

Investigating Flint Hills Fire Culture: A Qualitative Analysis

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Introduction/need for research

Wildfire risk is increasing globally, placing people's lives, homes, and jobs in danger (Jolly et al., 2015). Humans have had a long history of managing ecosystems through regular fire intervals for hunting, agriculture, and the settlement of areas (Coughlan, 2015). With damages from wildfires annually costing the American economy between \$71.1 billion to \$347.8 billion, it's important to find better management strategies to mitigate fire danger (Thomas et al., 2017). American fire suppression policy throughout the 20th century allowed for fuel loads to increase substantially, leading to increasingly intense and dangerous fires (Schoennagel et al., 2017). The Flint Hills is a unique area where a community of producers, mostly cattle ranchers, have used prescribed burning as a management practice for increased forage as well as a means to prevent woody invasive encroachment from taking place (Morford et al., 2022; Towne & Craine, 2016). There is plenty of research available on wildfire; however, social science research on prescribed burning is limited (Hiers et al., 2020). A better understanding of pro-fire motivations is invaluable information that can improve current training and education offered by Extension agents, as well as state, federal, and NGO-prescribed burning education.

Questions that guided this study were:

RQ1: What are ranchers' perceptions of risk related to prescribed fire?

RQ2: How does fire culture in Kansas influence decision-making behavior for ranchers?

Theoretical framework

Due to the lack of prior qualitative research on prescribed fire culture, we utilized grounded theory to develop a framework from an inductive approach. This allowed us to build our theory through rigid data analysis (Tie, 2019). We collected data through interviews and built our codes from a basic framework to advanced codes once we reached data saturation. This method of examination allowed us to create and verify concepts as we coded more interviews (Charmaz & Thornberg, 2020).

Methodology

The research questions were addressed using semi-structured interviews conducted within the Flint Hills in 2019 as part of a documentary for the Great Plains Fire Exchange. Participants were producers, primarily ranchers, using prescribed fire as a land management tool. The majority of participants were males ages 65 and older. The interviewer used an IRB-approved list of questions ranging from personal perceptions toward fire to community perceptions of fire. A team of three coders used NVivo software to examine 34 total interview transcripts. Each coder examined 17 interview transcripts from the total pool of 34 interviews, with coding overlap. Coders first used note-taking to examine transcripts and become familiar with the text before moving on to rigorous coding. All three researchers coded the first 7 transcripts to compare their approach, establish initial codes, and to maintain coherence throughout the analysis. After using reflexive iteration and multiple waves of coding, the researchers debriefed multiple times to develop thick descriptions of codes and synthesize major themes from the data.

Findings

Three major themes emerged throughout the coding process, all centralized around the decision of whether or not to apply prescribed burning as a management tool. These themes are risk, culture, and experience. Participants mention many types of *risks*, including fire suppression's

risk to the ecosystem, along with their responsibility to reduce risk by conducting safe prescribed burns. Participants often refer to community norms, which we refer to as *culture*, or the practice of burning as a community and/or because generations before them have done it. Many participants mention passing down knowledge from one generation to another at a young age, which we labeled *experience*, to help reduce risk, enhance learning, and to conduct a burn safely. Example quotes from these themes are displayed in Table 1.

Table 1
Producer Perspectives for Using Prescribed Burning

Theme	Example quotes
Risk	<p>“Our practice is that we believe that there is more risk of not using fire than there is of using too much, use too many years, so I suppose if we’re going to make a mistake we’ll burn every year rather than trying to take off three or four years as I know some people do.” -Anthony</p> <p>“I used fire cautiously and beneficially and I’m learning a lot about the use of fire from current experiments and will anticipate using it...” -Garrett</p>
Culture	<p>“Being a good neighbor, being a good steward of the land kind of goes hand in hand and we notify people who’re going to be burning anywhere near or adjacent to their property. And just being a good steward and a good neighbor goes a long way.” -Charles</p> <p>“My great-great-grandfather settled about five miles east of where we are in the mid 1880s, and he started using prescribed fire then. And it's just come down one generation to the other.” -Robert</p>
Experience	<p>“I’ve been going along on these burns ever since I was big enough that they let me go. I used to run with my grand-dad a lot and so that was kind of, I just learned it by doing it...” -Will</p> <p>“...usually the most senior person there in age is who makes many of the decisions on. Is it safe to burn? Is it right to burn? How are we going to do it?” -Wyatt</p>

Conclusions

Our results suggest risk, culture, and experience in utilizing fire are major themes that help define their “fire culture” and drive long-term management decisions of prescribed burning. Many producers in the Flint Hills have a multigenerational connection to burning and as a result, have a firm understanding of the risks, benefits, and the understanding to conduct burns safely.

Implications/recommendations/impact

More social science research is needed to better understand the motivations and demotivators of burning for producers in other regions of the country, as well as residents who don’t own large tracts of land. As risk for wildfire danger increases in our day to day lives, it is important to understand the motivations private landowners have in protecting their homes, livelihoods, and local ecosystems. We recommend additional research focus on geographically urban people’s perceptions of fires – both controlled fires and wildfires – as they are an understudied population (Rosen et al., 2023).

References

- Charmaz, K., & Thornberg, R. (2020). The pursuit of quality in grounded theory. *Qualitative Research in Psychology, 18*(3), 305–327.
<https://doi.org/10.1080/14780887.2020.1780357>
- Coughlan, M. R. (2015). Traditional fire-use, landscape transition, and the legacies of Social Theory Past. *Ambio, 44*(8), 705–717. <https://doi.org/10.1007/s13280-015-0643-y>
- Hiers, J. K., O'Brien, J. J., Varner, J. M., Butler, B. W., Dickinson, M., Furman, J., Gallagher, M., Godwin, D., Goodrick, S. L., Hood, S. M., Hudak, A., Kobziar, L. N., Linn, R., Loudermilk, E. L., McCaffrey, S., Robertson, K., Rowell, E. M., Skowronski, N., Watts, A. C., & Yedinak, K. M. (2020). Prescribed fire science: The case for a refined research agenda. *Fire Ecology, 16*(1). <https://doi.org/10.1186/s42408-020-0070-8>
- Jolly, W. M., Cochrane, M. A., Freeborn, P. H., Holden, Z. A., Brown, T. J., Williamson, G. J., & Bowman, D. M. (2015). Climate-induced variations in global wildfire danger from 1979 to 2013. *Nature Communications, 6*(1). <https://doi.org/10.1038/ncomms8537>
- Morford, S. L., Allred, B. W., Twidwell, D., Jones, M. O., Maestas, J. D., Roberts, C. P., & Naugle, D. E. (2022). Herbaceous production lost to tree encroachment in United States rangelands. *Journal of Applied Ecology, 59*(12), 2971–2982.
<https://doi.org/10.1111/1365-2664.14288>
- Rosen, Z., Henery, G., Slater, K. D., Sablan, O., Ford, B., Pierce, J. R., Fischer, E. V., & Magzamen, S. L. (2023). A culture of fire: Identifying community risk perceptions surrounding prescribed burning in the Flint Hills, Kansas. *Journal of Applied Communications, 106*(4). <https://doi.org/10.4148/1051-0834.2455>
- Schoennagel, T., Balch, J. K., Brenkert-Smith, H., Dennison, P. E., Harvey, B. J., Krawchuk, M. A., Mietkiewicz, N., Morgan, P., Moritz, M. A., Rasker, R., Turner, M. G., & Whitlock, C. (2017). Adapt to more wildfire in western North American forests as climate changes. *Proceedings of the National Academy of Sciences, 114*(18), 4582–4590.
<https://doi.org/10.1073/pnas.1617464114>
- Thomas, D., Butry, D., Gilbert, S., Webb, D., & Fung, J. (2017). The costs and losses of wildfires: A literature survey. *National Institute of Standards and Technology, 1–64*.
<https://doi.org/10.6028/nist.sp.1215>
- Tie, Y. C., Birks, M., & Francis, K. (2019). Grounded Theory Research: A design framework for novice researchers. *SAGE Open Medicine, 7*, 1–8.
<https://doi.org/10.1177/2050312118822927>
- Towne, E. G., & Craine, J. M. (2016). A critical examination of timing of burning in the Kansas Flint Hills. *Rangeland Ecology & Management, 69*(1), 28–34.
<https://doi.org/10.1016/j.rama.2015.10.008>