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The Devil is in the Details: Variation in Public Acceptance of Fuels Treatments Across Western Fire-Prone Communities

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Abstract
Implementation of broad landscape management goals to confront the wildfire crisis occurs at the project level and is subject to public scrutiny. Although the research literature demonstrates broad public acceptability of fuels treatments, a closer examination of the studies reveals notable variation in acceptance. Survey data from thirteen western U.S. communities using the same measures of acceptability are presented. Results highlight high acceptance with notable variation in treatment type and study location. Results indicate that the devil is in the details.

Keywords: Acceptability, Fuels treatments, Public lands, Social data, Survey research

Running head: Variation in Acceptance of Fuels Treatments

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Introduction

Substantial wildfire impacts have prompted paradigmatic shifts in public land management approaches. This is exemplified in the United States by the National Cohesive Wildland Fire Management Strategy (USDA, 2011) and Wildfire Crisis Strategy (USDA, 2022), which call for expanded efforts to reduce wildfire risk through fuel management on federal, state, tribal, and private lands (USDA, 2023) as part of comprehensive efforts to adapt to wildfire (Schoennagel et al., 2017). These investments coincide with increased public attention to risks posed by wildfire, including impacts far beyond a fire's immediate geography, such as widespread smoke from the 2023

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Canadian wildfires.

Fuels management projects, including thinning vegetation, burning piles of cut vegetation, prescribed fire, and managing naturally-ignited fires, are inherently local. Ideally, decisions about each fuels treatment consider the appropriateness and effectiveness of treatment methods, project scale, collaboration across land ownership types, existing authorities and partner investments, equity and risk to communities, and protection of critical infrastructure (e.g., power, roadways, and water supplies; USDA, 2023). Critically, fuels treatments that meet scientific and regulatory requirements must also be acceptable to the public.

Research on public acceptability of fuels treatments in the United States over the last twenty years demonstrates broad public acceptance (McCaffrey and Olsen 2012; McCaffrey et al., 2013). However, organized resistance to fuels treatments on public lands can delay, alter, or undermine management activities and plans (Paveglio et al., 2009; Jahn, White, and Brenkert-Smith, 2020; Paveglio and Edgeley, 2023), even when resistance does not reflect the broader public sentiment (Brenkert-Smith et al., 2020c). Past forest management conflict, exemplified by the "timber wars" of the U.S. Pacific Northwest, has generated significant environmental and social costs, including eroded trust between the public and federal agencies (Dumont, 1996; Winkel, 2014). Planning and implementation of fuels treatments may benefit from data-driven understandings of public acceptability. Data should represent not only those who find fuels treatments acceptable but also those who find fuels treatments unacceptable or whose conditional acceptance could shift toward support or opposition. Such data may complement existing methods for gathering public preferences, such as public comment periods, which often produce non-technical feedback that provides novel insights but is difficult to incorporate into project planning (Steelman, 1999). Awareness of the full range of fuels treatment acceptability, which takes into account conditional support and opposition, is particularly important on a local scale, where fuels treatment implementation happens.

Public land and fire managers hold important insights into public acceptability based on personal experience implementing fuel and other forest management projects, and have expressed concern about public opposition (e.g., Gardner et al., 1985; Symstad and Leis, 2017; Urgenson et al., 2017; Kupfer et al., 2022). However, managers' perspectives can differ from those of the broader public, possibly leading to misperceptions (Burns and Cheng, 2007; Wu et al., 2022). For example, Byerly Flint et al. (2022) found that wildfire practitioners' expectations of the effect of images of wildfire destruction in outreach materials intended to encourage mitigation behaviors did not match measured behavioral outcomes among homeowners in fire-prone communities. Owners with riskier properties were less likely to pursue wildfire risk reduction information when shown negative imagery. Mylek and Schirmer (2020) found no relationship between public acceptability of prescribed fire and length of time since personally experiencing a wildfire, even though half of the study's wildfire experts thought that would be the case. The authors speculated that wildfire experts might form opinions based on interactions with highly interested and engaged parties seeking contact with wildfire experts, rather than the broader public. Without representative social data, such as that from systematically administered household surveys, anecdotes of public acceptability might unduly influence on-the-ground implementation of fuels treatments.

Here, we briefly review the literature regarding social acceptance of fuels treatments in the U.S. then, we investigate how acceptability varies across communities using a compiled dataset from studies across five states and thirteen study areas in the American West. We find variability in the acceptance of fuels treatments across locations and fuels treatment approaches. Understandings from

local social data can offer critical and actionable insights to support managers' public engagement efforts and potentially help avoid conflict. These insights provide opportunities for strategic communication (Remenick, 2017) in support for public land management agencies' shift toward collaborative and community-based approaches to fuels treatments (Bosworth et al., 2007).

Literature Review

Overall, the literature finds fuels treatments on public lands to be broadly acceptable to the U.S. public (McCaffrey and Olsen, 2012; McCaffrey et al., 2013). However, investigations using consistent methods across multiple locations have found variation in acceptability of fuels treatments by location (Brunson and Shindler, 2004; Bright and Newman, 2006; Bright, Newman, and Carroll, 2007; Ostergren, Abrams, and Lowe, 2008; Clement and Cheng, 2011; Toman et al., 2014). For example, Toman et al. (2014) found that the portion of respondents who agree that different fuels treatments are "a legitimate tool for resource managers to use whenever they see fit" varied from 47% to 76% for mechanical vegetation removal and 31% to 61% for prescribed fire across study sites over two time periods in seven western and upper midwestern states.

Studies from the last twenty years also show varied public preferences for different fuels treatments techniques (Shindler and Toman, 2003; Brunson and Shindler, 2004; Vogt, Winter, and Fried, 2005; McCaffrey, 2006; Merrick and Vining, 2006; Ryan and Wamsley, 2006; Toman, Shindler, and Brunson, 2006; Absher and Vaske, 2007; Kaval, Loomis, and Seidl, 2007; McCaffrey, Moghaddas, and Stephens, 2008; Ostergren, Abrams, and Lowe, 2008; Lim et al., 2009; Shindler, Toman, and McCaffrey, 2009; Clement and Cheng, 2011; Shindler et al., 2011; McCaffrey et al., 2013; Gordon, Brunson, and Shindler, 2014; Molina et al., 2021). For example, in a national survey, Bowker et al. (2008) found that 91% of respondents agreed with the use of prescribed fire with little regional variation, while only 58% agreed with the use of mechanical vegetation management with high levels of regional variation, as part of a wildfire management program. In contrast, Clement and Cheng (2011) found residents located near three national forests in Colorado and Wyoming had higher support for forest thinning than prescribed fire as a fuels treatment to reduce wildfire risk.

Examining variation in fuels treatment acceptability by location is important on its own and can offer insights into the relative importance of factors that might moderate or influence acceptability. Much of the relevant literature examines measures related to acceptability of fuels treatments, including stakeholder type (Bright and Newman, 2006; Bright, Newman, and Carroll, 2007; McCaffrey, Moghaddas, and Stephens, 2008; Ostergren, Abrams, and Lowe, 2008; Shindler et al., 2011), trust (Kneeshaw et al., 2004; Shindler, Toman, and McCaffrey, 2009; Shindler et al., 2011; Gordon, Brunson, and Shindler, 2014), and forest conditions (Absher and Vaske, 2007; Bright, Newman, and Carroll, 2007; Campbell, Venn, and Anderson, 2016). However, making direct comparisons of acceptability of fuels treatments across studies presents difficulties. The reporting for individual and syntheses of studies largely focuses on high acceptability. However, the portion of survey respondents who find management techniques moderately or not at all acceptable can vary, as can the conditions under which treatments are acceptable. Refer to Appendix A for a summary of publications measuring acceptability, including the specific metrics and measurements.

The types of fuels treatments measured in past acceptability research typically include mechanical treatments and prescribed fire. However, social data collection instruments (e.g., surveys) vary in fuels treatment techniques queried and language used to describe the different fuels treatments. For example, in some studies "mechanical treatment" is used generically, whereas others specify tree

felling, clearcutting, or thinning. Likewise, studies employ different acceptability measures (e.g., acceptance, tolerance, support, or approval) that may carry different meanings for study participants (see Appendix A). Furthermore, acceptability is generally characterized as a judgement between alternatives (Brunson, 1996), and studies vary in terms of alternatives provided. For example, some study structures infer acceptability based on higher support for one technique compared to another (Toman, Shindler, and Reed, 2004; Brunson and Evans, 2005; Vogt, Winter, and Fried, 2005; Bowker et al., 2008; Shindler et al., 2011; Ascher et al., 2013; Gordon, Brunson, and Shindler, 2014; Toman et al., 2014), while others measure tradeoffs between techniques directly (Shindler and Reed, 1996; Brunson and Shindler, 2004; Kaval, Loomis, and Seidl, 2007). Other studies may provide respondents with a "no action" option (Shindler and Reed, 1996; Kneeshaw et al., 2004; Bright, Newman, and Carroll, 2007; Clement and Cheng, 2011), complicating opportunities to compare results across studies.

Collectively, the literature indicates, despite evidence of broad public support, acceptability for fuels treatments varies based on treatment technique and location, suggesting that the devil is in the details.

Methods

The Wildfire Research (WiRē) Approach

The WiRē Approach was developed by a long-running, researcher-practitioner team (known as WiRē[10]) that works with wildfire practitioner organizations (e.g., fire department, regional wildfire council, a nonprofit, or some combination of local entities) to collect local data that inform practitioner efforts to reduce wildfire risk to homes and communities at actionable scales.[11] In collaboration with WiRē, project partners use diverse criteria to select communities for study. Communities are chosen through collaborative processes with the intention to fulfill the information needs of partners' programs, rather than to represent larger geographic regions. All communities are considered at high risk of wildfire, but study areas vary in many ways, including exposure to wildfire hazards, fire protection capabilities, existing levels of property- or community-level mitigation efforts, and the extent of wildfire education and outreach programs.

Implementation of the WiRē Approach (described by Champ et al., 2021b) involves working collaboratively with local wildfire education programs to collect observations of property-level wildfire risk through a rapid wildfire risk assessment and social data collected through a household survey. Starting with county assessor data, fire professionals assess the wildfire risk for every residential property with a structure within a defined study area. The rapid risk assessment is comprised of 13 attributes associated with home survivability (e.g., vegetation near the home, roofing materials) observed from the roadside. Next, a modified Dillman approach (Dillman, 2011) is used to administer a mailed household survey.[12] The household surveys come from the local partner and contain core questions related to risk mitigation, wildfire experience, attitudes towards wildfire, and acceptability of fuels treatments that are repeated in every project, as well as local questions tailored

[10] Pronounced: Wy-REE

[11] wildfireresearchcenter.org

[12] The modified Dillman Approach used is comprised of four mailings. A letter introducing the project mailed before the risk assessments are conducted, followed by three mailings after the risk assessments: 1) a first survey packet with cover letter, survey, and postage-paid envelope, 2) a reminder/thank you postcard, and 3) a second survey packet with a modified cover letter, survey, and postage-paid envelope.

to the specific priorities of the partner organization.

Full details on project-specific data collection and results summaries are published in the Research Notes following each project included here (Brenkert-Smith et al., 2020a; Brenkert-Smith et al., 2020b; Champ et al., 2021a; Brenkert-Smith et al., 2022; Donovan et al., 2022; Goolsby et al., 2022; Brenkert-Smith et al., 2023; Goolsby et al., 2023). See Table 1.

Overview of WiRē Study Locations and Compiled Data Set

Data from projects using the WiRē Approach have been compiled into a dataset that is comprised of 26,016 rapid wildfire risk assessments, of which 8,001 are paired with household survey responses from 22 collaborative projects. Over time, small adjustments to the rapid wildfire risk assessment and household survey instrument have been made to reflect the latest wildfire and social science. For example, distance to neighboring homes was added to the risk assessment to capture the risk contributed by adjacent homes that can lead to radiant, direct flame, or ember ignition depending on distance (Knapp et al., 2021; Quarles et al. 2010). Each project dataset is produced using a standardized procedure with consistent variables that can be compiled for analysis. Further steps are taken when adding individual project data to the compiled dataset to account for any updates to existing variables (e.g., generalizing the variable description to account for changes to the wording of a survey question). The data are processed in Stata[13]2 following a reproducible workflow outlined in Long (2009). Previous analysis has revealed substantial variation across these communities in several related aspects, including demographics, residents' expectations regarding wildfire outcomes, and both self-reported and professionally observed wildfire preparedness and mitigation efforts (Meldrum et al., 2018).

The dataset presented here represents thirteen projects conducted in five states between 2018 and 2023 (see Figure 1). For the purposes of this paper, we include this subset of projects from the compiled dataset for which the household survey included the same battery of questions about the acceptability of fuel treatments. For this battery, respondents rated a core set of fuels treatments to reduce wildfire risk on public lands as extremely, very, moderately, slightly, or not at all acceptable.

Table 1. Summary of the 13 Wildfire Research (WiRē) Projects Presented

Project Name	Partner(s)	Location	Year	Survey Responses	Response Rate
Squilchuck	Chelan County Fire District 1	Chelan County, WA	2018	295	48%
Chaffee	Colorado State Forest Service	Chaffee County, CO	2019	204	50%
Grand	Grand County Wildfire Council	Grand County, CO	2020	557	50%
Ashland	Ashland Fire Rescue	Jackson County, OR	2019	1128	56%
Platte	Platte Canyon Fire Department	Park County, CO	2020	418	36%
Teton	Teton Area Wildfire Protection Collaboration	Teton County, WY	2020	258	38%

[13] Any use of trade, firm, or product names is for descriptive purposes only and does not imply endorsement by the U.S. Government.

Wasatch	Forestry Fire and State Lands, Utah State Department of Natural Resources	Salt Lake County, UT	2021	249	45%
Santa Fe	City of Santa Fe Fire Department	Santa Fe County, NM	2021	419	46%
Genesee	Genesee Fire Rescue	Jefferson County, CO	2021	584	45%
Chelan	Cascadia Conservation District, Chelan County Fire District 3, Lake Wenatchee Fire & Rescue, Wenatchee Valley Fire Department	Chelan County, WA	2022	550	42%
Vail	Vail Fire and Emergency Services	Eagle County, CO	2022	155	21%
Montrose	West Region Wildfire Council	Ouray and Montrose Counties, CO	2023	270	25%
Estes	Estes Valley Fire Protection District	Larimer County, CO	2023	549	39%
				Total: 5,636	

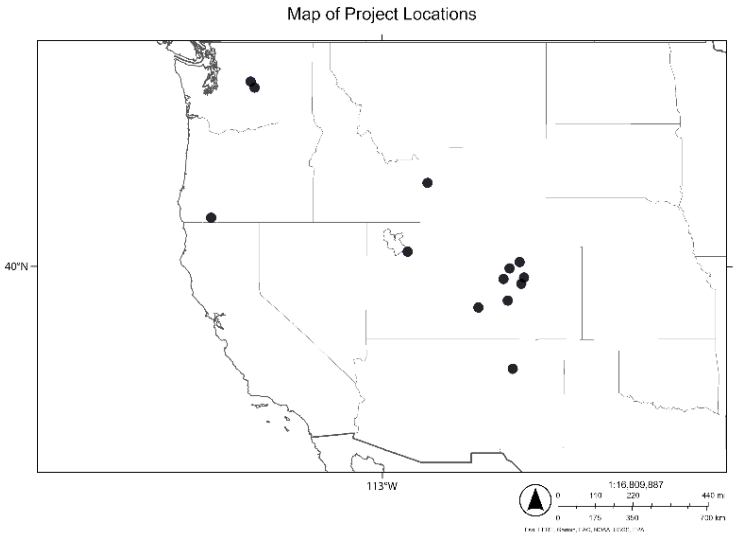

Figure 1. Map of Study Locations Included in the Wildfire Research (WiRē) Analysis.

Findings

In general, respondents expressed broad acceptance of fuels treatments on public lands near them (Figure 2). Acceptance of removing trees and reducing other vegetation (thinning/fuel breaks) on nearby public lands was the most accepted treatment across projects, with 76% of respondents overall indicating it as extremely or very acceptable (ranging from 64% in Montrose to 84% in Ashland). Sixteen percent of respondents reported it as moderately acceptable, ranging from 11% (Ashland) to 25% (Estes). On average, 8% of respondents report this approach as slightly or not at all acceptable, ranging from 5% (Santa Fe, Chelan, and Ashland) to 16% (Montrose).

Overall, the majority (68%) of respondents indicated that managing naturally occurring fires was extremely or very acceptable, ranging from 48% (Montrose) to 78% (Ashland and Santa Fe). Eighteen

percent of respondents reported this approach was moderately acceptable, ranging from 11% (Ashland) to 31% (Montrose). On average, 14% of respondents reported that they found this management technique on public lands slightly or not at all acceptable, ranging from 7% (Chelan) to 22% (Wasatch).

A majority of respondents (67%) also found "burning piles of vegetation (slash piles) on nearby public lands" very or extremely acceptable; however, acceptability ranged from 38% (Wasatch) to 81% (Squilchuck), indicating a wide range of acceptability. Sixteen percent of respondents found it moderately acceptable, ranging from 11% (Squilchuck, Grand, Ashland) to 21% (Chaffee). Notably, nearly a fifth (17%) of respondents found burning piles of vegetation slightly or not at all acceptable, ranging from 7% (Teton) to 44% (Wasatch).

Finally, while most respondents (58%) also found prescribed fire extremely or very acceptable, the project average ranged from 31% (Wasatch) to 76% (Ashland). Nearly a quarter of respondents (22%) reported prescribed fire as moderately acceptable, ranging from 14% (Ashland) to 28% (Chaffee and Montrose). Twenty percent of respondents, ranging from 9% (Chelan) to 44% (Wasatch), found prescribed fire slightly or not at all acceptable.

Discussion

In this paper we report public acceptability of different fuels treatments to reduce wildfire risk using survey data collected between 2018-2023 from respondents in thirteen project locations across five states. Our use of consistent survey measures across the thirteen study sites enables direct comparisons of acceptability of different fuels treatments by location. Our findings support conclusions within the broader literature of high public acceptability of fuels treatments on public lands to mitigate wildlife risks. Averaging across locations, over 50% of respondents found it very or extremely acceptable for managers to use the following treatments to reduce fire risk: removing trees and other vegetation (e.g., thinning or fuel breaks) (76%), managing a naturally-ignited fire (68%), burning piles of vegetation (67%), and conducting a prescribed fire (58%). However, examining acceptability by location, treatment type, and level of acceptance yields more variation than the summary above suggests. Notably, we find that acceptability varied by fuel treatment and location.

For example, the treatment option of removing trees and other vegetation (e.g., thinning or fuel breaks) was the most highly and consistently accepted treatment option across locations, but acceptability of fire use varied by type (prescribed fire, pile burning, managing a naturally-ignited fire), with prescribed fire rated the least acceptable.

While research on fuels treatment acceptability typically focuses on the portion of respondents who report high acceptability, managers' constituents include those who report otherwise (i.e., moderately, slightly, or not at all acceptable). We find the portion of respondents who reported low or no acceptability varied by study location and treatment type. For example, the portion of study respondents who found each fuels treatment option slightly or not at all acceptable ranges from 5% (removing trees and other vegetation, Chelan, Ashland, Santa Fe) to 44% (burning piles of vegetation or conducting a prescribed fire, Wasatch). Local data that reveal such community variation can support and enable managers' efforts to build collaborative, community-based approaches to fuels treatment implementation. If managers encounter complaints, objections, or resistance to fuels treatment projects, understanding the extent to which such complaints represent a broader community sentiment can also inform strategic communication and engagement by managers.

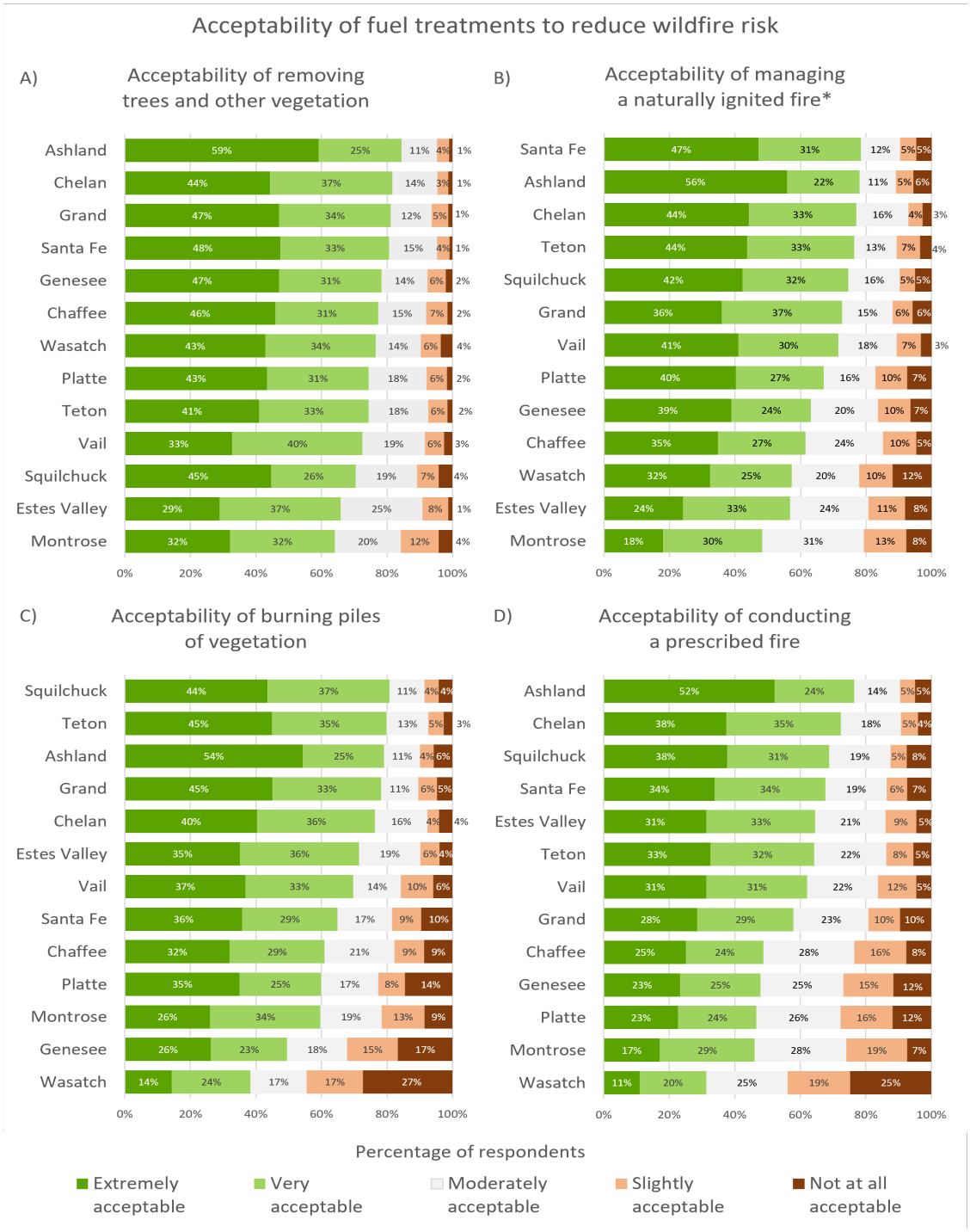

Figure 2. Survey results pertaining to the acceptability of fuels treatments on nearby public land to reduce wildfire risk for four treatment methods (A) "removing trees and other vegetation," B) "conducting a prescribed fire," C) "burning piles of vegetation," and D) "conducting a prescribed fire," reported by WiRē projects conducted 2018-2023 (n = 5,636). Any differences in percentages reported in this figure and in the text are the result of rounding. Kruskal-Wallis equality-of-populations rank tests indicate that the distribution of the 5-point categorical responses for each of the four "acceptability" questions vary significantly across the 13 study locations (p<0.001).

Further, a relatively consistent portion of respondents found the fuels treatment options moderately acceptable, ranging from 11% to 31%, depending on treatment and location. These respondents may

be truly ambivalent about fuels treatments or may not know enough to have a strong opinion in either direction. Regardless, such 'swing voters' can be important for managers to engage with during project planning, including outreach.

There are many ways in which local insights into public acceptability of fuels treatments can help managers plan strategically. Higher public acceptability for certain treatments may aid in fuels treatment selection, how management action information is communicated, and the phasing of different treatments (e.g., conducting more acceptable treatments first to build trust before moving to less acceptable treatments). Understanding the distribution of acceptance levels (e.g., high, moderate, or low acceptability) in communities near planned fuels treatments may help managers interact more effectively and strategically with the public, especially by contextualizing complaints or resistance.

Variation in acceptability by treatment and location also points toward the ongoing need for systematic investigation of the drivers of acceptability. For example, modes or types of treatments measured may affect acceptability (e.g., mechanical versus hand removal, thinning versus clear cutting, broadcast fire versus pile burning). Local data might also be used to test the efficacy of outreach and engagement campaigns intended to build public support, including among those with whom clear communication and trust may lead to increased acceptability of fuels treatments.

Conclusion

National policy is increasingly bolstering resources to promote and undertake fuels treatments on public lands to reduce wildfire risk. Understanding public acceptability of fuels treatments is critical. Past research suggests there is broad public support for fuels treatments on public lands. Our data demonstrate that the most acceptable fuels treatment was "removing trees and other vegetation" while the least acceptable was "conducting a prescribed fire." Importantly, the results presented here indicate variation in acceptability by location and treatment type when comparing thirteen local-scale projects in the Western United States. Since fuels treatments are implemented in specific geographies, local data may be more actionable for managers and decision-makers, as they are more representative of the specific social and ecological contexts in which fuels treatments occur. Local data may enable fuels treatment planners and implementers to identify preferable pathways and strategize outreach to build support for fuels management.

Future research examining the relative influence of factors on acceptability, such as location, local fire ecology, proximity to treatment, current and historical forest condition, purpose of treatment, and related potential short- and long-term benefits/costs (recreation, wildlife, climate adaptation etc.) could provide further insights for developing fuels treatment strategies that align with public acceptability. Although we focused on acceptability of fuels treatments on public lands, wildfire risk reduction does not rest simply within the confines of public land boundaries. It is well established that comprehensive risk reduction to communities requires a multi-faceted approach that spans land ownership boundaries on both public and private lands and includes the built environment (McWethy et al., 2019). In response to such evolving considerations, the WiRē survey has expanded in recent projects to gauge acceptability of policy measures aimed at reducing community wildfire risk, such as growth policies and development standards. Managing wildfire risk to communities ahead of a significant event will require public engagement across a broad range of sectors and concerns, and the availability of high-quality local data will be an even more important tool in support of relevant and timely policy and programmatic decision making to support community wildfire adaptation.

Appendices

Appendix A. The publications measure acceptability of fuels treatments, including the specific metrics and measurements. Studies that made geographic or temporal comparisons across communities are noted. Acceptance is categorized here into three levels (highly, moderately/conditionally, or slightly/not at all acceptable), where data was available. Translation from study-specific measurements into these three categories is noted in the second column. (s.d.=standard deviation; pt=point)

Publication	Metric and Measurement	Place or Time Comparison	Specified Techniques and Management Alternatives	Acceptability Level	Mechanical Vegetation Management (percent acceptable)	Prescribed Fire (percent acceptable)
Gordon et al. (2014)	Acceptance. 5 response categories[1]	Time	Mechanical (felling, mowing, and chaining). Livestock grazing, herbicide application	Highly	22-39%	40-42%
				Moderately/ Conditionally	29-41%	41-42%
				Slightly/ Not at all	18-33%	12-13%
Toman et al. (2014)	Acceptance. 5 response categories[1]	Place, time	-	Highly	47-76%	31-60%
				Moderately/ Conditionally	10-34%	25-53%
				Slightly/ Not at all	0-9%	1-20%
Ascher et al. (2013)	Support. 7-pt scale (-3 = strongly oppose, +3 = strongly support, 0 = neither oppose nor support)	-	Pile burning also reported: 1.62 (s.d. 1.8)[2]	Highly	1.90 (s.d. 1.5)[2]	**
				Moderately/ Conditionally	*	**
				Slightly/ Not at all	*	**
Clement and Cheng (2011)	Support. 5-pt scale (1 = strongly oppose, 5 = strongly favor)	Place	"No action", clearcutting	Highly	4.07-4.21[2]	3.46-3.54[2]
				Moderately/ Conditionally	*	*
				Slightly/ Not at all	*	*
Shindler et al. (2011)	Acceptance. 5 response categories[1]	Place	Mechanical (felling trees, mowing shrubs, chaining trees). Livestock grazing, herbicide application	Highly	11-42%	39-41%
				Moderately/ Conditionally	24-42%	40-45%
				Slightly/ Not at all	18-47%	10-13%
Bowker et al. (2008)	Agreement with use. 3 response categories (agree, disagree, "uncertain/ refused")	-	Chemical treatments	Highly	58%	91%
				Moderately/ Conditionally	*	*
				Slightly/ Not at all	12%	5%

Absher and Vaske (2007)	Approval. Binary (support, not support), constructed from 7-pt ratings of appropriateness, effectiveness, safety (1 = not at all, 7 = extremely, 4 = neutral)	-	Defensible space and Firewise construction actions	Highly	90%	82%
				Moderately/ Conditionally	**	**
				Slightly/ Not at all	10%	18%
Kaval et al. (2007)	Preference. Choice of one scenario among multiple using prescribed fire/not.	-	-	Highly	**	86%
				Moderately/ Conditionally	**	4%
				Slightly/ Not at all	**	10%
Vogt et al. (2005)	Intention to approve. 7-point scale (1 = strongly disapprove, 7 = strongly approve, 4 = neither approve nor disapprove)	Place	Defensible space ordinances	Highly	4.9 (s.d. 1.62) - 5.75 (s.d. 1.34)[2]	4.02 (s.d. 1.88) - 5.72 (s.d. 1.37)[2]
				Moderately/ Conditionally	*	*
				Slightly/ Not at all	*	*
Brunson and Evans (2005)	Acceptance. 5 response categories[1]	Place	-	Highly	42-44%	30-35%
				Moderately/ Conditionally	34-39%	45-52%
				Slightly/ Not at all	9-11%	7-14%
Brunson and Shindler (2004)	Acceptance. 4 response categories[1]	Place	Excluding fire use in populated areas, excluding fuels reduction in scenic areas. Livestock grazing.	Highly	43-61%	37-56%
				Moderately/ Conditionally	20-36%	34-49%
				Slightly/ Not at all	4-9%	3-7%
Toman et al. (2004)	Acceptance. 5 response categories[2]	-	-	Highly	**	43%
				Moderately/ Conditionally	**	53%
				Slightly/ Not at all	**	3%
Shindler and Toman (2003)	Attitudes. 4 response categories[3]	Time	-	Highly	68-69%	39-44%
				Moderately/ Conditionally	28%	45-50%
				Slightly/ Not at all	3%	11%
Shindler and Reed (1996)	Acceptance. 4 response categories[3]	-	"No action," selective thinning instead of mechanized thinning.	Highly	63%	44%
				Moderately/ Conditionally	33%	44%
				Slightly/ Not at all	4%	12%

[1] These papers all used the following 5-pt scale for acceptance, with minor grammatical differences, except Brunson and Evans (2005) whose fifth category was "No opinion", and Brunson and Shindler (2004) who did not include the fifth category. 1) This practice is a legitimate tool that land managers should be able to use whenever they see fit, 2) This practice should be done only infrequently, in

carefully selected areas, 3) This practice should not be used because it creates too many negative impacts, 4) This is an unnecessary practice, and 5) I do not know enough about this practice to offer a judgment. In the table above, 1) was categorized as highly acceptable, 2) as moderately acceptable, 3) and 4) as slightly/not at all acceptable, and 5) is not reported.

[2] Mean rating across acceptability levels, rather than percentage of respondents for a particular acceptability level, was reported for these studies.

[3] These papers used the following 4-pt scale for acceptance, with minor grammatical differences. The practice 1) is a legitimate management tool that the Forest Service should have the discretion to use for improving forest conditions, 2) should be used sparingly by the Forest Service and only in carefully selected areas, 3) creates too many impacts and should not be considered as a management alternative, and 4) is unnecessary and should not be utilized. In the table above, 1) was categorized as highly acceptable, 2) as moderately acceptable, and 3) and 4) as slightly/not at all acceptable.

* Data were collected but not reported within the article.
** Data were not collected in the study.

References

Absher, J.D., and J.J. Vaske. 2007. "Modelling Public Support for Wildland Fire Policy." In K.M. Reynolds, A.J. Thomson, M. Köhl, M.A. Shannon, D. Ray, and K. Rennolls, eds. Sustainable Forestry: From Monitoring and Modelling to Knowledge Management and Policy Science. Wallingford, UK: CABI, pp. 159–170. doi: 10.1079/9781845931742.0159.

Ascher, T.J., R.S. Wilson, E. Toman, T.J. Ascher, R.S. Wilson, and E. Toman. 2013. "The Importance of Affect, Perceived Risk and Perceived Benefit in Understanding Support for Fuels Management among Wildland– Urban Interface Residents." International Journal of Wildland Fire 22(3). CSIRO Publishing: 267–276. doi: 10.1071/WF12026.

Bosworth, D., H. Brown, M. Nie, and P.S. Williams. 2007. "After the Timber Wars: Community-Based Stewardship/RESPONSE: Forest Management Wars Far from Over/RESPONSE: Working More Publicly: The Need for Community-Based Forestry." Journal of Forestry 105(5). Oxford University Press: 271-273. doi: 10.1093/jof/105.5.271.

Bowker, J.M., S.H. Lim, H.K. Cordell, G.T. Green, S. Rideout-Hanzak, and C.Y. Johnson. 2008. "Wildland Fire, Risk, and Recovery: Results of a National Survey with Regional and Racial Perspectives." Journal of Forestry 106(5): 268–276. doi: 10.1093/jof/106.5.268.

Brenkert-Smith, H., P.A. Champ, C. Chambers, K. Gibble, C.M. Barth, C. Donovan, C. Wagner, A. Lerch, and J.R. Meldrum. 2020a. Living with Wildfire in Ashland, Oregon: 2020 Data Report. Research Note RMRS-88. Fort Collins, CO: USDA, Forest Service, Rocky Mountain Research Station. Available online at https://www.fs.usda.gov/rm/pubs_series/rmrs/rn/rmrs_rn088.pdf [Accessed Aug. 15, 2023].

Brenkert-Smith, H., P.A. Champ, J. Riley, C.M. Barth, C. Donovan, J.R. Meldrum, and C. Wagner. 2020b. Living with Wildfire in the Squilchuck Drainage-Chelan County, Washington: 2020 Data

Report. Research Note RMRS-RN-87. Fort Collins, CO: USDA, Forest Service, Rocky Mountain Research Station. Available online at https://www.fs.usda.gov/rm/pubs_series/rmrs/rn/rmrs_rn087.pdf [Accessed Aug. 15, 2023].

Brenkert-Smith, H., J.L.S. Jahn, E.A. Vance, and J. Ahumada. 2020c. "Resistance and Representation in a Wildland–Urban Interface Fuels Treatment Conflict: The Case of the Forsythe II Project in the Arapaho- Roosevelt National Forest." Fire 3(1). Multidisciplinary Digital Publishing Institute: 2. doi: 10.3390/fire3010002.

Brenkert-Smith, H., A.E. McConnell, S. Olson, A. Gosey, J.R. Meldrum, P.A. Champ, J. Gomez, C.M. Barth, C. Donovan, and C. Wagner. 2022. Living With Wildfire in Grand County, Colorado: 2021 Data Report.

Research Note RMRS-RN-94. Fort Collins, CO: USDA, Forest Service, Rocky Mountain Research Station. https://doi.org/10.2737/RMRS-RN-94.

Brenkert-Smith, H., D. Dalton, J. Puffett, P.A. Champ, C.M. Barth, J. Meldrum, C. Donovan, C. Wagner, J. Goolsby, and C. Forrester. 2023. Living with Wildfire in Genesee Fire Protection District, Jefferson County, Colorado: 2022 Data Report. Fort Collins, CO: USDA, Forest Service, Rocky Mountain Research Station. doi: 10.2737/RMRS-RN-99.

Bright, A.D., and P. Newman. 2006. "How Forest Context Influences the Acceptability of Prescribed Burning and Mechanical Thinning." The Public and Wildland Fire Management: Social Science Findings for Managers.

GTR NRS-1. United States Department of Agriculture, Forest Service, North Central Research Station, St. Paul, MN: 47–52. doi: 10.1071/WF11115.

Bright, A.D., P. Newman, and J. Carroll. 2007. "Context, Beliefs, and Attitudes toward Wildland Fire Management: An Examination of Residents of the Wildland-Urban Interface." Human Ecology Review 14(2): 212–222. Available online at https://www.jstor.org/stable/24707707 [Accessed Aug. 15, 2023].

Brunson, M.W. 1996. Defining Social Acceptability in Ecosystem Management: A Workshop Proceedings: Kelso, Washington, June 23-25, 1992. General Technical Report PNW-369. Portland, OR: US Department of Agriculture, Forest Service, Pacific Northwest Research Station. doi: 10.2737/PNW-GTR-369.

Brunson, M.W., and J. Evans. 2005. "Badly Burned? Effects of an Escaped Prescribed Burn on Social Acceptability of Wildland Fuels Treatments." Journal of Forestry 103(3): 134–138. doi: 10.1093/jof/103.3.134.

Brunson, M.W., and B.A. Shindler. 2004. "Geographic Variation in Social Acceptability of Wildland Fuels Management in the Western United States." Society & Natural Resources 17(8). Routledge: 661–

678. doi: 10.1080/08941920490480688.

Burns, M., and A.S. Cheng. 2007. "Framing the Need for Active Management for Wildfire Mitigation and Forest Restoration." Society & Natural Resources 20(3): 245–259. 20073222964. doi: 10.1080/08941920601117348.

Byerly Flint, H., P.A. Champ, J.R. Meldrum, and H. Brenkert-Smith. 2022. "Wildfire Imagery Reduces Risk Information-Seeking among Homeowners as Property Wildfire Risk Increases." Communications Earth & Environment 3(1): 1–8. doi: 10.1038/s43247-022-00505-7.

Campbell, R.M., T.J. Venn, and N.M. Anderson. 2016. "Social Preferences toward Energy Generation with Woody Biomass from Public Forests in Montana, USA." Forest Policy & Economics 73: 58–67. doi: 10.1016/j.forpol.2016.08.008.

Champ, P.A., J.B. Goolsby, J. Shaver, J. Kuehn, J.R. Meldrum, H. Brenkert-Smith, C.M. Barth, C. Donovan, and

C. Wagner. 2021a. Living with Wildfire in Chalk Creek, Chaffee County, Colorado: 2019 Data Report. Research Note RMRS-RN-90. Fort Collins, CO: USDA, Forest Service, Rocky Mountain Research Station. doi: 10.2737/RMRS-RN-90.

Champ, P.A., C.M. Barth, L.C. Falk, J.B. Gomez, and J.R. Meldrum. 2021b. "Putting People First: Using Social Science to Reduce Risk." Wildfire Magazine. Available online at https://www.iawfonline.org/article/putting- people-first-using-social-science-to-reduce-risk/ [Accessed Aug. 15, 2023].

Clement, J.M., and A.S. Cheng. 2011. "Using Analyses of Public Value Orientations, Attitudes and Preferences to Inform National Forest Planning in Colorado and Wyoming." Applied Geography 31(2): 393–400. doi: 10.1016/j.apgeog.2010.10.001.

Dillman, D.A. 2011. Mail and Internet Surveys: The Tailored Design Method--2007 Update with New Internet, Visual, and Mixed-Mode Guide. John Wiley & Sons.

Donovan, C., J.P. Gomez, L. Falk, C.M. Barth, P.A. Champ, H. Brenkert-Smith, J.R. Meldrum, and C. Wagner. 2022. Living With Wildfire in Log Hill Mesa, Ouray County, Colorado: 2017 Data Report and a Comparison to 2011 and 2012 Data. Research Note RMRS-RN-91. Fort Collins, CO: USDA, Forest Service, Rocky Mountain Research Station. doi: 10.2737/RMRS-RN-91.

Dumont, C.W. 1996. "The Demise of Community and Ecology in the Pacific Northwest: Historical Roots of the Ancient Forest Conflict." Sociological Perspectives 39(2): 277–300. doi: 10.2307/1389313.

Gardner, P.D., H.J. Cortner, K.F. Widaman, and K.J. Stenberg. 1985. "Forest-User Attitudes toward Alternative Fire Management Policies." Environmental Management 9(4): 303–311. doi: 10.1007/BF01867302.

Goolsby, J.B., P.A. Champ, H. Brenkert-Smith, B.J. Clauson, R.M. Sgroi, L. Williams, C.M. Barth, J.R. Meldrum, C. Donovan, and C. Wagner. 2022. Living with Wildfire in Teton County, Wyoming: 2021 Data Report. Research Note RMRS-RN-93. Fort Collins, CO: USDA, Forest Service, Rocky Mountain Research Station. doi: 10.2737/RMRS-RN-93.

Goolsby, J.B., H. Brenkert-Smith, D. Reid, J.R. Meldrum, P.A. Champ, C.M. Barth, C. Donovan, and C. Wagner.

2023. Living With Wildfire in Emigration Canyon, Utah: 2022 Data Report. Research Note RMRS-RN-98. Fort Collins, CO: USDA, Forest Service, Rocky Mountain Research Station. doi: 10.2737/RMRS-RN-98.

Gordon, R., M.W. Brunson, and B. Shindler. 2014. "Acceptance, Acceptability, and Trust for Sagebrush Restoration Options in the Great Basin: A Longitudinal Perspective." Rangeland Ecology & Management 67(5): 573–583. doi: 10.2111/REM-D-13-00016.1.

Jahn, J.L.S., M.S. White, and H. Brenkert-Smith. 2020. "My Place or Yours? Using Spatial Frames to Understand the Role of Place in Forest Management Conflicts." Society & Natural Resources 33(3): 329–346. doi: 10.1080/08941920.2019.1709003.

Kaval, P., J. Loomis, and A. Seidl. 2007. "Willingness-to-Pay for Prescribed Fire in the Colorado (USA) Wildland Urban Interface." Forest Policy and Economics 9: 928–937. doi: 10.1016/j.forpol.2006.08.003.

Knapp, E.E., Y.S. Valachovic, S.L. Quarles, and N.G. Johnson. 2021. "Housing arrangement and vegetation factors associated with single-family home survival in the 2018 Camp Fire, California." Fire Ecology 17: 25. doi: 10.1186/s42408-021-00117-0.

Kneeshaw, K., J.J. Vaske, A.D. Bright, and J.D. Absher. 2004. "Situational Influences of Acceptable Wildland Fire Management Actions." Society & Natural Resources 17(6): 477–489. doi: 10.1080/08941920490452427.

Kupfer, J.A., K. Lackstrom, J.M. Grego, K. Dow, A.J. Terando, and J.K. Hiers. 2022. "Prescribed Fire in Longleaf Pine Ecosystems: Fire Managers' Perspectives on Priorities, Constraints, and Future Prospects." Fire Ecology 18(1): 1–19. doi: 10.1186/s42408-022-00151-6.

Lim, S.H., J.M. Bowker, C.Y. Johnson, and H.K. Cordell. 2009. "Perspectives on Prescribed Fire in the South: Does Ethnicity Matter?" Southern Journal of Applied Forestry 33(1): 17–24. doi: 10.1093/sjaf/33.1.17.

Long, J.S. 2009. The Workflow of Data Analysis Using Stata. College Station, TX: Stata Press.

McCaffrey, S., J.J. Moghaddas, and S.L. Stephens. 2008. "Different Interest Group Views of Fuels Treatments: Survey Results from Fire and Fire Surrogate Treatments in a Sierran Mixed Conifer

Forest, California, USA." International Journal of Wildland Fire 17(2): 224–233. doi: 10.1071/WF07005.

McCaffrey, S., E. Toman, M. Stidham, and B. Shindler. 2013. "Social Science Research Related to Wildfire Management: An Overview of Recent Findings and Future Research Needs." International Journal of Wildland Fire 22(1): 15–24. doi: 10.1071/WF11115.

McCaffrey, S.M. 2006. "Prescribed Fire: What Influences Public Approval?" Paper presented at the USDA Forest Service, Newtown Square, USA, pp. 192–198. Available online at https://books.google.com/books?hl=en&lr=&id=zUNJFCjwvogC&oi=fnd&pg=PA192&dq=Prescribed+fire:+ what+influences+public+approval%3F&ots=RWg9x2HZSg&sig=O7lBbWN-e4rJ4rqrMr7jYUdDZiY#v=onepage&q=Prescribed%20fire%3A%20what%20influences%20public%20appro val%3F&f=false.

McCaffrey, S.M., and C.C. Olsen. 2012. Research Perspectives on the Public and Fire Management: A Synthesis of Current Social Science on Eight Essential Questions. General Technical Report NRS-GTR-104. Newtown Square, PA: United States Department of Agriculture, Forest Service, Northern Research Station. doi: 10.2737/NRS-GTR-104.

McWethy, D.B., T. Schoennagel, P.E. Higuera, M. Krawchuk, B.J. Harvey, E.C. Metcalf, C. Schultz, C. Miller,

A.L. Metcalf, and B. Buma. 2019. "Rethinking Resilience to Wildfire." Nature Sustainability 2(9): 797–804. doi: 10.1038/s41893-019-0353-8.

Meldrum, J.R., H. Brenkert-Smith, P.A. Champ, L. Falk, P. Wilson, and C.M. Barth. 2018. "Wildland–Urban Interface Residents' Relationships with Wildfire: Variation within and across Communities." Society & Natural Resources 31(10). Taylor & Francis: 1132–1148. doi: 10.1080/08941920.2018.1456592.

Merrick, M., and J. Vining. 2006. "Characteristics People Consider When Evaluating Forest Landscape Attractiveness: Fuel Management Implications." In McCaffrey, S. The Public and Wildland Fire Management: Social Science Findings for Managers. General Technical Report NRS-1. Washington, USA:

United States Department of Agriculture, Forest Service, pp. 63–71. Newton Square, PA: USDA, Forest Service: 63–75. Available online at https://www.fs.usda.gov/research/treesearch/18668 [Accessed Aug. 15, 2023].

Molina, A., J. Little, S. Drury, and R. Jandt. 2021. "Homeowner Preferences for Wildfire Risk Mitigation in the Alaskan Wildland Urban Interface." Sustainability 13(21): 11754. doi: 10.3390/su132111754.

Mylek, M.R., and J. Schirmer. 2020. "Exploring the 'Issue-Attention Cycle': Does Length of Time Since Wildfire Predict Social Acceptability of Prescribed Burning?" Environmental Management 65(4): 433–447. doi: 10.1007/s00267-019-01251-x.

Ostergren, D.M., J.B. Abrams, and K.A. Lowe. 2008. "Fire in the Forest: Public Perceptions of Ecological Restoration in North-Central Arizona." Ecological Restoration 26(1): 51–60. doi: 10.3368/er.26.1.51.

Paveglio, T., M.S. Carroll, J.D. Absher, and T. Norton. 2009. "Just Blowing Smoke? Residents' Social Construction of Communication about Wildfire." Environmental Communication 3(1): 76–94. doi: 10.1080/17524030802704971.

Paveglio, T.B., and C.M. Edgeley. 2023. "Variable Support and Opposition to Fuels Treatments for Wildfire Risk Reduction: Melding Frameworks for Local Context and Collaborative Potential." Journal of Forestry 121(4): 354–373. doi: 10.1093/jofore/fvad021.

Quarles, S.L., Y. Valachovic, G.M. Nakamura, G.A. Nader, and M.J. De Lasaux. 2010. Home survival in wildfire-prone areas: Building materials and design considerations. ANR Publication 8393. Richmond, CA: University of California, Agriculture and Natural Resources. https://escholarship.org/uc/item/4vt8w5qk [Accessed Aug. 15, 2023].

Remenick, L. 2017. "The Role of Communication in Preparation for Wildland Fire: A Literature Review." Environmental Communication 12(2): 164–176. doi: 10.1080/17524032.2017.1346519.

Ryan, R.L., and M.B. Wamsley. 2006. "Perceptions of Wildfire Threat and Mitigation Measures by Residents of Fire-Prone Communities in the Northeast: Survey Results and Wildland Fire Management Implications." In McCaffrey, S. The Public and Wildland Fire Management: Social Science Findings for Managers. General Technical Report NRS-1. Newton Square, PA: USDA, Forest Service, pp. 11–17. Available online at https://www.fs.usda.gov/nrs/pubs/gtr/gtr_nrs1.pdf#page=21 [Accessed Aug. 15, 2023].

Schoennagel, T., J.K. Balch, H. Brenkert-Smith, P.E. Dennison, B.J. Harvey, M.A. Krawchuk, N. Mietkiewicz, P. Morgan, M.A. Moritz, and R. Rasker. 2017. "Adapt to More Wildfire in Western North American Forests as Climate Changes." Proceedings of the National Academy of Sciences 114(18): 4582–4590. doi: 10.1073/pnas.1617464114.

Shindler, B., and E. Toman. 2003. "Fuel Reduction Strategies in Forest Communities: A Longitudinal Analysis of Public Support." Journal of Forestry 101(6): 8–15. doi: 10.1093/jof/101.6.8.

Shindler, B., R. Gordon, M.W. Brunson, and C. Olsen. 2011. "Public Perceptions of Sagebrush Ecosystem Management in the Great Basin." Rangeland Ecology & Management 64(4): 335–343. doi: 10.2111/REM-D- 10-00012.1.

Shindler, B.A., and M. Reed. 1996. Forest Management in the Blue Mountains: Public Perspectives on Prescribed Fire and Mechanical Thinning. Corvallis, OR: Dept. of Forest Resources, Oregon State University. Available online at https://www.fs.usda.gov/research/treesearch/35279 [Accessed Aug. 15, 2023].

Shindler, B.A., E. Toman, and S.M. McCaffrey. 2009. "Public Perspectives of Fire, Fuels and the Forest Service in the Great Lakes Region: A Survey of Citizen-Agency Communication and Trust." International Journal of Wildland Fire 18(2): 157–164. doi: 10.1071/WF07135.

Steelman, T.A. 1999. "The Public Comment Process: What Do Citizens Contribute to National Forest Management?" Journal of Forestry 97(1): 22–26. doi: 10.1093/jof/97.1.22.

Symstad, A.J., and S.A. Leis. 2017. "Woody Encroachment in Northern Great Plains Grasslands: Perceptions, Actions, and Needs." Natural Areas Journal 37(1): 118–127. https://www.jstor.org/stable/90009260.

Toman, E., B. Shindler, and M. Reed. 2004. "Prescribed Fire: The Influence of Site Visits on Citizen Attitudes." Journal of Environmental Education 35(3): 13–17. doi: 10.3200/JOEE.35.3.13-33.

Toman, E., B. Shindler, and M. Brunson. 2006. "Fire and Fuel Management Communication Strategies: Citizen Evaluations of Agency Outreach Activities." Society & Natural Resources 19(4): 321–336. doi: 10.1080/08941920500519206.

Toman, E., B. Shindler, S. McCaffrey, and J. Bennett. 2014. "Public Acceptance of Wildland Fire and Fuel Management: Panel Responses in Seven Locations." Environmental Management 54(3): 557–570. doi: 10.1007/s00267-014-0327-6.

U. S. Department of Agriculture (USDA) Forest Service. 2011. A National Cohesive Wildland Fire Management Strategy. Washington, D.C.: Wildland Fire Leadership Council. Available online at https://www.fs.usda.gov/research/treesearch/38646 [Accessed Aug. 30, 2023].

Urgenson, L., C. Ryan, C. Halpern, J. Bakker, R. Belote, J. Franklin, R. Haugo, C. Nelson, and A. Waltz. 2017. "Visions of Restoration in Fire-Adapted Forest Landscapes: Lessons from the Collaborative Forest Landscape Restoration Program." Environmental Management 59(2): 338–353. doi: 10.1007/s00267-016-0791-2.

U.S. Department of Agriculture (USDA) Forest Service. 2022. Confronting the Wildfire Crisis: A Strategy for Protecting Communities and Improving Resilience in America's Forests. FS-1187a. Washington, DC: USDA Forest Service. Available online at https://www.fs.usda.gov/sites/default/files/fs_media/fs_document/Confronting-the-Wildfire-Crisis.pdf [Accessed Aug. 15, 2023].

U.S. Department of Agriculture (USDA), Forest Service. 2023. Confronting the Wildfire Crisis: Expanding Efforts to Deliver on the Wildfire Crisis Strategy. FS-1187f. Washington, DC: USDA Forest Service. Available online at https://www.fs.usda.gov/sites/default/files/fs_media/fs_document/Confronting-the- Wildfire-Crisis.pdf.

Vogt, C.A., G. Winter, and J.S. Fried. 2005. "Predicting Homeowners' Approval of Fuel Management at the Wildland-Urban Interface Using the Theory of Reasoned Action." Society & Natural Resources 18(4): 337–354. doi: 10.1080/08941920590915242.

Winkel, G. 2014. "Sustainable Forest Management on Federal Lands in the US Pacific Northwest-Making Sense of Science, Conflict, and Collaboration." In P. Katila; G. Galloway, W. de Jong, P. Pacheco, and G. Mery, eds., Forests under Pressure: Local Responses to Global Issues. IUFRO World Series 32. Vienna, Austria: IUFRO (International Union of Forestry Research Organizations, pp. 189–203.

Wu, H., Z.D. Miller, R. Wang, K.Y. Zipp, P. Newman, Y. Shr, C.L. Dems, A. Taylor, M.W. Kaye, and E.A.H. Smithwick. 2022. "Public and Manager Perceptions about Prescribed Fire in the Mid-Atlantic, United States." Journal of Environmental Management 322: 116100. doi: 10.1016/j.jenvman.2022.116100.