

Sally E. Koerner

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Tampa, FL 33647

EDUCATION

Ph.D., Biology, University of New Mexico (UNM) – Albuquerque, NM - 2012

Thesis: Effects of global change on savanna grassland ecosystems

Advisor: Scott L. Collins

GPA – 4.01

B.S., Biological Sciences, Clemson University – Clemson, SC - 2005

Departmental and General Honors, GPA – 3.77 – *magna cum laude*

Honors Thesis: Disturbance in African savannas: Fire in Nairobi National Park, Kenya and grazing in Kruger National Park, South Africa

RESEARCH INTERESTS

Biodiversity, community ecology, conservation, disturbance, ecosystem ecology, fire ecology, global change, grasslands, grazing, herbivory, invasion, landscape ecology, meta-analyses, multivariate statistics, plant ecology, spatial patterns, species interactions, synthesis, tropical forests, vertebrate ecology

RESEARCH & WORK EXPERIENCE

Postdoctoral Associate: University of South Florida	2016 – Present
Postdoctoral Associate: Duke University	2015 – 2016
Research Scientist I: Colorado State University	2014 – 2015
Postdoctoral Associate: Colorado State University	2012 – 2014
Research Assistantship: University of New Mexico	2009 – 2011
Graduate Assistantship: University of New Mexico	2007 – 2009
Lab prep for all UNM core introductory biology labs	
Herbarium Assistant: Clemson University	2005
Research Project on the status & distribution of Georgia Aster	
Research Intern, Northern Plains Project: Kruger National Park, South Africa	2004
Study Abroad Participant: Organization for Tropical Studies, South Africa	2004
Study Abroad Participant: School for Field Studies, Kenya	2003

PUBLICATIONS

24. Poulsen, J.R., **S.E. Koerner**, S. Moore, V.P. Medjibe, S. Blake, C.J. Clark, M.E. Akou, M. Fay, A. Meier, J. Okouyi, C. Rosin, & L.J.T. White. Remote, large protected area fails to protect forest elephants from poaching in Central Africa. In Press at *Current Biology*.
23. Poulsen, J.R., **S.E. Koerner**, Z. Miao, V.P. Medjibe, L. Banak, & L.J.T. White. **2017**. Forest structure determines large liana abundance and distribution in Gabon. In Press at *Global Ecology and Biogeography*. DOI: 10.1111/geb.12554.

22. Burkepile, D.E., R.W.S. Fynn, D. Thompson, N.P. Lemoine, **S.E. Koerner**, S. Eby, N. Hagenah, K.R. Wilcox, S.L. Collins, K.P. Kirkman, A.K. Knapp, & M.D. Smith. **2017**. Herbivore size matters for productivity-richness relationships in African savannas. *Journal of Ecology*. DOI: 10.1111/1365-2745.12714.
21. **Koerner, S.E.**, J.R. Poulsen, E. Blanchard, & C.J. Clark. **2017**. Hunting induced defaunation gradient in a Gabonese tropical forest. *Journal of Applied Ecology*. DOI: 10.1111/1365-2664.12798.
20. Carlson, B.S., **S.E. Koerner**, V.P. Medjibe, L.J.T. White, & J.R. Poulsen. **2017**. Deadwood stocks increase with selective logging and large tree frequency in Gabon. *Global Change Biology*. DOI: 10.1111/gcb.13453.
19. Guo, L., J. Cheng, E. Luedeling, **S.E. Koerner**, J. He, J. Xu, C. Gang, W. Li, R. Luo, & C. Peng. **2017**. Critical climate periods for grassland productivity on China's Loess Plateau. *Agricultural and Forest Meteorology*. 233:101-109. DOI: 10.1016/j.agrformet.2016.11.006.
18. **Koerner, S.E.**, M.L. Avolio, K. La Pierre, K.R. Wilcox, M.D. Smith, S.L. Collins. **2016**. Nutrient additions cause divergence of tallgrass prairie plant communities resulting in loss of ecosystem stability. *Journal of Ecology*. 104:1478–1487. DOI: 10.1111/1365-2745.12610.
17. Smith, M.D., A.K. Knapp, S.L. Collins, D.E. Burkepile, K.P. Kirkman, **S.E. Koerner**, D.I. Thompson, J.M. Blair, C.E. Burns, S. Eby, E.J. Forrestel, R.W.S. Fynn, N. Govender, N. Hagenah, D.L. Hoover, & K. R. Wilcox. **2016**. Shared drivers but divergent ecological responses: Insights from long-term experiments in savanna grasslands. *Bioscience*. 66 (8):666-682. DOI: 10.1093/biosci/biw077.
16. Miao*, Z., **S.E. Koerner***, V.P. Medjibe*, & J.R. Poulsen*. **2016**. Wanted: New allometric equations for large lianas and African lianas. *Biotropica*. DOI: 10.1111/btp.12353. *These authors contributed equally.
15. Burkepile, D.E., D. Thompson, R.W.S. Fynn, **S.E. Koerner**, S. Eby, N. Govender, N. Hagenah, N.P. Lemoine, J.R. Matchett, K.R. Wilcox, S.L. Collins, K.P. Kirkman, A.K. Knapp, & M.D. Smith. **2016**. Fire frequency drives habitat selection by a diverse herbivore guild impacting top-down control of plant communities in an African savanna. *Oikos*. DOI: 10.1111/oik.02987.
14. Wang, Q., N. He, Y. Gao, X. Wen, R. Wang, **S.E. Koerner**, & Q. Yu. **2016**. Soil microbial respiration rate and temperature sensitivity along a north-south forest transect in eastern China: Patterns and influencing factors. *Journal of Geophysical Research – Biogeosciences*. 121(2):399-410. DOI: 10.1002/2015JG003217.
13. Avolio, M.L., K. La Pierre, G. Houseman, **S. E. Koerner**, E. Grman, F. Isbell, D. Johnson, & K.R. Wilcox. **2015**. A framework for quantifying the magnitude and variability of community responses to global change drivers. *Ecosphere*. 6(12):280. DOI: 10.1890/ES15-00317.1.
12. **Koerner, S.E.**, M.L. Avolio, C.C. Chang, J. Grey, D.L. Hoover, & M.D. Smith. **2015**. Invasibility of a mesic grassland depends on the time-scale of fluctuating resources. *Journal of Ecology*. 103(6):1538-1546. DOI: 10.1111/1365-2745.12479.
11. Knapp, A.K, D.L. Hoover, K.R. Wilcox, M.L. Avolio, **S.E. Koerner**, K.J. La Pierre, M.E. Loik, Y. Luo, O.E. Sala, & M.D. Smith. **2015**. Characterizing differences in precipitation regimes of extreme wet and dry years: Implications for climate change experiments. *Global Change Biology*. 21(7):2624-2633. DOI: 10.1111/gcb.12888.
10. Ryan, M.J., N.J. Scott, J. A. Cook, B. Willink, G. Chaves, F. Bolanos, A. Garcia-Rodriguez, I.M. Latella, & **S.E. Koerner**. **2015**. Too wet for frogs: Changes in a tropical leaf litter frog community coincide with La Nina. *Ecosphere*. 6(1):1-10. DOI: 10.1890/ES14-00352.1.
9. Avolio, M.L., **S.E. Koerner**, K. La Pierre, K.R. Wilcox, S.L. Collins, & M.D. Smith. **2014**. Plant community responses to a decade of nitrogen and phosphorus additions drive changes ecosystem function. *Journal of Ecology*. 102(6):1649-1660. DOI: 10.1111/1365-2745.12312.

8. Smith, N.G., V.L. Rodgers, E.R. Brzostek, A. Kulmatiski, M.L. Avolio, **S.E. Koerner**, D.L. Hoover, K. Grant, & A. Jentsch. **2014**. Droughts and Downpours: Resolving the disconnect between rainfall manipulation experiments and terrestrial ecosystem models. *Reviews of Geophysics*. 52. DOI: 10.1002/2014RG000458.
7. Kirkman, K., S.L. Collins, M.D. Smith, A.K. Knapp, D.E. Burkepile, C.E. Burns, R.W.S Fynn, N. Hagenah, **S.E. Koerner**, K. Matchett, D.I. Thompson, K.R. Wilcox, & P. Wragg. **2014**. Responses to fire differ between South African and North American grassland communities. *Journal of Vegetation Science*. 24(3):793-804. DOI: 10.1111/jvs.12130.
6. **Koerner, S.E.**, D.E. Burkepile, R.W.S. Fynn, C.E. Burns, S. Eby, N. Govender, N. Hagenah, K. Matchett, D. Thompson, K.R. Wilcox, S.L. Collins, K. Kirkman, A.K. Knapp, & M.D. Smith. **2014**. Plant community response to loss of large herbivores differs between North American and South African savanna grasslands. *Ecology*. 95:808-816. DOI: 10.1890/13-1828.1.
5. Eby, S., D.E. Burkepile, R.W.S. Fynn, C.E. Burns, N. Govender, N. Hagenah, **S.E. Koerner**, K. Matchett, D.I. Thompson, K.R. Wilcox, S.L. Collins, K. Kirkman, A.K. Knapp, & M.D. Smith. **2014**. Loss of a single large grazer impacts savanna grassland plant communities similarly in North America and South Africa. *Oecologia*. 175:293-303. DOI: 10.1007/s00442-014-2895-9.
4. **Koerner, S.E.**, & S.L. Collins. **2014**. Interactive effects of grazing, drought, and fire on grassland plant communities in North America and South Africa. *Ecology*. 95(1):98-109. DOI: 10.1890/13-0526.1.
3. **Koerner, S.E.**, S.L. Collins, A.K. Knapp, J.M. Blair, & M.D. Smith. **2014**. Rainfall variability has minimal effects on grassland recovery from repeated grazing. *Journal of Vegetation Science*. 25(1):36-44. DOI: 10.1111/jvs.12065.
2. **Koerner, S.E.**, & S.L. Collins. **2013**. Small-scale patch structure in North American and South African grasslands responds differently to fire and grazing. *Landscape Ecology*. 28:1293-1306. DOI: 10.1007/s10980-013-9866-0.
1. Collins, S.L., **S.E. Koerner**, J.A. Plaut, J.G. Okie, D. Breese, L.B. Calabrese, A. Carvajal, R.J. Evansen, & E. Nonaka. **2012**. Stability of tallgrass prairie during a 19-year increase in growing season precipitation. *Functional Ecology*. 26(6):1450-1459. DOI: 10.1111/j.1365-2435.2012.01995.x.

In Revision/Review

- Wilcox, K.R., A. Shi, L.A. Gherardi, N.P. Lemoine, **S.E. Koerner**, D.L. Hoover, E. Bork, K. Byrne, J. Cahill, Jr., S.L. Collins, S. Evans, A.K. Gilgen, P. Holub, L. Jiang, A.K. Knapp, L. Yahdjian, D. LeCain, J. Liang, J. Peñuelas, W.T. Pockman, M.D. Smith, S.R. White, K. Zhu, & Yiqi Luo. Asymmetric responses of primary productivity to climate extremes: A synthesis of grassland precipitation manipulation experiments. In Revision at *Global Change Biology*.
- Koerner, S.E.**, M.D. Smith, D.E. Burkepile, N. Hanan, M.L. Avolio, S.L. Collings, A.K. Knapp, N.P. Lemoine, E.J. Forrestel, S. Eby, Dave I. Thompson, & The Grazing Exlosure Consortium. Changes in plant dominance drive global variation in herbivore effects on plant biodiversity. In Review *Nature Ecology and Evolution*.

In Preparation (full draft only)

- Smith, M.D., **S.E. Koerner**, A.K. Knapp, M.L. Avolio, J.M. Briggs, F. Chavez, E. Denton, J. Dietrich, D. Gibson, J. Gray, A.M. Hoffman, D.L. Hoover, K.J. La Pierre, A. Silletti, K.R. Wilcox, Q. Yu, & J.M. Blair. Change in dominance drives ecosystem response to global environmental change. In Preparation for *Science*.

Edited Book Chapters

Staver, A.C., **Koerner, S.E. 2015.** Top-Down and Bottom-Up Interactions Determine Tree and Herbaceous Layer Dynamics in Savanna Grassland. in TC Hanley and KJ La Pierre (eds): *Trophic Ecology: Bottom-Up and Top-Down Interactions Across Aquatic and Terrestrial Systems*. Cambridge University Press.

RESEARCH GRANTS

Rapid – National Science Foundation 2016
Impact of exceptional drought on transformation of a South African savanna grassland (\$67,000) PI: Melinda Smith; Co-PI: Sally Koerner, S. Collins, D. Burkepile, A. Knapp

JP Weaver Grant – The Nature Conservancy 2010
Community and ecosystem resistance and resilience of altered tallgrass prairie plant communities (\$1,000)

Doctoral Dissertation Improvement Grant – National Science Foundation 2009
Interactive effects of global climate change, loss of mega-herbivore biodiversity, and altered fire regimes on savanna grassland ecosystems (\$14,860)
PI: Scott Collins; Co-PI: Sally Koerner

Research and Project Travel Grant – UNM Graduate Association (\$1,500) 2007-2011

SRAC Grant – UNM Graduate Association (\$2,000) 2007/2009

GRAC Grant – UNM Biology Graduate Student Association (\$1,500) 2007-2009

FELLOWSHIPS & AWARDS

Melinda Bealmer Scholarship – UNM Biology Department (\$500) 2011

Sigma Xi – Award for Excellent Graduate Student Research for the UNM chapter 2010

Hertel Scholarship – UNM Biology Department (\$2,000) 2010

Grove Research Scholarship – UNM Biology Department (\$750) 2008

Springfield Scholarship – UNM Biology Department (\$2,000) 2007/2009

TEACHING EXPERIENCE

Guest Lecturer: Duke University 2015
Tropical Ecology (Graduate) – “Tropical Savannas”

Guest Lecturer: Colorado State University 2013
Plant Ecology (Undergrad) – “Disturbance”, “Succession”
Community Ecology (Graduate) – “Disturbance and Succession”
Foundations in Ecology (Graduate) – “Community Ecology”

Teaching Assistant: University of New Mexico
Biology Lab for Health-Related Sciences (BIOL 124) – 4 semesters 2006-2012
Biology Lab for Non-majors (BIOL 112) – 1 semester 2012

INVITED TALKS

Koerner, S.E. 2016. Plant diversity responses to global change: Finding ecological generality in the world's grasslands. **Georgia Southern University Departmental Seminar.**

- Koerner, S.E. 2015. Responses of diversity and dominance to grazing: A case study and a global synthesis. **Wake Forest University Ecology Group Seminar.**
- Koerner, S.E. 2013. Plant community response to loss of large herbivores differs between North America and South Africa. **Sino-German Symposium: Resources in the agro-pastoral transition zone of Inner Mongolia: Challenges and opportunities for 'marginal lands', Erguna, China.**
- Koerner, S.E. 2013. Convergence and divergence in grassland responses to global change. **University of Northern Colorado Biology Departmental Seminar.**
- Koerner, S.E. 2010. Effects of global climate change, loss of mega-herbivore biodiversity, and altered fire regimes on savanna grassland ecosystems. **UNM Biology Department Brown Bag Seminar hosted by Sigma Xi.**
- Koerner, S.E. 2009. Experimentally assessing the interactive effects of grazing and altered precipitation on grassland community structure. **Kansas State Biology Department Brown Bag Seminar.**

PRESENTATIONS

- Koerner, S.E., M.D. Smith, D.E. Burkepile, M.L. Avolio, S.L. Collins, A.K. Knapp, N.P. Lemoine, E. Forrrestel, S. Eby, D.I. Thompson, & Grazing Exlosure Consortium. 2016. Changes in dominance, not productivity, drive global variation in herbivore effects on grassland diversity. **Ecological Society of American 101st Meeting & Konza Prairie LTER Annual Meeting.**
- Koerner, S.E., M.D. Smith, D.E. Burkepile, M. Anderson, M.L. Avolio, S. Eby, E. Forrrestel, N. Lemoine, D.I. Thompson, Grazing Exlosure Consortium. 2015. Responses of diversity and dominance to grazing: A global synthesis. **Ecological Society of American 100th Meeting & 13th European Ecological Federation Conference (ILTER session).**
- Koerner, S.E., D.E. Burkepile, R.W.S. Fynn, C.E. Burns, S. Eby, N. Govender, N. Hagenah, K. Matchett, D. Thompson, K.R. Wilcox, S.L. Collins, K. Kirkman, A.K. Knapp, and M.D. Smith. 2014. An inter-continental comparison of the effects of grazing and fire on savanna grassland plant community composition. **Organized Oral Session. Ecological Society of America 99th Meeting.**
- Koerner, S.E., M.L. Avolio, C.C. Chang, D. Hoover, & M.D. Smith. 2013. Inter- not intra-annual precipitation variability determines invasion of a mesic grassland. **Ecological Society of America 98th Meeting.**
- Koerner, S.E., M.L. Avolio, K.K. La Pierre, K.R. Wilcox, M.D. Smith, & S.L. Collins. 2012. Long-term nutrient additions cause divergence in tallgrass prairie plant communities. **Organized Oral Session. Ecological Society of America 97th Meeting.**
- Koerner, S.E., and S.L. Collins. 2011. Interactive effects of drought, grazing, and fire on grassland community dynamics: a cross-continental comparison. **Grasslands in a Global Context Symposium.**
- Koerner, S.E., and S.L. Collins. 2011. Interactive effects of drought grazing and fire on grassland community dynamics: a cross-continental comparison. **Ecological Society of America 96th Meeting.**
- Koerner, S.E., S.L. Collins, A.K. Knapp, J.M. Blair, and M.D. Smith. 2011. Grazing alters grassland sensitivity to more extreme precipitation regimes in tallgrass prairie. **Konza Prairie LTER Site Review.**

- Koerner, S.E., and S.L. Collins. 2011. Fire, grazing, & patch structure: Do South African & American grasslands respond in the same way? **Ecological Society of America 95th Meeting & Savanna Networking 9th Meeting.**
- Koerner, S.E., S.L. Collins, A.K. Knapp, J.M. Blair, and M.D. Smith. 2009. Grazing alters grassland sensitivity to more extreme precipitation regimes in tallgrass prairie. **Ecological Society of America 94th Meeting & LTER All Scientists Meeting.**
- Koerner, S.E., J.A. Plaut, J.G. Okie, D. Breese, L.B. Calabrese, A. Carvajal, R.J. Evansen, E. Nonaka, and S.L. Collins. 2008. Plant functional traits and community responses in a changing environment. **Ecological Society of America 93rd Meeting.**
- Koerner, S.E., and S.L. Collins. 2007. Community responses to fire and grazing in savanna grasslands. **Ecological Society of America 92nd Meeting.**

PROFESSIONAL VOLUNTEER ACTIVITIES

Volunteer Judge:

Braun Poster Judge (Ecological Society of America)	2009-Present
Poster Presentation Judge (All Scientist's Meeting)	2009-2015
Research Day (UNM Biology Department) Poster Judge	2009-2012
Undergraduate Oral & Poster Presentation Judge (ESA)	2009-2012

Workshop Co-organizer at Ecological Society of America Meeting

Navigating NSF: The Who, What, and When of the National Science Foundation	2016
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Organized Oral Session Co-organizer at Ecological Society of America Meeting

Generalities and Contingencies with Multiple Global Change Drivers: Diminishing Effects or Amplified Consequences?	2016
Nutrient Additions Alter Community and Ecosystem Processes: Lessons Learned from the Long-Term Ecological Research (LTER) Network	2012

LTER Graduate Student Committee:

Co-Chair	2010-2012
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Biology Graduate Student Association (BGSA) Government at UNM:

President	2008-2010
Publication Reimbursement Committee Chair	2008-2009
Social Chair	2007-2008

Ecological Society of America Student Section Government:

Student Host	2008-2009
Undergraduate Presentation Competition Co-Chair	2009-2011

Graduate Student & Professional Association Council at UNM:

Biology Representative	2008-2009
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PROFESSIONAL AFFILIATIONS AND ACTIVITIES

Memberships: Ecological Society of America, Sigma Xi, Association for Tropical Biology and Conservation

Journal Reviews: *African Journal of Range & Forage Science; Applied Vegetation Science; Bioscience; Ecosphere; Functional Ecology; Global Change Biology; Journal of Ecology; Journal of Vegetation Science; Landscape Ecology; Natural Areas Journal; Nature Climate Change; Oecologia; Plant and Soil; Plant Ecology; PLOS*

ONE; Proceedings of the Royal Society B, Rangeland Ecology & Management; Restoration Ecology

Book Reviews: *Ecology and Landscape Ecology*

Grant Reviews: NSF Division of Environmental Biology Electronic Proposal Review (2015), South African National Research Foundation Thuthuka Programme Proposal Review (2016)

Working Groups:

Participant: LTER: Integrating plant community and ecosystem responses to chronic global change drivers: Toward an explanation of patterns and improved global predictions. Meeting I at NCEAS (Dec 2016, Santa Barbara, CA). Projects are ongoing.

Participant: A toolbox for analysis of long-term ecological dynamics using the Kepler workflow system. Meeting I at NCEAS (Oct 2015, Santa Barbara, CA). Meeting II at NCEAS (scheduled Feb 2017, Santa Barbara, CA). Projects are ongoing.

Co-lead: Community convergence or divergence in response to global change. Meeting I at LTER All Scientists Meeting (Sept 2015, Estes Park, CO); Meeting II (Nov 2015, Manhattan, KS). Projects are ongoing.

Lead: Grazing Exclosure Consortium – Impacts of herbivores on dominance. Meeting I (June 2015, Ft. Collins, CO); Meeting II (Feb 2016, Santa Barbara, CA). Projects are ongoing.

Participant: Dominance in Grasslands. Meeting I (June 2015, Ft. Collins, CO). Projects are ongoing.

Participant: Resources in the agro-pastoral transition zone of Inner Mongolia: Challenges and opportunities for 'marginal lands'. Sino-German Symposium. Erguna, China. 2013

Participant: Mechanisms of convergence and divergence - Understanding the variability of plant community responses to multiple resource manipulations. Meeting I (2013, Ft. Collins, CO; LTER LNO funding); Meeting II (2013, Ft. Collins, CO; LTER LNO funding). Projects are ongoing.

Participant: The Ecosystem Sensitivity to Rainfall Experiment (EcoSeRE) - Design and Synthesis. Meeting I funded by the LTER LNO Office. 2013.

Co-lead: Graduate Student Symposium (GSS). LTER All Scientists Meeting. 2012.

Co-lead: Examining the effects of patchiness on ecosystem stability across a range of grassland types using long-term vegetation data. LTER All Scientists Meeting GSS. 2012.

Co-lead: Engineering Global Change Experiments. LTER All Scientists Meeting GSS. 2009.