Preview of Award 2025849 - Annual Project Report

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Submitting Official (if other than PD\PI):	Jesse B Nippert Principal Investigator
Submission Date:	11/08/2024
Signature of Submitting Official (signature shall be submitted in accordance with agency specific instructions)	Jesse B Nippert

Accomplishments

*** What are the major goals of the project?**

The Konza Prairie LTER program (KNZ) focuses on the ecological dynamics of tallgrass prairie - a historically widespread mesic grassland in the North American Great Plains. Our core research site is the Konza Prairie Biological Station (KPBS), a 3487 ha native tallgrass prairie located in the Flint Hills of northeast Kansas, USA. Since 1980, KNZ has investigated how key drivers of grasslands globally - fire, grazing, and climatic variability - interact to influence tallgrass prairie structure and function. The conceptual framework of KNZ LTER VIII builds on long-term studies, reflects the increasing complexity of research questions developed over the history of this program, and explicitly recognizes that tallgrass prairie pattern and process results from human alteration of ecological drivers at local (e.g., land use and management), regional (e.g., nutrient inputs) and global (e.g., climate change) scales. KNZ LTER VIII will provide new information critical for understanding, managing, and conserving grasslands globally, while concurrently addressing fundamental ecological questions to explain grassland dynamics in a changing world.

KNZ utilizes long-term, watershed-scale manipulations of fire frequency and grazing by large ungulates, coupled with numerous plot-scale manipulations (i.e., nutrients and rainfall) to test ecological theory and address timely questions regarding grassland responses to multiple, interacting global changes. KNZ LTER VIII builds upon a legacy of long-term observations and experiments manipulating key drivers to assess changes in the structure and function of tallgrass prairie and associated dynamics in aquatic systems. A recurring theme from prior KNZ research is that grassland responses to variation in ecological drivers vary in magnitude and change dynamically over time. Long-term studies are required to improve our ability to forecast change in this ecosystem, identify the mechanisms that facilitate and reinforce these ecological changes, and determine if the ecological changes we have observed are reversible. LTER VII began our focus on mechanisms that underlie the sensitivity and resilience of ecosystem states in mesic grasslands. LTER VIII will utilize the array of ecosystem states that have emerged from these manipulations of historical and global change drivers to refine our understanding of sensitivity, resilience, and ecosystem state change in tallgrass prairie.

To accomplish the goals of KNZ LTER VIII, our proposed research comprises four thematic areas: 1) watershed-level study of the long-term effects of historical drivers (fire and grazing), 2) experimental manipulations of global change

drivers, 3) cessation or reversal of selected drivers, and 4) human intervention. Collectively, we will use ongoing and new activities under each theme to assess ecosystem sensitivity and resilience through the manipulation or restoration of drivers or ecosystem states. We will: 1) conduct targeted investigations of mechanisms that underlie ecosystem sensitivity and state change as informed by results to date, 2) interpret experiments in the context of long-term observations at KNZ and in comparison to other grasslands and biomes, 3) advance general ecological theory and inform theoretical and process-based ecological models, and 4) maximize the broader impacts of our research by providing full open access to all core datasets, applying insights from KNZ research to management, conservation, and restoration of grasslands, while expanding KNZ education and public outreach programs.

*** What was accomplished under these goals and objectives (you must provide information for at least one of the 4 categories below)?**

Major Activities:

The LTER VIII conceptual framework integrates the increasing complexity of previous iterations of LTER research and recognizes that the key determinants of patterns and processes in grasslands are directly (land use and management) and indirectly (climate change and nutrient inputs) determined by human activities. Experimental manipulation of drivers allows us to assess sensitivity, transitions between states, and the potential for recovery or changes in resilience.

The watershed-scale experiment and a multitude of plot-level manipulations are used to: 1) reveal mechanisms underlying ecosystem state changes in response to altered and variable ecological drivers (O'Connor et al. 2020, Collins et al. 2021, Eckhoff et al. 2023); 2) interpret responses in the context of long-term observations at KNZ (Knapp et al. 2018, Bruckerhoff et al. 2020, Smith et al. 2020) and in comparison to other grasslands and biomes (e.g., Smith et al. 2016, Koerner et al. 2018, Komatsu et al. 2019, Rastetter et al. 2022); and 3) advance ecological theory and inform process- based models (Smith et al. 2009, Dodds et al. 2015, Ratajczak et al. 2017, Brunsell et al. 2017, Ratajczak et al. 2018). Last, we maximize the broader impacts of our research by providing full open access to all core datasets, applying insights from KNZ research to management, conservation, and restoration of grasslands, while expanding KNZ education and public outreach programs.

Each year, LTER staff, faculty and students play intentional roles supporting the fire (burning watersheds) and grazing (bison roundup) programs at Konza Prairie. During year 4 of KNZ LTER VIII, we maintained our core KNZ programs including watershed-level fire experiments, contrasts of grazed (bison and cattle) and ungrazed locations, and the associated data collection and synthesis that are central to our research program. This includes maintaining watershed-level manipulations of fire frequencies (1, 2, 4, 20-year fire return intervals), seasonal timing of fires (spring, summer, fall, winter), and the reversal of fire treatments over time to assess the potential for altered fire regimes to mitigate trajectories of land-cover change. Collectively, we use ongoing and new activities under each theme to assess how changes in the key drivers of ecosystem processes impact the sensitivity and resilience of grassland ecosystem states. In addition to the watershed-level experimental platform at KNZ, there are numerous plot-level and stream reach experiments that aim to tease apart mechanisms underlying the grassland response to variation in historical and global change drivers. This platform of research also provides unique research opportunities for graduate and undergraduate students at KSU, as well as visiting students from many other institutions.

Nippert has completed his seventh year as the PI of the KNZ program. As with many large research programs, there are many aspects of this program that require frequent attention. To assist with these additional responsibilities that have accrued through time, Meghan Avolio (Johns Hopkins) began co-leading the program with Nippert over the last year. The Konza LTER group frequently interacts to ensure we are meeting goals and expectations. We have whole-site meetings (everyone invited) once a month, Nippert and the KNZ staff meet monthly, and Avolio, Nippert, and

Jennifer Rhodes meet bi-weekly for planning purposes. We have an annual KNZ LTER meeting that includes site-based presentations, posters, and group interactions. This past year, we invited regional stakeholders to our annual meeting to develop and refine our interactions with range managers and conservationists. In addition to these frequent research meetings, we have stand- alone monthly DEI meetings to discuss new ways to broaden KNZ participation and create a more equitable environment for ecological research. Using recent DEI supplements received in 2023 and 2024, our DEI group has felt empowered to make the Konza Prairie LTER one of the most welcoming, inclusive, and equitable sites in the LTER network.

A major activity of note for our group was hosting the Natural Areas Association (NAA) annual meeting in the past year (October 7-10, 2024). You may remember that the 2023 NAA meeting was held online and organized to promote research across the entire LTER network. Starting in August 2023, several KNZ LTER PI's (Blair, Baer, Nippert, and Ratajczak) accepted positions on the NAA steering committee to design and plan this event. Over the course of the last year, we met monthly (and sometimes more frequently) to develop the program and field trip offerings. John Blair and Sara Baer were honored as keynote speakers, and Blair, Baer, Ratajczak, Nippert, Jeff Taylor (KNZ staff), and Jill Haukos (KNZ staff) led day-long fieldtrips during this event. Finally, Ratajczak and Nippert organized a day-long symposium on woody encroachment on the meeting's final day. Of the nearly 400 conference attendees, many included KNZ LTER investigators and students along with 320 participants from 38 states. For many people, this was their first time in Kansas and first exposure to the tallgrass prairie.

Specific Objectives:

Significant Results:

In the "Activities" supporting document included in this report, we provide updated results on the broad suite of research activities conducted at Konza Prairie over the past year. Our goal with this document is to illustrate the progress being made and to provide short illustrations of novel, and significant results. In addition to this supplementary information, we provide some additional exciting research coming from two junior faculty at our site - Zak Ratajczak and Andrew Hope.

Tallgrass prairie is an endangered ecosystem. Most of the former extent of this ecosystem is now dominated by row crop agriculture, and what little grassland remains is currently threatened by woody encroachment. Shrub encroachment is arguably the largest economic and conservation threat to tallgrass prairie. However, measuring the extent and severity at large scale is difficult; many areas cover around 40% of a given catchment. The high stem density makes some areas largely impenetrable and difficult to measure on the ground, and these shrub islands have a high incidence of ectoparasites, primarily ticks. In 2020, research led by the Ratajczak lab began assessing if we could measure shrub encroachment by combining machine learning with publicly available remote sensed aerial imagery from low-flying planes—primarily the NEON AOP and USDA NAIP programs.

We have found that these two federally funded data-sources synergize well; the LiDAR data from NEON AOP are by far the most important for training machine learning models to identify shrubs and trees, followed by NDVI data from the USDA NAIP program. For one year, we were able to obtain a user accuracy of 97% (Noble and Ratajczak, *In Review*). We are now using LiDAR from the NEON AOP to measure changes in shrub encroachment across a wider range of the site than ever before, including questions such as: how do fire, grazing, and topography interact to control encroachment (Ratajczak et al. In prep)? Are extreme disturbances the key to reversing shrub encroachment (K. Nippert et al. In prep)? Will long-term changes in climate reverse shrub encroachment (Schmidt et al. In prep)? On the other hand, we continue to find areas where the NEON AOP could use refinement. For instance, a

recent study at Konza has found that the NEON AOP data product for leaf area index —one of the most fundamental measurements in plant science—is often inaccurate compared to ground-based measurements (Tooley et al. 2024). Many scientists have met with NEON staff, including the NEON AOP pilots. We remain committed to trying to make the NEON AOP program as accurate as possible, because we think it is an area with great potential to synergize between the NEON and LTER networks.

In the past few years, the Hope lab established the Kansas State Biorepository (KSB) leveraging Konza support with a new NSF award (2226917). KSB supports the curation and partial digitization of nine years (and ongoing) of mammalian specimens and their associated parasite and pathogen samples from the Konza Prairie LTER. The KSB has positioned the KNZ as one of only two LTER sites that consistently archives voucher materials from mammalian communities, within the Arctos database and through iDigBio. This will allow physical specimens to be extended through linkages to a host of other primary biodiversity observations and abiotic data disseminated through the Environmental Data Initiative (EDI). For example, all tick samples collected from small mammal specimens from 2015-2020 are currently being identified and tested for zoonotic pathogens by colleagues at Oklahoma State University. This is in collaboration with statewide tick monitoring and pathogen testing by colleagues at the University of Kansas Biodiversity Institute. The Hope lab has a manuscript in preparation for BioScience focused on One Health consequences of ecosystem change (~ woody encroachment) through the Great Plains, relating rodent community turnover on Konza to statewide trends and the potential for cascading changes in rodent, parasite, and pathogen communities. Preliminary results from genetic sequencing and phylogeographic analysis of white-footed mice on Konza, and elsewhere through eastern North America highlights that Konza and Kansas more broadly supports three distinct intra-specific lineages of these mice, constituting the highest evolutionary complexity for this species across the study region and having implications for host-pathogen dynamics.

Key outcomes or
Other achievements:

*** What opportunities for training and professional development has the project provided?**

The Konza LTER program provides training and professional development opportunities at many levels, including K-12 teachers, undergraduate and graduate students, post-doctoral scientists from several different institutions, junior tenure earning faculty members, and professional research staff. Below we summarize some of the recent and continuing opportunities provided by the KNZ program.

The Konza Prairie Schoolyard LTER (SLTER) program is in its 26th year as a science education program for K-12 teachers and their students, built around the successful Konza Prairie LTER program. The Konza Prairie SLTER program aims to educate students about ecology and global change, with emphasis on regional grasslands, by engaging students and teachers in realistic and relevant science-based activities focused on long-term data collection at our LTER site. These activities were designed to give students an understanding of ecology, provide them with the opportunity to collect and interpret their own data. K-12 teachers who wish to bring their classes to Konza Prairie and to experience the Schoolyard LTER activities must first participate in a Summer Teachers' Workshop. This week-long program introduces the teachers to each of the activities offered by the Konza Environmental Education Program (KEEP) and, at the completion of the workshop, allows them to tailor an educational experience specific to the needs of their students. The teachers who complete the program qualify to bring their classes to Konza for no charge and have their bus transportation costs paid. This agreement stands for the rest of the teachers' professional career. These educators have become important partners in KEEP and many return annually. We have trained 127 area teachers since our program began in 1998. The number of SLTER student participants in 2023 (most recent year with complete data) was 1284.

KEEP has partnered with the Manhattan/Ogden KS School District 383 and Fort Riley/Junction City School District 475 to be a ready source of informal science education – specifically addressing core science concepts that are easily experienced during a Konza visit. To meet this need we train volunteer docents that assist in public education and

outreach activities. New docents are added to the program annually and receive 40 hours of training on the history and ecology of the tallgrass prairie as well as an overview of research being conducted at Konza. Experienced docents regularly are appraised of new research programs and the progress of existing research and become ambassadors of science to the community. The KEEP program has trained over 300 docents (61 who were active during this reporting year). Additionally, we partner with the Flint Hills Discovery Center (Manhattan, KS) to co-host visiting school groups.

The Konza LTER program continues to emphasize quality graduate student training. During the 2023-2024 funding period, we provided stipends and other forms of non-financial support (vehicle use, site use, analytical laboratory use, attendance at regional/national meetings) for 32 graduate students, including both KSU and non-KSU graduate students. We continue to foster graduate research involving students attending Colorado State University, University of Kansas, Johns Hopkins, Wyoming, UNC-Greensboro, Penn State, and Oregon State. In 2023-2024, 9 thesis/dissertations were completed that included research conducted and data acquired from Konza Prairie.

Konza Prairie hosted the second site-based meeting of the graduate student data synthesis group “Grassland Rocks” in early October 2024. Grassland Rocks is a collaborative program between 3 LTER grassland sites (Kellogg, Cedar Creek, and Konza) to teach graduate students data synthesis/meta-analysis techniques and working in teams for synthesis projects. Five KNZ LTER graduate students and postdocs continued to participate in the Grassland Rocks data synthesis program (of the 13 total this year). Kim Komatsu was the faculty lead and site host for this event (with participation from Nick Haddad (KBS) and Jesse Nippert).

During the meeting at Konza Prairie, the Grassland Rocks group finalized their first research question which centers on the relative importance of diversity and dominance in driving the stability of primary productivity to extreme climate events. The group made significant progress in cleaning and harmonizing data (nearly 15,000 individual data collections), writing code, and drafting an outline for an upcoming manuscript. In addition, the meeting included a tour of the Konza Prairie and a panel with USDA ARS research ecologist Dr. Amy Hudson with them about non-academic careers. The Grassland Rock group plans to meet in-person next spring at CDR while continuing to meet virtually every two weeks.

KNZ also offers research experiences for many undergraduate students. In the summer 2024, the Konza LTER program supported 4 REU students. Noah Grady (KSU), trained on soil nutrient analysis, took 744 soil cores from all over Konza and several long-term nutrient addition experiments to study the lasting impacts of fertilization on soil chemistry and put the experimental nutrient treatments into a larger context of observable levels. Jess Wilson (LSU) studied the edge effects of woody encroachment on small mammals. Ian Graham (KU) collected soil samples from 7 watersheds with varying fire/grazing treatments to examine soil-seed bank richness. Rain Grace (KSU) gained experience in plant identification, cultivating native plants, using RStudio, and analyzing large datasets while collaborating with the Kaw Nation. More details on their project and experience are provided in the supplementary “Findings” document.

The Konza LTER program provides hands-on research opportunities for ~45-50 undergraduate research assistants each year. These undergraduates are employed by KNZ LTER directly (as part of field crews collecting core LTER datasets) or indirectly in the labs of Konza faculty researchers. KNZ also supports and provides professional development for our professional research staff members, including training in the use of field and laboratory equipment, training in health and safety protocols, training in prescribed fire practices, and other relevant professional development. KNZ has a strong history of providing mentoring and research training for recent PhD’s and junior faculty members. The KNZ program provided resources and mentoring to tenure-earning faculty members. In our current funding cycle, this includes assistant professors in Biology at KSU (Andrew Hope, Allison Louthan, and Zak Ratajczak).

*** Have the results been disseminated to communities of interest? If so, please provide details.**

Konza LTER results are disseminated to the scientific community via publications in peer-reviewed literature, through presentations at professional meetings and workshops, through seminars by KNZ scientists and students, through social media (Twitter/X, Facebook, Researchgate), and via the KNZ and KPBS websites. In addition, KNZ scientists have participated in a broad range of activities that go beyond the scientific community. For example, KNZ data and findings are used in several undergraduate and graduate courses at Kansas State University, the University of Kansas, University of Arizona, Colorado State University, and University of Oklahoma, among others. Data and insight from the Konza LTER program are used by resource managers for effective land stewardship. Currently, our research concerning the role of seasonal burning and fire intensity on woody encroachment is being used to inform the Great Plains Fire Science Exchange (www.gpfirescience.org) and the Tallgrass Prairie and Oak Savanna Fire Science Consortium

(www.tposfirescience.org). Both non-profit groups focus on conservation issues and land management of Midwestern grasslands. In addition, many of the Konza investigators serve as scientific consultants for a regional cultural and natural history center, the 'Flint Hills Discovery Center' in Manhattan, KS.

In 2024, KEEP completed production of three sets of the "Prairie"-based curricula, one set designed for an elementary audience, one set for a middle-school audience, and one set for a high-school audience. The high-school curricula are an extensive, inquiry-based story-line program advanced by student research and curiosity. Based on LTER research at KPBS, students are introduced to our site with a basic observational question in the appearance of the prairie on two sides of the road. From there the students determine why the prairie looks different on each side, if there is a difference in functionality, diversity, and production, with their determinations coming from site data. We plan to present this new site-based curriculum at the ASM and at the National Science Teachers Association conference. This "Konza Prairie Tallgrass Storyline" is currently being used by the entire 9th grade at Manhattan High School, Lawrence Free State High School and Lawrence High School AP Environmental Science, and Topeka Seaman Middle School.

Over the past year, KNZ scientists and graduate students participated in numerous public outreach events designed to enhance the understanding of LTER science and dissemination of important findings. Several examples are provided in the "Impacts" section of this report. Here, we call to your attention a noteworthy dissemination of our science and outreach. Lydia Zeglin and her REU, Rain Grace, through a DEI supplement, collaborated with members of the Kaw Nation to revitalize the native language and the practice of connection between people and land. Zeglin and Grace designed a native garden and measured soil fertility. The plant species of interest included: *Pediomelum esculentum* (Prairie potato) or **do** in Kaw (Cumberland and Rankine 2012), *P. tenuiflorum* (scurfpea) or **dóle**, both legumes with edible roots; *Artemisia ludoviciana* (prairie sage) or **pézhe xòta^{n}**, *Fragilaria virginiana* (wild strawberry) or **pa^{n}shcéga**, and *Helianthus annuus* (annual sunflower) or **mi^{n}tógaxle**. Do and panshcéga would have been regular dietary items for Kanza people, pézhe xòta^{n} is important culturally and medicinally, dóle is a companion plant to do and medicinally useful, and mi^{n}tógaxle was chosen as a useful wild plant that we also expected to germinate and grow most easily, thus would serve as a control of sorts. Results overall showed that all soils and waters could support successful seedling germination and growth for all species. Finally, Rain Grace also compiled a document that matched recovered Kaw plant names with their field identifications and delivered a first draft of a field guide to the Kaw language program, which may be useful for teaching the new generation of Kaw speakers to recognize their plant relatives.

*** What do you plan to do during the next reporting period to accomplish the goals?**

We are entering year 5 of LTER VIII. We have begun to organize and plan for the renewal proposal, due in Spring 2026. To aid in that process, we have begun to develop our organizing conceptual model and discuss large site-based experiments that will test this model. We will be hosting a broad planning meeting in Jan. 2025 to make headway towards this goal.

During year 5 we will: 1) continue our core-data collection, processing, and online data integration of the current year and previous years' samples; 2) continue to update and error check the online data associated with KNZ LTER database and LTER network information management system; 3) continue to improve data accessibility and search options within our online database; 4) maintain our spatial data portal and online accessibility of our GIS data, 5) continue to support the development of new research projects initiated by KNZ faculty including Pam Sullivan (OSU), Meghan Avolio (Johns Hopkins), Sally Koerner (UNC-Greensboro), Kim Komatsu (UNC-Greensboro), Andrew Hope (KSU), Kevin Wilcox (UNC-Greensboro), Abby Langston (KSU), Zak Ratajczak (KSU) and Allison Louthan (KSU); 6) promote educational training and inclusion of undergraduate researchers within site science; 7) invest in training and development of our graduate student researchers at KNZ, contribute towards their career advancement, and engage them in synthesis activities available within broader LTER network; and 8) continue to provide leadership and participation in LTER network level activities.

Supporting Files

Filename	Description	Uploaded By	Uploaded On

Filename	Description	Uploaded By	Uploaded On
2023-2024 KNZ LTER Findings.pdf	Please see the supporting pdf file, which provides detailed additional information which contributed to the overall progress of LTER VIII in 2023-2024.	Jesse Nippert	11/07/2024
2023-2024 KNZ LTER Activities.pdf	Please see the supporting pdf file, which provides detailed information which contributed to the overall progress of LTER VIII in 2023-2024.	Jesse Nippert	11/08/2024

Products

Books

Book Chapters

Inventions

Journals or Juried Conference Papers

View all journal publications currently available in the NSF Public Access Repository for this award.

The results in the NSF Public Access Repository will include a comprehensive listing of all journal publications recorded to date that are associated with this award.

Jones, J. A. and Groffman, P. M. and Blair, J. and Davis, F. W. and Dugan, H. and Euskirchen, E. E. and Frey, S. D. and Harms, T. K. and Hinckley, E. and Kosmala, M. and Loberg, S. and Malone, S. and Novick, K. and Record, S. and Rocha, A. V. and Ruddell, B. L. and Stanley, E. H. and Sturtevant, C. and Thorpe, A. and White, T. and Wieder, W. R. and Zhai, L. and Zhu, K.. (2021). Synergies Among Environmental Science Research and Monitoring Networks: A Research Agenda. *Earth's Future*. 9 (3) . Status = Added in NSF-PAR

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Wilfahrt, Peter_A and Seabloom, Eric_W and Bakker, Jonathan_D and Biederman, Lori and Bugalho, Miguel_N and Cadotte, Marc_W and Caldeira, Maria_C and Catford, Jane_A and Chen, Qingqing and Donohue, Ian and Ebeling, Anne and Eisenhauer, Nico and Haider, Sylvia and Heckman, Robert_W and Jentsch, Anke and Koerner, Sally_E and Komatsu, Kimberly_J and Laungani, Ramesh and MacDougall, Andrew and Martina, Jason_P and Martinson, Holly and Moore, Joslin_L and Niu, Yujie and Ohlert, Timothy and Venterink, Harry_Olde and Orr, Devyn and Peri, Pablo and Pos, Edwin and Price, Jodi and Raynaud, Xavier and Ren, Zhengwei and Roscher, Christiane and Smith, Nicholas_G and Stevens, Carly_J and Sullivan, Lauren_L and Tedder, Michelle and Tognetti, Pedro_M and Veen, Ciska and Wheeler, George and Young, Alyssa_L and Young, Hillary and Borer, Elizabeth_T. (2023). Nothing lasts forever: Dominant species decline under rapid environmental change in global grasslands. *Journal of Ecology*. 111 (11) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, Jesse on 10/08/2024) Full text Citation details

Smith, Melinda D. and Wilkins, Kate D. and Holdrege, Martin C. and Wilfahrt, Peter and Collins, Scott L. and Knapp, Alan K. and Sala, Osvaldo E. and Dukes, Jeffrey S. and Phillips, Richard P. and Yahdjian, Laura and Gherardi, Laureano A. and Ohlert, Timothy and Beier, Claus and Fraser, Lauchlan H. and Jentsch, Anke and Loik, Michael E. and Maestre, Fernando T. and Power, Sally A. and Yu, Qiang and Felton, Andrew J. and Munson, Seth M. and Luo, Yiqi and Abdoli, Hamed and Abedi, Mehdi and Alados, Concepción L. and Alberti, Juan and Alon, Moshe and An, Hui and Anacker, Brian and Anderson, Maggie and Auge, Harald and Bachle, Seton and Bahalkeh, Khadijeh and Bahn, Michael and Batbaatar, Amgaa and Bauerle, Taryn and Beard, Karen H. and Behn, Kai and Beil, Ilka and Biancari, Lucio and Blindow, Irmgard and Bondaruk, Viviana Florencia and Borer, Elizabeth T. and Bork, Edward W. and Bruschetti, Carlos Martin and Byrne, Kerry M. and Cahill Jr., James F. and Calvo, Dianela A. and Carbognani, Michele and Cardoni, Augusto and Carlyle, Cameron N. and Castillo-Garcia, Miguel and Chang, Scott X. and Chieppa, Jeff and Cianciaruso, Marcus V. and Cohen,

Ofer and Cordeiro, Amanda L. and Cusack, Daniela F. and Dahlke, Sven and Daleo, Pedro and D'Antonio, Carla M. and Dietterich, Lee H. and S. Doherty, Tim and Dubbert, Maren and Ebeling, Anne and Eisenhauer, Nico and Fischer, Felícia M. and Forte, T'ai G. and Gebauer, Tobias and Gozalo, Beatriz and Greenville, Aaron C. and Guidoni-Martins, Karlo G. and Hannusch, Heather J. and Vatsø Haugum, Siri and Hautier, Yann and Hefting, Mariet and Henry, Hugh A. and Hoss, Daniela and Ingrisch, Johannes and Iribarne, Oscar and Isbell, Forest and Johnson, Yari and Jordan, Samuel and Kelly, Eugene F. and Kimmel, Kaitlin and Kreyling, Juergen and Kröel-Dulay, György and Kröpfl, Alicia and Kübert, Angelika and Kulmatiski, Andrew and Lamb, Eric G. and Larsen, Klaus Steenberg and Larson, Julie and Lawson, Jason and Leder, Cintia V. and Linstädter, Anja and Liu, Jielin and Liu, Shirong and Lodge, Alexandra G. and Longo, Grisel and Loydi, Alejandro and Luan, Junwei and Curtis Lubbe, Frederick and Macfarlane, Craig and Mackie-Haas, Kathleen and Malyshev, Andrey V. and Maturano-Ruiz, Adrián and Merchant, Thomas and Metcalfe, Daniel B. and Mori, Akira S. and Mudongo, Edwin and Newman, Gregory S. and Nielsen, Uffe N. and Nimmo, Dale and Niu, Yujie and Nobre, Paola and O'Connor, Rory C. and Ogaya, Romà and Oñatibia, Gastón R. and Orbán, Ildikó and Osborne, Brooke and Otfinowski, Rafael and Pärtel, Meelis and Penuelas, Josep and Peri, Pablo L. and Peter, Guadalupe and Petraglia, Alessandro and Picon-Cochard, Catherine and Pillar, Valério D. and Piñeiro-Guerra, Juan Manuel and Ploughe, Laura W. and Plowes, Robert M. and Portales-Reyes, Cristy and Prober, Suzanne M. and Pueyo, Yolanda and Reed, Sasha C. and Ritchie, Euan G. and Rodríguez, Dana Aylén and Rogers, William E. and Roscher, Christiane and Sánchez, Ana M. and Santos, Bráulio A. and Cecilia Scarfó, María and Seabloom, Eric W. and Shi, Baoku and Souza, Lara and Stampfli, Andreas and Standish, Rachel J. and Sternberg, Marcelo and Sun, Wei and Sünnemann, Marie and Tedder, Michelle and Thorvaldsen, Pål and Tian, Dashuan and Tielbörger, Katja and Valdecantos, Alejandro and van den Brink, Liesbeth and Vandvik, Vigdis and Vankoughnett, Mathew R. and Guri Velle, Liv and Wang, Changhui and Wang, Yi and Wardle, Glenda M. and Werner, Christiane and Wei, Cunzheng and Wiehl, Georg and Williams, Jennifer L. and Wolf, Amelia A. and Zeiter, Michaela and Zhang, Fawei and Zhu, Juntao and Zong, Ning and Zuo, Xiaoan. (2024). Extreme drought impacts have been underestimated in grasslands and shrublands globally. *Proceedings of the National Academy of Sciences*. 121 (4) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, Jesse on 10/08/2024) Full text Citation details

Dodds, Walter_K. (2024). Scientific collaborative within-group conduct, data-sharing, and publication agreements. *BioScience*. 74 (10) . Status = Added in NSF-PAR

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Seybold, Erin C. and Bergstrom, Anna and Jones, C. Nathan and Burgin, Amy J. and Zipper, Sam and Godsey, Sarah E. and Dodds, Walter K. and Zimmer, Margaret A. and Shanafield, Margaret and Datry, Thibault and Mazor, Raphael D. and Messager, Mathis L. and Olden, Julian D. and Ward, Adam and Yu, Songyan and Kaiser, Kendra E. and Shogren, Arial and Walker, Richard H.. (2023). How low can you go? Widespread challenges in measuring low stream discharge and a path forward. *Limnology and Oceanography Letters*. 8 (6) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, Jesse on 10/10/2023) Full text Citation details

Price, Adam Nicholas and Zimmer, Margaret Ann and Bergstrom, Anna and Burgin, Amy Jo and Seybold, Erin Cedar and Krabbenhoft, Corey Anne and Zipper, Sam and Busch, Michelle Hope and Dodds, Walter Kennedy and Walters, Annika and Rogosch, Jane Sarah and Stubbington, Rachel and Walker, Richard Harry and Stegen, James Christian and Datry, Thibault and Messager, Mathis and Olden, Julian and Godsey, Sarah Elizabeth and Shanafield, Margaret and Lytle, David and Burrows, Ryan and Kaiser, Kendra Elena and Allen, George Henry and Mims, Meryl Christine and Tonkin, Jonathan Douglas and Bogan, Michael and Hammond, John Christopher and Boersma, Kate and Myers-Pigg, Allison Nicole and DelVecchia, Amanda and Allen, Daniel and Yu, Songyan and Ward, Adam. (2024). Biogeochemical and community ecology responses to the wetting of non-perennial streams. *Nature Water*. 2 (9) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, Jesse on 10/08/2024) Full text Citation details

Wojciechowski, Ashley_A and Blair, John_M and Collins, Scott_L and Baer, Sara_G. (2024). Heterogeneity promotes resilience in restored prairie: Implications for the environmental heterogeneity hypothesis. *Ecological Applications*. 34 (6) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, Jesse on 10/08/2024) Full text Citation details

Ling, Bohua and Raynor, Edward J and Joern, Anthony and Goodin, Douglas G. (2023). Dynamic Plant–Herbivore Interactions between Bison Space Use and Vegetation Heterogeneity in a Tallgrass Prairie. *Remote Sensing*. 15 (22) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, Jesse on 10/08/2024) Full text Citation details

Keen, RM and Sadayappan, K and Jarecke, KM and Li, L and Kirk, MF and Sullivan, PL and Nippert, JB. (2024). Unexpected hydrologic response to ecosystem state change in tallgrass prairie. *Journal of Hydrology*. 643 (C) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, Jesse on 10/08/2024) Full text Citation details

Wilcox, Kevin R. and Chen, Anping and Avolio, Meghan L. and Butler, Ethan E. and Collins, Scott and Fisher, Rosie and Keenan, Trevor and Kiang, Nancy Y. and Knapp, Alan K. and Koerner, Sally E. and Kueppers, Lara and Liang, Guopeng and Lieungh, Eva and Loik, Michael and Luo, Yiqi and Poulter, Ben and Reich, Peter and Renwick, Katherine and Smith, Melinda D. and Walker, Anthony and Weng, Ensheng and Komatsu, Kimberly J.. (2023). Accounting for herbaceous communities in process-based models will advance our understanding of “grassy” ecosystems. *Global Change Biology*. 29 (23) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, null on 10/08/2024) Full text Citation details

Keen, R M and Helliker, B R and McCulloh, K A and Nippert, J B. (2024). Save or spend? Diverging water-use strategies of grasses and encroaching clonal shrubs. *Journal of Ecology*. 112 (4) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, null on 10/08/2024) Full text Citation details

Koyama, Akihiro and Johnson, Nels G and Brewer, Paul and Webb, Colleen T and von_Fischer, Joseph C. (2024). Biological and physical controls of methane uptake in grassland soils across the US Great Plains. *Ecosphere*. 15 (9) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, null on 10/08/2024) Full text Citation details

Slapikas, Ryan and Pau, Stephanie and Donnelly, Ryan C. and Ho, Che-Ling and Nippert, Jesse B. and Helliker, Brent R. and Riley, William J. and Still, Christopher J. and Griffith, Daniel M.. (2024). Grass Evolutionary Lineages Can Be Identified Using Hyperspectral Leaf Reflectance. *Journal of Geophysical Research: Biogeosciences*. 129 (2) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, Jesse on 10/16/2024) Full text Citation details

Aurell, Johanna and Gullett, Brian and Grier, Gina and Holder, Amara and George, Ingrid. (2023). Seasonal emission factors from rangeland prescribed burns in the Kansas Flint Hills grasslands. *Atmospheric Environment*. 304 (C) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, Jesse on 10/09/2024) Full text Citation details

Norwood, Brock S. and Stotler, Randy L. and Brookfield, Andrea and Sullivan, Pamela L. and Macpherson, G. L.. (2023). Flux and stable isotope fractionation of CO2 in a mesic prairie headwater stream. *Journal of Water and Climate Change*. 14 (6) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, Jesse on 10/08/2024) Full text Citation details

Feldman, Andrew F and Feng, Xue and Felton, Andrew J and Konings, Alexandra G and Knapp, Alan K and Biederman, Joel A and Poulter, Benjamin. (2024). Plant responses to changing rainfall frequency and intensity. *Nature Reviews Earth & Environment*. 5 (4) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, Jesse on 10/08/2024) Full text Citation details

Keen, R M and Bachle, S and Bartmess, M and Nippert, J B. (2024). Combined effects of fire and drought are not sufficient to slow shrub encroachment in tallgrass prairie. *Oecologia*. 204 (4) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, Jesse on 10/08/2024) Full text Citation details

Kaspari, Michael and Welti, Ellen AR. (2024). Nutrient dilution and the future of herbivore populations. *Trends in Ecology & Evolution*. 39 (9) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, Jesse on 10/08/2024) Full text Citation details

Corimanya, Joanna and Smith, Emma and Boyle, W Alice. (2024). Experimental evidence that nest orientation influences microclimate in a temperate grassland. *Journal of Field Ornithology*. 95 (1) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, Jesse on 10/08/2024) Full text Citation details

Tooley, E Greg and Nippert, Jesse B and Ratajczak, Zak. (2024). 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*. 349 (C) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, Jesse on 10/08/2024) Full text Citation details

Song, Lin and Griffin-Nolan, Robert J. and Muraina, Taofeek O. and Chen, Jiaqi and Te, Niwu and Shi, Yuan and Whitney, Kenneth D. and Zhang, Bingchuan and Yu, Qiang and Smith, Melinda D. and Zuo, Xiaoan and Wang, Zhengwen and Knapp, Alan K. and Han, Xingguo and Collins, Scott L. and Luo, Wentao. (2024). Grassland sensitivity to drought is related to functional composition across E ast A sia and N orth A merica. *Ecology*. 105 (2) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, Jesse on 10/08/2024) Full text Citation details

Horne, Eva A. and Blackmore, Pam and Bello, Nora M. and Taylor, Jeffrey and Skibbe, Adam. (2024). Spatial and physical characteristics of bison wallows in the Flint Hills of Kansas. *Ecosphere*. 15 (5) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, null on 10/08/2024) Full text Citation details

Nieland, Matthew A and Zeglin, Lydia H. (2024). Plant and microbial feedbacks maintain soil nitrogen legacies in burned and unburned grasslands. *Journal of Ecology*. 112 (9) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, null on 10/08/2024) Full text Citation details

Griffin-Nolan, Robert J and Felton, Andrew J and Slette, Ingrid J and Smith, Melinda D and Knapp, Alan K. (2023). Traits that distinguish dominant species across aridity gradients differ from those that respond to soil moisture. *Oecologia*. 201 (2) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, Jesse on 10/09/2024) Full text Citation details

Dodds, Walter. (2023). Woody Removal Experiment on Kings Creek at Konza Prairie Biological Station. *The Bulletin of the Ecological Society of America*. 104 (3) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, null on 10/09/2024) Full text Citation details

Wilcox, Kevin R. and Collins, Scott L. and Knapp, Alan K. and Pockman, William and Shi, Zheng and Smith, Melinda D. and Luo, Yiqi. (2023). Assessing carbon storage capacity and saturation across six central US grasslands using data–model integration. *Biogeosciences*. 20 (13) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, Jesse on 10/08/2024) Full text Citation details

Dee, Laura E. and Ferraro, Paul J. and Severen, Christopher N. and Kimmel, Kaitlin A. and Borer, Elizabeth T. and Byrnes, Jarrett E. and Clark, Adam Thomas and Hautier, Yann and Hector, Andrew and Raynaud, Xavier and Reich, Peter B. and Wright, Alexandra J. and Arnillas, Carlos A. and Davies, Kendi F. and MacDougall, Andrew and Mori, Akira S. and Smith, Melinda D. and Adler, Peter B. and Bakker, Jonathan D. and Brauman, Kate A. and Cowles, Jane and Komatsu, Kimberly and Knops, Johannes M. and McCulley, Rebecca L. and Moore, Joslin L. and Morgan, John W. and Ohlert,

Timothy and Power, Sally A. and Sullivan, Lauren L. and Stevens, Carly and Loreau, Michel. (2023). Clarifying the effect of biodiversity on productivity in natural ecosystems with longitudinal data and methods for causal inference. *Nature Communications*. 14 (1) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, Jesse on 10/08/2024) Full text Citation details

Sadayappan, Kayalvizhi and Keen, Rachel and Jarecke, Karla M. and Moreno, Victoria and Nippert, Jesse B. and Kirk, Matthew F. and Sullivan, Pamela L. and Li, Li. (2023). Drier streams despite a wetter climate in woody-encroached grasslands. *Journal of Hydrology*. 627 (PB) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, Jesse on 10/08/2024) Full text Citation details

Nieland, Matthew A and Carson, Christine M and Floyd, Victoria and Zeglin, Lydia H. (2024). Product-inhibition feedbacks, not microbial population level tradeoffs or soil pH, regulate decomposition potential under nutrient eutrophication. *Soil Biology and Biochemistry*. 189 (C) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, null on 10/08/2024) Full text Citation details

O'Keefe, Kimberly and Nippert, Jesse B and Keen, Rachel M and McCulloh, Katherine A. (2024). Contrasting shrub and grass hydraulic responses to experimental drought. *Oecologia*. 204 (4) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, Jesse on 10/08/2024) Full text Citation details

Swenson, Logan J. and Zipper, Sam and Peterson, Delaney M. and Jones, C. Nathan and Burgin, Amy J. and Seybold, Erin and Kirk, Matthew F. and Hatley, Camden. (2024). Changes in Water Age During Dry-Down of a Non-Perennial Stream. *Water Resources Research*. 60 (1) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, Jesse on 10/08/2024) Full text Citation details

Mount, Hailey E. and Smith, Melinda D. and Knapp, Alan K. and Griffin-Nolan, Robert J. and Collins, Scott L. and Atkins, David H. and Stears, Alice E. and Laughlin, Daniel C.. (2024). Drought-tolerant grassland species are generally more resistant to competition. *Journal of Ecology*. 112 (2) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, Jesse on 10/08/2024) Full text Citation details

Silber, Katy M. and Hefley, Trevor J. and Castro-Miller, Henry N. and Ratajczak, Zak and Boyle, W. Alice. (2024). The long shadow of woody encroachment: An integrated approach to modeling grassland songbird habitat. *Ecological Applications*. . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, Jesse on 10/08/2024) Full text Citation details

Avolio, Meghan_L and Komatsu, Kimberly_J and Collins, Scott_L and Grman, Emily and Koerner, Sally_E and Tredennick, Andrew_T and Wilcox, Kevin_R and Baer, Sara and Boughton, Elizabeth_H and Britton, Andrea_J and Foster, Bryan and Gough, Laura and Hovenden, Mark and Isbell, Forest and Jentsch, Anke and Johnson, David_S and Knapp, Alan_K and Kreyling, Juergen and Langley, J_Adam and Lortie, Christopher and McCulley, Rebecca_L and McLaren, Jennie_R and Reich, Peter_B and Seabloom, Eric_W and Smith, Melinda_D and Suding, Katharine_N and Suttle, K_Blake and Tognetti, Pedro_M and Anderson, ed., Marti. (2021). Determinants of community compositional change are equally affected by global change. *Ecology Letters*. 24 (9) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, null on 10/08/2021) Full text Citation details

Zinnert, Julie_C and Nippert, Jesse_B and Rudgers, Jennifer_A and Pennings, Steven_C and González, Grizelle and Alber, Merryl and Baer, Sara_G and Blair, John_M and Burd, Adrian and Collins, Scott_L and Craft, Christopher and Di_Iorio, Daniela and Dodds, Walter_K and Groffman, Peter_M and Herbert, Ellen and Hladik, Christine and Li, Fan and Litvak, Marcy_E and Newsome, Seth and O'Donnell, John and Pockman, William_T and Schalles, John and Young, Donald_R. (2021). State changes: insights from the U.S. Long Term Ecological Research Network. *Ecosphere*. 12 (5) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, null on 10/12/2021) Full text Citation details

Wilfahrt, Peter_A and Asmus, Ashley_L and Seabloom, Eric_W and Henning, Jeremiah_A and Adler, Peter and Arnillas, Carlos_A and Bakker, Jonathan_D and Biederman, Lori and Brudvig, Lars_A and Cadotte, Marc and Daleo, Pedro and Eskelinen, Anu and Firn, Jennifer and Harpole, W_Stanley and Hautier, Yann and Kirkman, Kevin_P and Komatsu, Kimberly_J and Laungani, Ramesh and MacDougall, Andrew and McCulley, Rebecca_L and Moore, Joslin_L and Morgan, John_W and Mortensen, Brent and Ochoa_Hueso, Raul and Ohlert, Timothy and Power, Sally_A and Price, Jodi and Risch, Anita_C and Schuetz, Martin and Shoemaker, Lauren and Stevens, Carly and Strauss, Alexander_T and Tognetti, Pedro_M and Virtanen, Risto and Borer, Elizabeth_T. (2021). Temporal rarity is a better predictor of local extinction risk than spatial rarity. *Ecology*. 102 (11) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, null on 10/20/2022) Full text Citation details

Collins, Scott_L and Nippert, Jesse_B and Blair, John_M and Briggs, John_M and Blackmore, Pamela and Ratajczak, Zak and Comita, ed., Liza. (2021). Fire frequency, state change and hysteresis in tallgrass prairie. *Ecology Letters*. 24 (4) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, null on 10/08/2021) Full text Citation details

Hope, Andrew_G and Gragg, Sabrina_F and Nippert, Jesse_B and Combe, Fraser_J. (2021). Consumer roles of small mammals within fragmented native tallgrass prairie. *Ecosphere*. 12 (3) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, null on 10/08/2021) Full text Citation details

Wisnoski, Nathan I. and Andrade, Riley and Castorani, Max C. N. and Catano, Christopher P. and Compagnoni, Aldo and Lamy, Thomas and Lany, Nina K. and Marazzi, Luca and Record, Sydne and Smith, Annie C. and Swan, Christopher M. and Tonkin, Jonathan D. and Voelker, Nicole M. and Zarnetske, Phoebe L. and Sokol, Eric R.. (2023). Diversity–stability relationships across organism groups and ecosystem types become decoupled across spatial scales. *Ecology*. 104 (9) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, Niall on 10/11/2023) Full text Citation details

Souza, Ligia F.T. and Hirmas, Daniel R. and Sullivan, Pamela L. and Reuman, Daniel C. and Kirk, Matthew F. and Li, Li and Ajami, Hoori and Wen, Hang and Sarto, Marcos V.M. and Loecke, Terry D. and Rudick, Aoesta K. and Rice, Charles W. and Billings, Sharon A.. (2023). Root distributions, precipitation, and soil structure converge to govern soil organic carbon depth distributions. *Geoderma*. 437 (C) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, Jesse on 10/04/2023) Full text Citation details

Donnelly, Ryan C. and Wedel, Emily R. and Taylor, Jeffrey H. and Nippert, Jesse B. and Helliker, Brent R. and Riley, William J. and Still, Christopher J. and Griffith, Daniel M.. (2023). Evolutionary lineage explains trait variation among 75 coexisting grass species. *New Phytologist*. 239 (3) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, Jesse on 10/11/2023) Full text Citation details

Pau, Stephanie and Nippert, Jesse B. and Slapikas, Ryan and Griffith, Daniel and Bachle, Seton and Helliker, Brent R. and O'Connor, Rory C. and Riley, William J. and Still, Christopher J. and Zaricor, Marissa. (2021). Poor relationships between NEON Airborne Observation Platform data and field-based vegetation traits at a mesic grassland. *Ecology*. 103 (2) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, Christopher on 10/20/2022) Full text Citation details

Silber, Katy M. and Mohankumar, Narmadha M. and Hefley, Trevor J. and Boyle, W. Alice. (2023). Emigration and survival correlate with different precipitation metrics throughout a grassland songbird's annual cycle. *The Journal of Wildlife Management*. 87 (3) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, W. Alice on 10/04/2023) Full text Citation details

Bakker, Jonathan D. and Price, Jodi N. and Henning, Jeremiah A. and Batzer, Evan E. and Ohlert, Timothy J. and

Wainwright, Claire E. and Adler, Peter B. and Alberti, Juan and Arnillas, Carlos Alberto and Biederman, Lori A. and Borer, Elizabeth T. and Brudvig, Lars A. and Buckley, Yvonne M. and Bugalho, Miguel N. and Cadotte, Marc W. and Caldeira, Maria C. and Catford, Jane A. and Chen, Qingqing and Crawley, Michael J. and Daleo, Pedro and Dickman, Chris R. and Donohue, Ian and DuPre, Mary Ellyn and Ebeling, Anne and Eisenhauer, Nico and Fay, Philip A. and Gruner, Daniel S. and Haider, Sylvia and Hautier, Yann and Jentsch, Anke and Kirkman, Kevin and Knops, Johannes M. H. and Lannes, Lucíola S. and MacDougall, Andrew S. and McCulley, Rebecca L. and Mitchell, Rachel M. and Moore, Joslin L. and Morgan, John W. and Mortensen, Brent and Olde Venterink, Harry and Peri, Pablo L. and Power, Sally A. and Prober, Suzanne M. and Roscher, Christiane and Sankaran, Mahesh and Seabloom, Eric W. and Smith, Melinda D. and Stevens, Carly and Sullivan, Lauren L. and Tedder, Michelle and Veen, G. F. (Ciska) and Virtanen, Risto and Wardle, Glenda M.. (2023). Compositional variation in grassland plant communities. *Ecosphere*. 14 (6) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, Eric on 10/04/2023) Full text Citation details

Dea, Hannah I. and Urban, Abigail and Kazarina, Anna and Houseman, Gregory R. and Thomas, Samantha G. and Loecke, Terry and Greer, Mitchell J. and Platt, Thomas G. and Lee, Sonny and Jumpponen, Ari. (2022). Precipitation, Not Land Use, Primarily Determines the Composition of Both Plant and Phyllosphere Fungal Communities. *Frontiers in Fungal Biology*. 3 . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, Jesse on 11/09/2023) Full text Citation details

Knapp, Alan K. and Condon, Kathleen V. and Folks, Christine C. and Sturchio, Matthew A. and Griffin-Nolan, Robert J. and Kannenberg, Steven A. and Gill, Amy S. and Hajek, Olivia L. and Siggers, J. Alexander and Smith, Melinda D.. (2023). Field experiments have enhanced our understanding of drought impacts on terrestrial ecosystems—But where do we go from here?. *Functional Ecology*. 38 (1) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, Jesse on 11/03/2023) Full text Citation details

Carroll, Oliver and Batzer, Evan and Bharath, Siddharth and Borer, Elizabeth T. and Campana, Sofía and Esch, Ellen and Hautier, Yann and Ohlert, Timothy and Seabloom, Eric W. and Adler, Peter B. and Bakker, Jonathan D. and Biederman, Lori and Bugalho, Miguel N. and Caldeira, Maria and Chen, Qingqing and Davies, Kendi F. and Fay, Philip A. and Knops, Johannes M. H. and Komatsu, Kimberly and Martina, Jason P. and McCann, Kevin S. and Moore, Joslin L. and Morgan, John W. and Muraina, Taofeek O. and Osborne, Brooke and Risch, Anita C. and Stevens, Carly and Wilfahrt, Peter A. and Yahdjian, Laura and MacDougall, Andrew S. and Penuelas, ed., Josep. (2021). Nutrient identity modifies the destabilising effects of eutrophication in grasslands. *Ecology Letters*. 25 (4) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, Eric on 10/20/2022) Full text Citation details

Rudgers, Jennifer A. and Fox, Sam and Porras-Alfaro, Andrea and Herrera, Jose and Reazin, Chris and Kent, Dylan R. and Souza, Lara and Chung, YanYi Anny and Jumpponen, Ari. (2021). Biogeography of root-associated fungi in foundation grasses of North American plains. *Journal of Biogeography*. 49 (1) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, Stephanie on 10/20/2022) Full text Citation details

Chaves, Francis A. and Smith, Melinda D.. (2021). Resources do not limit compensatory response of a tallgrass prairie plant community to the loss of a dominant species. *Journal of Ecology*. 109 (10) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, Jesse on 10/20/2022) Full text Citation details

O'Connor, Rory C and Blumenthal, Dana M and Ocheltree, Troy W and Nippert, Jesse B. (2022). Elevated CO2 counteracts effects of water stress on woody rangeland-encroaching species. *Tree Physiology*. . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, Jesse on 10/10/2023) Full text Citation details

Eckhoff, Kathryn D. and Scott, Drew A. and Manning, George and Baer, Sara G.. (2023). Persistent decadal differences in plant communities assembled under contrasting climate conditions. *Ecological Applications*. 33 (3) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, Jesse on 10/04/2023) Full text Citation details

Pehim Limbu, Smriti and Avolio, Meghan L. (2023). Effect of genotypic richness, drought and mycorrhizal associations on productivity and functional traits of a dominant C4 grass. *Journal of Plant Ecology*. 16 (1) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, Jesse on 10/04/2023) Full text Citation details

Broderick, Caitlin M. and Freeman, Kiona M. and Zeglin, Lydia H. and Blair, John M.. (2022). Climate Legacy Effects Shape Tallgrass Prairie Nitrogen Cycling. *Journal of Geophysical Research: Biogeosciences*. 127 (10) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, Jesse on 10/20/2022) Full text Citation details

Kaspari, Michael and Welti, Ellen A. R.. (2022). Electrolytes on the prairie: How urine-like additions of Na and K shape the dynamics of a grassland food web. *Ecology*. 104 (1) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, null on 11/03/2023) Full text Citation details

Muehleisen, Andrew J. and Watkins, Carmen R. E. and Altmire, Gabriella R. and Shaw, E. Ashley and Case, Madelon F. and Aoyama, Lina and Brambila, Alejandro and Reed, Paul B. and LaForgia, Marina and Borer, Elizabeth T. and Seabloom, Eric W. and Bakker, Jonathan D. and Arnillas, Carlos Alberto and Biederman, Lori and Chen, Qingqing and Cleland, Elsa E. and Eskelinen, Anu and Fay, Philip A. and Hagenah, Nicole and Harpole, Stan and Hautier, Yann and Henning, Jeremiah A. and Knops, Johannes M. H. and Komatsu, Kimberly J. and Ladouceur, Emma and Laungani, Ramesh and MacDougall, Andrew and McCulley, Rebecca L. and Moore, Joslin L. and Ohlert, Tim and Power, Sally A. and Raynaud, Xavier and Stevens, Carly J. and Virtanen, Risto and Wilfahrt, Peter and Hallett, Lauren M.. (2022). Nutrient addition drives declines in grassland species richness primarily via enhanced species loss. *Journal of Ecology*. 111 (3) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, Eric on 11/03/2023) Full text Citation details

Marcotte, Abbey L. and Neudorf, Christina M. and Langston, Abigail L.. (2021). Lateral bedrock erosion and valley formation in a heterogeneously layered landscape, Northeast Kansas. *Earth Surface Processes and Landforms*. 46 (11) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, Abigail on 10/08/2021) Full text Citation details

Ladouceur, Emma and Blowes, Shane A. and Chase, Jonathan M. and Clark, Adam T. and Garbowski, Magda and Alberti, Juan and Arnillas, Carlos Alberto and Bakker, Jonathan D. and Barrio, Isabel C. and Bharath, Siddharth and Borer, Elizabeth T. and Brudvig, Lars A. and Cadotte, Marc W. and Chen, Qingqing and Collins, Scott L. and Dickman, Christopher R. and Donohue, Ian and Du, Guozhen and Ebeling, Anne and Eisenhauer, Nico and Fay, Philip A. and Hagenah, Nicole and Hautier, Yann and Jentsch, Anke and Jónsdóttir, Ingibjörg S. and Komatsu, Kimberly and MacDougall, Andrew and Martina, Jason P. and Moore, Joslin L. and Morgan, John W. and Peri, Pablo L. and Power, Sally A. and Ren, Zhengwei and Risch, Anita C. and Roscher, Christiane and Schuchardt, Max A. and Seabloom, Eric W. and Stevens, Carly J. and Veen, G.F. (Ciska) and Virtanen, Risto and Wardle, Glenda M. and Wilfahrt, Peter A. and Harpole, W. Stanley. (2022). Linking changes in species composition and biomass in a globally distributed grassland experiment. *Ecology Letters*. . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, null on 11/03/2023) Full text Citation details

Dea, H. and McKenzie, D.A. and Clark, B. and Jumpponen, A.. (2023). Amorpha canescens and Andropogon gerardii recruit comparable foliar fungal communities across the steep precipitation gradient in Kansas. *Transactions of the Kansas Academy of Science*. . Status = Added in NSF-PAR Federal Government's License = Acknowledged. (Completed by Nippert, Jesse on 11/03/2023) Full text Citation details

Broderick, Caitlin M. and Wilkins, Kate and Smith, Melinda D. and Blair, John M.. (2022). Climate legacies determine grassland responses to future rainfall regimes. *Global Change Biology*. 28 (8) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, Jesse on 10/20/2022) Full text Citation details

Franco, André L. C. and Guan, Pingting and Cui, Shuyan and de Tomasel, Cecilia M. and Gherardi, Laureano A. and Sala, Osvaldo E. and Wall, Diana H.. (2022). Precipitation effects on nematode diversity and carbon footprint across grasslands. *Global Change Biology*. 28 (6) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, Jesse on 10/20/2022) Full text Citation details

Mino, Laura and Kolp, Matthew R. and Fox, Sam and Reazin, Chris and Zeglin, Lydia and Jumpponen, Ari. (2021). Watershed and fire severity are stronger determinants of soil chemistry and microbiomes than within-watershed woody encroachment in a tallgrass prairie system. *FEMS Microbiology Ecology*. 97 (12) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, Jesse on 10/20/2022) Full text Citation details

Langley, J. Adam and Grman, Emily and Wilcox, Kevin R. and Avolio, Meghan L. and Komatsu, Kimberly J. and Collins, Scott L. and Koerner, Sally E. and Smith, Melinda D. and Baldwin, Andrew H. and Bowman, William and Chiariello, Nona and Eskelinen, Anu and Harmens, Harry and Hovenden, Mark and Klanderud, Kari and McCulley, Rebecca L. and Onipchenko, Vladimir G. and Robinson, Clare H. and Suding, Katharine N.. (2022). Do tradeoffs govern plant species responses to different global change treatments?. *Ecology*. . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, null on 11/03/2023) Full text Citation details

Hawkins, Jaide H. and Zeglin, Lydia H.. (2022). Microbial Dispersal, Including Bison Dung Vectored Dispersal, Increases Soil Microbial Diversity in a Grassland Ecosystem. *Frontiers in Microbiology*. 13 . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, null on 11/03/2023) Full text Citation details

Rastetter, Edward B. and Kwiatkowski, Bonnie L. and Kicklighter, David W. and Barker Plotkin, Audrey and Genet, Helene and Nippert, Jesse B. and O'Keefe, Kimberly and Perakis, Steven S. and Porder, Stephen and Roley, Sarah S. and Ruess, Roger W. and Thompson, Jonathan R. and Wieder, William R. and Wilcox, Kevin and Yanai, Ruth D.. (2022). N and P constrain C in ecosystems under climate change: Role of nutrient redistribution, accumulation, and stoichiometry. *Ecological Applications*. 32 (8) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, null on 11/03/2023) Full text Citation details

Hatley, Camden M. and Armijo, Brooklyn and Andrews, Katherine and Anhold, Christa and Nippert, Jesse B. and Kirk, Matthew F.. (2023). Intermittent streamflow generation in a merokarst headwater catchment. *Environmental Science: Advances*. 2 (1) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, Jesse on 10/04/2023) Full text Citation details

Slette, Ingrid J. and Hoover, David L. and Smith, Melinda D. and Knapp, Alan K.. (2023). Repeated extreme droughts decrease root production, but not the potential for post-drought recovery of root production, in a mesic grassland. *Oikos*. 2023 (1) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, Jesse on 10/04/2023) Full text Citation details

Jiménez, F. Agustín and Rowan, Brian and Hope, Andrew G.. (2023). Hymenolepis ackerti n. sp. (Eucestoda: Hymenolepididae) infecting cricetid rodents from the central Great Plains of North America. *Revista Mexicana de Biodiversidad*. 94 . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, Jesse on 10/04/2023) Full text Citation details

Tooley, E Greg and Nippert, Jesse B and Bachle, Seton and Keen, Rachel M. (2022). Intra-canopy leaf trait variation facilitates high leaf area index and compensatory growth in a clonal woody encroaching shrub. *Tree Physiology*. . Status

= Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, Jesse on 10/04/2023) Full text Citation details

Ruffing, Claire M. and Veach, Allison M. and Schechner, Anne and Rüegg, Janine and Trentman, Matt T. and Dodds, Walter K.. (2022). Prairie stream metabolism recovery varies based on antecedent hydrology across a stream network after a bank-full flood. *Limnology and Oceanography*. 67 (9) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, Jesse on 10/04/2023) Full text Citation details

Feldman, Andrew F. and Short Gianotti, Daniel J. and Dong, Jianzhi and Akbar, Ruzbeh and Crow, Wade T. and McColl, Kaighin A. and Konings, Alexandra G. and Nippert, Jesse B. and Tumber-Dávila, Shersingh Joseph and Holbrook, Noel M. and Rockwell, Fulton E. and Scott, Russell L. and Reichle, Rolf H. and Chatterjee, Abhishek and Joiner, Joanna and Poulter, Benjamin and Entekhabi, Dara. (2023). Remotely Sensed Soil Moisture Can Capture Dynamics Relevant to Plant Water Uptake. *Water Resources Research*. 59 (2) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, Jesse on 10/04/2023) Full text Citation details

Gray, Jesse E. and Smith, Melinda D.. (2023). Contrasting intra-annual population dynamics of two codominant species are consistent across spatial and temporal scales. *Journal of Ecology*. 111 (3) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, Jesse on 10/04/2023) Full text Citation details

Mohankumar, Narmadha M. and Hefley, Trevor J. and Silber, Katy M. and Boyle, W. Alice. (2023). Data fusion of distance sampling and capture-recapture data. *Spatial Statistics*. 55 (C) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, Jesse on 11/03/2023) Full text Citation details

Freeman, N E and Gustafson, M and Hefley, T J and Boyle, W A. (2023). Riding out the storm: depleted fat stores and elevated hematocrit in a small bodied endotherm exposed to severe weather. *Conservation Physiology*. 11 (1) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, Jesse on 10/04/2023) Full text Citation details

Dodds, Walter K. and Ratajczak, Zak and Keen, Rachel M. and Nippert, Jesse B. and Grudzinski, Bartosz and Veach, Allison and Taylor, Jeffery H. and Kuhl, Amanda. (2023). Trajectories and state changes of a grassland stream and riparian zone after a decade of woody vegetation removal. *Ecological Applications*. 33 (4) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, Jesse on 10/11/2023) Full text Citation details

da Rocha, Adolpho Emanuel and Santos, Eduardo Alvarez and Patrignani, Andres. (2022). Partitioning evapotranspiration in a tallgrass prairie using micrometeorological and water use efficiency approaches under contrasting rainfall regimes. *Journal of Hydrology*. 608 (C) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, Jesse on 10/10/2023) Full text Citation details

Vilonen, Leena L. and Blair, John and Trivedi, Pankaj and Zeglin, Lydia and Smith, Melinda D.. (2022). Limited legacy effects of extreme multiyear drought on carbon and nitrogen cycling in a mesic grassland. *Elementa: Science of the Anthropocene*. 10 (1) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, Jesse on 11/09/2023) Full text Citation details

Dea, H. (2023). Amorpha canescens and Andropogon gerardii recruit comparable foliar fungal communities across the steep precipitation gradient in Kansas. *Transactions of the Kansas Academy of Science*. . Status = Added in NSF-PAR
Federal Government's License = Acknowledged. (Completed by Nippert, Jesse on 11/09/2023) Full text Citation details

Koerner, Sally E. and Avolio, Meghan L. and Blair, John M. and Knapp, Alan K. and Smith, Melinda D.. (2023). Multiple global change drivers show independent, not interactive effects: a long-term case study in tallgrass prairie. *Oecologia*. 201 (1) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, Jesse on 10/04/2023) Full text Citation details

Rocci, Katherine S. and Bird, Michael and Blair, John M. and Knapp, Alan K. and Liang, Chao and Cotrufo, M. Francesca. (2023). Thirty years of increased precipitation modifies soil organic matter fractions but not bulk soil carbon and nitrogen in a mesic grassland. *Soil Biology and Biochemistry*. 185 (C) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, Jesse on 10/04/2023) Full text Citation details

Kaspari, Michael and de Beurs, Kirsten M. and Welti, Ellen A. R.. (2021). How and why plant ionomes vary across North American grasslands and its implications for herbivore abundance. *Ecology*. 102 (10) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, Jesse on 10/20/2022) Full text Citation details

Johnson, Loretta C. and Galliart, Matthew B. and Alsdurf, Jacob D. and Maricle, Brian R. and Baer, Sara G. and Bello, Nora M. and Gibson, David J. and Smith, Adam B.. (2021). Reciprocal transplant gardens as gold standard to detect local adaptation in grassland species: New opportunities moving into the 21st century. *Journal of Ecology*. 110 (5) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, null on 10/26/2021) Full text Citation details

Keller, Adrienne B. and Walter, Christopher A. and Blumenthal, Dana M. and Borer, Elizabeth T. and Collins, Scott L. and DeLancey, Lang C. and Fay, Philip A. and Hofmockel, Kirsten S. and Knops, Johannes M. H. and Leakey, Andrew D. B. and Mayes, Melanie A. and Seabloom, Eric W. and Hobbie, Sarah E.. (2022). Stronger fertilization effects on aboveground versus belowground plant properties across nine U.S. grasslands. *Ecology*. 104 (2) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, null on 11/03/2023) Full text Citation details

Dea, H. (2023). Amorpha canescens and Andropogon gerardii recruit comparable foliar fungal communities across the steep precipitation gradient in Kansas. *Transactions of the Kansas Academy of Science*. . Status = Added in NSF-PAR
Federal Government's License = Acknowledged. (Completed by Nippert, Jesse on 10/17/2023) Full text Citation details

Fox, Sam and Sikes, Benjamin A. and Brown, Shawn P. and Cripps, Cathy L. and Glassman, Sydney I. and Hughes, Karen and Semenova-Nelsen, Tatiana and Jumpponen, Ari. (2022). Fire as a driver of fungal diversity — A synthesis of current knowledge. *Mycologia*. 114 (2) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, Jesse on 10/13/2023) Full text Citation details

Vázquez, Eduardo and Borer, Elizabeth T. and Bugalho, Miguel N. and Caldeira, Maria C. and McCulley, Rebecca L. and Risch, Anita C. and Seabloom, Eric W. and Wheeler, George R. and Spohn, Marie. (2023). The synergistic response of primary production in grasslands to combined nitrogen and phosphorus addition is caused by increased nutrient uptake and retention. *Plant and Soil*. 490 (1-2) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, Jesse on 10/04/2023) Full text Citation details

Felton, Andrew J. and Knapp, Alan K. and Smith, Melinda D.. (2020). Precipitation–productivity relationships and the duration of precipitation anomalies: An underappreciated dimension of climate change. *Global Change Biology*. 27 (6) p. 1127-1140. Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, null on 10/12/2021) Full text Citation details

Hudson, Amy R. and Peters, Debra P. C. and Blair, John M. and Childers, Daniel L. and Doran, Peter T. and Geil, Kerrie and Gooseff, Michael and Gross, Katherine L. and Haddad, Nick M. and Pastore, Melissa A. and Rudgers, Jennifer A. and Sala, Osvaldo and Seabloom, Eric W. and Shaver, Gaius. (2022). Cross-Site Comparisons of Dryland Ecosystem Response to Climate Change in the US Long-Term Ecological Research Network. *BioScience*. 72 (9) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, Jesse on 10/20/2022) Full text Citation details

Ozment, Katerina A. and Welti, Ellen A. R. and Shaffer, Monica and Kaspari, Michael. (2021). Tracking nutrients in space and time: Interactions between grazing lawns and drought drive abundances of tallgrass prairie grasshoppers. *Ecology and Evolution*. 11 (10) p. 5413-5423. Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, null on 10/08/2021) Full text Citation details

Ebeling, Anne and Strauss, Alex T. and Adler, Peter B. and Arnillas, Carlos A. and Barrio, Isabel C. and Biederman, Lori A. and Borer, Elizabeth T. and Bugalho, Miguel N. and Caldeira, Maria C. and Cadotte, Marc W. and Daleo, Pedro and Eisenhauer, Nico and Eskelinen, Anu and Fay, Philip A. and Firn, Jennifer and Graff, Pamela and Hagenah, Nicole and Haider, Sylvia and Komatsu, Kimberly J. and McCulley, Rebecca L. and Mitchell, Charles E. and Moore, Joslin L. and Pascual, Jesus and Peri, Pablo L. and Power, Sally A. and Prober, Suzanne M. and Risch, Anita C. and Roscher, Christiane and Sankaran, Mahesh and Seabloom, Eric W. and Schielzeth, Holger and Schütz, Martin and Speziale, Karina L. and Tedder, Michelle and Virtanen, Risto and Blumenthal, Dana M.. (2021). Nutrient enrichment increases invertebrate herbivory and pathogen damage in grasslands. *Journal of Ecology*. 110 (2) p. 327-339. Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, Jesse on 10/20/2022) Full text Citation details

Seabloom, Eric W. and Adler, Peter B. and Alberti, Juan and Biederman, Lori and Buckley, Yvonne M. and Cadotte, Marc W. and Collins, Scott L. and Dee, Laura and Fay, Philip A. and Firn, Jennifer and Hagenah, Nicole and Harpole, W. Stanley and Hautier, Yann and Hector, Andy and Hobbie, Sarah E. and Isbell, Forest and Knops, Johannes M. H. and Komatsu, Kimberly J. and Laungani, Ramesh and MacDougall, Andrew and McCulley, Rebecca L. and Moore, Joslin L. and Morgan, John W. and Ohlert, Timothy and Prober, Suzanne M. and Risch, Anita C. and Schuetz, Martin and Stevens, Carly J. and Borer, Elizabeth T.. (2021). Increasing effects of chronic nutrient enrichment on plant diversity loss and ecosystem productivity over time. *Ecology*. 102 (2) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, null on 10/08/2021) Full text Citation details

Henning, Jeremiah A. and Kinkel, Linda and May, Georgiana and Lumibao, Candice Y. and Seabloom, Eric W. and Borer, Elizabeth T.. (2020). Plant diversity and litter accumulation mediate the loss of foliar endophyte fungal richness following nutrient addition. *Ecology*. 102 (1) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, null on 10/20/2022) Full text Citation details

Griffin-Nolan, Robert J. and Slette, Ingrid J. and Knapp, Alan K.. (2021). Deconstructing precipitation variability: Rainfall event size and timing uniquely alter ecosystem dynamics. *Journal of Ecology*. 109 (9) p. 3356-3369. Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, null on 10/08/2021) Full text Citation details

Welti, Ellen A. R. and Kaspari, Michael. (2021). Sodium addition increases leaf herbivory and fungal damage across four grasslands. *Functional Ecology*. 35 (6) p. 1212-1221. Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, null on 10/08/2021) Full text Citation details

Chen, Anping and Mao, Jiafu and Ricciuto, Daniel and Lu, Dan and Xiao, Jingfeng and Li, Xing and Thornton, Peter E. and Knapp, Alan K.. (2021). Seasonal changes in GPP/SIF ratios and their climatic determinants across the Northern Hemisphere. *Global Change Biology*. 27 (20) p. 5186-5197. Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, Jesse on 10/20/2022) Full text Citation details

Hajek, Olivia L. and Knapp, Alan K.. (2021). Shifting seasonal patterns of water availability: ecosystem responses to an unappreciated dimension of climate change. *New Phytologist*. 233 (1) p. 119-125. Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, Jesse on 10/20/2022) Full text Citation details

Dodds, Walter K. and Wichman, Gretchen and Guinnip, James P. and Corman, Jessica R. and Blair, John M.. (2022). Assessing transport and retention of nitrate and other materials through the riparian zone and stream channel with simulated precipitation. *Methods in Ecology and Evolution*. 13 (3) p. 757-766. Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, null on 10/20/2022) Full text Citation details

Gray, Jesse E. and Komatsu, Kimberly J. and Smith, Melinda D.. (2021). Defining codominance in plant communities. *New Phytologist*. 230 (5) p. 1716-1730. Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, null on 10/08/2021) Full text Citation details

Harms, Tamara K. and Groffman, Peter M. and Aluwihare, Lihini and Craft, Christopher and Wieder, William R and Hobbie, Sarah E. and Baer, Sara G. and Blair, John M. and Frey, Serita and Remucal, Christina K. and Rudgers, Jennifer A. and Collins, Scott L.. (2021). Patterns and trends of organic matter processing and transport: Insights from the US long-term ecological research network. *Climate Change Ecology*. 2 (C) 100025. Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, Sara on 10/08/2021) Full text Citation details

Avolio, Meghan L. and Komatsu, Kimberly J. and Koerner, Sally E. and Grman, Emily and Isbell, Forest and Johnson, David S. and Wilcox, Kevin R. and Alatalo, Juha M. and Baldwin, Andrew H. and Beierkuhnlein, Carl and Britton, Andrea J. and Foster, Bryan L. and Harmens, Harry and Kern, Christel C. and Li, Wei and McLaren, Jennie R. and Reich, Peter B. and Souza, Lara and Yu, Qiang and Zhang, Yunhai. (2022). Making sense of multivariate community responses in global change experiments. *Ecosphere*. 13 (10) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, Jesse on 10/20/2022) Full text Citation details

Sullivan, P.L. and Billings, S.A. and Hirmas, D. and Li, L. and Zhang, X. and Ziegler, S. and Murenbeeld, K. and Ajami, H. and Guthrie, A. and Singha, K. and Giménez, D. and Duro, A. and Moreno, V. and Flores, A. and Cueva, A. and Koop, null and Aronson, E.L. and Barnard, H.R. and Banwart, S.A. and Keen, R.M. and Nemes, A. and Nikolaidis, N.P. and Nippert, J.B. and Richter, D. and Robinson, D.A. and Sadayappan, K. and de Souza, L.F.T. and Unruh, M. and Wen, H.. (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 (C) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, null on 10/20/2022) Full text Citation details

Verheijen, Bram H. F. and Erickson, Amy N. and Boyle, W. Alice and Leveritte, Kiana S. and Sojka, Jennifer L. and Spahr, Lauren A. and Williams, Emily J. and Winnicki, Sarah K. and Sandercock, Brett K.. (2022). Predation, parasitism, and drought counteract the benefits of patch-burn grazing for the reproductive success of grassland songbirds. *Ornithological Applications*. 124 (2) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, Jesse on 10/20/2022) Full text Citation details

Bachle, Seton and Nippert, Jesse B.. (2022). Climate variability supersedes grazing to determine the anatomy and physiology of a dominant grassland species. *Oecologia*. 198 (2) p. 345-355. Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, Jesse on 10/20/2022) Full text Citation details

Chen, Qingqing and Wang, Shaopeng and Seabloom, Eric W. and MacDougall, Andrew S. and Borer, Elizabeth T. and Bakker, Jonathan D. and Donohue, Ian and Knops, Johannes M. and Morgan, John W. and Carroll, Oliver and Crawley, Mick and Bugalho, Miguel N. and Power, Sally A. and Eskelinen, Anu and Virtanen, Risto and Risch, Anita C. and Schütz, Martin and Stevens, Carly and Caldeira, Maria C. and Bagchi, Sumanta and Alberti, Juan and Hautier, Yann. (2022). Nutrients and herbivores impact grassland stability across spatial scales through different pathways. *Global Change Biology*. 28 (8) 2678 to 2688. Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, Jesse on 10/20/2022) Full text Citation details

Keen, Rachel M. and Nippert, Jesse B. and Sullivan, Pamela L. and Ratajczak, Zak and Ritchey, Brynn and O'Keefe, Kimberly and Dodds, Walter K.. (2022). Impacts of Riparian and Non-riparian Woody Encroachment on Tallgrass Prairie Ecohydrology. *Ecosystems*. . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, null on 10/20/2022) Full text Citation details

Fernandez, Javier A. and Nippert, Jesse B. and Prasad, P.V. Vara and Messina, Carlos D. and Ciampitti, Ignacio A.. (2022). Post-silking 15N labelling reveals an enhanced nitrogen allocation to leaves in modern maize (Zea mays) genotypes. *Journal of Plant Physiology*. 268 (C) 153577. Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, Jesse on 10/20/2022) Full text Citation details

O'Keefe, Kimberly and Bachle, Seton and Keen, Rachel and Tooley, E. Greg and Nippert, Jesse B.. (2022). Root traits reveal safety and efficiency differences in grasses and shrubs exposed to different fire regimes. *Functional Ecology*. 36 (2) 368 to 379. Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, Jesse on 10/20/2022) Full text Citation details

Wenger, Seth J. and Stowe, Edward S. and Gido, Keith B. and Freeman, Mary C. and Kanno, Yoichiro and Franssen, Nathan R. and Olden, Julian D. and Poff, N. LeRoy and Walters, Annika W. and Bumpers, Phillip M. and Mims, Meryl C. and Hooten, Mevin B. and Lu, Xinyi. (2022). Simple statistical models can be sufficient for testing hypotheses with population time-series data. *Ecology and Evolution*. 12 (9) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, Jesse on 10/20/2022) Full text Citation details

Ratajczak, Zak and Collins, Scott L. and Blair, John M. and Koerner, Sally E. and Louthan, Allison M. and Smith, Melinda D. and Taylor, Jeffrey H. and Nippert, Jesse B.. (2022). Reintroducing bison results in long-running and resilient increases in grassland diversity. *Proceedings of the National Academy of Sciences*. 119 (36) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, Jesse on 10/20/2022) Full text Citation details

Wieder, William R. and Pierson, Derek and Earl, Stevan and Lajtha, Kate and Baer, Sara G. and Ballantyne, Ford and Berhe, Asmeret Asefaw and Billings, Sharon A. and Brigham, Laurel M. and Chacon, Stephany S. and Fraterrigo, Jennifer and Frey, Serita D. and Georgiou, Katerina and de Graaff, Marie-Anne and Grandy, A. Stuart and Hartman, Melannie D. and Hobbie, Sarah E. and Johnson, Chris and Kaye, Jason and Kyker-Snowman, Emily and Litvak, Marcy E. and Mack, Michelle C. and Malhotra, Avni and Moore, Jessica A. and Nadelhoffer, Knute and Rasmussen, Craig and Silver, Whendee L. and Sulman, Benjamin N. and Walker, Xanthe and Weintraub, Samantha. (2021). SoDaH: the SOils DAta Harmonization database, an open-source synthesis of soil data from research networks, version 1.0. *Earth System Science Data*. 13 (5) 1843 to 1854. Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, null on 10/08/2021) Full text Citation details

Hedden, Skyler C. and Gido, Keith B.. (2020). AGE-SPECIFIC PATTERNS OF OCCURRENCE, DENSITY, AND GROWTH OF TWO CYPRINID FISHES IN HEADWATER PRAIRIE STREAMS. *The Southwestern Naturalist*. 65 (3-4) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, Jesse on 10/20/2022) Full text Citation details

Cusser, Sarah and Helms, Jackson and Bahlai, Christie A. and Haddad, Nick M.. (2021). How long do population level field experiments need to be? Utilising data from the 40-year-old LTER network. *Ecology Letters*. 24 (5) 1103 to 1111. Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, null on 10/20/2022) Full text Citation details

Nieland, Matthew A. and Moley, Priscilla and Hanschu, Janaye and Zeglin, Lydia H.. (2021). Differential Resilience of Soil Microbes and Ecosystem Functions Following Cessation of Long-Term Fertilization. *Ecosystems*. 24 (8) 2042 to 2060. Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, Jesse on 10/20/2022) Full text Citation details

Kaspari, Michael and Joern, Anthony and Welti, Ellen A.. (2022). How and why grasshopper community maturation rates are slowing on a North American tall grass prairie. *Biology Letters*. 18 (1) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, Jesse on 10/20/2022) Full text Citation details

Lagueux, Devon and Jumpponen, Ari and Porras-Alfaro, Andrea and Herrera, Jose and Chung, Y. Anny and Baur, Lauren E. and Smith, Melinda D. and Knapp, Alan K. and Collins, Scott L. and Rudgers, Jennifer A.. (2020). Experimental drought re-ordered assemblages of root-associated fungi across North American grasslands. *Journal of Ecology*. . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, Jesse on 10/20/2022) Full text Citation details

Seabloom, Eric W. and Batzer, Evan and Chase, Jonathan M. and Stanley Harpole, W. and Adler, Peter B. and Bagchi, Sumanta and Bakker, Jonathan D. and Barrio, Isabel C. and Biederman, Lori and Boughton, Elizabeth H. and Bugalho, Miguel N. and Caldeira, Maria C. and Catford, Jane A. and Daleo, Pedro and Eisenhauer, Nico and Eskelinen, Anu and Haider, Sylvia and Hallett, Lauren M. and Svala Jónsdóttir, Ingibjörg and Kimmel, Kaitlin and Kuhlman, Marirose and MacDougall, Andrew and Molina, Cecilia D. and Moore, Joslin L. and Morgan, John W. and Muthukrishnan, Ranjan and Ohlert, Timothy and Risch, Anita C. and Roscher, Christiane and Schütz, Martin and Sonnier, Grégory and Tognetti, Pedro M. and Virtanen, Risto and Wilfahrt, Peter A. and Borer, Elizabeth T.. (2021). Species loss due to nutrient addition increases with spatial scale in global grasslands. *Ecology Letters*. 24 (10) 2100 to 2112. Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, null on 10/20/2022) Full text Citation details

Keller, Adrienne B. and Borer, Elizabeth T. and Collins, Scott L. and DeLancey, Lang C. and Fay, Philip A. and Hofmockel, Kirsten S. and Leakey, Andrew D.B. and Mayes, Melanie A. and Seabloom, Eric W. and Walter, Christopher A. and Wang, Yong and Zhao, Qian and Hobbie, Sarah E.. (2022). Soil carbon stocks in temperate grasslands differ strongly across sites but are insensitive to decade-long fertilization. *Global Change Biology*. 28 (4) 1659 to 1677. Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, null on 10/20/2022) Full text Citation details

Fernández, Javier A and Messina, Carlos D and Salinas, Andrea and Prasad, P V and Nippert, Jesse B and Ciampitti, Ignacio A. (2022). Kernel weight contribution to yield genetic gain of maize: a global review and US case studies. *Journal of Experimental Botany*. 73 (11) 3597 to 3609. Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, Jesse on 10/20/2022) Full text Citation details

Yahdjian, Laura and Sala, Osvaldo E and PiÑEiro-Guerra, Juan Manuel and Knapp, Alan K and Collins, Scott L and Phillips, Richard P and Smith, Melinda D. (2021). Why Coordinated Distributed Experiments Should Go Global. *BioScience*. 71 (9) 918 to 927. Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, null on 10/12/2021) Full text Citation details

Wen, Hang and Sullivan, Pamela L. and Macpherson, Gwendolyn L. and Billings, Sharon A. and Li, Li. (2021). Deepening roots can enhance carbonate weathering by amplifying CO₂-rich recharge. *Biogeosciences*. 18 (1) 55 to 75. Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, null on 10/08/2021) Full text Citation details

Welti, Ellen A. and Joern, Anthony and Ellison, Aaron M. and Lightfoot, David C. and Record, Sydne and Rodenhouse, Nicholas and Stanley, Emily H. and Kaspari, Michael. (2021). Studies of insect temporal trends must account for the complex sampling histories inherent to many long-term monitoring efforts. *Nature Ecology & Evolution*. 5 (5) 589 to 591. Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, null on 10/08/2021) Full text Citation details

Wang, Jinsong and Tian, Dashuan and Knapp, Alan K. and Chen, Han Y. and Luo, Yiqi and Li, Zhaolei and Hou, Enqing and Huang, Xinzhao and Jiang, Lifen and Niu, Shuli. (2021). Precipitation manipulation and terrestrial carbon cycling: The roles of treatment magnitude, experimental duration and local climate. *Global Ecology and Biogeography*. 30 (9) 1909 to

1921. Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, null on 10/12/2021) Full text Citation details

Avolio, Meghan L. and Wilcox, Kevin R. and Komatsu, Kimberly J. and Lemoine, Nathan and Bowman, William D. and Collins, Scott L. and Knapp, Alan K. and Koerner, Sally E. and Smith, Melinda D. and Baer, Sara G. and Gross, Katherine L. and Isbell, Forest and McLaren, Jennie and Reich, Peter B. and Suding, Katharine N. and Suttle, K. Blake and Tilman, David and Xu, Zhuwen and Yu, Qiang. (2020). Temporal variability in production is not consistently affected by global change drivers across herbaceous-dominated ecosystems. *Oecologia*. 194 (4) 735 to 744. Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, null on 10/08/2021) Full text Citation details

Connell, R. Kent and Zeglin, Lydia H. and Blair, John M.. (2021). Plant legacies and soil microbial community dynamics control soil respiration. *Soil Biology and Biochemistry*. 160 (C) 108350. Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, null on 10/12/2021) Full text Citation details

Bachle, Seton and Nippert, Jesse B. (2020). Microanatomical traits track climate gradients for a dominant C4 grass species across the Great Plains, USA. *Annals of Botany*. 127 (4) 451 to 459. Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, null on 10/08/2021) Full text Citation details

Scott, Drew A. and Bach, Elizabeth M. and Du Preez, Chris C. and Six, Johan and Baer, Sara G.. (2021). Mechanisms influencing physically sequestered soil carbon in temperate restored grasslands in South Africa and North America. *Biogeochemistry*. . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, null on 10/08/2021) Full text Citation details

Bruckerhoff, Lindsey A. and Gido, Keith B. and Estey, Michael and Moore, Pamela J.. (2021). Disentangling effects of predators and landscape factors as drivers of stream fish community structure. *Freshwater Biology*. 66 (4) 656 to 668. Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, null on 10/08/2021) Full text Citation details

Narayanan, Achala and Ismert, Kyle J. and Smith, Melinda D. and Jumpponen, Ari. (2021). Soil fungal communities are compositionally resistant to drought manipulations – Evidence from culture-dependent and culture-independent analyses. *Fungal Ecology*. 51 (C) 101062. Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, null on 10/08/2021) Full text Citation details

Slette, Ingrid J. and Blair, John M. and Fay, Philip A. and Smith, Melinda D. and Knapp, Alan K.. (2021). Effects of Compounded Precipitation Pattern Intensification and Drought Occur Belowground in a Mesic Grassland. *Ecosystems*. . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, null on 10/26/2021) Full text Citation details

Pellegrini, Adam F. and Hobbie, Sarah E. and Reich, Peter B. and Jumpponen, Ari and Brookshire, E. N. and Caprio, Anthony C. and Coetsee, Corli and Jackson, Robert B.. (2020). Repeated fire shifts carbon and nitrogen cycling by changing plant inputs and soil decomposition across ecosystems. *Ecological Monographs*. 90 (3) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, null on 10/08/2021) Full text Citation details

Sullivan, Pamela L. and Zhang, Chi and Behm, Michael and Zhang, Fan and Macpherson, G. L.. (2020). Toward a new conceptual model for groundwater flow in merokarst systems: Insights from multiple geophysical approaches. *Hydrological Processes*. 34 (24) 4697 to 4711. Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, null on 10/08/2021) Full text Citation details

Borer, E. T. and Harpole, W. S. and Adler, P. B. and Arnillas, C. A. and Bugalho, M. N. and Cadotte, M. W. and Caldeira,

M. C. and Campana, S. and Dickman, C. R. and Dickson, T. L. and Donohue, I. and Eskelinen, A. and Firn, J. L. and Graff, P. and Gruner, D. S. and Heckman, R. W. and Koltz, A. M. and Komatsu, K. J. and Lannes, L. S. and MacDougall, A. S. and Martina, J. P. and Moore, J. L. and Mortensen, B. and Ochoa-Hueso, R. and Olde Venterink, H. and Power, S. A. and Price, J. N. and Risch, A. C. and Sankaran, M. and Schütz, M. and Sitters, J. and Stevens, C. J. and Virtanen, R. and Wilfahrt, P. A. and Seabloom, E. W.. (2020). Nutrients cause grassland biomass to outpace herbivory. *Nature Communications*. 11 (1) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, null on 10/08/2021) Full text Citation details

Comte, Lise and Carvajal-Quintero, Juan and Tedesco, Pablo A. and Giam, Xingli and Brose, Ulrich and Erős, Tibor and Filipe, Ana F. and Fortin, Marie-Josée and Irving, Katie and Jacquet, Claire and Larsen, Stefano and Sharma, Sapna and Ruhi, Albert and Becker, Fernando G. and Casatti, Lilian and Castaldelli, Giuseppe and Dala-Corte, Renato B. and Davenport, Stephen R. and Franssen, Nathan R. and García-Berthou, Emili and Gavioli, Anna and Gido, Keith B. and Jimenez-Segura, Luz and Leitão, Rafael P. and McLarney, Bill and Meador, Jason and Milardi, Marco and Moffatt, David B. and Occhi, Thiago V. and Pompeu, Paulo S. and Propst, David L. and Pyron, Mark and Salvador, Gilberto N. and Stefferud, Jerome A. and Sutela, Tapio and Taylor, Christopher and Terui, Akira and Urabe, Hirokazu and Vehanen, Teppo and Vitule, Jean R. and Zeni, Jaquelini O. and Olden, Julian D.. (2021). RivFishTIME: A global database of fish time-series to study global change ecology in riverine systems. *Global Ecology and Biogeography*. 30 (1) 38 to 50. Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, null on 10/08/2021) Full text Citation details

McCullough, Kelsey and Haukos, David A and Albanese, Gene. (2021). Regal Fritillary (Speyeria idalia) Sex Ratio in Tallgrass Prairie: Effects of Survey Timing and Management Regime. *The American midland naturalist*. 185 (1) 57-76. Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, null on 10/08/2021) Full text Citation details

Connell, R. Kent and O'Connor, Rory C. and Nippert, Jesse B. and Blair, John M.. (2021). Spatial variation in soil microbial processes as a result of woody encroachment depends on shrub size in tallgrass prairie. *Plant and Soil*. 460 (1-2) 359 to 373. Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, null on 10/08/2021) Full text Citation details

Bruckerhoff, Lindsey A. and Pennock, Casey A. and Gido, Keith B.. (2021). Do fine-scale experiments underestimate predator consumption rates?. *Journal of Animal Ecology*. 90 (10) 2391 to 2403. Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, null on 10/08/2021) Full text Citation details

Wedel, Emily R and O'Keefe, Kimberly and Nippert, Jesse B and Hoch, Braden and O'Connor, Rory C. (2021). Spatio-temporal differences in leaf physiology are associated with fire, not drought, in a clonally integrated shrub. *AoB PLANTS*. 13 (4) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, null on 10/12/2021) Full text Citation details

Hedden, Skyler C. and Bruckerhoff, Lindsey A. and Gido, Keith B.. (2021). Assessing Linkages Between Small Impoundments and Long-term Trajectories of Prairie Stream Fish Assemblages. *The American Midland Naturalist*. 185 (2) . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, null on 10/08/2021) Full text Citation details

Nippert, Jesse B. and Telleria, Lizeth and Blackmore, Pamela and Taylor, Jeffrey H. and O'Connor, Rory C.. (2021). Is a Prescribed Fire Sufficient to Slow the Spread of Woody Plants in an Infrequently Burned Grassland? A Case Study in Tallgrass Prairie. *Rangeland Ecology & Management*. 78 (C) 79 to 89. Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, null on 10/08/2021) Full text Citation details

Tognetti, Pedro M. and Prober, Suzanne M. and Báez, Selene and Chaneton, Enrique J. and Firn, Jennifer and Risch, Anita C. and Schuetz, Martin and Simonsen, Anna K. and Yahdjian, Laura and Borer, Elizabeth T. and Seabloom, Eric W.

and Arnillas, Carlos Alberto and Bakker, Jonathan D. and Brown, Cynthia S. and Cadotte, Marc W. and Caldeira, Maria C. and Daleo, Pedro and Dwyer, John M. and Fay, Philip A. and Gherardi, Laureano A. and Hagenah, Nicole and Hautier, Yann and Komatsu, Kimberly J. and McCulley, Rebecca L. and Price, Jodi N. and Standish, Rachel J. and Stevens, Carly J. and Wragg, Peter D. and Sankaran, Mahesh. (2021). Negative effects of nitrogen override positive effects of phosphorus on grassland legumes worldwide. *Proceedings of the National Academy of Sciences*. 118 (28) e2023718118. Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, null on 10/08/2021) Full text Citation details

Slette, Ingrid J. and Liebert, Alannah and Knapp, Alan K.. (2021). Fire history as a key determinant of grassland soil CO2 flux. *Plant and Soil*. 460 (1-2) 579 to 592. Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, null on 10/08/2021) Full text Citation details

Wedel, Emily R. and Nippert, Jesse B. and Hartnett, David C.. (2021). Fire and browsing interact to alter intra-clonal stem dynamics of an encroaching shrub in tallgrass prairie. *Oecologia*. 196 (4) 1039 to 1048. Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, null on 10/08/2021) Full text Citation details

Hedden, Skyler C. and Gido, Keith B.. (2020). Dispersal drives changes in fish community abundance in intermittent stream networks. *River Research and Applications*. 36 (5) 797 to 806. Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, null on 10/08/2021) Full text Citation details

Carroll, Charles J. and Slette, Ingrid J. and Griffin-Nolan, Robert J. and Baur, Lauren E. and Hoffman, Ava M. and Denton, Elsie M. and Gray, Jesse E. and Post, Alison K. and Johnston, Melissa K. and Yu, Qiang and Collins, Scott L. and Luo, Yiqi and Smith, Melinda D. and Knapp, Alan K.. (2021). Is a drought a drought in grasslands? Productivity responses to different types of drought. *Oecologia*. . Status = Added in NSF-PAR

Federal Government's License = Acknowledged. (Completed by Nippert, null on 10/08/2021) Full text Citation details

Wen, H, Sullivan, PL, Macpherson, GL, Li, L. Effects of vegetation rooting characteristics on carbonate weathering and critical zone evolution. Earth and Planetary Science Letters.. Status = SUBMITTED.

Ren, H, Zhang, Y, Gui, W, Yang, G, Wilson, GT, Cobb, AB, Eviner, VT, Hu, S, Bai, Y. What drives grassland ecosystem multifunctionality: Grazing pressure or plant community parameters? Functional Ecology.. Status = AWAITING_PUBLICATION.

Gido, KB, Hedden, SC, Bruckerhoff, LA, Pennock, CA, Hedden, CK, Hopper, GW, Renner, EA, Johnson, ER, Postlethwait, BJ. 2022. Removing a perched culvert facilitates dispersal of fishes in an intermittent prairie stream but not recovery from drought. Freshwater Science.. Status = AWAITING_PUBLICATION.

Pinchi-Davila, X, Vargas-Hernandez, D, Romero-Jimenez, M, Jumpponen, A, Rudgers, J, Herrera, J, Hutchinson, M, Dunbar, JM, Kuske, C, Porras-Alfaro, A. 2023. Pleoardoris graminearum gen. et sp. nov., a new member of Pleosporales from the North American Plains, biogeography and effects on B. gracilis growth. Mycologia.. Status = AWAITING_PUBLICATION.

Sutton, A.O., Ratajczak, Z., Louthan, A.M. High among-species variability in the context dependence of herbivory across disturbance, weather and topoedaphic gradients. Journal of Ecology.. Status = SUBMITTED.

Duell, E.B., Todd, T.C., Wilson, G.W.T. Mycorrhizal-herbivore interactions and the competitive release of subdominant tallgrass prairie species. Journal of Ecology.. Status = SUBMITTED.

Krause, A.G., A. A. Wojciechowski, and S. G. Baer. In press. Nitrogen enrichment drives accelerative effect of soil heterogeneity on the flowering phenology of a dominant grass. Ecosphere. Status = AWAITING_PUBLICATION.

Jarecke, K., R.M. Keen, K. Sadayappan, M.F. Kirk, L. Li, J.B. Nippert, P.L. Sullivan. (in press) Woody encroachment modifies subsurface structure and hydrological function. ECOHYDROLOGY. Status = SUBMITTED.

Donnelly, R.C., J.B. Nippert, E.R. Wedel, C. Ferguson (in press) Grass leaf structural and stomatal trait responses to climate gradients assessed over the 20th century and across the Great Plains, USA AOB PLANTS plae055 https://doi.org/10.1093/aobpla/plae055. Status = ACCEPTED.

Anhold, C., Hatley, C., Alcantar-Velasquez, E., Keen, R.M., Sadayappan, K., Jarecke, K., Sullivan, P.L., Nippert, J.B., Li, L., Macpherson, G.L., Kirk, M.F., In revision. Grassland woody encroachment alters subsurface mineral weathering and groundwater composition in a carbonate system. Chemical Geology.. Status = ACCEPTED.

Licenses

Other Conference Presentations / Papers

Other Products

Other Publications

Nippert, J.B., McCulloh, K., Wilcox, K., O'Keefe, K., Keen, R., and Chen, A. (2023). *Using root and soil traits to forecast woody encroachment dynamics in mesic grassland*. U.S. Department of Energy Office of Scientific and Technical Information Technical Report. Status = PUBLISHED; Acknowledgement of Federal Support = Yes

Patent Applications

Technologies or Techniques

Thesis/Dissertations

Weickert, Nathaniel. *Are We There Yet: Assessing Trajectories of Two Restored Prairies to Target Native Prairies over a Decadal Time Frame*. (2023). University of Kansas. Acknowledgement of Federal Support = Yes

Hedberg, Sydney. *Assessing drought sensitivity across the shortgrass steppe biome*. (2024). Colorado State University. Acknowledgement of Federal Support = Yes

Gora, S.. *Belowground traits lack response to chronic nitrogen additions in the tallgrass prairie*. (2022). University of North Carolina at Greensboro. Acknowledgement of Federal Support = Yes

Vega Anguiano, Nico. *Bison and cattle impacts on grassland soil microbial and ecosystem properties*. (2023). Kansas State University. Acknowledgement of Federal Support = Yes

Broderick, CM. *Climate legacies and restoration history as drivers of tallgrass prairie carbon and nitrogen cycling*. (2022). Kansas State University. Acknowledgement of Federal Support = Yes

Thomas Herrera, Jr.. *Comparative phylogeography of small mammals across the Great Plains Suture Zone highlights repeated processes of speciation and community assembly coincident with the 100th meridian*. (2022). Kansas State University. Acknowledgement of Federal Support = Yes

Herrera, T. *Comparative phylogeography of small mammals across the Great Plains Suture Zone highlights repeated processes of speciation and community assembly coincident with the 100th meridian*. (2022). Kansas State University. Acknowledgement of Federal Support = Yes

Narmadha Mohankumar. *Data fusion and spatio-temporal approaches to model species distribution*. (2022). Kansas State University. Acknowledgement of Federal Support = Yes

Gray, JE. *Defining, describing, and assessing growth determinacy as a mechanism of plant species codominance*. (2022). Colorado State University. Acknowledgement of Federal Support = Yes

Vilonen, L. *Drought impacts on the microbiome in grasslands across the great plains: a story of legacy effects, resistance, and resilience*. (2022). Colorado State University. Acknowledgement of Federal Support = Yes

Noble, B.. *Early detection of wildfire risk in the Great Plains: merging machine learning, landscape metrics, and rich data sources*. (2023). Kansas State University. Acknowledgement of Federal Support = Yes

Keen, R.. *Ecohydrological implications of clonal shrub encroachment in tallgrass prairie*. (2023). Kansas State University. Acknowledgement of Federal Support = Yes

Nieland, M.. *Ecosystem recovery from chronic fertilization: Biotic mechanisms underpinning soil nitrogen legacies in burned and unburned grasslands*. (2023). Kansas State University. Acknowledgement of Federal Support = Yes

Herzog, Sarah. *Environmental driver effects on population growth rates vary by rarity type and variation in demographic rate sensitivity*. (2024). Kansas State University. Acknowledgement of Federal Support = Yes

Pehim Limbu, Smriti. *Exploring global change impacts on plant-plant and plant-microbe interactions of grassland species*. (2023). Johns Hopkins University. Acknowledgement of Federal Support = Yes

Hajek, O.L.. *Grassland responses to seasonal shifts in water availability*. (2023). Colorado State University. Acknowledgement of Federal Support = Yes

Rodgers, A.. *Grazing intensity and fire frequency effects on plant species and community characteristics in tallgrass prairie*. (2023). University of Wyoming. Acknowledgement of Federal Support = Yes

McCarroll, Nicholas. *Hillslope evolution of heterolytic landscapes: investigating processes and controls on geomorphic development of staircase landscapes*. (2023). Kansas State University. Acknowledgement of Federal Support = Yes

Bunch, Zachary. *Impacts of Patch Burn Grazing on the Invertebrate Communities of Kansas Rangelands*. (2024). University of North Carolina Greensboro. Acknowledgement of Federal Support = Yes

Anhold, Christa. *Impacts of Woody Encroachment on the Fate of Soil CO2 in Grassland Watersheds*. (2023). Kansas State University. Acknowledgement of Federal Support = Yes

Hatley, Camden M.. *Intermittent streamflow generation in a merokarst headwater catchment*. (2022). Kansas State University. Acknowledgement of Federal Support = Yes

Noble, Sidney. *North American Megafauna, Friend or Foe to Woody Encroachment Across the Great Plains?*. (2024). Kansas State University. Acknowledgement of Federal Support = Yes

Mohammadi, Shahla. *Phenotypic plasticity and ecological memory in Andropogon gerardii: responses to simulated grazing pressure*. (2024). Kansas State University. Acknowledgement of Federal Support = Yes

Dea, H. *Prairie plant communities and their associated phyllosphere fungal communities change across the steep precipitation gradient in Kansas USA, though individual plant species' phyllosphere communities may not*. (2023). Kansas State University. Acknowledgement of Federal Support = Yes

Wedel, Emily. *Resource-use strategies of woody plants in grassy ecosystems*. (2023). Kansas State University. Acknowledgement of Federal Support = Yes

Ross, M. *Response and recovery of grassland plant communities exposed to multiyear drought differs across a precipitation gradient*. (2022). Colorado State University. Acknowledgement of Federal Support = Yes

Donnelly, Ryan. *The amazing diversity of Poaceae: trait variation across space, time, and lineage*. (2022). Kansas State University. Acknowledgement of Federal Support = Yes

Eckhoff, K.D.. *The effects of drought on plant and soil microbial communities and functioning during tallgrass prairie restoration.*. (2022). University of Kansas. Acknowledgement of Federal Support = Yes

Bloodworth, Kathryn. *The role of disturbance in Great Plains grassland community dynamics*. (2024). University of North Carolina Greensboro. Acknowledgement of Federal Support = Yes

Tooley, EG. *The unique canopy structure, leaf morphology, and physiology of Cornus drummondii*. (2022). Kansas State University. Acknowledgement of Federal Support = Yes

Silber, K.M.. *Under the weather: mechanisms underlying avian responses to precipitation*. (2023). Kansas State

University. Acknowledgement of Federal Support = Yes

Websites or Other Internet Sites

Participants/Organizations

What individuals have worked on the project?

Name	Most Senior Project Role	Nearest Person Month Worked
Nippert, Jesse	PD/PI	4
Baer, Sara	Co PD/PI	2
Gido, Keith	Co PD/PI	2
Smith, Melinda	Co PD/PI	2
Zeglin, Lydia	Co PD/PI	2
Avolio, Meghan	Co-Investigator	1
Blair, John	Co-Investigator	1
Boyle, Alice	Co-Investigator	1
Brunsell, Nathaniel	Co-Investigator	1
Collins, Scott	Co-Investigator	1
Dodds, Walter	Co-Investigator	1
Hefley, Trevor	Co-Investigator	1
Hope, Andrew	Co-Investigator	1
Horne, Eva	Co-Investigator	1
Jensen, William	Co-Investigator	1
Jumpponen, Ari	Co-Investigator	1
Kirk, Matt	Co-Investigator	1
Knapp, Alan	Co-Investigator	1
Koerner, Sally	Co-Investigator	1
Komatsu, Kimberly	Co-Investigator	1

Name	Most Senior Project Role	Nearest Person Month Worked
Langston, Abigail	Co-Investigator	1
Louthan, Allison	Co-Investigator	1
Ratajczak, Zak	Co-Investigator	1
Rice, Charles	Co-Investigator	1
Santos, Eduardo	Co-Investigator	1
Sullivan, Pam	Co-Investigator	1
Wilcox, Kevin	Co-Investigator	1
Wilson, Gail	Co-Investigator	1
Goodin, Douglas	Faculty	1
Griffin-Nolan, Robert	Faculty	1
Lee, Sonny	Faculty	1
Mayfield, Mark	Faculty	1
Moore, Trisha	Faculty	1
O'Keefe, Kim	Faculty	1
Olson, KC	Faculty	1
Patrignani, Andres	Faculty	1
Spencer, Joel	Faculty	1
Temme, Arnaud	Faculty	1
Todd, Timothy	Faculty	1
Welti, Ellen	Faculty	1
Whiles, Matt	Faculty	1
Zolnerowich, Gregory	Faculty	1
Bachle, Seton	Postdoctoral (scholar, fellow or other postdoctoral position)	1

Name	Most Senior Project Role	Nearest Person Month Worked
Bloodworth, Kathryn	Postdoctoral (scholar, fellow or other postdoctoral position)	1
Broderick, Caitlin	Postdoctoral (scholar, fellow or other postdoctoral position)	1
Connell, Kent	Postdoctoral (scholar, fellow or other postdoctoral position)	1
Duell, Eric	Postdoctoral (scholar, fellow or other postdoctoral position)	1
Gray, Jesse	Postdoctoral (scholar, fellow or other postdoctoral position)	1
Hajek, Olivia	Postdoctoral (scholar, fellow or other postdoctoral position)	1
Keen, Rachel	Postdoctoral (scholar, fellow or other postdoctoral position)	1
Nieland, Matthew	Postdoctoral (scholar, fellow or other postdoctoral position)	1
Pehim Limbu, Smriti	Postdoctoral (scholar, fellow or other postdoctoral position)	1
Puthalath, Saranya	Postdoctoral (scholar, fellow or other postdoctoral position)	1
Slette, Ingrid	Postdoctoral (scholar, fellow or other postdoctoral position)	1
Zaret, Max	Postdoctoral (scholar, fellow or other postdoctoral position)	1
Haukos, Jill	Other Professional	12
O'Connor, Rory	Other Professional	1
Rhodes, Jennifer	Other Professional	12
Wiekert, Nathaniel	Other Professional	1
Xia, Yang	Other Professional	12
King, Nathan	Technician	12

Name	Most Senior Project Role	Nearest Person Month Worked
Ajowele, Joshua	Graduate Student (research assistant)	1
Anderson, Logan	Graduate Student (research assistant)	1
Bookout, Bess	Graduate Student (research assistant)	1
Brenneman, Rachael	Graduate Student (research assistant)	1
Broemmelsiek, Elsa	Graduate Student (research assistant)	1
Bunch, Zachary	Graduate Student (research assistant)	1
Chakravarty, Moupyali	Graduate Student (research assistant)	1
Clark, Kelly	Graduate Student (research assistant)	1
Dea, Hannah	Graduate Student (research assistant)	1
Gimenez Diaz, Marcos	Graduate Student (research assistant)	1
Glidden, Alec	Graduate Student (research assistant)	1
Grabda, Elisa	Graduate Student (research assistant)	1
Greenlee, Emma	Graduate Student (research assistant)	1
Hedberg, Sydney	Graduate Student (research assistant)	1
Herzog, Sarah	Graduate Student (research assistant)	1
Jacobi, Adriana	Graduate Student (research assistant)	1
Jones, Molly	Graduate Student (research assistant)	1
Linabury, Mary	Graduate Student (research assistant)	1
McCarroll, Nicholas	Graduate Student (research assistant)	1
Mohammadi, Shahla	Graduate Student (research assistant)	1
Moriello, Madison	Graduate Student (research assistant)	1
Noble, Sidney	Graduate Student (research assistant)	1
Ortiz, Millie	Graduate Student (research assistant)	1

Name	Most Senior Project Role	Nearest Person Month Worked
Pruitt, Levi (Johnny)	Graduate Student (research assistant)	1
Querns, Aleah	Graduate Student (research assistant)	1
Raihan, Md	Graduate Student (research assistant)	1
Regier, Lydia	Graduate Student (research assistant)	1
Ritchey, Brynn	Graduate Student (research assistant)	1
Stevermer, Klara	Graduate Student (research assistant)	1
Storc, Zach	Graduate Student (research assistant)	1
Summers, Dorothea	Graduate Student (research assistant)	1
Terry, Rose	Graduate Student (research assistant)	1
Vasquez, Amy	Graduate Student (research assistant)	1
Vega Anguiano, Nico	Graduate Student (research assistant)	1
Wedel, Emily	Graduate Student (research assistant)	1
Westberg, Lydia	Graduate Student (research assistant)	1
Wojciechowski, Ashley	Graduate Student (research assistant)	1
Yao, Zheng	Graduate Student (research assistant)	1
Figge, Janaye	Non-Student Research Assistant	12
Kuhl, Amanda	Non-Student Research Assistant	12
Taylor, Jeff	Non-Student Research Assistant	12
Villasana, Sami	Undergraduate Student	1

Full details of individuals who have worked on the project:

Jesse B Nippert
Email: nippert@ksu.edu
Most Senior Project Role: PD/PI
Nearest Person Month Worked: 4

Contribution to the Project: Dr. Nippert is the Konza Prairie LTER lead PI and project director. Provides overall LTER project leadership and coordination. He contributes expertise in plant ecology and ecophysiology, and plant responses

to spatial variability in microclimate, and plant responses on core LTER watersheds at the Konza Prairie LTER site. He is responsible for woody plant encroachment studies, and also directs the KSU Stable Isotope Mass Spectroscopy Laboratory, and provides expertise on the application of stable isotopes to ecological studies.

Funding Support: NSF: Collaborative Research: How roots, regolith, and rock interact to control climate at meso-temporal scales, the R3-C Frontier.

Change in active other support: No

International Collaboration: Yes, South Africa
International Travel: No

Sara G Baer
Email: sgbaer@ku.edu
Most Senior Project Role: Co PD/PI
Nearest Person Month Worked: 2

Contribution to the Project: Dr. Baer is a project co-PI and provides expertise on grassland restoration, particularly with respect to plant community dynamics and long-term changes in ecosystem properties and processes. She is responsible for directing research on grassland restoration ecology at the Konza site, including recovery of ecosystem properties in restored grasslands. Dr. Baer oversees the Restoration Chronosequence study as part of the LTER VIII project. Supported with a subcontract to the University of Kansas.

Funding Support: USDA: Linking microbiome function and microbial processes to plant genetic diversity in a foundation forage grass across the Great Plains grassland climate gradient: a multi-omics approach.

Change in active other support: No

International Collaboration: No
International Travel: No

Keith B Gido
Email: kgido@ksu.edu
Most Senior Project Role: Co PD/PI
Nearest Person Month Worked: 2

Contribution to the Project: Provides expertise in aquatic ecology; stream communities and ecosystems; the effects of fish on stream ecosystem properties such as primary productivity, nutrient cycling, community structure (species richness and diversity), decomposition and transport of particulate organic matter (POM); impacts of altered hydrologic regimes on stream ecosystems. Oversees the LTER experimental stream facility. Coordinates regional assessments of stream fish communities.

Funding Support: US Bureau of Reclamation: Razorback suckers study in San Juan River

Change in active other support: No

International Collaboration: Yes, Australia
International Travel: No

Melinda D Smith
Email: melinda.smith@colostate.edu
Most Senior Project Role: Co PD/PI
Nearest Person Month Worked: 2

Contribution to the Project: Professor at Colorado State University conducting research on plant population and

community dynamics at Konza Prairie, and the impacts of climate change. Directs site-based activities related to the multi- site Nutrient Network (NutNet) project. Supported by a subcontract to Colorado State University.

Funding Support: USDA-NIFA: How do the soil microbiome and plant-soil feedbacks influence rangeland agroecosystems responses to drought?

Change in active other support: No

International Collaboration: No
International Travel: No

Lydia H Zeglin
Email: lzeglin@ksu.edu
Most Senior Project Role: Co PD/PI
Nearest Person Month Worked: 2

Contribution to the Project: Provides expertise in molecular microbial ecology; taxonomic and functional diversity of soil and stream microbiota in the context of ecosystem N and C cycles.

Funding Support: NSF-DEB-ES CAREER: How do microorganisms and grazing mammals interact at local to regional scales to regulate grassland nitrogen cycling processes?

Change in active other support: No

International Collaboration: No
International Travel: No

Meghan Avolio
Email: meghan.avolio@gmail.com
Most Senior Project Role: Co-Investigator
Nearest Person Month Worked: 1

Contribution to the Project: Research on grassland plant communities, mycorrhizae, climate change, nitrogen deposition, and genetic structure of plant communities. Currently an assistant professor at Johns Hopkins University.

Funding Support: None

International Collaboration: No
International Travel: No

John Blair
Email: jblair@ksu.edu
Most Senior Project Role: Co-Investigator
Nearest Person Month Worked: 1

Contribution to the Project: Konza LTER investigator and Director of the Konza Prairie Biological Station (the primary research site for the Konza LTER program). Research expertise in ecosystem ecology and terrestrial biogeochemistry; soil ecology, including decomposition, soil nutrient cycling, litter/soil/plant nutrient dynamics; effects of climate change and other disturbances on ecosystem processes; ecology of soil invertebrates; and restoration ecology.

Funding Support: None

International Collaboration: No
International Travel: No

Alice Boyle
Email: aboyle@ksu.edu
Most Senior Project Role: Co-Investigator
Nearest Person Month Worked: 1

Contribution to the Project: Expertise in bird ecology and physiology; particular interest in reproduction, dispersal and energetics.

Funding Support: None

International Collaboration: No
International Travel: No

Nathaniel Brunsell
Email: brunsell@ku.edu
Most Senior Project Role: Co-Investigator
Nearest Person Month Worked: 1

Contribution to the Project: Expertise in ecosystem and global C and water flux measurement and modeling; coordinates collection and analysis of data from the Ameriflux towers located on Konza Prairie.

Funding Support: None

International Collaboration: No
International Travel: No

Scott Collins
Email: scollins@sevilleta.unm.edu
Most Senior Project Role: Co-Investigator
Nearest Person Month Worked: 1

Contribution to the Project: Expertise in grassland ecology and plant community ecology; ecological analyses of spatial and temporal dynamics; ecological responses to disturbance; analysis of species distribution and abundance; local regional interactions; productivity-diversity relationships.

Funding Support: None

International Collaboration: Yes, South Africa

International Travel: No

Walter Dodds
Email: wkdodds@ksu.edu
Most Senior Project Role: Co-Investigator
Nearest Person Month Worked: 1

Contribution to the Project: Dr. Dodds provides leadership for the Konza LTER aquatic research group. Research expertise in aquatic ecology; phycology; nutrient cycling and retention in streams; groundwater chemistry; watershed-level hydrologic export; water quality. Dr. Dodds is also leading the riparian vegetation removal study as part of the LTER VIII funding cycle. This study assess the impacts of riparian land-cover change on grassland streams.

Funding Support: None

International Collaboration: Yes, Brazil
International Travel: No

Trevor Hefley
Email: thefley@ksu.edu
Most Senior Project Role: Co-Investigator
Nearest Person Month Worked: 1

Contribution to the Project: Ecological statistics, hierarchical Bayesian models, spatial and spatio-temporal statistics, and wildlife ecology.

Funding Support: None

International Collaboration: No
International Travel: No

Andrew Hope
Email: ahope@ksu.du
Most Senior Project Role: Co-Investigator
Nearest Person Month Worked: 1

Contribution to the Project: Expertise in mammalogy; particularly phylogeography, speciation and climate impacts on evolutionary mechanisms of community assembly.

Funding Support: None

International Collaboration: No
International Travel: No

Eva Horne
Email: ehorne@ksu.edu
Most Senior Project Role: Co-Investigator
Nearest Person Month Worked: 1

Contribution to the Project: Research in behavioral ecology of grassland reptiles; responses of reptile and amphibian populations to fire and grazing. Dr. Horne also assists with administration of the Konza Prairie Biological Station, and coordination of research permits and projects at the site.

Funding Support: None

International Collaboration: No
International Travel: No

William Jensen
Email: wjensen1@emporia.edu
Most Senior Project Role: Co-Investigator
Nearest Person Month Worked: 1

Contribution to the Project: Dr. Jensen is an Associate Professor at Emporia State University. He is studying the effects of patch-burn grazing on brood parasitism of Dickcissel nests in the Flint Hills tallgrass prairie, and is responsible for collecting data on avian consumer responses to the patch-burn grazing experiment.

Funding Support: None

International Collaboration: No
International Travel: No

Ari Jumpponen
Email: ari@ksu.edu
Most Senior Project Role: Co-Investigator
Nearest Person Month Worked: 1

Contribution to the Project: Expertise on fungal ecology, particularly mycorrhizae and other endophytic fungi; diversity of soil microbial communities; application of molecular methods to characterize soil microbial communities.

Funding Support: None

International Collaboration: No
International Travel: No

Matt Kirk
Email: mfkirk@ksu.edu
Most Senior Project Role: Co-Investigator
Nearest Person Month Worked: 1

Contribution to the Project: KSU professor in the Department of Geology. Dr. Kirk is continuing the research of Dr. Gwen Macpherson, who retired from the University of Kansas.

Funding Support: None

International Collaboration: No
International Travel: No

Alan Knapp
Email: alan.knapp@colostate.edu
Most Senior Project Role: Co-Investigator
Nearest Person Month Worked: 1

Contribution to the Project: Provides research expertise in grassland ecology, plant ecology, physiological ecology, global change studies, plants-herbivore interactions, invasive species ecology. Dr. Knapp also provides leadership for LTER studies of plant productivity and responses to climatic variability and climate change, and conducts multi-site research involving SGS and KNZ LTER sites. Supported by a subcontract to Colorado State University.

Funding Support: None

International Collaboration: Yes, South Africa
International Travel: No

Sally Koerner
Email: sally.koerner@uncg.edu
Most Senior Project Role: Co-Investigator
Nearest Person Month Worked: 1

Contribution to the Project: Dr. Koerner is an assistant professor at the University of North Carolina Greenboro. Her research interests include ecology (community, ecosystem and plant ecology); drivers of biodiversity across spatial scales and through time.

Funding Support: None

International Collaboration: No
International Travel: No

Kimberly Komatsu
Email: kjkomatsu@uncg.edu
Most Senior Project Role: Co-Investigator
Nearest Person Month Worked: 1

Contribution to the Project: Former PhD student from Yale University. Dr. Komatsu is an associate professor and Florence Schaeffer Distinguished Scholar at the University of North Carolina Greensboro. Her research areas consists of animal plant interactions, biodiversity, climate change, ecology, ecosystem function, ecosystem services, global change, herbivores, insects, invasive species, nutrient pollution, plant ecology, and terrestrial ecology.

Funding Support: None

International Collaboration: No
International Travel: No

Abigail Langston
Email: alangston@ksu.edu
Most Senior Project Role: Co-Investigator
Nearest Person Month Worked: 1

Contribution to the Project: Professor in the KSU Department of Geology. Dr. Langston's core areas of geographic research are in quantitative geomorphology and landscape evolution modeling.

Funding Support: None

International Collaboration: No
International Travel: No

Allison Louthan
Email: amlouthan@ksu.edu
Most Senior Project Role: Co-Investigator
Nearest Person Month Worked: 1

Contribution to the Project: Dr. Louthan works at the intersection of population and community ecology, focusing on how species interactions and climate change jointly influence plant population dynamics and distribution patterns. She uses a combination of observational fieldwork, field- and greenhouse-based experiments, and modeling to explore how species interactions might impact future biodiversity patterns in a changing climate.

Funding Support: None

International Collaboration: No
International Travel: No

Zak Ratajczak
Email: zarata@ksu.edu
Most Senior Project Role: Co-Investigator
Nearest Person Month Worked: 1

Contribution to the Project: Research area involves woody encroachment. Former PhD student of Jesse Nippert.

Funding Support: None

International Collaboration: No
International Travel: No

Charles Rice
Email: cwrice@ksu.edu
Most Senior Project Role: Co-Investigator
Nearest Person Month Worked: 1

Contribution to the Project: Expertise in soil microbial ecology; responses of grassland microbial communities to fire, grazing climatic variability; soil C and N dynamics; denitrification in grasslands; effects of management on soil C sequestration. Contributor and author for IPCC AR4.

Funding Support: None

International Collaboration: No
International Travel: No

Eduardo Santos
Email: esantos@ksu.edu
Most Senior Project Role: Co-Investigator
Nearest Person Month Worked: 1

Contribution to the Project: Micro-meteorology and measurements of carbon and water fluxes from grassland. Expertise in eddy flux techniques and stable isotope analyses.

Funding Support: None

International Collaboration: No
International Travel: No

Pam Sullivan
Email: pamela.sullivan@oregonstate.edu
Most Senior Project Role: Co-Investigator
Nearest Person Month Worked: 1

Contribution to the Project: As an ecohydrologist, Dr. Sullivan is interested in investigating the interactions between climate, vegetation and geology on freshwater resources over different temporal and spatial scales. Supported on a subcontract to Oregon State University.

Funding Support: None

International Collaboration: No
International Travel: No

Kevin Wilcox
Email: k_wilcox@uncg.edu
Most Senior Project Role: Co-Investigator
Nearest Person Month Worked: 1

Contribution to the Project: Professor at University of North Carolina Greensboro. Research focuses on global change and land use impacts on plant community dynamics, primary productivity, and biogeochemical cycles.

Funding Support: None

International Collaboration: No
International Travel: No

Gail Wilson
Email: gail.wilson@okstate.edu
Most Senior Project Role: Co-Investigator
Nearest Person Month Worked: 1

Contribution to the Project: Gail Wilson provides expertise on the role of mycorrhizal fungi in grasslands, and is responsible for long-term studies of the impacts of of mycorrhizal fungi on plant community dynamics and on soil structure and C storage in grasslands.

Funding Support: None

International Collaboration: No
International Travel: No

Douglas Goodin
Email: dgoodin@ksu.edu
Most Senior Project Role: Faculty
Nearest Person Month Worked: 1

Contribution to the Project: Provides expertise on remote sensing of ecological data, including patterns of plant productivity and spatial distributions of grazing and fire effects; research on climatology in the Central Plains; research on the impacts of burning on air quality.

Funding Support: None

International Collaboration: No
International Travel: No

Robert Griffin-Nolan
Email: rgriffinnolan@scu.edu
Most Senior Project Role: Faculty
Nearest Person Month Worked: 1

Contribution to the Project: Former PhD student (Advisor, Alan Knapp) working on plant physiological responses to drought and ecosystem drought sensitivity. Received PhD in 2019. Currently, faculty at California State University.

Funding Support: None

International Collaboration: No
International Travel: No

Sonny Lee
Email: leet1@ksu.edu
Most Senior Project Role: Faculty
Nearest Person Month Worked: 1

Contribution to the Project: Interest include: metagenomics, bioinformatics, microbial ecology, microbial diversity and cultivation.

Funding Support: None

International Collaboration: No
International Travel: No

Mark Mayfield
Email: markherb@ksu.edu
Most Senior Project Role: Faculty
Nearest Person Month Worked: 1

Contribution to the Project: Expertise in plant systematics.

Funding Support: None

International Collaboration: No
International Travel: No

Trisha Moore
Email: tlcmoore@ksu.edu
Most Senior Project Role: Faculty
Nearest Person Month Worked: 1

Contribution to the Project: Expertise in environmental engineering with a focus on ecohydrology and water and carbon cycling.

Funding Support: None

International Collaboration: No
International Travel: No

Kim O'Keefe
Email: okeefe.kim@gmail.com
Most Senior Project Role: Faculty
Nearest Person Month Worked: 1

Contribution to the Project: Assistant professor at Northern Michigan University. Former PhD student of Dr. Jesse Nippert

Funding Support: None

International Collaboration: No
International Travel: No

KC Olson
Email: kcolson@ksu.edu
Most Senior Project Role: Faculty
Nearest Person Month Worked: 1

Contribution to the Project: KC Olson is a professor of animal science, who brings expertise on the physiology and management of cattle in mesic grasslands. Dr. Olson is an active participant in the new patch-burn grazing study, and will oversee assessment of animal performance as a management-related aspect of this LTER study.

Funding Support: None

International Collaboration: No
International Travel: No

Andres Patrignani
Email: andrespatrignani@ksu.edu
Most Senior Project Role: Faculty
Nearest Person Month Worked: 1

Contribution to the Project: Dr. Patrignani is an assistant professor in the KSU Department of Agronomy. His interest is soil water management.

Funding Support: None

International Collaboration: No
International Travel: No

Joel Spencer
Email: joelspen@ksu.edu
Most Senior Project Role: Faculty
Nearest Person Month Worked: 1

Contribution to the Project: KSU professor of geology

Funding Support: None

International Collaboration: No
International Travel: No

Arnaud Temme
Email: arnaudtemme@ksu.edu
Most Senior Project Role: Faculty
Nearest Person Month Worked: 1

Contribution to the Project: Expertise in Geomorphology, soil mapping, soil and landscape evolution, complexity, mountain landscapes

Funding Support: None

International Collaboration: No
International Travel: No

Timothy Todd
Email: nema@ksu.edu
Most Senior Project Role: Faculty
Nearest Person Month Worked: 1

Contribution to the Project: Expertise in nematode ecology; particularly plant-nematode interactions and soil food web dynamics.

Funding Support: None

International Collaboration: No
International Travel: No

Ellen Welti
Email: weltie@si.edu
Most Senior Project Role: Faculty
Nearest Person Month Worked: 1

Contribution to the Project: Former PhD student (Advisor, Tony Joern) working on mechanisms of food web stability. Currently working at the Great Plains Science Program, Conservation Ecology Center, Smithsonian Conservation Biology Institute.

Funding Support: None

International Collaboration: No
International Travel: No

Matt Whiles
Email: mwhiles@ufl.edu
Most Senior Project Role: Faculty
Nearest Person Month Worked: 1

Contribution to the Project: Expertise in invertebrate ecology; research focused on assessment of patterns and controls of secondary productivity in grassland streams; ecology of soil invertebrates in grasslands. Participant in new riparian vegetation removal experiment.

Funding Support: None

International Collaboration: No
International Travel: No

Gregory Zolnerowich
Email: gregz@ksu.edu
Most Senior Project Role: Faculty
Nearest Person Month Worked: 1

Contribution to the Project: Expertise in grassland insect biodiversity and insect systematics, particularly of parasitic wasps. Dr. Zolnerowich oversees the KSU Museum of Entomological and Prairie Arthropod Research, and provides expertise on electronic databasing of biological collections.

Funding Support: None

International Collaboration: No
International Travel: No

Seton Bachle
Email: setonbachle20@gmail.com
Most Senior Project Role: Postdoctoral (scholar, fellow or other postdoctoral position)
Nearest Person Month Worked: 1

Contribution to the Project: Postdoc at LI-COR Biosciences, Lincoln, NE Former graduate student of Dr. Jesse Nippert

Funding Support: None

International Collaboration: No
International Travel: No

Kathryn Bloodworth
Email: kjbloodw@uncg.edu
Most Senior Project Role: Postdoctoral (scholar, fellow or other postdoctoral position)
Nearest Person Month Worked: 1

Contribution to the Project: Advisor: Sally Koerner Defended PhD in December 2023 Now postdoc at University of Maryland

Funding Support: None

International Collaboration: No
International Travel: No

Caitlin Broderick
Email: broder49@msu.edu
Most Senior Project Role: Postdoctoral (scholar, fellow or other postdoctoral position)
Nearest Person Month Worked: 1

Contribution to the Project: Former Advisor: John Blair Now postdoc at Michigan State

Funding Support: None

International Collaboration: No
International Travel: No

Kent Connell
Email: rkco@umich.edu
Most Senior Project Role: Postdoctoral (scholar, fellow or other postdoctoral position)
Nearest Person Month Worked: 1

Contribution to the Project: Postdoc at University of Michigan Former graduate student of Dr. John Blair

Funding Support: None

International Collaboration: No
International Travel: No

Eric Duell
Email: eduell@ku.edu
Most Senior Project Role: Postdoctoral (scholar, fellow or other postdoctoral position)
Nearest Person Month Worked: 1

Contribution to the Project: Former Advisor: Gail Wilson. Research focus: plant ecology, grassland ecology, global change ecology. Now a postdoc at the University of Kansas

Funding Support: None

International Collaboration: No
International Travel: No

Jesse Gray
Email: jesse.gray@colostate.edu
Most Senior Project Role: Postdoctoral (scholar, fellow or other postdoctoral position)
Nearest Person Month Worked: 1

Contribution to the Project: Advisor: Dr. Alan Knapp Defended PhD in 2022. Now a postdoc at University of Colorado - Boulder.

Funding Support: None

International Collaboration: No
International Travel: No

Olivia Hajek
Email: olivia.hajek@colostate.edu
Most Senior Project Role: Postdoctoral (scholar, fellow or other postdoctoral position)

Nearest Person Month Worked: 1

Contribution to the Project: Advisor: Alan Knapp Defended PhD in 2023. Currently postdoc at USDA-ARS in Ft. Collins.

Funding Support: None

International Collaboration: No
International Travel: No

Rachel Keen
Email: rlease@ksu.edu
Most Senior Project Role: Postdoctoral (scholar, fellow or other postdoctoral position)
Nearest Person Month Worked: 1

Contribution to the Project: Former grad student of Dr. Jesse Nippert. Currently postdoc with Dr. Sharon Billings (KU) and Dr. Pam Sullivan (Oregon State).

Funding Support: None

International Collaboration: No
International Travel: No

Matthew Nieland
Email: mnieland@umass.edu
Most Senior Project Role: Postdoctoral (scholar, fellow or other postdoctoral position)
Nearest Person Month Worked: 1

Contribution to the Project: Former PhD student of Dr. Lydia Zeglin Now postdoc at University of Massachusetts Amherst

Funding Support: None

International Collaboration: No
International Travel: No

Smriti Pehim Limbu
Email: slimbu2@jhu.edu
Most Senior Project Role: Postdoctoral (scholar, fellow or other postdoctoral position)
Nearest Person Month Worked: 1

Contribution to the Project: Former PhD student of Dr. Meghan Avolio at Johns Hopkins Now postdoc at Dartmouth College

Funding Support: None

International Collaboration: No
International Travel: No

Saranya Puthalath
Email: saranyaputhalath@ksu.edu
Most Senior Project Role: Postdoctoral (scholar, fellow or other postdoctoral position)
Nearest Person Month Worked: 1

Contribution to the Project: Postdoc in Dr. Jesse Nippert's lab

Funding Support: None

International Collaboration: No
International Travel: No

Ingrid Slette
Email: ingrid.slette@gmail.com
Most Senior Project Role: Postdoctoral (scholar, fellow or other postdoctoral position)
Nearest Person Month Worked: 1

Contribution to the Project: Former Advisor: Alan Knapp. Postdoc at University of Minnesota. NutNet and DRAGNet coordinator

Funding Support: None

International Collaboration: No
International Travel: No

Max Zaret
Email: zaret@ksu.edu
Most Senior Project Role: Postdoctoral (scholar, fellow or other postdoctoral position)
Nearest Person Month Worked: 1

Contribution to the Project: Postdoc in Dr. Lydia Zeglin's lab

Funding Support: None

International Collaboration: No
International Travel: No

Jill Haukos
Email: jhaukos@ksu.edu
Most Senior Project Role: Other Professional
Nearest Person Month Worked: 12

Contribution to the Project: Director of the Konza Education Program (KEEP). Jill directs the K-12 education program, including the Konza Prairie SLTER program and serves as the KNZ LTER education representative for LNO activities. Jill also oversees the Konza docent program and some of the public outreach activities.

Funding Support: Konza Prairie Biological Station

International Collaboration: No
International Travel: No

Rory O'Connor
Email: rory.o'connor@usda.gov
Most Senior Project Role: Other Professional
Nearest Person Month Worked: 1

Contribution to the Project: Former PhD student of Dr. Jesse Nippert. Currently works as a rangeland ecologist for the USDA-ARS in Burns, Oregon. Still conducts research at Konza Prairie.

Funding Support: None

International Collaboration: No
International Travel: No

Jennifer Rhodes
Email: jenniferrhodes@ksu.edu
Most Senior Project Role: Other Professional
Nearest Person Month Worked: 12

Contribution to the Project: Program coordinator and event planner.

Funding Support: None

International Collaboration: No
International Travel: No

Nathaniel Wiekert
Email: n.c.weickert@ku.edu
Most Senior Project Role: Other Professional
Nearest Person Month Worked: 1

Contribution to the Project: Advisor: Sara Baer Defended masters in 2022. Now assistant operations manager at the KU Field Station

Funding Support: None

International Collaboration: No
International Travel: No

Yang Xia
Email: yangx@ksu.edu
Most Senior Project Role: Other Professional
Nearest Person Month Worked: 12

Contribution to the Project: LTER Information Manager. Responsibilities include data management, database design and implementation, and overseeing KNZ LTER computer network activities.

Funding Support: None

International Collaboration: No
International Travel: No

Nathan King
Email: nathanking778@ksu.edu
Most Senior Project Role: Technician
Nearest Person Month Worked: 12

Contribution to the Project: Field technician.

Funding Support: None.

International Collaboration: No
International Travel: No

Joshua Ajowele
Email: joshuaajowele@gmail.com
Most Senior Project Role: Graduate Student (research assistant)
Nearest Person Month Worked: 1

Contribution to the Project: Advisor: Kevin Wilcox University of North Carolina Greensboro

Funding Support: None

International Collaboration: No
International Travel: No

Logan Anderson
Email: landerson14@ksu.edu
Most Senior Project Role: Graduate Student (research assistant)
Nearest Person Month Worked: 1

Contribution to the Project: Graduate student in Dr. Alice Boyle's lab.

Funding Support: None

International Collaboration: No
International Travel: No

Bess Bookout
Email: bessbookout16@gmail.com
Most Senior Project Role: Graduate Student (research assistant)
Nearest Person Month Worked: 1

Contribution to the Project: Advisor: Zak Rataczak

Funding Support: None

International Collaboration: No
International Travel: No

Rachael Brenneman
Email: rrbrenneman@uncg.edu
Most Senior Project Role: Graduate Student (research assistant)
Nearest Person Month Worked: 1

Contribution to the Project: Advisor: Dr. Kim Komatsu

Funding Support: None

International Collaboration: No
International Travel: No

Elsa Broemmelsiek
Email: elsabroe@ksu.edu
Most Senior Project Role: Graduate Student (research assistant)
Nearest Person Month Worked: 1

Contribution to the Project: Graduate student in Dr. Lydia Zeglin's lab

Funding Support: None

International Collaboration: No
International Travel: No

Zachary Bunch
Email: zlbunch2@uncg.edu
Most Senior Project Role: Graduate Student (research assistant)
Nearest Person Month Worked: 1

Contribution to the Project: Graduate student in Dr. Kim Komatsu's lab at University of North Carolina Greensboro

Funding Support: None

International Collaboration: No
International Travel: No

Moupyali Chakravarty
Email: mou@k-state.edu
Most Senior Project Role: Graduate Student (research assistant)
Nearest Person Month Worked: 1

Contribution to the Project: Graduate student in Dr. Abigail Langston's lab at KSU

Funding Support: None

International Collaboration: No
International Travel: No

Kelly Clark
Email: kmclark4@uncg.edu
Most Senior Project Role: Graduate Student (research assistant)
Nearest Person Month Worked: 1

Contribution to the Project: Graduate student at University of North Carolina Greensboro Advisor: Kim Komatsu

Funding Support: None

International Collaboration: No
International Travel: No

Hannah Dea
Email: hidea@ksu.edu
Most Senior Project Role: Graduate Student (research assistant)
Nearest Person Month Worked: 1

Contribution to the Project: Advisor: Ari Jumpponen

Funding Support: None

International Collaboration: No
International Travel: No

Marcos Gimenez Diaz
Email: marcosgimenezdiaz@ku.edu
Most Senior Project Role: Graduate Student (research assistant)
Nearest Person Month Worked: 1

Contribution to the Project: Graduate student at University of Kansas Advisor: Dr. Sara Baer

Funding Support: None

International Collaboration: No
International Travel: No

Alec Glidden
Email: aglidden@ksu.edu
Most Senior Project Role: Graduate Student (research assistant)
Nearest Person Month Worked: 1

Contribution to the Project: Advisor: Dr. John Blair

Funding Support: None

International Collaboration: No
International Travel: No

Elisa Grabda
Email: msgrabda@uncg.edu
Most Senior Project Role: Graduate Student (research assistant)
Nearest Person Month Worked: 1

Contribution to the Project: Advisor: Dr. Kim Komatsu

Funding Support: None

International Collaboration: No
International Travel: No

Emma Greenlee
Email: egreenlee@ksu.edu
Most Senior Project Role: Graduate Student (research assistant)
Nearest Person Month Worked: 1

Contribution to the Project: Graduate student in Dr. Zak Ratajczak's lab KSU

Funding Support: None

International Collaboration: No
International Travel: No

Sydney Hedberg
Email: sydney.hedberg@colostate.edu
Most Senior Project Role: Graduate Student (research assistant)
Nearest Person Month Worked: 1

Contribution to the Project: Advisor: Dr. Melinda Smith Defended Master's June 2024

Funding Support: None

International Collaboration: No
International Travel: No

Sarah Herzog
Email: sherzog@ksu.edu
Most Senior Project Role: Graduate Student (research assistant)
Nearest Person Month Worked: 1

Contribution to the Project: Advisor: Allison Louthan

Funding Support: None

International Collaboration: No
International Travel: No

Adriana Jacobi
Email: adriana.jacobi@colostate.edu
Most Senior Project Role: Graduate Student (research assistant)
Nearest Person Month Worked: 1

Contribution to the Project: Graduate student at Colorado State University

Funding Support: None

International Collaboration: No
International Travel: No

Molly Jones
Email: molly09@ksu.edu
Most Senior Project Role: Graduate Student (research assistant)
Nearest Person Month Worked: 1

Contribution to the Project: Graduate student at KSU Advisor: Andrew Hope

Funding Support: None

International Collaboration: No
International Travel: No

Mary Linabury
Email: mary.linabury@gmail.com
Most Senior Project Role: Graduate Student (research assistant)
Nearest Person Month Worked: 1

Contribution to the Project: Advisor: Melinda Smith

Funding Support: None

International Collaboration: No
International Travel: No

Nicholas McCarroll
Email: nmccarroll13@ksu.edu
Most Senior Project Role: Graduate Student (research assistant)
Nearest Person Month Worked: 1

Contribution to the Project: Advisor: Dr. Arnaud Temme Defended masters in 2023.

Funding Support: None

International Collaboration: No
International Travel: No

Shahla Mohammadi
Email: smohammadi@ksu.edu
Most Senior Project Role: Graduate Student (research assistant)
Nearest Person Month Worked: 1

Contribution to the Project: Advisor: Jesse Nippert Defended in 2024

Funding Support: None

International Collaboration: No
International Travel: No

Madison Moriello
Email: moriello@ksu.edu
Most Senior Project Role: Graduate Student (research assistant)
Nearest Person Month Worked: 1

Contribution to the Project: Graduate student in Dr. Walter Dodds' lab

Funding Support: None

International Collaboration: No
International Travel: No

Sidney Noble
Email: slnoble@ksu.edu
Most Senior Project Role: Graduate Student (research assistant)
Nearest Person Month Worked: 1

Contribution to the Project: Advisor: Zak Ratajczak Defended in 2024

Funding Support: None

International Collaboration: No
International Travel: No

Millie Ortiz
Email: m_ortiz2@uncg.edu
Most Senior Project Role: Graduate Student (research assistant)
Nearest Person Month Worked: 1

Contribution to the Project: Graduate student in Dr. Kim Komatsu's lab at UNCG.

Funding Support: None

International Collaboration: No
International Travel: No

Levi (Johnny) Pruitt
Email: JohnnyPruitt@ksu.edu
Most Senior Project Role: Graduate Student (research assistant)
Nearest Person Month Worked: 1

Contribution to the Project: Graduate student at KSU Advisor: Dr. Matt Kirk

Funding Support: None

International Collaboration: No
International Travel: No

Aleah Querns
Email: akquerns@ksu.edu
Most Senior Project Role: Graduate Student (research assistant)
Nearest Person Month Worked: 1

Contribution to the Project: Advisor: Allison Louthan

Funding Support: None

International Collaboration: No
International Travel: No

Md Abu Raihan
Email: aburaihan@ksu.edu
Most Senior Project Role: Graduate Student (research assistant)
Nearest Person Month Worked: 1

Contribution to the Project: Advisor: Dr. Walter Dodds

Funding Support: None

International Collaboration: No
International Travel: No

Lydia Regier
Email: lydiaregier@ku.edu
Most Senior Project Role: Graduate Student (research assistant)
Nearest Person Month Worked: 1

Contribution to the Project: Graduate student at University of Kansas Advisor: Sara Baer

Funding Support: None

International Collaboration: No
International Travel: No

Brynn Ritchey
Email: britchey1@ksu.edu
Most Senior Project Role: Graduate Student (research assistant)
Nearest Person Month Worked: 1

Contribution to the Project: Advisor: Zak Ratajczak

Funding Support: None

International Collaboration: No
International Travel: No

Klara Stevermer
Email: klarastevermer@ksu.edu
Most Senior Project Role: Graduate Student (research assistant)
Nearest Person Month Worked: 1

Contribution to the Project: Master's student of Dr. Jesse Nippert

Funding Support: None

International Collaboration: No
International Travel: No

Zach Storc
Email: zjstorc@ku.edu
Most Senior Project Role: Graduate Student (research assistant)
Nearest Person Month Worked: 1

Contribution to the Project: Advisor: Dr. Sara Baer, University of Kansas

Funding Support: None

International Collaboration: No
International Travel: No

Dorothea Summers
Email: dorothea.summersamdg@gmail.com
Most Senior Project Role: Graduate Student (research assistant)
Nearest Person Month Worked: 1

Contribution to the Project: Graduate student at University of Kansas Advisor: Dr. Sara Baer

Funding Support: None

International Collaboration: No
International Travel: No

Rose Terry
Email: rsterry@uncg.edu
Most Senior Project Role: Graduate Student (research assistant)
Nearest Person Month Worked: 1

Contribution to the Project: Advisor: Sally Koener

Funding Support: None

International Collaboration: No
International Travel: No

Amy Vasquez
Email: avasque3@jhu.edu
Most Senior Project Role: Graduate Student (research assistant)
Nearest Person Month Worked: 1

Contribution to the Project: Advisor: Dr. Meghan Avolio

Funding Support: None

International Collaboration: No
International Travel: No

Nico Vega Anguiano
Email: nicova@ksu.edu
Most Senior Project Role: Graduate Student (research assistant)
Nearest Person Month Worked: 1

Contribution to the Project: Graduate in Dr. Lydia Zeglin's lab Defended in 2024

Funding Support: None

International Collaboration: No
International Travel: No

Emily Wedel
Email: erwedel@ksu.edu
Most Senior Project Role: Graduate Student (research assistant)
Nearest Person Month Worked: 1

Contribution to the Project: Former PhD student of Jesse Nippert Defended in 2023 Now postdoc at Norte Dame

Funding Support: None

International Collaboration: No
International Travel: No

Lydia Westberg
Email: lydia.westberg@ku.edu
Most Senior Project Role: Graduate Student (research assistant)
Nearest Person Month Worked: 1

Contribution to the Project: Graduate student of Dr. Sara Baer's at KU.

Funding Support: None

International Collaboration: No
International Travel: No

Ashley Wojciechowski
Email: ashley.wojiechowski@ku.edu
Most Senior Project Role: Graduate Student (research assistant)
Nearest Person Month Worked: 1

Contribution to the Project: Advisor: Sara Baer

Funding Support: None

International Collaboration: No
International Travel: No

Zheng Yao
Email: zyao78@k-state.edu
Most Senior Project Role: Graduate Student (research assistant)
Nearest Person Month Worked: 1

Contribution to the Project: Graduate student of Dr. Allison Louthan

Funding Support: None

International Collaboration: No
International Travel: No

Janaye Figge
Email: jhanschu@ksu.edu
Most Senior Project Role: Non-Student Research Assistant
Nearest Person Month Worked: 12

Contribution to the Project: LTER analytical lab supervisor, research coordinator.

Funding Support: None.

International Collaboration: No
International Travel: No

Amanda Kuhl
Email: akuhl@ksu.edu
Most Senior Project Role: Non-Student Research Assistant
Nearest Person Month Worked: 12

Contribution to the Project: Research assistant and field crew leader.

Funding Support: None

International Collaboration: No
International Travel: No

Jeff Taylor
Email: jht@ksu.edu
Most Senior Project Role: Non-Student Research Assistant
Nearest Person Month Worked: 12

Contribution to the Project: Field technician.

Funding Support: None

International Collaboration: No
International Travel: No

Sami Villasana
Email: samiv11@ksu.edu
Most Senior Project Role: Undergraduate Student
Nearest Person Month Worked: 1

Contribution to the Project: KSU Geology undergraduate student from Dr. Matt Kirk's lab. She is doing her undergraduate thesis on spring compositions in N4d and N1b

Funding Support: None

International Collaboration: No
International Travel: No

What other organizations have been involved as partners?

Name	Type of Partner Organization	Location
Colorado State University	Academic Institution	Fort Collins, CO
Department of Energy	Other Organizations (foreign or domestic)	USA
USGS	Other Organizations (foreign or domestic)	USA
University of Kansas	Academic Institution	Lawrence, KS
University of North Carolina at Greensboro	Academic Institution	Greensboro, NC
Johns Hopkins University	Academic Institution	Baltimore, MD

Name	Type of Partner Organization	Location
Kansas State University	Academic Institution	Manhattan, KS
NOAA	Other Organizations (foreign or domestic)	USA
Oklahoma State University	Academic Institution	Stillwater, OK
Oregon State University	Academic Institution	Corvallis, OR
State of Kansas	State or Local Government	Kansas
The Nature Conservancy	Other Nonprofits	Kansas
US EPA	Other Organizations (foreign or domestic)	USA

Full details of organizations that have been involved as partners:

Colorado State University

Organization Type: Academic Institution
Organization Location: Fort Collins, CO

Partner's Contribution to the Project:
Collaborative Research

More Detail on Partner and Contribution: Dr. Alan Knapp (Biology Department, Colorado State University) collaborates on many aspects of the Konza LTER program. His research includes studies of grassland ecology, responses to climatic variability and climate change, and the ecology of plant invasions. Knapp's LTER research is supported by a subcontract to Colorado State University, which also provides support for students participating in cross-site research that utilizes the Konza Prairie LTER site and database. Dr. Melinda Smith is an LTER collaborator and participates in several aspects of Konza LTER research, including studies of plant community dynamics, the ecology of plant invasions, genomic responses of plants to climate change, and comparisons of the ecology of North American and South African grasslands. Dr. Smith and her students also oversee the NutNet project at Konza as apart of a multi-site study of the effects of nutrient amendments and herbivory on herbaceous community and ecosystem dynamics. The Konza LTER program provides a subcontract to CSU and logistical support for these studies.

Department of Energy

Organization Type: Other Organizations (foreign or domestic)
Organization Location: USA

Partner's Contribution to the Project:
Financial support
In-Kind Support
Collaborative Research

More Detail on Partner and Contribution: The Konza LTER program provides partial support for two CO2 flux towers, which are part of the Ameriflux network of net C exchange measurement sites. DOE provides some financial and logistical support for tower operations and data processing.

Johns Hopkins University

Organization Type: Academic Institution
Organization Location: Baltimore, MD

Partner's Contribution to the Project:
Collaborative Research

More Detail on Partner and Contribution: Konza LTER supports collaborative research with Johns Hopkins collaborator, Dr. Megan Avolio. Dr. Avolio's lab focuses on plants and their interactions with the environment and other organisms.

Kansas State University

Organization Type: Academic Institution
Organization Location: Manhattan, KS

Partner's Contribution to the Project:
In-Kind Support
Facilities

More Detail on Partner and Contribution: KSU owns a portion of the Konza Prairie Biological Station, and provides access and use of the field site and associated on-site facilities. KSU also provide campus lab facilities, and computer server and network support through a partnership between the KNZ LTER program and the KSU Physics Computer Support Center, where KNZ network servers are housed. KSU provides support for operation of the Environmental Chemistry Laboratory in Bushnell Hall, which is used for LTER water sample analyses. KSU also provides support in the form of available assistantships for graduate students conducting KNZ research.

NOAA

Organization Type: Other Organizations (foreign or domestic)
Organization Location: USA

Partner's Contribution to the Project:
Facilities
Collaborative Research

More Detail on Partner and Contribution: Konza Prairie is part of the U.S. Climate Reference Network (USCRN). USCRN is a network of climate stations developed as part of a National Oceanic and Atmospheric Administration (NOAA) initiative. Its primary goal is to provide future long-term homogeneous observations of temperature and precipitation that can be coupled to long-term historical observations for the detection and attribution of present and future climate change.

Oklahoma State University

Organization Type: Academic Institution
Organization Location: Stillwater, OK

Partner's Contribution to the Project:
Collaborative Research

More Detail on Partner and Contribution: The Konza LTER program supports collaborative research with Dr. Gail Wilson. Dr. Wilson's research focuses primarily on the role of mycorrhizae in grasslands, and the the ecology of Bothriochloa bladhii (Caucasian bluestem), an important invasive grass species.

Oregon State University

Organization Type: Academic Institution
Organization Location: Corvallis, OR

Partner's Contribution to the Project:
Collaborative Research

More Detail on Partner and Contribution: Collaborative Konza LTER research is supported by a subcontract to OSU collaborator, Dr. Pam Sullivan and students to conduct research on groundwater hydrology and chemistry. Dr. Sullivan is continuing work previously conducted by Dr. Gwen Macpherson (University of Kansas), who retired in 2020.

State of Kansas

Organization Type: State or Local Government
Organization Location: Kansas

Partner's Contribution to the Project:
Financial support
Facilities

More Detail on Partner and Contribution: The state of Kansas provides an operating budget for Konza Prairie Biological Station personnel and general site maintenance.

The Nature Conservancy

Organization Type: Other Nonprofits
Organization Location: Kansas

Partner's Contribution to the Project:
Facilities
Collaborative Research

More Detail on Partner and Contribution: Konza Prairie Biological Station is a Nature Conservancy site, established on land purchased by The Nature Conservancy and managed by the Division of Biology at KSU. Konza LTER scientists interact with TNC scientists and officers on a broad range of management-related issues, including grassland conservation, restoration ecology, and grazing management.

US EPA

Organization Type: Other Organizations (foreign or domestic)

Organization Location: USA

Partner's Contribution to the Project:
Facilities
Collaborative Research

More Detail on Partner and Contribution: The US EPA jointly operates a CASTNet (Clean Air Standards and Trends Network) and AMoN (ammonia monitoring) site located at the Konza Prairie LTER site. The Konza Prairie LTER program provides site support and the EPA provides analytical services and compiles data on atmospheric nutrient concentrations and dry deposition rates, and tropospheric ozone concentrations. The EPA Region 7 office also supports a collaborative modeling project, which is using using Konza LTER data to build linked models of hydrology and biogeochemistry that can be used to assess the effects of alternate land-use scenarios in the Flint Hills region. This project is led by Dr. Bob McKane (EPA) in collaboration with KNZ scientists.

USGS

Organization Type: Other Organizations (foreign or domestic)
Organization Location: USA

Partner's Contribution to the Project:
Facilities
Collaborative Research

More Detail on Partner and Contribution: The USGS collects and provides data on the hydrology and chemistry of Kings Creek, a USGS benchmark stream located on the Konza Prairie LTER site, and the Konza LTER program facilitates the transfer of these data to the Hydro-DB database. The Konza LTER site is also a part of the USArray component of the USGS EarthScope project- a continental-scale seismic observatory.

University of Kansas

Organization Type: Academic Institution
Organization Location: Lawrence, KS

Partner's Contribution to the Project:
Collaborative Research

More Detail on Partner and Contribution: We provide a subcontract and logistical/technical support to Dr. Nathaniel Brunsell (Dept of Geography), who oversees flux tower operations at the Konza site. Dr. Brunsell's research addresses the role of land-use/land-cover change land surface heterogeneity in vegetation, moisture, soil type, topography on water and energy fluxes from local to regional scales. This research uses a combination of field measurements, remote sensing and numerical modeling, and is integrated with flux tower studies at the Konza LTER site. We also provide a subcontract to Dr. Sara Baer and student to research grassland restoration ecology.

University of North Carolina at Greensboro

Organization Type: Academic Institution
Organization Location: Greensboro, NC

Partner's Contribution to the Project:
Collaborative Research

More Detail on Partner and Contribution: Konza LTER supports collaborative research with UNCG's collaborators, Dr. Sally Koerner, Dr. Kim Komatsu, and Dr. Kevin Wilcox.

Were other collaborators or contacts involved? If so, please provide details.
Nothing to report

Impacts

What is the impact on the development of the principal discipline(s) of the project?

The Konza Prairie LTER program is a comprehensive, interdisciplinary research program designed to contribute to synthetic activities and conceptual and theoretical advances in ecology, and to further an understanding of ecological processes in grasslands. In the 2032-2024 funding period, the KNZ program produced or contributed to 45 publications: 36 refereed journal articles (including 10 currently in press) and 9 dissertations and theses. These publications cover topics ranging from mechanisms and consequences of woody encroachment, site based ecohydrology, nutrient cycling in the context of restoration, and linkages between climate and consumer populations. Within the past year, Konza LTER scientists have continued to publish high-quality articles in disciplinary focused areas (e.g. Water Resources Research, Agricultural and Forest Meteorology, Mycologia, and Journal of Wildlife Management), general ecology (e.g. Oecologia, Ecology, Functional Ecology, Ecosphere, Ecosystems, Journal of Ecology, Ecology Letters), and high-impact general science journals (e.g. PNAS, Science, TREE, and Nature).

In addition to site-based science, KNZ scientists made substantial contributions to multi-site, collaborative ecological research, and the widespread use of KNZ LTER data and resources by the broader ecology community. For example, Kim Komatsu is a member of the LTER SPARC Synthesis working group, which is using long-term data from 14 LTER sites to understand how disturbances and environmental change across timescales are altering the production and transfer of organic matter from primary producers to herbivores. Finally, data from five long-term Konza experiments are included in the CoRRE database, for which the consequences of global change drivers for plant phylogenetic and functional diversity are being assessed as part of a German Centre for Biodiversity (iDiv) working group led by Meghan Avolio and Kim Komatsu).

Two global experimental networks have their roots at Konza. Building on Konza's rich history of experimental rainfall manipulations (Knapp et al. 2015, Wilcox et al. 2017), Melinda Smith founded 'Drought-Net', a network of >100 globally distributed grassland sites that manipulate rainfall to assess ecosystem sensitivity to drought. Smith was also a founding member of the Nutrient Network (NutNet), with plots established on KPBS in 2007. KNZ investigator Kim Komatsu serves on the NutNet Advisory Team and contributes KNZ data for NutNet publications.

Konza's long-term datasets continue to inspire new discoveries. Using an NSF EAGER award, Sarah Supp from Denison College is exploring long-term Konza datasets to see how different types of disturbance can affect species incidence through time. Supp is in year 2 of this project.

What is the impact on other disciplines?

The Konza Prairie LTER program and our core research experiments attract numerous scientists from a broad spectrum of scientific disciplines beyond ecology. One particular area of recent emphasis has been the development of our critical zone research and collaborations between biological and hydrological scientists. Our groundwater chemistry program (and well installation) began in the late 1980's by Gwen Macpherson (Geology, KU). Gwen retired in the winter of 2020, and her groundwater chemistry sampling is being continued by Dr. Matt Kirk, Geology, KSU. KNZ supports Dr. Pamela Sullivan (Earth, Oceans, and Atmo Sciences, Oregon State Univ.) who began additional subsurface geochemistry research at Konza in 2016 and is continuing to develop a site-based program on Konza. Sullivan's work focuses on the interface of freshwater resources – changing climate – vegetation dynamics, and she is collaborating with Nippert and Blair. Pam, Jesse and Dr. Li Li (Penn State) have been investigating root macropore generation as a consequence of woody encroachment. New wells were installed on Konza for this project in the summer, 2021. Pam, Jesse, Li Li and 5 others (Dr. Kamini Singha – CO School of Mines, Dr. Dan Hirmas and Dr. Hoori Ajami – Cal Riverside, Dr. Lejo Flores – Idaho State, and Dr. Sharon Billions – KU) received an NSF-GEO award to conduct Critical Zone research comparing Konza to 4 other sites. This research began in Summer 2022. In the summer 2024, Sullivan, Li, Nippert, and Kirk received a new NSF award (EAR 2415980) to continue to investigate how woody plants alter subsurface geology, hydrology, and biogeochemistry. This work is exclusively focused on Konza Prairie and builds from previous research on site.

Dr. Abby Langston (KSU Geography) is a geomorphologist with research interests in landscape evolution and modeling. Dr. Langston is collaborating with Dr. Walter Dodds on projects related to stream flow and stream corridor change.

The KNZ LTER patch-burn grazing experiment is being done in collaboration with Dr. KC Olson, a grazing animal nutritionist (Animal Science and Industry – KSU) that is using the experiment to access the impacts of alternative grassland management practices on animal nutrition and animal health. Other contributions to disciplines outside the traditional realm of ecology include the use of flux towers at the Konza site, which has provided data used by micrometeorologists, climatologists, remote sensing scientists and modelers. We also collaborate with atmospheric chemists and modelers with the EPA CASTNet program in sampling concentrations of selected airborne particles and use these to model dry deposition rates.

What is the impact on the development of human resources?

Our program has a long history of undergraduate training and exposure to scientific research for local KSU students. Amanda Kuhl (KNZ Research Assistant) mentors 15-25 students year-round that provide essential roles in the collection and measurement of long-term productivity plots, as well as grass and grasshopper population data in the core KNZ datasets. Amanda is a long-term Konza staff and has great institutional memory and is a core asset to our team. In addition, training of undergraduates includes REU students supported each summer (typically 2/summer). Indirectly, we support the development of undergraduates via the use of the Konza LTER data in ecology classes and textbooks. As documented elsewhere in this report, we also train numerous graduate students and provide valuable experience in interdisciplinary research and the synthetic use of long-term datasets. In addition to supporting KSU graduate students, the Konza Prairie LTER site is widely utilized by graduate students from other institutions. During the 2023-2024 funding period, the site was used by graduate students from the University of Kansas, Colorado State University, Oregon State University, University of North Carolina at Greensboro, and Johns Hopkins University. We also hosted field trips for students from many regional colleges and universities. The Konza Environmental Education Program and the Konza Prairie Schoolyard LTER Program provide formal and informal research experiences and science education to public groups, children, and K-12 teachers.

What was the impact on teaching and educational experiences?

KNZ data and findings are used in a number of undergraduate and graduate courses at Kansas State University, the University of Kansas, University of Arizona, Colorado State University, University of Oklahoma, among others. In addition, KNZ findings are increasingly utilized in undergraduate ecology texts and supplementary teaching material. For example, KNZ long-term studies were used to demonstrate the role of fire and grazing in the ‘Ecology’ text by Cain et al. (‘Life. The Science of Biology. 7th edition’ by Purves, Sadva, Orians, and Heller) and KNZ data and findings are highlighted in several upper-level and graduate texts including ‘Freshwater Ecology’ (W.K. Dodds), ‘The Ecology of Plants’ (Gurevitch, Scheiner and Fox), and ‘Biogeochemistry. An Analysis of Global Change’ (W.H. Schlesinger). Additionally, KNZ is used as an “outdoor classroom’ for many courses at KSU and regional colleges and universities. As an example, many of the lab portions of KSU Biology courses take the students to Konza for weekly lab exercises (focused on everything from small mammal trapping, avian ecology / sampling, measurements of plant physiology and productivity, soil microbiome measurements, and freshwater fish and biogeochemistry sampling.

Konza Prairie hosted two educational/training short courses in 2024 (in addition to the ‘Grassland Rocks’ data synthesis activity previously described). Konza Prairie hosted the 3rd straight summer iteration of the ‘Critical Zone’ Field Camp (late June 2024). This course is led by Pam Sullivan (Oregon State) with instructional support from Ma Lin (UTEP), Jason Ricketts (UTEP) and Jesse Nippert (KSU). This course is offered for undergraduate students interested in critical zone science that have not traditionally had access to field-based curriculums. Since 2022, the CZ Field Camp has hosted 40 students, of which over 50% come from under-represented populations in science. During the week-long course, students spend their morning in the field on Konza learning geophysical, biological, and hydrological techniques and collecting data. Afternoons are spent in the classroom learning how to analyze, interpret and present data. The camaraderie developed among participants and instructors has made this camp fun, while encouraging these students to pursue a career in science.

In September 2024, KPBS hosted the “Go Belowground!” 2024 field course focused on learning skills and techniques associated with the rhizosphere. This course was organized by Jacqueline Ott, USDA Forest Service (former KNZ LTER graduate student), Jitka Klimesova and Jana Martinkova from the Institute of Botany, Czech Academy of Sciences. This

was the first time Go Belowground was offered outside the Czech Republic. The short course was five days long and contained both field and classroom sessions. Sixteen student participants came from Europe, Asia, and the United States, with outstanding demographic and career stage diversity. Nippert and Blair were presenters and local liaisons during the week-long course.

What is the impact on physical resources that form infrastructure?

The Konza LTER program provides a research platform for scientists and students from around the world. The 3,487-ha Konza Prairie Biological Station (KPBS), located in the Flint Hills of NE Kansas, is the core research site for the KNZ program. In addition to providing the watershed-level fire and grazing treatments, agricultural fields, restored prairie, stream networks and weirs, KPBS includes several buildings in the headquarters area that support LTER research. The on-site Ecology Laboratory (2,400 ft2) includes (1) a wet/dry lab with sinks, fume hood, refrigerators, balances, etc., (2) two large multi-purpose work rooms with bench space and sinks for processing samples, drying ovens, refrigerators and freezers, and equipment storage, and (3) a large researchers' shop equipped with a variety of tools and field supplies. Other station buildings include a fire station and maintenance building, a large storage building for equipment, and a residence occupied by the site foreman year around. The 4,650-ft2 Hulbert Center houses a library/conference room, administrative office, classroom and teaching laboratory (used primarily for K-12 activities), reference herbarium and animal collections, and a kitchen and dormitory-style housing for 15 visitors. Two small guest cottages (each with 2-bedrooms, living room, bath, kitchen, and laundry facilities), can accommodate up to 5 persons/cottage. A larger cottage, built in 2012, can accommodate up to 12 guests, expanding the capacity of on-site accommodations to 37 visiting researchers. With funding from an NSF-FSML grant and additional support from KSU and a private donor, an historic limestone barn at the KPBS headquarters was transformed into a multipurpose meeting facility for on-site conferences, workshops, and educational programs. The historic stone barn was renovated in 2008 and has the Cortelyou Lecture Hall (1,750 ft2) with a seating capacity of ~100 persons fully equipped with A/V equipment and wireless internet. An additional large multi-purpose room (1,850 ft2) is designed as flexible space for varied uses including additional meeting space, workshops, scientific posters and other research displays, social gatherings, and education programs for large groups. All lab and office buildings have internet connectivity to the KSU campus. In addition, there is a wireless link to KPBS from campus with multiple wireless access points that provides coverage to >60% of the 3,487-ha site. Other LTER infrastructure, maintained by KPBS, includes the outside perimeter fence (29.8 km), the interior bison management area closed by 16.4 km of "New Zealand" fence, 98 small (25 m2) grazing enclosures, 11.7 km of fence for cattle research, 26.4 km of access roads and 61 km of fireguards separating the experimental watershed units. KPBS maintains several general-purpose vehicles on-site, as well as specialized equipment (tractors, fire trucks, mowers, soil augers, etc.). KPBS makes staff and equipment available to assist with KNZ research activities, including mowing fireguards, installing equipment, soil coring, etc. KPBS staff also coordinates the fire management of bison and cattle herds for KNZ grazing treatments. The headquarters area includes a corral and handling facilities for managing the bison herd (hydraulic chute, electronic scales, etc.), which is essential for LTER grazing studies. In late 2017, then KPBS director, Briggs received an NSF award to upgrade the corral area. In 2018, KPBS and KNZ staff redesigned and improved the bison handling facility. The changes provide a safer working environment for staff, reduce stress on bison, and allow greater ease and flexibility in conducting bison-related research. In 2018, we constructed a 900 ft2 walk-in drying oven using a modified shipping container. Temperatures within the large drying oven are regulated by a small home furnace powered using propane. In 2020, 20 km of fencing was replaced to improve the safety and security of the bison inclosure. This process of fence replacement required months of effort. Other field equipment and instrumentation on-site includes the main KNZ weather station, a network of 11 rain gauges, two eddy flux towers for quantifying ecosystem-level C and water vapor flux, four weirs and associated stream gauging equipment, 46 wells for measuring groundwater levels and chemistry, numerous TDR probes, neutron access tubes and tension lysimeters for soil water measurements. Related equipment co-supported by other programs includes USGS stream monitoring station, 2 seismometers (USGS), an aerosol and ozone monitoring facility (CASTNet), and a NOAA Climate Reference Network (CRN) weather station. These facilities add significantly to data for LTER research and education programs, and for regional cross-site studies. KPBS is also a core site for the National Ecological Observatory Network (NEON), which is fully-built-out and operational. NEON provides additional unique measurement capabilities and data at KBPS, which will complement many KNZ LTER studies. In addition to facilities at KPBS, a wide range of modern laboratory facilities are available on the nearby KSU campus, approximately 15 km from KPBS (e.g., Analytical Chemistry Labs, Stable Isotope Lab, Ecological Genomics Institute, Core Sequencing and Genotyping Facility). The majority of core LTER laboratory space and analytical equipment are in Bushnell Hall (Biology), including space and equipment for preparing plant, soil and water samples for analysis (drying ovens, grinders, shaker tables, block digesters, vacuum filtration systems). Bushnell Hall also houses an extensive collection of prairie plant

specimens in the KSU Herbarium, and these specimens are electronically databased and georeferenced. Some specific equipment and facilities available for LTER research are located within other Departments (Agronomy, Biological and Agricultural Engineering, Plant Pathology, Geography), reflecting the interdisciplinary nature of our research. Some major analytical instruments available for KNZ investigators include: 2 Alpkem autoanalyzers (FlowSolution IV) for liquid samples, Carlo-Erba 1500 automated C/N analyzer for solid samples, Shimadzu TOC 500 analyzer for dissolved C, a Hitachi U2900 automated dual-beam spectrophotometer, 4 LiCor 6400 Portable Photosynthetic Systems, 2 LiCor 8100 systems dedicated for soil CO2 flux measurements, a LiCor 1600 null-balance porometer for stomatal conductance, and 3 pressure chambers (PMS model 1000) for measuring plant water potential, 4 Tektronix cable testers (model 1502B) coupled to Campbell CR10 data loggers for TDR soil moisture measurements, 2 Troxler (model 3221) neutron probe gauges for soil moisture determinations, and several Trimble GPS units. Eight multi-parameter sonds (YSI 6000) are used for monitoring oxygen and temperature for 3 watersheds.

What is the impact on institutional resources that form infrastructure?
Nothing to report.

What is the impact on information resources that form infrastructure?

KNZ resources are used to support the hardware and software associated with the KNZ website and data portal, which provide a wide array of information resources to the larger scientific community, LTER network, Environmental Data Initiative (EDI), and DataOne. Our website (lter.konza.ksu.edu) provides access to all KNZ data, publications, research activities, and products, including 175 data packages with 30 of the total packages related to graduate student research. Since October 2023, seven new packages have been added.

The KNZ website also lists physical sample collections from various long-term datasets, including grasshoppers, plants, water, and small mammals. All online data is searchable by KNZ data categories, LTER controlled vocabulary keywords, LTER core areas, KNZ watersheds, and data owners. We maintain an updated list of 2091 KNZ LTER-supported publications currently available online.

Over the past year, we've enhanced data discoverability through our KNZ GitHub account, which centralizes management of various research projects. Improvements include updated documentation, such as the KNZ LTER data package authorship guidelines. Additionally, we established a KNZ LTER Google Scholar account to track research outputs and data citations, which currently exceeds 125,000.

During the next reporting year, we will: 1) Continue to ensure data quality, integrity, and data availability by adhering to the latest LTER IMC standards, providing accurate data to KNZ investigators and the broader scientific community; 2) Continue to support researchers and graduate students to facilitate the timely incorporation of projects and data into the KNZ IMS and the EDI; 3) Continue to make improvements to the KNZ LTER spatial data portal. (https://maps-konza.hub.arcgis.com/), and 4) Complete the redesign and development of the new KNZ LTER WordPress website, and finalize the migration of all KNZ LTER servers, databases, and network access to the centralized Kansas State University (KSU) IT system.

What is the impact on technology transfer?
Nothing to report.

What is the impact on society beyond science and technology?

The KNZ LTER program contributes to increased public awareness of ecological and environmental issues (e.g. biodiversity conservation, habitat loss, ecosystem services, restoration ecology, etc.) through outreach and public education activities. Our research concerning the role of seasonal burning and fire intensity on woody encroachment is being used to inform the Great Plains Fire Science Exchange (www.gpfirescience.org) and the Tallgrass Prairie and Oak Savanna Fire Science Consortium (www.tposfirescience.org). Both are non-profit groups focusing on conservation issues and land management of Midwestern grasslands. Konza investigators have a strong working and advisory relationship with the KS NRCS and with the Kansas chapter of The Nature Conservancy. We work closely with Dr. Brian Obermeyer, the Director of Protection and Stewardship and Tony Capizzo, Flint Hills Initiative Manager for KS TNC. In addition, the Konza Prairie LTER program is increasingly called upon to provide data relevant to resource management and regulatory policy. Dr. John Blair and Dr. Jesse Nippert regularly provide outreach and tours to state and national policymakers and lawmakers. Because of the widespread use of prescribed fire for both grassland conservation and agricultural tours, KNZ

research on ecological responses to contrasting long-term fire regimes and different seasons of fire has taken on new importance. At the regional level, KNZ scientists advised the EPA Region 7 staff and scientists on the ecological benefits of fire in maintaining native tallgrass prairie habitat and diversity and contribute long-term data to guide the development of the Flint Hills regional smoke and management goals. The KNZ Season of Fire Experiment provides 23-years of data from watersheds burned at different times of the year (Spring, Summer, Fall, and Winter). Most prescribed burning in the Flint Hills takes place during a small window in April. We now have data showing that burning can be done other times of the year in ungrazed watersheds with little adverse effect on plant productivity or desirable species. KNZ investigators have interacted with advisory groups, including the EPA, Natural Resources Conservation Service, the Kansas Farm Bureau, The Nature Conservancy Grassland Community, and others. Locally, Konza scientists continue to serve as consultants for the Flint Hills Discovery Center, the Mount Mitchell Heritage prairie (grassland site with historical linkages to the underground railroad) and we participate in Kansas Agricultural Experiment Station public education events by providing information on the ecological consequences of various grassland management practices (e.g., fire frequency and grazing). The Konza Prairie LTER database is also being used to address other issues relevant to regulatory policy. Long-term data on Konza Prairie stream water quality provides a baseline being incorporated into ongoing studies to evaluate the potential of grassland management practices to increase soil C sequestration to offset atmospheric CO2 loading.

In 2023-2024, KNZ scientists, graduate students, and staff participated in numerous public outreach events to enhance understanding of LTER science and dissemination of important findings. Over the past year, Jesse Nippert was invited to present Konza science and perspectives on woody plant encroachment to practitioners in Missouri. This included presentations at the Missouri Natural Resources Conference, Missouri Native Grasslands Society annual meeting, and an invitation to write a public-science piece for the Missouri Prairie Journal. This article, titled: “Shrub encroachment alters water cycling with long-term consequences for tallgrass prairie” was published in the summer issue of this quarterly public-science journal. Nippert and Keith Gido were both interviewed and featured on the NPR podcast ‘Up From Dust’, speaking about conservation issues in the Great Plains. John Blair was featured on NPR talking about how Konza Prairie Biological Station offers a window into Kansas’ past. KNZ LTER Environmental Educator, Jill Haukos, organized events, open to the public, to showcase Konza and our research. These events, which drew record number this year, include a Wildflower Walk (June 2024), Friends of Konza Prairie Bison Tour (September 2024), and the Visions of the Flint Hills Art Show, where a portion of the art sold returns to support the Konza Education Programs.

What percentage of the award's budget was spent in a foreign country?
Nothing to report.

Changes/Problems

Changes in approach and reason for change
Nothing to report.

Actual or Anticipated problems or delays and actions or plans to resolve them
Nothing to report.

Changes that have a significant impact on expenditures
Nothing to report.

Significant changes in use or care of human subjects
Nothing to report.

Significant changes in use or care of vertebrate animals
Nothing to report.

Significant changes in use or care of biohazards
Nothing to report.

Change in primary performance site location
Nothing to report.