

Wildland Fire, Risk, and Recovery: Results of a National Survey with Regional and Racial Perspectives

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ABSTRACT

We used a national household survey to examine knowledge, attitudes, and preferences pertaining to wildland fire. First, we present nationwide results and trends. Then, we examine opinions across region and race. Despite some regional variation, respondents are fairly consistent in their beliefs about assuming personal responsibility for living in fire-prone areas and believing that residents of such areas should follow government guidelines for managing fire risk. However, we find divergence of opinion on "trusting forest professionals" between African-American and Caucasian people. Across all survey questions related to fire management and public confidence, African-Americans appear to be relatively more concerned than Caucasian or Hispanic people.

Keywords: wildland fire, prescribed fire, fire management

Fire is integral to maintaining forest and rangeland health and sustainability. Better understanding of the relationship between humans and wildland fire is fundamental at federal, state, and local levels of fire management (Machlis et al. 2002). Early research found that the public was averse to virtually all forest fires and supported a strategy of complete suppression. In time, society's attitude toward fire changed as the public became more knowledgeable and willing to accept management practices

such as prescribed fire (Machlis et al. 2002, p. 95). Federal and state management policies that include fuels reduction, prescribed fire, and postfire rehabilitation may require even greater societal changes, and public education will be very important. Fire management programs that involve the public will require assessing public attitudes, preferences, and values to gain public acceptance for policy decisions

Reactions to reintroduction of fire into forest ecosystems have been mixed thus far,

but more recent studies suggest increased public support for prescribed fire. Small-scale studies have shown positive attitudes among the public (primarily recreationists), with respect to prescribed burns and forest health (Taylor and Daniel 1984, Patel et al. 1999). In a study of Ontario residents, Wagner et al. (1998) found evidence of significant public support for forest vegetation management through various means, with prescribed burns being more popular than chemical alternatives but less so than mechanical methods.

A number of site-level studies, e.g., Winter and Fried (2001), Shindler and Toman (2003), Brunson and Shindler (2004), and a collection of studies in McCaffrey (2006), have examined local knowledge, attitudes, values, and preferences related to wildfire and fire management.

Shindler and Brunson (2005) conducted a national mail survey ($n = 754$) on public responses to fire management in 2001. However, to date, there have been no

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Table 1. Public opinion about prefire and postfire management and personal responsibility (n = 6,979).

	Agree (%)	Disagree (%)	Uncertain/refused (%)
Prefire management			
Public land managers and forest professionals can be <i>trusted</i> to select the best methods for dealing with wildfire	68	15	17
Public land managers should use <i>prescribed fire</i> as part of a wildfire management program	91	5	4
Public land managers should use <i>mechanical vegetation removal</i> as part of a wildfire management program	58	12	30
Public land managers should use <i>chemical treatments</i> to control ground vegetation as part of a wildfire management program	30	47	22
Postfire management			
It makes sense to <i>salvage</i> and sell timber damaged by wildfire on public lands	81	8	12
All wildfires should be <i>put out</i> , regardless of location	58	33	9
An area burned by wildfire should be left to <i>recover naturally</i>	55	29	16
Wildfires in <i>remote areas</i> should be allowed to burn if human life or property is not threatened	36	51	13
Personal responsibility			
People who choose to live near forests or rangelands should be prepared to <i>accept the risks</i> of wildfire	69	11	20
Where wildfire is common, homeowners should have to follow <i>government guidelines</i> to manage for wildfire risk	66	17	18

"Respondents" implies percentages from the population-weighted sample.

Table 2. Public concern related to general fire management and prescribed fire (n = 6,979).

	Concerned (%)	Slightly concerned (%)	Not concerned (%)	Do not know/refused (%)
General fire management				
Long-term forest health will be considered when developing fire management programs	64	14	16	6
Taxpayer's cost will be considered when developing fire management programs	54	17	23	6
Public land managers' ability to manage for fire in forests and rangeland	38	20	33	9
Prescribed fire				
Harm to fish and wildlife from prescribed fire	52	17	26	5
Reduced scenic quality and recreation opportunities from prescribed fire	42	17	34	7
Smoke from prescribed fire.	40	15	42	3

"Respondents" implies percentages from the population-weighted sample.

national survey studies of attitudes, knowledge, and preferences pertaining to fire, fire risk, and fire recovery of sufficient sample size to allow comparisons across sociodemographic and geographic factors.

Cultural differences and population diversity, both within and between regions, may give rise to differing wildfire management preferences. Raish and González-Cabán (2003) highlighted the need to understand different cultures and their perceptions of fire use and fire management practices. Loomis et al. (2001) revealed that Florida residents significantly differed by social strata in their attitudes and understanding about fire treatment programs. Raish et al. (2005) emphasized the importance of examining and understanding historic and current attitudes and practices relating to fire among varied cultural and ethnic groups. Our national-level data allow us to examine nationwide trends and also to compare results by region and race or ethnicity.

Survey Methods

A fire module was designed and implemented in the National Survey on Recreation and the Environment, the latest of eight national surveys on outdoor recrea-

tion behavior and environmental attitudes (Cordell et al. 2004). Interviews were conducted using nationally based random digit dialing. Rural states were oversampled; however, data were weighted according to a census-based postsample stratification procedure to make the sample representative of the national population (Holt and Smith, 1979). Five weighting strata were used: age, race, gender, education, and setting (rural versus nonrural). The weighting procedure is discussed in Cordell et al. (2002).

The fire module contained questions about knowledge, attitudes, and preferences toward fire and fire management in wildland and wildland/urban interface areas. Fire scientists, social scientists, land managers, and local landowners assisted in question development. After pretesting, surveying occurred during two periods: July 2002 through March 2003 and November 2003 through February 2004. Copies of the survey module and data are available from the authors.

Preferences, Opinions, and Concerns

Prefire Management. We examined general public attitudes and preferences per-

taining to fire management, postfire recovery, personal risk, and government trust with the population-weighted sample (Tables 1 and 2). Sixty-eight percent agreed that public land managers and forest professionals can be trusted to select the best methods for dealing with wildfire. Although no agencies or levels of government were singled out, the result suggests that respondents [1] were confident that land managers and forest professionals will successfully deal with fire-related problems.

Use of prescribed fire by land managers was highly favored (91% agreed). Somewhat to the contrary, Shindler and Brunson (n.d.) found only 41% thought prescribed fire was a universally applicable tool, and 39% viewed prescribed fire as a tool that should be used infrequently in selected areas. Nevertheless, their findings suggest that 80% of the public agrees to some level of prescribed fire.

Mechanical thinning was supported by 58% of respondents, although 12% disagreed. Respondents were less inclined to accept the use of chemical treatments in wildfire management programs with nearly 50%

disagreeing outright. For both mechanical thinning and chemical treatment, the high proportions of uncertain/refused responses (30% and 22%, respectively) are noteworthy. High levels of uncertainty for these broad statements may suggest the need for educational outreach about these methods. Moreover, the strong negative reaction to chemical treatment could be a symptom of society's concern about pollution and toxic chemicals.

Postfire Management. Fifty-five percent of respondents felt that areas burned by wildfire should be left to recover naturally. However, over 80% favor the salvage and sale of timber damaged by fire on public lands. Additionally, 33% disagree with the statement that "all wildfires should be put out, regardless of location," with 58% agreeing. Thirty-six percent of respondents think wildfires in remote areas should be allowed to burn if property or human life is unthreatened. Together, these responses suggest some inconsistencies. On all but the natural recovery statement, clear majorities, especially in the case of timber salvage, favor postfire intervention.

Personal Responsibility. About 70% of respondents believed that people who live in and around forests and rangelands should be prepared to accept the inherent fire risks in such areas (Table 1). Moreover, 66% of respondents thought homeowners should have to follow government guidelines to manage fire risk. This indicates a general confidence that the government, in an unspecified way, can be trusted to develop acceptable wildfire risk guidelines for homeowners. Results for these two statements imply that personal responsibility is paramount. However, there is clearly an interest in coordinated/organized action, and thus government involvement, in developing guidelines related to fire management.

General Fire Management. Table 2 displays six statements designed to elicit respondent concerns across a range of issues related to visual, ecological, and management topics. Sixty-four percent of respondents indicated concern that long-term forest health be considered when developing fire management programs. Fewer respondents (but still over one-half at 54%) were concerned that taxpayer cost be considered in developing fire management programs.

Respondents were least concerned about land managers' abilities to deal with forest fire. Coupling this result with the high proportion indicating trust in public land

managers' ability to deal with fire (Table 1) suggests that respondents had confidence, albeit cautious confidence, in land managers. Results for fire management statements in Table 2 imply that respondents appeared to have confidence at the land manager level. However, ability and perhaps capacity were still concerns for respondents, and there were doubts and concerns at a higher long-term policy or program level.

Prescribed Fire. As displayed in Table 2, 69% of respondents reported concern or slight concern about potential harm to fish and wildlife from prescribed fire. Forty-two percent of respondents were concerned about scenic quality and recreation opportunity loss, while 34% were not concerned. Additionally, 40% of respondents were concerned about smoke from prescribed fire, while 15% were slightly concerned and 42% were not concerned at all.

Our findings indicated less concern for both smoke from prescribed fire and loss of scenic quality than other studies (Shindler and Toman 2003, Brunson and Shindler 2004). Timing, location, methods, and wording of the survey could have influenced these differences. The fact that our sample was weighted to reflect the highly urban national population is probably another factor contributing to the difference.

Regional Differences

To explore regional variation in the responses listed in Tables 1 and 2, we divided respondents in our sample into four regions (Figure 1). Cross-tabulations by region testing the null hypothesis of no regional differences are reported in Tables 3 and 4. Chi-squares should be viewed cautiously because of large sample sizes. In many cases statistical differences exist, while practical differences are negligible.

Prefire Management. Chi-square statistics for each of statements about prefire management indicated statistically significant regional variation (Table 3). The South and North seemed to trust decisions of public land managers and forest professionals slightly more (71% and 69% agreeing) than respondents from the Pacific and Rocky Mountain regions (60% and 64% agreeing).

Regional differences regarding prescribed fire were minor, with percentages agreeing ranging from the low to mid 90s. Although regions differ in climate and topography, these numbers indicate consistent acceptance of prescribed burning across macroregions. Regional agreement for vari-

ation for mechanical vegetation removal ranged from 54% in the North to 64% in the Pacific region.

Postfire Management. Agreement with putting out all wildfires regardless of location ranged from 39% in the Rocky Mountain/Great Plains region to 56% in the South. The range of agreement that a burned area be left to recover naturally was from 50% in the Pacific region to 60% in the North. Agreement on letting wildfires in remote areas burn, if human life and property were not threatened, ranged from 33% in the South to 48% in the Rocky Mountain/Great Plains. Except for the timber salvage statement, regional response variation for postfire management ranged from 10% to 17% with no discernible patterns.

Personal Responsibility. Although chi-square statistics indicate some significant associations between opinion and region, respondents were consistent in their beliefs about assuming personal responsibility for living in fire-prone areas and following relevant government guidelines for managing risk. Agreement differed regionally by less than 10% with the Rocky Mountain/Great Plains being the highest and the North being the lowest (Table 3).

General Fire Management. Cross-tabulations of responses by region pertaining to general fire management and prescribed fire are reported in Table 4. Regional responses did not statistically differ regarding concern that taxpayers' costs be considered when developing fire management plans. There were statistical differences across regions for concern that long-term forest health be considered when developing management programs and about public land managers' abilities. However, these differences were practically negligible (5%).

Prescribed Fire. Regional responses to statements regarding concern about prescribed fire were statistically different, but practical differences were unimportant. Statistical significance is mostly a result of the large sample size. The largest range in regional differences occurred for the statements on whether all wildfires should be put out regardless of location and whether wildfires in remote areas should be allowed to burn if human life and property were unthreatened.

Racial and Ethnic Differences

Cross-tabulations by race/ethnicity are reported in Tables 5 and 6. Because of sample size concerns, responses are only re-

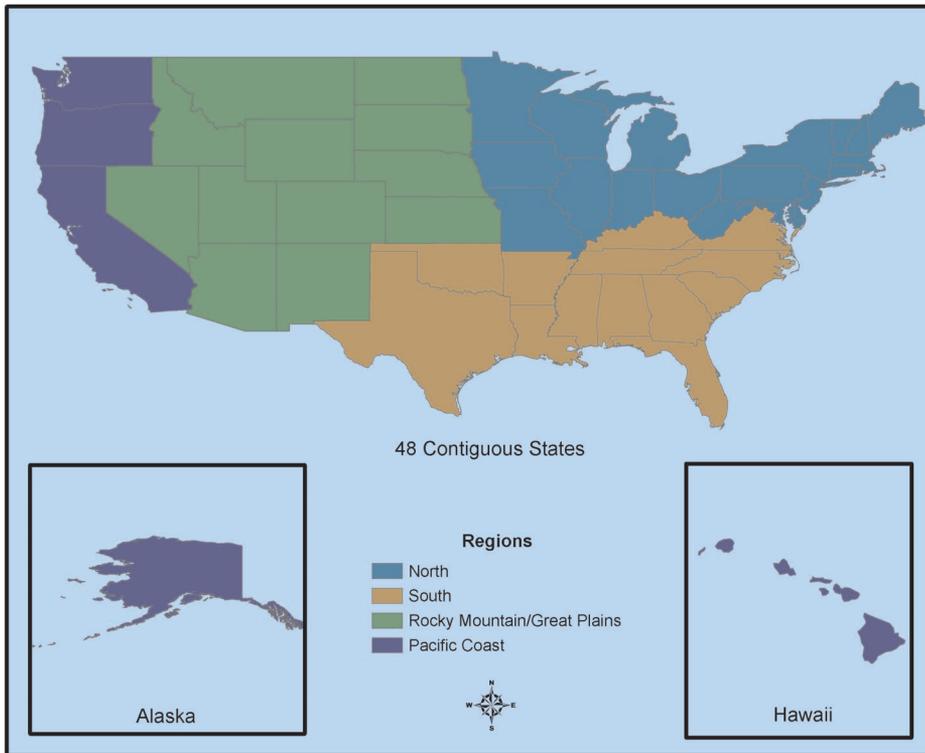


Figure 1. North—ME, NH, RI, MA, CT, VT, NY, NJ, PA, DE, MD, WV, IL, IN, OH, MI, WI, MN, IA, MO, and DC. South—VA, NC, SC, FL, GA, MS, AL, LA, TX, OK, AR, KY, and TN. Rocky Mountain/Great Plains—MT, ND, ID, WY, KS, CO, NE, SD, NM, AZ, NV, and UT. Pacific Coast—CA, WA, OR, AK, and HI.

ported for African-American, Hispanic, and Caucasian people.

Prefire Management. Sizeable majorities among the three racial/ethnic groupings agree that public land managers and forest professionals can be trusted to select the best methods for dealing with fire. African-American agreement, at 61%, was 7% lower than either Hispanic or Caucasian people. African-Americans (84%) were also less likely to support prescribed fire as a management tool.

Postfire Management. A sizeable gap appeared over the statement that all wildfires should be put out regardless of location. Only 46% of Caucasian people agreed compared with 69% of Hispanic and 80% of African-American people. Another gap occurred over natural recovery. Fifty-eight percent of Caucasian people agreed that areas burned by wildfire should be left to recover naturally, while 46% of African-American and Hispanic people agreed. Finally, fewer African-Americans (24%) agreed that fires in remote areas should be allowed to burn if human life and property are unthreatened, than either Hispanic (36%) or Caucasian (40%) people. There were no differences

across groups' agreement (80–82%) about postfire timber salvage and sale.

Personal Responsibility. Responses to statements about personal responsibility were statistically different across the three groupings. The range for agreement that people who choose to live near forests or rangelands should be prepared to accept the risks of wildfire was 16% (Table 5). There was a 19% response range for the statement that where wildfire is common, homeowners should follow government guidelines to manage for wildfire risk. In both cases, majorities of all groups agreed, with Caucasian people the most likely and African-American people the least likely to agree about homeowner's personal responsibility.

General Fire Management. Large variations in the responses to statements related to general fire management were observed across the three racial/ethnic groups (Table 6). Across all statements African-Americans expressed higher levels of concern than either Caucasian or Hispanic people.

Seventy-five percent of African-Americans were concerned that long-term forest health be considered when developing fire

management programs relative to 63% of Caucasian and 69% of Hispanic people. Seventy-three percent of African-Americans were concerned that taxpayer costs be considered when developing management programs compared with 62% of Hispanic and 48% of Caucasian people. African-Americans also appeared to have more reservation about managers' ability because over 55% of African-Americans were concerned about this issue relative to 44% of Hispanic and 31% of Caucasian people.

Prescribed Fire. African-Americans indicated more concern regarding use of prescribed fire than either Hispanic or Caucasian people. Seventy percent of African-Americans were concerned about harm to wildlife, while 58% of Hispanic and 44% of Caucasian people were concerned. Additionally, 57% of African-Americans were concerned about reduced scenic quality as a result of prescribed fire, whereas 48% of Hispanic and 34% of Caucasian people were concerned with the same issue. Finally, concern about smoke from prescribed fire yielded a 30% difference across the groupings, as 60% of African-Americans were concerned about prescribed fire smoke versus 51% of Hispanic and 30% of Caucasian respondents.

Overall, differences in opinion across racial/ethnic groupings were statistically significant for 7 of 10 statements in Table 5. Caucasian people were most likely to indicate that residents accept the risks of choosing to live in a fire-prone area and follow government guidelines while doing so.

Conclusions

This study focused on the broad topic of public opinions and preferences related to wildfire and prescribed fire issues. We reported population-weighted results of nationwide responses, and then disaggregated across four regions and three major racial/ethnic groupings. Unlike previous and ongoing research, this study aimed to provide national- or macro-level information. Over 90% agreed with the use of prescribed fire, 58% supported the use of mechanical thinning, but only 30% agreed with the use of chemical treatments. Although the questions were broadly stated, the order of public acceptance for the three practices presented was clear. Thus, if chemical treatment appears necessary, land managers will need to better inform the public about the efficacy of its use. Although prescribed fire was highly regarded as a management practice in all re-

Table 3. Respondent opinion about prefire and postfire management and personal responsibility by region, (North = 3,029; South = 2,160; Rocky Mountain and Great Plains = 797; and Pacific = 993).

	Agree (%)	Disagree (%)	Uncertain/refused (%)
Prefire management			
Public land managers and forest professionals can be <i>trusted</i> to select the best methods for dealing with wildfire			
North	69	14	17
South	71	12	17
Rocky Mountain and Great Plains	64	18	18
Pacific	60	21	19
		Pearson chi-square (6) = 55.59 ^a	
Public land managers should use <i>prescribed fire</i> as part of a wildfire management program			
North	92	5	4
South	91	5	4
Rocky Mountain and Great Plains	95	3	3
Pacific	95	3	3
		Pearson chi-square (6) = 26.25 ^a	
Public land managers should use <i>mechanical vegetation removal</i> as part of a wildfire management program			
North	54	13	33
South	58	11	31
Rocky Mountain and Great Plains	63	13	23
Pacific	64	11	25
		Pearson chi-square (6) = 51.54 ^a	
Public land managers should use <i>chemical treatments</i> to control ground vegetation as part of a wildfire management program			
North	24	53	23
South	32	45	23
Rocky Mountain and Great Plains	30	50	20
Pacific	25	53	21
		Pearson chi-square (6) = 54.82 ^a	
Postfire management			
It makes sense to <i>salvage</i> and sell timber damaged by wildfire on public lands			
North	81	7	11
South	81	8	11
Rocky Mountain and Great Plains	81	10	10
Pacific	80	9	10
		Pearson chi-square (6) = 9.07	
All wildfires should be <i>put out</i> , regardless of location			
North	49	40	11
South	56	35	9
Rocky Mountain and Great Plains	39	51	10
Pacific	42	50	8
		Pearson chi-square (6) = 115.73 ^a	
An area burned by wildfire should be left to <i>recover naturally</i>			
North	60	23	17
South	56	27	18
Rocky Mountain and Great Plains	53	29	16
Pacific	50	32	17
		Pearson chi-square (6) = 47.18 ^a	
Wildfires in <i>remote areas</i> should be allowed to burn if human life or property is not threatened			
North	39	48	13
South	33	53	14
Rocky Mountain and Great Plains	48	38	14
Pacific	47	42	11
		Pearson chi-square (6) = 92.96 ^a	
Personal responsibility			
People who choose to live near forests or rangelands should be prepared to <i>accept the risks</i> of wildfire			
North	71	9	20
South	75	9	16
Rocky Mountain and Great Plains	78	7	15
Pacific	73	9	19
		Pearson chi-square (6) = 23.49 ^a	
Where wildfire is common, homeowners should have to follow <i>government guidelines</i> to manage for wildfire risk			
North	68	14	19
South	71	14	15
Rocky Mountain and Great Plains	77	10	13
Pacific	72	13	15
		Pearson chi-square (6) = 38.94 ^a	

^aSignificant at the 0.01 level.

gions, it came with a number of public concerns.

Although there may be some variation

in opinions on postfire recovery and fire management strategies across regions, responses were generally consistent about as-

suming personal responsibility for living in a fire-prone area. Responses were also consistent in believing that residents of

Table 4. Respondent concern related to general fire management and prescribed fire by region (North = 3,029; South = 2,160; Rocky Mountain and Great Plains = 797; and Pacific = 993).

	Concerned (%)	Slightly concerned (%)	Not concerned (%)	Do not know/refused (%)
General fire management				
Long-term forest health will be considered when developing fire management programs				
North	63	14	17	5
South	66	15	15	4
Rocky Mountain and Great Plains	62	13	20	5
Pacific	68	13	15	4
			Pearson chi-square (9) = 24.45 ^a	
Taxpayer's cost will be considered when developing fire management programs				
North	49	20	26	5
South	53	19	23	5
Rocky Mountain and Great Plains	48	20	27	5
Pacific	50	21	25	5
			Pearson chi-square (9) = 11.42	
Public land managers' ability to manage for fire in forests and rangeland				
North	32	20	40	8
South	33	23	37	8
Rocky Mountain and Great Plains	35	21	36	8
Pacific	37	27	28	8
			Pearson chi-square (9) = 52.77 ^a	
Prescribed fire				
Harm to fish and wildlife from prescribed fire				
North	47	19	29	5
South	47	19	30	4
Rocky Mountain and Great Plains	40	17	38	4
Pacific	46	21	29	3
			Pearson chi-square (9) = 33.73 ^a	
Reduced scenic quality and recreation opportunities from prescribed fire				
North	38	18	38	6
South	38	18	38	6
Rocky Mountain and Great Plains	32	14	48	6
Pacific	33	18	45	5
			Pearson chi-square (9) = 42.81 ^a	
Smoke from prescribed fire				
North	31	15	51	2
South	36	17	45	2
Rocky Mountain and Great Plains	31	17	50	2
Pacific	34	17	48	2
			Pearson chi-square (9) = 26.69 ^a	

^aSignificant at the 0.01 level

such areas should follow relevant government guidelines for managing fire risk. We also found that support for postfire salvage and sale of timber was high. A recent study by Donato et al. (2006) after the 2002 Biscuit Fire in Oregon found that postfire logging increased short-term fire risk and "can be counterproductive to the goals of forest regeneration and fuel reduction." The Donato et al. (2006) study drew criticism that it was based on small data sets (Baird 2006) and suffered from a lack of scientific information (Newton et al. 2006). Obviously, more research is needed to examine the environmental and economic impacts of postfire logging so that management decisions can be improved. If Donato et al.'s results are born out in future research, public attitude might turn against postfire salvage.

There were pronounced differences in opinions across race/ethnicity with regard to fire management and several wildfire-related issues. Across all statements on fire management and public confidence, African-American people expressed higher levels of concern than either Caucasian (lowest) or Hispanic people. Our findings appear to be consistent with that of Johnson et al. (2004b), who found that Hispanics' environmental beliefs are more similar to Caucasian than are African-American people. Reasons behind such a high level of concern among African-Americans have not been widely discussed in the social environmental literature. Earlier research showed fairly consistent black/white differences in environmental engagement, with black people either participating less in wildland activities or indicating less support for environmental

agendas (Meeker 1973, Hershey and Hill, 1978). More recent research has shown fewer black/white differences in environmentalism (Mohai and Bryant 1998, Parker and McDonough 1999, Johnson et al. 2004a). Future research examining African-American's relatively lower trust of government and higher concern about fire management would improve our understanding of the racial differences uncovered by this survey.

Thus, because of divergent opinions, fuel control programs should be carefully selected and designed to consider community acceptance and to achieve program effectiveness. Furthermore, information provided to the public about fuel control options can be tailored to different groups for greater effect according to the nature of each group's concerns and beliefs. Past literature has consistently viewed trust as an important criterion

Table 5. Respondent opinion about prefire and postfire management and personal responsibility by race (Caucasian = 5,782; African-American = 415; and Hispanic = 337^a).

	Agree (%)	Disagree (%)	Uncertain/refused (%)
Prefire management			
Public land managers and forest professionals can be <i>trusted</i> to select the best methods for dealing with wildfire			
Caucasian	68	14	17
African-American	61	20	19
Hispanic	68	15	16
		Pearson chi-square (4) = 12.5	
Public land managers should use <i>prescribed fire</i> as part of a wildfire management program			
Caucasian	93	4	3
African-American	84	12	4
Hispanic	88	7	5
		Pearson chi-square (4) = 65.44 ^b	
Public land managers should use <i>mechanical vegetation removal</i> as part of a wildfire management program			
Caucasian	58	12	30
African-American	55	13	32
Hispanic	61	12	26
		Pearson chi-square (4) = 5.14	
Public land managers should use <i>chemical treatments</i> to control ground vegetation as part of a wildfire management program			
Caucasian	27	51	22
African-American	32	48	20
Hispanic	35	42	23
		Pearson chi-square (4) = 17.23 ^b	
Postfire management			
It makes sense to <i>salvage</i> and sell timber damaged by wildfire on public lands			
Caucasian	81	8	11
African-American	80	8	12
Hispanic	82	7	11
		Pearson chi-square (4) = 0.74	
All wildfires should be <i>put out</i> , regardless of location			
Caucasian	46	44	10
African-American	80	16	4
Hispanic	69	24	7
		Pearson chi-square (4) = 230.26 ^b	
An area burned by wildfire should be left to recover naturally			
Caucasian	58	25	17
African-American	46	39	15
Hispanic	46	39	16
		Pearson chi-square (4) = 69.65 ^b	
Wildfires in remote areas should be allowed to burn if human life or property is not threatened			
Caucasian	40	47	13
African-American	24	67	9
Hispanic	36	53	11
		Pearson chi-square (4) = 68.18 ^b	
Personal responsibility			
People who choose to live near forests or rangelands should be prepared to <i>accept the risks</i> of wildfire			
Caucasian	75	8	17
African-American	59	18	23
Hispanic	67	13	20
		Pearson chi-square (4) = 75.90 ^b	
Where wildfire is common, homeowners should have to follow <i>government guidelines</i> to manage for wildfire risk			
Caucasian	73	11	16
African-American	54	26	20
Hispanic	57	23	20
		Pearson chi-square (4) = 126.98 ^b	

^aOnly 6,534 of the 6,979 responses were reported because of missing values or people choosing an alternative racial category.

^bSignificant at the 0.01 level.

for program effectiveness. Key ingredients of trusting citizen–agency relations involve inclusiveness, sincere leadership, and engaging citizens in genuine discussion and communication (Shindler 2004, Winter et al. 2006). In learning more about differences in public perceptions and preferences regarding fire and fuels management, a next step

could be to look for segments of public opinion that might be linked to other issues or to broader values and lifestyles. Uncovering such links would likely help in further selecting management approaches.

A limitation of this population-weighted study is that results are driven by the fact that nearly 80% of today's public

lives in urban areas. Therefore, it can be argued that the many people are not proximate to areas potentially subject to large wildfires and areas where prescribed burns are common. Hence, future research combining these data with land cover, proximity of forestland, regional differences, race and ethnicity, and climate data in a regression

Table 6. Respondent concern related to general fire management and prescribed fire by race, (Caucasian = 5782, African-American = 415, Hispanic = 337^a).

	Concerned (%)	Slightly concerned (%)	Not concerned (%)	Do not know/refused (%)
General fire management				
Long-term forest health will be considered when developing fire management programs				
Caucasian	63	15	17	4
African-American	75	10	10	5
Hispanic	69	12	14	5
Pearson chi-square (6) = 29.51 ^b				
Taxpayer's cost will be considered when developing fire management programs				
Caucasian	48	21	26	5
African-American	73	7	16	4
Hispanic	62	16	18	4
Pearson chi-square (6) = 125.76 ^b				
Public land managers' ability to manage for fire in forests and rangeland				
Caucasian	31	23	38	8
African-American	57	15	23	6
Hispanic	44	20	28	8
Pearson chi-square (6) = 137.01 ^b				
Prescribed fire				
Harm to fish and wildlife from prescribed fire				
Caucasian	44	20	32	4
African-American	70	13	12	6
Hispanic	58	14	23	5
Pearson chi-square (6) = 137.96 ^b				
Reduced scenic quality and recreation opportunities from prescribed fire				
Caucasian	34	17	43	6
African-American	57	15	19	8
Hispanic	48	18	28	6
Pearson chi-square (6) = 137.05 ^b				
Smoke from prescribed fire				
Caucasian	30	17	52	2
African-American	60	10	26	3
Hispanic	51	13	33	2
Pearson chi-square (6) = 233.79 ^b				

^aOnly 6,534 of the 6,979 responses were reported because of missing values or people choosing an alternative racial category.

^bSignificant at the 0.01 level

modeling framework would appear an important next step.

Endnote

[1] When referring to Tables 1 and 2, "respondents" implies percentages from the population-weighted sample.

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