

Race and Wildfire Risk Perceptions Among Rural Forestland Owners in North-Central Florida

MIRIAM WYMAN

Department of Environment and Society, Utah State University, Logan, Utah, USA

SPARKLE MALONE AND TAYLOR STEIN

School of Forest Resources and Conservation, University of Florida, Gainesville, Florida, USA

CASSANDRA JOHNSON

USDA Forest Service, Southern Research Station, Athens, Georgia, USA

The southern United States is susceptible to wildfire, from its climate, growing seasons, lightning frequency, and decades of fire suppression. With much known about wildfire's biophysical risks, less is understood about sociodemographic obstacles, including race, income, and education. Blacks in the rural southeastern United States are typically among the most marginalized Americans and least likely to have sufficient knowledge about resource protection. Because disaster preparedness has been shown to vary by sociodemographic status and race, this study focused on race and wildfire prevention by rural forestland owners in north-central Florida. Results show that while Whites were more aware of existing resources, they were less likely to incorporate preventative measures. In contrast, Blacks earned lower incomes and utilized their land less, but were more likely to manage and live on their land. We conclude that wildfire mitigation programs may be more effective when they work to connect absentee rural land owners to their land.

Keywords Florida, nonindustrialized private landowners, race, wildfire

The southern U.S. climate makes the region especially conducive to wildfire (Nelson et al. 2005; Stanturf et al. 2002). Critical factors to wildfire occurrence include dense vegetation, high lightning frequency, and a lack of a persistent snow layer. Influencing the natural risk of wildfire, decades of fire suppression have resulted in substantial fuel buildup in Southern woodlands, further increasing the probability of wildfire occurrence (Nelson et al. 2005).

Received 21 May 2010; accepted 22 December 2011.

Address correspondence to Miriam Wyman, Department of Environment and Society, Utah State University, 5215 Old Main Hill, Logan, UT 84322-5215, USA. E-mail: miriam.wyman@usu.edu

Although these factors are common in large natural forests, they also increase the probability of wildfire within the wildland–urban interface (WUI) where undeveloped forests and human development intersect (Stewart et al. 2004). The WUI is found across the United States and includes many sprawling communities that grew during the 1990s when low-density housing spread across the landscape (Stewart et al. 2004). In particular, the WUI accounts for 18% of the entire state of Florida, totaling 6,975,142 acres (Hartel 2005). The potential for fire within the WUI is particularly important since a WUI fire will likely impact both the natural areas and adjacent human structures, increasing the risk to people's homes, possessions, and safety (Stewart et al. 2004). WUIs create additional constraints on fuel management and add anthropogenic sources to natural wildfire ignitions (Stewart et al. 2004).

On average, Florida has the second highest wildfire frequency in the United States, experiencing approximately 5,000 wildfires annually (Department of Agriculture and Consumer Services 2010). Based on available cost information, approximately 4,800 wildfires burned in 1998, costing over \$800 million in lost tourist revenues and timber (Monroe et al. 2003), and between 2007 and 2010, 11,918 wildfires burned more than 590,000 acres (Florida Division of Forestry 2010).

Efforts to reduce wildfire risk to communities and the environment that incorporate community involvement represent a shift in wildfire policy; what began with a focus on wildfire suppression has now turned to wildfire prevention (Steelman et al. 2004). With 89% of the WUI in the United States privately owned, community involvement and support for wildfire mitigation practices on private lands are critical (Theobald and Romme 2007). This focus on wildfire prevention places as much emphasis on mitigation efforts, such as prescribed burning or other modes of thinning; the creation of defensible space around property; and generalized wildfire planning through groups like Firewise USA and the creation of Community Wildfire Protection Plans. These programs or groups (e.g., the Fire Learning Network, Fire Safe Councils, and Firewise Communities USA) have been assisting communities to adapt to living with wildfire (Sturtevant and McCaffrey 2006). Additionally, the Healthy Forest Restoration Act of 2003 focuses on community wildfire protection plans by working with local governments to provide forest and fuel management programs (Society of American Foresters 2004). As wildfire has encroached on private lands, these types of programs just listed increase landowner risk perception and homeowner involvement in fire mitigation practices (McCaffrey 2004a).

Within the field of disaster research, wildfires have not been given the attention that earthquakes, hurricanes, floods, and other catastrophic events have received (McCaffrey 2004b; Ojerio 2008). However, researchers have begun to uncover key constructs that impact people's attitudes and participation about wildfire preparedness and mitigation. For example, Collins (2005) found that past experience with wildfire, cultural beliefs about wildfire, and attitudes toward government-sponsored programs are important variables in wildfire preparedness. Monroe et al. (2004) found specific values, including wildlife habitat, privacy, and recreation activities, were more important than reducing wildfire risk on their property. Other research demonstrates that age, race, disability, gender, political influence, poverty, education, and employment are also correlated with feelings of increased vulnerability (Cutter et al. 2000; Evans et al. 2007; Ojerio 2008). Finally, Brunson and Schindler (2004) stressed the importance of people's geographic locale when working to understand people's attitudes toward wildfire mitigation. "Policies based on national

consensus, or an amalgam of nationwide attitude surveys, are unlikely to reflect local needs or concerns” (Brunson and Schindler 2004, 676).

Race and the South

Although the racial divide among African, European, Latino, and Native peoples has had a presence in Southern society, the depth of Black segregation is unparalleled to any other group (Massey and Denton 1993). Historically, racist policies and contemporary practices have influenced structural barriers to wealth accumulation and racial inequality for African Americans (Oliver and Shapiro 1995). And although much of the literature on race and ethnicity focuses on urban areas, racial segregation is as much a reality in rural America (Snipp 1996). From American Indian reservations, to Latino colonias, to rural Black communities in the Black Belt, these locations are among the nation’s poorest places (Snipp 1996). From reconstruction and the implementation of Jim Crow laws to economic arrangements and employment discrimination, southern Black communities have remained socially and economically isolated (e.g., Dill and Williams 1992; Falk and Lyson 1988; Gallardo and Stein 2007; Lyson 1989; Snipp 1996). Socially marginal groups in the South, many of whom are rural-dwelling minorities, are less likely than middle- or upper-income Whites to be able to prepare for, mitigate, or recover from wildfire events. Poor, African American communities in the region typically have less social or human capital in the form of information access and finances, both of which are crucial for successful mitigation and recovery (Lynn and Gerlitz 2006).

Research Objectives

To better prepare communities for disasters, more research is needed to assess the links between disaster impacts and socioeconomic factors (Fothergill and Peek 2004). North-central Florida is characterized by a high proportion of rural, private forestland owners and an area highly susceptible to wildfire. As mentioned earlier, Blacks living in the rural southeastern United States are among those groups least likely to have sufficient knowledge about resource protection (Gilbert et al. 2002; Johnson and Monroe 2008). Therefore, we focus on race (Black and White nonindustrialized private landowners, NIPLs) in north-central Florida and their knowledge of wildfire mitigation programs and practices. We define NIPLs as individuals or families who own private land. Findings will help illuminate sociodemographic factors that may limit NIPLs to engage in wildfire mitigation efforts. As a comparative analysis, and not intended to be representative of a larger population, this study’s objectives compared Black and White NIPL populations with respect to:

1. Knowledge about established wildfire mitigation education programs.
2. Sociodemographic characteristics as they relate to attitudes, perceptions, and behavior toward wildfire mitigation programs and practices.
3. Whether sociodemographic factors constrain NIPLs’ ability to implement wildfire prevention practices.
4. The influence sociodemographic drivers have in predicting engagement in wildfire prevention practices.

Methods

Sampling Scheme and Survey Instrument

Research was conducted in two stages: mail surveys (Phase I) and household and phone surveys (Phase II). In Phase I, a mail survey was administered by Texas A&M University researchers from June to September 2007. Data collected from the mail survey were part of a larger data set where NIPLs from the southeastern region of the United States were surveyed to determine their perception, awareness, and adoption of wildfire prevention and mitigation programs (see Jarrett et al. 2009). Only data collected from the state of Florida were used in our analysis. The survey was distributed to 500 randomly selected NIPLs in the north-central Florida counties of Gadsden, Taylor, Hamilton, and Madison (Figure 1). Counties were chosen based on the percentage of the Black population ($\geq 25\%$); percent forestland ($\geq 33\%$);



Figure 1. Four county research sites in north-central Florida: (A) Gadsden, (B) Jefferson, (C) Madison, and (D) Hamilton.

and amount of state acreage burned by wildfire from 1999–2003 (Southern Area n.d.). The sample was randomly selected from county tax assessor rolls after the county Extension agent helped identify potential study participants who fit the NIPL designation. It is not known if all the parcels had structures or homes, nor the zoning of the NIPL's land. However, one of the questions asked was whether or not the NIPL lived on their land. The questionnaire was reviewed and pretested by state forestry officials and Extension personnel before being mailed to NIPLs. Because of the low response rate for Florida (23%) and low representation of Blacks (2%), a second phase was conducted.

For Phase II, a 32-question survey assessed knowledge of state-sponsored wildfire mitigation resources, preventative measures used, land use, and sociodemographic information in three separate sections. Landowners were asked about their previous experiences with wildfire and knowledge of wildfire programs in the first section of the survey. These programs included Best Development Practices for Wildfire Mitigation in Florida; Firewise Communities; Florida Risk Assessment System, Smoke Screening Tool, and Forestry Fire Management; Living on the Edge in Florida; Wildfire Risk Assessment Guide; Fire in Florida's Ecosystem; and Landscaping with Florida in Mind. This was followed by questions about forest management practices, other land disturbances the land owner might have experienced, preferences in receiving information on wildfire programs, perceived roles of their state government, needed assistance, and wildfire prevention and mitigation options, among others. Combined, these two sections were comprised of eight questions with an open-ended component where interviewees could choose "other" and expand on this response. The third and final section of the survey identified landowner socioeconomic and demographic characteristics.

A sampling strategy was developed to conduct household interviews both over the phone and in person with Black NIPLs in north-central Florida. McAvoy et al. (2000) addresses the difficulties with interviewing communities of color, suggesting that personal interviews have been more successful than other methods (Collins 1991; Stanfield 1994). We worked with county Extension offices in four counties (e.g., Gadsden, Hamilton, Jefferson, and Madison) to obtain names and addresses. From this information we obtained available phone numbers from the phone directories and contacted potential study participants by phone. We explained the study and conducted the interview either over the phone or arranged to conduct the interview at a later date in person. Because there were more NIPLs in these counties than the Extension offices had information about, we employed area sampling, or geographical cluster sampling, for home interviews in all four counties.

Cluster sampling was used due to the grouping of the African American population in these counties. Forestry Extension agents indicated on maps where higher populations of Black NIPLs lived. From the clusters identified, random street sampling covered diverse sections of each county that were identified on county maps that was mixed between rural to semi-urban (small towns) areas. The addresses were checked against the Extension list to make sure the household had not been contacted by phone. Related households were also confirmed to make sure no two households interviewed belonged to the same extended land owner family. The response rate from Phase II was 83.6%. Phase II resulted in 77 interviews (39 phone, 38 in person, 15 declined). The total sample from both Phase I and II was 188 completed interviews/surveys with NIPLs.

Statistical Analysis

Data collected from both phases were merged. Statistical analysis included tests for multicollinearity and binomial logit (logistic regression) modeling ($p \leq .05$) (research questions 2 and 3). Chi-squared tests were conducted to understand the significance between sociodemographic variables (research question 2). In addition, to test for internal validity, absentee and resident wildfire management was separated by race. To test what factors influenced whether NIPLs were more (or less) likely to engage in wildfire mitigation practices, we used past wildfire mitigation behaviors. We split the sample into those NIPLs who responded “yes” ($n = 105$) to any listed wildfire prevention methods (e.g., fire lines, fire insurance, removal of unwanted trees or shrubs, or other specified activity) and those who responded “none” ($n = 83$). A binomial logic (backward) stepwise regression model assessed the relative influence of socio-demographic predictors (independent variables) on the probability that a NIPL practices wildfire prevention, using the following equation:

$$P(y = 1|x) = \frac{e^{(\beta_0 + \beta_1 x_1 + \beta_2 x_2 \dots)}}{1 + e^{(\beta_0 + \beta_1 x_1 + \beta_2 x_2 \dots)}}$$

where P is the probability of the occurrence (e.g., that a NIPL practices wildfire prevention) of the dichotomous dependent variable ($y = 1$ or 0) based on the multiple independent variables (x) and their estimated parameters (coefficients) (β) (Maddala 1983). Tests of multicollinearity employed Pearson’s correlation prior to model development, using a value of .50 or greater as a measure of high correlation following Munroe et al. (2004) and Cohen (1988). A measure of model accuracy (Nagelkerke’s pseudo R^2) assessed model goodness of fit, as the R^2 statistic is not easily calculated in a categorical regression framework (Meyers et al. 2006).

Results

Sociodemographic Characteristics

In this sample, approximately 45% of NIPLs were Black and 52% were White (Table 1). More White NIPLs were women, while more Black NIPLs were men. The majority of Blacks were contacted by phone or in person (90%), while all Whites were contacted by mail. Because of differences in sampling, we compared our data to census data in Gadsden, Hamilton, Jefferson, and Madison counties for key demographic variables.

Comparing differences between race, annual household income within our sample varied considerably among NIPLs with a median income between \$50,000 and \$69,000, but overall Whites had more representation for higher income levels in the \$90,000–> 120,000 range (47.7% vs. 9.8%) (Table 1). The major differences between our study population and the census data pertained to education and age, confirmed through ANOVAs. The respondents were older, with roughly half of both Black and White NIPLs above 60 years. For education, a larger percentage of White NIPLs had completed less than a high school education, approximately 60% of all NIPLs had completed at least a high school education or higher, and more Blacks had completed higher levels of education than Whites (Table 1). Census data for all four counties, however, report Whites as more highly educated, with Blacks having more

Table 1. Characteristics of survey respondents ($n = 188$) among Black and White respondents in comparison to Florida Census data (2008 and 2008 estimates)

Study data	Florida Census data (2000)										
	Percent Black	Percent White	Age (yr)	Gadsden (%)	Hamilton (%)	Jefferson (%)	Madison (%)	Gadsden (%)	Hamilton (%)	Jefferson (%)	Madison (%)
Age (yr)	$n = 79$	$n = 86$									
<40	13.9%	3.5%	<18	26.4	23.5	22.7	25.3				
40-49	17.1%	15.1%	18-24	9.5	10.8	8.2	9.2				
50-59	20.3%	30.2%	25-44	28.9	31.8	28.9	28.2				
≥60	48.1%	51.2%	45-64	23.0	22.8	25.7	22.7				
			65 +	12.2	11.2	14.5	14.6				
Education	$n = 81$	$n = 91$	Education	B	W	B	W	B	W	B	W
≤High school	22.2%	48.4%	≤High school	36.8	19.3	46.6	30.0	47.0	15.0	48.6	22.5
High school	35.8%	33.0%	High school	38.8	33.2	28.7	40.0	28.2	34.5	29.8	37.1
College/tech	32.1%	18.7%	Some college	15.1	21.5	18.5	15.4	14.3	22.4	12.3	20.8
≥4-year	9.9%	0.0%	Associates	2.5	5.8	2.3	5.9	3.7	5.0	4.5	6.2
			Bachelors	3.9	12.9	2.9	6.4	4.1	15.1	2.4	8.9
			Post 4-year	2.8	7.3	1.1	2.8	2.6	8.0	2.3	4.4
Race ($n = 188$)	44.7%	51.6%	Race (2008 est.)	Black	White	Black	White	Black	White	Black	White
			Gadsden	55.4%	43.3%	43.3%	62.0%	43.3%	62.0%	43.3%	62.0%
			Hamilton	36.2%	62.0%	62.0%	62.7%	62.7%	59.0%	59.0%	59.0%
			Jefferson	35.4%	39.3%	39.3%	39.3%	39.3%	39.3%	39.3%	39.3%
			Madison	39.3%	39.3%	39.3%	39.3%	39.3%	39.3%	39.3%	39.3%
Income (\$)	$n = 71$	$n = 86$	Median Income (\$)	Black	White	Black	White	Black	White	Black	White
≤30,000	1.4%	9.3%	Gadsden	24,290	41,018	41,018	41,018	41,018	41,018	41,018	41,018
30-49,000	47.9%	12.8%	Hamilton	17,109	30,096	30,096	30,096	30,096	30,096	30,096	30,096

(Continued)

Table 1. Continued

Study data	Florida Census data (2000)						
	Percent Black	Percent White		Gadsden (%)	Hamilton (%)	Jefferson (%)	Madison (%)
50–69,000	25.4%	16.3%	Jefferson	19,423		42,845	
70–89,000	15.5%	14.0%	Madison	18,226		31,817	
90–111,999	5.6%	16.3%					
≥120,000	4.2%	31.4%					
Gender	<i>n</i> = 84	<i>n</i> = 97	Data not available				
Male	64.2%	28.9%					
Female	35.7%	71.1%					
Heir property	<i>n</i> = 82	<i>n</i> = 83	Data not available				
	61.0%	65.1%					

Note. Some respondents chose to not answer every question.

representation in the less than high school education group. We recognize potential concerns attached to generalization when our respondents do not match the entire population in the area of interest. However, our study focus is on forestland owners, and within that group, we believe our findings will be of substantial value.

Wildfire Burn, Land Management, and Program Knowledge

Approximately 67% of White and 14% of Black NIPLs have experienced wildfire burns on their property (Table 2). Additionally, White NIPLs (73.7%) experienced significantly more property loss from wildfire than Black NIPLs (17.9%). However, significantly more Blacks (54.8%) believed that their property could be damaged by future wildfire than Whites (6%). Black NIPLs live on (82.7% vs. 31.3%) and personally manage (85.4% vs. 8.3%) their rural lands significantly more than White NIPLs (Table 2). In this respect, “personally manage” refers to when a private landowner is making the sole decisions about his or her land. He or she is not contracting it out to a consultant or contractor. In other words, such landowners alone schedule and perform land management activities. However, Whites utilized their land significantly more (e.g., agriculture, recreation, timber) (62.0% vs. 26.5%) and are more likely to possess management plans (46.0% vs. 23.8%). In spite of our finding that almost all White NIPLs (99.0%) had significantly more knowledge of all listed wildfire prevention programs than Black NIPLs (58.3%), Whites practiced significantly less wildfire prevention on their rural lands (4.1%) than Blacks (81.0%). To test for internal validity, absentee and resident wildfire management was separated out by race. The patterns were similar by race (less practice for absentee owners and more for residents).

Table 2. Chi-squared tests between race (Black and White) and various binary variables

Variable	Total	Total White	Percent White	Total Black	Percent Black	χ^2
Practice wildfire prevention***	181	97	4.1%	84	81.0%	77.72
Program knowledge***	181	97	99.0%	84	58.3%	44.14
Personally manage land***	178	96	8.3%	82	85.4%	103.49
Live on rural land***	177	96	31.3%	81	82.7%	44.92
Land use***	175	92	62.0%	83	26.5%	32.55
Property loss***	179	95	73.7%	84	17.9%	59.65
Past wildfire burn***	179	95	67.4%	84	14.3%	67.37
Heir property	167	83	65.1%	82	61.0%	0.033
Management plan**	167	87	46.0%	80	23.8%	8.07
Believe property burn***	174	90	6.0%	84	54.8%	50.78
Income***	157	86		71		41.44
Education***	172	91		81		20.29

Note. Significance indicated by *** $p = .001$, ** $p = .01$.

Table 3. Binomial logit stepwise model, with probability of incorporating wildfire mitigation practices on rural land based on various socioeconomic, sociodemographic, and landowner characteristics

Coefficient	Estimate	Std. error	z Value	p Value
(Intercept)	0.1749	0.2789	0.627	.5305
Income*	-0.5799	0.2546	-2.278	.0227
Manage**	1.5114	0.2606	5.800	<.0001
Land use*	-0.7959	0.3668	-2.710	.0300

Note. Significance indicated by ** $p = .001$, * $p = .05$; pseudo $R^2 = .457$, AIC = 108.2.

Probability Modeling

Drawing from past literature and informed by the various statistical tests for multicollinearity, the following variables were examined in a probability model: gender, education, household income, percent income from land, wildfire burn on property, property loss from wildfire, land use (e.g., farming, recreation, timber, etc.), land management, and residence (on rural land or not) (Table 3). Race was not considered in the model because of its high multicollinearity with many of the variables. However, the importance of the model was to identify parameters other than race that would influence the probability that a landowner would practice wildfire mitigation. All data were standardized (subtracting the mean and dividing by the standard deviation) to enable comparison between binary and continuous variables within the model.

The variables chosen by the model as significant predictors of wildfire prevention were income, land use, and personal land management. As an NIPL's household income decreases, the probability of practicing wildfire prevention increases ($p \leq .05$). Additionally, the less a NIPL utilizes their land for a specific land use (e.g., farming, logging, etc.), the increased likelihood they practice wildfire prevention ($p \leq .05$). Lastly, for those who personally manage their land, the probability of practicing wildfire prevention increases ($p \leq .01$). With respect to model accuracy, this model reported a pseudo R^2 statistic of .457, indicating the model accounts for 45.7% of the variability in the independent variables chosen to describe wildfire prevention practices among NIPLs in our study.

Discussion

This study clearly shows that differences exist among White and Black landowners with respect to their knowledge of wildfire mitigation education programs and performing wildfire mitigation practices on their lands. Analysis of sociodemographic characteristics among these two groups helps to explain why these differences exist. Past research shows that the important social factors influencing wildfire prevention participation are past wildfire experience, cultural beliefs about wildfire, attitudes toward government-sponsored programs (Collins 2005), age, race, disability, gender, poverty, education, and employment (Cutter et al. 2000; Evans et al. 2007; Ojerio 2008). Although there are some similar findings with our study, our findings also contradict some of these social factors.

Income, Race, Education, Land Management, and Wildfire Prevention

Although Fothergill and Peek (2004) found low income households with fewer financial resources less likely to adequately prepare for a disaster, our study found that those NIPLs with lower incomes were more likely to engage in wildfire prevention. Our study also indicates that past experience with wildfire, age, gender, and education were not significant predictors influencing wildfire mitigation practices among NIPLs in north-central Florida. As in the Jarrett et al. (2009) study, our study found that program awareness by NIPLs did not translate into action to prevent wildfire, and program awareness and wildfire prevention activities differed across racial groups. However, in our study Whites had significantly more knowledge about these programs while in the Jarrett et al. (2009) study Blacks possessed more knowledge. Our finding of higher education rates among Black landowners than White may also be tied with land ownership. Across the counties, the majority of Blacks are probably not landowners. However, there is very likely a correlation between education and land ownership for Blacks. That is, property ownership is a more significant indicator of upward mobility for rural African Americans than for Whites (Oliver and Shapiro 1995).

Perceived risk of wildfire was an important finding in our study. We found that 54.8% of Black and 6.0% of White NIPLs believed their property could be damaged by future wildfires. This finding is consistent with other studies. For example, homes within the WUI are at the greatest risk from wildfire damage, yet most households do not engage in wildfire prevention practices, and those that do often make only minimal preparations (Bates et al. 2009). To some degree, this is because many have not experienced the devastating effects of wildfires and therefore underestimate the risks. However, even landowners who have been affected by wildfire often fail to recognize the risk of a future event (Reams et al. 2005). Income was an indirect significant indicator of wildfire mitigation practices within our study. Those from lower incomes and who personally managed their land were more likely to be Black. However, those who tended to utilize their land (e.g., farming, timber, etc.) were more likely to be White.

A major finding of our study was that although Blacks knew less about wildfire mitigation programs and resources, they practiced more wildfire prevention on their rural forestlands. The practices utilized were evenly distributed among the options (e.g., fire line: $n = 77/188$; buy fire insurance: $n = 144/188$; remove unwanted trees or shrubs: $n = 104/188$); and other: $n = 93/188$). Furthermore, NIPLs who lived on their land did not disproportionately choose “removing unwanted trees or shrubs.” From the results, 66/188 (35%) of NIPLs who live on their land also chose “removing unwanted trees or shrubs” (among other options). To test for internal validity, absentee and resident wildfire management was separated by race. The patterns were similar by race (less practices for absentee owners and more for residents), indicating that the probability of a NIPL practicing wildfire prevention is the same between races and indicating that this study has high internal validity. Therefore, despite the differences in enumeration practices, a higher number of black landowners engage in wildfire management practices due to their higher resident status.

The fact that they are more likely to engage in wildfire mitigation practices might also be linked with living on their land. Whites were less likely to live on, or personally manage, their rural land. This “disconnect” from their land could explain the rationale behind practicing less wildfire prevention than Blacks, even

though Whites were more knowledgeable and aware of wildfire mitigation programs. The fact that Black NIPLs in north-central Florida appear more connected to their rural lands while Whites are more likely to be “absentee” landowners provides some considerations for future research that examines the role place attachment may have in wildfire prevention.

Place attachment applies to places that gain meaning and definition through the individual experiences that occur within those places (Tuan 1980) and describes the emotional bonds between people and places (e.g., Davenport and Anderson 2005; Williams and Vaske 2003). Place attachment has been used to assess Black participation in Southern, rural yard designs and gardening practices (Westmacott 1992) and wildland recreation (e.g., Johnson et al. 1997; Williams and Carr 1993). Other research has examined the different wildland meaning between Southern rural Blacks and Whites. For example, research by Johnson et al. (1997) suggests that the labels, words, or meanings that rural African Americans assign to wildlands are different from the meanings rural Whites give these places, and that the meanings different racial groups attach to wildlands help explain visitation to these areas. Additionally, findings by Philipp (1993) support previous research that Blacks and Whites are significantly different in ranking of wildland recreation among different natural resource-based tourist destinations. These relationships may, in turn, influence place meanings, and therefore communication and educational approaches that agencies might select in focusing their wildfire mitigation programs for this group of landowners.

Limitations

With respect to the potential influence of different sampling methods on our results, we believe we avoided this bias by incorporating phone interviews and cluster sampling (for in-person interviews) in Phase II. The Black landowners we called from the Extension list had an equal probability of living on their land or being absentee land owners. Out of the total 77 interviews from Phase II, 39 of our interviews with Black rural land owners were conducted over the phone from the Extension list. The other half ($n = 38$) were conducted in person. Cluster sampling was employed in the rural counties through random sampling of streets which was mixed between rural to semi-urban (small towns) areas where interviewed landowners were not found to all live on their lands; in fact, there was a mix of responses to this question. We therefore feel that Black NIPLs interviewed in Phase II had an equal probability of living on their rural lands as being absentee landowners. However, we acknowledge that research subjects might respond in different ways as they perceive the intentions or discern the more desirable responses. This is particularly true when asking about behaviors that respondents might consider to be preferred by the interviewer (e.g., fire management practices). We took efforts to minimize this bias, but future research could remove this bias by focusing on observing actual behaviors to substantiate these claims.

Conclusion

Although education has been known to increase risk perception and therefore to increase homeowner involvement in wildfire mitigation practices, our study showed that awareness of resources was not indicative of participation in educational events

or engagement in wildfire prevention practices. In fact, White NIPLs have more knowledge of these programs, in addition to higher income levels and land utilization (e.g., agriculture, timber, recreation), yet practice less wildfire prevention than their Black counterparts. Black NIPLs reported personally managing their rural lands significantly more, an important factor predicting the probability of engaging in wildfire prevention.

Because our study is unique to forestland owners, we recognize that generalizations are limited to NIPLs in the southeastern United States and we must also consider the possible influence of using different methods of data collection (mail, phone, and in-person). We also recognize that other socio-psychological variables play a role that transcend race. Additionally, while we acknowledge that other variables may have been germane to examine, such as the differences between poor and middle-income Blacks, or similarities between poor rural Blacks and Whites, this went beyond the scope of our study. Nevertheless, our findings have some important implications for future research and outreach to forestland owners. The fact that Black NIPLs in north-central Florida appear more connected to their rural lands by living on and personally managing their lands, while Whites are more likely to be “absentee” NIPLs, provides some consideration for future research that examines the role place attachment has in wildfire prevention. This may signal that wildfire mitigation programs may be more effective when they work to connect absentee NIPLs to their land and wildfire risk.

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