THE PRAIRIE PROJECT

SPRING 2023

SOCIAL MEDIA SPOTLIGHT

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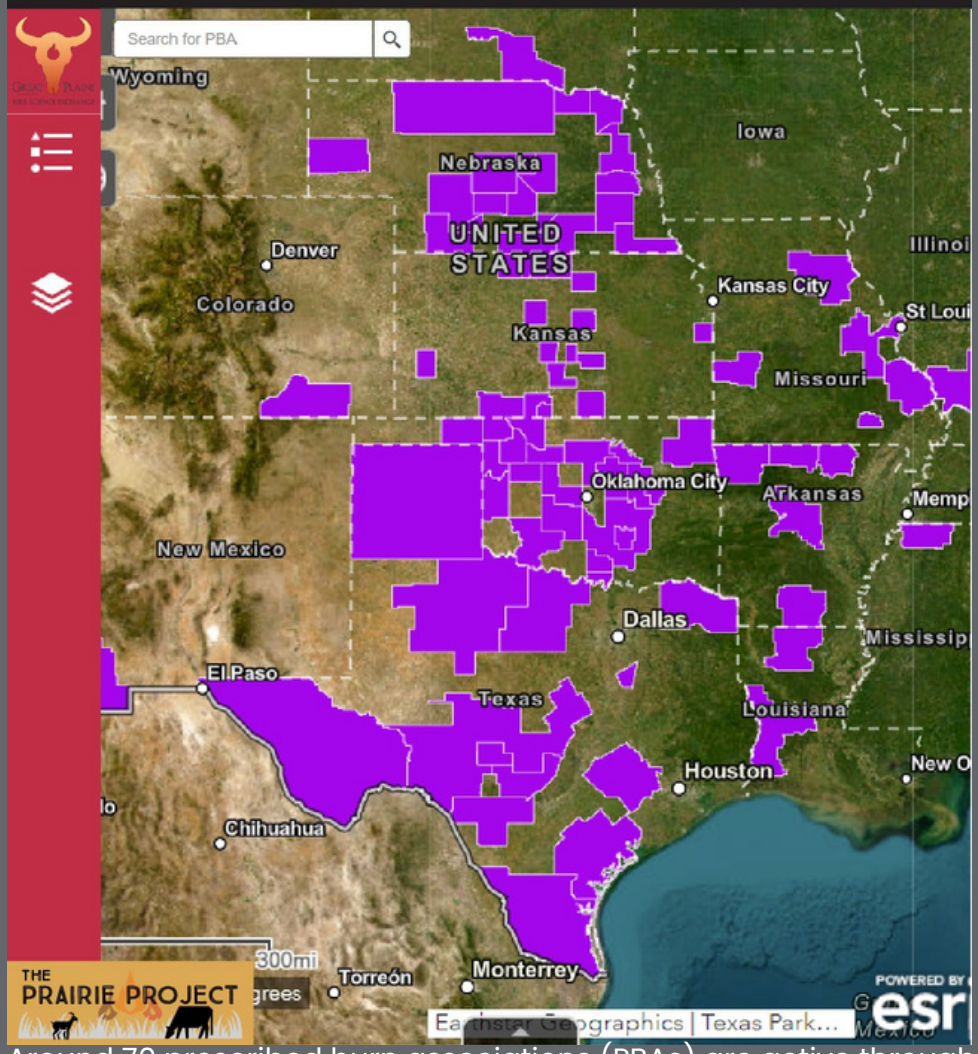
FIND YOUR LOCAL PRESCRIBED BURN ASSOCIATION!



Around 70 prescribed burn associations (PBAs) are active throughout Texas, Oklahoma, Kansas and Nebraska with 125 total across the US.
PBA members are mainly landowners but also include non-profit, state agency and federal agency personnel. Neighbors help neighbors to conduct prescribed burns. The associations often provide equipment such as safety gear, suppression vehicles and equipment, driptorches and other tools.

Posted March 3, 2023

UPCOMING DATES

TEXAS CATTLEWOMEN
Stephenville, Texas
April 15, 2023

PRESCRIBED BURN SCHOOL
San Angelo, Texas
April 19-21, 2023

JFSP ANNUAL MEETING
Manhattan, Kasnsas
April 25-28, 2023

WEBINAR: WILD PIGS IN TEXAS
texasrangewebinars.tamu.edu
May 4, 2023

SOUTH TEXAS PRESCRIBED FIRE SUMMIT
Kingsville, Texas
May 8-9, 2023

TEXAS GRAZING LAND COALITION MEETING
San Angelo, Texas
May 8-9, 2023

INTERNATIONAL GRASSLAND CONGRESS
Covington, Kentucky
May 15-19, 2023

TAMU RWFM 333 RX FIRE FIELD COURSE
Johnson City, Texas
May 25, 2023

WEBINAR: ALGEAL BLOOMS
texasrangewebinars.tamu.edu
June 1, 2023

TSSRM YOUTH RANGE WORKSHOP
Junction, Texas
June 18-23, 2023

THE PRAIRIE PROJECT

PRAIRIE PROJECT UPDATES

Prairie Project Presentation at the 2023 Texas and Southwestern Cattle Raisers Convention and Expo

Erika Sullivan, Texas A&M University, Department of Rangeland, Wildlife, and Fisheries M.Sc. graduate student, presented a poster in the graduate student poster competition at Texas and Southwestern Cattle Raisers Convention and Expo on March 25, 2023 in Fort Worth, Texas. Erika has been working on The Prairie Project throughout her graduate studies providing the crucial link between our demonstration ranchers and our 4H/FFA students and County Extension Agents

Erika's research poster is titled "Woody Plant Encroachment in Grasslands: Teaching by RAP'ing" where her focus explores the benefits of completing Rangeland Analysis Platform (RAP) assessments in efforts to understand woody plant encroachment in grasslands and the impacts of rancher's decisions using prescribed fire and multi-species grazing.

Erika hopes to use her research results to build stronger and more informed outreach programs to effectively teach more landowners, stewards, and citizens about woody encroachment issues and the different ways that it can be integrated onto rangeland landscapes. Erika always enjoys teaching students and ranchers about new technologies that can be efficiently integrated into making more informed decisions at the ranch scale and enhancing rangeland literacy in youth.

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PRAIRIE PROJECT UPDATES

Prairie Project Presentation at the 2023 Texas and Southwestern Cattle Raisers Convention and Expo *cont.*

SCAN ME

TEXAS A&M AGRILIFE EXTENSION

Woody Plant Encroachment in Grasslands: Teaching by RAP 'ping

THE PRAIRIE PROJECT

SCAN ME

Erika N. Sullivan [1], Morgan Treadwell [2], Maria Macik [3]

[1]M.Sc. Graduate Student, Rangeland, Wildlife, and Fisheries Management Department, Texas A&M University, College Station, TX 77845, USA; [2]Associate Professor and Extension Range Specialist, Rangeland, Wildlife, and Fisheries Management Department Texas A&M AgriLife Extension Service, San Angelo, Texas 76901, USA; [3]Research Scientist in Health and Kinesiology Department, Texas A&M University, College Station, TX 77845, USA.

Introduction

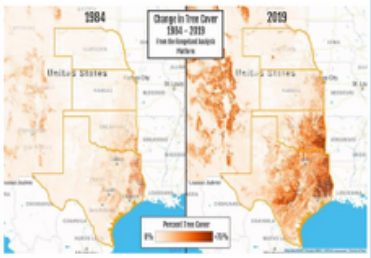


Figure 1: Change in Tree cover 1984-2019 as shown on https://rangelands.app/.

- Over the last 100 years the Great Plains has seen a significant increase in the number of woody plants.
- Prescribed fire, patch-burn grazing, pyric herbivory offer a cost-effective solution to slow the spread of woody plants.
- A combination of cultural restraints, lack of education, and a growing divide between schools and rangelands hinder the widespread adoption of these techniques.
- To combat cultural barriers and impediments to adoption, we created an educational protocol and outreach curriculum and activities to enhance rangeland literacy and understanding of woody brush encroachment.

Methods

- As part of the initial case study, a group of extension agents, high school educators, college students, Texas Master Naturalists (TMN), Texas Section Society for Range Management Youth Range Workshop (YRW) participants, Ranch Brigades (RB) youth, and 4H/ FFA youth completed a Rangeland Analysis Platform (RAP) protocol, vegetative ground truthing with transects, and ranch tour.
- In addition, traditional curriculum (PowerPoint lectures), gallery photo walks, and social media activities were implemented to determine preference of learning styles.
- Pre- and post-assessments were evaluated to examine participant's rangeland literacy on woody brush encroachment, prescribed fire, and multi-species grazing.

Figure 2: 4H youth estimating woody brush density.

Results

- High school students experienced the highest rates of knowledge gained at 22% on woody brush encroachment understanding and management.
- College students' knowledge of woody brush encroachment increased approximately 16%.
- The least amount of knowledge gained occurred in the TMN group at 0.4%.

Table 3: Estimates of rangeland literacy gained for participants that completed either the Ranch Tour, RAP Protocol, RAP Protocol + Ranch Tour, or Extension Curriculum.

Treatment	Rangeland Literacy, %
Ranch Tour	4
RAP Protocol	17
RAP Protocol + Ranch Tour	0.4
Traditional Curriculum	17

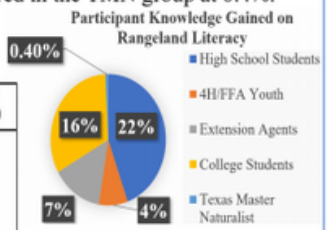


Figure 5: Participant knowledge gained on rangeland literacy. High School Students (Dark Blue), 4H/FFA Youth (Orange), Extension Agents (Gray), TMN (Light Blue), and College Students (Yellow).

Figure 6: Extension agents executing vegetation transects to determine grass, shrub, tree, and forb cover at Rocking Chair Ranch near San Angelo, TX.

Conclusions

- Our results indicate the RAP protocol and traditional curriculum were successful in increasing literacy and attitudes in five out of six demographics by an average of 10%.
- Future work will include focus groups, increasing participation, and replicating the same sample groups in 2023.

Implications

- Integrating the RAP with in-person and in-pasture experiences are impactful tools to increase rangeland literacy and knowledge of prescribed fire and multi-species grazing across various demographics.

References

- Karen Launchbaugh et al. "Rangelands in the Classroom: Increasing Rangeland Understanding of Students and Teachers," (1 June 2012). Archer, Steven et al. (2017). Woody Plant Encroachment: Causes and Consequences. Wilcox, Brad et al. (2021). Saving imperiled grassland biomes by recoupling fire and grazing: a case study from the Great Plains.

Erika Sullivan's Poster, presented at Texas and Southwestern Cattle Raisers Convention and Expo on March 25, 2023

THE PRAIRIE PROJECT

RESEARCH HIGHLIGHTS

Graduate Student Katherine Haile Finds Way to Increase Cattle Grazing in Previously Avoided Areas

Dr. Laura Goodman

Oklahoma State University's Katherine Haile (M.Sc.), recently completed a research project for the Prairie Project. She worked in western Oklahoma at the Marvin Klemme Range Research Station, south of Clinton. Her research focus was to examine if patch burning could increase cattle use of avoided areas. In her first year she deployed GPS collars on cattle and tracked where they did and didn't graze, then in year two she burned areas they avoided and again tracked their grazing. She found that regrowth on the burns had higher crude protein and total digestible nutrients as well as many macro and micro nutrients and that they remained higher for approximately six months after the burn. Cows were successfully drawn to previously avoided areas using patch burning. Prior to the burns cattle spent about 5% of their time in these avoided areas while after the burns their use increased to almost 20% of their time. The burned areas made up about 11% of the total pasture area. Their increased use of avoided areas also resulted in decreased time spent grazing in the riparian or stream areas. The average daily distance that the cows traveled decreased by about one tenth of a mile, possibly due to the reduced need to search for high quality forage which was now available in the burned areas. Moving subsequent patch burns around the pasture could effectively rotate grazing around the pasture without the need for expensive and labor-intensive fence.

THE PRAIRIE PROJECT

RESEARCH HIGHLIGHTS

Targeted Goat Grazing in Dallas/Fort Worth Wildland Urban Interface Receives Fuels Reduction Grant Based Off of Prairie Project Results

Dr. John Walker

In a Nutshell:

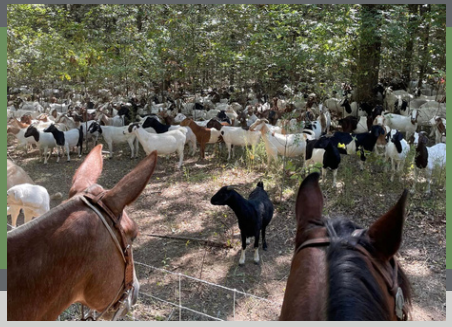
- Because of the success of the targeted goat grazing on the Caddo National Grassland, the U.S. Forest Service received a $500,000 fuels reduction grant for the Lyndon B. Johnson (LBJ) National Grassland. The application for this funding was jointly developed by the USDA Forest Service and Prairie Project leadership.
- The targeted goat grazing on the Caddo National Grassland will begin again in April with approximately twice as many goats as last year.

LBJ National Grassland in Wise County, Texas is facing a significant risk of wildfire due to the absence of fire and encroaching juniper and brush. To mitigate this risk, the Caddo-LBJ National Grasslands Ranger District is proposing an initial treatment of targeted grazing with goats in the 7 small, isolated range allotments within the wildland-urban interface (WUI) in the Project Area.

Recent research suggests that targeted grazing with goats is an effective method to control encroaching juniper, ladder fuels, and promote the establishment of a desirable herbaceous layer. The proposed grazing plan is to sequence a band of goats through each of the allotments until the target grazing intensity is reached. The estimated cost is $550/acre for a 7-month season of a band of 1,000 goats. In the following years, the district plans to use conventional grazing permits to maintain hazardous fuels within acceptable levels.

This project is included in the ongoing collaboration of The Prairie Project, a southern Great Plains regional collaborative including private ranches, the district, and multiple universities. The district will also collaborate with Texas A&M on goat projects and partner with Fannin Grazing Association to administer the initial treatment and long-term maintenance of fuels in the Project Area.

The proposed targeted grazing plan with goats will help to mitigate the significant risk of wildfire in the Project Area while also promoting the establishment of a desirable herbaceous layer. The district hopes to use this project as a model for other high-risk WUI areas within the LBJ National Grassland.



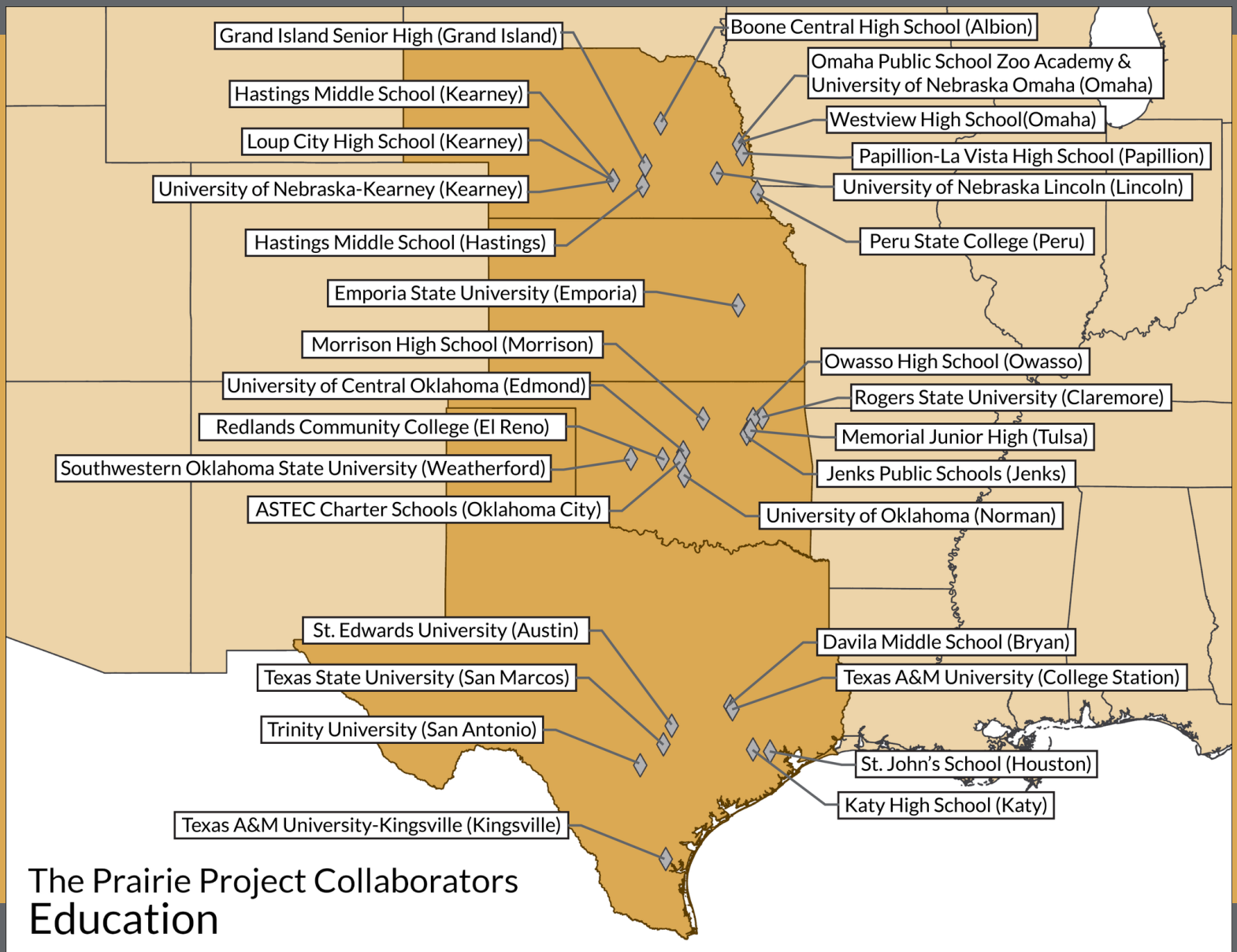
Using Goats as a Preliminary Treatment to Manage Vegetative Fuels For Wildfire Mitigation

THE PRAIRIE PROJECT

EDUCATION HIGHLIGHTS

Expansion of Environmental Education in Schools Across the Great Plains

The Prairie Project is an innovative and effective way to educate students about the loss of the prairie ecosystem and inspire them to take action to protect it. As more educators across the Great Plains integrate Prairie Project science and curriculum into their classroom, we can expect to see a new generation of environmentally aware and engaged agents of change who are committed to maintaining open spaces in grassland ecosystems. Below is a map with schools that have adopted the Prairie Project's resources as curriculum features to conserve grasslands and enhance rangeland literacy in their classrooms.



The Prairie Project Collaborators

Education

Click here for more!

THE PRAIRIE PROJECT

EDUCATION HIGHLIGHTS

Cohort Two of Prairie Project Teaching Fellows Closing

Sakina Toyah Sackaloo Dixon

Dr. Evan Tanner

Our time with our second cohort of Prairie Project Teaching Fellows is coming to a close. Over the past two years, Cohort Two has met monthly to learn about our prairie restoration efforts and to share high impact teaching practices. Additionally, each Fellow has given a presentation on how they have incorporated what they have learned from the Prairie Project into their course curriculum. Professional meetings where our educators have shared their work include the technical meeting of the Oklahoma Academy of Science, the Nebraska Association of Teachers of Science's Share-a-Thon, and the Ecological Society of America's annual meeting. Most recently, Dr. Evan Tanner presented his findings from his classroom project as part of the Prairie Project symposium at the Society for Range Management's annual meeting. Dr. Tanner's project focused on using thermal landscapes as an impetus towards integrating climate science into patch-burn management education for undergraduate students.

Please help us congratulate Cohort Two on their successful completion of our Teaching Fellows program:

Jordan Binfield, *Hastings Middle School*
Dr. Amy Concilio, *St. Edward's University*
Renee' Ekhoff, *Grand Island Senior High*
Dr. Chad King, *University of Central Oklahoma*
Dr. Jason Martina, *Texas State University*
Dr. Evan Tanner, *Texas A&M University-Kingsville*
Kyle Tredinnick, *Omaha Public Schools Zoo Academy & University of Nebraska Omaha*
Teresa Walters, *Loup City High School*
Robert Wilson, *Davila Middle School*

Congratulations

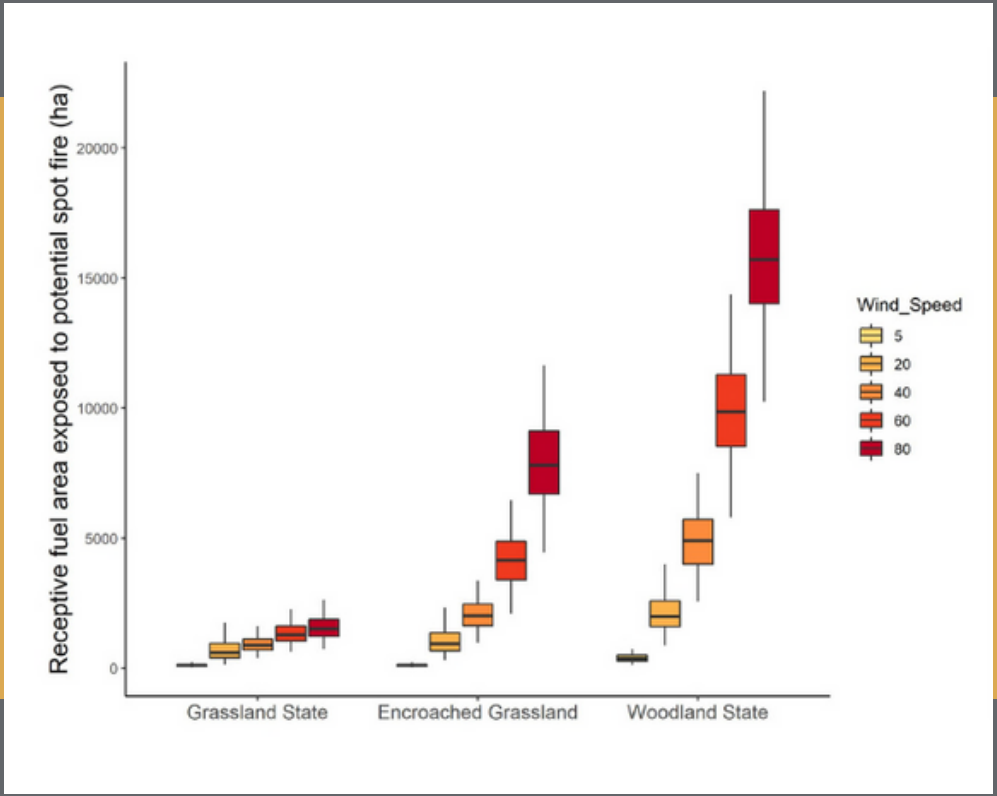
You can view the biographies and classroom project descriptions of our Teaching Fellows on our website here

THE PRAIRIE PROJECT

RESEARCH HIGHLIGHTS

Spot-fire distance increases disproportionately for wildfires compared to prescribed fires as grasslands transition to Juniperus woodlands

- Woody encroachment poses a major threat to grasslands, depleting ecosystem services and increasing wildfire danger.
- The study focuses on Juniperus encroachment in the Great Plains of North America, which converts grasslands to an alternative woodland state.
- Spot-fire distances are critical to wildfire danger, and the study assesses changes in these distances as grasslands experience Juniperus encroachment.
- Prescribed fire used to control woody encroachment has lower maximum spot-fire distances than wildfires, and correspondingly, a lower amount of land area at risk to spot-fire occurrence.
- Under extreme wildfire scenarios, spot-fire distances were 2 times higher in grasslands and over 3 times higher in encroached grasslands and Juniperus woodlands compared to prescribed fires.
- Maximum spot-fire distance was 450% greater in Juniperus woodlands compared to grasslands, exposing an additional 14,000 ha of receptive fuels to spot-fire occurrence.
- The study highlights the need to address woody encroachment to reduce the risks associated with wildfires.



The change in receptive fuel area exposed to potential spot fire surrounding individual burn units in the Loess Canyons Experimental Landscape as juniper encroachment level and wind speed increase (Fig. 4 from the paper).

Citation: Donovan VM, Fogarty DT, Twidwell D (2023) Spot-fire distance increases disproportionately for wildfires compared to prescribed fires as grasslands transition to Juniperuswoodlands. PLoS ONE 18(4): e0283816.

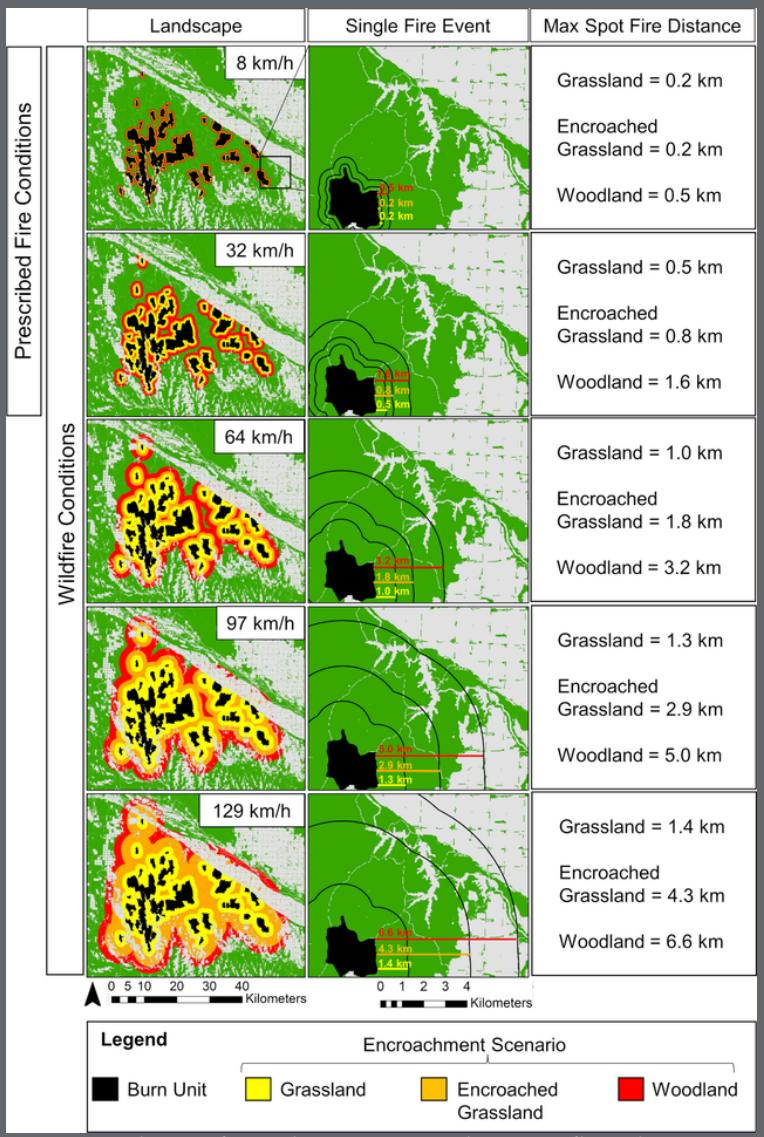
THE PRAIRIE PROJECT

RESEARCH HIGHLIGHTS

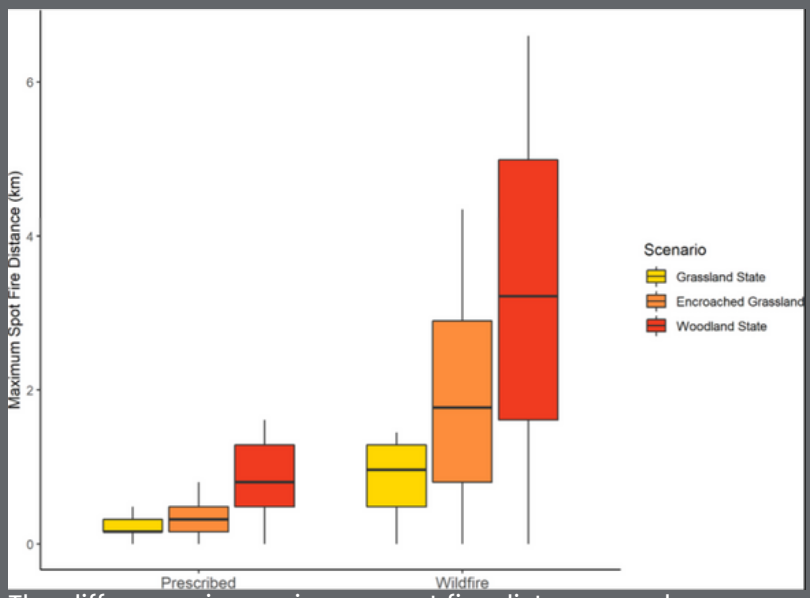
Spot-fire distance increases disproportionately for wildfires compared to prescribed fires as grasslands transition to Juniperus woodlands *cont.*

Spot-fire distance increases disproportionately for wildfires compared to prescribed fires as grasslands transition to Juniperus woodlands

figures continued



A comparison of maximum potential spot fire distance under prescribed fire (8 and 32 km/h) versus wildfire (8, 32, 64, 97, and 129 km/h) wind speeds relative to the grassland state (yellow) juniper encroached grasslands (orange), and the juniper woodland state (red) in the Loess Canyons Experimental Landscape.



The difference in maximum spot fire distance under prescribed fire (0-32 km/h) versus wildfire (0-129 km/h) conditions relative to 3 different levels of juniper encroachment: the grassland state, a woody encroached grassland, and the woodland state.

Victoria Donovan

Dillon Fogarty

Dirac Twidwell

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UPCOMING EVENTS

South Texas Prescribed Fire Summit: May 8-9, 2023 Stephenville, Texas

www.theprairieproject.org

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UPCOMING EVENTS

Texas Section Society for Range Management Youth Range Workshop: June 18-23, 2023 Junction, Texas

Youth Range Workshop is an annual youth camp held in June to prepare students to be knowledgeable leaders in their communities regarding the value of rangelands, the services and products they provide, and the importance of stewardship of our natural resources. Our emphasis is on stewardship, leadership, and management of natural resources. These lessons will serve participants well in the future regardless of what career path they choose or where they live. The students spend six days of intense activity in the field and classroom immersed in activities, including:

- Plant identification and plant collection
- Study species composition and plant community dynamics
- Conduct forage inventories
- Learn the grazing and browsing habits of livestock and wildlife
- Learn habitat management principles and techniques for various species of wildlife
- Conduct field tests to determine the benefits of vegetation on infiltration and runoff rates as well as soil erosion
- Learn about soil health
- Assisting with a prescribed burn on a local ranch

Hands-on learning is the focus, whether collecting, assisting with an actual prescribed burn, clipping and weighing vegetation, measuring soil temperature, participating in the operation of a rainfall simulator or learning to use the latest phone app for range management.

Applications are currently being accepted, but space is limited! The Youth Range Workshop will be held at Texas Tech University Center in Junction, Texas on June 18 through June 23, 2023. For more information, please visit www.tssrm-youthrangeworkshop.com or email tssrmyrw@gmail.com.

THE PRAIRIE PROJECT

UPCOMING EVENTS

Texas CattleWomen Women in Ranching: April 15, 2023 Stephenville, Texas

Texas CattleWomen is a State Organization made of 21 chapters across the state of Texas. Our mission is the promotion of Beef in a healthy diet. Our local chapters are the boots on the ground of this organization. From Ag in the Classroom, to the promotion of Beef, to scholarships, to hands-on demonstrations and Ranch Tour, our CattleWomen do it all.

Our local chapters are spread out through different counties in the State. For more information on CattleWomen and what local chapter you may belong to, be sure to check out our website. It is our goal to have every county in Texas covered in the future. If your county currently does not have a local chapter, we are always looking to start new local chapters. We have two new chapters currently being started in the Bastrop County and Scurry County areas.

Our annual Women In Ranching event is coming up on April 15th. This program was started several years ago and participants across the State have really enjoyed it. We wanted a place where women could come for hands-on learning and not be afraid to ask questions. This year our event is taking place in Stephenville, Texas at Tarleton State University.

The morning will kick off with Cattle Handling Demonstrations with Dr. Ron Gill and a BQA certification. Already BQA certified? No worries, this certification needs to be renewed every three years and this would be a great time to refresh that certificate.

We will break for lunch and then start the afternoon session. This will be three sessions of hands-on activity. We will have chute-side manners and a fencing demonstration. The third session will be from our very own Dr. Morgan Treadwell with Plant and Forage Identification.

In the evening, a Grilling 101 demonstration will be given, where all participants will get to grill their own steaks! We will wrap up the event with our producer panel. Not only is this event very informational but you will meet fellow women who are passionate about the industry. Interested in this event, be sure to register here.

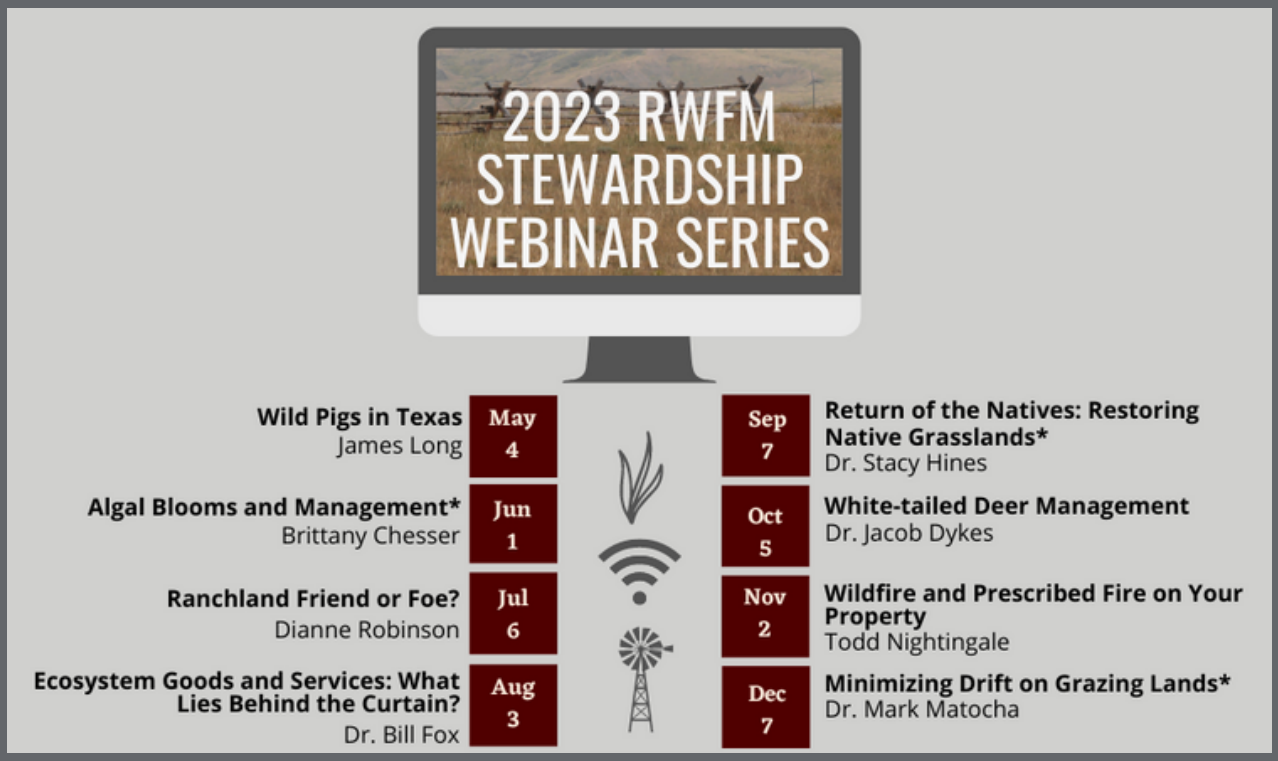
For any additional questions about CattleWomen, be sure to reach out to Casey Matzke at caslmatzke@gmail.com or 713-578-0863.

More information on Texas CattleWomen can be found at www.txcattlewomen.org

THE PRAIRIE PROJECT

FEATURED PROGRAMS

Texas A&M University Rangeland, Wildlife, and Fisheries Management Stewardship Educational Opportunities



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