

Public Perceptions of Prescribed Fire in Two Florida Communities: A Comparison in Progress

Rhayfon N. Pancho¹, William O'Brien^{1*}, Henry T. Smith^{1,2}, and Terje Høim¹

INTRODUCTION The ecological and hazard mitigation benefits of prescribed fire are well known to biologists and land management professionals. However, those charged with the task of implementing fire policy find it difficult to do so in the face of local opposition by homeowners. This perception of public opposition to prescribed fire is particularly acute in places situated in what is known as the “urban-wildland” interface, where homes are potentially at greatest direct risk of both wildfire and prescribed fire accidents. Beyond concerns about actual fire damage, residents of such zones may also be concerned about smoke, landscape aesthetic impacts, as well as fire impacts on wildlife communities. A recent survey of fire management professionals in the Southeast rated public opinion as the most significant barrier to prescribed fire implementation in state forest lands (Haines et al. 2001). Yet, despite such perceptions among fire professionals, there is a growing body of evidence suggesting that public resistance to prescribed fire has actually dissipated significantly over the past 30 years; researchers studying the public perception of fire note a clear trend toward greater public knowledge and support regarding prescribed fire and tolerance of associated risks (e.g., Bunson and Shindler 2004, Cortner et al. 1990, Shindler and Toman 2003).

Many of these previous studies address perceptions among residents of fire-prone Western states in the U.S., although a few recent studies have been conducted in Florida (e.g., Butry et al. 2002, Jacobson et al. 2001, Loomis et al. 2001, Martí et al. 2005, Monroe and Nelson 2004). Often, regardless of region, these studies survey residents located generally in fire-prone areas, rather than focusing on those with homes directly at the edge of forested lands. Our study in progress examines public perceptions of fire by surveying homeowners in two Southeast Florida residential communities. The surveyed residents live in direct proximity to lands with fire-adapted plant communities that have not been burned because they occupy the “urban-wildland” interface. One of the residential communities, Abacoa, is a suburban neighborhood setting that contains a large “greenway” of mainly pine flatwoods, part of which is now home to threatened gopher tortoises (*Gopherus polyphemus*). The other residential community lies adjacent to the Savannas Preserve State Park and a strip of endangered Atlantic coastal ridge scrub that has not been burned in 25 years (Martí et al. 2005). High fuel-loads, habitat degradation, public safety, and public perceptions are key concerns to managers of both lands. Assessing public perceptions in these two settings would indicate whether the use of prescribed fire is politically feasible, as well as provide insight into how residents living on the “front lines” perceive the danger of fire.

Studies in Florida reflect the trend toward greater public acceptance of prescribed fire as a land management tool, along with greater knowledge of fire's ecological benefits. Jacobson et al. (2001, 932) for instance, state that over “79% of the respondents knew that fire helps renew Florida's forests” and that 60% “believed that fire is beneficial to Florida's native plants” (Jacobson et al. 2001, 933). Another Florida survey indicated that 74% agreed “fire is necessary to maintain a natural balance in Florida's ecosystems” and that 71% felt “fire is beneficial to Florida's native plants and trees” (Tall Timbers Research, Inc. 2000). Both studies, however, suggest that respondents were unsure about the impacts of prescribed fire on wildlife; only 35% of respondents in the Tall Timbers Research, Inc. (2000) study agreed that plants and animals benefit from prescribed fire, while respondents in Jacobson et al.'s (2001) study saw harm to wild animals as one of the two greatest risks of prescribed fires.

Studies also assess the effects of education and experience with fire in shaping knowledge and attitudes toward prescribed fire. Manfredo et al. (1990) reported that residents surveyed in fire-prone Montana and Wyoming expressed greater support for prescribed fires than respondents at the national scale, pointing to a probable connection between experience and knowledge. Jacobson et al.'s (2001) study provides some support for such a connection in Florida noting, “self-reported experience with fire...did reveal significant correlations with knowledge levels, attitudes, or behavioral intentions” (Jacobson et al. 2001, 934). Regarding the impacts of fire education, Loomis et al. (2001) measured Florida residents' perceptions and knowledge of both wildfire and prescribed fire both before and after receiving educational materials. They found that residents' understanding and support for prescribed fires increased after receiving such materials, pointing to the potential effectiveness of fire education programs. This finding supports the general perception in the literature that public attitudes are significantly and positively impacted by fire education efforts (e.g., Cortner et al. 1984, Gardner et al. 1985, Loomis et al. 2001, Monroe and Nelson 2004, Winter and Fried 2000).

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Given the indications of these previous studies, we expected that residents at the edge of Savannas Preserve State Park, with greater exposure to fire education from park personnel and other sources, and with greater experience with both wildfire and prescribed fire within park boundaries, would be more knowledgeable and supportive of prescribed fire. We expected residents of the more typically suburban Abacoa community to be more hesitant and uncertain in their knowledge, perception, and support for prescribed fire.

METHODS Our study is based on phase 1 door-to-door surveys implemented in 2005-2006 among residents in the Cambridge and Osceola Woods neighborhoods of Abacoa (n=86) and among residents living along the eastern edge of Savannas Preserve State Park (n=85). Survey responses were based on a series of statements with five responses ranging from “strongly agree” to “don't know” to “strongly disagree.” These statements were grouped into categories that assess knowledge and attitudes toward prescribed fires, perceptions of government officials implementing fire policy, and exposure to fire education opportunities. Abacoa respondents were virtually evenly split between males and females, tended to be younger and highly educated (90% had at least some college education), and were overwhelmingly white (91%). The majority of respondents near Savannas Preserve State Park were male (62%), somewhat older on average, were almost as highly educated (84% with college experience) and slightly more ethnically diverse. In both communities the vast majority of respondents owned, rather than rented, their homes.

RESULTS We employed chi-square analysis to test differences between responses of residents in Abacoa and those bordering Savannas Preserve State Park. Overall, these results suggest that the residents near Savannas Preserve State Park demonstrate greater knowledge of the benefits of prescribed fire, greater tolerance of its associated drawbacks (e.g., smoke and aesthetic impacts), and greater support for prescribed fire implementation in areas adjacent to their property in comparison with their more “traditionally suburban” counterparts in Abacoa. Perhaps most important to land management planning, there was a very significant difference ($\chi^2= 16.67$, $df=4$, $p<0.002$) between the communities regarding responses to the statement, “I

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would support the use of prescribed fires” in the areas adjacent to their homes. Of the respondents near Savannas Preserve State Park, 69% either strongly or somewhat agreed (compared with 17% not supporting), while responses in Abacoa were evenly split (38% for and against the use of prescribed fires in their community). Compared with those near Savannas Preserve State Park, significantly more residents in Abacoa responded that prescribed fires should be avoided because they threaten homes ($\chi^2=17.78$, $df=4$, $p<0.001$) and make the landscape unattractive ($\chi^2=12.99$, $df=4$, $p<0.01$). Abacoa residents also preferred mechanical clearing over prescribed fires compared with residents near Savannas ($\chi^2=11.66$, $df=4$, $p<0.02$). Regarding impacts on wildlife, 59% of residents near Savannas either strongly or somewhat agreed that prescribed fire provides benefits to plant and animal communities. In contrast, Abacoa residents expressed much less certainty on that issue, with 36% affirming benefits, 30% expressing that they “don’t know”, and 34% believing that prescribed fires harm animal and plant communities ($\chi^2=9.87$, $df=4$, $p<0.04$).

We also found similarities between the communities, particularly regarding an expressed desire to have the opportunity to provide input into decisions to implement prescribed fires. While respondents at both Savannas and Abacoa expressed strong support for government environmental protection efforts generally (75% and 80% respectively), reflecting widespread regional support, they also remained somewhat skeptical of officials. Respondents at Savannas expressed less trust in officials to safely implement prescribed fires (35%, compared with 58% in Abacoa ($\chi^2=9.81$, $df=4$, $p<0.04$), while 58% of respondents in both communities wanted the opportunity to overrule officials’ decisions to implement prescribed fires. In both communities, there was a relatively high number of “don’t know” responses to a number of questions (often at a rate of 25-30%) suggesting that significant educational work remains despite a generally elevated level of knowledge of fire and its effects.

Regarding fire education impacts on both knowledge and support for prescribed fire implementation, only a minority of respondents in both communities had been exposed to flyers, workshops, or other means of fire education. Among residents near Savannas Preserve State Park, there was no significant difference in knowledge and support for prescribed fire between those respondents with exposure to fire education (40%) and those without (60%); both groups demonstrated a relatively high level of knowledge and support. In Abacoa, however, the 22% of respondents who said they had received some form of fire education demonstrated a significantly greater knowledge of fire’s benefits to wildlife and plant communities ($\chi^2=16.07$, $df=4$, $p<0.003$), while they also were more supportive of fire implementation in their communities compared with the 74% of their neighbors with no fire education ($\chi^2=22.49$, $df=4$, $p<0.001$).

DISCUSSION The results of this preliminary study suggest that local residents with homes potentially subject to a fire’s path, such as those bordering Savannas Preserve State Park, can be quite supportive of prescribed fire implementation, despite the perception of public opposition that often inhibits prescribed fire implementation. It is possible that a relatively few vocal and persistent oppositional voices masks wider support that may be present, prompting fire implementation delays that can go on for years. Knowing that public support exists for prescribed fires can embolden managers to implement fire programs that would benefit residents, plant, and wildlife communities alike. Where such support exists, however, the results here suggest that the public residing at the “urban-wildland” interface should be fully and early informed about plans to implement burns. At the same time, education efforts should continue to emphasize knowledge about prescribed fire, particularly regarding wildlife benefits, but also regarding the rigors of the prescription writing and fire implementation process itself. Residents’ concerns could be lessened by knowing that very strict guidelines are followed in implementing prescribed fires. These sorts of outreach efforts could be vital in perpetuating support for prescribed fires and reducing

public skepticism regarding fire officials.

On the other hand, our results suggest that implementing prescribed fire could meet more persistent public resistance in communities perceived as more “traditionally suburban”. The “greenway” in the planned development of Abacoa is not perceived as a “wildland” in a normal sense, and, as a result, education efforts would likely increase knowledge, but might not lead directly to higher levels of support for prescribed fire implementation. In an open-ended narrative question, several Abacoa residents expressed support for prescribed fires in principle, but not in a densely settled neighborhood like theirs. As such, it may simply be harder for officials to convince the public in such domesticated settings where seemingly “wild” features, such as fire, are perceived not to belong. In fact, at the time of this writing, land managers of Abacoa’s greenway have opted to implement mechanical clearing rather than fire to clear underbrush and open up habitat.

Perhaps the most important implication of this study relates to the impact of fire education and experience on knowledge and support. While suburban concerns about fire in dense human settlements may inhibit prescribed fire implementation, evidence in Abacoa suggests that increased fire education *could* lead to more widespread support and greater understanding of fire’s benefits, even in such communities. Just as important, among residents near Savannas Preserve State Park, experience with fire appears to have a similar effect as fire education on increasing knowledge and support for prescribed fires. Though we did not measure for the impact of this variable, Savannas Preserve State Park has been the site of both wildfires and prescribed fires. We believe that such prior experience with fire helps explain the statistically non-significant relationship between education and knowledge/support for prescribed fire among Savannas respondents, who demonstrated significant knowledge and support regardless of exposure to fire education. A previous study in the same community (Martí et al. 2005) pointed out to residents the very high fuel-loads in the park’s scrub areas near their back yards (separated only by the buffer of railroad tracks). This fuel-load hazard, combined with the experiences of the March 2004 Savannas wildfire, the Florida 1998 wildfires, and a number of successful prescribed fires in other areas of the park, has likely increased residents’ fire awareness as well as support for fire policy. Further research into the effectiveness of education and the impacts of experiences on knowledge and attitudes is clearly warranted, and our next objective.

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*Author to whom correspondence should be addressed: William O’Brien [wobrien@fau.edu]

¹Harriet L. Wilkes Honors College, Florida Atlantic University, John D. MacArthur Campus, 5353 Parkside Drive, Jupiter, FL 33458, USA

²Florida Department of Environmental Protection, Florida Park Service, 13798 S.E. Federal Highway. Hobe Sound, FL 33455, USA

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