

## **A CHANGING LANDSCAPE IN THE WILDLAND-URBAN INTERFACE: PERMANENT AND SEASONAL HOME OWNERS, RECREATION AND FUEL MANAGEMENT**

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**Abstract:** This paper reports research completed in the fall/winter seasons of 2001/2002 on home owners living in the wildland urban interface for the USDA Forest Service. The primary research focus was to understand human dimensions of wildland fire, particularly attitudes toward and approval of three fuel treatment types (prescribed burning, mechanical thinning, and defensible space). Questionnaires were mailed to homeowner lists obtained from county tax assessors in selected areas of California, Colorado and Florida. The goal of the study was to understand similarities and differences between permanent and seasonal home owners. The consideration of wildland fire during the home buying process, recreation use levels, and attitudes toward and approval of fuel treatments were the dependent variables examined across three study areas for permanent and seasonal home owners.

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### **Introduction**

There is a growing concern over significantly more residents living near and recreating in public lands. Baby boomers (i.e., 40 to 60 year olds) are purchasing homes that might serve as a vacation home for pre-retirement years and then eventually move into the home full-time (Godbey and Bevins, 1987; McHugh, Hogan, and Happel, 1995). Some city dwellers are finding that technology has allowed them to live further away from urban areas. Hence, a different type of wildland urban interface home owner may exist as either a full-time resident or part-time, vacation resident (Lee, 1991).

As public land managers consider the benefits and costs of increased (and possibly different) home owners, wildland fire and the challenges with more structures and lives at risk becomes a serious management concern (Cohen, 2000; Davis, 1990). Some wildland fire mitigation (e.g., defensible space) requires home owners to be home and involved in their own defense. Garder, Cortner and Widman (1987) found wildland urban interface residents held a low awareness of fire severity and preferred resource managers to be responsible for mitigation strategies. Winter and Fried (2000) found Michigan home owners viewed wildland fires as uncontrollable and the resulting damage

random in terms of which homes might be lost.

Seasonal home owners present a unique situation in that they may not maintain their home site because they are not there throughout the year or they may prefer low maintenance as their residency is "vacation time." Researchers (Green, Marcouiller, Deller, Erkkila, and Sumathi, 1996) have examined differences in home owners and found permanent residents to be more supportive of economic development and less supportive of land use planning. Based on this small body of literature, a need exists to further understand whether length of living in a home (i.e., part-time, full-time) influences how home owners view wildland fire risks and mitigation programs.

Thus, the problem statement of the research was to identify and examine similarities and differences between seasonal and permanent home owners on topics related to forest use and fire management. Specifically the following topics were examined: (1) the home buying decision process, (2) recreation usage levels and activities, and (3) attitudes toward fuel treatment programs.

### **Methods**

This research was funded by USDA Forest Service, Pacific Southwest Research Station, in Riverside, California. This study is one of many funded by that station investigating human dimensions of fire management, particularly in wildland urban-interface areas.

Selection of study areas began by examining the national list of communities at risk published by the USDA State & Private Forestry (2001). Efforts were made to encourage principal investigators of fire research projects to select communities on this list. Additionally, discussions with the Forest Service station and examination of Census data provided direction on specific geographic areas. Three study areas were selected to represent different fuel types and forest management priorities. These areas were: (1) San Bernardino National Forest, California; (2) Grand Mesa, Uncompahgre and Gunnison National Forests (GMUG), Colorado; and (3) Apalachicola National Forest, Florida. San Bernardino NF is located outside of the Los Angeles area; GMUG NF is located between Grand Junction and Ouray, Colorado; and Apalachicola NF is located near Tallahassee.

In all three geographic areas, home owner lists were obtained either directly from the county or from a third party database firm. Every effort was made to obtain the most recent list and in some cases, the list had just been updated. Visits to each of the areas were made to identify at risk wildland urban interface areas so that targeted sampling could occur. In California, two entire communities/districts of a city were identified as the sampling frame. In Colorado, township and range sections in three counties were identified as the sampling frame. In Florida, sections of communities in three counties were identified as the sampling frame. In total, 1,000 households were studied in each state area (Table 1). The only exception to this was in Colorado where one incorrect list.

Table 1. Sampling frame

State	Type of residency	Population N (%)	Sample n (%)	Respondents n (%)
California	Permanent	1,966 (36%)	362 (36%)	119 (40%)
	Seasonal	3,565 (64%)	638 (64%)	176 (60%)
Colorado	Permanent	955 (72%)	566 (72%)	254 (80%)
	Seasonal	377 (28%)	215 (28%)	66 (20%)
Florida	Permanent	2,219 (88%)	711 (71%)	267 (82%)
	Seasonal	306 (12%)	289 (29%)	57 (18%)

Table 2. Response rates

State	Type of residency	Sample Size	Bad Addresses	Net Sample Size	Returned	Response Rate
California	Permanent	362	74	288	119	41%
	Seasonal	638	117	521	176	34
Colorado	Permanent	566	20	546	254	47
	Seasonal	215	14	201	66	33
Florida	Permanent	711	33	678	267	39
	Seasonal	289	23	266	57	21

of homeowners for a section within a township was provided and almost all the mail came back undeliverable. In Colorado, 781 surveys were mailed to correct addresses. In addition to seasonal and permanent homes with land ownership, a list of seasonal permittees in California (N=463) and Colorado (N=32) were provided by the local Forest Service offices. These homeowners (with leased land) received the same questionnaire and participated at high response rates (approximately 70%), however, are excluded from the analysis provided here.

An eight-page questionnaire was designed by the researchers with the assistance of the Forest Service cooperators. The questionnaire included questions about home type and tenure, consideration of wildland fire during the home buying process, past experiences and actions related to fire education and assistance, recreation usage on local public lands, belief statements about fuel treatments leading to outcomes, attitudes about fuel treatments, intentions to support fuel treatment techniques, and demographic items.

A modified Dillman mail procedure was used where each household received a personalized letter, a prepaid business reply envelope, and a prenumbered questionnaire. The letter included an incentive offer whereby one out of 250 households could be selected for a \$25 gift certificate to either Walmart or Lowe's. A reminder postcard was mailed

approximately one week after the original questionnaire mailing. After three weeks those households who had not yet responded were mailed another questionnaire, personalized letter, and prepaid business reply envelope. Press releases were mailed (timed to match the two survey mailings) to local papers to increase awareness of the research study. It is important to note the California and Colorado mailings were done shortly after 9/11 and anthrax being found in US mail.

Response rates ranged from 21 to 47 percent (Table 2). In all three study sites, permanent homeowners responded at a higher level than seasonal homeowners.

### Findings

The results of this study are presented by (1) the home buying decision process, (2) recreation usage levels and activities, and (3) attitudes toward and approval of fuel treatment programs. In the presentation of these topics the emphasis is placed on understanding similarities and differences between seasonal and permanent home owners who live in wildland urban interface areas in each state's case study location.

### Home buying process

To understand some of the ways homeowners acquire land

Table 3. Means of acquiring home in wildland-urban interface settings

	California - San Bernardino NF		Colorado - GMUG NF		Florida - Apalachicola NF	
	<i>Permanent Home-owners</i>	<i>Seasonal Home-owners</i>	<i>Permanent Home-owners</i>	<i>Seasonal Home-owners</i>	<i>Permanent Home-owners</i>	<i>Seasonal Home-owners</i>
Property was handed down or purchased from within the family	1.8%	6.9%	7.9%	8.2%	21.9%	26.3%
Property was purchased with the help of a realtor or sales office	74.6	69.5	60.3	62.3	34.6	17.5
Property was purchased directly from previous owner	17.5	17.2	26.0	26.2	39.6	56.1
Another way (mostly buying land and then building)	<u>6.1</u>	<u>6.3</u>	<u>5.8</u>	<u>3.3</u>	<u>3.8</u>	<u>0</u>
Total	100.0	100.0	100.0	100.0	100.0	100.0

and/or a home in wildland urban interface areas, respondents were asked whether a realtor was involved, whether the property was purchased from the previous owner, or whether the property was handed down or purchased from within the family. Respondents were also provided an "other" category with the opportunity to explain their answer. Since a house was implied in the question, several individuals selected "other" and then wrote they first bought the land and then built or had the house built. In California, the majority of both permanent (74.6%) and seasonal (69.5%) homeowners purchased their home through a realtor or sales office (Table 3). Less than one in five homeowners, permanent or seasonal, purchased directly from the previous owner. Fairly similar results existed for both permanent and seasonal homeowners in Colorado. Florida results were quite different. Over fifty percent of seasonal homeowners purchased directly from the previous owner and the next most popular response was acquiring their house through the family. The least popular response for seasonal home owners was through a realtor. Florida permanent home owners were slightly more likely to purchase a home from the previous owner than through a realtor.

A profile of retirement plans of home owners was created. Households in the wildland urban interface areas studied were more likely to be retired in California and Colorado in comparison to Florida households (Table 4). In all three states, permanent homeowners who were not yet retired were much more likely to stay living in their house full-time compared to seasonal home owners planning to live in their house full-time (representing an increase of people living in the area full-time). Specifically, 12 percent of California seasonal homeowners, 28 percent of Colorado seasonal homeowners, and 27 percent of Florida seasonal homeowners planned to live in their seasonal home full-time after retiring. Seasonal homeowners in all three states were also slightly more likely to sell their seasonal home

after retirement than current permanent homeowners.

A final question was asked about the consideration of wildland fire by homeowners during the home buying process. In California, permanent homeowners were more likely than seasonal homeowners to consider fire "a great deal" before and during the home buying process (Table 5). After the home purchase, California seasonal homeowners were more likely to consider fire "a great deal" than permanent homeowners. In Colorado, permanent and seasonal homeowners had similar responses across the three phases. Importantly those who expressed "a great deal" of consideration increased across the home buying phases. In Florida, seasonal homeowners were more likely to consider fire "a great deal" than permanent homeowners before and during home search. This pattern reversed after homeowners purchased their home with almost one-third of the permanent homeowners giving wildfire a great deal of consideration.

#### Recreation usage levels and activities

Permanent and seasonal homeowners recreate in the national forest near their home at varying levels of use. In California, a greater proportional of seasonal homeowners recreated in the forest compared to permanent homeowners, however, permanent homeowners were more likely to use the forest on a daily basis (Table 6). In Colorado, a very high proportion of seasonal and permanent homeowners recreated in the forest. Similar to California, a greater proportion of seasonal homeowners in Florida recreated in the nearby forest.

Besides frequency of use, homeowners were also asked about the outdoor recreation activities they enjoyed on the forest over the past 12 months. In California, the most frequently mentioned activities were snow activities (i.e., downhill and cross country skiing), hiking/walking, and all

Table 4. Retirement plans of homeowners in wildland-urban interface settings

	California - San Bernardino NF		Colorado - GMUG NF		Florida - Apalachicola NF	
	<i>Permanent Home-owners</i>	<i>Seasonal Home-owners</i>	<i>Permanent Home-owners</i>	<i>Seasonal Home-owners</i>	<i>Permanent Home-owners</i>	<i>Seasonal Home-owners</i>
Already retired	31.9%	33.3%	32.8%	32.8%	24.9%	23.2%
Plan to live in current home full-time for retirement	52.2	11.7	57.6	27.9	66.1	26.8
Plan to live in current home part-time for retirement	9.7	43.9	6.7	32.8	5.1	42.9
Plan to sell this home and move away for retirement	<u>6.2</u>	<u>11.1</u>	<u>2.9</u>	<u>6.6</u>	<u>3.9</u>	<u>7.1</u>
Total	100.0	100.0	100.0	100.0	100.0	100.0

Table 5. Consideration of wildland fire during the home buying process

		California - San Bernardino NF		Colorado - GMUG NF		Florida - Apalachicola NF	
		<i>Permanent Home-owners</i>	<i>Seasonal Home-owners</i>	<i>Permanent Home-owners</i>	<i>Seasonal Home-owners</i>	<i>Permanent Home-owners</i>	<i>Seasonal Home-owners</i>
Before searching for a home	Not at All <sup>a</sup>	48.2%	52.4%	40.3%	44.1%	77.7%	75.1%
	Moderate Amount	31.5	36	45.1	45.8	18.8	16.7
	A Great Deal	20.4	11.6	14.4	10.2	3.4	8.3
During the home buying process	Not at All	43.9%	45.7%	33.6%	37.3%	74.1%	70.9%
	Moderate Amount	34.5	40.7	47.7	47.5	23.4	20.9
	A Great Deal	21.5	13.6	18.8	15.3	2.6	8.4
After purchasing a home	Not at All	23%	20.1%	14.5%	18.5%	32.1%	47.7%
	Moderate Amount	52.1	39.5	43.6	44.9	37.7	37
	A Great Deal	24.8	40.3	41.9	36.6	30.1	15.2

a. Seven point scale where "0" = not at all, "3" = moderate amount, and "6" = great deal. Results are presented at three category levels where "not at all" was 0 and 1, "moderate amount" was 2, 3, and 4, and "a great deal" was 5 and 6.

terrain vehicles (ATV) riding. In Colorado, ATV riding, snow activities and hiking/walking were most frequently mentioned. In Florida, ATV riding or pleasure riding/touring, hiking/walking, and hunting were the most frequently mentioned activities

Attitudes toward and approval of fuel treatment programs

Attitude and approval of three types of fuel treatment programs that reduce the risk of structure loss were evaluated by homeowners living in wildland urban interface areas. The treatment types were (and defined as): prescribed burning defined as resource managers using

planned fire to reduce fuels, regenerate desired plant or animal species, and promote ecological health; mechanical fuel reduction defined as resource managers using chainsaws, brush mowers, and specialized machines to cut and remove shrubs, trees, and other fuels; and defensible space defined as homeowners maintaining a fire-safe zone consisting of 30 feet around homes that is free of flammable vegetation. Attitude and approval were each measured on 7-point scale for the three fuel treatments. In California and Colorado, both permanent and seasonal homeowners had more positive attitudes toward defensible space than mechanical fuel reduction or prescribed burning (Table 7). Colorado homeowners, particularly permanent

Table 6. Recreation use levels

Usage of nearby national forest for recreation						
State	Type of residency	% of home-owners	Daily	Couple times per month	Couple times per year	
California	Permanent	67%	30	21	16	
	Seasonal	81	4	36	41	
Colorado	Permanent	94%	24	45	25	
	Seasonal	92	23	28	33	
Florida	Permanent	74%	28	20	26	
	Seasonal	83	11	39	33	

Table 7. Attitude toward fuel treatment by wildland urban interface home owners

		California - San Bernardino NF		Colorado - GMUG NF		Florida - Apalachicola NF	
		<i>Permanent Home-owners</i>	<i>Seasonal Home-owners</i>	<i>Perma-nent Home-owners</i>	<i>Seasonal Home-owners</i>	<i>Perma-nent Home-owners</i>	<i>Seasonal Home-owners</i>
Prescribed burning	Extremely Negative <sup>a</sup>	31.6%	25.7%	20%	27.7%	5%	7.1%
	Neutral	38.5	41.5	39.7	35.5	19.4	25
	Extremely Positive	29.9	32.8	40.2	36.9	75.6	67.8
	Mean	-.17	.13	.53	.22	2.03	1.68
Mechanical fuel reduction	Extremely Negative	5.9%	6.4%	6.8%	7.8%	5%	3.6%
	Neutral	27.9	33.7	32.8	31.3	19.4	39.3
	Extremely Positive	66.1	59.9	60.4	60.9	65.5	67.8
	Mean	1.68	1.42	1.51	1.36	1.72	1.55
Defensible space	Extremely Negative	3.3%	9.2%	6.8%	4.7%	7%	8.8%
	Neutral	16.8	28.3	25.9	25	38.2	40.4
	Extremely Positive	79.8	62.5	67.3	70.3	40.9	50.9
	Mean	2.23	1.50	1.70	1.77	1.35	1.23

a. Seven point scale where "-3 =strongly disagree", "0 =neither agree/disagree", and "3=strongly agree". Results are presented at three category levels where "strongly disagree" was -3 and -2, "neither agree/disagree" was -1, 0, and 1, and "strongly agree" was 2 and 3. The mean was calculated on a 7-point scale.

homeowners, were more positive toward prescribed burning than California residents. In Florida, both permanent and seasonal homeowners held a very positive attitude toward prescribed burning.

Besides attitudes, homeowners were also asked to rate their overall level of approval. In California and Colorado, both permanent and seasonal homeowners had higher levels of approval of defensible space than mechanical fuel

Table 8. Overall approval of fuel management approaches

		California - San Bernardino NF				Florida - Apalachicola NF	
		<i>Permanent Home-owners</i>	<i>Seasonal Home-owners</i>	<i>Permanent Home-owners</i>	<i>Seasonal Homeowners</i>	<i>Permanent Home-owners</i>	<i>Seasonal Home-owners</i>
Prescribed burning	Strongly disapprove <sup>a</sup>	30.6%	25.2%	14.4%	17.4%	4.6%	1.9%
	Neither approve/disapprove	43.2	47.9	41.5	33.3	16.8	16.7
	Strongly approve	26.1	27	44.1	49.2	78.6	81.5
	Mean	-.10	.12	.83	.89	2.14	2.17
Mechanical fuel reduction	Strongly disapprove	11%	6.9%	9.1%	7.3 %	7%	9.5%
	Neither approve/disapprove	38.5	44.9	38.5	50.1	45.4	45.3
	Strongly approve	50.5	48.1	52.4	43.5	47.6	45.3
	Mean	1.11	1.16	1.24	1.03	1.13	1.06
Defensible space	Strongly disapprove	6.5%	8%	3.1%	3.2%	7.8%	2%
	Neither approve/disapprove	23.1	37.2	32.3	27.4	40.4	54.9
	Strongly approve	70.4	54.7	64.7	64.7	51.7	43.2
	Mean	1.76	1.38	1.79	1.87	1.25	1.20

a. Seven point scale where “-3 =strongly disapprove”, “0 =neither approve/disapprove”, and “3=strongly approve”. Results are presented at three category levels where “strongly disapprove” was -3 and -2, “neither approve/disapprove” was -1, 0, and 1, and

reduction or prescribed burning (Table 8). Colorado homeowners held higher levels of approval of prescribed burning than California residents. In Florida, both permanent and seasonal homeowners strongly approved prescribed burning.

### Conclusions and Implications

As demographers and resource managers are seeing, greater numbers of households are moving into wildland urban interface areas. Our results show that many current permanent, but not yet retired, households plan to stay in their homes, that sizable portions of seasonal homeowners plan to live in their now vacation home upon retirement, and few permanent or seasonal homeowners plan to move elsewhere. Our results further show that wildland fire is not a strong consideration when purchasing a home in interface areas. Awareness and consideration of wildland fire appears to strengthen once a resident moves into a home. Reaching home buyers will remain a challenge. Results showed a wide variety of ways home owners look for homes to buy. The role of the previous owner, whether this person is a stranger or a family member, discussing any risks associated with living in the interface seems quite important, particularly in Florida where a majority acquired

a home through a previous owner or family member.

Households living in the wildland urban interface are clearly recreationists. Opportunities to educate residents about wildland fire and fuel hazard mitigation programs may be the most cost effective means to reaching home owners during the time they are recreating or exposed to recreation literature (e.g., maps, trailhead signs, interpretive centers).

Based on the three locations studied, differences were found between permanent and seasonal homeowners, as well across the three states. Of the fuel treatment programs, defensible space is the preferred (in terms of very positive attitudes toward and strong approval levels) alternative in California and Colorado. In Florida, prescribed burning received very positive attitude and approval ratings. These results clearly show if home owners' views and support are solicited, then specialized and localized fire/fuel treatment plans might result. It is important to note that while state names were used in this paper, the results are not intended to be generalized to those states.

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Service, Southwest Pacific Research Station, Riverside, California. "strongly approve" was 2 and 3. The mean was calculated on a 7-point scale.

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