SARAH E. EVANS, PHD

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APPOINTMENTS

2014 – *Assistant Professor,* Kellogg Biological Station, Department of Integrative Biology, Department of Microbiology & Molecular Genetics, Michigan State University

2012 – 2014 *NSF Postdoctoral Fellow,* University of California-Irvine, Irvine, CA
Advisors: Steven Allison (UC Irvine) & Kiona Ogle (Arizona State University)

2009 – 2012 *NSF Graduate Research Fellow*, Colorado State University

EDUCATION

2007 – 2012 *PhD, Ecology*. Colorado State University, Fort Collins, CO
Advisors: Matthew Wallenstein and Ingrid Burke (U Wyoming)

2001 – 2005 *BA*, *Biology*. Grinnell College, Grinnell, IA
Advisors: Kathryn and Peter Jacobson. Outside coursework: OTS semester in Costa Rica/Nicaragua, Juneau Icefield Research Program, Juneau, Alaska/Atlin, BC

PUBLICATIONS **postdoc/grad advisee* ±*undergrad advisee*

In press, review, or revision

Evans, SE, *L Bell-Dereske, *H Kittredge, K Dougherty. Does dispersal increase soil microbial community resistance to drought? *Environmental Microbiology*. *Accepted.*

Smercina, D, **SE Evans**, M Friesen, L Tiemann**.** Optimization of the $^{15}N_2$ incorporation and Acetylene Reduction Methods for Free-Living Nitrogen-Fixation. *Plant and Soil*. *In review*

Evans, SE, K Todd-Brown, K Jacobson, P Jacobson. 2018. Non-rainfall moisture: a key driver of carbon flux from standing litter in arid, semiarid, and mesic grasslands. *Ecosystems*. *In revision.*

Published

Smercina, D, **SE Evans**, M Friesen, L Tiemann. 2019. To Fix or Not To Fix: Controls on Free-Living Nitrogen-Fixation in the Rhizosphere. *Applied and Environmental Microbiology.* Doi: 10.1128/AEM.02546-18

Evans, SE, ME Dueker, †JR Logan, KC Weathers. 2019. The biology of fog: results from coastal Maine and Namib Desert reveal common drivers of fog microbial composition. *Science of The Total Environment* 647:1547-1556. PRESS: The Atlantic, Atlas Obscura, Frontiers in Ecology and Evolution Dispatches (Vol16 Issue8, Oct 2018), Canadian Broadcasting Corporation, WAMC northeast public radio, EarthSkyNews, Futurity.

Hall, EK, ES Bernhardt, R Bier, MA Bradford, CM Boot, JB Cotner, PA del Giorgio, **SE Evans**, EB Graham, SE Jones, JT Lennon, D Nemergut, B Osborne, JD Rocca, JS Schimel, MS Waldrop, MD Wallenstein. 2018. Understanding How Microbiomes Influence the Systems they Inhabit: Insight from Ecosystem Ecology. *Nature Microbiology.*

Ouyang, Y, **SE Evans**, M Friesen LK Tiemann. 2018. Effect of nitrogen fertilization on the abundance of nitrogen cycling genes in agricultural soils: A meta-analysis of field studies. *Soil Biology & Biochemistry*. 127, pg 71-78.

Bowsher, A. **SE Evans,** LT Tiemann, ML Friesen. 2017. Effects of soil nitrogen availability on rhizodeposition in plants: a review. *Plant and Soil.* 10.1007/s11104-017-3497-1

Wilcox, K, Z Shi, L Gherardi, NP Lemoine, SE Koerner, DL Hoover, E Bork, K Byrne, J Cahill, S Collins, **SE Evans,** AK Gilgen, P Holub, L Jiang, A Knapp, L Yahdjian, DR LeCain, J Liang, J Peñuelas, W Pockman, M Smith. 2017. Asymmetric responses of primary productivity to climate extremes: a synthesis of grassland precipitation manipulations. *Global Change Biology* **23**(10): 4376–4385. doi: 10.1111/gcb.13706

Evans, SE, J. Martiny, S. Allison. 2016. Effects of dispersal and selection on stochastic assembly in microbial communities. *International Society for Microbial Ecology Journal (ISMEJ)*. doi:10.1038/ismej.2016.96

Evans, SE, U Dieckmann, O Franklin, K Kaiser. 2015. Synergistic effects of diffusion and microbial physiology reproduce the Birch effect in a micro-scale model. *Soil Biology and Biochemistry* **93:** 28-37. doi: 10.1016/j.soilbio.2015.10.020

Jacobson K, van Diepeningen A, **SE Evans**, Fritts R, Gemmel, P. Marsho C, Seely, M, Wenndt A, Yang X, Jacobson P. 2015. Non-rainfall moisture activates fungal decomposition of surface litter in the Namib Sand Sea. *PLoS ONE* **10:** e0126977. doi:10.1371/journal.pone.0126977

Rocca, JD, EK Hall, JT Lennon, **SE Evans,** MP Waldrop, JB Cotner, DR Nemergut, EB Graham, MD Wallenstein. 2015. Relationships between protein-encoding gene abundance and corresponding process are commonly assumed yet rarely observed. *International Society for Microbial Ecology Journal (ISMEJ)* **9:** 1693-1699. doi:10.1038/ismej.2014.252

Evans, SE and MD Wallenstein. 2014. Climate change alters the ecological strategies of soil bacteria. *Ecology Letters* **17:** 155-164. doi: 10.1111/ele.12206

Evans, SE, MD Wallenstein, IC Burke. 2014. Is bacterial moisture niche a good predictor of shifts in community composition under long-term drought? *Ecology* **95:** 110-122. http://dx.doi.org/10.1890/13-0500.1

Evans, SE and IC Burke. 2013. Carbon and nitrogen decoupling under an 11-year drought in the shortgrass steppe. *Ecosystems* **16:** 20-23. doi: 10.1007/s10021-012-9593-4

Evans, SE and MD Wallenstein. 2012. Soil microbial community response to drying and rewetting stress: does historical precipitation regime matter? *Biogeochemistry* **109:**101-116. doi: 10.1007/s10533-011-9638-3

Conant, RT, MG Ryan, GI Ågren, HE Birge, EA Davidson, PE Eliasson, **SE Evans**, SD Frey, CP Giardina, F Hopkins, R Hyvönen, MUF Kirschbaum, JM Lavallee, J Leifeld, WJ Parton, JM Steinweg, MD Wallenstein, JÅ Martin Wetterstedt, and MA Bradford. 2011. Temperature and soil organic matter decomposition rates – synthesis of current knowledge and a way forward. *Global Change Biology* **17**: 3392–3404. doi: 10.1111/j.1365-2486.2011.02496.x

Evans, SE , KM Byrne, IC Burke and WK Lauenroth. 2011. Defining the limit to resistance in a drought tolerant grassland: long-term severe drought significantly reduces the dominant species and increases ruderals. *Journal of Ecology* **99**: 1500-1507. doi: 10.1111/j.1365-2745.2011.01864.x. **Received Issue 6 (November 2011) Editor's Choice Award*

Evans, SE, IC Burke, WK Lauenroth. 2011. Controls on soil organic carbon and nitrogen in Inner Mongolia, China: a cross-continental comparison of temperate grasslands. *Global Biogeochemical Cycles* **25:** GB3006. doi:10.1029/2010GB003945

<u>In preparation (< 6 months until submission)</u> [+]Postdoctoral, graduate, or undergraduate mentee

[+]Erwin, H, *L Bell-Dereske, *TC Chicoine, **SE Evans**. Switchgrass recruitment of microbial communities depends on phenological stage. *Phytobiome*. Submission to invited special issue August 2019.

*Chicoine, TC, **SE Evans**. Switchgrass variety influences microbiome but not through root traits. *Phytobiome*. Submission to invited special issue August 2019.

*Logan, JR, M Pieristè, **SE Evans**, M Robson, PW Barnes. Photodegradation in terrestrial systems: Review of methods and recommendations. *Ecosystems*. Anticipated submission August 2019.

Kaiser, C, **SE Evans**, U Diekmann, S Widder. Spatial self-organization of microbial decomposer communities and their potential effect on biogeochemical cycles in soil. *Ecology Letters (accepted for Concepts and Synthesis).* Anticipated submission July 2019.

Wenndt, A, Diepeningen, **SE Evans,** PJ Jacobson, *JR Logan, MK Seely, KM Jacobson**.** Is facultative endophytism an adaptive strategy of surface-litter fungal saprophytes in drylands? Evidence from the Namib Sand Sea. *New Phytologist.* Anticipated submission August 2019.

Turley, N, **SE Evans**, *L Bell-Dereske, L Brudvig. Agricultural land-use history and restoration co-structure soil microbial communities in longleaf pine savannas. *Ecology.* Anticipated submission summer 2019.

SE Evans, E Zandona, SW Fitzpatrick. The role of the gut microbiome in rapid evolution. *Ecology Letters.* Anticipated submission August 2019.

RESEARCH GRANTS

Pending

2019-2021. Identifying and understanding the function and importance of vertically transferred microorganisms within a bioenergy crop microbiome. Department of Energy. EMSL User Grant. Role: coPI with 1 other (PI: Lisa Tiemann) (~$50,000)

2019-2021. Spatially resolving the molecular basis of belowground trade partnerships between switchgrass and rhizosphere diazotrophs. Department of Energy. FICUS (Facilities Integrating Collaborations for User Science) user grant JGI-EMSL. Department of Energy. Role: coPI with 1 other (PI: Maren Friesen). Pre-proposal, no budget yet.

Active Awards

2015 - 2020: Connecting nitrogen transformations mediated by the rhizosphere microbiome to perennial cropping system productivity in marginal lands. Department of Energy Office of Biological and Environmental Research. Role: **PI.** coPIs: L. Tiemann, M. Friesen, J. Cole ($5,771,832).

2018 - 2022. LTER: Mechanisms of Resilience in Agricultural Landscapes. National Science Foundation. Role: coPI with 6 others (PI: N. Haddad) ($4,508,000)

2017 - 2022. Great Lakes Bioenergy Research Center. Department of Energy Office of Science. Role: Co-investigator (PI: T. Donohue). (Evans budget: 2017-2018: $158,00, 2018-2019: $144,398)

2019 - 2021. In situ characterization of associations and resource exchange between free-living nitrogen-fixers and switchgrass. Department of Energy EMSL user grant. Role: coPI with 3 others (PI: K. Hofmockel, to supplement D. Smercina graduate fellowship).

2019. Fog of Dawn Art Exhibit. Detroit Science Gallery. Open Call proposal awarded to: B. Hamberger, S. Evans, G. Bonito, Jj Kidder. 20 of 160 applications funded ($2,400).

2018 - 2021. REU Site: Ecological and Evolutionary Dynamics in a Changing World. National Science Foundation. Role: coPI with 11 others (PI K. Gross) ($395,571.00)

2017-2019. Tracking switchgrass photosynthate via 13CO2 pulse-chase into the rhizosphere microbiome and metabolome. Department of Energy FICUS (JGI and EMSL) user grant. Role: coPI with 1 other (PI: L. Tiemann) (~$150,000)

1/1/19 - 9/30/21. EMSL User Proposal (50682). Department of Energy. In situ characterization of associations and resource exchange between free-living nitrogen-fixers and switchgrass. PI: K. Hofmockel. Role: coPI with L. Tiemann, M. Friesen.

Past Awards

2018. EMSL Rapid User Proposal (50415). Department of Energy. Identifying the effects of plant neighbor on switchgrass root exudates and microbial community associations. Role**: PI** with T. Chicoine (gradate student) and L. Tiemann. EMSL Host: N. Washton (~$10,000, hours/machine time quantified).

2017 - 2018. FSML: Real-time genomics: enabling the next generation of field ecology and evolution. National Science Foundation. Role: coPI with 3 others (PI: K. Gross) ($216,843 + $42,956 in supplement)

2016 - 2017. National Geographic Society Waitt Grant. Microbial transport in the Namib Desert: from ocean to desert, via fog. Role: **PI** ($11,400)

2016 - 2018. NSF LTER. The KBS LTER: Long Term Ecological Research in Row Crop Agriculture Project. National Science Foundation. Role: coPI with 6 others (PI: S. Hamilton) ($2,254,000)

2016 - 2017. MSU Strategic Partnership Travel Funding. African Studies Program. Microbial transport in the Namib Desert: from ocean to desert, via fog. Role: **PI.** ($10,200)

2012-2014: Amazon Web Services, Education grant for Amazon Cloud Computing. Role: **PI**. ($10,000)

2011-2012: NSF Doctoral Dissertation Improvement Grant, 2011. Dissertation research: Does long-term drought alter the response of microbial communities to moisture? Role: graduate student coPI and primary writer. PI: M. Wallenstein, graduate adviser ($14,742)

FELLOWSHIPS

- NSF Postdoctoral Fellowship in Biology (Mathematics/Biology), 2012 ($130,000, 2 years)
- NSF International Institute for Applied Systems Analysis (IIASA) Young Scientists Fellowship, Advisors: Christina Kaiser, Oskar Franklin, Ulf Dieckmann, 2012 ($8,000).
- NSF Graduate Research Fellowship, 2009-2012 ($137,000 over three years)
- NSF East Asia & Pacific Summer Institute (EAPSI) fellowship for summer research in China, 2008 ($5,000)

HONORS AND AWARDS

Awards

- Grinnell College Alumni Scholar Award, 2013
- Editor's Choice Award for 2011 publication in *Journal of Ecology* Issue 6, November, 2011
- Best Presentation, Biogeosciences, Ecological Society of America Meeting, 2011
- CSU Natural Resource Ecology Laboratory Outstanding Graduate Student Award, 2011

Travel grants

- NSF RCN FORECAST Training travel grant, 2012 ($1,650)

- Argonne Soils Metagenomics Workshop Travel Grant: 2010 and 2011 ($1,000)
- Graduate Degree Program in Ecology Travel Grant: 2010, 2011 ($1,000)
- American Geophysical Union (AGU) Travel Award to attend annual meeting, 2010 ($500)
- Natural Resource Ecology Laboratory Francis Clark Soil Biology Scholarship, 2009 ($4,000)
- Colorado State University, Travel for International Conference on Soil Organic Carbon, 2009
- Recruitment award, Graduate Degree Program in Ecology (CSU), 2007 ($2,000)
- Elsie Stoffer Award for biological study abroad in Costa Rica, 2004 ($1,000)
- Grinnell College Environmental Studies Grant, Juneau Icefield Res Program, 2003 ($2,000)
- Grinnell College Merit-based scholarship, 2001, ($20,000 over 4 years)

PRESENTATIONS

Invited University Seminars

2019 Virginia Tech University Ecology and Evolutionary Biology Department, "Microbes in the mist: precipitation as a driver of dispersal and function in terrestrial microbial communities" Blacksburg, VA.

2017 University of Michigan Ecology and Evolutionary Biology Department, "Microbial ecology of the world's oldest desert" Ann Arbor, MI.

2017 Michigan State University, Center for African Studies, "Microorganisms of the Namib Desert" East Lansing, MI.

2016 Western Michigan University Department of Biological Sciences, "Microbial responses to global change: moving from pattern to process" Kalamazoo, MI

2016 Cary Institute for Ecosystem Studies, "Microbial and biogeochemical responses to shifts in precipitation patterns" Millbrook, NY

2015 Michigan State University, Ecology, Evolutionary Biology, and Behavior Seminar Program, "Microbial responses to global change: moving from pattern to process" East Lansing, MI

2014 University of Pretoria Centre for Microbial Ecology and Genomics. "Microbial and biogeochemical responses to shifts in precipitation patterns" Pretoria, South Africa

2013 Grinnell College Biology Department, "Do microbes adapt to climate change and does it matter for carbon cycling?" Grinnell, IA

2012 University of Vienna, Division of Microbial Ecology, "Microbial and biogeochemical responses to precipitation patterns" Vienna, Austria

Invited symposia, panels, and workshop presentations

2019 Invited Panelist, "The State of Knowledge on Soil Biodiversity." Soil Ecology Society Meeting, Toledo, OH.

2016 The National Academies of Sciences, Engineering and Medicine study on "Microbiomes of the Built Environment: From Research to Application". Invited speaker for 3rd committee meeting. Irvine, CA.

2015, 2016 EDAMAME speaker: Explorations in Data Analysis for Metagenomic Advances in Microbial Ecology, Hickory Corners, MI

Invited oral presentations

Evans, SE, Jim Cole, Maren Friesen, Steven Gougherty, Lisa Tiemann. Plant and Biogeochemical Controls on the Switchgrass Microbiome: Perspectives from a fine-scale time series. DOE Genomic Sciences Contractor-PI Meeting (oral presentation). Tysons, VA. 2018.

Evans, SE, JR Logan. The Microbial Ecology of Namibia's Namib Desert. African Studies Center, Eye on Africa Series (Oral presentation). East Lansing, USA. 13 September 2017.

Evans, SE. Fog microbes link marine and terrestrial ecosystems. American Geophysical Union Annual Meeting (Oral presentation). New Orleans, LA. 2017.

Evans, SE. How does dispersal maintain decomposer diversity and function? insight from theoretical and experimental approaches. Ecological Society of America Annual Meeting (Invited oral presentation). Portland, OR. 2017.

Evans, SE. How does dispersal maintain decomposer diversity and function? Soil Health Summit and Soil Ecology Society Annual Meeting (Poster). Fort Collins, CO. 2017.

Evans, SE. Connecting nitrogen transformations mediated by the rhizosphere microbiome to perennial cropping system productivity in marginal lands. DOE Genomic Sciences Contractor-PI Meeting (Invited oral presentation). Tysons, VA. 2017.

Evans, SE and L Bell-Dereske (substitute presenter). How does dispersal maintain decomposer diversity and function? Insight from theoretical and experimental approaches? Ecological Society of America Meeting (Invited Oral Presentation). August 15, 2017.

Evans, SE. Connecting nitrogen transformations mediated by the rhizosphere microbiome to perennial cropping system productivity in marginal lands. DOE Genomic Sciences Contractor-PI Meeting. Tysons, VA *(invited session: Systems Biology Research to Advance Sustainable Bioenergy Crop Development).* 2016.

Evans, SE, Jacobson, PJ, Jacobson, KM, Seely, M. 2015. Rewetting without rain: cryptic controls on dryland decomposition revealed in a hyperarid desert. Ecological Society of America Annual Meeting. Baltimore, MD *(invited oral session, "Rewetting dry soil: the century's unifying problem in soil microbial ecology")*

Evans, SE. 2015. Stochasticity in microbial community dynamics. 2014. Ecological Society of America Annual Meeting. Baltimore, MD. *(IGNITE, invited oral session, "When tiny things rule the world")*

Evans, SE, SD Allison, JBH Martiny. 2014. Quantifying stochastic and deterministic drivers of microbial community assembly: results from a traits-based model. Ecological Society of America Meeting, Sacramento, CA *(invited oral session, "Community ecology writ small")*

Evans, SE, MD Wallenstein, August, 2013. Microbial community responses to changes in rainfall: moving from pattern to process. Ecological Society of America Meeting, Minneapolis, MN *(invited symposium presentation, "Defining which microbial processes matter to ecosystems and how to measure them")*

Evans, SE, MD Wallenstein. 2012. Can we use microbial life strategies to understand the response of microbial communities to moisture stress? International Society for Microbial Ecology Annual Meeting. Copenhagen, Denmark *(oral presentation)*

Evans, SE, MD Wallenstein. 2011. Does long-term drought alter the response of soil microbial communities to moisture? Argonne Soil Metagenomics Workshop. Bloomingdale, IL (*invited oral presentation)*

Wallenstein, MD. **Evans, SE.** 2010. Microbial adaptations to environmental change: a moving target for global change ecology. Ecological Society of America annual meeting, Pittsburgh, PA. *(invited, symposium)*

Burke, IC, WK Lauenroth, E Bontti, **SE Evans**. 2009. Coupled biogeochemical cycles in grasslands: a long-term perspective. Ecological Society of America Annual meeting, special workshop on Coupled Biogeochemical Cycles *(invited, symposium)*

<u>Contributed conference presentations</u> ***postdoc/grad advisee** ***±undergrad advisee***

2019

*Kittredge, H. **SE Evans.** Natural Transformation of Extracellular DNA in Soil. Soil Ecology Society Meeting (Poster). Toledo, OH. May 28, 2019. * *1st place in student poster competition*

Smercina, D, L Tiemann, M Friesen, **SE Evans.** Optimization of Methods for Assessing Free-living Nitrogen Fixation in Soils and the Rhizosphere. Soil Ecology Society Meeting (Oral presentation). Toledo, OH. May 28, 2019.

Tiemann, L, D Smercina, **SE Evans**, M Friesen. Environmental and plant mediated controls on free-living Nfixation. Soil Ecology Society Meeting (Oral presentation). Toledo, OH. May 28, 2019.

Chretien, M. N Benucci, P Beschoren da Costa, **SE Evans**, M Friesen, A Shade, G Bonito. Fungal endophytes and epiphytes isolated from switchgrass grown in GLBRC experimental field sites. Great Lakes Bioenergy Research Center Annual Meeting (Poster). Lake Geneva, WI. May 21, 2019.

Vanwyk, JJ, P Beschoren da Costa, M Chretien, GMN Benucci, AK Kuhn, A Shade, **SE Evans**, G Bonito. Soil location is a key factor impacting switchgrass biomass, flowering time and

distribution of 952 root-associated microbial strains. Great Lakes Bioenergy Research Center Annual Meeting (Poster). Lake Geneva, WI. May 21, 2019.

Beschoren da Costa, P, GMN Benucci, M Chretien, JJ Vanwyk, AK Kuhn, A Shade, **SE Evans**, G Bonito. Sustainably improving plant traits without Bonito modifying plants: switchgrass biomass in marginal soils increase by multi-generation selection of its associated microbes. Great Lakes Bioenergy Research Center Annual Meeting (Poster). Lake Geneva, WI. May 21, 2019.

Smercina, D, W Chrisler, J Cliff, SE Evans, M Friesen, K Hofmockel, D Hoyt, L Tiemann. Direct visualization of carbon uptake and nitrogen fixation in the switchgrass root zone. Great Lakes Bioenergy Research Center Annual Meeting (Poster). Lake Geneva, WI. May 21, 2019.

White III, R. A., A. Garoutte, A Bowsher, Y Ouyang, C Bekkering, D Smercina, S Gougherty, H Vander Stel, L Bell-Dereske, J Cole, LK Tiemann, **SE Evans**, ML Friesen. Deciphering spare functional repertoire of rhizosphere microbiomes in marginal lands containing switchgrass. Poster. DOE 2019 Genomic Sciences Program Annual PI Meeting. Washington D.C. Feb 24-27, 2019.

[+]Bell-Dereske, L Tiemann, M Friesen, J Cole, and **SE Evans**. The response of bacterial communities to nitrogen fertilization depends on temporal and spatial scale. DOE Genomics Science Program PI Meeting (Poster). Tysons, VA. February, 25 2019.

[+]Bell-Dereske, L., Temann, L., Friesen, M., Cole, J., and **SE Evans**. The response of bacterial communities to nitrogen fertilization depends on temporal and spatial scale. Great Lake Bioenergy Research Center DOE Annual Review. Madison, WI. January 15, 2019.

[±]Hilborn, S., Bell-Dereske, L., K., Ulbrich, T.C., and **SE Evans**. Microbial carbon sourcing during drought: we'll C what they can find. Michigan State University Undergraduate Research and Arts Forum (Poster). East Lansing, MI. April 5, 2019.

[±]Gebresilase, K., Ulbrich, TC, Bell-Dereske, L., and **SE Evans**. Microbially mediated changes in the root system of switchgrass during drought. Michigan State University Undergraduate Research and Arts Forum (Poster). East Lansing, MI. April 5, 2019.

[±]Cordova-Ortiz, E, R Logan, K Jacobson, **SE Evans**. Pennsylvania Academy of Sciences Annual Meeting. Specializations of fungal decomposers from the hyper-arid Namib Desert. 2019.

2018

[+]Bell-Dereske, L, L Tiemann, M Friesen, J Cole, and **SE Evans**. MMPRNT: Effects of spatial and temporal scale on bacterial communities. LTER All Scientists Meeting (Poster). Asilomar, CA. 4 Oct 2018.

[+*]Bell-Dereske, L and **SE Evans**. Role of extreme rain events and priority effects in the assembly of leaf microbial communities. Invited Oral Presentation. Ecological Society of America Meeting 2018.

[+]Logan, JR, K Jacobson, P Jacobson, **SE Evans**. The effects of non-rainfall moisture on fungal communities and standing grass litter decomposition in a hyperarid desert. American Geophysical Union Fall Meeting (Poster). Washington, D.C. 11 December 2018.

[+]Logan, JR, K Jacobson, P Jacobson, P Barnes, **SE Evans**. Photodegradation of the plant cuticle increases biological decomposition by facilitating uptake of non-rainfall moisture. International Association for Plant UV Research Network Meeting. Bled, Slovenia. 17 April 2018 .

Smercina, D, Tiemann, LK, Evans, **SE Evans** and ML Friesen. Free-living Nitrogen-Fixation Rates Driven by Nitrogen-Fixer Diversity Over Nitrogen Availability. Goldschmidt Conference (Oral presentation). Boston, MA, August 13-17, 2018.

[+]Chicoine, T. Tiemann, LK, ML Friesen, and **SE Evans**. Plant neighborhood influences a focal plant's interactions and associations with its microbial community. International Society for Microbial Ecology 17th Meeting (Poster). August 2018. Leipzig, Germany.

[+]Chicoine, T., S.S. Roley, G.P. Robertson, L. Tiemann, M. Friesen, **SE Evans**. Soil- and root-associated microbiomes across twelve switchgrass cultivars. Department of Energy Annual Principal Investigators Genomics Sciences Meeting (Poster). Tysons Corner, VA. 25 - 28 February 2018

[±]Ervin, H., Chicoine, T, Bell-Dereske, L., Gebresilase, T., Hilborn, S., Hogenkamp, A., **SE Evans**. Microbial effects on plant drought tolerance. LTER All Scientists Meeting (Poster). Asilomar, CA. 1-3 October 2018.

[+]Kittredge, HA, Dougherty, K, Glanville, K, and **SE Evans**. Dead stuff matters: how bacterial necromass facilitates evolution. Evolution Conference (Poster). LTER All Scientists Meeting. Asilomar, CA. October 1-3, 2018.

[+]Kittredge, HA, **SE Evans**. The Neglected Necromass. LTER All Scientists Meeting (Lightning Oral Presentation). Asilomar, CA. October 1-3, 2018.

[+]Kittredge, HA, K Dougherty and **SE Evans**. Dead stuff matters: how bacterial necromass facilitates evolution. Evolution Conference (Poster). Montpellier, France. August 19-22, 2018.

[±]Al-Tameemi, Z, C Rutkoski, H Vander Stel, **SE Evans**. Spatial and temporal variation of plant available inorganic nitrogen in marginal land switchgrass soils. Kellogg Biological Station Research Symposium (Poster). Hickory Corners, MI. 1 August, 2018.

[+]Bell-Dereske, L, L Tiemann, M Friesen, J Cole, and **SE Evans**. Microbial Mediated Perennial Rhizosphere Nitrogen Transformations (MMPRNT): Effects of spatial and temporal scale on bacterial communities. Poster Presentation and Organized Oral Presentation Great Lakes Bioenergy Research Center All Scientist Meeting 2018.

[±]Cordova-Ortiz, E, JR Logan, K Jacobson, **SE Evans**. Specialization of fungal decomposers from the Namib Desert. KBS Undergraduate Research Symposium (Poster). W. K. Kellogg biological Station, USA. 3 August 2018.

±McAda, S, Kittredge, HA, **SE Evans.** The Dynamic Bacterial Genome: The role of horizontal gene transfer. Kellogg Biological Station Research Symposium (Poster). Hickory Corners, MI. 1 August, 2018.

±Frailey, S, Kittredge, HA, **Evans, SE**. Extracellular DNA in soil microbial communities. The need for speed: Horizontal gene transfer and the spread of antibiotic resistance. Kellogg Biological Station Research Symposium (Poster). Hickory Corners, MI. 1 August, 2018.

±Hilborn, S., Chicoine, T., Bell-Dereske, L., and **SE Evans**. Microbial carbon sourcing during drought: we'll C what they can find. Kellogg Biological Station Research Symposium (Poster). Hickory Corners, MI. 1 August, 2018.

±Hogenkamp, A., Chicoine, T., Bell-Dereske, L., and **SE Evans**. A Thirst for Knowledge: Microbiome Ecological Response to Drought in Switchgrass. Kellogg Biological Station Research Symposium (Poster). Hickory Corners, MI. 1 August, 2018.

±Gebresilase, K., Chicoine, T., Bell-Dereske, L., and **SE Evans**. Microbially mediated changes in the root system of switchgrass during drought. Kellogg Biological Station Research Symposium (Poster). Hickory Corners, MI. 1 August, 2018.

±Ervin, H., Chicoine, T., Bell-Dereske, L., and **SE Evans**. Quality or quantity? Microbial biomass and plant-promoting capabilities effects on plant drought resistance. Kellogg Biological Station Research Symposium (Poster). Hickory Corners, MI. 1 August, 2018.

2017

*Logan, JR, K Jacobson, P Jacobson**, SE Evans**. "The Plant Cuticle in Arid Land Decomposition: Interactions with Sunlight and Non-Rainfall Moisture." Midwest Ecology & Evolution Conference (Poster). Champaign-Urbana, USA. 18 March 2017.

*Logan, JR, P Jacobson, K Jacobson, **SE Evans.** Decomposition of standing litter in arid grasslands: Interactions between sunlight, non-rainfall moisture, microbes, and plants. American Geophysical Union Fall Meeting (Poster). New Orleans, USA. 15 December 2017.

±Dokor, F, H Kittredge, K Dougherty, **SE Evans**. Quantifying the abundance of extracellular DNA in soil. Annual Biomedical Research Conference for Minority Students (Poster). Phoenix, AZ. 2017.

±Donkor, F, HA Kittredge, K Dougherty, **SE Evans**. Extracellular DNA in soil microbial communities. Kellogg Biological Station Research Symposium (Poster). Hickory Corners, MI. 2 August, 2017.

±Carpenter, S, JR Logan, G Mittelbach, **SE Evans**. A Parasitic Flatworm Changes Abundance per Bluegill in Different Habitats. KBS Undergraduate Research Symposium (Poster). W. K. Kellogg Biological Station, USA. 2 August 2017.

±Bloodworth, K (undergraduate REU), W West (postdoctoral researcher), **SE Evans**. The carbon and nitrogen cycle collide in soil: An examination of the effects of switchgrass root exudates on

soil denitrification. Ecological Society of America Annual Meeting (Oral presentation). Portland, OR. 2017.

*Kittredge, HA, Dougherty, K, **SE Evans**. Dead stuff matters: how bacterial necromass facilitates evolution. Ecology, Evolutionary Biology, and Behavior (Oral presentation). East Lansing, MI. 29 November, 2017.

*Chicoine, T, SS Roley, GP Robertson, L Tiemann, M Friesen, **SE Evans**. Soil- and root-associated microbiomes across twelve switchgrass cultivars. Long-Term Ecological Research All Scientists Meeting (Poster). East Lansing, MI. 6 – 7 October 2017.

Larcinese, W, T Chicoine, L Tiemann, M Friesen, **SE Evans**. Differences in Root Morphology and Nitrogen Fixing Bacteria Colonization Between Upland and Lowland Varieties of Switchgrass (*Panicum Virgatum*). Michigan State University Plant Biology Final Assessment (Oral presentation). 2 May 2017.

+Ervin, H, T Chicoine, L Bell-Dereske, and **SE Evans.** Hungry Hungry...Microbes? Effects of plant identity and nitrogen availability on soil microbes carbon consumption. Kellogg Biological Station Research Symposium (Poster). Hickory Corners, MI. 2 August, 2017.

Chicoine, T, SS Roley, GP Robertson, L Tiemann, M Friesen, **SE Evans**. Variation in microbial communities and nitrogen transformation rates among switchgrass varieties. Ecology, Evolutionary Biology, and Behavior Research Symposium (Poster). Michigan State University, East Lansing, Michigan. 1 May 2017.

+Bloodworth, KJ, West, WE, **SE Evans**. The carbon and nitrogen cycles collide in soil: an examination of the effects of Switchgrass root exudates on soil denitrification. Ecological Society of America (oral presentation). Portland, OR. August 2017

2016

Logan, JR, **SE Evans**, P Jacobson. "A proposal for microbial exploration of chemically diverse Namib Desert springs." Midwest Geobiology Conference (Poster). Cincinnati, USA. 15 October 2016.

Kittredge, HA, K Dougherty, **SE Evans**. Horizontal transfer of N-fixation genes in soil microbes. Midwest Ecology and Evolution Conference (Poster). University of Illinois, IL. 18 March ,2016.

Bloodworth, KJ, West, WE, **Evans, SE.** The carbon and nitrogen cycles collide in soil: an examination of the effects of Switchgrass root exudates on soil denitrification. World Congress on Undergraduate Research (poster). University of Qatar, Doha, Qatar. November 2016.

Bloodworth, KJ, West, WE, **Evans, SE**. The carbon and nitrogen cycles collide in soil: an examination of the effects of Switchgrass root exudates on soil denitrification. Kellogg Biological Station Annual Undergraduate Research Symposium (poster). Hickory Corners, MI. August 2016.

*West, W (postdoctoral researcher), Bloodworth, K (undergraduate), **SE Evans**. Linking the carbon and nitrogen cycle in switchgrass marginal lands. World Congress for Undergraduate Research. Doha, Qatar. 2016.

*Chicoine, T (graduate student), S Roley, GP Robertson, L Tiemann, M Friesen, **SE Evans.** Variation in microbial communities and nitrogen transformation rates among switchgrass varieties. Phytobiome Symposium. Santa Fe, New Mexico. 2016.

Evans, SE. Does microbial dispersal via rain maintain soil diversity and function? International Society for Microbial Ecology Meeting. Montreal, Canada. 2016.

Chicoine, T., S.S. Roley, G.P. Robertson, L. Tiemann, M. Friesen, **SE Evans**. Variation in microbial communities and nitrogen transformation rates among switchgrass varieties. Keystone Symposia Conference Phytobiomes: From Microbes to Plant Ecosystems (Poster). Santa Fe, NM. 8 - 12 November 2016.

Before 2016

+Chepng'eno, Hepsbia (undergraduate), K Dougherty, **SE Evans.** 2015. Microbes respond to predicted changes in rainfall. Kellogg Biological State Undergraduate Research Symposium. Kellogg Biological Station, Hickory Corners, MI.

Evans, SE, C Kaiser, O Franklin, U Dieckmann. 2012. What mechanisms explain soil carbon dioxide flux under fluctuating rainfall patterns? Young Scientists Summer Workshop, Int'l Institute for Applied Systems Analysis (IIASA). Laxenburg, Austria *(oral presentation)*

Evans, SE, MD Wallenstein. 2011. Does long-term drought alter the response of soil microbial communities to moisture? Ecological Society of America Annual Meeting. Austin, TX (*oral presentation). *Received the Biogeosciences Section Best Student Presentation Award*

Evans, SE, IC Burke, WK Lauenroth. 2010. Controls on soil organic carbon and nitrogen in Inner Mongolia, China: a cross-continental comparison of temperate grasslands. American Geophysical Union (AGU) Annual Meeting, San Francisco, CA *(presentation).*

Evans, SE and MD Wallenstein. 2010. Soil microbial response to drying-rewetting stress: Do microorganisms adapt to altered rainfall timing? International Symposium for Microbial Ecology, Seattle, WA *(poster)*

Evans, SE and MD Wallenstein. 2010. Soil microbial response to drying-rewetting stress: Do microorganisms adapt to altered rainfall timing? Front Range Student Ecology Symposium, Colorado State University, Fort Collins, CO. (*presentation*)

Evans, SE, IC Burke, WK Lauenroth, JC von Fischer. 2009. The effect of long-term drought on C and N linkages in the shortgrass steppe. Ecological Society of America annual meeting, Albuquerque, NM *(poster)*

Evans, SE, IC Burke, WK Lauenroth, GS Zhou. 2009. The response of soil organic carbon to land use and precipitation in grasslands of Inner Mongolia, China. International Conference on Soil Organic Matter, Colorado Springs, CO *(presentation)*

Evans, SE and IC Burke. 2008. The effect of altered precipitation regimes on carbon-nitrogen linkages in the shortgrass steppe. Front Range Student Ecology Symposium, Colorado State University, Fort Collins, CO *(presentation)*

Evans, SE. 2006. Ethics and Protocols of Social and Environmental Research in Southern Africa, Winter Term course, "Protocols in International Research" University of Virginia, Charlottesville, VA *(presentation)*

Evans, SE. 2006. Ethics and Protocols of Social and Environmental Research in Southern Africa, Winter Term course, "Protocols in International Research" University of Virginia, Charlottesville, VA *(presentation)*

Evans, SE and KM Jacobson. 2005. Intrapopulational genetic variation in *Morchella esculenta.* Iowa Academy of Sciences Meeting, Des Moines, IA *(poster)*

Evans, SE. 2004. Snow mass balance on the Juneau Icefield: climatic implications from long-term data. Juneau Icefield Research Program annual summer research symposium. Atlin, British Colombia, Canada (*presentation)*

TEACHING

Courses taught

2016,17,18	IBIO 357. Global Change Biology. Department Integrative Biology, Michigan State University (2019: parental leave)
2017	IBIO 890. Scientific Writing. Graduate seminar. Department of Integrative Biology, Michigan State University
2015	ZOL 890. Special Topic: Microbial Robustness. Graduate seminar. Department of Integrative Biology, Kellogg Biological Station, Michigan State University

Guest lectures and other teaching experience

2015 – 2019	PLB 809. 1x each year. Pathways to Success (Professional). Kellogg Biological Station, Michigan State University
2015, 2017	Guest lecturer, MMG 425. Microbial Ecology. Michigan State University
2012	Guest lecturer, BY 320. Ecology. Colorado State University
2012	Teaching Asst., NR 120. Environmental Conservation. Colorado State University
2005 – 2006	Training and Outreach Coordinator, Grinnell Corps Fellow (1 year position), Gobabeb Training and Research Centre, Namib Desert, Namibia, Africa

Teaching, mentoring, and leadership workshops and course development

2019	Site Visit (3 weeks) to Alabama and Florida for Study Away Course Development
2019	Cultural Competency Training, College of Natural Sciences, Michigan State University (Invited participant. Facilitators: Karen Pace, Dionardo Pizaña)

2018	Expanding Inclusion in Ecology and Evolution (Co-organizer. Facilitator: Deborah Johnson)
2018	Facilitated Discussion Assessing Climate at KBS (Co-organizer. Facilitator: Kim Phillips-Knope). Kellogg Biological Station
2018	MSU STEM Teaching Essentials Workshop. Closing the Loop: Using Evidence to Improve Teaching-Individually and Programmatically. April 26, 2018.
2017	MSU STEM Teaching Essentials Workshop: Knowing What Students Know: The Roles of Assessment for Instructional Design. Michigan State University. October 24, 2017.
2017	MSU STEM Teaching Essentials Workshop: Putting It All Together: Learning Outcomes and Assessments that Blend Core Ideas with Science and Engineering Practices. Michigan State University, November 14, 2017

SERVICE

Reviewer

Scientific Journals: Science, Nature Climate Change, Ecology Letters, International Society for Microbial Ecology (ISMEJ), Global Change Biology, Soil Biology and Biochemistry, Soil Science Society of America Journal, Frontiers in Microbiology, New Phytologist, Geobiology, FEMS Microbiology Ecology, Frontiers in Ecology and Evolution

Ad hoc proposal reviewer: Baylor University (Young Investigator Development Program), The Office of the Vice Provost for Research

Book review: Global Change Biology, Oxford University Press (2019)

Panelist: NSF Doctoral Dissertation Improvement Grant (DDIG), DEB Ecosystems Panel, 2015

Ad hoc reviewer: MSU BEACON program, Likens publication award, Biogeosciences Section, Ecological Society of America, 2014

Michigan State University

2018 – present	Space Committee, Kellogg Biological Station (Chair)
2018 – present	Graduate Affairs Committee, Kellogg Biological Station (2019, Chair)
2018 – present	Culture and Inclusion Committee, Kellogg Biological Station
2018	EEBB Curriculum Committee (ad hoc)
2015 – 2018	Faculty Advisory Committee (4 years, Chair Y4), Kellogg Biological Station
2016 – 2017	Search Committee, Terrestrial Ecologist, Kellogg Biological Station
2014 – 2016	Seminar Committee (chair), Kellogg Biological Station
2014 – present	Graduate Affairs Committee, Kellogg Biological Station

2015 Brown Bag Seminar, "How to get a DDIG: field report from NSF panel"

2015, 2016-present Faculty Advisory Committee, Kellogg Biological Station

Working group participation and organization ± Indicates lead or organizer

2019 USGS Powell Center Proposal. Integrating Ecosystem Metabolomics into Ecological Theory. Proposal submitted, invited participant

2019 Invited Panelist, Career Panel, Great Lakes Bioenergy Research Center Annual Meeting, Lake Geneva, WI.

2019 LTER Network Diversity Committee (2019- present)

2018 The Biologicals Roundtable. Workshop with farmers, consultants, industry, and scientists on the use of biological amendments in agriculture. Kellogg Biological Station, February 22, 2018.

2018 ±American Geophysical Union Annual Meeting Organized Session: Life at the Top: How Carbon Cycles at the Surface of Drylands. December, 2018. Co-organizers: Robert Logan (gradate student), Sasha Reed, Colin Tucker. Washington, DC

2018 ±LTER All Scientists Meeting: Facilitating Further Integration of Microbes into Long Term Ecological Research. October, 2018. Co-organizers: Lydia Zeglin, Kristen DeAngelis, Robin Rohwer. Asilomar, CA

2017 ±IGNITE Session: "Put a number on it: quantitative microbial ecology for deeper and broader scientific impact". 2017. Ecological Society of America 2017 Annual Meeting, Portland, OR

2016 DroughtNET (NSF RCN) Workshop, Sevilleta NWR, NM (invited participant)

2015 National Academies of Science Keck Futures Initiative (NAFKI) conference, workshop, and idea generation: Art and science frontier collaborations (invited participant)

2015 ±LTER All Scientists Meeting Workshop Organizer: LTER based perspectives on analyzing microbial community structure, function, and process

2015 Prioritizing directions for long-term ecological research in the U.S. (invited participant, NSF award to Lau and Bradford)

2014 – 2015 FOGLIFE colloquium and collaborative working group (invited participant)

2012 – 2015 ±Next Generation of Microbial Ecological Indicators, Powell Center, USGS (co-grant writer, grant awarded to Wallenstein, Lennon, Hall)

2008 – 2012 ±Front Range Student Ecology Symposium organizing committee, Colorado State University (Secretary, 2009).

2010 Graduate Student Representative, Natural Resource Ecology Lab, Colorado State University

MENTORING

Graduate student advisees (active):

Robert Logan (PhD candidate, NSF GRFP recipient)
Heather Kittredge (PhD candidate, GK-12 Fellow, LTER Fellow)
Tayler Chicoine (PhD student, MSU Plant Science Fellow, NSF GRFP recipient)
Corinn Rutkoski (PhD student, beginning June 2019, MSU Plant Science Fellow, NatSci Fellow)

Undergraduate researchers: *first-generation college student or underrepresented group

2019: Andrew Kelley (MSU URA), Ethan Tobiczyk (MSU URA), Hope Meyers (MSU URA)
2018: *Esbeiry Cordova-Ortiz (SEEDS REU), Audrey Hogenkamp (REU, Augustana College), Shanna Hilborn (MSU URA), Sara McAda (REU), *Stephen Frailey (MSU URA), *Kisanet Gebresilase (MSU URA) and *Zahraa Al-Tameemi (MSU URA)
2017: Sharon Carpenter (MSU URA, Drew Scholar), *Francisca Dokor (REU), Harry Ervin (REU, 2 years), *Khalilia Smith (MSU URA, Drew Scholar)
2016: *Kelechi Ukuchukwu (MSU URA), *Kathryn Bloodworth (SEEDS REU), *Ellen James (University of Michigan), Ben Dougherty (MSU)
2015: *Hepsiba Chepng'eno (MSU URA)
2014, 2016: SEEDS Mentor (program promoting diversity), ESA Annual Meeting
2010-2012: Mentored 3 female students on independent projects

Postdoctoral scholars:

Jennifer Jones (2019-present)
Lukas Bell-Dereske (2018-present)
Will West (2015-2017)

Technicians

Holly Vander Stel (2018-present)
Corinn Rutkoski (2018-2019; now: graduate student, Michigan State University)
Steven Gougherty (2016-2018; now: graduate student, Boston University)
*Daniela Herrera (2017; now: IL Science & Energy Innovation Foundation)
Kevin Dougherty (2014-2017; now: nursing student, University of Rochester)
Shannon Carvey (2017-2018; now: graduate student, University of New Brunswick)
Grace Kiel (2016; now: Lab Coordinator at BDN Industrial Hygiene Consultants)

Graduate student committees, active (does not include advisees)

Doctoral (7 total): Reid Longley (Bonito, PSM), Lindsay Putnam (Schrenk, IBIO/GEO), Lana Bolin (Lau, KBS/Univ IL), Jackson Sorensen (Shade, MMG), Di Liang (Robertson, KBS), Darian Smercina (Tiemann, PSM), Samantha Wescott (Eisten, IBIO)

Masters (1 total): Sierra Kaszubinski (Meek/Benbow, IBIO)

Graduate student committees, completed

Doctoral (3 total): Dustin Kincaid (Hamilton, KBS, competed 2018), Danny O'Donnell (Litchman, KBS, completed 2018), Paul Wilburn (Litchman, KBS, completed 2018)

Masters (2 total): Lindsay Williams (Matt Schrenk, IBIO/GEO, completed 2018), Allie Spring (Docherty, Western Michigan University, completed 2019)

PRESS, OUTREACH, AND COMMUNICATION

Work featured in:

"The Secret World Inside Tiny Fog Droplets" by Jessica Leigh Hester, Atlas Obscura, August 30, 2018.

"Fog is full of microbes" by Sarah Zhang, The Atlantic, August 24, 2018.

"Rolling in with the Fog" by Ken Ferguson, Frontiers in Ecology and Evolution Dispatches, Vol16 Issue8, Oct 2018.

Radio interview, Information Morning – Saint John, Canadian Broadcasting Corporation, August 30, 2018.

"Coastal fog can act as a Vector for Microbes", Sept 10, 2018, WAMC northeast public radio

Hastings Banner Newspaper, Hastings, MI. 2018.

"Looking Beneath the Surface" Kellogg Biological Station Annual Report 2016-2017 " by Blair Bohlen. 2017.

Multimedia communication

"Fog of Dawn" Detroit Science Gallery DEPTH. June-August 2019. Expected visitors: >4000.

Video series on MMPRNT project (DOE-funded project on microbes in switchgrass), led by Evan Kutz, KBS intern and Blair Bohlen, KBS Communications

- "Restoration through growing smarter: the MMPRNT Project" (link)
- "Facing the future through collaboration: The MMPRNT Project" (link)
- "Ushering in a new energy era: The MMPRNT Project" (link)
- "Powerful knowledge through technology: The MMPRNT Project" (link)

Public seminars

Tiny creatures, big jobs: The important and awesome role of microbes in the Namib Desert. Namibia Scientific Society. Robert Logan and Sarah Evans. Windhoek, Namibia. 11 February 2019.

Tiny creatures, big jobs: The important and awesome role of microbes in the Namib Desert. Swakopmund Scientific Society. Robert Logan and Sarah Evans. Swakopmund, Namibia. 31 January 2019.

Invisible stewards: what do microorganisms do in nature and why is it important? Sarah Evans. North Country Trail Association (Chief Noonday Chapter), Delton, Michigan. Oct 11, 2017.