

**Creating a Wildfire Risk Assessment Guide for Homeowners
in the Southern U.S.**

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August, 2004**

Technical paper presented to the School of Forest Resources and Conservation
at the University of Florida as a partial requirement for the
Master of Forest Resources and Conservation Degree

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General Audience Abstract

Abstract of technical paper presented to the School of Forest Resources and Conservation at the University of Florida as a partial requirement for the Master of Forest Resources and Conservation Degree

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By

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Homeowners in the southern United States are faced with the threat of wildfires every year. A risk assessment guide was developed in an effort to provide homeowners with a tool to assist them in reducing the fire threat. A draft of the guide was sent to 174 fire experts in the South, and 41 responses were received from nine states. Their responses and comments were incorporated into the final version of the guide. Of the 41 respondents, 86% indicated that the guide was useful and they would promote its use by homeowners in their area. The respondents suggested that the most desirable format for the guide would be a well-illustrated brochure. Although a variety of risk assessment procedures that focus on community level factors are available, this guide is unique in that it focuses on individual homeowners and the factors that they directly control.

A Review of the Wildfire Risk Assessment Guide for Homeowners in the Southern United States

Introduction

Wildfire risk assessment procedures for communities and individual homeowners have been developed recently by a number of agencies in the Southern United States. Several states have developed their own assessment guide, a regional assessment project is underway sponsored by the Southern Group of State Foresters and some state and local agencies have adopted assessment protocols used elsewhere. National models (e.g., Firewise, NFPA 1144) are probably the most widely used models for fire hazard assessment at the community level, and they have been adapted for specific state and regional conditions. For example, Florida released a new hazard assessment book in 2003 that describes fire conditions in different vegetation communities as well as a rating system for a large number of factors that might influence vulnerability of individual homes. Virginia has a similar rating system that can be used by landowners. Both of these state standards and the national models place significant emphasis on community and development features (such as distance to fire services, water and power utilities and access routes) which are beyond the direct responsibility or authority of individual homeowners.

This guide is unique from the standpoint that it focuses on the individual homeowner rather than communities. This fact sets it apart from other state guides that were reviewed. The value is that individual homeowners have a tool they can use themselves to evaluate just those factors over which they have direct control. This guide also takes a regional approach, including information for all 13 southeastern states, giving this tool a much broader scope than most other risk assessments.

The University of Florida recently completed a Wildfire Risk Assessment Guide for Homeowners in the Southern United States that focuses just on individual properties and the fire risk factors over which individual owners have control. The Guide is applicable in all common vegetation ecosystems across the South. It was developed through a cooperative agreement with the USDA Forest Service, Southern Research Station, Southern Center for Wildland-Urban Interface Research & Information, and was funded by the National Fire Plan. The study was titled *Assessing and Mitigating Fire Risk for Landowners in the Southern Wildland-Urban Interface*, and included subprojects on post-fire damage assessment, plant flammability, fuel mitigation methods, and the guidelines themselves.

A quantified version of the risk assessment procedure in the Guide was also incorporated into a computerized decision support system (DSS) supported by another Southern Research Station project (*Using the NED Decision Support System to Improve Fuels Management Decision Processes*) funded by the Joint Fire Science Program. The DSS will be pilot tested in several southern states, including Alachua County, Florida, before it is released for use on individual landownership parcels to assist fire resource managers in characterizing and reducing uncertainty, identifying fire risk, and improving decision-making processes in the wildland/urban

interface as well as the broader forested wildlands. The DSS project was composed of 4 major tasks: (1) produce risk assessment guidelines for fuels management in the wildland/urban interface; (2) provide guidelines for evaluating the impact of fuels management strategies on wildland ecosystems; (3) expand the NED DSS to incorporate new fire risk reduction and fuels management goals; and (4) test the new system using field-based case studies. The objective of my project was to assist in developing the Guide and to survey southern resource professionals on the accuracy and utility of the Risk Assessment Guide before it was published. The survey would also assure that the data input for the NED DSS would be accurate and acceptable. Key components of the project were to: review existing risk assessments utilized by southeastern states, send the draft assessment to experts in the field and revise the guide based on critiques and suggestions from the experts. This report summarizes the survey process, results, and their use.

Methods

The assessment guide was based on extensive review of other assessment protocols and brochures used across the country. The original draft included the following topics: factors that influence a home's vulnerability to wildfire, vegetation around a home, building design and construction materials, the risk assessment procedure, ideas for mitigating risk, and a description of fire behavior in different southern vegetation ecosystems. The section on wildfire risk assessment enabled homeowners to rate and score both the fuels on their property as well as structural features that affect vulnerability to fire.

A database of experts in the field of wildland-urban interface issues and wildfire control and education was compiled by phone or email contact with fire prevention specialists, internet searches of state and local agency websites and personal knowledge of various fire organizations. This database consisted of 173 people across the 13 southeastern states with job titles that included, but were not limited to, fire chiefs, wildfire mitigation specialists, state firewise coordinators and fire prevention chiefs.

The evaluation survey consisted of ten single or multiple-answer questions with room for additional comments. Both the survey and assessment guide draft were sent to reviewers, with the request that at least the survey form be returned, but that edits and comments directly on the guide would also be welcome. Follow-up phone calls and email messages were sent to each person within two weeks after the initial survey mailing in an attempt to increase the return rate. Of the 173 assessments that were mailed out for review, 40 (23%) were returned (Table 1). This low rate of return could affect the results with a bias towards those states and individuals that responded and offered comments. Factors that may have influenced the low response rate may have been the proximity to the holidays (the responses were collected close to December), there may have not been much support from upper level management to return the surveys, and the people who did respond and offer comments may have been individuals who were enthusiastic about the assessment guide. They may also have included individuals who like to offer up their opinions.

Table 1. Number of surveys sent to, and received from, fire specialists in the 13 southern states.

State	Number of Surveys		
	Mailed	Returned	%
AL	11	6	55
AR	7	0	0
FL	42	12	29
GA	22	4	18
KY	16	2	15
LA	8	2	25
MS	11	6	55
NC	8	1	13
OK	2	0	0
SC	12	3	25
TN	4	0	0
TX	15	0	0
VA	12	4	33
Total	170	40	24

A summary of the survey results included the number of responses for each answer, as well as lists of the written answers and comments for each question. Based on survey responses, the guidelines were revised to reflect comments and suggestions from reviewers. We tried to accommodate all changes that were suggested by more than one respondent. However, one set of suggestions, that was not included in the revision, dealt with risk factors that would not be under the control of individual landowners.

Results/Discussion

The returned surveys and edited guidelines were generally very supportive of the need for, and design of, the proposed assessment guide for homeowners. One of the questions asked if the assessment system was user friendly and easy for the general public to understand; 78% of the respondents answered yes with only one of the respondents indicating that many changes would be necessary. When asked if the recommendations for homeowners were appropriate for their area, over 90% said yes.

Survey questions mainly addressed content, the rating system, utility/applicability, and format. Survey responses relevant to each of these topics are summarized below. The summaries include both answers to specific questions as well as the general character of the various additional comments and the way in which those comments and suggestions were incorporated into the revised guide. The specific questions and tabulated results are attached as Appendix A. Appendix B includes a compilation of all the written comments on the survey.

Content

Respondents indicated that the guidelines were generally complete in terms of inclusion or omission of key factors related to fire risk. Ninety-five percent of the respondents concurred that the factors in the assessment rating guide were appropriate for individual homeowner assessments. On the other hand, 47% of the survey responses indicated that some key factors were omitted. Suggested factors to be added included: slope, access for emergency response/fire suppression resources, water source availability, and location of other flammables such as propane tanks and wood piles. Since fire suppression resources and water sources are not directly controlled by the individual landowner, they were still omitted from the revised guidelines, recognizing that they are very important factors when assessing risks at the community level. The guidelines were changed to add propane tanks located within 30 feet of the house as a possible indirect ignition factor, and metal roofing and tiles were added to the mitigation possibilities under Wildfire Hazard Reduction Rules.

Just over 60 percent of the responses confirmed that we listed most of the hazardous vegetative fuel types that exist in their areas. But 38% indicated other specific vegetation types that could be included, such as cogongrass, melaleuca and young pine stands (3-5 years). The exotic invasive plant species comments came from Florida and are specific to that state. They are covered well in the Florida's hazard assessment guide and, on that basis, we did not include them in the regionwide guidelines. Similarly, relatively minor vegetation types in other states were not addressed because of the Southwide focus in the guidelines. Young pine stands were addressed with additional clarification in the final draft of the landowner guide. Comments from several states indicated the desire for the addition of pest species that injure trees such as, the southern pine beetle and gypsy moth. The authors understand the value of insect damage to vegetation and the threat it presents for increased fire hazard, but they decided that there are not yet enough data to suggest how to modify the ratings for large groups of dead or dying trees. There was also diversity in many other comments from the respondents due to the fact that they came from nine different states and from individuals with different backgrounds and experiences with regard to wildfire.

Rating System

Ninety-four percent of the respondents rated the weightings used in the Guide for the risk assessment factors as accurate or reasonable. Similarly, 89% of the respondents felt that the hazard ratings of different vegetation communities and defensible space distances were accurate or reasonable. The other 11% believed modifications were needed for their region. Suggestions included additional emphasis on open or vinyl soffits in the point system and a different overall risk rating by increasing the points for each level. The results support the risk rating system we developed, which was based on fire behavior prediction estimates for different vegetation communities, relative ratings from a number of current hazard rating systems for communities, and one system used for individual properties in California.

Utility/Applicability

Several survey questions addressed this issue by asking whether: the respondents used other hazard assessment systems, they would promote this particular tool, and the recommendations were appropriate for their area. Over 90% of the returned surveys answered that the recommendations were applicable to their area, and 86% of the respondents said that they would promote the use of the assessment guide by individual homeowners in their areas, strongly supporting the need for such an instrument in most southern states. However, about half of the respondents did state that they have utilized another wildfire hazard assessment system, with most examples coming from Florida and Virginia or from people who have been involved with Firewise or NFPA 1144/299 standards (Table 2).

Table 2. Wildfire hazard assessment systems utilized by respondents.

Survey	Level of Utilization		
	Individual Property	Neighborhood or Community	County, Region or State
NFPA 1144/299	3	3	2
Florida DOF	3	3	3
S.C. Forestry Comm.	1	2	1
Firewise	2	2	3
Wildfire Hazard	1	4	
Will Your Home Survive	1		
Woodland Home Survival			1
GA Forestry Comm.			1

The majority of reviewers who use another assessment system indicated that they are satisfied with those assessments. In addition to listing the assessments with which they are familiar, each reviewer was asked to rate each system on a scale from 1 to 5 (unacceptable to excellent). Of those that answered, 80% felt that the system they currently use is satisfactory or better. However, 86% of the reviewers also see our new guide as useful and will promote its use to their homeowners.

Format

Two important concerns with respect to the usefulness of the homeowner guide are the format in which it would be available to homeowners and fire agencies and its simplicity. Nearly three-fourths of the survey respondents indicated that the brochure format was their primary choice (Table 3). An interactive website came in second with 33% of the choices, followed by the video with 25%, and the interactive CD with 10% of the votes. Sixteen of the 40 respondents rated this question in an unconventional manner with checkmarks rather than numerical ranks or

the same ranking repeated for several options, while four reviewers did not rank the choices at all.

Although the survey indicated that the majority of the reviewers liked the overall format of the guide and 78% of the reviewers answered that it was ‘user-friendly,’ comments were made throughout the returned documents that the text was long, that it needed to be simplified, and that some of the explanatory text could be eliminated. There were also recommendations to add graphics and pictures. Based on the comments and edit suggestions, the final text in the guide was simplified, two appendices were compiled into one, and a variety of pictures were added.

Table 3. Respondent preferences for format of landowner risk assessment guide.

Format	Choice for Format			
	1 st	2 nd	3 rd	4 th
Brochure	28 (70%)	4 (10%)	1 (3%)	1 (3%)
Website	13 (33%)	7 (18%)	7 (18%)	6 (15%)
Video	10 (25%)	7 (18%)	8 (20%)	7 (18%)
CD	4 (10%)	5 (13%)	13 (33%)	7 (18%)

Conclusions

The survey results indicate that the draft guidelines met the objective of creating a regional wildfire risk assessment guide for homeowners that would be accurate and useful. Reviewer comments and suggestions to make the guide more user-friendly were incorporated in the final version of the guide. The changes that were implemented make this guide ready for use by homeowners. For this guide to be a useful tool for homeowners, it must now be distributed to them throughout the Southeast. Natural resource agencies, extension agencies, insurance companies, planning and building departments, among others must be identified as possible avenues to utilize for distribution. The logical place to begin would be with natural resource agencies, in particular, forestry divisions and commissions. The information officers or others who distribute these guides must believe in their usefulness and convey that message to the homeowner. The goal is for the homeowner to find this fire risk assessment guide to be a useful tool in identifying and then lowering their risks with respect to wildfire.

Appendix A Survey Questions, Tabulated Responses and Some General Comments

Question #1

“What is the county, region, and /or state that you represent?”

Question #2

“Did we include any factors in the assessment rating guide that are not necessary for individual homeowner assessments?”

38	No	(95%)
2	Yes	(5%)

Comments: Add information to the fuel model for completeness, slope is not a problem in LA and factors are too complicated for the average homeowner.

Question #3

“Were any key factors omitted from our system that you feel should be added?”

16	Yes	(47%)
18	No	(53%)

Comments: Access for emergency response, water source availability, location of fuels (ie. butane tanks), availability of fire suppression resources

-5 mentioned access for emergency response/fire suppression resources

-3 mentioned water source availability

-3 mentioned location of other flammables ie. butane tanks

Questions #4

“Overall, how would you rate the weightings (relative values) for the factors, in the context of determining wildfire hazard for individual homes or lots?”

8	Accurate	(22%)
26	Reasonable	(72%)
2	Modification	(6%)

Comments: More emphasis on open soffits and vinyl soffits in point system and increase the risk rating numbers.

Question #5

“How accurate are the hazard ratings of vegetation community and defensible space distance?”

10	Accurate	(26%)
24	Reasonable	(63%)

4 Modification (11%)

Comments: Not enough to mention

Question #6

“Are there any key vegetation communities in your area, in terms of wildfire hazard, that do not fit into the fuel types that are listed in the hazardous fuel component of the assessment?”

13	Yes	(38%)
21	No	(62%)

Comments:

- 3 in Florida mentioned cogongrass, grass areas and exotic, invasive species
- 4 in Florida mentioned mealeuca
- 2 mentioned young (3-5 year old) planted pine stands

Question #7

“Please list any wildfire hazard assessment systems that are currently being used in your area at each of the following levels: individual properties, communities, and county or region wide (include name of system and/or author (e.g., NFPA 299 or 1144, state forestry agency, etc.)) and rate each system on a scale of 1 to 5 (1=unacceptable, 2=poor, 3=satisfactory, 4=very good, 5=excellent).

Reviewers listed the assessments that they utilize in their areas along with ratings.

Question #8

“Would you promote the use of this assessment guide by individual homeowners in your area?”

32	Yes	(86%)
5	No	(14%)

Comments:

- 3 stated excellent guide, very valuable
- 3 stated too complicated, might need assistance to understand

Question #9

“In which format(s) would you use this hazard assessment (rank each by most useful (1) to least useful (4) and place an “X” by any formats that you would NOT use).”

Brochure	28	#1	(70%)
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	4	#2	(10%)
	1	#3	(3%)
	1	#4	(3%)
CD	4	#1	(10%)
	5	#2	(13%)
	13	#3	(33%)
	7	#4	(18%)
Website	13	#1	(33%)
	7	#2	(18%)
	7	#3	(18%)
	6	#4	(15%)
Video	10	#1	(25%)
	7	#2	(18%)
	8	#3	(20%)
	7	#4	(18%)

Question #10

“Do you think that this assessment system will be user friendly and easy for the general public to understand?”

29	Yes	(78%)
8	No	(22%)

“To what extent should it be altered?”

8	None	(22%)
16	Few	(64%)
1	Many	(4%)

Comments:

- 7 commented that it was too complicated and lengthy, complex, detailed and confusing
- 3 recommended photographs

Questions #11

“Are the recommendations for homeowners appropriate for your area?”

36	Yes	(92%)
3	No	(7%)

“To what extent should it be altered?”

6	None	(40%)
8	Few	(53%)
1	Many	(7%)

Comments: Include invasive exotic plants and animals into risk assessment, provide information on further places homeowner can go for information, and include infrastructure and fire suppression elements.

Appendix B

SPECIFIC COMMENTS ABOUT HOMEOWNER WILDFIRE RISK ASSESSMENT GUIDE

Question 2

- #2 (LA) slope is generally not a problem in LA
- #7 (MS) Fuel models 10, 12, 13, while they may be common, should be added for completeness.
- #13 (FL) determining the plant community – very complicated. Fuel model should be adequate.
- #30 (KY) Factors are too complicated for average homeowner

Question 3

- (NC) slope aspect
- #17(GA) access of emergency vehicles and equipment, water source availability, organized response resources
- (FL) add ‘combustible outbuildings’
- #21(SC) Fire occurrence; Infrastructure; Fire Suppression Elements, ie. Distance/time of fire service, water supply; Fire ignition risks
- #22 (AL) You do not have to clear all trees in the defense zone - stress that. You will get more buy in - aesthetics.
- #25 (FL) ember attack, wooden (flammable) walkways
- #27 (FL) Though mentioned in text, gutters that are not cleared should increase risk in calculus
- #1 (VA) Fire occurrence (history), road surface, width and length, culdesack size if appropriate, home visibility and identification
- #3 (SC) possibly spark overhang device or screen over chimneys
- #5 (FL) Fire protection, access, utilities
- #8 (FL) fuels (incl. propane) near house, I don’t think the house can be rated independently of the comm. Surroundings – aggress/ ingress issues etc. are important
- #12 (AL) ladder fuels might be mentioned (vines, etc.) especially how to mitigate this risk.
- #13 (FL) driveway length & width and overhead clearance, gates
- #14 (NC) Fire suppression , response, VFD, Forestry, etc. Water capability ie well, hydrant.
- #28 (FL) Home address clearly posted on site, location of propane tanks near house (BBC Grills), elevated wood decks & porches, thickness of duff present in adjacent wildland area.

-#30 (KY) Factors are too complicated for average homeowner

-#33 (MS) location of butane tanks, fuel storage or other flammables/explosives

-#34 (VA) marsh can be close to homes in coastal plain

-#36 (MS) distance to fire suppression resources and type of water supply (availability)

Question 4

-#22 (AL) I am leary of ratings & grades

-#3 (SC) Risk Rating

low	< 7
mod	8-12
high	12-15
very high	> 15

-#4 (FL) Is this for Florida or southeast? If it is southeast then it is ok. If it is Florida it needs some work.

-#28 (FL) open soffits & vinyl soffits needs MORE EMPHASIS in point system

Question 5

-#19 (FL) 30' is a minimum, stating the survival rate & % relative to distance would demonstrate the much more accurately & would enable homeowners to understand the % differences better

-#21(SC) We had more points for each type but it is only a matter of opinion

Question 6

- #16 (GA) young planted pine stands - less than 15 yrs old, Southern Pine Beetles spots, Rhododendron/Laurel thickets

-#17 (GA) This vegetation community may be covered under southern rough, Model 7. However, we do have depressions or "dry pond" sites which exhibit torching up to tree-height lengths during droughts or dry, summer periods. Bay species, pond pine, bond cypress, pond cypress, fetterbush, ti-ti, and vines form ladder fuels into the trees on these sites.

-#19 (FL) - exotic, invasive plants. Old world climbing fern, meleleuca

- #20 (FL) dense stands of meleleuca trees in Martin, Palm Beach, Broward & Miami-Dade counties (also SW coast of FL) Fire intensity is extreme with flame length of 50'-60'

- #21 (SC) Pine/Hardwood Types in the sand hills where the soil dries out quickly. The fuels are pine/hardwood litter with occasional pockets of hardwood drains. We call fires in this type as sand hill screamers with high intensity and flame lengths of 10 to 50 feet.

- #22 (AL) I used this for my residence in a residential community with large wooded lots in the piedmont. It seemed reasonable.

- #23 (AL) Have pine savannas with heavy loading of gallberry along coast. Suggest adding "only" grasses in the hazard rating.

- #25 (FL) cut throat grass areas, a small plant community in range distribution, models 1 or 2 depending on tree cover, but a bit more intense (heat output)

-#5 (FL) Cogon grass, melaleuca

-#8 (FL) melaleuca – extreme intensity & flame length

-#9 (GA) Kudzoo is a serious problem. After frost occurs in the fall/winter the kudzoo burns with intensity and rapid fires spread including elevated fires

-#10 (VA) Here in Virginia we do have a gypsy moth infestation as well as Southern Pine bark beetle damage. I don't know if a landowner would put this damage under Fuel model 11 or not without being told.

-#11 (AL) consider West Texas & Oklahoma – they are in the Southern Region. Texas calls it West Texas and Far West Texas.

-#32 (MS) 3-5 year old pine plantations with heavy oak & wax myrtle brush/shrubs. Very dry conditions with flame lengths of 10-25 feet and burns very hot scattering fire brands. This is a lot of land in Mississippi.

Question 7

-#11 (AL) most are using a form of firewise assessment. Arkansas has ours on their website. Alabama borrowed Virginia's. FL worked on their own using firewise.

-#32 (MS) (The insurance companies don't seem to care about wildfires.) * No wildfire hazard assessment systems in place in MS at this time. The MS Forestry Commission is in the starting stage of FIREWISE.

-#36 (MS) I will be adding hazard mitigation University of Oklahoma on Jan. 26-30, 2004 and maybe as a result of this trip our agency can begin to adapt some type of rating system for MS

Question 8

-#17 (GA) This assessment would provide an excellent guide for evaluating the home ignition zone of individual residences.

- #21 (SC) We might but currently we do the assessments ourselves

- #25 (FL) Depending on format (usability) of final product

-#3 (SC) Yes, would be good to give communities at High Risk – the individual homeowners so can see why and what they can do

-#4 (FL) Yes, better than current assessment. No to general, needs to be more Florida. 30 and 100 not near enough space in places, others too much.

-#5 (FL) NFPA 299 was modified for Fla. (It works in Fla.) This assessment may be of use by other southern states that are still using 299.

-#8 (FL) needs to connect home to community risk better & be much easier for basic homeowner to understand

-#13 (FL) But they might need assistance to understand some sections.

-#30 (KY) Too complicated and wordy for average homeowner to use comfortably

Question 10

- #17 (GA) I think the Common Plant Community descriptions will be aided by photographs for clarity for the average homeowner.

- #19 (FL) Yes, provided someone has provided some level of training 1st. I have too much training to answer this well. I think I take for granted that everyone has some level of understanding. A trial run of this document to the general public would answer this better.

- #20 (FL) Need to reduce the amount of text in the directions for the homeowner. Ask yourself, “will the homeowner be patient enough to read all the text?”

- #21 (SC) It is good but getting a homeowner to sit down and complete it would be a major task.

- #22 (AL) I am concerned that it is too general. I would hope that it would evolve into a website with many examples representing all regions, topography, plant communities, etc.

- #23 (AL) Hazard rating of pine savannas

-#27 (FL) It would be nice if all final calculations were on one page like a tax return.

-#2 (LA) I think parts are too complex for many homeowners especially the plant communities, maybe a CD with pictures will be easier. Often in LA, this whole process is “overkill” since all most homeowners have to do CLEANUP.

-#5 (FL) (Fuel Models). Go with general fuel type examples.

-#7 (MS) Some sections need to be written more clearly.

-#8 (FL) language, assessment & appendix are too detailed & confusing – eg when I asked co-workers to choose their fuel risk, they gave me their impression based on what they heard because they couldn’t understand tables

-#13 (FL) Plant community determination. Point totalling section. Appendix A.

-#15 (AL) It would be less complicated if you could add all the components together, rather than multiplying the hazardous fuel component. Also out fuel key. Appendix A – It is too complicated for homeowners. Plant community description is ok.

-#30 (KY) –make it more simple

- reduce length
- eliminate some of the explanatory text
- add many graphics and pictures

-#31 (FL) –consideration of grasslands as “moderate” hazard: only homes lost in Alachua County interface were wintertime grassland exposure.

- vegetation around (P.2) would add “types of plants, shrubs & trees used in defensible space zone.”

-#33 (MS) include soffits in the glossary

-#34 (VA) explain the shrub understory in loblolly pine stands better

-#37 (GA) The length may be a bit difficult to recreate in a brochure. Length may also be a hindrance in keeping homeowner's attention.

Question 11

- #21 (SC) You need to include infrastructure and fire suppression elements.

- #27 (FL) May indicate where homeowners can go to get help applying prescribed burning since it is suggested

-#5 (FL) Slope is useful in southeast except in Florida.

-#9 (GA) Including the kudzu and explain the dangers of the plant

-#32 (MS) This should be used when purchasing homeowner insurance. This may be the only way to get this system to be used.

General Comments

- #22 (AL) First para is too simple. Address seasonal variation of lawns. What is green in the early summer may be very flammable in the late summer or fall.

- #25 (FL) The guide is necessary and helpful. The grammar, word choice and clarity of the writing are excellent. I imagine a brochure or booklet format. If so, then the text would be reduced. From my field-based perspective, the purpose of the piece is to spur the landowner into action, which in this case is to fill out the hazard assessment score-sheet. If that's the case, then bulleted text with photos or diagrams would work to explain enough to fill out the assessment correctly.

Page 1. Skip the heat, fuel and oxygen explanation and go right to the ways a home gets ignited.

Page 1. Consider including "ember attack" as a fourth way. The Australians make good use of this concept, and although their fuels are quite different, I think that embers drifting up into soffits, onto pre-heated siding, etc., are a real contributor in the US as well. In my view, a fire starting from an ember is not the same as radiant heat.

Page 3-4. Shorten the explanation of the factors a landowner can't control. I think the lay reader will glaze over as soon as "climate, topography, Piedmont, and seasonal weather patterns" show up. A simple sentence or two may suffice, saying that other factors are embedded in the scoring. I may have the wrong audience in my thinking, so see what you think.

Page 6. Under "rating system for assessing..." Define "surrounding area."

Page 6. Add wooden walkways to the list, maybe along with decks?

Page 6. Are recycled plastic decks and walkways flammable in a wildfire situation? If so, include them.

Page 7. In the "What do your scores tell you?" section, refer the reader to the "what to do" list right away. I read the text and thought, well, that's too general to be of any use; and I almost put the document down. Then I found the list and perked back up.

Page 10. Hate to admit it, but I couldn't find where the fuel model (Appendix A) fit into the earlier scoring system. I must have missed something, but check to see if other readers experience the same.

#1 (VA) – I like a lot of the supporting documentation and reference material, but do not like the assessment calculation tool. Focusing in on only a few of the key factors might mislead a user to thinking that the veg type/arrangement and home construction are the only factors to "worry" about.

The way I looked at it, it seems to place a home in the upper risk grouping very easily????

-#7 (MS) The only substantive changes that I think should be made deal with making it clearer. For example, computing the hazard fuel component total on page 5 could be written more clearly. It's clear to me, but may not be clear to the population in general. We call it the "fog index". Things need to be very clear for the average person to read and understand.

I really liked the dichotomous key at the end. I haven't seen that before, and think it's a very ingenious way to determine fuel models. There may be a "fog index" problem with it too though.

-#8 (FL) My biggest concern as I reviewed it was "here we go again." I don't want to get into another pulling contest with the extension service over which risk assessment is the best and truest. That part can be handled with close cooperation with anything that ultimately gets released. The pamphlet we did "Landscaping in Florida with Fire in Mind" was a great joint task that led to many useful joint projects.

Another concern was that this seems to try and isolate a home from the community when looking at the fire risk. Although some home are more fire resistant than others, community factors also impact the homes ability to withstand a wildfire. Ingress/egress is a good example. A home that has poor construction survivability had a better chance of surviving in a FIREWISE community than it does alone in the woods. You make some recommendations at the end for possible solutions for the homeowner that involve the community, but don't take it into consideration during the assessment.

Lastly, it was difficult in parts to wade through the directions. As I noted on the review sheet, co-workers here rated their fuel risk based on their impressions of what they had heard because they didn't understand what you were trying to describe in the directions. We have lots of homeowners in SW FL that don't have a college education – not to mention Spanish speaking populations.

If you haven't seen it already, I think the CD How to Have a FIREWISE Home is ideal for what you are trying to do. It is simple to use and gets the message across to the homeowners.

-#11 (AL)

Page 2

Comment 1: I believe that Jack Cohen's research states the 30 feet defensible space around a home is adequate. I have no problem extending that to 100 feet considering slopes and other hazards. A trained person would need to make that assessment, not sure a homeowner can do that. Despite the research, 30 feet is not much if you are adjacent to a pine plantation.

Comment 2: Maintain a space of 3 to 5 feet immediately adjacent to the house that is cleared of all shrubs and dead plant materials. We are telling people you can not have any foundation planting around their house. Homeowners are not going to accept this. I think we can use appropriate plants, gravel mulch as opposed to pine needles or wood mulch and a sprinkler system to mitigate this concern. The plants need to be less prone to fire. The key is their arrangement that you mention in the next paragraph as well as selection.

Page 3

Comment 1: Floating embers can enter attics through open eaves and soffits. I recommend a statement that installing wire screening for open soffits, decks and foundations is necessary to protect a house. Metal skirting or a masonry foundation are options. Cohen's research shows that plywood exterior siding is resistant to heat. It is when a window breaks or the eaves are not protected that the structure burns. Obviously masonry structures are more resistant. Window discussion is good.

Page 5

Comment 1: Very low fire hazard should include green shrubs and grasslands as well as a lawn in a non-drought condition. This covers West Texas and Oklahoma. Low fire hazard mature pine trees – the description is one of the managed forest using prescribed fire, mechanical or chemical treatments. High fire hazard, suggest you add shrub – grasslands in drought conditions, again to include Texas and Oklahoma.

Comment 2: Number 2 Defensible Space – need to be careful not to imply that a 100 foot clear cut sewn in grass around my house is best. It is a quality issue rather than a quantity issue. It may be overkill and again homeowners will not support that. People tend to resist defensible space because they think that it is a clear cut around their house, when they want to live in a "woodland" setting with minimal intrusion to the landscape.

Page 6

Comment 1: Wood deck with an open foundation. Open soffits with no screen wire protection. Open foundation with no metal or masonry skirting. Under number 2 do you want to add a LPF tank within 30 feet of house.

Page 7

Comment 1: Cohen research may not support your rating. Seems like vinyl siding and soffits, single pane glass are higher risks than wood siding. Masonry structure is less at risk than a masonry structure (?). You may have findings to support your rating from what you have researched in the South.

Overall I really like the rating. It is something basic and not 4 pages long with technical detail that a homeowner has no conception. I want to use it on our Southern Region website for Firewise.

Page 8

Comment 1: If house has a wood roof or deck. There are many alternative roof systems. Suggest you add a metal roof and a masonry roof. Masonry roofs (cement tiles) are beginning to replace tile, slate and shingle roofs. One can place screen wire behind a lattice work skirting for a deck or enclose the deck with masonry brick or rock work.

Comment 2: If house has wood siding. This is good. Cohen's research supports your recommendation. May install a masonry foundation or synthetic rock wanescoating. People also need to know that synthetic stucco if applied to a wood frame structure is not effective.

Comment 3: if house has an open foundation. Again one could have a screen wire behind lattice work. Obviously solid material is best.

Comment 4: The next 2 situations involving shrubs and slope have the same mitigation whether the slope is less than or greater than 30 percent.

Page 10

Comment 1: Appendix A is in lay terms. I believe a homeowner can grasp that. Make sure that West Texas and Oklahoma can identify with your descriptions. You may need to add another region like "plains." It needs to be described as a fuel model.

You may want to use the term ladder fuels of vines, shrubs and small trees.

Page 12

Comment 1: Appendix B – Add a fuel model for West Texas and Oklahoma. They are in the Southern Region.

-#31 (FL) I have reviewed the package and like it. I believe that it will be useful for homeowners and even developers. As my comments on the survey indicate I believe that grasslands in wintertime in North Florida are a more significant exposure and hazard than "moderate". The only homes we have lost in Alachua County over the last ten years to wildland fire were the result of fire driven by gusting winds during winter front-related weather through pasture grasslands. A significant factor has been open access beneath the structures, and combustible materials adjacent to the structures. Additionally, I'd consider adding to the concerns in the "defensible space" around structures "the types of vegetation allowed in the zone."

Appendix C

SUMMARY OF GENERAL COMMENTS ON SURVEY RESPONSES

- reduce text
- use bulleted text with photos and diagrams
- consider using “ember attack”. The Australians make good use of this concept.
- under “rating system for assessing...” Define “surrounding area.”
- add wooden walkways to the list
- Are recycled plastic decks and walkways flammable in a wildfire situation?
- focusing in on only a few of the key factors might mislead a user to thinking that the beg type/arrangement and home construction are the only factors to “worry” about.
- This seems to isolate a home from the community when looking at the fire risk.
- It was difficult in parts to wade through the directions.
- Consider extending the defensible space from 30 feet to 100 feet.
- “Maintain a space of 3 to 5 feet immediately adjacent to the house that is cleared of all shrubs and dead plant materials.” We are telling people you cannot have any foundation planting around their house. Homeowners are not going to accept this. I think we can use appropriate plants, gravel mulch as opposed to pine needles or wood mulch and a sprinkler system to mitigate this concern.
- recommendation for a statement to install wire screening for open soffits, decks and foundations to protect against floating embers
- Window discussion is good
- low fire hazard should include green shrubs and grasslands as well as a lawn in a non-drought condition. Also low fire hazard mature pine trees – the description is for a managed forest using prescribed fire, mechanical or chemical treatments. High fire hazard, suggest you add shrub – grasslands in drought conditions.
- need to be careful not to imply that a 100 foot clear cut sewn in grass around my house is best. It is a quality issue rather than a quantity issue. Homeowner will resist defensible space because they think it is a clear cut around their house, when they want to live in a “woodland” setting with minimal intrusion to the landscape.
- Do you want to add an LPF tank within 30 feet of house?
- Another comment on open soffits with no screen wire protection and open foundation with no metal or masonry skirting.
- suggest adding metal roof and a masonry roof (cement tiles)
- You may want to add another region like “plains.” It needs to be described as a fuel model.

Discussion:

95% of the respondents felt that we did not include any factors in the rating guide that were unnecessary for individual homeowners. This supports the information included in the text of the assessment.

The respondents were split down the middle with regards to our omission of key factors that should have been added. The three primary areas of concern were the fire suppression and emergency response access, water source availability and proximity of butane tanks and other flammables/explosives.

65% of the respondents felt that the weightings for the factors in determining wildfire hazard for individual homes or lots were reasonable. This supports the descriptions being utilized for the hazard ratings.

Likewise, 60% of the respondents felt that the hazard ratings of the vegetation community and defensible space distance were reasonable. This also supports the descriptions being utilized for the hazard ratings.

Just over 50% (53%) of the respondents felt that we listed most of the hazardous vegetative fuel types that exist in their areas. But 33% did not and they had enough comments on three specific types to mention: cogon grass, mealeuca and young pine stands (3-5 years). The cogon grass and mealeuca comments were made from Florida respondents of course.

The respondents were about half and half with regard to utilizing any wildfire hazard assessments systems. Some of them had them and some of them didn't. Those that are currently utilizing them are pleased for the most part, but would be glad to improve them with any new information that became available.

80% of the respondents said that they would promote the use of this assessment guide by individual homeowners in their areas, which supports the validity of the content and the structure of this assessment. But several comments were made to the complexity, length and understandability of this assessment. So it can certainly be improved upon according to several opinions.

The brochure seems to be the format of choice with 70% of the respondents indicating that as their primary choice. An interactive website came in second with 33% of the choices and the video was a close third at 25%. The interactive CD is obviously not preferred with only 10% of the votes for the number one choice. But it is worth noting that the CD was the third choice of 33% of the respondents.

The respondents obviously felt that this assessment system was user friendly and easy for the general public to understand with 73% in the affirmative and only 3% feeling that it should be altered. Likewise, 90% felt that the recommendations for the homeowners in their area were appropriate and only 3% would alter any of the items. These findings lend themselves to fully support this assessment for use to homeowners in the areas that we surveyed with minimal changes/alterations.

Appendix D

Final Survey and Cover Letter

Dear Sir/Madam,

Please find attached a draft copy of a Wildfire Risk Assessment Guide for Homeowners in the Southern United States (Guide). We are distributing this Guide to professionals across the South who work in wildfire management, prevention, or education to obtain a critical review of its structure and content and to evaluate its appropriateness for individual homeowners in your area. Participation in this review process is voluntary, and you do not have to answer any of the attached review questions that you do not wish to. However, your comments are valuable, and they will serve as the primary tool for refining the draft assessment document into a useful guide to be distributed across the South. Enclosed in this packet of materials include: (1) this cover letter, (2) review questions for the Guide, (3) the Guide itself, and (4), to guide our future research, a brief survey on plant flammability in your local area (including cover letter and survey questions).

Prior to the development of this Guide, we evaluated existing hazard assessment systems in use across the United States; our report on this evaluation is available online at the following link: http://www.interfacesouth.org/fire/abstracts/landowner_risk_asst_rpt.pdf. Many excellent systems already exist for assessing fire hazard at various levels, but they generally do not provide southern homeowners with the tools to assess their individual hazard independent of the surrounding community. However, recently several states have adopted new guidelines that have been used successfully elsewhere. Our assessment includes some key concepts from existing assessment systems, as well as several new components that cater the system to homeowners in the South, especially those in the wildland-urban interface.

This Guide was developed at the University of Florida's School of Forest Resources & Conservation as part of a larger project that focuses on assessing and mitigating fire risk for southern landowners. The project is funded by the USDA Forest Service Southern Center for Wildland-Urban Interface Research and Information using National Fire Plan funds. The vegetation hazard ratings in the Guide were based on results of the BEHAVE fire behavior prediction system for fuel models common to the South and severe fire weather conditions. As with some other assessment systems, numerical ratings were not necessarily linear, but rather were weighted proportional to the hazards created by different conditions. Please let us know if you would like us to send you a more detailed description of the process that we followed. Another important component of the larger project involves research on the flammability of southern landscape plants. Enclosed is a separate cover letter and accompanying survey questions that will help us expand our flammability research to include important plant species in your area.

The final Guide will most likely be distributed in brochure form, although it may also be available on a CD, video, or through an interactive website. While there is no compensation for reviewing this draft document, you will be able to use the final product in your area once the guide is finalized. One of the review questions asks your opinion on which format of the Guide would be most useful for you.

Feel free to write comments on the draft as well as on the questionnaire. We look forward to receiving your response by December 31. Please mail it to Alan Long at the address listed below. If you have any questions about this project, please contact Alan Long at (352) 846-0891 (ajl2@ufl.edu) or Cotton Randall at (352) 846-0120 (cotton@ufl.edu).

Thank you again for your time and consideration.

Sincerely,

Ludie Ehlers
Graduate Student

Alan Long
Associate Professor

Cotton Randall
Fire Project Coordinator

Please mail your review comments to (a self-addressed mailing label is enclosed):

Alan Long
School of Forest Resources & Conservation
University of Florida
P.O. Box 110410
Gainesville, FL 32611-0410

Email: ajl2@ufl.edu

Review Questions: Analysis of the Homeowner Risk Assessment Guide

1. What is the county, region, and/or state that you represent? _____
2. Did we include any factors in the assessment rating guide that are not necessary for individual homeowner assessments? YES _____ NO _____
If YES, list each: _____

3. Were any key factors omitted from our system that you feel should be added?
YES _____ NO _____ If YES, list each: _____

4. Overall, how would you rate the weightings (relative values) for the factors, in the context of determining wildfire hazard for individual homes or lots?
Very accurate _____ Reasonable _____ Need modification in your region* _____

*Please write any suggestions for modification directly on the assessment draft.

5. How accurate are the hazard ratings of vegetation community and defensible space distance?
Very accurate _____ Reasonable _____ Need modification in your region* _____

*Again, please note any suggestions for modifications on the assessment.

6. Are there any key vegetation communities in your area, in terms of wildfire hazard, that do not fit into the fuel types that are listed in the hazardous fuel component of the assessment? YES _____ NO _____
If YES, list each and briefly describe their 'worst-case' scenario fire behavior, for example, fire intensity, flame length.

7. Please list any wildfire hazard assessment systems that are currently being used in your area at each of the following levels: individual properties, communities, and county or region wide (include name of system and/or author (e.g., NFPA 299 or 1144, state forestry agency, etc.)) and rate each system on a scale of 1 to 5 (1=unacceptable, 2=poor, 3=satisfactory, 4=very good, 5=excellent).

Individual property level: _____ Rating: _____
Neighborhood or community level: _____ Rating: _____
County, region, or state wide: _____ Rating: _____

8. Would you promote the use of this assessment guide by individual homeowners in your area? YES ___ NO ___
If NO, please explain why. _____

9. In which format(s) would you use this hazard assessment (rank each by most useful (1) to least useful (4) and place an "X" by any formats that you would NOT use).

- ___ printed brochure
- ___ interactive CD
- ___ interactive website (linked to www.interfacesouth.org)
- ___ video

10. Do you think that this assessment system will be user friendly and easy for the general public to understand? YES ___ NO ___

To what extent should it be altered? None ___ Few items* ___ Many items* ___

*Please indicate below, or on the draft, how you would alter the system.

11. Are the recommendations for homeowners appropriate for your area?

YES ___ NO ___

To what extent should they be altered? None ___ Few items* ___ Many items* ___

*Please indicate below, or on the draft, how you would modify them.

12. Please provide the name and contact information for any person in your organization or region who works on Wildland-Urban Interface fire issues, including prevention, who you would recommend that we contact concerning this assessment guide (including yourself, if applicable).

Appendix E

Wildfire Risk Assessment Guide for Homeowners in the Southern United States

Final Draft