NORTHERN ARIZONA UNIVERSITY | Ecological Restoration Institute

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March 2025

Recent social science findings on forest and fire management from the greater Flagstaff, Arizona area

Overview

Recent research in social science related to forest and fire management illustrates best practices for engaging with the public around decision-making, resource allocation, and public safety, among other key topics. This briefing paper reviews several recent social science studies conducted in and around Flagstaff, AZ between 2019–2024 to highlight growing public support for forest management and provide suggestions that can leverage support during future forest management planning and implementation.

Full cost accounting for the Schultz Fire

In 2020, a team of researchers conducted a full cost accounting for the 2010 Schultz Fire. The total cost of the fire and flooding for a ten-year assessment period (2010–2020) was conservatively estimated to be approximately $111 million in 2021 dollars, only 10% of which were for fire suppression. This represents a fire cost of $7,345 per acre, which is 4.5 times the proposed cost of restoration. Furthermore, these costs continued to accrue over time and included long-term financial costs, but also effects that are more difficult to quantify such as decreases in local ecosystem services and societal costs like community well-being. Ten years after the Schultz Fire, 25% of survey respondents shared that the fire and flooding caused significant stress, while almost 20% reported that their mental health had suffered.

Household experiences with the 2019 Museum Fire

Two household surveys — one in 2019 and one in 2022 — sought to understand Flagstaff resident experiences before and after flooding following the 2019 Museum Fire. While conditions surrounding the Museum Fire concerned many residents, there is continued support for forest management activities. A majority of 2022 respondents found a variety of forest management practices acceptable, including strategic removal of trees to reduce hazardous fuels (89.5%), creating fuel breaks (88.9%), allowing lighting- ignited fires to burn (74%), and utilizing prescribed fire (79.5%). An exception was reduced air quality (40.6%), although prescribed fire had high levels of acceptance (78.4%). This contradiction highlights the challenges of management tactics that have consequences beyond public land such as reduced air quality.

Public support is built upon the perception that continued collaborative forest management will lead to positive long-term outcomes, with a strong majority of 2022 respondents agreeing that continued forest management will reduce the risk of catastrophic fire (90.3%) and postfire flooding (80.7%) and minimize future costs associated with wildfire (81.4%) and postfire flooding (77.8%). Under these collaborative conditions, local government and land management agencies have widespread public support for and recognition of the need for forest restoration and wildfire and post-fire flood risk reduction.

Community acceptance of smoke from wildfire and fire used for land management

Five household surveys were conducted in five Arizona communities — Parks, Highlands Fire District (Kachina Village, Mountainaire, and Forest Highlands), Sedona, Camp Verde, and the Cheshire/Linwood Heights area of Flagstaff — between 2021 and 2024. Participants were asked to report how long they would tolerate unhealthy levels of smoke from different sources; mean responses ranged from 3–6 days across surveys.

Smoke from wildfire was most acceptable, followed by prescribed fire, managed fire, and then slash pile burning. Residents were supportive of forest management activities that produce smoke, but indicated a preference for techniques that did not produce smoke wherever possible. Common information needs respondents expressed included notification of approaching declines in air quality, explanations of the decision-making process behind prescribed fire planning and timing, and access to real-time air quality monitoring.

Household flood insurance after wildfire

Household surveys following the Schultz and Museum Fires invited respondents to describe their experiences with post-fire flood insurance coverage. The average respondent who made a flood insurance claim was underinsured by at least $12,111. Most respondents declined to renew their coverage between 2-5 years after a fire, indicating a need to increase risk communication around the two-year mark to encourage retention. Renters are particularly vulnerable, as their ability to mitigate or recoup losses is in large part dependent on the decisions of their landlord. The cost of mitigation efforts to reduce the impacts of post fire flooding doubled over a 10-year period following the Schultz Fire, indicating that there are substantial out-of-pocket costs (an average of $10,847 per household) that are often not captured in economic analyses after wildfires.

Recommendations

While more work is needed in other areas of Coconino County or northern Arizona, these studies suggest that support for forest management and tolerance of associated impacts remain high. We conclude that:

- It may take a minimum of 3–5 years following a fire to understand the full costs of a single event. Investment in treatments far outweigh the costs following uncharacteristic fire and flooding.
- Uncharacteristic fire and flooding can impact mental health; thus, it is important to emphasize the connection between preparation and mental health.
- Support for a diverse suite of forest management approaches, even when smoke is produced, has remained consistent in the greater Flagstaff area and has been bolstered by effective communication about the value of fire. Given high understanding of fire, forest management outreach should focus on why activities are necessary and provide information about the approaches used.
- Addressing disconnects between short-term impacts of forest management (e.g., smoke) versus long-term benefits (e.g., reduced property risk) can extend public acceptance of forest management activities even further.
- Exploring mechanisms such as outreach programming or small grants and cost shares to support post-fire flood mitigation may encourage proactive risk reduction while minimizing financial hardships at the household level.
- Resident turnover in the greater Flagstaff area requires continued engagement and communication about forest health and management, but many new residents are more willing to accept the impacts and outcomes of forest management.
- Increased access to information regarding planning and preparation for smoke from wildfire and forest management can increase public support; this requires better guidance on where to find this information, rather than the creation of new resources.

For a comprehensive list of publications and resource links, visit eri.nau.edu/social-science-findings, or use the QR code below.

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