THE PRAIRIE PROJECT

WINTER 2023

Happy New Year From the Prairie Project!

SOCIAL MEDIA SPOTLIGHT

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Posted December 2, 2022

UPCOMING DATES

WEBINAR: PRAIRIES, LAND USE CHANGE, HUMAN CONCEPTS AND WEEDS
texasrangewebinars.tamu.edu
February 2, 2023

TDA PRESCRIBED BURN BOARD MEETING
Austin, TX
February 9, 2023

SOCIETY FOR RANGE MANAGEMENT ANNUAL MEETING
Boise, ID
February 12-16, 2023

TAYLOR COUNTY PROGRAM
Abilene, TX
February 22, 2023

COMANCHE COUNTY PROGRAM
Comanche, TX
February 24, 2023

WEBINAR: STEWARDSHIP EXAMPLES IN BRUSH MANAGEMENT
webinar website
March 2, 2023

WEBINAR: WATER LAW OVERVIEW AND UPDATE
webinar website
April 6, 2023

WEBINAR: WILD PIGS IN TEXAS
webinar website
May 4, 2023

AWARDS

DR. SAM FUHLENDORF TO RECEIVE W.R. CHAPLINE RESEARCH AWARD AT 2023 SRM MEETING

Dr Sam Fuhlendorf will be receiving the W. R. Chapline Research Award at the annual SRM meeting on February 12-16, 2023 to acknowledge a lifetime of achievement in range research. The award is given to individuals who have contributed to the advancement of Range Science Research.

Dr. Fuhlendorf is the Groendyke chair in Wildlife Conservation and Regents Professor at Oklahoma State University and focuses his research on conserving and managing rangelands with native species of plants and animals.

DR. JOHN WALKER TO RECEIVE SUSTAINED LIFETIME ACHIEVEMENT AWARD AT 2023 SRM MEETING

Dr John Walker will be receiving the Sustained Lifetime Achievement Award at the annual SRM meeting on February 12-16, 2023 to acknowledge his contributions to range management science and the Society of Range Management.

Dr. John Walker is recently retired from his career at Texas A&M AgriLife where he held the position of Center Director, but remains active in his research of range management .

PRAIRIE PROJECT UPDATES

Prairie Project Symposium Session at 2023 SRM meeting

Woody plant encroachment poses grave threats to sustainability of rangelands globally. Pyric herbivory and mixed-species grazing are management strategies that can help control woody plants, support livestock production, and promote biodiversity. Their adoption by rangeland managers and support in the policy arena have been limited because of cultural constraints and public misperceptions. We present an integrated cross-boundary education and outreach effort, as a key component of the USDA- funded Prairie Project, that develops agents of change and education and Extension resources, cultivates progressive rangeland professionals and rangeland-literate public, and supports broader adaptions of these management strategies and rangeland sustainability.

Featuring:

- ***"Burn it, graze it, teach it, use it: Building effective extension programming to demonstrate best range management practices with land owners"*** with Chase Brooke, Texas AgriLife Extension Service
- ***"Bridging the divide between research and management: A new approach for extension programming"*** with Laura Goodman, Oklahoma State University
- ***"Using drone imagery in the classroom to compare vegetation changes after a prescribed fire"*** with Humberto Perotto, Texas A&M University, Kingsville
- ***"Learning about woody brush encroachment outside the classroom to compare vegetation changes after a prescribed fire"*** with Erika Sullivan, Texas AgriLife Extension Service
- ***"Utilizing thermal landscapes as an impetus towards integrating climate science into patch-burn management education in undergraduate curriculum"*** with Evan P. Tanner, Texas A&M University, Kingsville
- ***"Social media--what works for extension?"*** *with Allison Thompson, Oklahoma State University*
- ***"Rangeland literacy: Learning from the rancher on the ranch"*** with Morgan Treadwell, Texas AgrilLife Extension Service
- ***"Developing agents of change and innovations in K-16 education to promote rangeland literacy"*** with Ben Wu, Texas A&M University
- ***"Fire Ecology Research Station for Teaching (JenksFERST): Opportunities for science communication"*** with Bryan Yockers, Jenks High School

RESEARCH HIGHLIGHTS

The Caddo National Grasslands

with Dr. John Walker

Grasslands and savannas are threatened by woody plant encroachment. The Caddo National Grasslands are a great example of the impact of woody plant encroachment. These grasslands are in the southern great plains and are described by the Texas Historical Society as open grasslands and post oak and blackjack oak savannas. However, most visitors today would call this area a forest. Historically, this area burned every 3 – 5 years followed by heavy grazing by bison and other wildlife. Heavy grazing impact would remove plant material permitting sunlight to reach the soil surface providing an opportunity for many short-lived forbs and grasses to germinate which diversified the landscape.

The Prairie Project in collaboration with the U.S. Forest Service is striving to recreate the historic pattern of fire and grazing to create savannas and restore the diversity of the grassland. This area had not been grazed in over 20 years, but in June 2022 this changed when Goatscaping LLC, a Texas targeted grazing company, unloaded over 1,000 goats. Targeted grazing is the use of livestock for ecological restoration. The goats are contained with electronet fencing and a herder is on site 24/7. The goats are grazed at extremely high densities of 200 – 300 goats per acre, they are moved daily, and areas are not re-grazed in the same year. Thus, the historical grazing impact is being recreated. The goats have effectively removed most of the woody vegetation up to 6 feet and about 90% of the herbaceous vegetation. Five months after grazing there was regrowth and recovery of the herbaceous vegetation but little regrowth of woody plants. In addition to the ecological benefits of goat browsing they also improve aesthetics for a local equine trail club. They commented on their Facebook page that: “We saw the goats. They have done a real good job cleaning up the under brush, from under the trees.”

A view of untouched land on the left of the road, vs goat-grazed on the right.

RESEARCH HIGHLIGHTS

Landowner Views of Prescribed Fire, Patch-Burn Grazing and Mixed Species Grazing in the Southern Great Plains

with Dr. Laura Goodman

A landowner survey conducted by one of our researcher, Dr. Omkar Joshi, and his PhD student, Saroj Adhikari, examined landowner views and use of prescribed fire, patch-burn grazing, and mixed-species grazing. Their survey included the four Prairie Project states: Kansas, Nebraska, Oklahoma, and Texas. They found that across these states 90%, 48%, and 58% of landowners were aware of prescribed fire, patch-burn grazing, and mixed-species grazing, while 35%, 10%, and 9% used these practices.

In Kansas, 91% of respondents were aware of prescribed fire with 52% conducting them. About 95% of Nebraska landowner respondents were aware and 44% were conducting prescribed fires. Respondents from Oklahoma answered with 88% aware of and 48% performing prescribed fires on their land. In Texas, 79% of respondent landowners were aware of and 39% conducted prescribed fires.

Patch-burn grazing is a more recent but well researched management strategy with only a portion of the pasture burned each year and livestock grazing access to both burned and unburned areas. In Kansas, 52% of respondents were aware and 17% were practicing patch-burn grazing. About 44% of Nebraska landowner respondents were aware and 4% were practicing patch-burn grazing. Similarly, 48% of Oklahoma landowners were aware and 8% were practicing patch-burn grazing. Lastly, in Texas, 39% of landowner respondents were aware and 14% were conducting patch-burn grazing on their land.

Mixed-species grazing, where a mixture of cattle and goats, cattle and sheep, or any combination are grazed on the same ranch, was historically very common but less practiced today. In Kansas, 62% of respondents were aware and 8% were practicing mixed-species grazing. Respondents from Nebraska reported 63% aware and 7% practicing mixed-species grazing. About 57% of Oklahoma landowners were aware and 10% conducting mixed-species grazing. Finally, in Texas, 49% of landowner respondents were aware and 9% were practicing mixed-species grazing.

EDUCATOR HIGHLIGHTS

Renee' Ekhoff (Grand Island High School) and Teresa Walters (Loup City High School)

Renee' Ekhoff and Teresa Walters are members of our second cohort of Prairie Project Teaching Fellows. Renee' is the curriculum lead and a science educator at Grand Island High School and Teresa is a science teacher at Loup City High School. For her project, Renee' taught her students the importance of maintaining our rangelands through proper management. They explored the history of prairie fires and how to protect rangelands by reducing invasive species and increasing biodiversity. Renee's students used the Rangeland Analysis Platform (RAP) to evaluate woody encroachment in areas around the lower 48 states. Teresa introduced her students to the Prairie Protector Game, an online simulation that requires the use different treatments to control invasive trees. Her students then participated in the Preservation Game where they analyzed how decision-making may affect agricultural sustainability. Lastly, they completed the Quadrat Sampling Lab, where they recorded the number of grasses, forbs/legumes and woody plants in each quadrant and conducted a soil analysis. This past June, Renee' and Teresa co-facilitated a booth at the Nebraska Association of Teachers of Science's Share-a-thon sharing their experience teaching rangeland literacy through the RAP and other educational games.

Teaching Fellows Renee' Ekhoff (left) and Teresa Walters (right) with Prairie Project Team Member Erin Ingram (center) at the Nebraska Association of Teachers of Science's Share-a-thon in June 2022.

RESEARCH EXCERPT

Saving imperiled grassland biomes by recoupling fire and grazing: a case study from the Great Plains

with Bradford P Wilcox, Samuel D Fuhlendorf, John W Walker, Dirac Twidwell, X Ben Wu, Laura E Goodman, Morgan Treadwell, and Andrew Birt

In a nutshell:

- Woody plant encroachment has greatly altered grassland biomes across the world and poses a continuing threat to grasslands that remain
- Animal production systems that depend on grassland biomes are increasingly threatened by environmental change, including woody plant encroachment, a warmer and drier climate, and catastrophic wildfires
- Adoption of pyric herbivory and mixed-species grazing holds the potential to increase livestock production, reduce woody cover, and mitigate the adverse effects of climate change and wildfire
- Widespread adoption of these management practices is feasible through integrated research and extension programs with a focus on participatory and multistakeholder partnerships

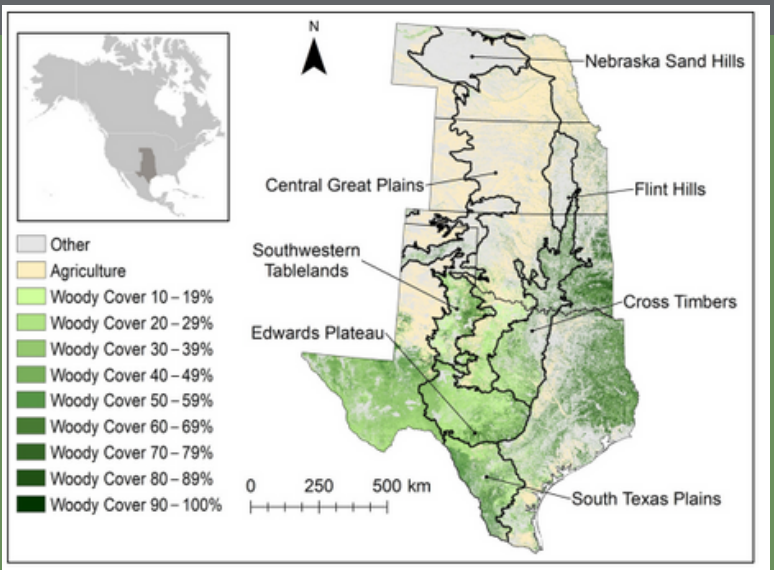

Figure 1. Major ecoregions and extent of woody plant cover over the Great Plains states of Texas, Oklahoma, Kansas, and Nebraska. Much of the present-day woody plant cover within this region has developed over the past 100 years.

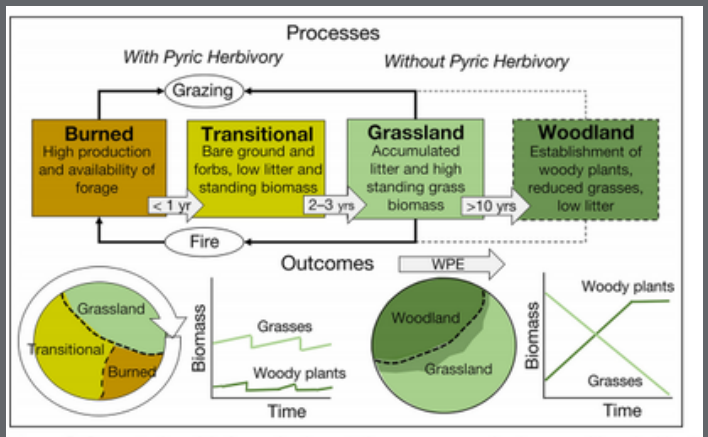

Figure 2. Conceptual model of rangeland vegetation processes and outcomes with and without pyric herbivory. With pyric herbivory (solid lines in top section), periodic fire limits the recruitment and establishment of woody plants. Herbivores preferentially graze in recently burned areas, enabling fine fuels necessary for fire to accumulate in less-grazed grassland patches. The outcome of this process is a landscape of vegetation in different stages of succession, which is driven by the spatial and temporal scale of past fire and grazing (pyric herbivory). Without pyric herbivory (dashed lines in top section), woody plants gradually but inexorably outcompete herbaceous vegetation. As woody plant abundance increases, grazing pressure on the remaining grass patches increases and the fine fuels necessary for fire no longer accumulate. As this transition occurs, the linkages between fire and grazing are broken, and become increasingly difficult to restore. WPE = woody plant encroachment.

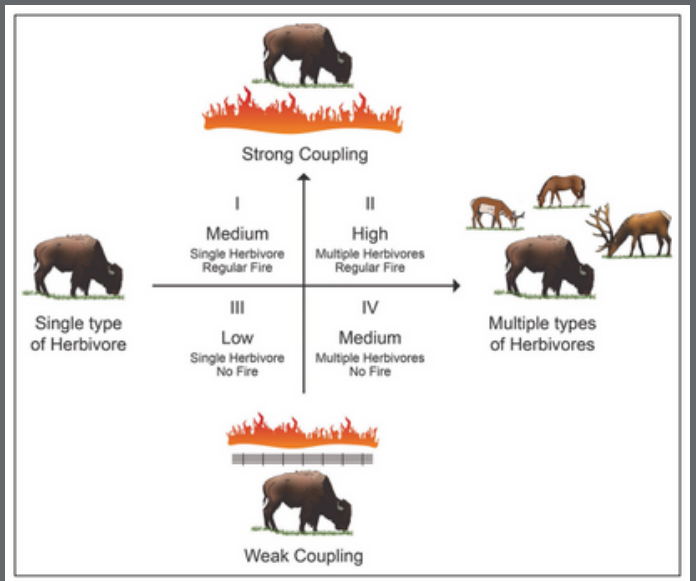

Figure 5. Rangeland management based on pyric herbivory can be viewed as a continuum that relates the number of herbivores to the strength of the fire–grazer coupling. The horizontal axis represents the extent to which multispecies herbivory occurs, and the vertical axis represents the extent to which fire occurs. High, Medium, and Low in the four quadrants indicate the level of conservation value (biodiversity, patch-scale heterogeneity, forage production and quality, and so forth).

FEATURED WEBINARS

Prairies, Land Use Change, Human Concepts, and Weeds* Dr Barron Rector	**Feb 2**	**Aug 3**	**Ecosystem Goods and Services: What Lies Behind the Curtain?** Dr. Bill Fox
Edwards Plateau: Stewardship Examples in Brush Management Curry Campbell	**Mar 2**	**Sep 7**	**Return of the Natives: Restoring Native Grasslands in Non-native, Invasive Bluestems and Bermudagrass*** Dr. Stacy Hines
Water Law Overview and Update* Tiffany Lashmet	**Apr 6**	**Oct 5**	**White-tailed Deer Management** Dr. Jacob Dykes
Wild Pigs in Texas James Long	**May 4**	**Nov 2**	**Wildfire and Prescribed Fire on Your Property** Todd Nightingale
Algal Blooms and Management* Brittany Chesser	**Jun 1**	**Dec 7**	**Minimizing Drift on Grazing Lands*** Dr. Mark Matocha
Ranchland Friend or Foe? Dianne Robinson	**Jul 6**	**For More Information, contact:** Morgan Treadwell morgan.treadwell@ag.tamu.edu	

Join us the first Thursday of every month for the RWFM Stewardship Webinar Series at Noon CST/CDT. For more information please visit https://texasrangewebinars.tamu.edu/.

**indicates webinars with CEU offered through Texas Dept. of Agriculture*

FEATURED PROGRAM