

*Social and Legal Barriers and  
Opportunities for Using Prescribed  
Fire on Private Land in the Southern  
Great Plains, USA*

Urs P. Kreuter

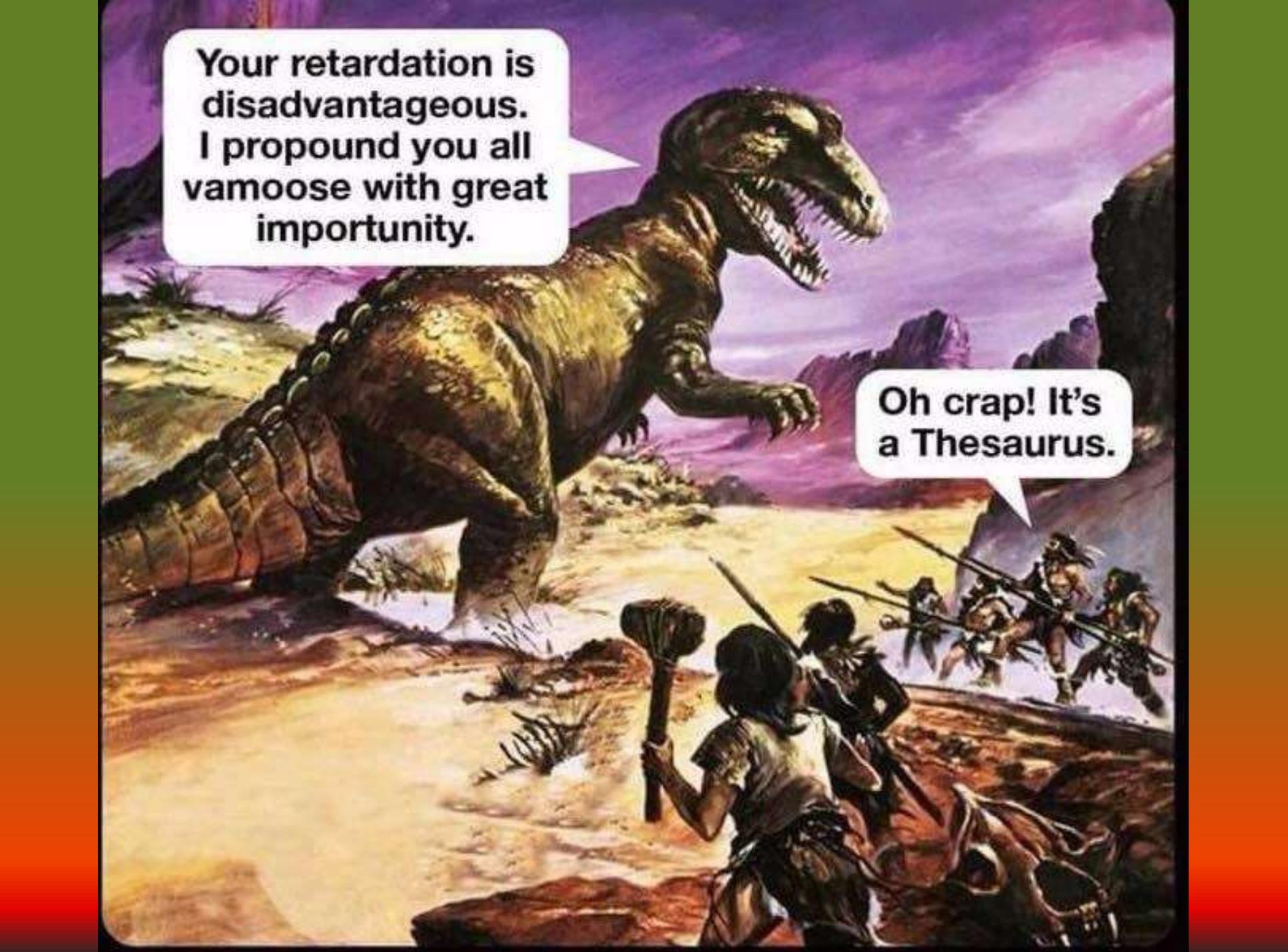
Joan Negley Kelleher Professor

Department of Ecosystem Science & Management

[urs@tamu.edu](mailto:urs@tamu.edu)



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A large T-Rex dinosaur stands on the left side of the frame, its mouth open as if speaking. It has a greenish-brown body with a lighter-colored head. In the foreground, a group of cavemen are gathered, some holding spears and bows. One caveman in the foreground is holding a large, dark, rounded object. In the background, more cavemen are visible, some on horseback. The landscape is a dry, hilly area with a purple and pink sky. The overall scene is a humorous take on a prehistoric encounter.

Your retardation is disadvantageous. I propound you all vamoose with great importunity.

Oh crap! It's a Thesaurus.

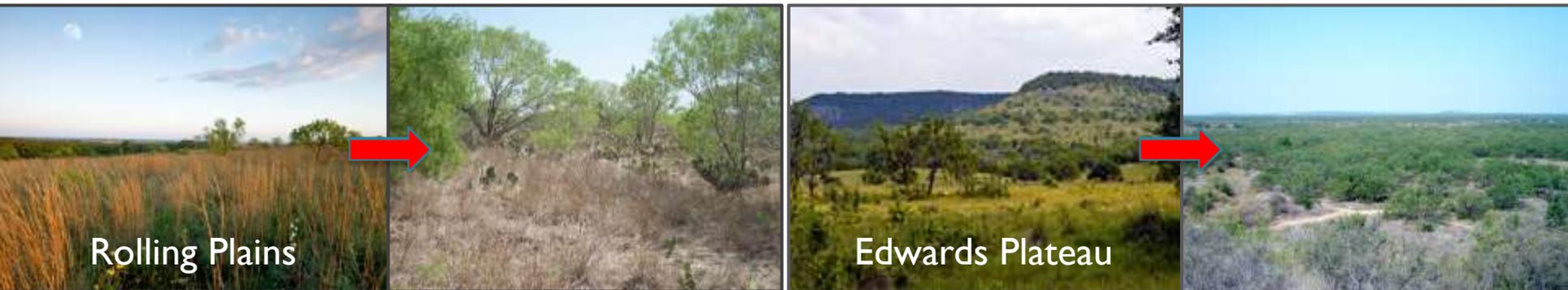
# Outline

*“What began as a chemical event evolved in human hands into a device for remaking whole landscapes.”*

*(Stephen J. Pyne, 2001)*

- ***Woody plant expansion/control in SGP***
- ***Economic benefits of burning***
- ***Social and legal barriers to prescribed fire use***
- ***Liability insurance effects on prescribed fire use***
- ***Role of PBAs in building social capital***
- ***Knowledge gaps***
- ***A brief introduction to a proposed new initiative***

# Woody Plant Expansion/Control in SGP



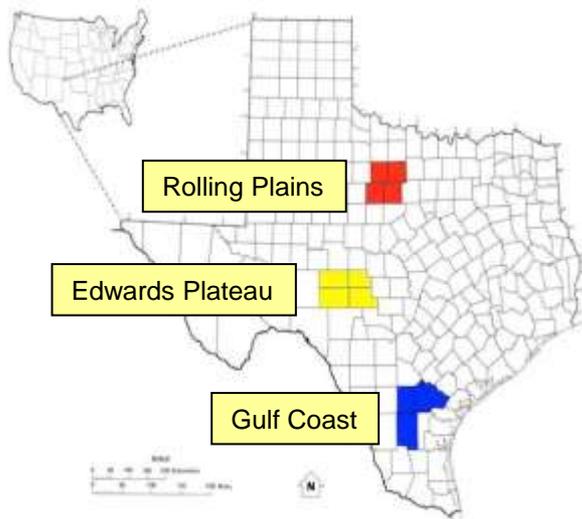
Burn plots, Texas A&M AgriLife Research Station, Sonora, Texas:

- (a) Has not been burned
- (b) Has been burned twice since 1987 (~14 year interval)
- (c) Has been burned four times since 1987 (~ 7 year int.)
- (d) Has been burned five times since 1987 (~4-5 year int.)



# Application of Intense Fire

Four-county study areas  
In three Texas eco-regions



Rolling Plains  
*prickly pear,*  
*mesquite*



Edwards Plateau  
*juniper,*  
*mesquite*



South Texas  
*Huisachce,*  
*mesquite*



Goal: Assess ecological,  
economic and social  
implications of using  
“extreme” fire ( $T > 95^{\circ} \text{F}$   
and/or  $\text{RH} < 20\%$ )

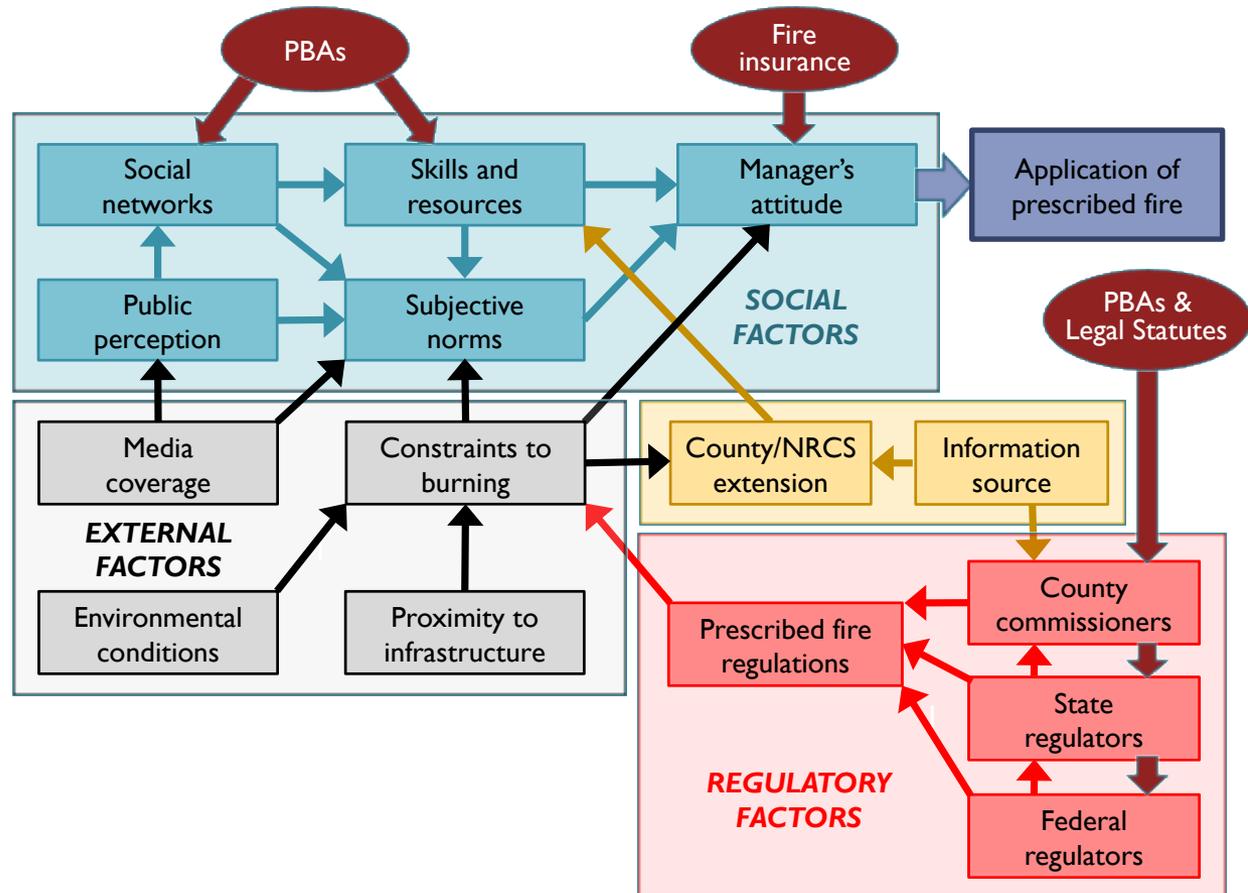
# Economics of Brush Removal

- Extreme fire was economically superior in all 3 ecoregions and was the only treatment that resulted in positive returns on investments without subsidy (Van Liew et al. 2011).

	Treatment	Brush Type	NPV (\$ ha <sup>-1</sup> )		NPV (\$ ha <sup>-1</sup> ) 50% cost share	
			Moderate	Heavy	Moderate	Heavy
Rolling Plains	Extreme fire	Prickly Pear	-0.38	<b>13.12</b>	<b>18.15</b>	<b>31.64</b>
		Mesquite	<b>4.13</b>	<b>18.31</b>	<b>22.65</b>	<b>36.83</b>
	Alternate	Prickly Pear	<b>-33.00</b>	<b>-53.87</b>	<b>2.82</b>	0.16
		Mesquite	<b>-26.16</b>	<b>-51.60</b>	<b>8.42</b>	<b>3.98</b>
Edwards Plateau	Extreme fire	Juniper	<b>18.73</b>	<b>27.50</b>	<b>37.26</b>	<b>46.02</b>
		Mesquite	<b>6.48</b>	<b>4.04</b>	<b>25.00</b>	<b>22.57</b>
	Alternate	Ashe J.	<b>-174.68</b>	<b>-264.94</b>	<b>-53.65</b>	<b>-91.42</b>
		Redberry J. Mesquite	<b>-227.10</b> <b>-140.77</b>	<b>-171.73</b> <b>-55.38</b>	<b>-78.29</b> <b>-44.44</b>	<b>-47.61</b> <b>-5.36</b>
South Texas Plains	Extreme fire	Huisache	<b>4.97</b>	<b>-0.76</b>	<b>32.75</b>	<b>27.03</b>
		Mesquite	<b>11.26</b>	<b>16.31</b>	<b>39.05</b>	<b>44.10</b>
	Alternate	Huisache	<b>-143.66</b>	<b>-96.96</b>	<b>-36.99</b>	<b>-18.07</b>
		Mesquite	<b>-43.20</b>	<b>-78.73</b>	<b>-33.44</b>	<b>-0.46</b>

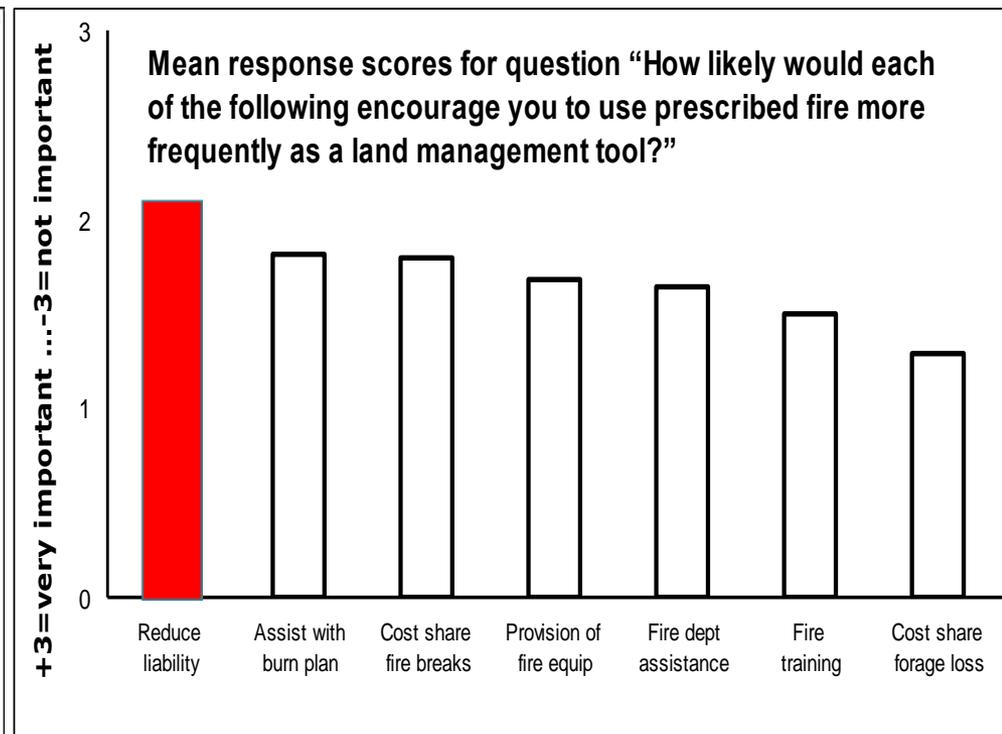
# Social and Legal Barriers to Fire Use

- Regulatory factors impose constraints
- External factors can affect social factors
- Social factors influence use of prescribed fire
- Information sources can mitigate regulatory and social factors
- Interventions (PBAs, insurance, legal frames) can also affect regulatory/social drivers of prescribed fire use



# Landowner Decisions about Burning

2004 mail survey; 6 central Texas counties; 185 EPPBA members and 600 non-member landowners



# Subjective Norm, Risk & Experience

- Direct Effects:

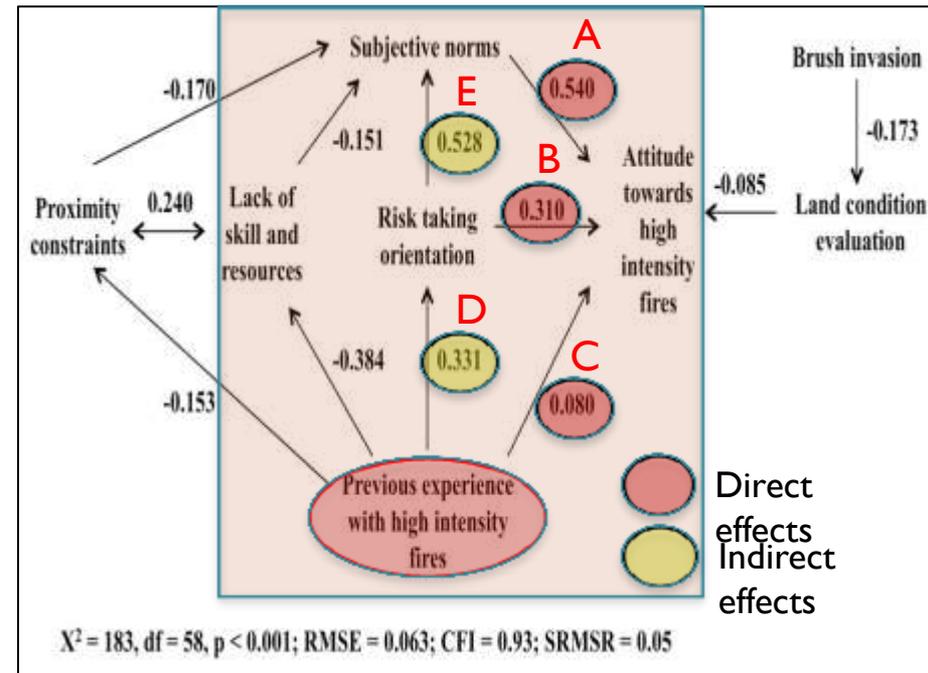
- ◆ Subjective norms (A = “decision support” from neighbors, family & friends), pro risk-taking orientation (B), and previous fire experience (C) are positively associated with attitudes toward use of “extreme” fire.

- Indirect effects:

- ◆ People with “extreme” fire *experience* perceive that benefits of such fires outweigh their risks (D).
- ◆ Those less concerned about *risk* felt neighbors, family & friends support their use of fire (E).

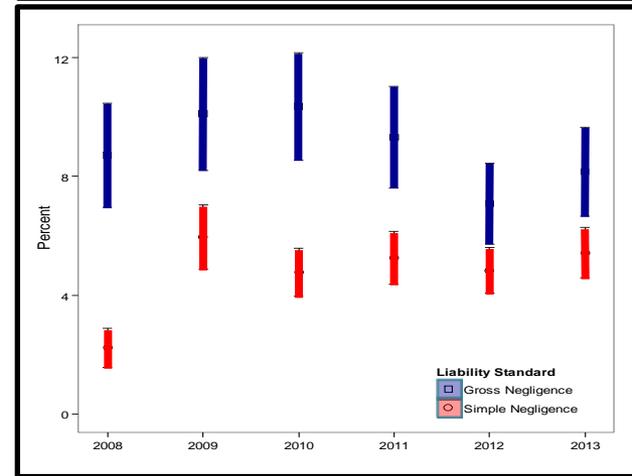
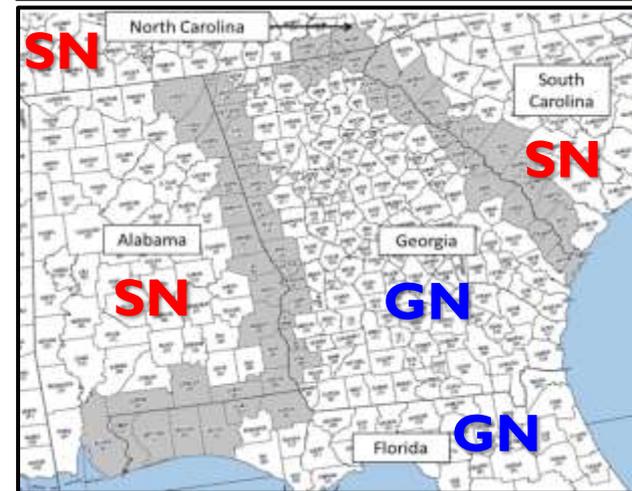
- Findings emphasize:

- ◆ Need for targeted *ENGAGEMENT STRATEGIES* to address norms, risk perceptions and landowner concerns.



# Civil Liability Standards & Use of Fire

- *Strict Liability (SL)* – burner liable for any damage caused by an escaped prescribed fire, regardless of precautions taken (5 states)
- *Simple Negligence (SN)* – requires burner to practice reasonable care in applying prescribed burn (most common, including TX & OK)
- *Gross Negligence (GN)* – if burner follows codified regulations regarding burning, plaintiff must show reckless disregard of the duty of care by burner (include FL & AL)
- Landowners in counties with GN standards burned more land than in counties with SN ( $f = 4.16, p = 0.046$ ).
- States wishing to develop safe burning cultures should consider benefits of a lower legal liability standard together with safe burning regulatory requirements.



Wonkka, C.L., W.E. Rogers, U.P. Kreuter. 2015. Legal barriers to effective ecosystem management: Exploring linkages between liability, regulations, and prescribed fire. *Ecological Applications* 25(8):2382-2393. DOI: 10.1890/14-1791.1

# *Liability Insurance Effects on Fire Use*

- Many landowners want a stand-alone policy indemnifying them for escaped fire damages.
- In 2015, the OPBA worked persuaded an insurance company to provide a stand-alone policy for burners nationwide.
- The company sold only about 30 policies and dropped the policy.
- Access to stand-alone insurance did not substantially increase the use of fire. (Do landowners use liability as an excuse to not burn?)
- In Texas, existence of an insurance policy led to a lawsuit for fire damages and subsequent decline in PBA membership.
- **Fire insurance may have an unintended negative effect on burning by landowners.**

# Prescribed Burning Associations (PBAs)

- Functions of PBAs:
  - ◆ Improve knowledge/skills – enhance peer-to-peer learning
  - ◆ Reduce risk & liability – provide fire safety training for members
  - ◆ Reduce costs – provide shared labor/equipment on burn days
- PBAs provide a non-legislative mechanism for limiting liability associated with prescribed fire, but PBAs are still subject to same level of liability as individual burners (“especially” with insurance?)
- PBA members have more positive attitudes towards prescribed fire and are more willing to use intense burns more frequently.
- PBA membership increases trust & reciprocity among landowners.

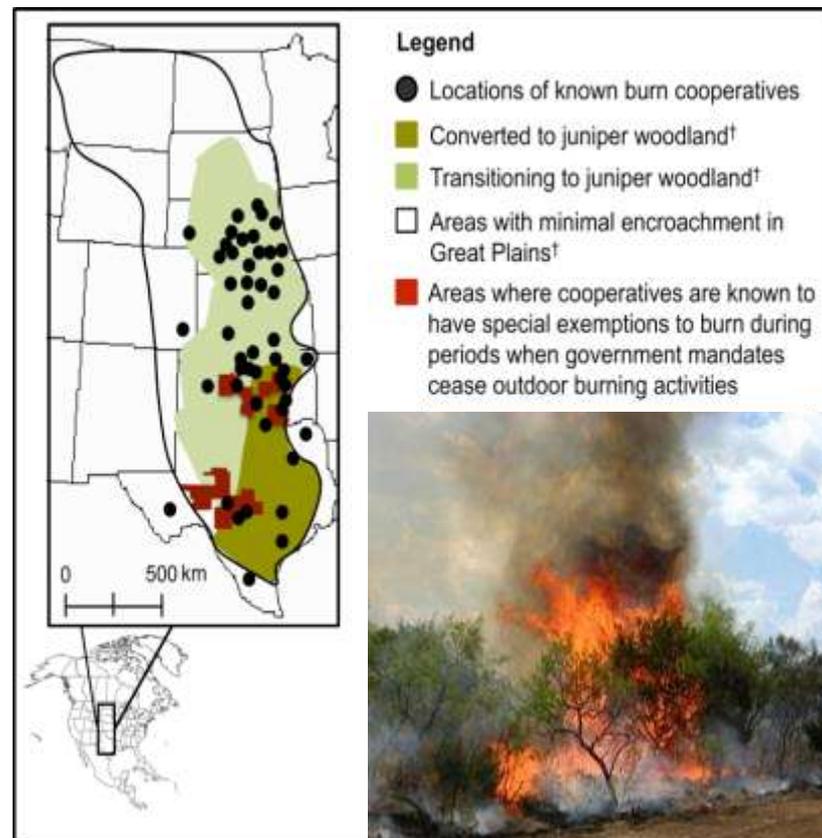
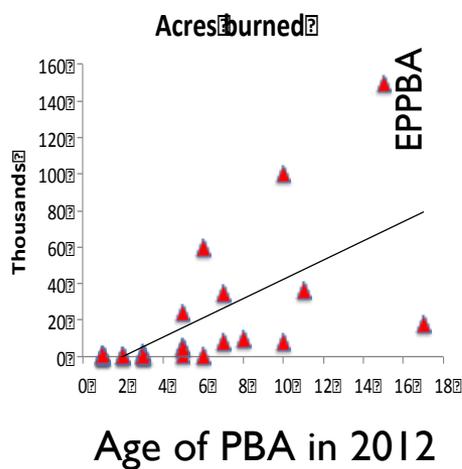
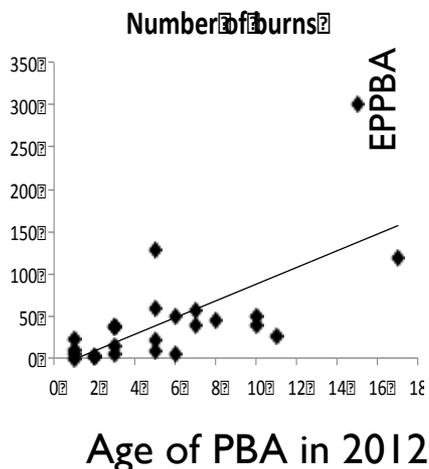
Toledo, D., U.P. Kreuter, M.G. Sorice, C.A. Taylor, Jr. 2014. The role of Prescribed Burn Associations in the Application of Prescribed Fires in Rangeland Ecosystems. *Journal of Environmental Management* 132:323-328

Twidwell, D., W.E. Rogers, S.D. Fuhlendorf, C.L. Wonkka, D.M. Engle, J.R. Weir, U.P. Kreuter, C.A. Taylor, Jr. 2013. The rising Great Plains fire campaign: Citizenry response to woody plant encroachment. *Frontiers in Ecology and the Environment* 11 (Online Issue 1): e64–e71, doi:10.1890/130015

# PBAs Spread Like Wildfire

*“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” (Taylor 2005).*

- 1995 – first burn cooperative formed in Great Plains (NE)
- 1997 – EPPBA formed
- 2013 – 50 fire coops



# Outline

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- Knowledge gaps
- A brief introduction to a proposed new initiative

# Knowledge Gaps

What information is needed to understand limitations and opportunities for enhancing landowner use of prescribed fire?

1. Regulatory drivers: Perspectives of “risk averse” county commissioners and trial judges
2. Public perceptions effects on social networks and subjective norms
3. County extension: Salient landowner-friendly information
4. Usefulness of PBAs and fire liability insurance as promoters of prescribed fire
5. Perceptions regarding the interaction of grazing and fire management as tools for long-term rangeland productivity and biodiversity conservation

# Texas-South Africa Collaboration

## ***Pyric-herbivory effects on savanna dynamics under differing social-ecological conditions.***

- LTER: Southern Great Plains Savanna (John Walker)
  - ◆ Balance between grasses and woody plants is regulated by complex interactions among climate, atmosphere, soils, herbivory, and fire.
  - ◆ Plant composition has tipped in favor of shrubs and trees with savannas transitioning to shrublands or woodlands.
  - ◆ Causes for these ongoing transformations are unclear, but there are important consequences for ecosystem processes, biodiversity, and the sustainability of savannas.
  - ◆ Interaction between fire and grazing herbivory have been determined to be a key determinant of savanna and grassland dynamics

# Texas-South Africa Collaboration

- Texas context: ~ 95% private land ownership
  - ◆ Coordinated land management to maintain/restore savannas is subject to landowner cooperation as promoted by PBAs.
- K2C Biosphere: State, communal and private land management are juxtaposed
  - ◆ Collaborative decision making is required to maintain and restore savanna systems may be more complex.
- These different land tenure/social contexts may affect biophysical drivers of savanna dynamics differently.
- The proposed study will be structured as a comparative social-ecological systems research initiative.
- The goal of the Thursday/Friday “workshop” is to develop a framework for this collaborative research initiative.

# Acknowledgements

- David Toledo<sup>1</sup>, Carissa Wonkka<sup>2</sup>, Dirac Twidwell<sup>2</sup>, Dianne Stroman<sup>3</sup>  
<sup>1</sup> Agricultural Research Service, USDA, Mandan, N. Dakota; <sup>2</sup> Department of Agronomy & Horticulture, University of Nebraska-Lincoln, Nebraska; <sup>3</sup> Collin College - Preston Ridge Campus, Frisco, Texas
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- Bob and Bessie Welder Wildlife Foundation

*Happiness is smoke on the horizon*

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# Characteristics of PBAs



Obstacle	Individual response	PBA response
Education & experience	<i>Lack of fire training</i> (cost of attending fire classes)	<i>FREE CLASSES WITH ACTUAL BURNS TO GAIN EXPERIENCE</i>
Labor to help	<i>Difficult to find trained and experienced labor</i>	<i>NEIGHBOR HELPING NEIGHBOR</i> (trained labor force available)
Equipment	<i>Buy or rent equipment</i>	<i>EQUIPMENT POOL FOR MEMBERS</i> (income from dues, contributions & grants)
Liability	<i>Lack of understanding of need for prescribed fire increases risk</i> (difficult to overcome prejudice against fire and to obtain insurance)	<i>AND MANAGE RISK WITH TRAINED, EXPERIENCED &amp; WELL EQUIPED BURN CREW</i> (PBA has greater political clout within community).
Intense fire	<i>Unable to burn due to burn bans when fires are most needed</i>	<i>EXEMPT FROM BURN BANS</i> (safety record and training and political clout)