



Chapter 7: Wildland Fire Appendices and Acknowledgements¹

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This document is a chapter in the Wildland Fire Education Handbook. To learn more about this handbook, please refer to Chapter 1: Introduction to the Wildland Fire Education Handbook (FOR 72).

This chapter of the Wildland Fire Education Handbook contains additional background information and resources to help make your programs a success.

- Audience Needs Assessment and Survey
- Landscaping With Fire in Mind—Workshop Report
- Toolkit Partners and Acknowledgements
- Florida Division of Forestry Center and District Field Units
- Florida Daily and Weekly Newspapers

Audience Needs Assessment and Survey, Awareness and Attitudes about Fire in Florida

Introduction

The telephone survey of 675 rural and suburban residents of North and Central Florida provides some very useful direction for the development of the Fire Education Toolkit program. Key messages that have been identified by extension agents and home landscaping experts are confirmed by this survey. Residents dislike smoke and negative air quality effects of fire, and are concerned about the fate of wildlife in fires. While rural Floridians are somewhat tired of hearing about fire, the survey identifies some promising topics for attracting the public to education programs about fire in Florida.

Survey Methods: The Survey

The survey was created through a process of question development and testing. Questions were developed, reviewed, and refined by Toolkit team

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members and several outside survey experts. A final slate of questions was pilot tested by telephone on a random sample of 10 target audience members. The survey was refined according to the results and comments from the pilot test. The final survey was put in machine language by the Bureau of Economic and Business Research (BEER), University of Florida, who recommended some further technical changes to ease administration and improve responses to the survey. The survey was administered from BEER during April by a trained telephone survey research crew. The automated and computerized BEER system is able to randomly select and dial Florida households.

The final survey included 60 questions:

- 5 true-false knowledge/awareness questions on fire
- 5 attitude questions on fire in general
- 3 awareness questions about prescribed fire
- 11 questions rating the risks and benefits of prescribed fire
- 2 questions comparing the risks of wildfire and prescribed fire
- 4 questions about likelihood of taking actions
- 6 questions asking what respondents would like to know about fire
- 6 questions about resident's environmental surroundings
- 10 questions about respondent's experience with and concern about wildfire
- 8 sociodemographic questions

Sampling

Sampling was performed for the project by the survey contractor, who maintains a computer database of Florida households and telephone exchanges, categorized by census-based Metropolitan Statistical Areas (MSAs). A random sample was taken with the following constraints:

- South Florida counties were eliminated from the sample because they were not in the project target area: Broward, Charlotte, Collier, Dade, Glades, Hendry, Lee, Martin, Monroe, and Palm Beach.
- Rural/suburban Floridians were targeted by eliminating Type I and Type II MSAs from the sample. As a result, counties where a majority of residents live in urban areas are not highly represented in the sample, such as Bay, Brevard, Escambia, Hillsborough, Manatee, Marion, Pinellas, St. Lucie, Sarasota, and Volusia.

For the purposes of later research (comparing the attitudes and awareness of people with and without experience with wildfires), the sample was divided into two segments: high-fire counties and low/no-fire counties. High-fire counties were Volusia, Flagler, Union, Wakulla, Columbia, Taylor, St. Johns, Osceola, and Brevard. Low/no-fire counties comprised the remainder of the 57 counties in the project area. High-fire counties were over-sampled (a larger sample was taken) so that the number of people with wildfire experience would be high enough to make later comparisons between the groups. This over-sample was corrected with a weighting of the survey data for this report.

Based on these criteria, a random sample of households was taken from the 57-county area (N=675). Although the target number of 700 cases was not reached, the sample was exhausted and multiple recalls were made before the survey data were considered complete. The sample was not stratified by county, but because of the nature of the random survey, this self-adjusting sample is equivalent to a stratified sample, according to BEER sampling experts. However, because of the wide geographical area being sampled, a few counties were missed in the sampling scheme (e.g., Calhoun, Leon, Polk), probably as a product of the random process, the exclusion of MSAs, or the extremely small county size. In the final analysis, these data are a random sample and, with appropriate weighting of the over-sampled areas, are representative of the rural/suburban population of Central and North Florida.

In addition, BEBR was able to insert 8 fire questions into their monthly Consumer Confidence Index (CCI) survey. This survey was directed at a random sample of *all* Floridians in *all* 67 counties (N=499), [*view PDF*] and was spread out over the entire month of April to control for time bias. Because the CCI survey sampled from all Floridians, it does not represent our rural/suburban target audience. Nevertheless, this free service provided by BEBR provides an additional snapshot of the knowledge and attitudes of Floridians which may be added to our knowledge base.

Data Analysis

Data analysis was done using the Statistica package for Windows (StatSoft, Inc., 1995). Data were imported into Statistica from a survey output spreadsheet provided by BEBR. Frequencies and/or descriptive statistics (means, standard deviations) were calculated for survey variables. Cases from the over sampled high-fire counties were weighted by a factor of 0.25, and cases from the low/no-fire counties were weighted by a factor of 1.96 in order to bring the two samples into a representative picture of the rural/suburban residents of Central and North Florida. Weighting factors were determined by dividing the proportion of households in each group in the total population by the proportion of households in the data set. With weighting, the data are analyzed proportionally as they appear in the actual populations. The only problem with weighting is that it may introduce bias into an analysis, but with our large sample and low-level weighting factors, bias is not expected to be a problem.

Results

For a complete listing of survey results, view [PDF](#).

Demographic Summary

The respondents in our sample are 43% male and 57% female and range in age from 18 to 90 years, with an average of 48 years of age. Despite our efforts to focus on rural Florida, only 45% believe they live in a rural area; 36% claim suburban, and 16% said they live in an urban area. Regarding education, 31% of the respondents have a high school

degree, 19% have two years of college and 15.5% have a four-year degree. Only 12% of the sample have attended graduate school. Regarding ethnicity, 86% are white, 6% are black, and 2% are Hispanic. Nearly a quarter (24%) of the sample worked in agricultural or natural resource professions during their life.

The respondents live an average of 7.2 miles from a natural area, 78% of whom say their natural area has pine trees. When asked if this natural area has burned since they have lived at this location, 67% said no. Despite this proximity and potential risk, 45% of the respondents were unconcerned about wildfire during the 1998 fire season, though 28% were very concerned. More than half the sample (58%), however, smelled smoke during the 1998 fires for an average of 8 days. Only 3% of the respondents were evacuated, but 38.5% of the respondents say the fire was near their home (on average, 10 miles away).

Knowledge and Awareness Summary

A majority of the respondents had an accurate view of fire in Florida. Table 1 summarizes the results of the knowledge-based questions.

Attitude Summary

Respondents shared somewhat mixed views about wildland fire in Florida. A majority agree that it is beneficial (60%), and slim majority (56%) think their local wildlands should be burned periodically. Although just more than half of the respondents (53%) favor protecting air quality more than burning natural areas, a large majority (79%) believe some residents should tolerate more smoke. See Table 2.

A variety of questions asked respondents to consider the risks and benefits of prescribed fire (see Tables 3 and 4). Their largest concerns are for harm to wild animals and the spread of prescribed fires. They believe the greatest benefits are preventing wildfire and improving the land for forestry and agriculture. In comparing the results of prescribed and wildland fire, 71% of the respondents thought that wildfire killed more wild animals than prescribed fire; 19% thought the outcomes would be equal. Perhaps the respondents did not answer the risk question (Table 3)

for only prescribed fire, but all fire. A majority (62%) also thought wildfire created more smoke than prescribed fire and 28% thought they would be the same.

Likelihood of Taking Actions

A surprisingly high number of respondents claim to have already taken some actions to protect their home from wildfire. Of the four actions queried, over 42% of the respondents have already trimmed shrubs and branches and moved flammable materials; Nearly half claim to be likely to replace flammable building materials, and use less flammable landscape plants (see Table 5).

Program Topics

To gauge respondents' interest in potential program topics that could be offered by the county teams, we asked them to rate the following list for interest. Those topics with a strongly personal connection attracted more interest. See Table 6.

Discussion

This needs assessment provides some direction to the development of materials for the Fire Education Toolkit Program.

Knowledge

There is a somewhat schizophrenic perspective on fire in Florida. People know it is good for natural areas, they think nearby residents should tolerate smoke, and they know prescribed fire is "better" than wildfire for a variety of reasons, but they want stricter controls on burning and they value air quality more than burning. Thus, our materials should recognize what most people already know and emphasize the importance of more novel benefits. Air quality concerns should be acknowledged as well as the efforts that are being taken to mitigate problems. There may be some confusing about wildfire and prescribed fire, however, as only 63% of the population correctly identified the definition of prescribed fire, 25% answered incorrectly, and the remainder didn't know the answer. Although 37% is less than half the population, this is a large minority who don't know the definition of prescribed fire.

Attitudes

More residents are unconcerned (45%) or moderately concerned (27%) about the 1998 wildfires than are very concerned (28%), despite the barrage of news coverage. They believe the greatest benefit of prescribed fire is to prevent wildfires, and maintaining natural landscapes is the least important benefit of the four choices we provided. Respondents believe that prescribed fire involves large risks to wildlife and of the fire spreading to nearby land. Risks of car accidents, health concerns, and more regulations are perceived to be less important, though they exist. Thus, how wildlife responds to fire should be clarified and home landscaping measures could be introduced as a way to protect property from the risk of any kind of fire.

Experience

While only 3% of respondents were evacuated from last year's wildfires, more than half were exposed to smoke from the fires at their homes. Furthermore, 30% of the respondents said the natural area nearest to their home has burned since they've lived there. So rural Floridians have a reasonable exposure, though not universal experience with natural area fires. This may be the reason over 40% of the respondents claim to have already trimmed branches and moved their woodpile to reduce their risk of wildfire.

Fire Education Programs

Respondents are most interested in attending programs about how to protect their homes from wildfire and about air quality and health. They are not very interested in learning about fire-prone areas near their homes. Residents are likely to plant but have not already planted less flammable landscaping plants; similarly, they are likely to replace but have not already replaced fire-prone building materials; these could be valuable program topics. Programs should be advertised through TV and newspaper media; radio is not the source for information about fire. While residents did not express much interest in attending programs to see prescribed fire demonstration areas, we believe there will be value in the roadside signs alerting people to areas that are managed by prescribed fire near their homes.

Landscaping in Florida with Fire in Mind

Summary of the March 15, 1999 Workshop, by Martha Monroe and Susan Marynowski.

Introduction: Defining the Problem

From late May to mid July 1998, over 2,200 wildfires burned 500,000 acres and destroyed or damaged 330 homes and businesses in Florida. Losses totaled over \$800 million dollars. The wildfires left many rural and suburban Floridians wondering how best to manage their yard and landscape to reduce the threat of wildfire to their homes. The lack of annual rainfall in early 1999 created dry conditions; a high number of wildfires have already occurred, and residents are justifiably concerned about the safety of their homes.

As a result of the long history of fire in the urban/wildland interface in the western U.S., many resources are available that direct residents to clear trees, brush, and combustible items from a 30' to 50' radius around their home. In this "defensible space," fire fighters could have access and flames could be more easily stalled or stopped, thus protecting the house. Homeowners are encouraged to water their yards regularly, plant less flammable species, and clear an even larger space if they live on a slope. Several publications have been prepared with similar defensible space recommendations for Florida homeowners. A list of available defensible space publications is attached at the end of this report.

Other agencies and organizations, however, have very different landscaping recommendations for Florida homeowners. For example, Water Management Districts suggest xeriscaping—planting vegetation that requires little water—and for watering less often in hot spring and summer months. Energy conservation guidelines call for planting trees near the home to provide shade. Backyard wildlife programs ask homeowners to plant and maintain layered shrub habitats in their yards for birds and wildlife. The Native Plant Society prefers that homeowners landscape with native plants—even ones that may be quite flammable. All of these recommendations differ with defensible space guidelines to some extent. It is likely that homeowners experience a degree of

confusion from the conflicting messages they receive about landscaping.

Goals of *Landscaping in Florida with Fire in Mind*

The differences in agency messages speak to the different values and priorities that many Florida residents hold for their home landscapes. If these values were mutually exclusive, it would be easy for residents to listen to their favorite message and exclude all others. But in this case, the values are overlapping. People who wish to attract wildlife soon discover that planting native species is a reasonable answer. The actions associated with these values complement each other. Similarly, almost everyone is interested in shade and reduced utility bills, and trees around a home can also attract wildlife and support a native plant community. No one, however, wishes to lose a home to flames. When it comes to defensible space, the actions are in conflict. So residents who listen to more than one message may easily find themselves uncertain about what is really important to do with their yard.

This is a case where agencies and organizations have an opportunity to reach a common understanding and develop a coordinated message on actions for fire prevention and defensible space in Florida. A message that acknowledges different landscaping values and offers suggestions for how to "do it all" will be more likely to be read, understood, and followed by individuals who feel strongly about any one value. Residents in high-risk areas who ignore wildfire protection guidelines are endangering their home and their neighborhood, should wildfire approach. Residents who are not at risk of wildfire may remove native plants from their yard, stop composting leaves, or waste water in unnecessary wildfire preparations. An appropriate message to Florida homeowners could address some of these problems.

Landscaping in Florida with Fire in Mind sought to involve as many agency and organizational representatives as possible to negotiate a common message about home landscaping and wildfire protection that can be used by the Florida Division of Forestry, UF's Cooperative Extension Service, and others. We invited 31 members of various

organizations, agencies, and departments who inform the public about home landscaping to work together on an appropriate message. Each invitee was supplied with copies of three existing publications concerning homeowner wildfire protection and defensible space. Twenty(23) people attended, representing state agencies (Department of Transportation, Division of Forestry, Game and Fresh Water Fish Commission, St. Johns River Water Management District); local government (County Fire and Rescue, City Fire, County Environmental Protection, Regional Utilities); Cooperative Extension Service (Forestry, Energy, Wildlife, Soils and Water, Environmental Horticulture, Flagler County); and private groups (Tall Timbers, Farm Bureau, The Nature Conservancy).

Exploring the Issues

The meeting began with a presentation by Matt Weinell of the Florida Division of Forestry about the 1998 wildfires and what was learned about home protection. The presentation led directly into a discussion of what works and what doesn't work to protect houses threatened by wildfires. Several representatives from fire fighting agencies contributed their experiences.

Fire Prevention Recommendations

- Recognize that risk of wildfire is higher in fire-prone ecosystems such as pine flatwoods.
- Recognize that wildfire danger increases with reduced moisture or drought.
- Reduce fuel buildup on lands near houses by using prescribed fire, herbicides, or mechanical methods (e.g., mowing, thinning, timber harvest).
- Maintain a 30' defensible space around the house: an area with reduced shrubs and trees; trimmed tree limbs and branches over or near house; reduced leaves, needles and organic mulches next to house; less flammable landscaping near house such as green ground cover (lawn) or gravel mulch; clear access around house for heavy fire fighting equipment (free of intervening fences, pools, septic systems, tree limbs below 10 feet).

- Replace combustible or heat-sensitive building materials such as vinyl soffits and siding, wood shingles or exteriors—tile, brick, stucco, concrete block, rock, metal or other fire-resistant construction materials are preferred in fire-prone areas.
- Take extra precautions during times of high wildfire danger: remove or moisten mulch, increase yard irrigation, move combustible materials away from house (e.g., firewood, compost piles, gas grills, propane tanks), clear roof of accumulated leaves and needles.
- Provide a passable access road (16' wide) to house for fire fighting equipment.
- Provide noncombustible (metal) street signs and house numbers.
- Provide, develop, or identify a water source for fighting wildfires, such as a pool, pond, or cistern with a hydrant connection that is accessible to within 10' by heavy fire fighting equipment.
- Encourage defensible space buffers around entire developments.

It goes without saying that some of these recommendations are in conflict with the recommendations from other perspectives. Those perspectives fit three themes:

- wildlife and native communities
- water conservation
- energy conservation

The following list of issues reflects these themes. Many of these issues take the form of what participants think needs to be done, so they are stated in the form of recommendations.

Wildlife and Native Communities Recommendations

- Restore the native community around your home by planting native plants.

- Provide habitat features for wildlife, such as layered shrubs (short, medium, tall), wildlife food plants, and water sources.
- Use a diversity of native plants in the home landscape.
- Consult a wildlife extension agent if pest wildlife become a problem in your yard.

Water Conservation Recommendations

- Use drought tolerant plants in the landscape (xeriscaping).
- Use drought tolerant ground covers in areas where turf grasses will not thrive. Consider replacing turfgrass with native plantings that require less water.
- Match plants to your soil and ecosystem type. Native plants are adapted to Florida soils and conditions.
- Refrain from overwatering the landscape.
- Reduce use of groundwater in the landscape by using rainwater or recycled wastewater for irrigation.
- Use mulch around plantings to reduce water requirements.
- Include water retention areas, ponds, or natural wetlands in landscape.

Energy Conservation Recommendations

- Plant trees and shrubs to shade house, particularly shading the west side after 1pm and shading the area around your AC system.
- Plant only shrubs or very short trees under utility wires.
- Plant trees to the south for increased shading, using deciduous trees for sun in winter in north Florida, and evergreen trees for year-round shading in south Florida.
- Manage your yard for water conservation (see guidelines above).

- Provide wind-break plantings to the north (NW to NE) of your home.
- Keep lower branches on young and growing trees.
- Get information from programs such as *Building with Trees* or *Cool Communities*.
- Compost yard trash at your home instead of sending it to the landfill.

A variety of questions still exist that were not specifically discussed at the workshop. Some answers depend on the location of the home (both ecosystem and neighborhood), while others may be answered through on-going research and discussion.

- Which plants are best for attracting wildlife and resisting fire?
- How can shrubs and plantings be both attractive and protect against fire?
- If mature pine trees already exist near the house, providing shade and wildlife values, should they be removed?
- How much of a danger is a compost pile?
- Does location and/or type of mulch matter? Is this a concern during wildfire season?
- Should recommendations on defensible space help residents feel safer near a prescribed burn, address average wildfire threats, and/or prepare people for rare firestorms?

Addressing the Audiences

While developing the recommendations, it became clear that not all recommendations apply to all people. Some people will be more or less risk than others, and there may be different situations where recommendations should be followed. Participants were asked to discuss in small groups the different messages that specific audiences might need about homeowner wildfire protection. The major audiences were:

- rural large landowners ("matrix")

- rural small landowners ("intermix")
- subdivision edge lot owners ("interface")
- designers, developers, landscapers, policy makers

Large Rural Landowners (>15 acres, "matrix")

- Assess your level of risk from wildfire: Is your land a fire-prone ecosystem? Assume you are at risk if your land has pine trees or high fuel levels.
- Manage ground vegetation and/or forest fuels through prescribed fire, herbicides, or mechanical methods (e.g., mowing)
- Maintain fire lines/fuel breaks (mowed or plowed) around and/or through property
- Maintain a network of access roads through property
- Clearly mark roads/intersections on your property with noncombustible (metal) signs
- If people live on this property, then you should also follow recommendations for Rural Residents

Rural Residents (<15 acres, "intermix")

- Assess your level of risk from wildfire: Do you live in a fire-prone ecosystem? Are your large landowner neighbors using prescribed fire to reduce the risk of wildfire?
- Be prepared for the threat of wildfire if you are at risk
- Maintain fire lines/fuel breaks (mowed or plowed) around property at fence line and around house
- Post noncombustible (metal) directional signs to your house and buildings from main road
- If you are at risk, maintain defensible space around buildings and provide clear access to and around buildings for fire fighting equipment while accommodating energy and water conservation goals

- Thin pines in forested areas near buildings
- Provide, develop, or identify a water source for wildlife and for fighting wildfires
- Plant species that help maintain the native landscape

Subdivision Edge Residents ("interface")

- Assess your level of risk from wildfire: Do you live in a fire-prone ecosystem? Is your lot contiguous to a forested or natural area? Are your large landowner neighbors using prescribed fire to reduce the risk of wildfire?
- Be more tolerant of smoke from prescribed burning
- If you are at risk, maintain defensible space around house and provide clear access to and around house for fire fighting equipment while accommodating energy and water conservation goals
- Provide, develop, or identify a water source for wildlife and for fighting wildfires
- Use less flammable native landscape plants
- Provide or ask your developer to provide a vegetation break between natural areas and subdivision edge

Designers, Developers, Landscapers, Policy Makers

- Develop community scale defensible space—it is more effective than individual scale defensible space
- Reduce fuels in pre-development prescribed burns
- Design green space so it can be easily burned under prescription.
- Include ongoing fuel reduction measures (burning, herbicides, mowing) in green space and right-of-way management plan

- Plan for strategic placement of storm water retention/drainage features for potential fire fighting
- Design streets, roads, driveways, bridges, culverts, and cul-de-sacs to assure access by fire fighting equipment, providing for weight class, cornering, turnaround, and overhead clearance throughout developments
- Have an emergency wildfire management plan
- Adopt appropriate covenants and restrictions for wildfire prevention
- Inform buyers/homeowners of the steps that are being taken to manage fuels and prevent wildfire in the area, such as the prescribed burning activities of adjacent large landowners
- Encourage local government policies to require developers to provide fuel management and emergency wildfire management plans
- Balance wildfire danger preparations with costs (e.g., energy, privacy, water, aesthetic)
- Involve policy makers, developers, landscapers, and homeowners in planning process.
- Encourage insurance credits for minimizing wildfire risk through use of appropriate building materials, use of appropriate landscaping, and use of prescribed fire
- Local permitting authorities should consider incentives for wildfire-safe development and strategic planning for issuing water permits

Message and Campaign Suggestions

Several discussions focused on how to communicate these ideas effectively to the target audiences. The following ideas were suggested for message delivery modes:

- Use direct mail (e.g., rural electric coops, Farm Bureau).
- Use continuous print and broadcast media.

- Work with other strategies for reaching rural residents, such as: DMV/driver's license offices, tax offices, water management districts, volunteer fire departments, county or municipal permitting agencies, fire fighting associations, DOF county offices.
- Design appealing campaign themes such as an annual *Fall Freshening* wildfire preparation around homes or a Smokey Bear campaign for prescribed fire.
- Communicate burn plans and results to local resident through public relations campaigns to announce burns and provide roadside signs near burns.

Summary of Consensus

Prescribed Fire

Participants agreed that prescribed fire is the best way to prevent wildfire, and that more acreage in Florida needs to be burned each year in order to prevent wildfires. Unfortunately, there is more forest than can be reasonable burned. Other fuel reduction techniques such as herbicides and mowing may help and may even be preferred in some cases. Regardless, wildfires will continue to occur in Florida in the near future.

Risk Assessment

Participants agreed that residents should carefully assess their level of risk in order to decide which wildfire prevention measures are needed around their house. Brochures and materials should carefully explain who is at risk, describe what they can do well before fire season, and recommend what they can do if a wildfire emergency threatens. Residents should ask themselves a series of questions to assess their risk, and then balance the level of risk with the costs of wildfire prevention. Wildfire prevention measures may result in energy costs, water costs, loss of privacy, reduced aesthetic value, etc. There are several key risk assessment questions:

- Ecosystem/Fuels: Do you live in or near a fire-prone natural area? Is there heavy undergrowth of brush in the area? Is there a thick buildup of pine needle litter in the area? Are your neighbors reducing their fuel loads?

- **Structure:** Does your home have a combustible roof or siding materials?
- **History:** Does your area have a history of wildfires?
- **Protection:** Is your house protected by a local fire district or water system?

More exact risk assessment criteria should be developed for Florida, but it is clear that rural residents of Florida will almost surely want to enact wildfire prevention measures around their houses. Subdivision residents should more carefully assess their situations. People who live at the edge of a subdivision surrounded by natural vegetation, or in a subdivision with “hopscotch” development or interspersed with large undeveloped spaces, are at higher risk. This would apply to residents of neighborhoods similar to the Palm Coast subdivision in Flagler County, which has experienced devastating wildfires twice in the last 15 years. Expanded recommendations for planners and developers might help create defensible space for entire subdivisions.

Balancing Risks with Environmental Costs

Urban residents and those who are just two or three lots back from the suburban edge have a much lower risk, and so should balance their wildfire preparations with the costs involved. Most urban or interior suburban residents should manage their yards for energy and water conservation and for wildlife habitat, instead of for high wildfire risk. Only those living in or adjacent to fire-prone ecosystems (a small percentage of Floridians) will be at high risk for typical wildfire events. To help people identify their own level of risk and make better decisions about how much and what to change in their yard, it was suggested that publications include risk assessment guidelines and information about how fire behaves and moves across the landscape.

What is Needed? Who's Doing What?

Regions and ecosystems of Florida are being rated for their wildfire danger based on a number of criteria, including vegetation community, elevation, moisture, rainfall patterns, etc. The Division of Forestry has begun this effort with a pilot project in North Florida.

A wildfire risk assessment protocol should be established for Florida residents. Examples exist from the western U.S. that may be adapted to Florida. Risk assessment for homeowners should be included as the first step in any brochures or publications about defensible space and wildfire prevention. The risk assessment information will be included in a defensible space publication being developed for the Fire Education Toolkit.

Flammability and combustibility of plants in Florida should be investigated and a list of native plants developed which includes flammability ratings. Many lists of plants to date have recommended against planting the obvious flammable native plants (e.g., palmettos, gallberry, wax myrtle, pines), but have offered lists of nonnative plants in their stead. We ideally need a list of less-flammable native plants for the home landscape that provide multiple benefits, such as water conservation and wildlife food and habitat.

Florida needs more prescribed burning. The Division of Forestry and other agencies and companies are pursuing this practice to prevent wildfires in Florida. Those who get phone calls and requests need a list of agencies and companies that provide prescribed burning services. This list could be distributed as part of the Fire Education Toolkit.

Evaluation and Commitment to the Outcome

At the end of the meeting, participants were asked to provide any additional information that they felt was not heard, and to evaluate the meeting. Responses to the fire education comment forms distributed at the meeting revealed a set of key messages that participants felt were important for fire education in Florida. The public education messages cited by participants fell into several categories:

- Fire plays a natural role in Florida
- We need more prescribed fire
- Be aware of your fire risk
- If you are at risk, be prepared for fire

- Everyone is responsible for preventing wildfires

Below is a summary of participants' suggested public education messages about fire. The categories have been listed from the most frequently mentioned to the least frequently mentioned. (The number of participants who made suggestions in each category is included in parentheses at the end of each paragraph.)

Fire plays a natural role in Florida:

Participants want people to know that “Florida burns,” that lightning is prevalent here, that our ecosystems are adapted to regular fire, that fire is beneficial for Florida's native plants and animals, that fire plays a natural role in Florida's ecosystems, and that fire helps to maintain healthy landscapes and watersheds. Because fire is natural and inevitable in Florida, fire suppression leads to adverse consequences such as overgrown landscapes and wildfires. (10)

We need more prescribed fire:

Participants want Floridians to know that prescribed fire is our best wildfire prevention insurance, that prescribed fire is good and necessary, that prescribed fire “keeps Florida beautiful,” that we need much more prescribed burning in Florida, and that prescribed fire is much more cost and energy efficient than other fuel reduction tactics, such as mowing or herbicides. (8)

Be aware of your fire risk:

Participants say that Floridians should be careful to assess who is at risk: people who live in urban areas generally are not at risk, while those surrounded by woods in rural areas generally are at risk. Other factors, such as the type of ecosystem (“Does it have pine trees?” “Is it prone to fire?”) and thickness of underbrush, as well as drought and fire danger indexes, are good indicators of risk in a given place and time. It is important that we be clear as to what property is truly at risk, to ensure we don't cause energy loss in homes by overpreparing for wildfire. (8)

If you are at risk, be prepared for fire:

Participants want Floridians to build and landscape their homes with fire in mind if they are in a high-risk area. Fire-safe practices would include using less-combustible building materials and landscape plants, while recognizing that low-energy landscaping and fire-safe landscaping can go hand in hand. Floridians at risk should be prepared to take emergency actions in the case wildfire or evacuation. (7)

Everyone is responsible for preventing wildfires:

Participants say that everyone has the responsibility to avoid causing wildfires, and Floridians should avoid starting fires (e.g., yard trash) where they might escape and cause wildfires. (3)

Available Publications

Carree, Y., C. Schnepf, and W.M. Colt. March 1998. *Landscaping for wildfire prevention. Protecting homes on the wildland/urban interface. A publication for the northern Rocky Mountains.* Station Bulletin 67. Idaho Forest, Wildlife and Range Experiment Station, University of Idaho, Moscow.

Includes information on fire ecology and homeowner wildfire protection, plus a home wildfire risk rating chart and list of fire resistant plant materials, all geared toward the Rocky Mountains. Available for \$3 (includes shipping) from Extension Forestry, Room 211, UI College of FWR, Moscow, ID 83844-1140

Christman, A., M. Minno, and S. Miller. Winter 1998. *Facts about fire in the native landscape: Part I.* The Palmetto 18:4.

Includes an introduction to fire ecology and a discussion of how development patterns and drainage of wetlands may contribute to risk from wildfires. Magazine of the Florida Native Plant Society, 407-951-2210. Copy was included in workshop folder.

Florida Department of Community Affairs. 1998. *Save your home from Florida wildfires.* Florida

Department of Community Affairs in cooperation with the Federal Emergency Management Agency and Florida Division of Forestry.

Booklet contains an in-depth discussion of homeowner wildfire protection practices and emergency procedures. Available from the Department of Community Affairs, Bureau of Recovery and Mitigation, 2555 Shumard Oak Boulevard, Tallahassee, FL 32399-2100, 850-413-9884.

Florida Division of Forestry. No date. *Prescribed fire in the wildland/urban interface*. Florida Division of Forestry.

Brochure gives very basic introduction to the wildfire risk in the wildland/urban interface and to the benefits of prescribed fire. Available from the Florida Division of Forestry, 3125 Conner Boulevard, Tallahassee, FL 32399-1650.

Lippi, C. and M. Kuypers. July 1998. *Flagler horticulture: Making your landscape more resistant to wildfires*. Flagler County Extension Service, IFAS, UF.

Discusses homeowner wildfire protection practices and includes lists of fire resistant plants. Available from Chuck Lippi or Mike Kuypers. Copy was included in workshop folder.

Monroe, M. and A. Long. February 1999. *Protecting your home from forest fires*. Extension Publication FOR59, School of Forest Resources and Conservation, Florida Cooperative Extension Service, IFAS, UF.

Discusses homeowner wildfire protection practices and the role of controlled burns in creating a fire-resistant landscape. Available at <http://hammock.ifas.ufl.edu> or <http://www.sfrc.ufl.edu/Extension/firehome.htm>. Copy was included in workshop folder.

USDA Forest Service and USDI Bureau of Land Management. 1995. *It could happen to you! How to*

protect your home when wildfire strikes. US Government Printing Office #1995-0-657-754.

Includes homeowner wildfire protection practices oriented toward the western U.S. Copy was included in workshop folder.

Wildland Fire Education Toolkit Partners

Geoffrey Babb is the Southeast Division fire manager for The Nature Conservancy and brings more than 20 years of fire experience to the project. In his current position, Geoff plans, organizes, and conducts prescribed burns and fire management workshops for The Nature Conservancy's southeastern division. Either as a coordinator or instructor, Geoff has led fire management workshops for more than a decade in Florida and throughout the country. He coordinated the Volusia County demonstration burn for this project.

Alison Bowers helped coordinate the Wildland Fire Education Toolkit project. She recently graduated with a Masters in Forest Resources and Conservation with a specialization in environmental education and communication. She has worked on other projects involving 4-H forestry curriculum, a needs assessment for Crown Region Environmental Education Service Project, and a qualitative study of perceptions of forests.

Patricia Garner administers all aspects of forest environmental education statewide for the Florida Division of Forestry. Ms Garner joined the DOF in November 1996 with a master's degree in landscape architecture and over 15 years experience in environmental consulting and planning in both the public and private sectors. She was a principal contributor to *The Interpretative Guide and Management Guidelines for Apalachicola National Forest*. Ms. Garner serves as a member of the Project Learning Tree Statewide Steering Committee and the Board of the Florida State Envirothon. She is actively involved in a variety of forest environmental education efforts and public information campaigns for the DOF.

Susan Jacobson, a professor in the Department of Wildlife Ecology and Conservation at the University of Florida, has expertise in natural resources communications. She assisted in the needs assessment, evaluation activities, public messages, and trainings associated with the project. Over 10 years of research activities at the University of Florida have given Dr. Jacobson a rich background of experience and wisdom for sharing conservation messages with the public. She has designed and evaluated educational materials on ecosystem management with a special emphasis on the use of prescribed fire for Eglin Air Force Base.

Alan Long has 25 years of professional experience with a wide range of forestry research, teaching, and extension responsibilities. He has conducted prescribed burning in the Pacific Northwest, Indonesia, and Florida, and currently teaches courses in fire ecology at UF's School of Forest Resources and Conservation. Since 1994 he has designed, organized, and conducted over 30 workshops for landowners and in-service training sessions for extension personnel and professional foresters.

Susan Marynowski helped coordinate the Wildland Fire Education Toolkit project, and previously coordinated several public conservation education campaigns in Florida. Most recently, she has worked to develop a recreation and natural resources management plan for the Econfina Creek Water Management Area and she produced/evaluated educational materials on ecosystem management for Eglin Air Force Base. She holds an M.S. in ecology and combines experience in educational program design and evaluation, project coordination, public communications, conservation science, and graphic design.

Martha Monroe coordinated the development of the Wildland Fire Education Toolkit. As an assistant professor at the University of Florida's School of Forest Resources and Conservation, she develops materials for educators in formal and non-formal settings. She has worked in environmental education for over 20 years, developing curricula, training staff and teachers, and evaluating programs. She has developed educational and training programs

for a variety of organizations and agencies, including the U.S. Fish and Wildlife Service, U.S. Environmental Protection Agency, World Wildlife Fund, 4-H, and the Office of Environmental Education at Florida Gulf Coast University.

Frances Nevill serves The Nature Conservancy as the public relations manager for its Florida Chapter. She promotes and develops public awareness of the chapter's prescribed fire program. She works with fire and communications staff members to develop print and video tools that relate to prescribed burning. Frances developed the press kit included in the Wildland Fire Education Toolkit.

Matt Weinell has been a certified prescribed burner for over 11 years. He also has over 12 years experience in forest and fire management. He administers the Florida Division of Forestry's prevention and mitigation program and conducts training sessions and workshops for DOF employees on wildfire prevention. Matt coordinated fire-fighting efforts in the planning section of the Unified Area Command at the State Emergency Operations Center during the Summer Fire Campaign of 1998.

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These materials represent ideas from a variety of sources drawn together to meet the needs expressed by extension agents and public outreach specialists working to educate Florida's citizens about wildland fire. We thank them all for the opportunity to convert their ideas into a product, for their comprehensive and keen suggestions for improvement, and for their support throughout the process.

Florida Division of Forestry Center and District Field Units

Table 7 contains the addresses and phone numbers for the Florida Division of Forestry District field offices. Personnel in these offices can answer questions about wildlife, prescribed fire, and forest management, and can work with extension agents to conduct public education programs.

Florida Daily and Weekly Newspapers

Newspapers may be interested in sending a reporter to cover a story on a prescribed fire or printing information from your news release. Table 8 lists the contact information for weekly and daily papers in Florida.

Table 1. Percentage of respondents answering knowledge-questions about fire.

Question	Correct	Incorrect	DK*	NA**
Fire helps to renew forests.	79	16	5	<1
Periodic fire is a natural process in Florida.	76	19	5	<1
Human carelessness causes more fires in Florida than lightning.	75	16	8	1
Florida's natural areas will remain the same without fire.	70	24	6	<1
Natural areas that are burned every few years are useless as wildlife habitat.	67	27	6	<1
Prescribed fire is when land managers purposefully set a fire.	63	24	12	1
* Don't Know				
** Not Available				

Table 2. Percentage of respondents who agree and disagree with statements about fire (n=662).

Question	Agree	Disagree	Neutral	DK	NA
Fire is beneficial to Florida's native plants	60	28	6	5	1
The natural areas in my county should be burned periodically.	56	31	8	4	1
Protecting air quality is more important than burning natural areas.	53	31	10	5	1
People who live near natural areas may have to tolerate some smoke from fires.	79	17	3	1	<1
Stricter regulations should be placed on burning.	76	17	5	2	<1

Table 3. Percentage of respondents rating the risks of prescribed fire.

Question	Large	Medium	Small	DK	NA
Harm to wild animals	47	24	27	1	0
Spread of fire to nearby property	44	25	28	3	<1

Table 3. Percentage of respondents rating the risks of prescribed fire.

Unattractive landscape right after	39	26	32	2	1
Health problems from smoke and ash	33	29	35	3	<1
More regulations for landowners	29	32	26	12	1
Car accidents due to smoke	19	28	49	2	1

Table 4. Percentage of respondents rating the benefits of prescribed fire.

Question	Large	Medium	Small	DK	NA
Prevention of wildfires	73	18	5	3	<1
Improved forestry and grazing land	59	25	12.5	3	<1
Better wildlife habitat	48	32	14	5	<1
Fewer insect pests	49	26	19	6	<1
Maintenance of natural landscape	46	35	15	2	<1

Table 5. Percentage of respondents stating the likelihood of taking actions to protect their home from wildfire by...

Question	Likely	Unlikely	Already	DK	NA
Removing shrubs and branches near your home	31	20	44	1	4
Moving flammable materials such as wood piles away from the home.	40	10	42	<1	7
Using landscape plants less likely to burn.	48	21	19	6	6
Replacing flammable building materials.	47	29	17	3	5

Table 6. Percentage of respondents rating their interest in attending a program to learn more about...

Question	Very	Moderately	Not	DK	NA
Fire prone areas near your home	13	26	58	2	1
How to protect your home from fire	28	26	43	1	1
How fire affects air quality & health	24	30	44	1	1
Seeing land managed with prescribed fire	17	32	47	2	2
How to support more prescribed fire	18	30	50	2	1

Table 7. Florida Division of Forestry Center and District Field Units

Center or District Name	Counties Covered	Contact Information
Blackwater Forestry Center	Escambia, Santa Rosa, Okaloosa	(850) 957-6140 11650 Munson Highway Milton, FL 32570
Chipola River District	Bay, Calhoun, Gulf, Liberty, Walton, Holmes, Washington, Jackson	(850) 872-4175 715 West 15 Street Panama City, FL 32401
Tallahassee District	Leon, Jefferson, Wakulla, Gadsen, Franklin	(850) 488-1871 865 Geddie Road Tallahassee, FL 32304
Perry District	Dixie, Lafayette, Madison, Taylor	(850) 838-2298 618 Plantation Road Perry, FL 32347
Suwannee District	Baker, Columbia, Hamilton, Suwannee, Bradford, Union	(904) 758-5700 Route 7, Box 369 Lake City, FL 32055
Jacksonville District	Duval, Clay, Nassau	(904) 693-5055 8719 W. Beaver Street Jacksonville, FL 32220
Waccasassa Forestry Center	Alachua, Gilchrist, Levy, Marion, Putnam	(352) 955-2005 1600 N.E. 23 rd Avenue Gainesville, FL 32609
Bunnell District	Flagler, St. Johns, Volusia	(904) 446-6785 Route 1, Box 20F Bunnell, FL 32110
Withlacoochee Forestry Center	Hernando, Citrus, Pasco, Sumter, Lake	(352) 754-6777 15019 Broad Street Brooksville, FL 34601

Table 7. Florida Division of Forestry Center and District Field Units

Center or District Name	Counties Covered	Contact Information
Orlando District	Orange, Seminole, Osceola, Brevard	(407) 856-6512 8431 S. Orange Blossom Tr. Orlando, FL 32809
Lakeland District	Polk, Hillsborough, Pinellas	(941) 648-3163 5745 S. Florida Avenue Lakeland, FL 33813
Myakka River District	Sarasota, Manatee, Charlotte, DeSoto, Hardee	(813) 751-7629 4723 53 rd Street Bradenton, FL 34203
Okeechobee District	Okeechobee, Highlands, Indian River, Glades, St.Lucie, Martin	(941) 462-5160 5200 Hwy. 441 N. Okeechobee, FL 34972
Caloosahatchee District	Lee, Hendry, Collier	(941) 694-2181 10941 State Road 80 Ft. Myers, FL 33905
Everglades District	Broward, Palm Beach, Dade, Monroe	(954) 475-4120 3315 S.W. College Avenue Ft. Lauderdale, FL 33314

Table 8. Florida Daily and Weekly Newspapers

Alachua	Gainesville	Gainesville Sun	56000		352-374-5000
Baker (2)	Macclenny	The Baker County Press		5300	904-259-2400
Bay	Panama City	New Herald	36058		805-763-7621
Bradford	Starke	Bradford County Telegraph		6000	904-964-6305
Brevard	Melbourne	Florida Today	85000		407-242-3500
Calhoun	Blountstown	The County Record		3000	850-674-5041
Charlotte	Port Charlotte	Sun Herald	30771		941-629-2855
Citrus	Crystal River	Citrus County Chronicle	23387		352-563-6363
Clay (2)	Keystone Heights	The Lake Region Monitor		2250	352-473-2210
Colombia	Lake City	Lake City Reporter	10500		904-752-1293
DeSoto	Arcadia	DeSoto Sun Herald	2500		941-494-7600
Dixie	Cross City	Dixie County Advocate		3000	352-498-3312
Duval	Jacksonville	Florida Times Union	200501		904-359-4111
Escambia (2)	Pensacola	Pensacola News Journal	65000		850-435-8500
Flagler					

Table 8. Florida Daily and Weekly Newspapers

Franklin	Apalachicola	Apalachicola Times		5000	850-653-8868
Gadsden (2)	Chattahoochee	Twin City News		1800	850-663-2255
Gilchrist	Trenton	Gilchrist County Journal		4000	352-463-7135
Glades					
Gulf	Port St. Joe	The Star		4200	850-227-1278
Hamilton	Jasper	The Jasper News		2200	904-792-2487
Hardee	Wauchula	The Herald-Advocate		5750	941-773-3255
Hernando	Brooksville	Hernando Today	20000		352-544-5200
Highlands	Sebring	Highlands Today	17000		941-382-1164
Hillsborough (3)	Tampa	Poracle	15000		813-974-2619
Holmes	Bonifay	Holmes County Advertiser		4200	850-547-4585
Indian River	Vero Beach	Vero Beach Press-Journal			561-562-2315
Jackson	Marianna	Jackson County Floridan	5600		850-526-3614
Jefferson	Monticello	Monticello News		3000	850-997-3568
Lafayette	Mayo	The Mayo Free Press		1700	904-294-1210
Lake	Leesburg	Daily Commercial	32625		352-365-8200
Levy (2)	Cedar Key	Cedar Key Beacon		1900	352-543-5701
Leon (3)	Tallahassee	Florida Flambeau	21000		850-681-6692
Liberty	Bristol	Calhoun-Liberty Journal		5000	904-879-2727
Madison	Madison	Madison County Carrier		3500	850-973-4141
Manatee	Bradenton	Bradenton Herald	43723		941-748-0411
Marion	Ocala	Star-Banner	51542		352-867-4010
Martin	Stuart	The Stuart News	36000		561-287-1550
Nassau	Fernandina Beach	Fernandina Beach News-Leader		11000	904-261-3696
Okaloosa	Ft. Walton Beach	NW Florida Daily News	39000		850-863-1111
Okeechobee	Okeechobee	Okeechobee News	5500		941-763-3134
Orange	Orlando	Orlando Sentinel	265187		407-420-5000
Osceola	Kissimmee	Osceola News-Gazette		29000	407-846-7600
Pasco (3)	Port Richey	Pasco Times	53179		818-862-7622
Pinellas	St. Petersburg	St. Petersburg Times	362920		813-893-8111
Polk (2)	Lakeland	The Ledger	79379		941-687-7000

Table 8. Florida Daily and Weekly Newspapers

Putnam	Palatka	Palatka Daily News	13900		904-312-5200
St. Johns	St. Augustine	St. Augustine News	18000		904-829-6562
St. Lucie	Fort Pierce	The Tribune	28123		561-461-2050
Santa Rosa (2)	Gulf Breeze	Islander Newspaper		3500	850-934-3417
Sarasota (2)	Englewood	Englewood Sun Herald			941-474-5521
Seminole (2)	North Port	N. Port Sun Herald			941-426-9544
Sumter	Lake Panasoffkee	The Sumter Journal		8000	352-793-6222
Suwanee	Branford	Branford News		2000	904-935-1427
Taylor	Perry	Perry Newspapers, Inc.		20000	850-584-5513
Union	Lake Butler	Union County Times		2150	904-496-2261
Volusia (3)	Daytona Beach	Daytona Beach News-Journal	99556		904-252-1511
Wakulla	Crawfordville	Wakulla News		5000	850-926-7102
Walton	Defuniak Springs	Defuniak Springs Herald-Breeze		6000	850-892-3232
Washington	Chipley	Washington County News		4000	850-638-0212
Total			2339765	269650	
Source: Florida News Media Directory, Copyright 1997, Betty Highberger, Mount Dora, Florida					