

# Place Attachment and Recreational Constraints Relating to Fire Management

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## Abstract

This paper presents a study of visitors to the Big Sur region of California during summer 2001. An onsite survey was administered to visitors to USDA Forest Service day-use areas and at developed campgrounds. Place attachment, observations relating to fires and fire management, and perceived recreational constraints owing to wildland fire and fire management are examined. The results indicate that place dependence and place identity influence some perceived constraints and observations of fire conditions. A discussion of the findings is provided, emphasizing the importance of managers' understanding of visitors' perceptions relating to fire and fire management.

Keywords: Big Sur, wildland fire, fire management, recreational constraints, place attachment, forest visitors, wildland-urban interface.

## Introduction

Since 2000, management of fire-prone ecosystems has received substantial attention in the United States. The awareness of wildland fires has been particularly evident among communities and land management agencies since the significant loss of life, property, and structures during the 2000 fire season. Subsequently multiple federal land management agencies developed a National Fire Plan to guide policy development and to emphasize the need to conduct research relating to biological, physical, and social aspects of fires (Machlis et al. 2002). The experience of visitors within the wildland-urban interface is among the areas emphasized in this research agenda.

The purpose of this study was to examine the effects of place attachment on perceived recreational constraints owing to fire and fire management and visitors' observations of fire and fire management activities.

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**One potential means of comprehending visitors' perceptions concerning fire management is to investigate the attachment they have to places.**

The perceptions of visitors to natural resources recreation areas concerning fire management actions, policies, and practices may depend on a number of individual and societal characteristics, experiences, feelings, and values. One potential means of comprehending visitors' perceptions is to investigate the attachment they have to places.

Although various approaches to the study of place attachment have emerged in recent years, one accepted conceptualization by outdoor recreation researchers has been the measurement of two dimensions of attachment: place identity and place dependence (e.g., Williams 2000; Williams and Roggenbuck 1989; Williams et al. 1992, 1995<sup>4</sup>). Place identity refers to the symbolic or emotional attachment that individuals have toward a place emphasizing their feelings, values, beliefs, behaviors, attitudes, and norms (Proshansky et al. 1983). Place dependence represents the functional nature of the attachment, the goals that individuals pursue at a place, and their assessment of alternative places to pursue these goals (Stokols and Shumaker 1981). In essence, visitors to a place that is a natural resource may value it because they can participate in recreational activities at that destination (Moore and Graefe 1994).

A benefit of examining place attachment is that it may provide an understanding of how management practices or alternatives are viewed by recreationists (Bricker and Kerstetter 2000). Previous research has demonstrated that place attachment helps managers to not only understand visitors, but to determine how they might respond to natural resources management issues (Kyle et al. 2003, Warzecha and Lime 2001). Therefore, the attachment that visitors have to a particular natural resources recreational setting may shape their perspectives on fire management. In fact, it has been argued that "the type and degree of attachments that people hold in regard to specific public lands influence their views of fire stewardship" (Knotek, 2006: 24).

Leisure constraint is another concept that researchers commonly use to understand recreationists. Constraints have been defined as "factors that limit people's participation in leisure activities, people's use of leisure services, or people's enjoyment of current activities" (Jackson and Scott 1999: 300). Although three types of constraints are typically recognized (interpersonal, intrapersonal, and structural) (Crawford and Godbey 1987, Crawford et al. 1991) in this research we are particularly interested in structural constraints that intervene between preferences and participation.

A multidimensional concept, structural constraints are particularly relevant to natural resources management issues. A focus on structural constraints has been emphasized previously (e.g., Scott et al. 2006). Structural constraints are similar to

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<sup>4</sup> Williams D.R.; Anderson, B.S.; McDonald C.D.; Patterson, M.E. 1995. Measuring place attachments: more preliminary results. Paper presented at the National Recreation and Park Association, Leisure Research Symposium. San Antonio: TX.

Jackson's (1993) conceptualization of barriers (Shores and Scott 2005) or external factors that a visitor does not have control over (Scott et al. 2004, Shores and Scott 2005). These constraints are external to the recreation participants, and they may be imposed or managed (Bialeschki and Henderson 1988). For example, the timing of a prescribed fire may create a constraint to participation in planned recreational activities for visitors to a specific forest.

The connection between barriers and constraints has long been established in previous research and discussions of leisure constraints (e.g., Henderson and Bialeschki 1993, Jackson 1994, Norman 1991, Petrick et al. 2001, Shores and Scott 2005, Tierney et al. 2004). The most direct relationship found in previous studies is possibly the use of barriers by Petrick et al. (2001) to directly measure constraints. In a study of golfers' constraints, motivations, and previous experience, they measured constraints using a 5-point Likert-type scale (from "not a barrier" to "extreme barrier"). We adapted this conceptualization and measurement of constraints because of its utility in a specific recreational setting and its precedence for investigating constraints with a segmentation of subjects (in Petrick et al. 2001, the segmentation was by experience use history; for our research it is place attachment).

## **Methods**

### **Study Site**

The study took place during summer 2001 near Big Sur on the central California coast, a 60-mile region along Highway One that offers unique recreational opportunities within one of the most spectacular natural resource destinations in the United States. Scenic views, world-class surfing, and ideal coastal camping likely ensure that many Big Sur visitors develop significant emotional ties and a sense of attachment to the region. The coastal redwood forest, approximately 30 miles from Monterey and 70 miles from Santa Clara County with a population of 1.5 million, also lies on a wildland-urban interface and has a high level of fire danger annually. Periodically, areas in the forest are closed owing to wildland fires.

### **Sampling**

Visitor perception data were collected on 15 randomly selected days and at seven randomly selected U.S. Department of Agriculture Forest Service (USFS) day-use, beach, and campground areas using random probability sampling procedures with replication. Locations were randomly assigned to a morning or afternoon. Based on a Los Padres National Forest recreation manager's estimates of visitor proportions, a target of 66.6-percent weekend days and 33.3-percent weekdays was selected for data collection. Research assistants approached all visitors at each of the selected

locations during a period and asked if they were willing to participate in the survey. The subjects were assured of anonymity and were informed that their participation in the study was voluntary.

## Instrument

The subjects completed onsite a 5-page questionnaire. Survey items included demographics and visitor characteristics such as annual household income, education, racial category, gender, residency, marital status, previous visitation to Big Sur, and accommodations. Of particular interest to this project were place identity and place dependence dimensions of attachment measured using an 11-item, 5-point scale from 1 = strongly disagree to 5 = strongly agree, with 3 as neutral. Five items measured place dependence and six items measured place identity. Sixteen perceived recreational constraints were measured using a 5-point scale: 0 = not a barrier, 1 = a slight barrier, 2 = somewhat of a barrier, 3 = an important barrier, and 4 = an extreme barrier (adapted from Petrick et al. 2001). The constraint items were developed based on consultation with USFS managers, social scientists, and a fire ecologist. Finally, frequency of observance of 11 fire-related conditions during visits to Big Sur were measured on a scale of 1 = not at all, 2 = sometimes, 3 = often, 4 = very often, and 5 = extremely often (adapted from Hammitt et al. 1996). The subjects also had the option of choosing “not applicable.”

## Analysis

For the data analysis, high and low levels of place identity and place dependence were created using the 50<sup>th</sup> percentile as a divider. These categories were treated as two levels for a *t*-test with place identity and place dependence as independent variables and the 16 perceived constraint items as dependent variables. Similarly, the effects of place dependence and place identity on visitors’ observations of 11 fire-related conditions were also examined.

## Results

The survey was administered to 498 subjects visiting Big Sur during July and August 2001. Over half of the subjects were male (56 percent) and over half were married (53 percent). Respondents were approximately 38 years old, and most had an education level equivalent to completion of a 4-year college degree. There were rather disparate annual household income levels with 38.4 percent of the subjects with incomes above \$75,000 and 24.2 percent of the subjects with incomes \$35,000 and lower. The majority of the subjects maintained a residence in California (80 percent), although 6 percent were international visitors. Most of the subjects had

visited Big Sur previously (77 percent), an average of four times. Most subjects were camping overnight (77.8 percent). Other subjects were day-use visitors (12.5 percent) or individuals staying in a hotel/bed and breakfast (7.7 percent). The majority of subjects described their racial categories as White (78.4 percent), American Indian/Alaskan Native (2.3 percent), Mexican (2.3 percent), Asian (2.1 percent), and other (8.3 percent).

Mean scores were calculated for the place attachment dimensions of place dependence and place identity (table 4). The highest mean scores for place attachment were “Big Sur is very special to me” at 4.02, “Big Sur means a lot to me” at 3.72, and “Big Sur is a part of me” at 3.63, which all represent the place identity dimension. Inter-item reliability of the six place identity items and the five place dependence items indicated acceptable alpha coefficients of 0.92 and 0.90 respectively.

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**Table 4—Place attachment to Big Sur**

	Mean	Standard deviation
<b>Place identity:</b>		
Big Sur is very special to me	4.02	0.87
Big Sur means a lot to me	3.72	0.97
Big Sur is a part of me	3.63	0.99
I am very attached to Big Sur	3.57	0.98
I identify strongly with Big Sur	3.55	1.02
Visiting Big Sur says a lot about who I am	3.23	1.02
<b>Place dependence:</b>		
No other place can compare to Big Sur	3.59	1.12
Big Sur is the best place for what I like to do	3.57	0.89
I get more satisfaction out of visiting Big Sur than from visiting any other place	3.11	0.99
I wouldn't substitute any other area for doing the types of things I do at Big Sur	3.08	1.04
Doing what I do at Big Sur is more important to me than doing it in any other place	3.02	0.95
Overall place attachment	3.46	0.80

Note: 5-point scale: 1 = strongly disagree to 5 = strongly agree.

The importance of barriers for a return visit to Big Sur or a similar destination were identified for 16 perceived constraint items relating to fire management, wildland fires, and prescribed fires (table 5). Perceived constraints with the highest mean scores were “no fires allowed in fire pits or on cooking grills in developed campgrounds or picnic areas” ( $M = 2.21$ ), “decreased air quality from smoke” ( $M = 2.16$ ), “traffic delays due to fire suppression” ( $M = 2.13$ ), and “decreased visibility

**Table 5—Perceived recreational constraint means by place attachment dimensions**

Barrier	Overall	Persons with:			Persons with:		
		Low identity	High identity	<i>p</i> value	Low dependence	High dependence	<i>p</i> value
		----- <i>Mean score</i> -----			-- <i>Mean score</i> --		
No fires in pits/grills in developed areas	2.21	2.08	2.33	0.082	2.14	2.25	0.453
Decreased air quality from smoke	2.16	2.00	2.33	.007	2.03	2.27	.052
Traffic delays due to fire suppression	2.13	2.05	2.22	.161	2.01	2.24	.052
Decreased visibility of scenic beauty due to smoke	2.00	1.92	2.09	.167	1.88	2.10	.974
Campground closures due to fire	1.92	1.78	2.08	.021	1.78	2.04	.522
Fire suppression activities taking place	1.51	1.34	1.70	.004	1.32	1.68	.003
Trail closures due to fire	1.50	1.35	1.64	.008	1.32	1.64	.003
Visible smoke from fire	1.50	1.41	1.58	.160	1.39	1.59	.87
No fires/stoves in backcountry	1.40	1.27	1.51	.078	1.37	1.40	.837
Picnic area closures due to fire	1.39	1.29	1.50	.079	1.28	1.49	.076
Visible burned area	1.17	1.04	1.30	.023	1.03	1.29	.023
Stoves only in backcountry	1.08	1.07	1.07	.964	1.09	1.05	.735
Fire permit requirement in backcountry	.96	.91	.98	.558	.95	.93	.835
No smoking except designated areas	.42	.35	.48	.200	.40	.42	.834
Prohibit fireworks	.17	.18	.16	.701	.12	.21	.126

Note. 5-point scale: 0 = not a barrier to 4 = an extreme barrier, significant differences at  $p < 0.05$ .

due to smoke” ( $M = 2.00$ ). The lowest mean scores were for “prohibition of fireworks” ( $M = 0.17$ ), “no smoking except in designated areas” ( $M = 0.42$ ), and “permit requirement for campfire/stove in the backcountry” ( $M = 0.96$ ).

An estimate of the frequency of observance of fire conditions during visits to Big Sur indicated low ratings of all 11 observations from a range of “not at all” observed to “sometimes” observed (see table 6). The highest mean score ratings were for “prohibition of fireworks in the forest” ( $M = 1.94$ ), “evidence of a wildland fire” ( $M = 1.78$ ), and “campfire rings next to a trail” ( $M = 1.72$ ).

*T*-tests were conducted to examine the effects of high and low levels of place identity on perceived recreational constraints owing to fires and fire management (table 5) and the observance of fire conditions (table 6). Significant differences emerged between low and high levels of place identity for constraints for “decreased air quality from wildland/prescribed fire smoke,” “campground closures due to fire,” “fire suppression activities,” “trail closures due to fire,” and “visible burned areas from a wildland/prescribed fire.” For all five of these items, high identity mean scores were greater than low identity mean scores. Similarly, there were significant differences for the effects of identity on 8 of the 11 observance items where high identity resulted in higher mean scores than low identity.

**Table 6—Means for observances of fire conditions by place attachment dimensions**

Condition observed	Overall	Persons with:		<i>p</i> value	Persons with:		<i>p</i> value
		Low identity	High identity		Low dependence	High dependence	
	----- Mean score -----				-- Mean score --		
Prohibit fireworks in forest	1.94	1.70	2.18	0.006	1.81	2.05	0.176
Evidence of wildland fire	1.78	1.57	1.95	.001	1.56	1.92	.001
Campfire rings next to trail	1.72	1.60	1.80	.069	1.70	1.74	.756
Restrictions no fires backpacking	1.64	1.40	1.83	.001	1.44	1.77	.005
Restrictions no fires in grills/pits	1.60	1.54	1.65	.234	1.52	1.66	.111
Evidence of prescribed fire	1.59	1.38	1.76	.001	1.39	1.73	.001
Evidence campfires nondesignated area	1.59	1.45	1.70	.005	1.46	1.67	.018
Visible smoke prescribed fire	1.58	1.43	1.71	.003	1.43	1.69	.004
Visible smoke wildland fire	1.49	1.41	1.57	.030	1.43	1.54	.144
Wildland fire suppression	1.42	1.31	1.57	.013	1.30	1.50	.012
Large bonfires in forest	1.17	1.20	1.15	.464	1.21	1.14	.280

Note: 5-point scale: 1 = not at all to 5 = extremely often observed; included not applicable option; significant differences at *p* <0 .05.

Differences occurred for “prohibit fireworks in forest,” “evidence of wildland fire,” “restrictions no fires backpacking,” “evidence of prescribed fire,” “evidence of campfires in non-designated area,” “visible smoke prescribed fire,” “visible smoke wildland fire,” and “wildland fire suppression.”

*T*-tests were also used to determine the effects of place dependence on perceived recreational constraints (table 5) and observance of fire conditions (table 6). High place dependence scores were significantly higher than low dependence scores for three constraints items: “fire suppression activities,” “trail closures due to fire,” and “visible burned areas from a wildland/prescribed fire.” For observation of fire conditions, there were significant differences between high and low dependence scores for “evidence of wildland fire,” “restrictions no fires backpacking,” “evidence of prescribed fire,” “evidence of campfires in non-designated area,” “visible smoke prescribed fire,” and “wildland fire suppression.”

## Discussion

The focus of this research was to assess perceived constraints that forest visitors face that are caused by fire management activities and wildland fires, the frequency of observed conditions related to fires and fire management, and the relationship of these constraints and observations to place attachment.

As demonstrated in other studies, the attachment that individuals have to the places they visit and recreate in continues to be an important variable in understanding recreationists. The analyses in this research provide support for

this assertion. The subjects with higher levels of place attachment continuously exhibited higher levels of perceived constraints and observations of fire conditions.

It is possible that the wording on the questionnaire regarding constraints influenced these results. The subjects were asked to consider the constraints from a perspective of visiting Big Sur again or an area like Big Sur. If the subjects did not plan on revisiting Big Sur or a similar natural recreation area, the perceived constraints relating to fires and fire management may have been irrelevant.

In viewing the overall observation of fire condition scores, it is apparent that the scores are relatively low with the most scores in the “sometimes observed” range. Thus, even during summer 2001 following the severe 2000 fire season, most of these subjects were not cognizant of fire regulations or evidence of fires. At the time of this data collection in 2001, the most recent large-scale fire at Big Sur was the Kirk Complex Fire of 1999. The low scores may simply have been because of a lack of personal experience with wildland fires by the subjects participating in the study.

Another plausible outcome of these results is that additional informational and interpretive programs are necessary to educate many visitors about Big Sur as a diverse and complex fire-prone ecosystem. The highest perceived constraint was not allowing fires in pits or on cooking grills in developed campgrounds or in picnic areas. Most of the subjects in the study were staying in developed campgrounds. Traditionally and culturally, campers have grown accustomed to the expectation of a fire as a part of the camping experience. Interpretive programs could be designed that emphasize the benefits of camping without a fire such as wildlife observation, the ecosystem benefits of leaving downed wood in place, and the reasons that regulations are in place during times of extreme fire danger. Communication strategies targeting the public need careful planning, and the delivery of these messages is an especially important consideration (Toman et al. 2006).

This study offers additional understanding of visitors to a specific natural resources recreation region and underscores the importance of considering visitor perceptions, observations, and how their perspectives impact the implementation of policies and management of natural resources (Kyle et al. 2004). Ultimately, the constraints that visitors confront may have a profound impact on the quality of their visits and their perceptions of managerial, social, and environmental conditions in natural resources recreation settings.

## Metric Equivalents

1 mile = 1.61 kilometers

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