

## JESSE B. NIPPERT

Division of Biology  
Kansas State University  
Manhattan, KS 66506  
USA

[nippert@ksu.edu](mailto:nippert@ksu.edu)  
<http://www.k-state.edu/ecophyslab/>  
Phone: (785) 532-0114  
ORCID: 0000-0002-7939-342X

---

### Appointments

May 2023	University Distinguished Professor of Biology, Kansas State University
Mar. 2019	Professor, Division of Biology, Kansas State University
Feb. 2013	Associate Professor, Division of Biology, Kansas State University
Aug. 2007	Assistant Professor, Division of Biology, Kansas State University
Aug. 2007	Director, Stable Isotope Mass Spectrometry Laboratory ( <i>SIMSL</i> ), KSU
Jan. 2007	Post-doctoral fellow; <i>Advisor: James J. Butler Jr.</i> , Kansas Geological Survey
Jan. 2006	Post-doctoral fellow; <i>Advisor: Joy K. Ward</i> , Department of Ecology and Evolutionary Biology, University of Kansas.

### Special Appointments

2020-present	Adjunct Faculty, Dept. Biology, Colorado State University
2017-present	PI, Konza Prairie Long-Term Ecological Research (LTER) Program
2015-present	Research Fellow, Ndlovu Node, South African Environmental Observation Network
2008-2015	Adjunct Professor, Biological Sciences, Fort Hays State University
2010-2012	Adjunct Faculty, Dept. Biology, St. Joseph's University (Philadelphia)
2010-2012	Adjunct Faculty, Dept. Biology, University of New Mexico
2009-2015	Graduate Faculty, Ecology & Evolutionary Biology, University of Kansas

### Education

2004-2006	Colorado State University	Ph.D.	Ecology
2002-2004	Kansas State University		Biology
			<i>Advisor: Alan K. Knapp</i>
2000-2002	University of Idaho	M.S.	Forest Resources
			<i>Advisor: John D. Marshall</i>
1994-1998	Kansas State University	B.S.	Park Resource Management & Environmental Science ( <i>w/ honors, cum laude</i> )

### Academic Experience

2004-2005	Graduate Research Assistant	Colorado State University
2002-2003	Graduate Teaching Assistant	Kansas State University
2001-2002	Graduate Teaching Assistant	University of Idaho
2000-2001	Graduate Research Assistant	University of Idaho
Sum. 1998	NSF-REU Fellowship	Ecosystems Center, Woods Hole, MA--Abisko Scientific Research Station, Abisko, SWEDEN
Sum. 1997	SCA Fellowship	Wrangell-St. Elias National Park, AK
1996-1998	Laboratory Research Assistant	Kansas State University
Spr. 1996	Study Abroad Program	Univ. Western Sydney-Hawkesbury, AUSTRALIA

### Awards & Recognition

2025	Keller Innovative Teaching Award, College of Arts & Sciences, KSU
2020	Karen Ann Griffith Research Award, College of Arts & Sciences, KSU
2020	Biology Graduate Student Assn, Outstanding Faculty Award, KSU

- 2015 Distinguished Alumnus, Graduate Degree Program in Ecology, Colorado State Univ.
- 2014 AAAS Frontiers of Science (Arab-American) invited presenter and panelist in Muscat, Oman
- 2011 Big 12 Faculty Fellowship: research exchange w/ Dr. Tim Seastedt, Univ. Colorado
- 2011 H. Henley Haymaker Teaching Excellence Award, Division of Biology, KSU
- 2010 William L. Stamey Teaching Award, College of Arts & Sciences, KSU
- 2006 General Research Award, Ecology & Evol. Biology, Univ. Kansas
- 2005 Graduate Travel Award, Department of Biology, CSU
- 2003 James Ackert Scientific Award, Division of Biology Forum, KSU

### Research Interests

Grassland and savanna ecology, plant eco-physiology, stable isotope ecology (specifically,  $\delta D$ ,  $\delta^{18}O$  &  $\delta^{13}C$ ), global climate change (changing precipitation patterns, elevated  $CO_2$ , & altered biogeochemistry), eco-hydrology, physiological mechanisms of species invasion, paleo-ecology

### National Graduate Student Instructional Workshops

*Conference Organizer and co-lead*

**Phys-Fest 4:** October 15-20, 2023, Sevilleta National Wildlife Refuge, Socorro, NM. 35 Graduate student participants from 23 U.S. Universities.

<https://physfest.wixsite.com/physfest/phys-fest-4-details>

**Phys-Fest 3:** July 18-23, 2021, Colorado State Mountain Campus, Bellvue, CO. 45 Graduate student participants from 30 U.S. Universities.

[https://www.k-state.edu/ecophyslab/phys\\_fest\\_3.html](https://www.k-state.edu/ecophyslab/phys_fest_3.html)

**Phys-Fest 2:** July 15-19, 2018, Holden Arboretum, Cleveland, OH. 41 Graduate student participants from 25 U.S. Universities.

[https://www.k-state.edu/ecophyslab/phys\\_fest\\_2.html](https://www.k-state.edu/ecophyslab/phys_fest_2.html)

<https://www.youtube.com/watch?v=ovlodZRAW8w>

**Phys-Fest 1:** June 5-9, 2016, Konza Prairie, Manhattan, KS. 32 Graduate student participants from 20 U.S. Universities. [https://www.k-state.edu/ecophyslab/phys\\_fest\\_2016.html](https://www.k-state.edu/ecophyslab/phys_fest_2016.html)

*Conference Host and Presenter*

**Go Belowground 2024:** Sept 16-20, 2024, Konza Prairie Biological Station. Hands-on training to assess belowground plant traits including morphology and anatomy of clonal growth organs, roots, and buds and their importance in the field of ecology. 18 graduate students participated from 13 universities. <https://klimesovajitka.wordpress.com/go-belowground/>

### Publications (all peer-reviewed) \*undergraduate co-author

- Tooley, E.G., **J.B Nippert**, A.K. Knapp (*in press*) Revisiting patterns and controls of productivity in a mesic grassland 30 years later: Do we know now what we knew then? *Ecosystems*
- Pau, S., R. Slapikas, C.-L. Ho, S.L.J. Bayliss, R.C. Donneley, A. Abdullahi, B.R. Helliker, **J.B. Nippert**, W.J. Riley, C.J. Still, E.R. Wedel, D.M. Griffith (2025) Hyperspectral leaf reflectance of grasses varies with evolutionary lineage more than with site. *Ecosphere*  
<https://doi.org/10.1002/ecs2.70257>
- Pilon, N., F. Peixoto, R.S. Oliveira, A.C.C. Oliveira, J. Alqueres et al. [including **J.B. Nippert**] (*in press*) Open letter: There are more than just trees and forests to be conserved and restored. *Plants People Planet* <https://doi.org/10.1002/ppp3.10635>
- Anhold, C., C. Hatley, E. Alcantar-Velasquez, R.M. Keen, K. Sadayappan, K. Jarecke, P.L. Sullivan, **J.B. Nippert**, L. Li, G.L. Macpherson, M.F. Kirk. (*in press*) Grassland woody encroachment

- alters subsurface mineral weathering and groundwater composition in a carbonate system. *Chemical Geology* 673: 122522 <https://doi.org/10.1016/j.chemgeo.2024.122522>
- Wedel, E.R., Z. Ratajczak, E.G. Tooley, **J.B. Nippert** (2025) Divergent resource-use strategies of encroaching shrubs: Can traits predict encroachment success in tallgrass prairie? *Journal of Ecology* 113: 339-352 <https://doi.org/10.1111/1365-2745.14456>
- Jarecke, K.M., X. Zhang, R.M. Keen, M. Dumont, B. Li, K. Sadayappan, V. Moreno, H. Ajami, S.A. Billings, A.N. Flores, D.R. Hirmas, M.F. Kirk, L. Li, **J.B. Nippert**, K. Singha, P.L. Sullivan. (2024) Woody encroachment modifies subsurface structure and hydrological function. *Ecohydrology* e2731. <https://doi.org/10.1002/eco.2731>
- Donnelly, R.C., **J.B. Nippert**, E.R. Wedel, C. Ferguson (2024) Grass leaf structural and stomatal trait responses to climate gradients assessed over the 20th century and across the Great Plains, USA *AOB Plants* 16:plae055 <https://doi.org/10.1093/aobpla/plae055>
- Wedel, E.R., **J.B. Nippert**, R.C. O'Connor, P. Nkuna, A.M. Swemmer (2024) Repeated bush clearing as a mechanism for savanna recovery following bush encroachment. *Journal of Applied Ecology* 61:1520-1530. <https://doi.org/10.1111/1365-2664.14666>
- Restrepo-Acevedo, A.M., J.S. Guo, S.A. Kannenberg, M.C. Benson, D. Beverly, R. Diaz, WRL Anderegg, D.M. Johnson, G. Koch, A.G. Konings, L.E.L. Lowman, J. Martínez-Vilalta, R. Poyatos, H.J. Schenk, A.M. Matheny, K.A. McCulloh, **J.B. Nippert**, R.S. Oliveira, K. Novick. (2024) PSInet: a new global water potential network. *Tree Physiology* 44: tpae110 <https://doi.org/10.1093/treephys/tpae110>
- Keen, R.M., K. Sadayappan, K.M. Jarecke, L. Li, M.F. Kirk, P.L. Sullivan, **J.B. Nippert** (2024) Unexpected hydrologic response to ecosystem state change in tallgrass prairie (2024) *Journal of Hydrology* 643: 131937 <https://doi.org/10.1016/j.jhydrol.2024.131937>
- Keen, R.M., B.R. Helliker, K.A. McCulloh, **J.B. Nippert** (2024) Save or spend? Diverging water-use strategies of grasses and encroaching clonal shrubs. *Journal of Ecology* 112: 870-885 <https://doi.org/10.1111/1365-2745.14276>
- Slapikas, R., S. Pau., R.C. Donnelly, C-Ling Ho, **J.B. Nippert**, B.R. Helliker, W.J. Riley, C.J. Still, D.M. Griffith (2024) Grass evolutionary lineages can be identified using hyperspectral leaf reflectance. *Journal of Geophysical Research – Biogeosciences* 129: e2023JG007852 <https://doi.org/10.1029/2023JG007852>
- Tooley, E.G., **J.B. Nippert**, Z Ratajczak. (accepted with revisions) Evaluating methods for measuring the leaf area index of encroaching shrubs in grasslands: from leaves to optical methods, 3-D scanning, and airborne observation. *Agricultural and Forest Meteorology*.
- O'Keefe, K. **J.B. Nippert**, R.M. Keen, K.A. McCulloh (2024) Contrasting shrub and grass hydraulic responses to experimental drought. *Oecologia* 24: 931-941 <https://doi.org/10.1007/s00442-024-05543-w>
- Keen, R.M., S. Bachle, M. Bartmess, **J.B. Nippert**. (2024) Combined effects of fire and drought are not sufficient to slow shrub encroachment in tallgrass prairie. *Oecologia* 204: 727-742 <https://doi.org/10.1007/s00442-024-05526-x>
- Sadayappan, K., R.M. Keen, K.M. Jarecke, V. Moreno, **J.B. Nippert**, M.F. Kirk, P.L. Sullivan, and L. Li. (2023) Drier streams despite a wetter climate in woody-encroached grasslands. *Journal of Hydrology* 627: 130388 [doi.org/10.1016/j.jhydrol.2023.130388](https://doi.org/10.1016/j.jhydrol.2023.130388)
- Swemmer, A.M., **J.B. Nippert**, T.G. O'Connor (2023) The effects of floods, droughts, and elephants on riparian tree mortality in a semi-arid savanna. *Forest Ecology and Management* 545:121264 [doi.org/10.1016/j.foreco.2023.121264](https://doi.org/10.1016/j.foreco.2023.121264)
- Donnelly, R, E.R. Wedel, J.H. Taylor, **J.B. Nippert**, B.R. Helliker, W. Riley, C.J. Still, D. Griffith (2023) Evolutionary lineage explains trait variation among 75 coexisting grass species *New Phytologist* 239:875-887 [doi: 10.1111/nph.18983](https://doi.org/10.1111/nph.18983)

- Belovitch, M, J. NeSmith, **J.B. Nippert**, and R.M. Holdo (2023) African Savanna grasses outperform trees across the full spectrum of soil moisture availability. *New Phytologist* 239: 66-74 doi: 10.1111/nph.18909
- Dodds, W.K., Z. Ratajczak, R.M. Keen, **J.B. Nippert**, B. Grudzinski, A. Veach, J.H. Taylor and A. Kuhl. (2023) Trajectories and state changes of a grassland stream and riparian zone after a decade of woody vegetation removal. *Ecological Applications* e2380 <https://doi.org/10.1002/eap.2830>
- O'Connor, R.C., D.M. Blumenthal, T.W. Ocheltree, and **J.B. Nippert** (2023) Elevated CO<sub>2</sub> counteracts effects of water stress on woody rangeland-encroaching species. *Tree Physiology* tpac150 <https://doi.org/10.1093/treephys/tpac150>
- Feldman, A.F., D.J. Short Gianotti, J. Dong, R. Akbar, W.T. Crow, K.A. McColl, A.G. Konings, **J.B. Nippert**, S.J. Tumber-Dávila, N.M. Holbrook, F.E. Rockwell, R.L. Scott, R.H. Reichle, A. Chatterjee, J. Joiner, B. Poulter, and D. Entekhabi (2023) Satellites capture soil moisture dynamics deeper than a few centimeters that are broadly relevant to plant water uptake. *Water Resources Research* 59: e2022WR033814 <https://doi.org/10.1029/2022WR033814>
- Holdo, R.M. and **J.B. Nippert** (2023) TANSLEY REVIEW: Linking resource- and disturbance-based models to explain tree-grass coexistence in savannas. *New Phytologist* 237: 1966-1979 <https://doi.org/10.1111/nph.18648>
- Hatley, C.M., B. Armijo, K. Andrews, C. Anhold, **J.B. Nippert** and M.F. Kirk (2023) Intermittent streamflow generation in a merokarst headwater catchment *Environmental Science: Advances* 2: 115-131 <http://doi.org/10.1039/d2va00191h>
- Tooley, E.G., R.M. Keen, S. Bachle, and **J.B. Nippert** (2022) Intra-canopy leaf trait variation facilitates high leaf area index and compensatory growth in a clonal woody-encroaching shrub. *Tree Physiology* 42(11): 2186–2202 <https://doi.org/10.1093/treephys/tpac078>
- Ratajczak, Z., S.L. Collins, J.M. Blair, S. Koerner, A.M. Louthan, M.D. Smith, J.H. Taylor, and **J.B. Nippert** (2022). Reintroducing bison results in long running and resilient increases in grassland diversity. *Proceedings of the National Academy Of Sciences, USA*. 119 (36) E2210433119 <https://doi.org/10.1073/pnas.2210433119>
- Rastetter, E.B., B.L. Kwiakowski, D.W. Kicklighter, A. Barker Plotkin, H. Genet, **J.B. Nippert**, K. O'Keefe, S.R. Perakis, S. Porder, S.S. Roley, R.W. Reuss, J.R. Thompson, W.R. Wieder, K. Wilcox, and R.D. Yanai (2022) N and P constrain C in ecosystems under climate change: role of nutrient redistribution, accumulation, and stoichiometry. *Ecological Applications* e2684 <https://doi.org/10.1002/eap.2684>
- Fernández, J.A., C.D. Messina, A. Salinas, P.V.V. Prasad, **J.B. Nippert**, I.A. Ciampitti. (2022) Kernel weight contribution to yield genetic gain of maize: A global review and US case studies. *Journal of Experimental Botany* <https://doi.org/10.1093/jxb/erac103>
- Keen, R.M., **J.B. Nippert**, P.L. Sullivan, Z. Ratajczak, B. Ritchey, K. O'Keefe, W.K. Dodds. (2022) Impacts of riparian and non-riparian woody encroachment on tallgrass prairie ecohydrology. *Ecosystems* <https://doi.org/10.1007/s10021-022-00756-7>
- Meng, B., J. Li, Y. Yao, **J.B. Nippert**, D. Williams, H. Chai, S.L. Collins, W. Sun. (2022) Soil N enrichment mediates carbon allocation through respiration in a dominant grass during drought. *Functional Ecology* <https://doi.org/10.1111/1365-2435.14033>
- O'Keefe K, S Bachle, RM Keen, EG Tooley, **JB Nippert** (2022) Root traits reveal safety and efficiency differences in grasses and shrubs exposed to different fire regimes. *Functional Ecology* 36: 368– 379. <https://doi.org/10.1111/1365-2435.13972>
- Bachle, S., **J.B. Nippert** (2022) Climate variability supercedes grazing to determine the anatomy and physiology of a dominant grassland species. *Oecologia* 198:345–355 <https://doi.org/10.1007/s00442-022-05106-x>
- Fernandez, J.A., **J.B. Nippert**, P.V.V. Prasad, C.D. Messina, I.A. Ciampitti (2022) Post-silking <sup>15</sup>N labelling reveals an enhanced nitrogen allocation to leaves in modern maize (*Zea mays*)

- genotypes. *Journal of Plant Physiology* 268: 153577  
<https://doi.org/10.1016/j.jplph.2021.153577>
- Sullivan, P, S. Billings, D. Hirmas, L. Li, X. Zhang, S. Ziegler, K. Murenbeeld, H. Ajami, A. Guthrie, K. Singha, D. Giménez, A. Duro, V. Moreno, A. Flores, A. Cueva, A. Koop, E.L. Aronson, H.R. Barnard, S.A. Banwart, R.M. Keen, A. Nemes, N.P. Nikolaidis, **J.B. Nippert**, D. Richter, D.A. Robinson, K. Sadayappan, L.F.T. Souza, M. Unruh, H. Wen. (2022) Embracing the dynamic nature of soil structure: A paradigm illuminating the role of life in critical zones of the Anthropocene. *Earth-Science Reviews* 225: 103873  
<https://doi.org/10.1016/j.earscirev.2021.103873>
- Pau, S, **JB Nippert**, R Slapikas, DM Griffith, S Bachle, BR Helliker, RC O'Connor, WJ Riley, CJ Still, M Zaricor. (in press) Poor relationships between NEON AOP data and field-based vegetation traits at a mesic grassland site *Ecology*
- Wedel, ER, **JB Nippert**, DC Hartnett. (in press) Fire and browsing interact to alter intra-clonal stem dynamics of an encroaching shrub in tallgrass prairie. *Oecologia*  
<https://doi.org/10.1007/s00442-021-04980-1>
- Nippert, JB**, L Telleria\*, P Blackmore, JH Taylor, RC O'Connor. (2021) Is prescribed fire sufficient to slow the spread of woody plants in an infrequently-burned grassland? *Rangeland Ecology and Management* 78: 79-89. <https://doi.org/10.1016/j.rama.2021.05.007>
- Wedel, ER, K O'Keefe, **JB Nippert**, RC O'Connor. (2021) Spatio-temporal differences in leaf physiology are associated with fire, not drought, in a clonally integrated shrub. *AoB PLANTS*, plab037, <https://doi.org/10.1093/aobpla/plab037>
- Gokool, S, JE Moody, ES Riddell, A Swemmer, **JB Nippert**, R Raubenheimer, KT Chetty. (2021) A preliminary evaluation of ecohydrological separation in a semi-arid riparian area. *Ecohydrology and Hydrobiology* 21:271-279 <https://doi.org/10.1016/j.ecohyd.2021.01.002>
- Collins, SL, **JB Nippert**, JM Blair, JM Briggs, P Blackmore, Z Ratajczak. (2021) Fire frequency, state change and hysteresis in tallgrass prairie. *Ecology Letters* 24: 636-647 DOI: 10.1111/ele.13676
- Connell, RK, RC O'Connor, **JB Nippert**, JM Blair (2021) Spatial variation in soil microbial processes as a result of woody encroachment depends on shrub size in tallgrass prairie. *Plant and Soil* 460: 359–373 <https://doi.org/10.1007/s11104-020-04813-9>
- Hope AG, S Gragg\*, **JB Nippert**, F Combe. (2021) Consumer roles of small mammals within fragmented native tallgrass prairie. *Ecosphere* 12(3):e03441  
[https://doi.org/10.1002/\(ISSN\)2150-8925](https://doi.org/10.1002/(ISSN)2150-8925)
- Bachle, S, **JB Nippert**. (2021) Microanatomical variation tracks climate variation for a dominant C<sub>4</sub> grass species across the Great Plains, USA. *Annals of Botany* 127: 451–459  
<https://doi.org/10.1093/aob/mcaa146>
- Qui, F, S Bachle, **JB Nippert**, MC Ungerer. (2021) Transcriptional responses to water stress and recovery in a drought-tolerant fescue wild grass (*Festuca ovina*; Poaceae). *Genome* 64(1):15-27. <http://dx.doi.org/10.1139/gen-2020-0055>
- Zinnert, JC, **JB Nippert**, JA Rudgers, SC Pennings, G González, M Alber, SG Baer, JM Blair, A Burd, SL Collins, C Craft, D Di Iorio, WK Dodds, PM Groffman, E Herbert, C Hladik, F Li, ME Litvak, S Newsome, J O'Donnell, WT Pockman, J Schalles, DR Young. (2021) Future Trajectories for ecosystems of the U.S. Long Term Ecological Research Network: The importance of state changes. *Ecosphere* 12(5): e03433. 10.1002/ecs2.3433
- Connell, RK, **JB Nippert**, JM Blair. (2020) Three decades of divergent land use and plant community change alters soil C and N content in tallgrass prairie. *Journal of Geophysical Research-Biogeosciences* 125, e2020JG005723. <https://doi.org/10.1029/2020JG005723>
- Mahama, GY, PVV Prasad, KL Roozeboom, **JB Nippert**, CW Rice. (2020) Reduction of Nitrogen Fertilizer Requirements and Nitrous Oxide Emissions Using Legume Cover Crops in a No-

- Tillage Sorghum Production System. *Sustainability* 12(11) 4403  
<https://doi.org/10.3390/su12114403>
- Case, MF, **JB Nippert**, RM Holdo, AC Staver. (2020) Root-niche separation between savanna trees and grasses is greater on sandier soils. *Journal of Ecology* 108: 2298– 2308.  
<https://doi.org/10.1111/1365-2745.13475>
- Griffith, DM, C Osborne, EJ Edwards, S Bachle, DJ Beerling, WJ Bond, TJ Gallaher, BR Helliker, CER Lehmann, L Leatherman, **JB Nippert**, S Pau, F Qui, WJ Riley, MD Smith, CAE Stromberg, L Taylor, M Ungerer, CJ Still. (2020) Lineage Functional Types (LFTs): Characterizing functional diversity to enhance the representation of ecological behavior in Land Surface Models. *New Phytologist* 228: 15-23 <https://doi.org/10.1111/nph.16773>
- O'Keefe K, DM Bell, KM McCulloh, **JB Nippert** (2020) Bridging the flux gap: sap flow measurements reveal species-specific patterns of water-use in a tallgrass prairie. *Journal of Geophysical Research-Biogeosciences* 125, e2019JG005446  
<https://doi.org/10.1029/2019JG005446>
- Qui F, S Bachle, **JB Nippert**, MC Ungerer (2020) Comparing control options for time-series RNAseq experiments in non-model organisms: an example from grasses. *Molecular Ecology Resources* 20: 681-691 <https://doi.org/10.1111/1755-0998.13137>
- O'Connor RC, JH Taylor, **JB Nippert** (2020) Browsing and fire decreases dominance of a resprouting shrub in woody-encroached grassland. *Ecology* 101: e02935 <https://doi.org/10.1002/ecy.2935>
- O'Keefe K, **JB Nippert**, KA McCulloh (2019) Plant water uptake along a diversity gradient provides evidence for complementarity in hydrological niches. *Oikos* 128:1748-1760.
- Veldman JW, JC Aleman, ST Alvarado, TM Anderson, S Archibald, WJ Bond... **JB Nippert** et al. (2019) Comment on "The global tree restoration potential". *Science* 366 (6463): eaay7976.
- Santos M, E Santos, C Wagner-Riddle, S Brown, K Stropes, R Staebler, **JB Nippert** (2019) Evaluating a Lagrangian inverse model for inferring isotope CO<sub>2</sub> exchange in plant canopies. *Agricultural and Forest Meteorology* 276-277: 107651.
- Bachle S, **JB Nippert** (2018) Physiological and anatomical trait variability of dominant C<sub>4</sub> grasses. *Acta Oecologia* 93:14-20
- Bachle S, Griffith DM, **JB Nippert** (2018) Intraspecific trait variability in *Andropogon gerardii*, a dominant grass species in the US Great Plains. *Frontiers in Ecology and Evolution* 6:217
- O'Keefe K, **JB Nippert** (2018) Drivers of nocturnal water flux in a tallgrass prairie. *Functional Ecology* 32: 1155-1167 doi: 10.1111/1365-2435.13072
- Vero, SE, GL Macpherson, PL Sullivan, AE Brookfield, **JB Nippert**, MF Kirk, S Datta, P Kempton (2018) Developing a conceptual framework of landscape and hydrology on tallgrass prairie: a critical zone approach. *Vadose Zone Journal* 17:170069 doi:10.2136/vzj2017.03.0069
- Holdo, RM, **JB Nippert**, MC Mack (2018) Rooting depth varies differentially in trees and grasses as a function of mean annual rainfall in an African savanna. *Oecologia* 186: 269-280  
doi:10.1007/s00442-017-4011-4
- Gokool, S, ES Riddell, AM Swemmer, **JB Nippert**, R Raubenheimer, KT Chetty. (2018) Estimating groundwater contribution to transpiration using satellite-derived evapotranspiration estimates coupled with stable isotope analysis. *Journal of Arid Environments* 152: 45-54 doi: 10.1016/j.jaridenv.2018.02.002
- Brunsell, NA, ES Van Vleck, M Nosschi, Z Ratajczak, **JB Nippert** (2017) Assessing the roles of fire frequency and precipitation in determining woody plant expansion in central US grasslands. *Journal of Geophysical Research-Biogeosciences* 122: 2683-2698 doi:10.1002/2017JG004046
- Griffith, DM, CER Lehmann, CAE Stromberg, CL Parr, RT Pennington, M Sankaran, J Ratnam, CJ Still, RL Powell, NP Hanan, **JB Nippert**, CP Osborne, S Good, TM Anderson, R Holdo, JW Veldman, G Durigan, KW Tomlinson, WA Hoffmann, S Archibald, WJ Bond. (2017) Response to Comment on 'The extent of forest in dryland biomes'. *Science* 358: 1-3.

- Concilio, AL, TR Seastedt, **JB Nippert** (2017) Changing edaphic conditions and exploitation of an expanded phenological niche allows for increased exotic (introduced) plant species dominance. *Plant and Soil* 415:299-315 doi:10.1007/s11104-016-3167-8
- Ratajczak, Z, P D'Odorico, SL Collins, B Bestelmeyer, F Isbell, **JB Nippert** (2017) The interactive effects of press/pulse intensity and duration on regime shifts at multiple scales. *Ecological Monographs* doi: 10.1002/ecm.1249
- O'Keefe, K, **JB Nippert** (2017) An assessment of diurnal water uptake in a mesic prairie: evidence for hydraulic lift? *Oecologia* 183: 963-975 doi: 10.1007/s00442-017-3827-2
- Ratajczak, Z, P D'Odorico, **JB Nippert**, SL Collins, NA Brunsell, S Ravi (2017) Changes in spatial variance during grassland-shrubland state transition. *Journal of Ecology* 105: 750-760 doi:10.1111/1365-2745.12696
- O'Keefe, K, **JB Nippert** (2017) Grazing by bison is a stronger driver of plant ecohydrology in tallgrass prairie than fire history. *Plant and Soil* 411: 423-436 doi:10.1007/s11104-016-3048
- Klodd, AE\*, **JB Nippert**, Z Ratajczak, H Waring, GK Phoenix (2016) Tight coupling of leaf area index to canopy nitrogen and phosphorus across heterogeneous tallgrass prairie communities. *Oecologia* 182(3): 889-898 doi:10.1007/s00442-016-3713-3
- Concilio, AL, **JB Nippert**, S Ehrenfeucht, K Cherwin, TR Seastedt (2016) Imposing antecedent global change condition rapidly alters plant community composition in a mixed-grass prairie. *Oecologia* 182(3) 899-911 doi:10.1007/s00442-016-3684-4
- Ratajczak, Z, JM Briggs, D Goodin, L Luo, R Mohler, **JB Nippert**, BK Obermeyer (2016) Assessing the potential for transitions from tallgrass prairie to woodlands: are we operating beyond critical fire thresholds? *Rangeland Ecology and Management* 69:280-287
- Raynor, EJ, A Joern, **JB Nippert**, JM Briggs (2016) Foraging decisions underlying restricted space-use: effects of fire and forage maturation on large herbivore nutrient uptake. *Ecology and Evolution* 6: 5843-5853 doi: 10.1002/ece3.2304
- Li, H, K Yu, Z Ratajczak, **JB Nippert**, D Tondrob, D Xu, G Du (2016) When variability outperforms the mean: trait plasticity predicts plant cover and biomass in an alpine wetland. *Plant and Soil* doi: 10.1007/s11104-016-2898-x
- Muench, AT\*, K O'Keefe, **JB Nippert**. (2016) Comparative ecohydrology between *Cornus drummondii* and *Solidago canadensis* in upland tallgrass prairie. *Plant Ecology* 217: 267-276 doi: 10.1007/s11258-016-0567-z
- Ocheltree, TW, **JB Nippert**, PVV Prasad (2016) A safety vs. efficiency trade-off identified in the hydraulic pathway of grass leaves is decoupled from photosynthesis, stomatal conductance, and precipitation. *New Phytologist* 210: 97-107 doi:10.1111/nph.13781
- O'Keefe, K, **JB Nippert**, AM Swemmer (2016) Savanna tree seedlings are physiologically tolerant to nighttime freeze events. *Frontiers in Plant Science* 7:art46 doi:10.3389/fpls.2016.00046
- Mahama GY, Prasad PVV, Roozeboom KL, **JB Nippert**, and Rice CW. (2016) Response of maize to cover crops, fertilizer nitrogen rates, and economic return. *Agronomy Journal* 108:17-31 doi:10.2134/agronj15.0136
- Mahama GY, Prasad PVV, Roozeboom KL, **JB Nippert**, and Rice CW. (2016) Cover crops, fertilizer nitrogen rates, and economic return of grain sorghum. *Agronomy Journal* 108: 1-16 doi:10.2134/agronj15.013
- Concilio, AL, JS Prev  y, P Omasta\*, J O'Connor, **JB Nippert**, & TR Seastedt (2015) Response of a mixed grass prairie to an extreme precipitation event: Introduced species, soil nitrogen and previous precipitation patterns influence responses. *Ecosphere* 6 (10) 1-12. <https://doi.org/10.1890/ES15-00073.1>
- Holdo RM, & **JB Nippert** (2015) Transpiration dynamics support resource partitioning in African savanna trees and grasses. *Ecology* 96: 1466-1472
- Nippert, JB**, & RM Holdo (2015) Challenging the maximum rooting depth paradigm in grasslands and savannas. *Functional Ecology* 29: 739-745 doi: 10.1111/1365-2435.12390

- Lin Y-S, BE Medlyn, RA Duursma, IC Prentice, OK Atkin, CVM Barton, J Bennie, A Bosc, MSJ Broadmeadow, LA Cernusak, P De Angelis, JE Drake, D Eamus, DS Ellsworth, M Freeman, O Ghannoum, TE Gimeno, Q Han, K Hikosaka, LB Hutley, JW Kelly, K Kikuzawa, P Kolari, K Koyama, J-M Limousin, M-L Linderson, M Löw, C Macinins-Ng, NK Martin-StPaul, P Meir, TN Mikkelsen, P Mitchell, **JB Nippert**, TW Ocheltree, Y Onoda, M Op de Beeck, V Resco de Dios, A Rey, A Rogers, L Rowland, SA Setterfield, W Sun, L Tarvainen, S Tausz-Posch, DT Tissue, J Uddling, G Wallin, JM Warren, L Wingate, J Zaragoza-Castells (2015) Optimal stomatal behaviour around the world. *Nature Climate Change* 5: 459-464 doi:10.1038/nclimate2550
- Ratajczak, Z, **JB Nippert**, JM Briggs, & JM Blair (2014) Fire dynamics distinguish grasslands, shrublands, and woodlands as alternative attractors in the Central Great Plains of North America. *Journal of Ecology* 102: 1374-1385
- Ratajczak, Z, **JB Nippert**, TW Ocheltree (2014) Abrupt transition of mesic grassland to shrubland: evidence for thresholds, alternative attractors, and regime shifts. *Ecology* 95: 2633-2645
- McLauchlan, KK, JM Craine, **JB Nippert**, TW Ocheltree (2014) Lack of eutrophication in a tallgrass prairie ecosystem over 27 years. *Ecology (in press)*.
- Thomas, RB, SE Spal, KR Smith, **JB Nippert** (2014) Reply to Schaberg et al.: Applying stable isotope analyses to examine the influence of acid deposition on *Juniperus virginiana*. *Proceedings of the National Academy of Sciences, USA* doi:10.1073/pnas.1321343111
- Brunsell NA, **JB Nippert**, T Buck (2014) Impacts of seasonality and surface heterogeneity on water-use efficiency in mesic grasslands. *Ecohydrology* doi:10.1002/eco.1455
- Nippert, JB**, TW Ocheltree, GL Orozco\*, Z Ratajczak, B Ling, AM Skibbe (2013) Evidence of physiological decoupling from grassland ecosystem drivers by an encroaching woody shrub. *PLoS ONE* 8(12): e81630 doi:10.1371/journal.pone.0081630
- Thomas, RB, SE Spal, KR Smith, **JB Nippert** (2013) Evidence of recovery of *Juniperus virginiana* trees from sulfur pollution after the Clean Air Act. *Proceedings of the National Academy of the Sciences, USA*. 110 (38) 15319-15324; doi:10.1073/pnas.1308115110
- Craine, JM, **JB Nippert** (2013) Cessation of burning dries soils long-term in a tallgrass prairie. *Ecosystems (in press)*.
- Ocheltree, TW, **JB Nippert**, MB Kirkham, PVV Prasad (2013) Partitioning hydraulic resistance in *Sorghum bicolor* leaves reveals unique correlations with stomatal conductance during drought. *Functional Plant Biology (in press)*
- Ocheltree, TW, **JB Nippert**, PVV Prasad. (2013) Stomatal responses to changes in vapor pressure deficit reflect tissue-specific differences in hydraulic conductance. *Plant, Cell, and Environment (in press)*
- O'Keefe, K, N Tomeo, **JB Nippert**, CJ Springer. (2013) Population origin and genome size do not impact *Panicum virgatum* (switchgrass) responses to variable precipitation. *Ecosphere* 4(3):37.
- Nippert, JB**, TSF Culbertson\*, GL Orozco\*, TW Ocheltree, BR Helliker (2013) Identifying the water sources consumed by bison: implications for large mammalian grazers worldwide. *Ecosphere* 4(2):.. <http://dx.doi.org/10.1890/ES12-00359.1>
- Hartman JC, **JB Nippert** (2012) Physiological and growth responses of switchgrass (*Panicum virgatum* L.) in native stands under passive air temperature manipulation. *Global Change Biology-Bioenergy*
- Craine JM, TW Ocheltree, **JB Nippert**, EG Towne, AM Skibbe, SW Kembel, and JE Fargione (2012) Global diversity of drought tolerance and grassland climate-change resilience. *Nature Climate Change* doi: 10.1038/nclimate1634
- Craine, JM, EG Towne, D Tolleson, **JB Nippert** (2012) Precipitation timing and grazer performance in a tallgrass prairie. *Oikos* doi: 10.1111/j.1600-0706.2012.20400.x
- Ratajczak Z, **JB Nippert** (2012) Comment on 'Hirota et al. 2011, Global Resilience of Tropical Forest and Savanna to Critical Transitions'. *Science* 336:541, doi:10.1126/science.1219346

- Craine, JM, EG Towne, TW Ocheltree, **JB Nippert** (2012) Community traitscape of foliar nitrogen isotopes reveals N availability in a tallgrass prairie. *Plant and Soil* doi:10.1007/s11104-012-1141-7
- Ratajczak Z, **JB Nippert**, SC Collins (2012) Woody encroachment decreases diversity in North American grasslands *Ecology* 93:697-703
- Craine, JM, **JB Nippert**, AJ Elmore, AM Skibbe, SL Hutchinson, NA Brunsell (2012) The timing of climate variability and grassland productivity. *Proceedings of the National Academy of the Sciences, USA* doi:10.1073/pnas.1118438109
- Gerhart, LM, JM Harris, **JB Nippert**, DR Sandquist, JK Ward (2012) Glacial trees from the La Brea tar pits show physiological constraints of low CO<sub>2</sub>. *New Phytologist* doi: 10.1111/j.1469-8137.2011.04025.x
- Hartman, JC, **JB Nippert**, CJ Springer (2012) Ecotypic responses of switchgrass to altered precipitation. *Functional Plant Biology* doi: 10.1071/FP11229
- Nippert, JB**, RA Wieme, TW Ocheltree, JM Craine (2012) Root characteristics of C4 grasses limit reliance on deep soil water in tallgrass prairie. *Plant and Soil* doi: 10.1007/s11104-011-1112-4
- Carter, JM & **JB Nippert** (2012) “Leaf level physiological responses of *Tamarix ramosissima* to increasing salinity” *Journal of Arid Environments* 77:17-24 doi:10.1016/j.jaridenv.2011.10.00
- Petrie MD, NA Brunsell, **JB Nippert**. (2012) Climate change alters growing season flux dynamics in mesic grasslands. *Theoretical and Applied Climatology* 107:427-440 doi: 10.1007/s00704-011-0484-y.
- Craine JM, EG Towne, TW Ocheltree, **JB Nippert** (2012) “Community traitscape of foliar nitrogen isotopes in a North American tallgrass prairie” *Plant and Soil* doi: 10.1007/s11104-012-1141-7
- Ocheltree, TW, **JB Nippert**, & PVV Prasaad (2012) “Changes in stomatal conductance along a grass leaf reflects changes in leaf structure” *Plant Cell and Environment* doi: 10.1111/j.1365-3040.2011.02470.x
- Carter, JM & **JB Nippert** (2011) “Physiological responses of *Tamarix ramosissima* to a NaCl gradient” *American Journal of Plant Sciences* 2: 808-815. doi:10.4236/ajps.2011.26095
- Fay PA, JM Blair, MD Smith, **JB Nippert**, JD Carlisle, AK Knapp (2011) “Relative effects of precipitation variability and warming on grassland ecosystem function” *Biogeosciences* 8:3053-3068 doi:10.5194/bg-8-3053-2011
- Ratajczak Z\*, **JB Nippert**, JC Hartman, TW Ocheltree (2011) “Positive feedbacks amplify rates of woody encroachment in mesic tallgrass prairie” *Ecosphere* 2(11):121. doi:10.1890/ES11-00212.1
- Hartman, JC, **JB Nippert**, RA Orozco, CJ Springer. (2011) Potential ecological impacts of switchgrass (*Panicum virgatum* L.) biofuel cultivation in the Central Great Plains, USA *Biomass and Bioenergy* 35: 3415-3421
- Tucker, SS, JM Craine, **JB Nippert** (2011) Physiological drought tolerance and the structuring of tallgrass prairie assemblages *Ecosphere* 2(4):art48. Doi:10.1890/ES11-00023.1
- Nippert, JB**, TW Ocheltree, AS Skibbe, L Kangas\*, J Ham, K Arnold, & NA Brunsell. (2011) Linking plant growth responses across topographic gradients in tallgrass prairie. *Oecologia* 166: 1131-1142
- Craine, JM, **JB Nippert**, EG Towne, SS Tucker, S Kembel, A Skibbe, & K McLauchlan. (2011) Functional consequences of climate change-induced plant species loss in a tallgrass prairie. *Oecologia* DOI: 10.1007/s00442-001-1938-8
- Kawakami, T, TJ Morgan, **JB Nippert**, TW Ocheltree, R Keith P Dhakal MC Ungerer (2011) Natural selection drives clinal life history patterns in the perennial sunflower species, *Helianthus maximiliani* *Molecular Ecology* 11:2318-28 doi: 10.1111/j.1365-294x.2011.05105x
- Travers, SE, Z Tang, D Caragea, KA Garrett, SH Hulbert, JE Leach, J Bai, A Saleh, AK Knapp, PA Fay, **JB Nippert**, PS Schnable, & MD Smith (2010) Variation in gene expression of

- Andropogon gerardii* in response to altered environmental conditions associated with climate change. *Journal of Ecology* doi: 10.1111/j.1365-2745.2009.01618.x
- Nippert, JB**, M. Hooten, D. Sandquist, & JK Ward. (2010) A Bayesian model for predicting El Niño events using tree-ring widths and  $\delta^{18}\text{O}$ . *Journal of Geophysical Research-Biogeosciences* doi:10.1029/2009JG001101
- Craine, JM, EG Towne, and **JB Nippert** (2010) Climate controls on grass flowering over a quarter century in a tallgrass prairie. *Ecology* 91:2132-2140 doi: 10.1890/09-1242
- Nippert, JB**, JJ Butler Jr, GJ Kluitenberg DO Whittemore, D Arnold, SA Spal, & JK Ward. (2010) Patterns of *Tamarix* water use during a record drought. *Oecologia* 162:283-292.
- Nippert, JB**, PA Fay, J.D. Carlisle, AK Knapp, & MD Smith. (2009). Ecophysiological responses of two dominant grasses to altered temperature and precipitation regimes. *Acta Oecologia* 35: 400-408.
- Fay, PA, DM Kaufman, **JB Nippert**, JD Carlisle, CW Harper. (2008) Changes in ecosystem function due to extreme precipitation events in grassland. *Global Change Biology* 14: 1-9.
- Nippert, JB** & AK Knapp (2007) Linking water uptake with rooting patterns in grassland species. *Oecologia* 153: 261-272.
- Nippert, JB** & AK Knapp (2007) Soil water partitioning contributes to species coexistence in tallgrass prairie. *Oikos* 116: 1017-1029.
- Nippert, JB**, PA Fay & AK Knapp. (2007) Photosynthetic traits in  $\text{C}_3$  and  $\text{C}_4$  grassland species in mesocosm and field environments. *Environmental and Experimental Botany* 60: 412-420.
- Nippert, JB**, AK Knapp & JM Briggs. (2006) Intra-annual rainfall variability and grassland productivity: can the past predict the future? *Plant Ecology* 184: 65-74.
- Duursma, RA, JD Marshall, **JB Nippert**, CC Chambers, & AP Robinson. (2005) Estimating leaf-level parameters for ecosystem process models: a study in mixed conifer canopies on complex terrain. *Tree Physiology* 25: 1347-1359.
- Nippert, Jesse** and John Blair. (March 2005, posting date) Comparing the Influence of Precipitation, Fire, and Topography on Plant Productivity in the Tallgrass Prairie, *Teaching Issues and Experiments in Ecology*, Vol. 3: Issues: Data Set #1 [online].  
[http://tiee.ecoed.net/vol/v3/issues/data\\_sets/konza/abstract.html](http://tiee.ecoed.net/vol/v3/issues/data_sets/konza/abstract.html)
- Nippert, JB**, RA Duursma, & JD Marshall. (2004) Seasonal variation in the photosynthetic potential of montane conifers. *Functional Ecology* 18: 876-886.
- Morgan, J. et al. (2004) Water relations in grassland and desert ecosystem exposed to elevated atmospheric  $\text{CO}_2$ . *Oecologia* 140: 11-25
- Nippert, JB** & JD Marshall (2003) Sources of variation in ecophysiological parameters in Douglas-fir and grand fir canopies. *Tree Physiology* 23: 591-601.

#### Book Chapters (peer-reviewed)

- Nippert, J.B.**, Helliker, B.R. (in press) Physiological and anatomical traits of grass species reflect evolutionary diversification and facilitate persistence across environmental gradients in grassy ecosystems. IN: "Routledge Handbook of Grasslands", D. Gibson, H. Hager, J. Newman, Eds. Routledge Publishing
- Symstad, A., **Nippert, J.B.**, Ott, J., Rogers, W., Toledo, D., Wonkka, C. (in press) The Great Plains Ecoregion. IN: "Fire and Invasive Plants: Science and Management in Wildlands of the United States", Brooks, Burgiel, Crist, D'Antonio, Kerns, Varner, Eds. Springer Nature Publishing
- Billings S.A., P.L. Sullivan, D. Hirmas, **J.B. Nippert**, D.D. Richter, Z. Brecheisen, C.W. Cook, and E. Hauser (in press) The CZ as an ecological problem: How the interplay of biotic and abiotic actors determines the functioning of Earth's living skin. IN: "Critical Zone and Ecosystem Dynamics" T. White, Ed., Springer Publishing

- Nippert JB**, RM Keen, S Bachle, ER Wedel. Climate change in grassland ecosystems: current impacts and potential actions for a sustainable future. IN: “Climate Action: Impacts and Solutions”, Brenda L. Groskinsky (ed.) CRC Press (*in press*).
- Blair, JM, **JB Nippert**, JM Briggs. 2014. Grassland Ecology. IN: “The Plant Sciences: Ecology and the Environment”, Russell Monson (ed.) Springer, New York. DOI 10.1007/978-1-4614-7501-9\_14
- Seastedt, T.R., L Hartley **JB Nippert**. 2013. Ecosystem transformations along the Colorado Front Range: Prairie dog interactions with multiple components of global environmental change. IN: Richard Hobbs, Eric Higgs and Carol Hall (eds). Novel Ecosystems: Intervening in the New Ecological World Order. Wiley Press ISBN: 978-1-1183-5422-3.

### Open File Reports

Miller Hesed, C.D., Yocum, H.M., Rangwala, I., Symstad, A.J., Martin, J.M., Ellison, K., Wood, D.J. A., Ahlering, M., Chase, K.J., Crausbay, S., Davidson, A.D., Elliott, J., Giocomo, J., Hoover, D.L., Klemm, T., Lightfoot, D., McKenna, O.P., Miller, B.W., Mosher, D., Nagy, R.C., Nippert, J.B., Pittman, J., Porensky, L., Stephens, J., and Zale, A.V., 2023, Synthesis of climate and ecological science to support grassland management priorities in the North Central Region: U.S. Geological Survey Open-File Report 2023–1036, 21 p., <https://doi.org/10.3133/ofr20231036>.

### Public Science Publications (*not peer-reviewed*)

Nippert, J.B., (2024) Shrub Encroachment Alters Water Cycling with Long-term Consequences for Tallgrass Prairie. *Missouri Prairie Journal* 45(2): 14-17.

### Funded External Proposals

- NSF-IOS, “Collaborative Research: Elucidating grass-specific responses to soil and atmospheric drought”, 2025-2028, \$301K
- NSF-EAR, “Collaborative Research: How do changes in land cover and climate perturb grassland water and carbon cycles below-ground?” 2024-2027, \$354K (Matt Kirk, - PI)
- NSF-RCN, “PSI-Net – A Global Water Potential Network”, 2023-2025, \$499K (Kim Novick – PI)
- NSF- FRES, Collaborative Research: How roots, regolith, rock and climate interact over decades to centuries – the R3-C Frontier” 2021-2025, \$415K
- NSF-DEB, “Konza Prairie LTER VIII: Manipulating drivers to assess grassland resilience” 2020-2026, \$7.1M
- NSF-EAR, "Collaborative Research: Digging deeper: Do deeper roots enhance deeper water and carbon fluxes and alter the trajectory of chemical weathering in woody-encroached grassland? 2019-2022, \$147,259
- NSF-DEB, "Collaborative Research: Rainfall variability and the axes of tree-grass niche differentiation." 2019-2022, \$240,749
- NSF-MRA, "Collaborative Research: MRA: A lineage-based framework to advance grassland macroecology and Earth system modeling." 2019-2022, \$298,621
- DOE-Terrestrial Ecosystems Science Program, "Using root and soil traits to forecast woody encroachment dynamics in mesic grassland", 2018-2022, \$998,261
- NSF-IOS, "MEETING: Phys-Fest 2, Holden Arboretum, July 15-19, 2018" \$49,000
- NSF-IOS, “MEETING: Phys-Fest: Advancing the Field of Plant Physiological Ecology; Konza Prairie, June 6-10, 2016” 9/1/15-8/30/16, \$31,000

- NSF-DEB, “Konza Prairie LTER VII: Long-Term Research on Grassland Dynamics- Assessing Mechanisms of Sensitivity and Resilience to Global Change” 11/01/14-10/31/20, \$6M (John Blair – PI)
- NSF Dimensions: Collaborative Research: The biogeography and evolution of drought tolerance in grasses” 01/01/14-12/31/17 \$1.3M (Mark Ungerer- PI)
- LTER Network Office Synthesis Proposals, “Bi-stability in North American ecosystems: analyzing woody plant cover for temporal stable-state dynamics” \$12K
- NSF-DEB, “Konza Prairie LTER VI: Grassland Dynamics and Long-Term Trajectories of Change”, 11/01/08-10/31/14, \$5.64M (John Blair – PI)
- NSF-MSP, “Global Environmental Change and Local Ecosystems: A Kansas MSP-Start Project for P-20 Students”, 09/01/2009-08/31/11, \$299K, (Joy Ward, PI – Univ. Kansas).
- NSF-DEB, “Ecosystem transformations along the Colorado Front Range: Prairie dog interactions with multiple components of global environmental change” 09/01/11-08/30/14 \$851K (Tim Seastedt, PI – Univ. Colorado)
- NSF-DEB, “LTER International Supplement: Drivers of Mopane expansion in South Africa Savannah”, 2010, \$9,700

### **Funded Internal Proposals**

- KSU-FDA, “Travel support to the First ILTER Meeting”, October, 2016, \$2200
- KSU-FDA, “Travel support the Savanna Science Networking Meeting, Skukuza, South Africa” Spring 2012 \$3500
- KSU-USRG, “Linking Water Availability to *Tamarix* Ecophysiology in SW Kansas”, 7/01/08-9/01/08, \$2.5K
- KSU-BRIEF – “Providing for the long-term stability and quality of analyses at the Stable isotope mass spectrometry laboratory (SIMSL). 10/30/ 07, \$2.7K
- KSU-BRIEF – “Moving SIMSL to the field: in situ isotopic analysis of liquid and water vapor samples with high precision and throughput”, 12/21/08, \$30K.
- KSU-FDA, “Travel support to attend the 2009 Joint Assembly 'The Meeting of the Americas' in Toronto, CAN.” Spring 2009, \$500
- KSU-BRIEF, “Travel support to attend the 2009 Joint Assembly 'The Meeting of the Americas' in Toronto, CAN.” Spring, 2009, \$1000

### **Invited Platform Presentations and seminars (*presented by Nippert*)**

- 2025 Learning how to management healthy prairies from the threat of woody encroachment, KS Grazing Lands Coalition
- 2025 Managing for healthy tallgrass prairies during an era of woody plant encroachment, Missouri Prairie Foundation Annual Dinner and Silent Auction
- 2025 What have we learned from 50 years of grassland research at Konza Prairie? Symphony of the Flint Hills, Chase County, KS
- 2025 A critical zone assessment of woody plant encroachment in grassy ecosystems. Dept. of Biology, Pittsburg State University
- 2025 Woody plant encroachment in Mesic Grasslands: what’s happened, where are we now, and what can still be done? Webinar - Natural Areas Association
- 2025 Trees in the Grasslands: Three Perspectives, Mariana Kistler Beach Museum of Art, Manhattan, KS
- 2025 A critical zone assessment of woody plant encroachment in grassy ecosystems, Ecology, Evolution, and Environmental Biology, Columbia University, NYC
- 2025 Using root traits to predict consequences of woody encroachment in grassy ecosystems, Czech Academy of Sciences, Czech Republic

- 2024 The unique role of water as an agent of savanna plant species coexistence, University of Florida, Gainesville, FL
- 2024 Woody plant invasion of mesic grasslands - drivers, consequences, and potential solutions, Missouri Native Grasslands Symposium, Jefferson City, MO
- 2024 Woody plant invasion of mesic grasslands - drivers, consequences, and potential solutions, Missouri Natural Resources Conference, Lake of the Ozarks, MO
- 2023 Ecohydrological consequences of woody plant encroachment in tallgrass prairie, Natural Areas Association
- 2023 Ecohydrological consequences of woody plant encroachment in tallgrass prairie, USGS Kanas Water Sciences Center
- 2021 How roots, regolith, rock and climate interact over decades to centuries – the R3-C Frontier, CZCN Network Meeting [online].
- 2021 Overlooked and Understudied - unique attributes of roots in grasslands and savannas, University of North Carolina, Greensboro
- 2019 Climate change and the tallgrass prairie, *KEYNOTE SPEAKER* Iowa Prairie Conference, Pella, IA
- 2019 Bush encroachment alters grassland ecohydrology and requires novel solutions for management. *KEYNOTE SPEAKER*, 54th Annual Congress, Grassland Society of Southern Africa, Uptington, South Africa.
- 2019 Mechanisms and consequences of woody plant encroachment in grassland ecosystems. Missouri Dept. of Conservation Stakeholders Meeting, Sedalia, MO
- 2019 Ecohydrology of the Konza Prairie. Department of Geology, Kansas State University
- 2018 Revisiting paradigms of C4 grass ecophysiology, Division of Biology, Kansas State University
- 2018 Revisiting paradigms of C4 grass ecophysiology, Odum School of Ecology, University of Georgia
- 2018 Climate change impacts in grassland ecosystems, Lawrence, KS Public Library, Invited by the Grassland Heritage Foundation.
- 2018 Drivers and consequences of woody encroachment in mesic grassland. *Next-Generation Ecosystems Experiments - Arctic*, Science Talks, Oak Ridge National Laboratory, Tennessee.
- 2017 Fire and grazing in tallgrass prairie: woody encroachment, *KEYNOTE SPEAKER* Grassland Restoration Networking Meeting.
- 2016 Fight Night: Pain on the Plains. Department of Biology Seminar Series, University of Pennsylvania.
- 2016 Grass ecophysiology responses to water manipulations. Drought-Net Research Coordination Network; Utilizing ongoing experiments to understand terrestrial ecosystem sensitivity to precipitation change and drought. Sevilleta National Wildlife Refuge, New Mexico
- 2016 Woody encroachment of tallgrass prairie. 12th Annual Tallgrass Prairie Management Seminar. Beatrice, NE
- 2015 Fight Night: Pain on the Plains, Graduate Degree Program in Ecology, Colorado State University
- 2014 Adaptive management of water resources in grasslands: Challenges in a changing world. Arab - American Frontiers of Science, Muscat, Oman.
- 2014 Altered land use and ecohydrology drive community change: lessons from South African forest and Kansas prairie. Dept. Horticulture, Kansas State University
- 2014 Ecohydrological change in grassland and woodland systems. Dept. Biology, West Virginia University
- 2014 Adaptive management of water resources in grasslands: challenges in a changing world. Nature Conservancy of Kansas Annual Meeting.
- 2012 Mechanisms and consequences of ecohydrologic change in mesic grasslands. Dept. Geography, University of Kansas

- 2012 Mechanisms and consequences of ecohydrologic change in mesic grasslands School of Natural Resources, University of Nebraska- Lincoln
- 2012 Mechanisms and consequences of ecohydrologic change in mesic grasslands. Division of Biology, Kansas State University
- 2012 Attack of the Clones: Woody plant expansion in grasslands. Dept. Biology, St. Joseph's University, Philadelphia, PA
- 2012 Source water partitioning among multiple species in mesic grassland. Dept. Biology, University of Missouri, Columbia, MO
- 2011 Grasslands in a Global Context: International Symposium Celebrating Konza Prairie, Manhattan, KS
- 2011 Water – Plants- Konza – Baboons – the UNIVERSE!, EEB Seminars, Division of Biology, KSU
- 2011 Water source partitioning among coexisting grassland species. Dept. Ecology and Evolutionary Biology, University of Colorado-Boulder, Boulder, CO
- 2011 Water source partitioning among coexisting grassland species Dept. Botany, Oklahoma State University, Stillwater, OK
- 2009 Local hydrological processes recorded in plant water  $\delta^2\text{H}$  and  $\delta^{18}\text{O}$ . Department of Geology Seminar Series, Kansas State University.
- 2009 Environmental variability as a primary driver of tallgrass prairie plant eco-physiology. Department of Biology Seminar Series, Wichita State University, KS
- 2008 Global Change and the Future of Ecophysiology. Department of Biology Seminar Series, Emporia State University, Emporia, KS
- 2007 *Tamarix ramosissima* physiology and groundwater use during a record drought. GSA Annual Meeting: Ecohydrology of Riparian Zones Session. Denver, CO
- 2006 The influence of water and  $\text{CO}_2$  variability on plant ecophysiology from past to future climates. EEB Colloquium, University of Kansas, Lawrence, KS.
- 2006 Global change and the future of ecophysiology. Division of Biology Forum, Kansas State University, Manhattan, KS.
- 2006 Life by the drop: water as a physiological driver of plant productivity. EEB Seminar Series, Kansas State University, Manhattan, KS.

#### **Research Presentations** (*presented by Nippert*)

- 2025 Causes and consequences of woody plant encroachment in Great Plains grasslands // Rethinking grassland management in the era of woody plant encroachment. America's Grasslands Conference, Kearney, NE
- 2025 A critical zone assessment of bush encroachment in grassy socio-ecological systems, Savanna Science Networking Meeting, Skukuza, South Africa
- 2024 Holistic consequences of woody plant encroachment in Great Plains grasslands, Natural Areas Association Annual Meeting, Manhattan, KS
- 2024 Using evolutionary lineage to predict grass trait responses across broad spatial gradients, Savanna Science Networking Meeting, Skukuza, South Africa
- 2023 Using root traits to predict the consequences of woody encroachment in grassy ecosystems, Ecological Society of America Annual Meeting, Portland, OR
- 2022 Root Form and Function in Grassy Ecosystems, Savanna Science Networking Meeting, Skukuza, South Africa.
- 2022 Varying physiological responses of grassland communities to interactive effects of drought and fire, Society for Range Management Annual Meeting, Albuquerque, NM
- 2020 Woody encroachment alters grassland ecohydrology and requires novel solutions for rangeland management, Kansas Natural Resources Conference, Manhattan, KS

- 2019 Can't see the grassland for the trees: rooting dynamics in tallgrass prairie. ESS PI Breakout Session, Dept. of Energy Annual Meeting, Potomac, MD
- 2019 Using ecophysiology to draw inference into grassland ecosystem management. Society of Range Management. Minneapolis, MN
- 2018 Repeated cutting alters tree-grass interactions in Mopane veld. Savanna Science Networking Meeting, Skukuza, South Africa.
- 2017 A new paradigm for plant water uptake and use in grasslands and savannas. Savanna Science Networking Meeting, Skukuza, South Africa.
- 2015 LAI predicts canopy N & P in annually-burned tallgrass prairie. International LTER 1st Open Science Conference. Skukuza, South Africa.
- 2016 LAI predicts canopy N & P in Annually burned tallgrass prairie. Konza Prairie LTER Annual Meeting
- 2016 Plant physiology influences the conversion of C4 grassland to shrubland. Society of Range Management. Corpus Christi, Texas
- 2015 Trajectories of change in long-term experimental controls: Konza Prairie. LTER All-Scientist's Meeting, Estes Park, CO.
- 2015 Using IRT's to assess changes in plant physiology, LTER All-Scientist's Meeting, Estes Park, CO.
- 2015 Drivers of Riparian Forest Change in Mapungubwe National Park. Savanna Science Meeting, Skukuza, South Africa.
- 2013 Variation in water sources used among riparian forest tree species in Mapungubwe National Park. Savanna Science Meeting, Skukuza, South Africa.
- 2012 Ecohydrologic mechanisms of Mopane in Kruger National Park. Savanna Science Meeting, Skukuza, South Africa.
- 2010 Scaling carbon fluxes in tallgrass prairie; 2010 ESA Annual Meeting, Pittsburg, PA
- 2009 Patterns of  $\delta^{13}\text{C}$  and  $\delta^{15}\text{N}$  in a woody shrub distributed along a topoedaphic gradient in burned and grazed grassland; 2009 Joint Assembly American Geophysical Union, Toronto, CAN
- 2008 Sensor networks for measuring spatial variability in the landscape energy balance; Geological Society of America Annual Meeting, Houston, TX
- 2008 *Tamarix ramosissima* physiology and groundwater use during a record drought. Kansas Natural Resources Conference, Wichita, KS
- 2007 Comparing the effects of climate variability and ENSO on tree growth at glacial and modern times. South-central and North-central Joint Section Meeting Geological Society of America, Lawrence, KS
- 2007 Salt-cedar water use in the presence of a falling water table. Water & the Future of Kansas Conference, Topeka, KS.
- 2006 Comparing the effects of climate variability and ENSO on tree growth at glacial and modern times. Ecological Society of America, Memphis, TN
- 2005 Water-use strategies of tallgrass prairie plant species: an isotopic approach. Ecological Society of America, Montreal, CAN.
- 2004 Resource-use or photochemistry: what confers C<sub>4</sub> dominance in tallgrass prairies? Ecological Society of America, Portland, OR
- 2002 Sources of variation in ecophysiological parameters in Douglas-fir and grand fir. Ecological Society of America, Tucson, AZ

### **Interdisciplinary Curriculum Development**

- Environmental Sciences Program, Interdisciplinary Major across the College of Arts and Sciences and College of Agriculture (KSU), Co-Founder, Program Began: 2021-2022, <https://www.k-state.edu/environmental-science/>
  - Advisory board member: 2021-2025

- Advisory board chair: 2023-2024

### **Courses Instructed**

- Su 2022: BIO495, Savanna Field Ecology, Limpopo, South Africa
- Sp 2021, 2023: BIO495, Savanna Ecology, KSU
- Fall 2020, 2022, 2024: BIO864, Plant Responses to the Environment, KSU
- Fall 2016, 2018: BIOL897, Stable Isotope Ecology, KSU
- Fall 2008-2024: BIOL500 Plant Physiology, KSU
- Fall 2008-2024: BIOL501 Plant Physiology Lab, KSU
- Fall 2007: BIOL198, Principles of Biology, KSU

### **Post-doctoral Scholars Advised**

Dr. Amy Concilio, 2013-2015

Dr. Saranya Puthalath, 2023-present

### **Graduate Students Advised**

#### *Current*

- Klara Stevermer, M.S., pending graduation May 2026

#### *Completed*

- Shahla Mohammadi, M.S., 2024
- Emily Wedel, Ph.D., 2023
- Rachel Keen, Ph.D., 2023
- Ryan Donnelly, MS., 2022
- Emmett (Greg) Tooley, M.S., 2022
- Marissa Zaricor, M.S., 2021
- Seton Bachle, Ph.D., 2021
- Emily Wedel, M.S., 2019
- Rory O'Connor, Ph.D., 2019
- Seton Bachle, M.S., 2017
- Kimberly O'Keefe, Ph.D., 2016
- Zak Ratajczak, Ph.D., 2014
- Jeff Hartman, M.S., 2011
- Sally Tucker, M.S. 2010
- Jacob Carter, M.S. 2010

### **Graduate Student Committee Member**

#### *Current*

- Levi Pruitt, M.S., KSU-Geology
- Joshua Ajowe, Ph.D., UNC-Greensboro
- Alec Glidden, Ph.D., KSU-Biology
- Aleah Querns Ph.D., KSU-Biology

### **Graduate Student Committee Member**

#### *Completed*

- Mary Linabury, Ph.D., Colorado State University
- Brooke Bernhardt, M.S., 2024, KU-EEB
- Samantha Sharpe, Ph.D., 2024, KSU-Biology

- Tamjid Us Sakib, Ph.D., 2023 KSU-Agronomy
- Christa Anhold, M.S., 2023, KSU-Geology
- Caitlin Broderick, Ph.D., 2022, KSU-Biology
- Javier Fernandez, Ph.D., 2021 Agronomy
- Mohammad Rahman, Ph.D., 2021 KSU-Genetics
- R. Kent Connell, Ph.D., 2020 KSU-Biology
- Bre Waterman, M.S., 2020 KSU-Geology
- Madelon Case, Ph.D., 2020 Yale
- Joshua Pool, Ph.D., 2019, KSU-Horticulture
- Monica Shaffer, M.S., 2019, KSU-Biology
- Regina Enniful, Ph.D., 2019, KSU-Agronomy
- Maged Nosshi, Ph.D., 2019, Geography, Univ. Kansas
- Adela Annis, M.S., 2018 KSU-Biology
- Kelly Logan, Ph.D., 2018, Geography, Univ. Kansas
- Rodrigo Pedroza, Ph.D., 2017, Plant Pathology, KSU
- Dillooshi Weerosooriya, 2016, Horticulture, KSU
- Kyle Stropes, M.S., 2016, KSU-Agronomy
- Jacob Carter, Ph.D., 2015, EEB, University of Kansas
- Kyle Shroyer, Ph.D., 2015, KSU-Agronomy
- George Mahama, Ph.D., 2015, KSU-Agronomy
- Cole Thompson, Ph.D., 2014, KSU-Horticulture
- Jackie Ott, Ph.D., 2014, KSU-Biology
- Michael Carson, M.S., 2013, KSU-Biology
- Paul Killian, M.S., 2012, KSU-Biology
- Jennifer Shelton, M.S., 2012, KSU-Biology
- Meghan Avolio, Ph.D., 2012, EEB – Yale
- Alexis Reed, Ph.D., 2012, EEB – University of Kansas
- Raymond Mutava, Ph.D., 2012, KSU- Agronomy
- Troy Ocheltree, Ph.D., 2012, KSU – Agronomy
- Michell Thomey, Ph.D., 2012, Biology –University of New Mexico
- O.C. Eke, M.S., 2011, KSU-Geology
- Kristin Polacik, 2010, Biology, Fort Hays State University

### **Undergraduate Research Projects**

- Mary (Katie) Janzen (2024-25): McNair Scholars program (KSU)
- Taylor Rogriguez-Blash (summer 2023): REU fellowship at Konza LTER (KSU)
- Faith Atkinson (summer 2021): REU fellowship at Konza LTER (West Texas A&M)
- Ryan Donnelly (2020-2021): Assessing grass traits using phylogeny (KSU)
- Lizeth Telleria (summer 2017): REU fellowship at Konza LTER (Cal St. Poly-Pomona)
- Mira Ensley-Field (summer 2016): REU fellowship at Konza LTER (Macalester College)
- Braden Hoch (summer 2015): REU fellowship at Konza LTER (KSU)
- Andy Muench (summer 2014): REU fellowship at Konza LTER (U. Wisconsin)
- Rachel Lease (2013-2016): Riparian water use in a tallgrass prairie ecosystem (KSU)
- Ben Ketter (2012-2014): Quantifying water flux of shrubs in mesic grassland (KSU)
- Gracie Orozco (2009-2014): Isotopic analysis of bison diet (KSU)
- Teall Culbertson (2009-11): Predicting bison source-water use (KSU)
- Annie Klodd (summer 2011): REU fellowship at Konza LTER (Grinnell)

- Rachel Wieme (summer 2010): REU fellowship at Konza LTER (St. Olaf's)
- Zak Ratajczak (summer 2009): REU fellowship at Konza LTER (Vassar)
- Laura Kangas (summer 2008): REU fellowship at Konza LTER (Michigan Tech)
- David Martin (summer 2008): Problems in Biology (BIOL 698) Independent Research
- Joe Brillhart (summer 2008): Problems in Biology (BIOL 698) Independent Research

## Service

### National

#### *Funding agency service:*

NSF Panelist: 2018, 2017, 2015, 2024  
 NSF Ad hoc Reviewer: 2020, 2019, 2016, 2013, 2012, 2010, 2009, 2008  
 USDA Ad hoc Reviewer: 2018, 2016,  
 UK NERC Ad hoc Reviewer: 2017, 2014  
 NSERC Canada: 2021  
 Israel Binational Agricultural Research and Development Fund: 2016  
 Swiss Science Foundation: 2015, 2021  
 New Zealand Science Foundation: 2015  
 Netherlands Organization for Scientific Research: 2013  
 Austrian Science Fund: 2009, 2023  
 Department of Energy: 2007, 2022

#### *Handling Editor:*

South African Journal of Range and Forage Science (2019-2022)  
Ecosphere (2012 - 2017)  
Journal of Vegetation Science (2013 - 2016)

#### *External Tenure and Promotion Evaluations for:*

Cleveland State University, University of Georgia, Texas A&M University, South Dakota State University, University of Pennsylvania, UC-Davis, Wellesley College, University of Cape Town, University of Oklahoma, University of Kwa-Zulu Natal, Rhodes University, Idaho State University, Aarhus University, Santa Clara University

#### *Journal Review Service:*

**Journals:** *Acta Oecologia, African Journal of Ecology, Agricultural and Forest Meteorology, American Journal of Botany, American Midland Naturalist, Annals of Botany, Austral Ecology, Australian Journal of Agricultural Research, Biogeochemistry, Biogeosciences, Biological Conservation, Biological Invasions, BioScience, Biotropica, BMC Ecology, Botany, Ecohydrology, Ecological Applications, Ecological Informatics, Ecological Research, Ecological Research Letters, Ecology, Ecology and Evolution, Ecology Letters, Ecosphere, Ecosystems, Environmental and Experimental Botany, Forest Ecology & Management, Frontiers in Plant Science, Functional Ecology, Functional Plant Biology, Global Change Biology, International Journal of Plant Sciences, Journal of Applied Ecology, Journal of Arid Environments, Journal of Climate, Journal of Ecology, Journal of Geophysical Research, Journal of Plant Ecology, Journal of Vegetation Science, Landscape Ecology, Mycorrhizae, Nature Climate Change, Nature Communications, Nature Plants New Forests, New Phytologist, Oecologia, Photosynthesis Research, Plant and Soil, Plant Biology, Plant Ecology, Plants, PLoS ONE, Proceedings of the National Academy of Sciences, USA, Progress in Physical Geology, Range Ecology and Management, Rapid Communications in Mass Spectrometry, Scientia Agricola, Soil Science Society of America,*

*Southeastern Naturalist, Tree Physiology, Trends in Ecology and Evolution, Water Resources Research, Western N. Am. Naturalist*

*Science Councils:*

North Central Climate Adaptation Science Center – Grassland Science Report (2020-2021)  
Long-Term Ecological Research (LTER) Science Council (2017- present)  
LTER Executive Board (2019-2022)  
Niwo Ridge LTER Advisory Council (2023-present)

*Professional Meeting Coordination:*

Natural Areas Association Annual Meeting, Manhattan, KS (Oct, 2024)  
Advisory committee, and co-host

**State**

*Advisory Boards:*

Mount Mitchell Prairie Guard (2014 - present)  
Kansas Chapter of The Nature Conservancy (2012 - present)

**University**

*Undergraduate Program Development:*

*Steering Committee*, Environmental Sciences Interdisciplinary Major

*Service Laboratory:*

Director of the Stable Isotope Mass Spectrometry Laboratory (2007- present)

*Committees:*

Biology Graduate Student Affairs Committee (2011 - 2022)  
Biology Safety Committee (2018 – present)  
Biology Graduate Recruitment Committee (2011 - 2016)  
Biology Tenure and Promotion Committee (2019)  
KSU Libraries “Kirmser Undergraduate Research Award” Committee (2014)

*Section Leadership:*

Biology Ecology and Evolutionary Biology Section  
Chair: 2018-2019, 2017-2018, 2015-2016, 2013-2014,  
Biology Ecology and Evolutionary Biology Section  
Seminar Series Chair: 2011-2012, 2010-2011, 2008-2009

*Faculty Search Committees:*

Biology (2018 [2 positions], 2017)