



Liability and Prescribed Fire: Perception and Reality

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ABSTRACT

Changing climate and fuel accumulation are increasing wildfire risks across the western United States. This has led to calls for fire management reform, including the systematic use of prescribed fire. Although use of prescribed fire by private landowners in the southern Great Plains has increased during the past 30 yr, studies have determined that liability concerns are a major reason why many landowners do not use or promote the use of prescribed fire. Generally, perceptions of prescribed fire—related liability are based on concerns over legal repercussions for escaped fire. This paper reviews the history and current legal liability standards used in the United States for prescribed fire, it examines how perceived and acceptable risk decisions about engagement in prescribed burning and other activities differ, and it presents unanticipated outcomes in two cases of prescribed fire insurance aimed at promoting the use of prescribed fire. We demonstrate that the empirical risk of liability from escaped fires is minimal (<1%) and that other underlying factors may be leading to landowners' exaggerated concerns of risk of liability when applying prescribed fire. We conclude that providing liability insurance may not be the most effective approach for increasing the use of prescribed fire by private landowners. Clearly differentiating the risks of applying prescribed fire from those of catastrophic wildfire damages, changing state statutes to reduce legal liability for escaped fire, and expanding landowner membership in prescribed burn associations may be more effective alternatives for attaining this goal. Fear of liability is a major deterrent to the use of prescribed fire; however, an evaluation of the risks from escaped fire does not support perceptions that using prescribed fire as a land management tool is risky. Prescribed burning associations and agencies that support land management improvement have an important role to play in spreading this message.

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Introduction

Historically, periodic fires that promote herbaceous plants over fire-sensitive woody plants were a primary driver for maintaining ecological resilience and biodiversity in open grasslands and savannas (Pyne, 2001). In recent decades, rangelands around the world have undergone substantial changes mainly due to the suppression of fire on a large scale and the subsequent proliferation of shrubs and trees (Briggs et al., 2005). Woody plant expansion alters the biophysical characteristics of grasslands and savannas and diminishes the viability of many livestock and wildlife-related activities that form the basis of diverse rural

economies and cultures (Archer et al., 2011; Eldridge et al., 2011). Importantly, fire suppression has also elevated fuel loads that, together with projected hotter and drier climatic conditions, are leading to ever more erratic and destructive wildfires (Luo et al., 2013). Recognition that changing climate and fuel accumulation are increasing wildfire risks in the western United States has led to calls for fire management reform, including the systematic use of prescribed fire, an ecologically effective and economically viable option for reducing accumulated fuel loads (Van Liew et al., 2012). However, such calls have not led to the widespread adoption of this important land management practice “because of (perceived) liability and casualty risks and little tolerance for management errors” (North et al., 2015, p. 1280). Although much of the debate about fire management reforms in the United States has focused on public lands administered and managed by federal and state agencies, this issue is equally important for the maintenance and

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restoration of privately owned rangelands, which are frequently the source of or conduit for large wildfires (Fischer and Charnley, 2012; Scasta et al., 2016).

In the southern Great Plains, which is the primary geographic focus of this paper, legal statutes, regulations, and burn bans governed by fire suppression policies have become the norm. This has led to many open grasslands becoming increasingly invaded by eastern redcedar (*Juniperus virginiana*), Ashe juniper (*J. ashei*) and redberry juniper (*J. pinchotii*). Encroachment by these species has resulted in up to 85% decline in forage production (Kenneth et al., 1995), leading to substantial declines in livestock numbers and biodiversity (Fuhlendorf et al., 2010; Holcomb et al., 2014; Hovick et al., 2015). Commonly used methods for reducing juniper trees include targeted chemical, mechanical, and prescribed fire treatments. Of these, prescribed fire has been found to be the least costly, most effective, and safest technique for reducing invasive woody plants (Van Liew et al., 2012; Twidwell et al., 2015).

Despite the ecological and economic advantages of prescribed fire, this land management practice is still minimally used on private land to reduce woody plants at large scales (Twidwell et al., 2013). The primary reason for the reluctance of many landowners to apply prescribed fire has been widely documented to be fear of liability (Haines et al., 2001; Kreuter et al., 2008; Elmore et al., 2010; Morton et al., 2010; Toledo et al., 2012; Melvin, 2015; Wonkka et al., 2015). In addition, while engaging with landowners from 15 different states, the lead author (who is a leading prescribed fire practitioner and trainer) found fear of liability from escaped fire to be the most commonly cited reason why landowners had not used prescribed fire on their land. Even landowners from Florida, which has one of the most burner-friendly statutes in the country, stated fear of liability as the reason for not burning.

Findings that landowners avoid using prescribed fire because of liability concerns begs the question whether the reported “fear of liability” is founded on fact or misperception. In this paper we address this question by summarizing the history of fire liability laws, discussing factors relating to actual and perceived risks associated with prescribed fire, and discussing effective means to overcome this fear factor in order to build a profire culture among landowners who manage fire-prone rangelands.

Fire Liability Laws

Fire law in the United States derived primarily from English laws relating to concerns over harms caused by escaped fire (Chamberlain, 1896). During the medieval age, King Alfred of England (871 – 899 AD) enacted a law to prevent the spread of fire in communities where most dwellings were built of wood and straw thatch; specifically, the law ordered a bell to be rung at eight o'clock each night to tell residents to cover their fires (Andrews, 1891). This law gave rise to the word *curfew*, derived from *couvre-feu*, an Old French phrase for cover fire (Pyne, 1997). For many centuries thereafter, a curfew bell was rung nightly throughout England to remind people to put out their fires. In 1368, King Edward III ruled, “At common law, a man in whose house or on whose premises fire originated, whether through accident or by reason of negligence, was held absolutely liable for any damage done by that fire to the property of another” (Chamberlain, 1896). Later, these laws were modified and many brought to America by European settlers.

Fire laws in the United States specify one of three liability standards in cases where damages result from fire: strict liability, simple negligence, and gross negligence (Sun, 2006; Weir, 2009; Wonkka et al., 2015; Russell et al., 2016). Strict liability places the burden of restitution for fire damages on the burner regardless of any and all actions taken by the burner to avoid damages. A finding of simple negligence requires a plaintiff to prove damage and that the proximate cause of the damage was negligence by the burner. A finding of gross negligence requires the plaintiff to show damage resulting from the absence of even slight diligence on the part of the burner. In most states where gross negligence applies, there are typically statutorily prescribed standards a burner must follow in order for the lesser liability standard (gross

negligence) to apply and burning outside of those standards will result in courts applying simple negligence in the resulting lawsuit. Six states have strict liability laws, 18 have simple negligence laws (including those in the southern Great Plains), and 4 have gross negligence laws, while 22 have unspecified liability standards for prescribed fire (Sun, 2006). In general, each of the three fire liability standards represents a different level of legal risk for landowners who want to apply prescribed fire on their land. In most instances, landowners' decisions whether or not to use prescribed fire are influenced by their own *perceptions* of the legal and financial implications of the prevailing legal standards of liability. We argue that these perceptions often diverge from the documented risk of escaped fire.

Empirical, Perceived, and Acceptable Risks

To set the stage for our argument, we first define and differentiate among empirical, perceived, and acceptable risk. Empirically, risk is defined as the likelihood of liability for or loss from exposure to a potentially harmful action or event action, and it is characterized by three parameters: probability of a loss, degree of exposure to the loss, and the magnitude of the possible loss (Johnson et al., 1999). Each parameter is estimated using historical data. Risks associated with the use of prescribed fire can be broadly categorized into two types. First, a landowner may consider the risk of damages on their own property resulting from a prescribed fire initiated on the property or one that spreads onto the property from an adjacent area. Second, a landowner may consider risk from potential damage resulting from prescribed fire that escapes from his or her property to adjacent areas. The probability of escaped fire is primarily determined by the conditions under which fire is applied. If a landowner ignites a prescribed fire when the spread of fire can be well managed (i.e., suitable weather conditions, including low wind speeds, adequate equipment, and adequate fire-breaks), then the probability of loss is low. By contrast, if the likelihood of escaped fire and associated damages is high (e.g., nearby highways, housing developments, or valuable adjacent properties), then the risk of initiating a prescribed fire is generally also high.

Although all three dimensions of risk can be empirically estimated, each is associated with some degree of uncertainty. The extent to which a person bases a decision about an action on empirically estimated risk depends on the degree to which he or she considers each estimate to be reliable and his or her degree of rationality in decision making. Kahneman (2011) emphasized that people are more prone to make decisions on the basis of emotional impulse than rational analysis. With respect to prescribed fire, all three risk elements are prone to emotional interpretation. For example, some landowners are more fearful than others about exposure to and losses from a lawsuit related to an escaped fire; their level of fear is determined by their emotional aversion to risk and their subjective perception of the likelihood of a lawsuit. In general, perceptions about the riskiness of applying fire are positively relative with sensationalized media coverage, negative social norms, and concerns about fire safety and weather conditions; by contrast, they are negatively related to experience with fire, accessibility of accurate information about prescribed fire, and access to equipment, labor, and financial resources needed to apply fire safely (Taylor, 2005; Kreuter et al., 2008; Toledo et al., 2013; Joshi et al., 2019). In addition, risk assessment of applying fire is affected by perception and acceptability of risk. Perceived risk is defined as risk that is indefinite and/or uncertain (Black, 1968), whereas acceptable risk is the level of potential losses that an individual, community, or society will tolerate under their existing environmental, technical, economic, sociocultural, and political conditions (UNISDR, 2009).

Most decisions about liability are based on what people believe to be acceptable risk; this stems from the fact that no action (including inaction) bears zero risk of liability. For example, during numerous prescribed fire training meetings conducted by the lead author, participants were asked a series of questions to illustrate this point.

When asked, “Who has never been in an automobile accident?”, few respond affirmatively. Then they were asked: “Since you have been involved in an auto accident, why do you continue to do something you know involves risk; how many of you can guarantee you will not be involved in an auto accident going home tonight; and why are you going to drive home if you cannot guarantee it?” The point of these questions was to demonstrate that actions we are willing to take bear risk and the fact we are willing to take them indicates the risk is acceptable; driving incurs an acceptable level of risk people are willing to take. By contrast, the risk of using prescribed fire is often considered unacceptable even though the risk associated with this practice is far less than driving a car. This is due to the fact that prescribed fire is perceived as a risk with great consequences to most people.

Since 2000, the Natural Resource Ecology and Management Department at Oklahoma State University (OSU) has annually offered two prescribed fire courses. More than 600 students have enrolled and actively participated in these courses, yet only two minor injuries have been reported since 2000 (Weir, 2008; Scasta et al., 2015). Other universities have contacted OSU to inquire how students are allowed to assist on burns because their administration and legal counsel disallow such participation. By contrast, universities require chemistry students to participate in laboratory experiments, with several chemistry laboratories reporting fatalities and injuries since 1997 (Benderly, 2010); one leading safety expert even wrote, “Most academic laboratories are unsafe venues for work or study” (Langerman, 2009). Yet the perception persists that the liability for allowing students to participate in prescribed fire applications is greater than allowing them to participate in chemistry laboratories.

Perceived and acceptable risk also influence state and federal agency policy relating to prescribed fire. These manifest into three common risk biases of agencies involved with fire management (Calkin et al., 2013). These biases include 1) *loss aversion*: preference to avoid practices that avoid losses over those that result in equivalent or even greater socioeconomic gains, 2) *discounting*: favoring actions or decisions perceived to reduce short-term risks but which ignore long-term risks, and 3) *status quo bias*: favoring the status quo, like fire suppression, because those actions are perceived to align more with societal or political ideals. These biases influence agency interactions with prescribed fire practitioners, especially in the private sector. For example, isolated losses in equipment, a lawsuit claim, and a severe ATV-related injury while conducting prescribed fires have created different support models within the USDA Natural Resource Conservation Service (NRCS), which vary in the degree of support provided for prescribed fire from state to state. To illustrate, in one state employees were prohibited from participating in developing burn plans and in applying prescribed burns following an all-terrain vehicle (ATV) accident that resulted in severe injury to one of its employees during a prescribed burn in 2014 (NRCS NE, 2014). The accident was not caused by the fire, but it occurred during a prescribed fire. By contrast, in a similar incident in 2010, an employee of the same agency in another state was killed in an ATV accident while collecting soil samples (USDL, 2016). In this case, the agency-initiated training for safe ATV use but did not discontinue conducting soil surveys. These examples demonstrate the degree of bias in agency support for prescribed fire and the extent to which loss aversion, discounting, and appealing to the status quo guides perceptions of acceptable risk and its management.

Research by Twidwell et al. (2015) has provided insight into the actual levels of risk involved with conducting prescribed fires on private lands. Their study underscored that fatalities related to prescribed fire are minimal on private lands, while accidents involving mechanized equipment and vehicles are by far the leading cause of death in agricultural settings. The study also showed during the past 50 yr, fatalities resulting from wildfire management exceeded those related to prescribed fire by 3,350%. The orders of magnitude difference between deaths sustained while suppressing wildfire and conducting prescribed fire are self-explanatory; however, wildfire and prescribed fire are

rarely distinguished in the media and fatalities associated with fire management are conflated and, therefore, considered unacceptably high. This emphasizes that the acceptability of risk is not necessarily based on the empirical risk of an activity but rather on how people react to specific incidents associated with that activity (prescribed fire) or unrelated but undifferentiated events (e.g., wildfire).

Burn Records

Spotfires and escaped fires are two types of incidents that can occur during the application of prescribed fires and give rise to liability concerns. A spotfire is an ignition that occurs outside the target burn area and is readily extinguished by burn crews using available equipment, whereas escaped fires are ignitions that spread beyond the target burn area and cannot be immediately contained with equipment and personnel used to tend the prescribed fire, thereby requiring extra assistance to extinguish the fire (Weir et al., 2015).

Unfortunately, there are few synthesized reports on burn activities. One report from the Wildland Fire Lessons Learned Center (WFLLC) reported an escape fire rate of only 0.8% for 16 626 prescribed burns conducted by federal agencies on 809 371 ha of public land in 2012 (WFLLC, 2013). A survey of prescribed burn association (PBA) members in the southern Great Plains found only 16 (1.5%) escapes out of 1 094 prescribed burns conducted from 1995 to 2012 and covering 202 342 ha; the escapes ranged from 0.04 to 809 ha, and no insurance claims or lawsuits were filed in response to any of these escapes from sanctioned fires (Weir et al., 2015). One private prescribed burn contractor working in the southeastern United States reported conducting > 2 000 burns on > 141 640 ha over a 14-yr period with no escapes, insurance claims, or lawsuits (J. R. Stivers, Professional Timberland Services, Hurtsboro, Alabama, personal communication). Another private contractor working in Texas reported conducting > 200 burns over a 10-yr period on > 60 702 ha with only two spotfires, no escapes, and no insurance claims or lawsuits (B. Treadwell, Conservation Fire Team, Christoval, Texas, personal communication). In addition, the lead author has conducted > 1 176 prescribed burns in 30 yr on nearly 40 469 ha with only three escapes (0.3%) ranging in size from 1.2 to 48.6 ha, with no property damage, insurance claims, or lawsuits.

To obtain a more comprehensive record of prescribed burns, the Oklahoma Prescribed Burn Association (OPBA) developed a prescribed burn entry form on its website (www.ok-pba.org) and has encouraged prescribed burners across the country to enter burn information. From 2015 to 2018, 1 290 burns covering 206 549 ha were reported from 16 states with 183 (14.2%) reporting spotfires and 42 (3.3%) reporting escaped fires. Over 86% of spotfires and 47% of all escapes reported on the website burned < 0.4 ha, and only two spotfires (0.015%) and only five escaped fires (14%) reported burning over 41 ha. There were no reported insurance claims or lawsuits resulting from any of the 1 013 reported prescribed burns.

On the basis of documented records, feedback from individual prescribe-burn contractors, and the OPBA website, there is no support for the contention that fire escapes represent a serious risk for landowners who use prescribed fire in a proper manner. Given the lack of evidence for any serious risk of escaped fire, we contend that concern over legal liability is not based on fact but rather on other factors that make the use of prescribed fire appear riskier than it actually is.

Liability Insurance and Unanticipated Outcomes

Many landowners have indicated they would apply fire on their land if they had liability insurance to cover damages associated with escaped fire (Kreuter et al., 2008). Generally, landowners have farm and ranch liability insurance policies that typically cover damages caused by escaped or hostile fire, but their policies often poorly define the extent of such coverage. To alleviate uncertainty, many potential burners have sought a policy that specifically indemnifies them from escaped

prescribed fire damages. Such insurance has been available in the south-eastern United States but not the southern Great Plains (Evans and Gharis, 2013). Two case studies are presented to illustrate that such liability insurance may not produce the intended outcomes.

In the first case, OPBA negotiated with an insurance company in 2015 to provide a stand-alone prescribed fire policy nationwide, with the anticipation that demand for such an insurance policy would be strong and prescribed burning would increase. However, during the first year this insurance was offered, just over 30 policies were sold, mostly to private prescribed fire contractors (L. Kutz, Bramlett Insurance Agency, personal communication). The insurance company's actuaries expressed concern about the apparent lack of interest and dropped the policy at the end of 2016 due to unsatisfactory sales volumes, which were not related to poor marketing or advertising. Therefore, although access to stand-alone insurance was considered to be a positive development for prescribed burning, it did not dramatically increase the number of burns or hectares burned during the time it was available. Perhaps if the insurance company had maintained the policy longer, more landowners would have purchased it and more prescribed fire would have been applied by landowners covered by it. However, landowners may also be reluctant to obtain prescribed fire-specific insurance because doing so could increase their exposure to escaped fire lawsuits, as the second case study illustrates.

In the second case, insurance provided to members of a PBA in Central Texas contributed to the initiation of multiple lawsuits following an escaped fire that negatively affected the use of prescribed fire by some landowners. The specifics of this incident and its aftermath were obtained through interviews with people involved in the lawsuits and through analysis of legal briefs and motions filed with the Sutton County court. In March 2011, a contractor who was neither certified as a burn manager nor insured was hired by a pair of private landowners in Sutton County, Texas to conduct a prescribed burn on their property during a burn ban. The contractor had recently become a member of the local PBA and counseled the landowners who hired him to also join the PBA so that they would be covered by the prescribed fire insurance provided by the association to its members. To comply with the PBA's insurance requirements, the contractor also filed a burn plan with the PBA. In addition, these people requested an exemption from the county judge to apply prescribed fire during the burn ban. The judge ruled that only certified burn bosses would be granted a variance and denied the request. In contravention to this ruling, the contractor nevertheless proceeded with the planned burn. In preparation for the burn, the fire crew preburned backfires along firebreaks to create blacklines on the downwind side of the planned fire. During blackline burning, the wind direction shifted, causing the fire to ignite a stand of extremely dry juniper trees. Embers from the burning junipers were blown outside of the burn unit and initiated an escaped fire that burned approximately 405 ha on the contracting landowners' property and three adjacent properties. Even though there was no major property damage or injury, the escaped fire led to multiple lawsuits.

Three plaintiffs filed lawsuits involving the landowner's property, where the fire started; the PBA; and a founding member of the PBA who had disapproved the proposed burn. Two insurance companies became involved in claims by the three landowners including the company that underwrote the PBA's prescribed fire insurance policy and the company that provided insurance for the landowners who had signed the contract for the burn. Initially, the latter insurance company stated its policy did not cover prescribed fire damage but ultimately agreed to pay for the claimed damages to settle the litigation. Once the insurance companies agreed to pay for the specified damages, the defendants were dropped from the lawsuit. The ultimate effect of the lawsuits for the unapproved burn was that the insurance company withdrew coverage of the PBA's prescribed fire insurance policy. Importantly, the insurance company omitted to include an "illegal activities" clause in the policy with which the insurance company would not have had to pay any claims because this was a fire conducted against

the ruling of a county judge. The PBA was named in the lawsuit due to wording in its bylaws that erroneously made it appear that the PBA did contract burning for landowners. As a result, numerous PBAs rewrote their bylaws to emphasize they only provide education, training, and opportunities for landowners to conduct prescribed burns and to clarify that PBA membership does not provide the right to burn outside state laws or prescribed burning guidelines set by the PBA. The fear of liability from this one incident has dramatically reduced the use of prescribed fire in the region, even though the escaped fire and subsequent lawsuits stemmed from an illegally and improperly conducted burn.

One informative statement came from an individual who was a PBA member and had burned regularly but became concerned about risk following the outcome of the lawsuits stemming from this illegal burn in which he had no part. He stated:

"How could I get started burning in 2003 without checking my insurance coverage for hostile (escaped) fire? There was no visceral 'fear.' Also, there were no escapes on my 30-plus fires. Now the fear is intellectual. With it comes inertia. No one wants to have an escape, and we all know that with any fire there is always that risk. Why doesn't planning allay that fear? The damage done by the arrogance of the escaped fire in 2011 hangs around our shoulders like a cloak."

This individual experienced risk reversal and stopped using prescribed fire because of concerns about the actions of others—in this case a lawsuit initiated by a neighbor because his land was burned and due to the existence of an insurance policy against which he could claim. Most other people in the area who had used prescribed fire and were not covered by the PBA's insurance policy continued to burn undeterred.

Discussion

The information provided here shows that, if applied according to proper guidelines, prescribed fire is a lower risk land management practice than generally perceived by many landowners, as well as the general public. From the records presented in this paper, the probability of escape of a prescribed fire is below 1%, with most escaped fires being minimal in size, presenting almost zero risk of fatality and minimal risk of insurance claims or lawsuits. Yet resistance to use of prescribed fire persists because of erroneous perceptions that this land management practice is dangerous and is associated with severe legal liability. To broadly change the fire culture in the western United States and elsewhere, it is imperative to clearly differentiate the risks of applying prescribed fire from wildfire risks and emphasize that systematic use of prescribed fire to reduce accumulated fuel loads substantially reduces catastrophic wildfire risk. This message must be disseminated by all agencies that have a mandate to reduce wildfire risks, as well as PBAs formed to promote the use of prescribed fire by private landowners.

Numerous landowners and managers have suggested that access to liability insurance to alleviate liability risks from prescribed fire would result in a greater use of fire. However, when such insurance was made available in 2015, there was little demand for the product. Moreover, such insurance has also produced perverse outcomes. As seen from the example of the insurance carried by the PBA, claims for damages caused by the escaped fire resulted in an out-of-court settlement by the insurance company rather than the burn manager, who illegally initiated the fire, being held liable for the damages. The reason for this perverse outcome was critical omissions from the insurance policy: First, the policy omitted a requirement that all fires covered under the policy needed to be approved by the local PBA; and second, the policy lacked an illegal activities clause, which complicated this case and ultimately led the insurance company to settle the claim and drop the PBA's policy. Therefore, providing greater access to liability insurance for prescribed fire does not seem to be the solution to overcoming

landowner resistance to applying prescribed fire on their land or to building a profire culture among landowners across the southern Great Plains and elsewhere.

An alternative approach that could enhance a profire culture is a change in state statutes pertaining to prescribed fire. Wonkka et al. (2015) found the frequency and scale of prescribed fire in Florida and Georgia, which have gross negligence standards (with well-defined standards for a burner to follow), were significantly higher than in adjacent states (Alabama, South Carolina, and North Carolina) with simple negligence standards. The likely reason for this difference is that under gross negligence a plaintiff has to prove that the burner did not undertake even slight diligence in conducting the burn, whereas simple negligence requires the plaintiff to show only that the burner did not do all of the things a reasonable person in that situation would have done to ensure that the damages did not occur. Given the greater difficulty of proving that a person was not even slightly diligent, gross negligence represents a lower level of risk for a prospective burner. To reduce landowner resistance to the use of prescribed fire in the southern Great Plains, a change in legislative statute from simple to gross negligence would likely be a positive step for prompting the greater use of prescribed fire to reduce fuel loads and, therefore, wildfire risks.

There also needs to be a shift in the value placed on invasive woody plants. For example, in Texas landowners can claim that fire damage to even invasive juniper trees represents harm to their property, whereas in Oklahoma, these same juniper trees have to be shown to have a marketable value or landscape value near a home to be claimed as a loss and, thus, their destruction cannot be considered property damage. The addition of contributory negligence – type laws has been examined in other places and could benefit prescribed burning (Eburn and Cary, 2017).

In addition to a change in legislation regarding prescribed fire liability, expanding the geographic reach of PBAs is also likely to have a beneficial effect in changing fire culture among private landowners. These are networks of landowners who assist each other during the application of properly planned, legally permitted prescribed fires. Many PBAs work with natural resource and extension agencies to provide training in the safe use of prescribed fire and maintain fire equipment for their members (Taylor, 2005; Twidwell et al., 2013). Several studies have found that members of PBAs are significantly more willing than nonmember landowners to apply prescribed fire on their land, even under extreme conditions (Kreuter et al., 2008; Twidwell et al., 2013; Toledo et al., 2014). One fundamental reason for this is that PBAs provide landowners peer-to-peer first-hand learning opportunities about the safe use of prescribed fire (Kreuter et al., 2008). Therefore, PBAs have the potential to transform the fire culture among landowners and within private land communities from antifire to profire. PBAs have been increasingly established throughout the Great Plains (Twidwell et al., 2013), and their further expansion should be actively encouraged by all parties who have a stake in restoring grasslands and savannas and in reducing the risk of uncontrollable wildfires that may become more destructive because of accumulated fuel loads on private lands. Collectively, PBAs may also be able to facilitate changes in state statutes from ones that retard the use of prescribed fire to ones that reduce liability for escaped fire and, therefore, encourage more landowners to use of fire on their land. In addition, some PBA members may have political connections willing to help change state statutes that hinder the use of this critical land management practice, and PBAs may also be able to persuade county commissioners not to implement burn bans when weather conditions are insufficiently severe to legitimately warrant the imposition of such bans.

Conclusion

In conclusion, to shift ongoing resistance to the widespread application of prescribed fire on private land, three things are needed. First, risks associated with wildfire and prescribed fire must be clearly differentiated in information disseminated by federal, state, and county land

management agencies. This must include accurate information about the low frequency and extent of escaped fires, along with the lack of injuries and fatalities resulting from prescribed fire. In addition, the positive role of prescribed fire to reduce fuel loads that feed uncontrollable wildfire needs to be emphasized. Simply put, fire needs to be desensationalized. Second, measures to mitigate fire-related liability should be refocused from seeking fire insurance to changing state statutes pertaining to the use of prescribed fire. Prescribed fire statutory reform has been most effective where statutes include language describing the importance of fire for the environment, economies, and safety of the state (e.g., Florida's Right to Burn Act); proclaim prescribed burning to be an inherent right of landowners; and statutorily adopt gross negligence as the applicable standard to be applied in cases of escaped prescribed fires. It is also important to include acceptable standards for burning. An additional statutory amendment that eliminated the ability of a plaintiff to claim invasive woody plants as valuable property would further reduce liability and promote prescribed burning. Third, PBAs should be expanded to areas where there is significant resistance by landowners to the use of prescribed fire in order to change fire culture. Without these measures, there will continue to be exaggerated liability concerns regarding the use of prescribed fire, fuel loads will continue to increase as woody plant expansion on rangelands increases, and wildfires fed by the accumulated fuel loads and changing climate conditions will become ever more destructive.

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