

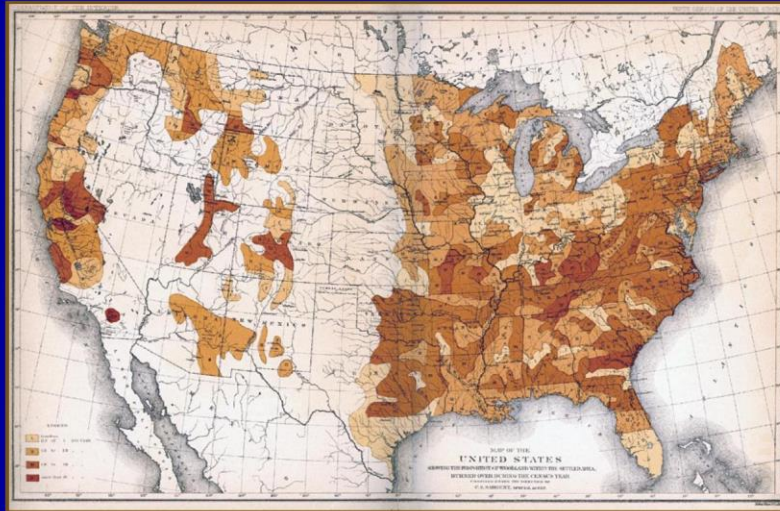
History of Fire in Texas



Fire is a Critical Component of Many Ecosystems

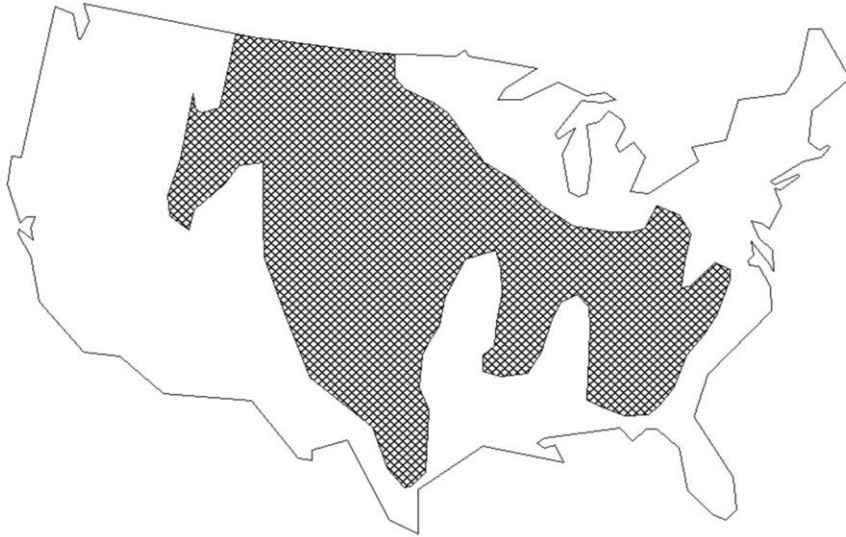
- Science demonstrates that low-intensity surface fires were historically a critical ecological process in as much as 60% of North American landscapes.
- Societal attitudes and perceptions create inherent challenges for 21st century land managers using fire, whether they are working to restore or maintain ecosystem function or to protect life and property.

**1880 Survey Map: Darkest Color Represents
> 10% of “Woodlands Burned Annually
Within Settled Areas**



Courtesy of The Forest Historical Society. Published in Pyne, Stephen J. "America's Fires"

Range of the Modern Buffalo Herd Approximately 400 years B.P.



We can learn a lot about the history of fire by looking at the buffalo range at the time of European settlement across the United States.

Perception of Fire 19th and 20th Centuries

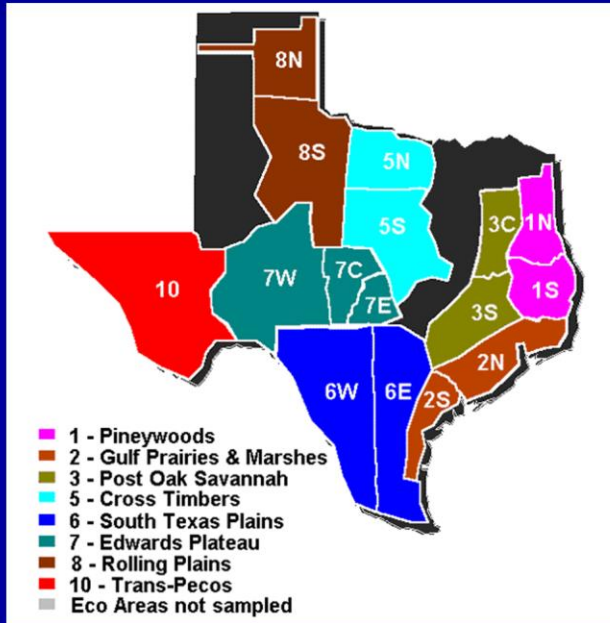
- As America became more urban, fire was not an important component of one's livelihood.
- The Weeks Act, 1911, set up a national fire protection system.
- Fire use became regulated and halted.

Perception of Fire 19th and 20th Centuries - *continued*

- Ecosystems were degraded.
- “Authorities treated fire like it was atomic energy, too dangerous for ordinary citizens to use,” Steve Pyne 2012.

21st Century

- A century later the scene looks different. A revolution in thinking about fire began in the 1960s has sought to promote fire, make fire institutions serve land use, and validate a civil society for fire. It has culminated in a rechartering of rights and responsibilities under a “national cohesive strategy,” released on the centennial of the Weeks Act. *Payne 2012.*
- This sound good, but what is the reality?



Most of the Ecological Regions in Texas are Fire Dependent

For instance, there is little area left that would adequately represent the pre-settlement Post Oak Savannah region today.

Fire History

- Fire is a natural occurrence
 - Periods of high forage production
 - Periods of drought
 - Lightening Strikes
 - Enormous areas burned until they burned themselves out
- Fire is a human association
 - Native Americans used fire to attract food
 - Early European settlers used fire to clear land similar to Brazil today



Pinewoods Fire History & Use

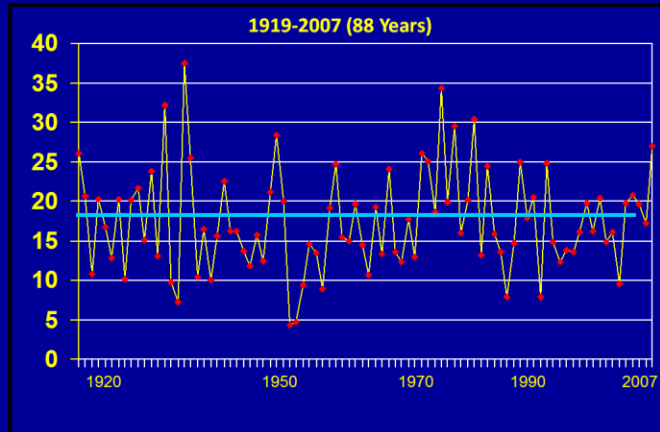
- Lear land for Farming
- Reduce Logging Slash
- Promote New Growth

“The Time It Never Rained”

Elmer Kelton

“Each new generation tends to forget – until it confronts the sobering reality – that dryness has always been the normal condition in the western half of the state. Wet years have been the exceptions.”

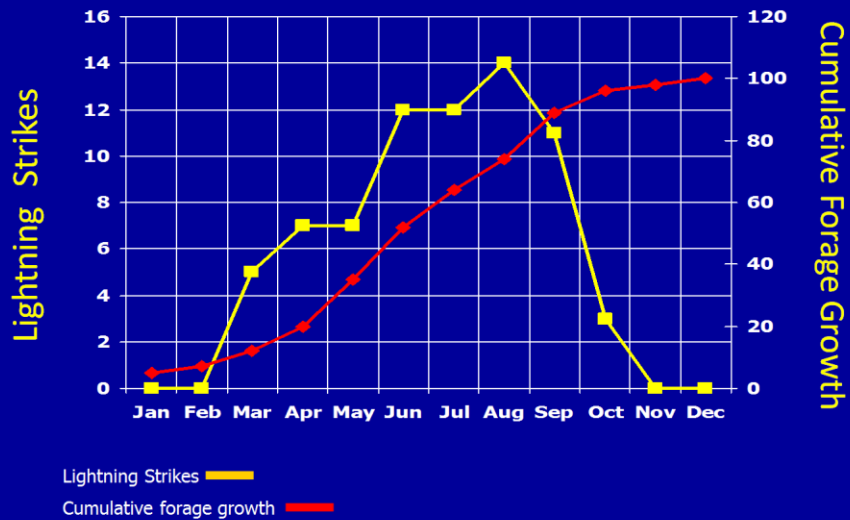
Long-Term "Growing-Season" Precipitation on the Texas AgriLIFE-Sonora (Semi-arid environment)



A major portion of Texas is a semi-arid region. In a desert, one knows what to expect of the climate and plan accordingly. The same is true of the humid regions. Men have been badly fooled by the semi-arid regions because they are sometimes humid, sometimes desert, and sometimes a cross between the two.

Bulk of warm season grasses are grown from warm-season precipitation. Precipitation is highly variable and not predictable. This problem creates one of the most difficult and important management decisions (i.e., adjusting livestock numbers to meet forage growth).

Lightning Strikes and Cumulative Forage Growth



Note that peak lightning strikes occur near the peak standing crop of forage that has been grown through the summer. Summer fires have historically shaped significant portions of Texas' ecosystems.

In the mid 19th century, one chief
set a fire that burned 62 counties

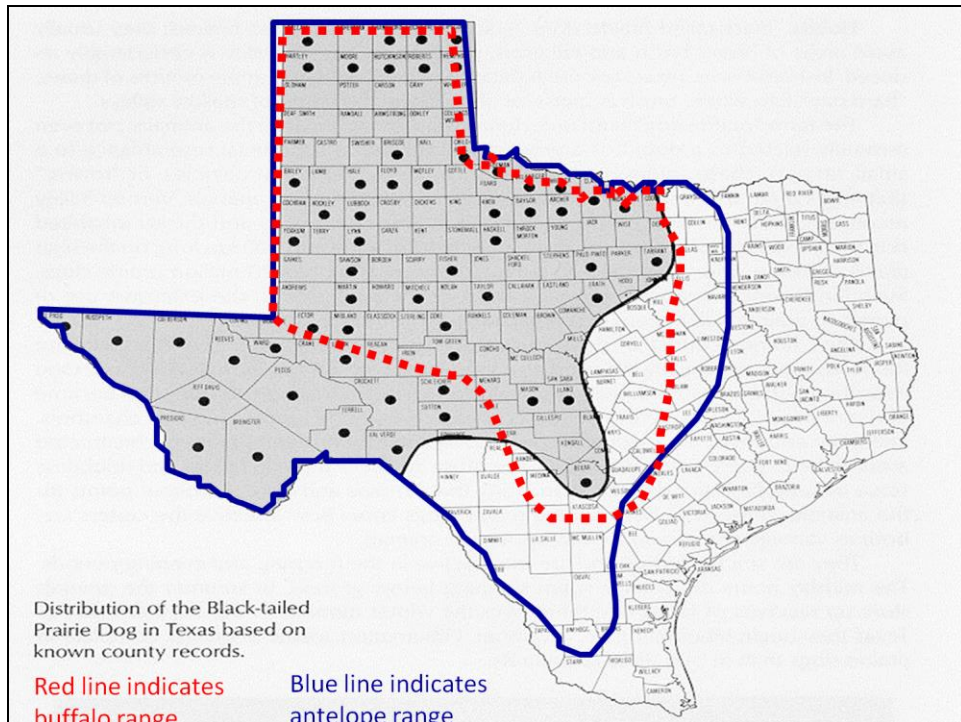


Permission from Debbie Grayson Lincoln

“In the spring the Indians throughout the buffalo country burned off the old grass in places where they had not used a fire drive in the previous autumn. Until the new grass attracted the buffalo herds, the Indians hauled in the animals drowned in the river during the winter” (Haley 1929).



Fire frequency for the majority of the state averaged less than 6 years. Some areas of the state had even more frequent fires.



Prairie dogs were the major herbivore for the Texas Range Station. Due to lack of surface water, buffalo were not able to spend much time in this particular part of the Edwards Plateau. Antelope were also present but in limited numbers. Note that all these animals required a prairie, not a woodland for the majority of their habitat.

Across Texas, Woody Vegetation has Increased in Abundance Relative to Grasslands....Foster 1917

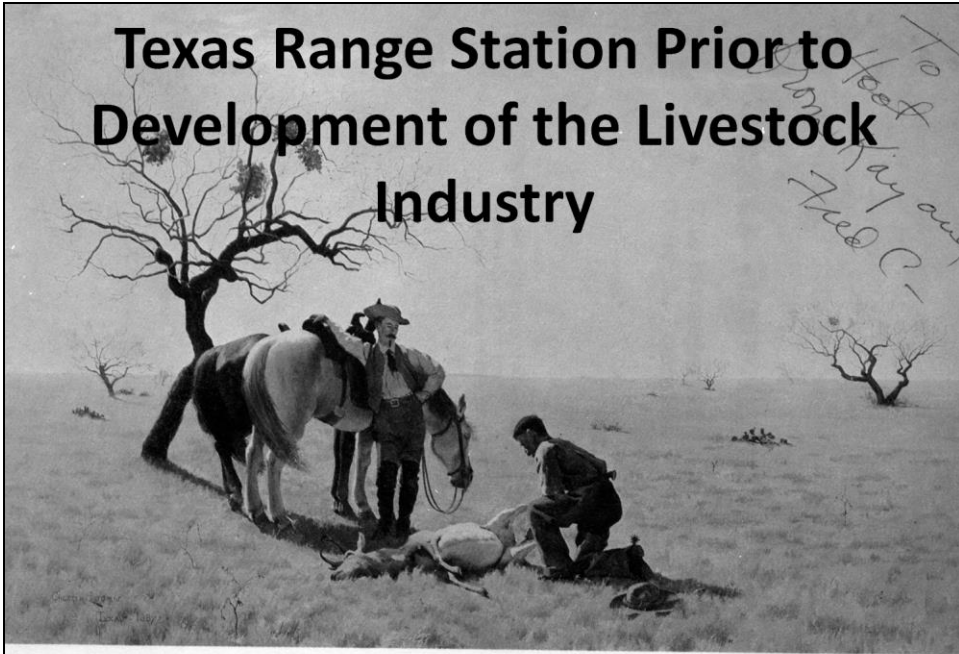
"The causes which have resulted in the spread of timbered areas are traceable directly to the interference of man. Before the white man established his ranch home in these hills, the Indians burned over the country repeatedly and thus prevented any extension of forest areas. Overgrazing has greatly reduced the density of grass. The practice of burning, has during recent years, disappeared. Almost unquestionably the spread of timbered areas received its impetus with the gradual disappearance of grassland fires."

European Influence

- Spanish Explorers.
- Westward exploration and settlement.
- Livestock industry explodes in Texas.
- Heavy grazing fireproofed the area in most years.

The European immigrants, unlike the native Americans, had little to no history or culture that required fire. They did not understand that fire shaped the ecosystems in which they had acquired. By stopping fire, they effectively changed the entire habitat.

Texas Range Station Prior to Development of the Livestock Industry

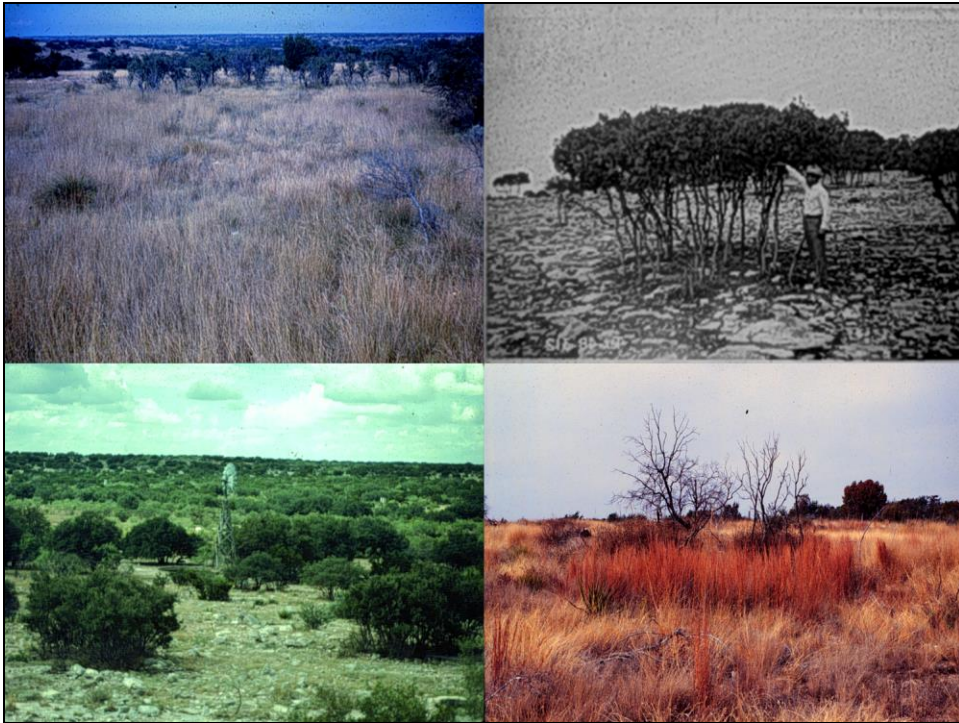


Antelope Hunters, Texas, 1887. Chester Loomis with beard, John Loomis kneeling. The Anschutz Collection.

There were two major herbivores prior to European Settlement. They were antelope and prairie dogs. Almost no white-tailed deer or buffalo because of limited amounts of consistent water.

A Hot Fire Described by Bennett in March 1852 While Camped on the Rio Grande in southern New Mexico

"Today the grass was as high as our heads and accidentally it got on fire. It came rushing on at a tremendous rate. We had merely time to save ourselves by running to the sandy beach of the river. All our provisions, saddles, arms, ammunition, and camp equipment were destroyed. It was an exciting time. Three hundred guns and several pistols, lying promiscuously on the ground, discharge their deadly contents in all directions. No accidents, however, happened."



The picture on the upper right is what we think the Edwards Plateau looked like prior to European development. Fire kept the ecosystem in a mostly grassland state with scattered low growing oaks and other woody plants. With heavy grazing, fire was removed from the ecosystem. Over time, woody plants like Juniper was allowed to grow and become a problem. Frequent fires can restore the ecosystem to it's earlier state as noted by the picture in the lower right. That picture is the same location as the upper right picture.

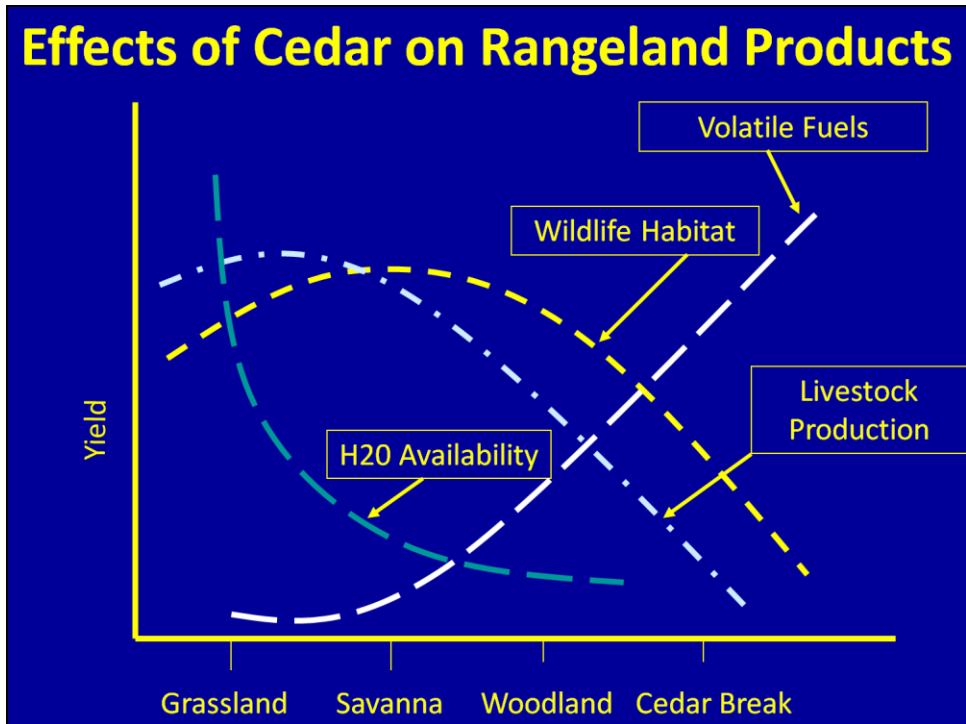


The lack of fire can be devastating to the ecosystem of the Edwards Plateau.

55-Years of No Grazing/Browsing or Fire



Cedar breaks can effectively reduce the carrying capacity for livestock or deer. The potential for catastrophic wildfire is great in this situation.



This graph represents the cost of allowing volatile fuels such as cedar to increase on the rangeland. Habitat and water are severely affected.



Mechanical removal of volatile fuels is costly and other more valuable woody species may be affected.



Chemical treatment can be effective, but costly.

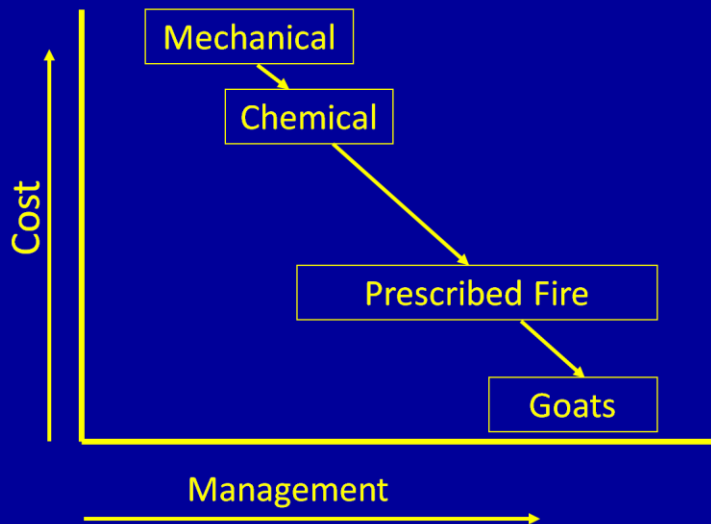


Browsing by goats selected to select cedar (Juniper) can be effective, especially when used in conjunction with fire.

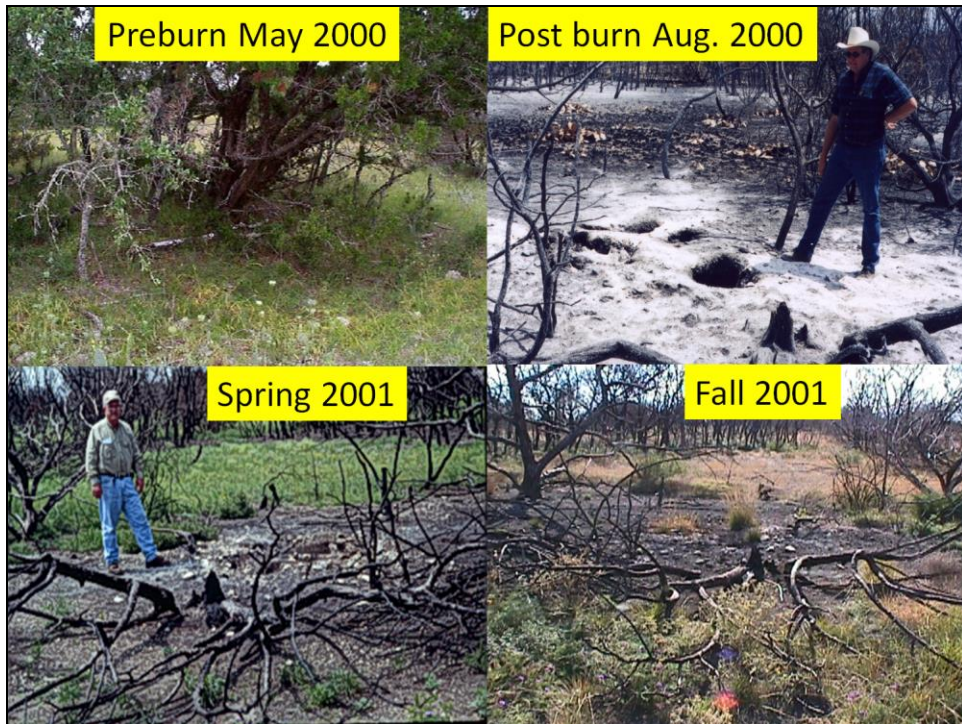


Fire is very effective to control unwanted volatile fuels, but requires more management and knowledge than chemical or mechanical methods.

Relative Economics and Management Requirements for Juniper Management



While fire and herbivores may be very effective for juniper management, more management is necessary. One must produce enough fuel to carry the fire and proper stocking is also required if goats are used with fire.



The Palmer drought index was as low as it gets in this area. This fire was extreme, burning the large cedar trees into the ground. Carrying capacity was increased 8 times for several years following the burn.



Summer 2003

Note that two years following the burn, prickly pear has been drastically reduced, but sprouts of cedar and other woody species are already two to three foot tall.

If Prescribed Fire is Such a Good Deal, Then Why Weren't Ranchers Using it on a Routine Basis?

1. Long history of fire suppression in Texas (for example, the XIT ranch began plowing fire guards in 1885, the year cattle were placed on its range (Haley 1929). In one year, over 1,000 miles of guards, 100 feet wide had been plowed on the ranch).

If Prescribed Fire is Such a Good Deal, Then Why Weren't Ranchers Using it on a Routine Basis? - *Continued*

2. Prescribed fire is limited by social constraints (Two laws were passed in Texas to regulate fire. One in 1848 and the other in 1884).
3. Liability rules affect incentives for prescribed fire use (i.e., liability is consistently listed as a major concern for ranchers using prescribed fire).

If Prescribed Fire is Such a Good Deal, Then Why Weren't Ranchers Using it on a Routine Basis? - *Continued*

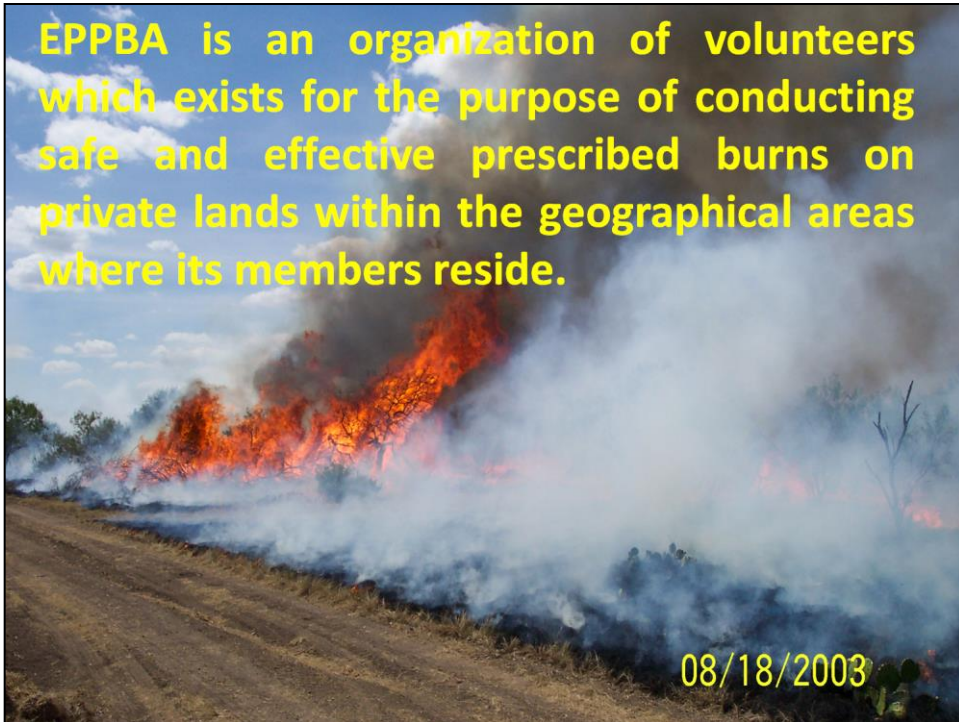
4. Most Texas ranchers are not raised in a "fire culture".

The bottom line is, if ranchers want to use prescribed fire on a routine basis, they will have to organize at the local level to enhance their clout within the local community.

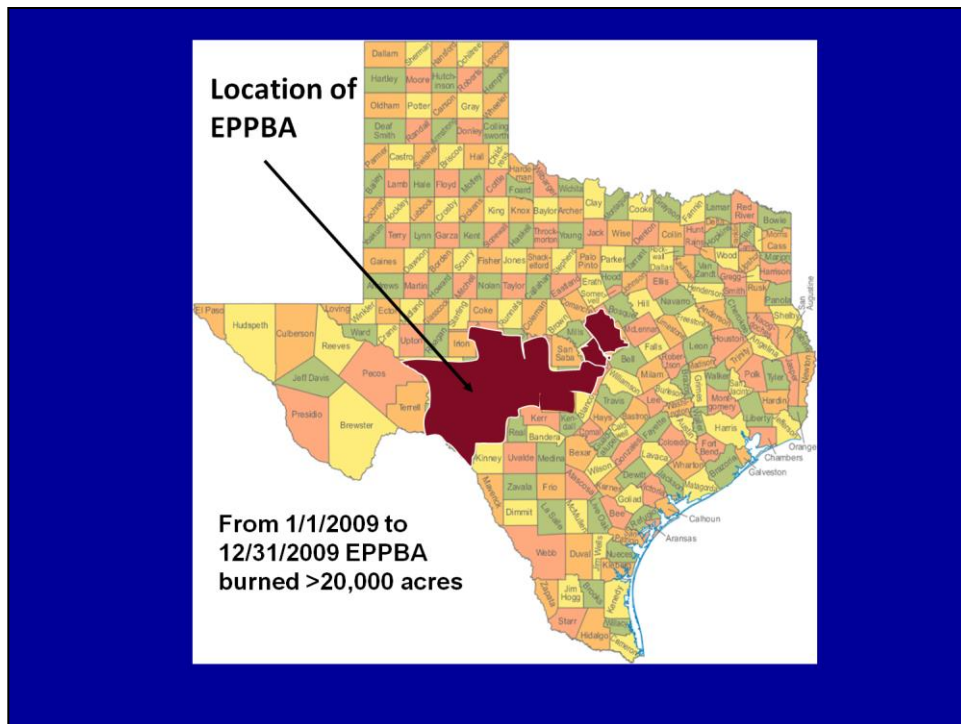
***The Edwards Plateau Prescribed
Burning Association (EPPBA) was
established in the fall of 1997 at
the TAMU Research Station located
between Sonora and Rocksprings.***

***The EPPBA was Incorporated on
March 29, 1999.***

EPPBA is an organization of volunteers which exists for the purpose of conducting safe and effective prescribed burns on private lands within the geographical areas where its members reside.

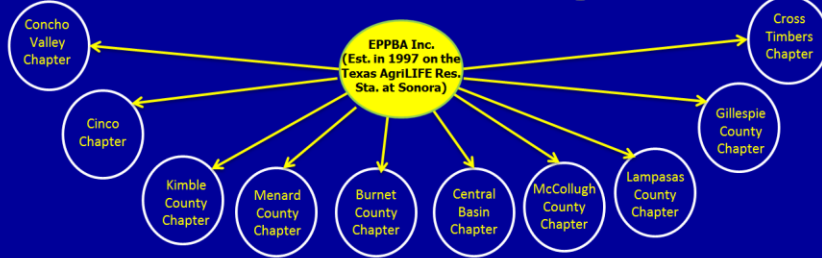


- ❖ We became frustrated by the obvious need for an active burning program in our area.
- ❖ Most ranchers were afraid of the liability or did not know how to implement fire to manage their rangelands.
- ❖ Work we had done since the early 1980s clearly showed the benefits of fire.
- ❖ A burning association could build confidence in prescribed fire and support from the local community.



U.S. Fish & Wildlife Grant, Magnolia foundation grant

Edwards Plateau Prescribed Burning Association, Inc.

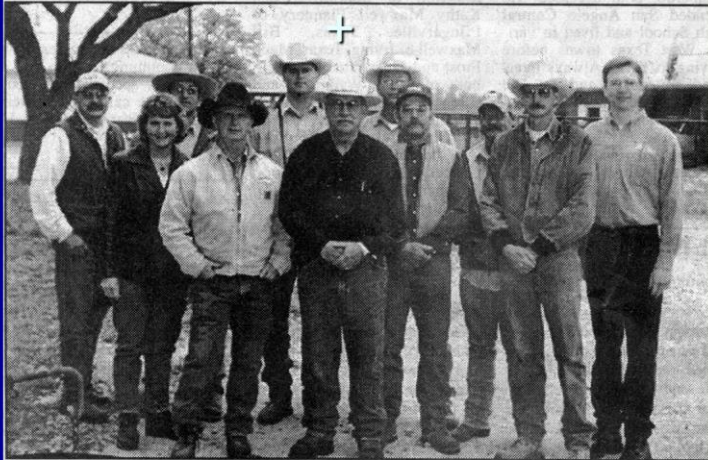


<http://www.ranchmanagement.org/eppba>

Prescribed Burn Associations in Texas



Edwards Plateau Prescribed Burning Association Prepares Film For Awards Ceremony



Members and Directors representing the Edwards Plateau Prescribed Burning Association that are being honored as one of the 12 winners of the coveted Governor's Environmental Excellence Awards were joined by TNRCC representatives on Saturday, April 6th for the making of a special awards video that will be shown at the awards ceremony in Austin, Texas on May 7th. Pictured here are (from l to r) are: back row - Nick Garza, Lewis Allen, Mark Alsup, Curry Campbell, Gus Ward and Ted Hazen. Front row - Dana Macomb, Terry Brooks, Dr. Charles "Butch" Taylor, Bob Brockman, and Tom Payton. For more pictures of the award winning burning association activities see page 7.

We were recognized by the State of Texas with the Governor's Environmental Excellence Award. A video was made of the organization and presented at a banquet in Austin.



The key to the sustainability of the burn association is the next generation. For the first time in the history of the ranching industry in this area, young children are being taught the benefits of prescribed fire.



- ❖ Our motto is happiness is smoke on the horizon.
- ❖ The application of fire by the burning association is:
 1. Increasing livestock carrying capacity.
 2. Improving wildlife habitat.
 3. Increasing aquifer recharge.
 4. Increasing biodiversity of Edwards Plateau rangelands.
 5. Gathering trust and respect from the community leaders.

Burn Bans are Limiting the Restoration of Texas' Rangelands



Burn bans are designed to reduce wildfires. Some counties allow prescribed burning during burn bans while others do not.



Prescribed fire can be proactive in reducing the volatile fuel loads which can cause catastrophic wild fires.

2005/2006 Fire Season

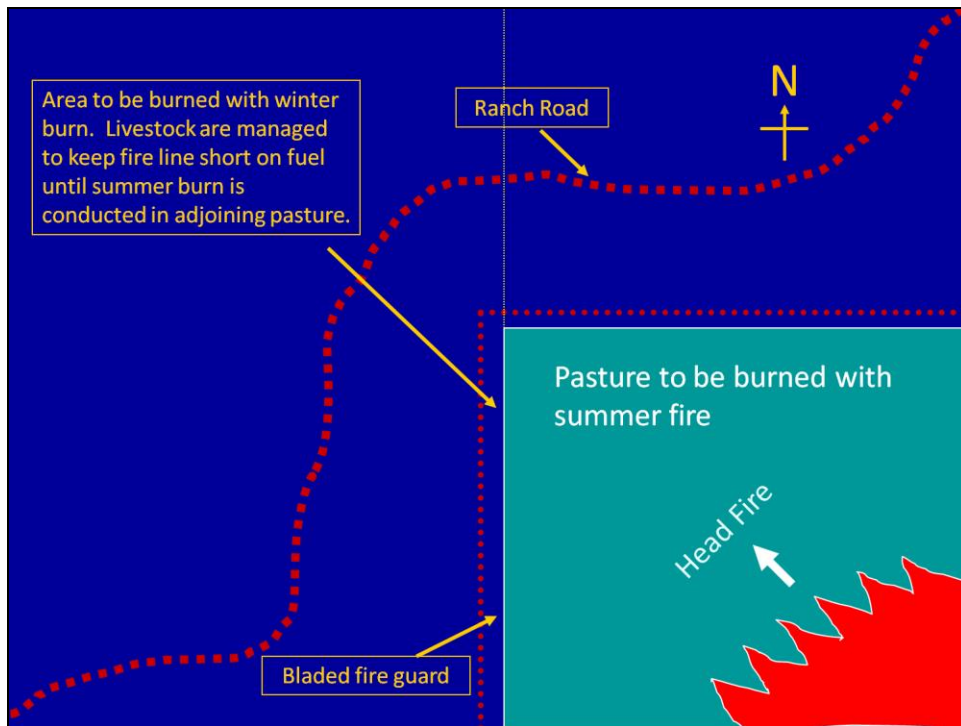
- Two fires burned across 800,000 acres in one day. For the entire 2005/06 fire year 29,141 wildfires were recorded.
- Total acres burned was 2,260,240. Property loss was estimated at \$628 million. The fire suppression response alone cost the state \$80 million.
- 20-people lost their lives to these wildfires. 85-percent of the fires occurred within two miles of communities.

Texas A&M Forest Service

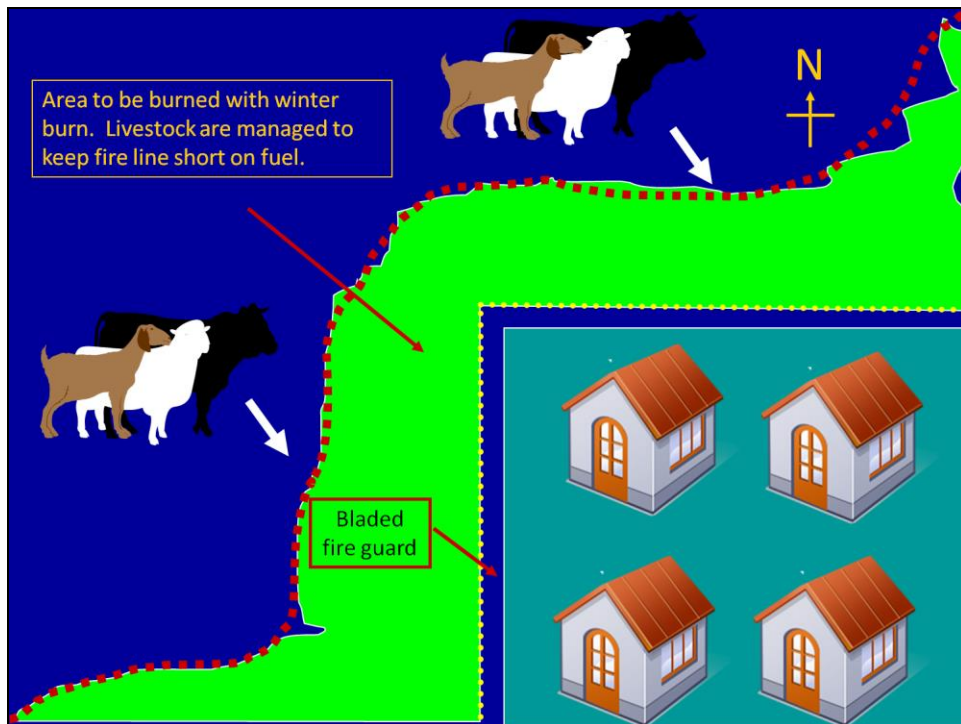
2010/2011 Fire Season

- There were 30,547 fires on 3,993,716 acres. 2,946 homes destroyed, and
- 2,792 other structures destroyed. Fire suppression response alone cost the state \$330 million.

Texas A&M Forest Service



An example of how to accomplish a hot summer fire safely. The entire pasture outside the burn can be grazed fairly short for added safety.



Prescribed fire school is a great way to learn more about burning
Assisting with prescribed burns increase experience.

