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PROFESSIONAL EXPERIENCE

2018-present	Chair, Dept. of Plant & Soil Sciences, University of Kentucky
2016-present	Full Professor, Dept. of Plant & Soil Sciences, University of Kentucky
2013-2017	Director, Tracy Farmer Institute for Sustainability & the Environment, UK
2012-2016	Associate Professor, Dept. of Plant & Soil Sciences, University of Kentucky
2006-2012	Assistant Professor, Dept. of Plant & Soil Sciences, University of Kentucky
2002-2006	Postdoctoral Fellow, Dept. of Biology, Duke University

EDUCATION

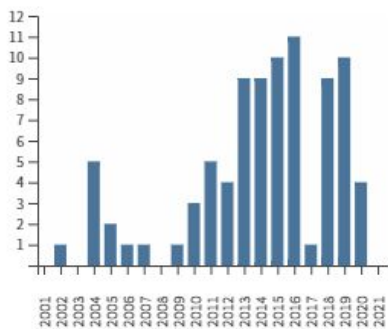
2002 – Ph.D. in Ecology, Colorado State University
1998 – M.S. in Rangeland Ecology & Management, Texas A&M University
1995 – B.A. in Biology, Rice University

RESEARCH INTERESTS

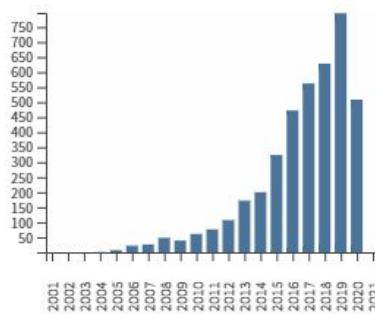
My research program seeks to identify the main ecological factors controlling grassland structure and function. Specifically, my lab explores the effects of fungal endophyte symbioses on grassland ecosystem processes and evaluates how grasslands will respond to global change factors, such as alterations to climate, land use, ultraviolet radiation, and invasive species abundance. To date, I have garnered >\$5million to support these activities, ~\$2.6million of which has been directed solely to my research program.

PUBLICATIONS

As reported by ISI Web of Science Core Collection (or Google Scholar) on August 6, 2020, my publication and citation metrics are:



Published Items Each Year



Citations in Each Year

Total citations: 4,096 (ISI)
6,051 (Google Sch)

Avg citations per item:
47.08 (ISI)

h-index: 30 (ISI)
35 (Google Sch)

PUBLICATIONS (cont'd)

† Indicates corresponding author. * Indicates a graduate or undergraduate student I advised or who worked closely with my lab to obtain the data presented. ® Indicates a postdoc, research associate, or visiting scientist associated with my lab. IF = 5-yr InCites JCR Impact Factor of the journal. For comparison, IF for ecology journals (n=168) range from <1 to >14, with the average being ~2.07 in 2019. Total citation count for individual articles are provided where possible (as reported in ISI Web of Science on August 6, 2020).

A) *Refereed Journal Articles*

- 88) Potts, L.J. †*, J.D. Gantz, Y. Kawarasaki, B.N. Philip, D.J. Gonthier, J.M. Unrine, **R.L. McCulley**, R.E. Lee, Jrl, D.L. Denlinger, and N.M. Teets. **In Press**. Environmental factors influencing fine-scale distribution of Antarctica's only endemic insect. Oecologia. *IF=3.094. Citations: 0*
- 87) Risch, A. †, S. Zimmermann, B. Moser, M. Schuetz, F. Hagedorn, J. Firn, P. Fay, P. Adler, L. Biederman, J. Blair, E. Borer, A. Broadbent, C. Brown, M. Cadotte, M. Caldeira, K. Davies, A. di Virgilio, N. Eisenhauer, A. Eskelinen, J. Knops, A. MacDougall, **R.L. McCulley**, B. Melbourne, J. Moore, S. Power, S. Prober, E. Seabloom, J. Siebert, M. Silveira, K. Speziale, C. Stevens, P. Tognetti, R. Virtanen, L. Yahdjian, and R. Ochoa-Hueso. **In Press**. Global impacts of fertilization and herbivore removal on soil net nitrogen mineralization are modulated by local climate and soil properties. Global Change Biology. *IF=9.827. Citations: 0*
- 86) Ochoa-Hueso, R. †, E.T. Borer, E.W. Seabloom, S.E. Hobbie, A.C. Risch, S.L. Collins, J. Alberti, H.A. Bahamonde, C.S. Brown, M.C. Caldeira, P. Daleo, C.R. Dickman, A. Ebeling, N. Eisenhauer, E.H. Esch, A. Eskelinen, V. Fernandez, S. Gusewell, B. Gutierrez-Larruga, K. Hofmockel, R. Laungani, E. Lind, A. Lopez, **R.L. McCulley**, J.L. Moore, P.L. Peri, S.A. Power, J.N. Price, S.M. Prober, C. Roscher, J.M. Sarneel, M. Schutz, J. Siebert, R.J. Standish, S. Velasco Ayuso, R. Virtanen, G.M. Wardle, G. Wiehl, L. Yahdjian, and T. Zamin. **2020**. Microbial processing of plant remains is co-limited by multiple nutrients in global grasslands. Global Change Biology 26(8):4572-4582. doi: 10.1111/gcb.15146. *IF=9.827. Citations: 0*
- 85) Gilbert, B. †, A.S. MacDougall, T. Kadoya, M. Akasaka, J.R. Bennett, E.M. Lind, H. Flores-Moreno, J. Firn, Y. Hautier, E.T. Borer, E.W. Seabloom, P.B. Adler, E.E. Cleland, J.B. Grace, W.S. Harpole, E.H. Esch, J.L. Moore, J. Knops, **R.L. McCulley**, B. Mortensen, J. Bakker, and P.A. Fay. **2020**. Climate and local environment structure asynchrony and the stability of primary production in grasslands. Global Ecology and Biogeography 29(7):1177-1188. doi: 10.1111/geb.13094. *IF=7.647. Citations: 0*
- 84) Sitters, J. †, E.R.J. Wubs †, E.S. Bakker, T.W. Crowther, P.B. Adler, S. Bagchi, J.D. Bakker, L. Biederman, E.T. Borer, E.E. Cleland, N. Eisenhauer, J. Firn, L. Gherardi, N. Hagenah, Y. Hautier, S.E. Hobbie, J.M.H. Knops, A.S. MacDougall, **R.L. McCulley**, J.L. Moore, B. Mortensen, P.L. Peri, S.M. Prober, C. Riggs, A.C. Risch, M. Schutz, E.W. Seabloom, J. Siebert, C.J. Stevens, and G.F. Veen. **2020**. Nutrient availability controls the impact of mammalian herbivores on soil carbon and nitrogen pools in grasslands. Global Change Biology 26(4):2060-2071. doi: 10.1111/gcb.15023. *IF=9.827. Citations: 1*

- 83) Risch, A.C.†, S. Zimmermann, R. Ochoa-Hueso, M. Schutz, B. Frey, J.L. Firn, P.A. Fay, F. Hagedorn, E.T. Borer, E.W. Seabloom, W.S. Harpole, J.M.H. Knops, **R.L. McCulley**, A.A.D. Broadbent, C.J. Stevens, M.L. Silveira, P.B. Adler, S. Baez, L.A. Biederman, J.M. Blair, C.S. Brown, M.C. Caldeira, S.L. Collins, P. Daleo, A. di Virgilio, A. Ebeling, N. Eisenhauer, E. Esch, A. Eskelinen, N. Hagenah, Y. Hautier, K.P. Kirkman, A.S. MacDougall, J.L. Moore, S.A. Power, S.M. Prober, C. Roscher, M. Sankaran, J. Siebert, K.L. Speziale, P.M. Tognetti, R. Virtanen, L. Yahdjian, and B. Moser. **2019**. Soil net nitrogen mineralization across global grasslands. Nature Communications (2019):4981. <https://doi.org/10.1038/s41467-019-12948-2> *IF=13.61. Citations: 2*
- 82) Slaughter, L.C. *†, J.A. Nelson, A.E. Carlisle, M. Bourguignon, R.D. Dinkins, T.D. Phillips, and **R.L. McCulley**. **2019**. Tall fescue and *E. coenophiala* genetics influence root-associated soil fungi in a temperate grassland. Frontiers in Microbiology 10: article 2380. Doi: 10.3389/fmicb.2019.02380. *IF=4.926. Citations: 0*
- 81) Lin, D.* , **R.L. McCulley**†, J.A. Nelson, K.L. Jacobsen, D. Zhang†. **2019**. Time in pasture rotation alters soil microbial community composition and function and increases soil carbon sequestration potential in a temperate agroecosystem. Science of the Total Environment 698 (2020) 134233. *IF=6.419. Citations: 0*
- 80) Komatsu, K.J.†, M.L. Avolio, N.P. Lemoine, F. Isbell, E. Grman, G.R. Houseman, S.E. Koerner, D.S. Johnson, K.R. Wilcox, J.M. Alatalo, J.P. Anderson, R. Aerts, S.G. Baer, A.H. Baldwin, J. Bates, C. Beierkuhnlein, R.T. Belote, J. Blair, J.M.G. Bloor, P.J. Bohlen, E.W. Bork, E.H. Boughton, W.D. Bowman, A.J. Britton, J.F. Cahill, Jr., E. Chaneton, N.R. Chiariello, J. Cheng, S.L. Collins, J.H.C. Cornelissen, G. Du, A. Eskelinen, J. Firn, B. Foster, L. Gough, K. Gross, L.M. Hallett, X. Han, H. Harmens, M.J. Hovenden, A. Jagerbrand, A. Jentsch, C. Kern, K. Klanderud, A.K. Knapp, J. Kreyling, W. Li, Y. Luo, **R.L. McCulley**, J.R. McLaren, J.P. Megonigal, J.W. Morgan, V. Onipchenko, S.C. Pennings, J.S. Prevey, J.N. Price, P.B. Reich, C.H. Robinson, F.L. Russell, O.E. Sala, E.W. Seabloom, M.D. Smith, N.A. Soudzilovskaia, L. Souza, K. Suding, K.B. Suttle, T. Svejcar, D. Tilan, P. Tognetti, R. Turkington, S. White, Z. Xu, L. Yahdjian, Q. Yu, P. Zhang, and Y. Zhang. **2019**. Global change effects on plant communities are magnified by time and the number of global change factors imposed. Proceedings of the National Academy of Science 116(36):17867-17873. <https://doi.org/10.1073/pnas.1819027116> *IF=10.62. Citations: 10*
- 79) Rounsaville, T.J.†*, **R.L. McCulley**, and M.A. Arthur. **2019**. Allee effects and soil nutrient changes mediated by experimental plantings of a nonindigenous, temperate liana. Plant Ecology 220(9):861-872. *IF=1.852. Citations: 0*
- 78) Seabloom, E.W.†, B. Condon, L. Kinkel, K.J. Komatsu, C.Y. Lumibao, G. May, **R.L. McCulley**, and E.T. Borer. **2019**. Effects of nutrient supply, herbivory, and host community on fungal endophyte diversity. Ecology 100(9): e02758. *IF=5.564. Citations: 2*

- 77) Yang, Z^{†*}, S. Chen, X. Liu, D. Xiong, C. Xu, M.A. Arthur, **R.L. McCulley**, S. Shi, and Y. Yang. **2019**. Loss of soil organic carbon following natural forest conversion to Chinese fir plantation. Forest Ecology and Management 449: 117476. doi: 10.1016/j.foreco.2019.117476 *IF*=3.581. *Citations*: 0
- 76) Moore, J.D.^{†®}, A.E. Carlisle, J.A. Nelson, and **R.L. McCulley**. **2019**. Fungal endophyte infection increases tall fescue's survival, growth, and flowering in a reconstructed prairie. Restoration Ecology 27(5):1000-1007. doi: 10.1111/rec.12960 *IF*=2.896. *Citations*: 0
- 75) Crowther, T.W.[†], C. Riggs, E.M. Lind, E.T. Borer, E.W. Seabloom, S.E. Hobbie, J. Wubs, P.B. Adler, J. Firn, L. Gherardi, N. Hagenah, K.S. Hofmockel, J.M.H. Knops, **R.L. McCulley**, A. MacDougall, P.L. Peri, S.M. Prober, C.J. Stevens, and D. Routh. **2019**. Sensitivity of global soil carbon stocks to combined nutrient enrichment. Ecology Letters 22(6):936-945. doi: 10.1111/ele.13258 *IF*=10.562. *Citations*: 8
- 74) Cleland, E.E.[†], E.M. Lind, N.M. DeCrappeo, E. DeLorenze, R.A. Wilkins, P.B. Adler, J.D. Bakker, C.S. Brown, K.F. Davies, E. Esch, J. Firn, S. Gressard, D.S. Gruner, N. Hagenah, W.S. Harpole, Y. Hautier, S.E. Hobbie, K.S. Hofmockel, K. Kirkman, J. Knops, C.W. Kopp, K.J. La Pierre, A. MacDougall, **R.L. McCulley**, B.A. Melbourne, J.L. Moore, S.M. Prober, C. Riggs, A.C. Risch, M. Schuetz, C. Stevens, P.D. Wragg, J. Wright, E.T. Borer, and E.W. Seabloom. **2019**. Belowground biomass response to nutrient enrichment depends on light limitation across globally distributed grasslands. Ecosystems. doi: 10.1007/s10021-019-00350-4 *IF*=4.466. *Citations*: 2
- 73) Bradford, M.A.[†], **R.L. McCulley**, T.W. Crowther, E.E. Oldfield, S.A. Wood, and N. Fierer. **2019**. Cross-biome patterns in soil microbial respiration predictable from evolutionary theory on thermal adaptation. Nature Ecology & Evolution 3(2):223-231. doi: 10.1038/s41559-018-0771-4 *IF*=12.559. *Citations*: 18
- 72) Nogueira, C.^{†*}, A. Nunes, M.N. Bugalho, C. Branquinho, **R.L. McCulley**, and M.C. Caldeira. **2018**. Nutrient addition and drought interact to change the structure and decrease the functional diversity of a Mediterranean grassland. Frontiers in Ecology and Evolution 6: article 155. doi: 10.3389/fevo.2018.00155 *IF*=2.555. *Citations*: 8
- 71) Hodapp, D.[†], E. Borer, S.W. Harpole, E. Lind, E. Seabloom, P. Adler, J. Alberti, C. Arnillas, J. Bakker, L. Biederman, M. Cadotte, E. Cleland, S. Collins, P. Fay, J. Firn, N. Hagenah, Y. Hautier, O. Iribarne, J. Knops, **R.L. McCulley**, A. MacDougall, J. Moore, J. Morgan, B. Mortensen, K. La Pierre, A. Risch, M. Schuetz, P. Peri, C. Stevens, J. Wright, and H. Hellbrand. **2018**. Spatial heterogeneity in species composition constrains plant community responses to herbivory and fertilization. Ecology Letters 21(9): 1364-1371. doi: 10.1111/ele.13102 *IF*=10.562. *Citations*: 6
- 70) Derner, J.D., A.J. Smart, T.P. Toombs, D. Larsen, **R.L. McCulley**, J. Goodwin, S. Sims, and L.M. Roche. **2018**. Soil health as a transformation change agent for U.S. grazing lands management. Rangeland Ecology & Management 71:403-408. *IF*=2.339. *Citations*: 11

- 69) Rounsaville, T.J.†, C.C. Baskin, E.A. Roualdes, **R.L. McCulley**, and M.A. Arthur. **2018**. Seed dynamics of the liana *Euonymus fortune* and implications for invasibility. Journal of the Torrey Botanical Society 145:225-236. *IF*=0.753. *Citations*: 2
- 68) Kalosa-Kenyon, E.* , L.C. Slaughter†*, J.A. Rudgers, and **R.L. McCulley**. **2018**. Asexual *Epichloë* endophytes do not consistently alter arbuscular mycorrhizal fungi colonization in three grasses. American Midland Naturalist 179:157-165. *IF*=0.7. *Citations*: 2
- 67) Anderson, T.M.†, D. Griffith, J. Grace, E. Lind, P. Adler, L. Biederman, D. Blumenthal, P. Daleo, J. Firn, N. Hagenah, A. MacDougall, **R. McCulley**, S. Prober, A. Risch, M. Sankaran, M. Schutz, E. Seabloom, C. Stevens, L. Sullivan, P. Wragg, and E. Borer. **2018**. Herbivory and eutrophication mediate grassland plant nutrient responses across a global climatic gradient. Ecology 99: 822-831. *IF*=5.564. *Citations*: 8
- 66) Shelton, R.E.†*, K.L. Jacobsen, and **R.L. McCulley**. **2018**. Cover crops and fertilization alter nitrogen loss in organic and conventional conservation agriculture systems. Frontiers in Plant Science 8: 2260. *IF*=5.207. *Citations*: 13
- 65) Slaughter, L.C.†*, J.A. Nelson®, E. Carlisle®, M. Bourguignon*, R.D. Dinkins, T.D. Phillips, and **R.L. McCulley**. **2018**. Climate change and *Epichloë coenophiala* association modify belowground fungal symbioses of tall fescue host. Fungal Ecology 31: 37-46. *IF*=3.953. *Citations*: 2
- 64) Hautier, Y.†, I. Forest, E.T. Borer, E.W. Seabloom, W.S. Harpole, E.M. Lind, A.S. MacDougall, C.J. Stevens, P.B. Adler, J. Alberti, J.D. Bakker, L.A. Brudvig, Y.M. Buckley, M. Cadotte, M.C. Caldeira, E.J. Chaneton, C. Chu, P. Daleo, C.R. Dickman, J.M. Dwyer, A. Eskelinen, P.A. Fay, J. Firn, N. Hagenah, H. Hillebrand, O. Iribarne, K.P. Kirkham, J.M.H. Knops, K.J. La Pierre, **R.L. McCulley**, J.W. Morgan, M. Partel, J. Pascual, J.N. Price, S.M. Prober, A.C. Risch, M. Sankaran, M. Schuetz, R.J. Standish, R. Virtanen, G.M. Wardle, L. Yahdjian, and A. Hector. **2017**. Local loss and spatial homogenization of plant diversity reduce ecosystem multifunctionality. Nature Ecology & Evolution <https://doi.org/10.1038/s41559-017-0395-0> *IF*=12.559. *Citations*: 41
- 63) Biederman, L.A.†, B. Mortensen, P.A. Fay, N. Hagenah, J. Knops, K. La Pierre, R. Laungani, E. Lind, **R.L. McCulley**, S. Power, E.W. Seabloom, P. Tognetti. **2017**. Nutrient addition shifts plant community composition towards earlier flowering species in some prairie ecoregions in the U.S. Central Plains. PLoS ONE 12(5): e0178440. <https://doi.org/10.1371/journal.pone.0178440> *IF*=3.226. *Citations*: 2
- 62) Slaughter, L.C. *† and **R.L. McCulley**. **2016**. Aboveground *Epichloë coenophiala* – grass associations do not affect belowground fungal symbionts or associated plant, soil parameters. Microbial Ecology 72: 682-691. *IF*=3.862. *Citations*: 4
- 61) Guo, J.*, **R.L. McCulley**, T.D. Phillips, and D.H. McNear, Jr†. **2016**. Fungal endophyte and tall fescue cultivar interact to differentially effect bulk and rhizosphere soil processes

governing C and N cycling. Soil Biology & Biochemistry 101:165-174. *IF*=6.767.
Citations: 9

- 60) Harpole, W.S.†, L.L. Sullivan, E.M. Lind, J. Firn, P.B. Adler, E.T. Borer, J. Chase, P.A. Fay, Y. Hautier, H. Hillebrand, A.S. MacDougall, E.W. Seabloom, R. Williams, J.D. Bakker, M.W. Cadotte, E.J. Chaneton, C. Chu, E.E. Cleland, C. D'Antonio, K.F. Davies, D.S. Gruner, N. Hagenah, K. Kirkman, J.M.H. Knops, K.J. La Pierre, **R.L. McCulley**, J.L. Moore, J.W. Morgan, S.M. Prober, A.C. Risch, M. Schuetz, C.J. Stevens, and P.D. Wragg. **2016**. Addition of multiple limiting resources reduces grassland diversity. Nature 537(7618):93-96. *IF*=46.486. *Citations: 128*
- 59) Saikkonen, K.†, T.D. Phillips, S.H. Faeth, **R.L. McCulley**, I. Saloniemi, and M. Helander. **2016**. Performance of endophyte infected tall fescue in Europe and North America. PLOS ONE 11(6):e0157382. doi: 10.1371/journal.pone.0157382. *IF*=3.226. *Citations: 8*
- 58) Tredennick, A.T.†, P.B. Adler, J.B. Grace, W.S. Harpole, E.T. Borer, E.W. Seabloom, T.M. Anderson, J.D. Bakker, L.A. Biederman, C.S. Brown, Y.M. Buckley, C. Chu, S.L. Collins, M.J. Crawley, P.A. Fay, J. Firn, D.S. Gruner, N. Hagenah, Y. Hautier, A. Hector, H. Hillebrand, K. Kirkham, J.M.H. Knops, R. Laungani, E.M. Lind, A.S. MacDougall, **R.L. McCulley**, C.E. Mitchell, J.L. Moore, J.W. Morgan, J.L. Orrock, P.L. Peri, S.M. Prober, A.C. Risch, M. Schutz, K.L. Speziale, R.J. Standish, L.L. Sullivan, G.M. Wardle, R.J. Williams, and L.H. Yang. **2016**. Comment on “Worldwide evidence of a unimodal relationship between productivity and plant species richness”. Science 351(6272):457. *IF*=44.372. *Citations: 7*
- 57) Rojas, X., J. Guo, J.W. Leff, D.H. McNear Jr., N. Fierer, and **R.L. McCulley**†. **2016**. Infection with a shoot-specific fungal endophyte (*Epichloë*) alters tall fescue soil microbial communities. Microbial Ecology 72:197-206. *IF*=3.862. *Citations: 21*
- 56) Smets, W., J.W. Leff, M.A. Bradford, **R.L. McCulley**, S. Lebeer, and N. Fierer†. **2016**. A method for simultaneous measurement of soil bacterial abundances and community composition via 16S rRNA gene sequencing. Soil Biology & Biochemistry 96:145-151. *IF*=6.767. *Citations: 66*
- 55) Flores-Moreno, H.†, P.B. Reich, E.M. Lind, L.L. Sullivan, E.W. Seabloom, L. Yahdjian, A.S. MacDougall, L. Reichmann, J. Alberti, S. Baez, J.D. Bakker, M.W. Cadotte, M.C. Caldeira, E.J. Chaneton, C. D'Antonio, P.A. Fay, J. Firn, N. Hagenah, W.S. Harpole, O. Iribarne, K.P. Kirkman, J.M.H. Knops, K.J. La Pierre, R. Laungani, A.D.B. Leakey, **R.L. McCulley**, J.L. Moore, J. Pascual, and E.T. Borer. **2016**. Climate modifies response of non-native and native species richness to nutrient enrichment. Philosophical Transactions of the Royal Society B 371(1694): 20150273. *IF*=6.736. *Citations: 18*
- 54) Helander, M.†, T. Phillips, S.H. Faeth, L.P. Bush, **R.L. McCulley**, I. Saloniemi, and K. Saikkonen. **2016**. Alkaloid quantities in endophyte-infected tall fescue are affected by the plant-fungus combination and environment. Journal of Chemical Ecology 42(2):118-126. doi: 10.1007/s10886-016-0667-1. *IF*=2.635. *Citations: 15*

- 53) Jokela, K.J.*†, D.M. Debinski, and **R.L. McCulley**. 2016. Effects of non-native grass species and endophyte infection on the development and survival of Tawny-edged skippers (Lepidoptera: Hesperidae). Environmental Entomology 45(1):142-149. doi: 10.1093/ee/nvv151. *IF=1.813. Citations: 3*
- 52) Slaughter, L.C.*†, A.E. Carlisle®, J.A. Nelson®, and **R.L. McCulley**. 2016. Fungal endophyte symbiosis alters nitrogen source of tall fescue host, but not nitrogen fixation in co-occurring red clover. Plant & Soil 405:243-256. doi: 10.1007/s11104-015-2510-9. *IF=3.88. Citations: 5*
- 51) Leff, J.W., S.E. Jones, S.M. Prober, A. Barberan, E.T. Borer, J.L. Firn, W.S. Harpole, S.E. Hobbie, K.S. Hofmockel, J.M.H. Knops, **R.L. McCulley**, K. La Pierre, A.C. Risch, E.W. Seabloom, M. Schutz, C. Steenbock, C.J. Stevens, and N. Fierer†. 2015. Consistent responses of soil microbial communities to elevated nutrient inputs in grasslands across the globe. PNAS 112(35):10967-10972. doi: 10.1073/pnas.1508382112. *IF=10.62. Citations:375*
- 50) Strickland, M.S.†, **R.L. McCulley**, J.A. Nelson®, and M.A. Bradford. 2015. Compositional differences in root exudates elicit a limited functional and compositional response in soil microbial communities. Frontiers in Microbiology 6:817. doi: 10.3389/fmicb.2015.00817. *IF=4.926. Citations: 12*
- 49) Bourguignon, M.*†, J.A. Nelson®, A.E. Carlisle®, H. Ji, R.D. Dinkins, T.D. Phillips, and **R.L. McCulley**. 2015. Ecophysiological responses of tall fescue genotypes to fungal endophyte infection and elevated temperature and precipitation. Crop Science 55:2895-2909. doi: 10.2135/cropsci2015.01.0020. *IF=2.096. Citations: 5*
- 48) Slaughter, L.C.*†, M.N. Weintraub, and **R.L. McCulley**. 2015. Seasonal effects stronger than three-year climate manipulation on grassland soil microbial community. Soil Science Society of America Journal 79:1352-1365. doi: 10.2136/sssaj2014.10.0431. *IF=2.568. Citations: 11*
- 47) Stevens, C.J.†, E.M. Lind, Y. Hautier, W.S. Harpole, E.T. Borer, S. Hobbie, E.W. Seabloom, L. Ladwig, J.D. Bakker, C. Chu, S. Collins, K.F. Davies, J. Firn, H. Hillebrand, K.J. La Pierre, A. MacDougall, B. Melbourne, **R.L. McCulley**, J. Morgan, J.L. Orrock, S.M. Prober, A.C. Risch, M. Schuetz, and P.D. Wragg. 2015. Anthropogenic nitrogen deposition predicts local grassland primary production worldwide. Ecology 96:1459-1465. *IF=5.564. Citations: 58*
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Refereed Journal Articles Currently In Review: n = 6

B) Peer Reviewed Book Chapters, Conference Proceedings, Webinars, and Extension Pubs.

* Indicates a graduate student I advised or who worked closely with my lab to obtain the data presented.

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- 2) Biederman, L.A., B. Mortensen, P. Fay, N. Hagenah, J. Knops, K. La Pierre, R. Laungani, E. Lind, **R. McCulley**, S. Power, E. Seabloom, and P. Tognetti. **2017**. How do nutrients change flowering in prairies? Environmental Science Journal for Teens. September issue.
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- 6) McNear Jr., D.H.† and **R.L. McCulley**. **2012**. Ch. 4.2 - Influence of the *Neotyphodium* – tall fescue symbiosis on belowground processes. *In* Epichloae, Endophytes of Cool Season Grasses: Implications, Utilization, and Biology, ed. by C.A. Young, G.E. Aiken, R.L. McCulley, J.R. Strickland, and C.L. Schardl. The Samuel Roberts Noble Foundation, Ardmore, OK, pp. 94-99. McNear Jr., D.H. and R.L. McCulley. *Citations: 8*
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- 8) Jackson, R.B.†, K.A. Farley, W.A. Hoffman, E.G. Jobbágy, and **R.L. McCulley**. **2007**. Ch 19: Carbon and water tradeoffs in conversions to forests and shrublands. Pp. 237-246, *In* Terrestrial Ecosystems in a Changing World. Eds. Canadell, J.G., D.E. Pataki, and L.F. Pitelka. Springer, Cambridge, MA. *Citations: 17*
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GRANTS

(Values in parentheses indicate percentage allocated to my research program)

i) *Internationally Competitive*

- 1) McCulley, R.L. (PI). “Global Research Alliance Senior Scientist Award.” *New Zealand Agricultural Greenhouse Gas Research Centre & the Global Research Alliance*. 2016. *This award paid for me to travel to and reside in Palmerston North, New Zealand, for three months, where I collaborated with AgResearch scientists to evaluate how cultivar, endophyte presence and strain influence soil-to-atmosphere N₂O fluxes*.....**\$30,000 NZD** (100%)
- 2) McCulley, R.L. (PI), K. Saikkonen, and I. Zabalgogezcoa (Co-PIs). “Manipulating Grass-Fungal Endophyte Symbioses to Reduce Greenhouse Gas Emissions and Increase Soil Carbon Sequestration in Grasslands of Finland, Spain, and the United States.” *FACCE-JPI*. 2014 – 2017. *This grant assesses whether grass-fungal endophyte symbioses affect ecosystem services, such as greenhouse gas emissions and soil carbon sequestration, in Spain, Finland, and the U.S. I am the lead PI on the proposal. I created the project, and provide the technical expertise and project management. Spain received 30,000€ and Finland 900,000€ from their funding agencies*.....**\$99,986** (100%)

ii) *Nationally Competitive*

- 3) Moe, L.A. (PI), S.T. Lucas, R.L. McCulley, R. Pearce, and G. Halich (Co-PIs). “The Hemp Effect: What impact will incorporating hemp into traditional crop rotations have on the provisioning of agroecosystem services?” *NIFA-AFRI-Foundational*, 2020-2024.....**\$500,000** (15%)
- 4) McCulley, R.L. (PI). “Utilizing grass-endophyte technology to improve pasture soil health and resilience to climate change stressors and soil health.” *NIFA-AFRI-Foundational – Agricultural Production Systems*. 2017-2021.....**\$500,000** (100%)
- 5) McCulley, R.L. (PI), J. White, and C.A. Young (Co-PIs). “Can manipulation of fungal endophyte diversity positively influence tall fescue pasture sustainability and ecosystem functioning?” *NIFA-AFRI-Foundational – Agroecosystem Biodiversity*. 2016 – 2018.**\$150,000** (75%)
- 6) Crowley, P.H. (PI), R.L. McCulley, R.C. Sargent, D.F. Westneat, and K. Zeidler (Co-PIs). “Field Station Planning for the Ecological Research and Education Center, University of Kentucky.” *NSF-DBI-Biological Field Stations & Marine Labs*. 2014 - 2015. *We developed a 5-year plan for the site. Majority of this money was spent on stakeholder group meetings to help develop the 5-year plan*.....**\$25,000** (1%)
- 7) McCulley, R.L. (PI), C. Moura and M. Caldiera (Co-PIs). “Controls on the plant-soil stoichiometry of dryland agroecosystems: A sabbatical strengthening grant.” *USDA-NIFA-AFRI Foundational Program – Microbial Communities in Soil*. 2013 – 2016. *This sabbatical proposal funded me to spend seven months in 2014 in Portugal, where, with Portuguese collaborators, we designed a project evaluating the effects of pasture biodiverse, legume-rich improvements on plant and soil stoichiometry*.....**\$112, 015** (100%)

- 8) McCulley, R.L. (PI). “The role of ultra-violet radiation in litter degradation in cork oak savannas of Portugal.” *National Science Foundation (NSF) – Ecosystem Science*. 2012-2013. *This was a supplement grant to the larger collaborative NSF dryland grant (#11). Portuguese collaborators have overseen the field aspect of the project, and my lab is handling the labwork.....* **\$31,832** (100%)
- 9) Debinski, D.M. (PI), R.L. McCulley, D. Engle, and J.D. Scasta (Co-PIs). “The complex role of tall fescue in grassland ecology.” *Leopold Center for Sustainable Agriculture*. 2012-2015. *I have worked for a few years in the Grand River Grasslands of southern Iowa, evaluating endophyte infection frequencies in invading tall fescue. Through a PI based at Iowa State, we were able to finally secure some funds to expand this work from the Leopold Center.* **\$86,333** (5%)
- 10) D.F. Westneat (PI), J. Bouwma-Gearhart (Co-PI), and 10 core faculty members (M. Arthur, V. Cassone, P. Crowley, C. Fox, G. Garcia-Ramos, J. Krupa, R. McCulley, N. McLetchie, J. Osborn, and C. Sargent). “Suburban Ecology and Invasive Species.” *National Science Foundation (NSF) – REU Site Program*. 2011 – 2014. *This proposal brought undergraduate students from all over the U.S. together for summer research experiences at the Ecological Research Facility associated with the Dept. of Biology here at UK. I was a faculty mentor to two students.....* **\$300,000** (5%)
- 11) M. Bradford (PI), N. Fierer, and R.L. McCulley (Co-PI’s). “Collaborative Research: Do expected evolutionary trade-offs in enzyme activities manifest at the level of microbial community function?” *NSF- Ecosystem Science*. 2010-2015..... **\$900,000** (32%)
- 12) M. Caldeira (PI), T. David, C. Moura, D. Fangueiro, J. David, R.L. McCulley, and R. Ryal (International Collaborators). “CARBOWATSHRUB – Shrub encroachment: effects on carbon, nitrogen, and water cycling.” *Portugal NSF** (a.k.a. *FCT*). 2010-2012. *As an international collaborator on this project, I helped develop the science of this proposal by guiding the field design and methods employed. I also provided laboratory analyses and training to associated Portuguese students and scientists. I traveled to Portugal for these purposes in fall 2010 and 2011.....* **156,401€**(3%)
- 13) Moura, C. (PI), R.L. McCulley, and J.H. Kim (International Collaborators). “Towards a holistic understanding of shrub encroachment in southern Portugal ecosystems.” *Portugal NSF** (a.k.a. *FCT*). 2010 – 2012. *This proposal provided additional money to support travel costs and additional analyses associated with the previous project.....* **15,000€**(5%)
- * These two proposals were nationally competitive within Portugal.
- 14) R.L. McCulley (PI). REU Supplement for “Collaborative Research: Decomposition in drylands: Soil erosion and UV interactions.” *NSF- Ecosystem Science*. Summer 2010. *This was a supplement award that I was granted through the following collaborative NSF proposal. This money supported, Katie Harvey, a UK-NRCM (or NRES) graduate, to spend summer 2010 developing an independent research project on the topic.....* **\$7,500** (100%)
- 15) S. Archer (PI), P. Barnes, D. Breshears, R.L. McCulley, and H. Throop (Co-PI’s). “Collaborative Research: Decomposition in drylands: Soil erosion and UV interactions.” *NSF*

– *Ecosystem Science*. 2008-2012. *I contribute the microbial component of the project. This project led to new collaborations and related projects in Portugal.....* **\$1,100,000** (18%)

- 16) D. McNear Jr. (PI), R.L. McCulley, and N. Fierer (Co-PI's). "Understanding endophyte infection effects on soil processes in tall fescue pastures: from rhizosphere to regional scales." *USDA-National Research Initiative (NRI) Soil Processes*. 2008-2013..... **\$397,500** (5%)
- 17) O. Wendroth (PI), M. Coyne, J. Grove, A. Karathanasis, and R.L. McCulley (Co-PI's). "Dynamics of soil physical state variables and related processes across a land use gradient in spatial and temporal transition." *USDA-NRI Soil Processes*. 2008-20..... **\$322,000** (5%)
- 18) R.L. McCulley (PI). "Effects of warming and altered precipitation regime on managed grassland structure and function." *U.S. Dept. of Energy - National Institute for Climatic Change Research*. 2008-2012..... **\$375,922** (100%)
- 19) R.L. McCulley (PI). "Postdoctoral Fellowship: Carbon storage consequences of land use change in the tallgrass prairie region of North America." *USDA NRI – Managed Ecosystems*. 2005-2007..... **\$50,000** (100%)
- 20) R.L. McCulley (PI) and I.C. Burke (Co-PI). "Grassland response to precipitation manipulation." *NSF – Dissertation Improvement Grant*. 2000-2002..... **\$10,000** (100%)

iii) Internally Competitive (within Univ. of KY)

- 21) R.L. McCulley (PI). "Determining red clover drought resistance under abiotic stress and exploring effects of clover-produced isoflavones on animal nitrogen excreta, soil-to-atmosphere trace gas production, and soil microbial communities." *USDA-FAPRU-Specific Cooperative Agreement*, 2018 – 2023... **\$119,942** (100%)
- 22) R. Hirsch (PI), C. Schardl, P. Calie, R.L. McCulley, J. White (Co-PI's). "KY EPSCoR: Integrating collegiate ecological and molecular research into the K-12 STEM curriculum." *KY NSF EPSCoR*, 2016-2017..... **\$9,860** (2%)
- 23) R.L. McCulley (PI). "Determining tall fescue genotype interactions with both fungal endophyte presence/genotype and changes in climate to alter tall fescue production, secondary metabolite concentrations, and overall fescue forage quality." *USDA-FAPRU- Specific Cooperative Agreement*, 2013-2017..... **\$152,896** (100%)
- 24) R.L. McCulley (PI), S. Hall, B. Leffew, and D. Pelly (Collaborators). "Evaluating the spatial pattern and environmental factors that contribute to tall fescue resistance to eradication and re-establishment in native warm season grasslands in Central Kentucky." *UK Precision Resource Management Enhancement Grant*, 2010 – 2012..... **\$48,399** (100%)
- 25) R.L. McCulley (PI), M. Coyne, E. D'Angelo, and E. Vanzant (Co-PI's). "Quantifying N₂O, NH₃, and CO₂ fluxes from different land use types in Kentucky." *UK Precision Resource Management Enhancement Grant*, 2007 – 2008..... **\$55,110** (100%)*

* This proposal was used to purchase a piece of equipment, which is housed in my lab, so I have listed it as 100% towards my group, despite the multiple Co-PI's on the award.

- 26) R.L. McCulley (PI). “Determine the consequences of endophyte infection on soil fertility and microbial communities in tall fescue pastures.” *USDA-FAPRU-Specific Cooperative Agreement*, 2007 – 2012..... **\$50,001** (100%)
- 27) R.L. McCulley (PI). “Determine which forage species and/or mixture of species best optimizes pasture ecosystem function in terms of aboveground production and carbon storage, nitrogen retention, and soil trace gas fluxes.” *USDA-FAPRU-Specific Cooperative Agreement*, 2008 – 2012..... **\$222,822** (100%)

iv) Other Proposals (recently denied, plan to resubmit)

- 1) McCulley, R.L. (PI), S.R. Smith, and V. Picasso-Risso (Co-PIs). “How will climate change impact alfalfa yield, forage quality, phenolic concentrations, and N-fixation?” *USDA-AFRI-Alfalfa Seed and Alfalfa Forage Systems*, 2019 – 2021.....**\$500,000** (75%)

PUBLISHED ABSTRACTS – last two years only (n = 70 total for career)

† Indicates presenting author. * Indicates a graduate or ** undergraduate student I advised or who worked closely with my lab to obtain the data presented. ® Indicates a postdoc, research associate, or visiting scientist associated with my lab.

- 1) McCulley, R.L.† **2019**. Long-term grazing experiments and soil carbon: What have we learned? ASA-CSSA-SSSA Annual Meeting, San Antonio, TX.
- 2) McCulley, R.L.† **2019**. Evaluating Grazingland Soil Health – Identifying Challenges and Opportunities. SSSA Annual Meeting, San Diego, CA.
- 3) McCulley, R.L.†, K. Saikonen, M. Helander, I. Zabalgogezcoa, and B.R. Vazquez de Aldana. **2018**. Effects of *Epichloë* endophytes on grassland greenhouse gas fluxes and soil carbon: results from a Trans-Atlantic study. International Fungal Endophyte of Grasses Symposium, Salamanca, Spain.
- 4) McCulley, R.L.† **2017**. Can grass-endophyte technology be utilized to build soil organic matter and improve pasture soil function? ASA-CSSA-SSSA Annual Meeting, Tampa, FL.
- 5) McCulley, R.L.†, J.A. Nelson, K. Predick, E.M. Levi, P.W. Barnes, H.L. Throop, and S.R. Archer. **2017**. UV radiation stimulates but soil-litter mixing reduces fungal role in dryland litter decomposition. Ecological Society of America Annual Meeting, Portland, OR.

TEACHING & ADVISING

A) Courses Taught:

NRE 201 – Introduction to Natural Resource & Environmental Science (3 credit hours)
Fall 2015 & 2016

PLS 103/104 – Plants, Soil, & People: A Global Perspective (3 credit hours)
Spring semesters 2008 – 2013

PLS 597 – Agroecology (3 credit hours)
Spring 2010 & 2011

GEN 300 – Climate Change and Agriculture (1 credit hour)
Spring 2010 & 2011

Teaching and Course Evaluations:

College/Dept averages over time are ~3.3/3.4 for value of course and ~3.4/3.4 for quality of teaching.

In 2016, the evaluation process changed, with 5 pts possible in each category.

		# Students	Value of Course	Quality of Teaching	% of Course Taught by McCulley
2008	PLS 104: Section 001	38	2.7	3.0	100%
	PLS 104: Section 002	65	3.0	3.1	100%
2009	PLS 104: Section 001	49	2.8	3.1	100%
	PLS 104: Section 002	100	2.8	2.9	100%
2010	PLS 104: Section 001	45	3.6	3.6	100%
	Agroecology	18	3.6	3.4	33%
	Climate Change	15	3.6	3.4	15%
2011	PLS 104: Section 001	38	3.5	3.7	100%
	Agroecology	18	3.8	3.7	25%
	Climate Change	20	2.9	---	15%
2012	PLS 103: Section 001	38	3.4	3.6	100%
2013	PLS 103: Section 001	60	3.2	3.6	100%
2015	NRE 201	30	3.3	3.3	100%
2016	NRE 201	50	4.24	4.44	100%

B) Graduate Student & Postdoc Advising:

i) Primary Graduate Advisor (n=10)

- Jacob Siegrist, M.S. in Plant & Soil Science, 2006 – 2008. Thesis: “The Endophyte Effect: Ecosystem Consequences of the Tall Fescue-Fungal Endophyte Symbiosis.” [Employed with U.S. Army Corp of Engineers, Huntington, WV.]
- Glade Brosi, M.S. in Plant & Soil Science, 2008 – 2010. Thesis: “The Response of Tall Fescue and its Fungal Endophyte to Climate Change.” [Head of Research & Development at Stemilt Growers, LLC, Wenatchee, WA.]
- Sarah Hall, Ph.D. in Crop Science, 2008 – 2011. Dissertation: “Restoration of Tall Fescue Pastures to Native Warm Season Grasslands: Does a Fungal Endophyte Symbiosis Play a Role in Restoration Success?” [Assistant Professor, Berea College, Berea, KY.]
- Cody Burton, M.S. in Plant & Soil Science, 2009 – 2011. Thesis: “Effects of Long-Term Cattle Grazing and Vegetation Type on Soil Microbial Communities in Dryland Systems.” [Dual Recovery, House Manager, Prescott, AZ.]

- Lindsey Slaughter, M.S. in Soil Science, 2010 – 2012. Thesis: “Soil Microbial Community Response to Climate Change: Results from a Temperate Kentucky Pasture.” [Became my PhD student upon MS completion.]
- Marie Bourguignon, M.S. in Integrated Plant & Soil Science, 2011 – 2013. Thesis: “Ecophysiological Responses of Tall Fescue Genotypes to Endophyte Infection and Climate Change.” [Current PhD student in Agronomy at Iowa State Univ.]
- Dan Weber, M.S. in Integrated Plant & Soil Science, 2012 – 2014. Thesis: “Grassland sustainability in Kentucky: Case Studies Quantifying the Effects of Climate Change on Slug Herbivory in Pastures and Different Home Lawn Systems on Turf Greenhouse Gas Emissions.” [Production Supervisor, Champion Petfood, Russellville, KY.]
- Rebecca Shelton, M.S. in Integrated Plant & Soil Science, 2013 – 2015. Thesis: “Conservation Agriculture in Kentucky: Investigating Nitrogen Loss and Dynamics in Corn Systems Following Wheat and Hairy Vetch Cover Crops.” [Current PhD student in Sustainability Science at Arizona State Univ.]
- Lindsey Slaughter, Ph.D. in Integrated Plant & Soil Science, 2012 – 2016. Dissertation: “Effects of *Epichloe coenophiala* – tall fescue symbiosis on plant-microbe-soil interactions in a temperate pasture.” [Currently as Assistant Professor in Dept. of Plant & Soil Sciences at Texas Tech Univ.]
- Mahtaab Bagherzadeh, M.S. in Integrated Plant & Soil Science, 2016 – 2018. Thesis: “Can increasing grass-fungal endophyte symbiotic diversity enhance grassland ecosystem functioning?” [Currently employed as a River Watch Coordinator for KY State Government.]
- Alayna Jacobs, Ph.D. in Integrated Plant & Soil Science, 2019 – present.

ii) Graduate Committee Member (*n=19*)

- Linda McClanahan – M.S. in Crop Science, completed 2007.
- Caitlin Kovzelove – M.S. in Plant & Soil Science, completed 2007.
- Sarah Hall – M.S. in Forestry, completed 2007.
- Laura Schwer – M.S. in Plant & Soil Science, completed 2011.
- Megan Poulette – Ph.D. in Biology, completed 2012.
- Megan Rúa – Ph.D. in Curriculum for the Environment and Ecology at University of North Carolina – Chapel Hill, completed 2012.
- Jann Fry – Ph.D. in Biology, completed 2014.
- Deric Miller – M.S. in Biology, completed 2014.
- Jingqi Guo – Ph.D. in Plant Physiology, completed 2014.
- Kenneth Cropper – Ph.D. in Integrated Plant & Soil Sciences, completed 2015.
- Karin Jokela – M.S. in Ecology, Evolution, & Organismal Biology, Iowa State University, completed 2015.
- Martón Szoboszlai – Ph.D. in Soil Science, completed 2015.
- Shuang Liu – Ph.D. in Soil Science, completed 2016.
- Todd Roundsville – Ph.D. in Biology, completed 2017.
- Katie Russell – Ph.D. in Integrated Plant & Soil Sciences, completed 2017.
- Carla de Almeida Nogueira – Ph.D. from Instituto Superior de Agronomia, Portugal, completed 2018.
- Zhijie Yang – Ph.D. in Integrated Plant & Soil Sciences, in progress.
- Eva Lyon – Ph.D. in Earth & Environmental Sciences, completed 2020.

- Leslie Potts - Ph.D. in Entomology, completed 2020.

iii) *International Visitors & Short-Term Advisor*

- Maria Almagro – Ph.D. in Environmental Science from Murcia University, Spain. She completed an internship in my lab July – October 2008.
- Lin Dong – Ph.D. in College of Grassland Science at Gansu Agricultural University, China. He completed a one-year visiting scholar position in my lab Oct 2014 – Sept 2015.
- Chengfang (‘Tony’) Lin – Associate Professor of Forest Ecosystem Science, Fuzhou Normal University, Fujian, China. August 2018 – January 2019.

iv) *Postdoc Advisor*

- Javed Iqbal – Ph.D. in Soil Ecology & Environment (awarded July 2009) from Huazhong Agriculture University, Wuhan, China. He was a postdoc in my lab Nov 2009 – Aug 2011. [*Currently an Assistant Professor at University of Nebraska - Lincoln.*]
- Jonathan Moore – Ph.D. in Biology, University of Kentucky. Postdoc in my lab Fall 2017 – Summer 2018. [*Currently an Assistant Professor at Campbellsville University.*]
- Steven McBride, II - Ph.D. in Biological Sciences, Virginia Tech University. Postdoc in my lab May 2020 - present.

C) *Undergraduate Mentoring: (n=14)*

- **2 undergraduate Biology students from Asbury College** (Brian Bennett and Jarred Earnest) completed independent summer research projects in my lab during the summers of 2007 and 2009. They both presented their findings at the Kentucky Academy of Sciences Annual Meeting and won 1st and 3rd place (respectively) in the Agricultural Science division student presentation competition (a total of 30 students competed each year).
- **Allison Cooke** (Transylvania University undergrad) completed a year-long independent study project in my lab during the '09-'10 academic year. She presented her work at the Kentucky Academy of Sciences meeting November 2010 and for the ‘Emerging Scientist’ competition of the American Forage Grassland Council annual meeting in June 2011, where she won 3rd place. Allison received her PhD in Pathobiology & Laboratory Medicine from the Univ. of Cincinnati in 2018 and is currently employed as a scientist at _____.
- My lab has hosted **five French ENESAD/AgroSup Dijon interns** (undergraduates): Amael Gy (Summer 2008), Alexis Breton (Summer 2009), Marie Bourguignon (Summer 2010), Marlène Mauras (Summer 2011), and Pierre Mas (Summer 2015).
- **Katie Harvey**, our first **NSF Research Experience for Undergraduates** student. Katie was a senior NRCM/NRES major here at UK when she worked with us (Summer 2010). She worked on the Arizona UV-erosion-decomposition project (grants #10 & 11).
- **Dan Weber** (Univ. of Kansas undergrad) and **Lee Davis Jackson** (Univ. of Kentucky undergrad) did independent research experiences in my lab in 2011. Lee worked on biofuel crop production effects on soil carbon stocks, and Dan assessed slug herbivory in our UK Forage Climate Change Project, which he later developed into a chapter in his MS degree.
- **Dawn DeColibus**, an undergrad at Ohio Northern University, was an NSF-REU student with our lab summer 2012 (grant #6). Dawn participated in a fescue transplant study at the Ecological Research Facility that evaluates whether endophyte infection confers a competitive advantage to tall fescue persisting or invading into native warm season grasslands. Dawn went on to receive an MS degree in ecology from Ball State Univ., and is now employed as a Water Quality Planner with NEFCO in Columbus, OH.

- **Eric Kalosa-Kenyon**, an undergrad at Brown University, was an NSF-REU student with our lab summer 2013 (grant #6). Eric continued to monitor the fescue plots we initiated during Dawn's REU, and he assessed endophyte effects on root mycorrhizal colonization in native grasses growing in Indiana experimental plots. Eric graduated from Brown, and worked as a Computational Research Associate for a bioinformatics agricultural start-up called Symbiota LLC in Boston, MA. He started a bioinformatics PhD program at UC-Davis in Fall 2016.
- **Anna Joy Thompson**, an undergrad at Georgetown College, was a recipient of a Howard Hughes Internship and chose to do it in my research program during the summer of 2015. She evaluated whether nutrient availability and endophyte infection affected leaf herbivory and pathogen damage on tall fescue within the NutNet project (current project #4). She presented her results at the Kentucky Academy of Science meeting Fall 2015, where she was awarded *1st place* for best presentation in her section.

LEADERSHIP

A) Chair of Department of Plant & Soil Sciences

i) Position Description:

I became Chair of my Department in January 2018. While we are called Chairs, we function as Department Heads, which means I have responsibility for managing my unit's budget (~\$8M in state and Federal dollars and ~\$7M in grants, contracts, etc), as well as all aspects of my Department's functioning. It is not a rotating position. I am responsible for all personnel management and overseeing all instructional, research, and extension functions. My Department is the largest in the College, from a personnel stand point, with 43 full-time faculty, ~60 full-time staff, ~50 graduate students, and ~50 temporary workers. We have people located in three different buildings on campus, and three farms located throughout the state. We are predominantly a research and extension unit. While we teach, our instructional load is light compared to other units on campus.

ii) Accomplishments:

- I have succeeded in promoting five faculty members and several staff. I have succeeded in correcting the job performance of a few staff members, and I have succeeded in obtaining resignations from two problematic employees, whose removal has improved the function of my unit substantially.
- I have kept my unit on track, exceeding our self-set goals on publications and grant \$\$ obtained per year.
- I have led the overhaul of our undergraduate degree programs, including pulling us out of a long-term co-Departmental degree program that had become dysfunctional years ago and supporting the creation of a new degree program, which already has an equal number of undergrads compared to our old one.
- I have re-organized our business and front office, including creating new positions and filling with new people.
- I have invested in new infrastructure at the farm, in our labs, in our classrooms, and in our buildings to improve faculty collaboration, safety, and function.
- I have initiated philanthropic and alumni efforts.
- I have awarded ~\$350K in internal funds to faculty to support instructional, field, and lab efforts.

B) Director of Tracy Farmer Institute for Sustainability and the Environment

i) Position Description:

I became the interim Director for the Tracy Farmer Institute for Sustainability and the Environment (TFISE) in Spring 2013 (<http://tfise.uky.edu/>). I became the official Director in July 2016. As Director, I provided leadership, vision, funding, and organizational assistance for faculty, staff, and students engaged in sustainability and environment-related education, outreach, and research. This was accomplished by the creation and facilitation of a variety of Working Groups on campus, each of which aimed to increase the visibility of various sustainability and environmental issues. We organized and hosted an annual Sustainability Forum/Showcase. I also initiated development of undergraduate certificates and curricula, and I helped create the Sustainability Challenge Grant program (see below).

ii) Accomplishments:

• Creation and growth of the *Sustainability Challenge Grant Program*

This program was collaboratively designed (by TFISE, Office of Sustainability, and the President's Sustainability Advisory Council) to engage multidisciplinary teams from the University community in the creation and implementation of ideas that will promote sustainability by simultaneously advancing economic vitality, ecological integrity, and social equity, now and into the future. The 2014 program (the inaugural year) dispensed \$100,000 to 7 projects. We doubled the available amount for 2015 and 2016 (\$200,000 per year). We funded 7 projects in 2015 and 6 in 2016. The program continues to this day. *[I helped create this program and obtain the funds. I helped define the call for proposals and the selection rubric. I help lead the review process, and TFISE hosted the award reception for successful teams at the Annual Sustainability Forum.]*

• Creation of new *Working Groups*

We have helped start 5 new Working Groups: Food Systems Initiative, Built Environment, Water Systems, Sustainable Nanotechnology, and the Urban Forest Initiative. These groups are comprised of ~100 faculty, with representation from most colleges on our campus. They are working on new efforts for our campus and beyond.

• Creation of a *living learning lab* on our campus

We leveraged diverse sources of funds (two of which are listed below under grants received) and diverse entities on campus to create a rain garden on main campus aimed at improving campus and city water quality, serving as an educational outreach resource for stormwater management programs, and a living learning lab for undergraduate and graduate students.

• Expansion and reinvigoration of the *Sustainability Intern Program*

We joined efforts with the Office of Sustainability to re-start and double the number of Sustainability Interns offered on our campus for the past three years. TFISE funds and TFISE faculty mentor 2-3 interns per year. We grew the program by collaborating with Environmental Management and other partners on campus.

iii) Grants Received: (\$46,800 in total)

- McCulley, R.L. (PI) and S. Walling. "A Rain Garden for Mitigating Stormwater Quality on UK's Campus." Funded by *Lexington-Fayette County Urban County Government*, (\$22,300) and *UK's Student Sustainability Council* (\$20,000), July 2013 – June 2015.

- Walling, S. (PI) and R.L. McCulley. “Let’s Talk About Water – Film Viewing Opportunity.” Funded by *Consortium for the Advancement of Hydrologic Science Inc.*, Nov 2013 – Nov 2014. (\$4,500).

iv) Grants Not Funded:

- Steiner, A. (PI), D. Scavia, M. Lemos, and I. Ibanez (Co-PI’s), M. Notaro, J. Schnoor, G. Carmichael, **R.L. McCulley**, C. Goodale, C. Caldwell, J. Dukes, C. Swanston, B. Lofgren (Principals). “A Midwest Climate Science Center.” *USGS – National Climate Change and Wildlife Science Center Program* (\$5M in total; \$100K for UK). Submitted July 2016.
- Arthur, M.A. and L. Rieske-Kinney (Co-PI’s). “The Urban Forest Initiative: Educating the Public to Connect Urban Trees to Stormwater Quality and Quantity.” *LFUCG Stormwater Grant* (\$68,413 in total; \$34,954 from LFUCG). Submitted May 2017.
- Crocker, E.V. (PI), M.A. Arthur, and L. Rieske-Kinney (Co-PI’s).” Development of an Urban and Community Forestry Certificate.” *NIFA-AFRI-Higher Ed Challenge Grant* (\$300,000). Submitted May 2017. Funded following year.

v) Published Abstracts: † Indicates presenting author. *grad or undergrad student.

- Segura, C.† and R. Hargrove. **2016**. Design Week In Motion: Applying App Based Data Collection & Assessment in a Department-wide Studio Design Charrette. Council of Educators in Landscape Architecture Conference. Logan, UT.
- Tedder, S.†, R.L. McCulley, S. Walling, C. Fisk†, and A.L. Meyer. **2015**. Sustainability Challenge Grants - Leveraging diverse funding sources to secure \$100,000 for interdisciplinary projects at UK. Association for the Advancement of Sustainability in Higher Education, Minneapolis, MN.
- Williamson, N.*†, M. Arthur, and L. Rieske-Kinney. **2015**. UKnTrees: Growing urban forestry awareness, outreach, and education. Association for the Advancement of Sustainability in Higher Education, Minneapolis, MN.

SERVICE

A) Departmental:

- Member of the Pedology Faculty position search, 2017.
- Member of the Dept. Advisory and Promotion & Evaluation Committees, 2015 – 2018.
- Mentor for four assistant professors in our Dept., 2014 – present.
- Space coordinator for offices on second floor of Ag Science North, 2013 – 2018.
- Coordinated the Distinguished Alumnus Committee, 2012 – 2013.
- Member of the Forage Faculty position search, 2012.
- Member of the Departmental Review team, 2012.
- Member of the Weed Science Review team, 2011.
- Co-Chair/Chair of the Crop Science Seminar Series, 2006 – 2009.
- Member of the Distinguished Alumnus Committee, 2006 – 2009.
- Member of Forage Commodity group, 2006 – present.
- Reviewed 2 departmental Extension Publications.

B) College:

- Chaired the Sustainable Agriculture academic program review, 2018.
- Panelist for College’s Promotion and Tenure workshop, 2017.

- Member of the College's Merit Appeals Committee, 2015 – 2016.
- Member of the Barnhart Award Committee, 2013 – 2015.
- Elected member of the College's Ag Faculty Council, 2011 – 2013.
- Member of the Hort/SusAG Faculty search, 2011.
- Member of the Sustainable Agriculture Curriculum Committee, 2009 – present.
- Panel Review Member for the Precision Resource Management group, 2009.
- Member of Natural Resources Planning Initiative Committee, 2007 – 2008.
- Reviewed 12 Hatch Proposals.
- Helped develop a county extension newsletter entitled, 'The Scientific Consensus on Global Warming: A Brief Summary for Kentucky Extension Agents,' Summer 2011.

C) **University:**

- Reviewer and panel member for new Research Center proposals for VPR, 2017.
- Member of the Sustainability Strategic Plan committee, 2016 – present.
- Director of the Tracy Farmer Institute for Sustainability & the Environment, 2013 – present.
- Participant/member of the President's Sustainability Advisory Council, 2013 – present.
- Member of the Faculty Senate, 2013 – 2016.
- Member of the University Appeals Board, 2010 – 2013.
- Member of TFISE (led the Climate Change working group), 2010 – 2013.
- Member of the Ecological Research Facility Committee, 2007 – 2008.

D) **Scientific Community:**

- **Panel Service** – NSF Ecosystem Sciences (n=9), MacroSystems Biology (n=1); USDA-AFRI Sustainable Biofuels (n=1); USDA-AFRI Climate Change (n=1); Dept. of Energy Belowground Processes (n=1); USDA-AFRI Sustainable Agroecosystems (n=1).
- **Editorial Service** –
 1. Member of the International Board of Advisors to the Editors of *New Phytologist* (*IF*=7.672), where I function as a dedicated subject reviewer (10-15 manuscripts a year) for the 'Environment' section, 2009 – 2017.
 2. Associate Editor for the *Journal of Ecology* (*IF*=5.521), 2015 – 2017.
 3. Subject Matter Editor for *Ecology & Ecological Monographs* (*IF*=4.733), 2016 – 2017.
- **Reviewer Service** – I review for a wide diversity of ecology, plant biology, agriculture and soil science journals (~ 30 different journals). In addition to my editorial service, I review on average 20-30 manuscripts a year. I also provide ad hoc proposal reviews for US and different country government programs and private entities (5-10 per year).
- **Society Service:**
 - i) I served as **President of the Rangeland Ecology section** of the Ecological Society of America (July 2009-2010). During this time, I organized a Symposium and a Special Session for the 2010 Annual meeting in Pittsburgh.
 - ii) I represented the Agronomy/Crop Science/Soil Science Society of America at the National Science Foundation's 'Coalition on the Hill' held in June 2007 in Washington, D.C. I am also a current member of the Kentucky Core Constituent Scientist Team for this group (2009 – present). I also helped develop this group's 2011 position statement on 'Crop Adaptation to Climate Change.' <https://www.crops.org/files/science-policy/cssa-crop-adaptation-position-statement.pdf>
 - iii) I was invited to develop and deliver a 15 minute 'webinar' on grassland management for carbon storage, which the United State Forest Service developed for a Forest and

- Grassland Carbon short course that is available over the internet, free of charge, to scientists and land managers throughout the world. I participated in a 2-day workshop to accomplish the peer-reviewing and production of these webinars in Spring 2011. The products of this workshop are at: <http://www.fsl.orst.edu/fs-pnw/pep/carbon/mcculley/>
- iv) I organized an oral session entitled, 'Building Bridges: Current Issues in Grassland Science' at the Joint Society of Range Management and American Forage Grassland Council Annual Meeting in Louisville, KY, January 2008.
 - v) I organized the 'Ecology and Agronomy' session of the 2010 International Symposium of Fungal Endophytes of Grasses held in July in Lexington, KY in conjunction with the Mycological Society of America.
 - vi) I co-organized the 'Ecology in a Dusty World: Integrating Dust Flux, Human Dimensions, and Ecological Processes in Drylands' for the 2012 annual Ecological Society of America meeting.

PROFESSIONAL DEVELOPMENT

A) Research:

- Society Meetings Attended:
My graduate students, postdocs, and myself regularly attend/participate in the following society meetings: American Forage and Grassland Council, American Geophysical Union, Agronomy, Crop, and Soil Science Societies of America, Ecological Society of America, International Symposium of Fungal Endophyte of Grasses, and Society for Range Management.
- I travel regularly to deliver results from my research program to diverse audiences, including Federal scientists, animal scientists, other departments, and international scientific audiences. More details can be found in the invited talk section.
- I coordinated a southeastern US faculty team focused on climate change to attend an Experiment Station sponsored proposal development workshop (Dec. 2012, Atlanta, GA).
- I was an active participant in the Multi-State Regional Project NC-1021, 'Nitrogen Cycling, Loading, and Use Efficiency in Forage-Based Livestock Production Systems.' I participated in their meetings for four years (2007-2010), and we submitted nationally competitive proposals from these efforts. In 2012, our new forage faculty member, Ben Goff, took over participation with this group, so that Kentucky continues to be represented.
- I was asked to join the Multi-State Regional Project NCCC-31, 'Ecophysiological Aspects of Forage Management,' which I did in 2011. This group developed a USDA-AFRI-Coordinated Agriculture Project proposal for an eastern U.S. forages climate change call (but it was declined). I hosted the annual meeting for this group in 2013, and attended the 2012 and 2015 meetings. I remain active in this group.
- I participate in a variety of other agronomic meetings, including the Southern Pasture & Forage Crop Improvement Conference, the Southern Extension & Research Activity Information Exchange Group 8, and the American Association of Animal & Dairy Science meetings.

B) Teaching:

- Participated in the Faculty Learning Community, led by our Assoc. Dean for Instruction, to consider ways of increasing student engagement in my introductory level classes (Spring 2013)

- Developed the GenEd PLS 103 proposal (2010-2011) to get PLS 104 approved as a ‘Global Dynamics’ course within the new GenEd curriculum on campus.
- Invited to review a Decomposition electronic book chapter for SimUText, an NSF sponsored science teaching/textbook development non-profit company, which led to the use of their book chapters and labs in AgroEcology and Climate Change and Agriculture courses.
- Attended CELT seminar “Resources for Student Success” (October 2011)
- Attended and participate in the CELT seminar “Today’s College Classroom: Generation X Teaches the Millennials” (October 2010).
- Attended the College of Agriculture Teaching Workshop, August 2006 & 2008 and January 2010.
- Completed a Peer Teaching Evaluation of PLS 104 (Spring 2009).
- Attended the Blackboard Grade Center workshop, Fall 2008.
- Attended the CELT Rubric Development workshop, Fall 2008.
- Took the Blackboard 101 course offered by TASC, Fall 2007.

C) Training:

- Completed leadership training for Land Grant Institutions - LEAD21, a year-long program, 2020.
- Completed the UK Chairs Academy I, Fall 2018.
- Completed the UK Women’s Executive Leadership Development program (WELD), Spring & Fall 2016.
- Completed the UK Appeals Board training on disciplinary hearing process, code of conduct, etc., August 2010.
- Participated in ‘How to talk to the press – a Media Skills Training Session’, ESA annual meeting, August 2010.
- Completed the UK Circles of Power Program – a leadership training course for UK female faculty members, 2008-2009.

AWARDS & RECOGNITION

A) Awards:

- U.S.A. – New Zealand Soil Science Travel Award, Soil Science Society of America, 2019. Provides \$5,000 stipend for me to go back to NZ and work with AgResearch.
- Global Research Alliance Senior Scientist Award, New Zealand Agricultural Greenhouse Gas Research Centre & the Global Research Alliance, January – April, 2016.
- Distinguished Alumnus Award, Graduate Degree Program in Ecology, Colorado State University, October 2009.
- Best Oral Presentation in the “Carbon Cycling and Climate Change” Session of the Front Range Student Ecology Symposium, Colorado State University, 2002.
- Julian Huxley Award for Excellence in Ecology & Evolutionary Biology, Rice University, 1995.

B) Invited Presentations:

2019: American Society of Agronomy Annual Meeting, Symposium Session, San Antonio, TX

2018: Lanzhou Normal University, China

Kansas State University, Manhattan, KS

2017: Kellogg Biologic Station, Michigan State University, Hickory Corners, MI

Ecological Society of America Meeting, Organized Oral Session, Portland, OR

- Tri-Societies (ASA-CSSA-SSSA) Meeting, C-06 Symposium, Tampa, FL
 Noble Research Institute, Ardmore, OK
- 2016: Fujian Normal University, Sanming, China
 Mycology Society of America Annual Meeting, Berkeley, CA
 AgResearch, Palmerston North, New Zealand
- 2015: International Symposium on Fungal Endophytes of Grasses, Melbourne, Australia
 International Grassland Congress – declined
 American Association of Animal & Dairy Science Annual Meeting, Orlando, FL
 Virginia Tech, Dept. of Crop & Soil Sciences
- 2014: Texas A&M University, Dept. of Ecosystem Science & Management
 Purdue University, Dept. of Agronomy
 Instituto Superior da Agronomia, Lisboa, Portugal
- 2013: Waste-to-Worth, Denver, Colorado
 University of Toledo, Dept. of Environmental Sciences
 American Association of Animal & Dairy Science Annual Meeting, Phoenix, AZ
- 2012: Southeastern Climate Consortium, Auburn, Alabama
 Ecological Society of America Meeting, Organized Oral Session, Portland, OR
- 2011: University of Oklahoma, Dept. of Botany & Microbiology
 United States Forest Service, Natural Bridge State Resort Park, Kentucky
 Ecological Society of America Meeting, Organized Oral Session, Austin, TX
- 2010: University of Guelph, School of Environmental Sciences
 University of Tennessee, Dept. of Ecology & Evolutionary Biology
 University of North Carolina – Chapel Hill, Curriculum in the Environment & Ecology
 International Symposium on Fungal Endophytes of Grasses, Lexington, KY
- 2009: Rice University, Dept. of Ecology & Evolutionary Biology
 Colorado State University, Graduate Degree Program of Ecology
 Georgetown College, Dept. of Biology
- 2007: Ecological Society of America Meeting, Organized Oral Session, San Jose, CA
 National Science Foundation Coalition for Hill Staff in Washington, D.C.
- 2005: University of Kentucky, Dept. of Plant & Soil Sciences
 New Mexico State University, Dept. of Biology
- 2004: University of New Mexico, Dept. of Biology
 University of Arizona, Dept. of Soil, Water, & Environmental Science
 New Mexico State University, Dept. of Range Science
 COST action 627 Meetings on Carbon Sequestration in European Grasslands, Belgium
 University of Georgia, Institute of Ecology
- 2003: University of Wyoming, Dept. of Plant Science
- 2002: Duke University, Dept. of Biology
- 2001: The Nature Conservancy of Colorado
- 1998: Texas A&M University, Dept. of Rangeland Ecology & Management

C) *Elected Positions:*

- Member of UK's Faculty Senate (2013 – 2016)
- Member of College of Agriculture's Ag Faculty Council (2011-2013)
- President of the Rangeland Ecology section of ESA (2009-2010)

PROFESSIONAL AFFILIATIONS

American Geophysical Union, 2003 – present
American Association for Women in Science, 2003 – 2016
Crop Science Society of America, 2008 - present
Ecological Society of America, 2003 – present
Society of Range Management, 2003 – 2009
Sigma Xi, 2002 – 2016
Soil Science Society of America, 2002 – present