyler d'Entremont (2022-)

Ella Segal (2022-)

### Graduate student committees

Daniela Yaffar (2018-2020), Morgan Roche (2018-2020), Shikha Singh (2019-2020), Jacob Moutouama (2018-), Kyla Linn (2019-2022), Alex Neild (2021-2022), Sarah Love (2020-), Sophia Turner (2020-), Elliot Goldstein (2020-2022), Chance Noffsinger (2021-), Sarah Ortiz, UT-Austin (2021-), Zhixu Lu (2021-), Marisol Sanchez-Julia, Tulane (2022-), Django Grootmeyer (2022-).

### Undergraduate students mentored

University of Tennessee	Brandt Tate, Emily Price, Rosy Harpe (Breedlove-Dennis Funding, Honors Thesis), Jackson Turner (Breedlove-Dennis Funding, EuReCa Honors, Honors Thesis), Morgan Tate, Caleb Keoho (SURIP; Honors Thesis), Keilah Carter (SURIP; Breedlove-Dennis Funding), Nicholas Kiss, Preston Youn, Steven Thomas, Xavier Esslinger (SURIP), Taylor Baxter, Chris Hussey, Kaitlyn Loveday (DAR Fellow, SURIP)
University of New Mexico Rocky Mountain Biological Laboratory	Katherine Anderson Luciana Ranelli (REU), Will Hendricks, Kari Clausen (REU), Drew Freed (REU), Nikki Silva (REU), Ian McCowen (REU), Will Thomas (REU)
University of Texas	Wayne Baumier, Alyssa Hanson, Allison Harvey, Mio Shinada
University of CA-Irvine	Michelle Gonzalez, Amy Chan, Charmaine Doan, Nicole Farr, Bettina Ho

### High school students mentored

Bowie High School	Liam Fredlund
Austin High School	Rebecca Martinez

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## Professional Service

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### Associate Editor

Elementa: Earth and Ecosystem Science  
Global Ecology and Biogeography

### Guest Editor

Frontiers in Forests and Global Change  
PLoS ONE

### Grant panel review

Department of Energy Terrestrial Ecosystem Science: Tropical Ecosystems, Above-Belowground Interactions, Small Business Innovation and Research  
National Science Foundation: Rules of Life, Postdoctoral Fellowship

### Ad-hoc grant review

National Science Foundation DEB: CAREER, Ecosystem Science, Integrative Organismal Systems, Plant Biotic Interactions Program, Polar Programs, Population and Community Ecology, Small Business Innovation Research (SBIR)  
Vienna Science and Technology Fund  
German-Israeli Foundation for Scientific Research and Development  
Netherlands Organisation of Scientific Research: Earth and Life Sciences  
The J. William Fulbright Commission  
European Research Council  
Mexican Research Council: Conacyt  
Swiss National Science Foundation: Ambizione  
Czech Science Foundation

### Book review

Elsevier Soil Science Series

### Manuscript review

Applied and Environmental Microbiology, Applied Soil Ecology, Axios, Biogeochemistry, Biological Invasions, Biology Letters, Biotropica, Botany, Communications Earth and Environment, Conservation Biology, Current Microbiology, Diversity and Distributions, Ecological Applications, Ecological Complexity, Ecological Monographs, Ecology, Ecology Letters, Ecosystems, Environmental Microbiology, European Journal of Forest Research, FEMS Microbiology Ecology, Frontiers in Terrestrial Microbiology, Functional Ecology, Fungal Biology, Fungal Diversity, Fungal Ecology, Global Change Biology, The ISME Journal, Journal of Arid Environments, Journal of Biogeography, Journal of Ecology, Journal of Experimental Botany, Journal of Visualized Experiments, mBio, Microbial Ecology, Molecular Ecology, mSphere, mSystems, Mycologia, Mycorrhiza, Nature Communications, Nature Ecology and Evolution, New Phytologist, Oecologia, Oikos, Pedosphere, Plant and Soil, Plant Ecology, PLoS One, Proceedings of the National Academy of Sciences, Proceedings of the Royal Society B, Scientific Reports,

Soil Biology and Biochemistry, South African Journal of Botany, Tree Physiology.

### **Professional Society Service**

Ecological Society of America Soil Ecology Section Vice President (2021-)

Ecological Society of America Soil Ecology Section Secretary (2019-2021)

Ecological Society of America Student Section: Local Host for Austin Conference. (2011)

Ecological Society of America Student Section: Women and Minorities Chair (2009-2011)

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### **Professional Society Membership**

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Ecological Society of America  
Mycological Society of America  
Society of Conservation Biology

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### **Contributed Presentations**

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R. Wooliver<sup>‡</sup>, **S.N. Kivlin**, A. McClure, J. Lee, and S. Jagadamma. Outcomes of crop diversification for soil microbial communities, soil health, and crop yields. 2021. SSSA Conference.

S. Singh<sup>†</sup>, M.A. Mayes, S. Jagadamma, **S.N. Kivlin**, C. Schadt, J. Phillips, and A. Shekoofa. 2021. Changes in soil microbial community and function with changes in soil moisture and texture. DOE Conference, Washington DC.

M.A. Mann, J.A. Rudgers, **S.N. Kivlin** and D.L Taylor. 2021. Long reads recapitulate composition and resolved unknown taxonomy of environmentally-sequenced plant-associated fungi. The American Society of Microbiology Conference.

**S.N. Kivlin**. 2020. Global biogeographical patterns of mycorrhizal fungi. 105<sup>th</sup> Annual Ecological Society of America Conference.

J.A.M. Moore<sup>‡</sup>, L.C. Moorhead<sup>‡</sup>, V.R. Harpe<sup>\*</sup>, M.M. Hubert<sup>†</sup>, and **S.N. Kivlin**. 2019. Biodiversity-function relations disrupted: The role of fire and urbanization disturbances in forest ecosystems of the southeastern United States. 104<sup>th</sup> Annual Ecological Society of America Conference.

M. Roche<sup>†</sup>, I.S. Pearse, H.R. Sofaer, **S.N. Kivlin**, and S. Kalisz. 2019. Allelopathic plant invader selectively impacts native plant community by mutualism disruption. 104<sup>th</sup> Annual Ecological Society of America Conference.

**S.N. Kivlin**, R. Muscarella, K.K. Treseder, and C.V. Hawkes. 2019. Global biogeographic patterns may imply species traits for arbuscular mycorrhizal fungi. 104<sup>th</sup> Annual Ecological Society of America Conference.

J.H. Turner\*, J.A.M. Moore<sup>‡</sup>, and **S.N. Kivlin**. 2019. How does elevation affect arbuscular mycorrhizal fungal abundance across the growing season? UT-Knoxville EureCA symposium.

V.R. Harpe\*, J.H. Turner\*, L.C. Moorhead<sup>‡</sup>, J.A.M. Moore<sup>‡</sup>, and **S.N. Kivlin**. 2019. Fungal response to wildfire in southeastern forests: effects at the urban-forest interface. Mid-Atlantic Society of Mycologists.

**Kivlin, S.N.** J.A.M. Moore<sup>‡</sup>, L.C. Moorhead<sup>‡</sup>, and C.V. Hawkes. 2019. Soil microbial drought response across ecosystems. Soil Science Society of America Conference.

**Kivlin, S.N.**, M Mann<sup>†</sup>, M. Kazenel<sup>†</sup>, J.S. Lynn<sup>†</sup>, and J.A. Rudgers. 2018. Climate change may differentially disrupt above- and belowground plant phytobiomes. International Phytobiomes Conference.

**Kivlin, S.N.** and J.A. Rudgers. 2017. Mismatch in plant-fungal symbiosis alters both above- and belowground processes. 102<sup>nd</sup> Annual Ecological Society of America Conference.

**Kivlin, S.N.**, J.A. Rudgers, and B.N. Sulman. 2017. The predictive promise and pitfalls of incorporating mycorrhizas into Earth system models. 102<sup>nd</sup> Annual Ecological Society of America Conference.

Lynn, J.S. <sup>†</sup>, **S.N. Kivlin**, M.R. Kazenel<sup>†</sup>, and J.A. Rudgers. 2017. Incorporating biotic interactions improves the prediction of mountain ecosystem species abundance and distribution. 8<sup>th</sup> International Biogeography Society Conference.

**Kivlin, S.N.**, R. Muscarella, C.V. Hawkes, K.K. Treseder, M.R. Kazenel<sup>†</sup>, J.S. Lynn<sup>†</sup>, and J.A. Rudgers. 2016. Climate controls AM fungal distributions from global to local scales. American Geophysical Union Conference.

**Kivlin, S.N.**, R. Muscarella, C.V. Hawkes, and K.K. Treseder. 2016. Global ecological niches of AM fungal species are predicted by climate, not resource levels. Mycological Society of America Conference.

Kazenel, M.R. <sup>†</sup>, **S.N. Kivlin**, D.L. Taylor, and J.A. Rudgers. 2016. Assessing the potential for climate-change induced disruption of plant-microbe symbioses in the Rocky Mountains. 101<sup>st</sup> Annual Ecological Society of America Conference.

**Kivlin, S.N.** and C.V. Hawkes. 2015. Soil microbial functions are controlled by moisture, not vegetation history, in Neotropical rainforests. 100<sup>th</sup> Annual Ecological Society of

America Conference.

**Kivlin, S.N.**, R. Bedoya, and C.V. Hawkes. 2014. Arbuscular mycorrhizal fungi influence long-term plant-soil feedback as much as soil pathogens in Neotropical forests. 99<sup>th</sup> Annual Ecological Society of America Conference.

**Kivlin, S.N.** and C.V. Hawkes. 2013. Belowground carbon allocation to soil fungi differs between tropical species. 98<sup>th</sup> Annual Ecological Society of America Conference.

**Kivlin, S.N.** and K.K. Treseder. 2012. Phylogenetic relatedness of saprotrophic fungal communities affects decomposition rates. 97<sup>th</sup> Annual Ecological Society of America Conference.

**Kivlin, S.N.** and K.K. Treseder. 2012. Soil extracellular enzyme activities are mostly influenced by abiotic factors. 2<sup>nd</sup> Annual Enzymes in the Environment Conference.

**Kivlin, S.N.**, G.C. Winston, M.L. Goulden, and K.K. Treseder. 2011. Spatial and temporal controllers of soil and airborne fungal assemblages. 96<sup>th</sup> Annual Ecological Society of America Conference.

**Kivlin, S.N.** and K.K. Treseder. 2010. Soil fungal biomass and enzyme activities respond to environmental moisture gradients. 13<sup>th</sup> International Symposium on Microbial Ecology.

**Kivlin, S.N.**, K.L. McGuire, C.V. Hawkes and K.K. Treseder. 2010. Biogeography of fungal functional groups: A global synthesis of published DNA sequences. 95<sup>th</sup> Annual Ecological Society of America Conference.

**Kivlin, S.N.**, K.L. McGuire, C.V. Hawkes and K.K. Treseder. 2009. Fungal biogeography and diversity: A global synthesis of published DNA sequences. 94<sup>th</sup> Annual Ecological Society of America Conference.

**Kivlin, S.N.** and C.V. Hawkes. 2008. Differentiating the effects of invasive species from diversity on arbuscular mycorrhizal fungi. 93<sup>rd</sup> Annual Ecological Society of America Conference.

**Kivlin, S.N.** and C.V. Hawkes. 2007. Differentiating the effects of invasive species from diversity on arbuscular mycorrhizal fungi. 2<sup>nd</sup> Annual Central Texas Ecologists Conference.