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Understanding place meanings in planning and managing the wildland–urban interface: The case of Florida trail hikers

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HIGHLIGHTS

- Little research exists on social benefits related to place meanings in WUI areas.
- Hikers with higher trail meanings reported preferences for natural trail settings.
- Hikers with higher place meanings preferred recreation experiences more than others.
- WUI planners and managers will need to use appropriate spatial scales or zones.

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ABSTRACT

As urban sprawl encroaches into natural ecosystems and recreational use of wildland–urban interface (WUI) areas increases, a better understanding of the values and attitudes of visitors could assist both those visitors and WUI area managers. This study examines the influence that place meanings have on WUI visitors' benefits sought and preferences for landscape attributes and trail settings and suggests management implications. Data from on-site interviews with the Florida National Scenic Trail hikers through WUI areas were analyzed. Confirmatory factor analysis revealed that place meanings consisted of place dependence, place identity, community identity, legacy identity, and nature and natural process. Cluster analysis generated high, -medium, and -low place attached clustered groups. Sociodemographic variables were not significantly related to place meanings, but visitors' trail use history and the trail's proximity to their residences were related. Significant differences in desired experiences were found between three clustered WUI groups. The highly attached WUI group desired escape, nature learning/exploration, and achievement more strongly than the other clustered groups. Similarly, the highly attached group preferred natural features (e.g., undisturbed nature, wildlife habitat, air, water, and soil quality) and traveling on natural trails more strongly than other groups. These results highlight the importance of maintaining natural conditions in WUI areas that provide biodiversity, higher water and air quality, protection of wildlife habitat, and recreation/tourism opportunities, which support human emotional and psychological feelings and well-being and higher levels of meanings ascribed to WUI trails.

1. Introduction

Urban sprawl has been increasing around inland and coastal areas possessing natural amenities or proximal to protected areas in the US (Radeloff et al., 2005). Sprawl often instigates a blurring of the line between developed settings and natural environments (Dwyer & Childs, 2004) often referred to as the wildland–urban interface (WUI). WUI includes areas where natural habitat is located adjacent to or intermixed with urban land uses (Zipperer, 2005). More than nine percent of U.S. lands lie in WUI areas (Duryea & Vince, 2005; Radeloff et al., 2005) and the percentage is increasing (Theobald & Romme, 2007).

Urbanized environments cause adverse impacts such as habitat loss and fragmentation, wildlife disturbance, and deterioration of water and air quality and scenic assets (Dwyer & Childs, 2004; Radeloff et al., 2005; Theobald, Miller, & Hobbs, 1997; Zipperer,

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2005). These impacts can result in a failure to maintain not only biodiversity and ecological integrity (Dwyer & Childs, 2004; Nilon, Long, & Zipperer, 1995; Radeloff et al., 2005; Theobald & Romme, 2007; Theobald et al., 1997), but also social values (Nilon et al., 1995) or social aspects of the areas (Dwyer & Childs, 2004).

Often, easy access to WUI areas results in higher recreation use levels; therefore, local residents are likely to have regular interaction with those areas (Stein, 2005). Also, since the public is increasingly aware of how WUI natural resources are managed, they might be sensitive to how management decisions impact their recreational activities and everyday lives. Consequently, decisions affecting WUI areas likely affect the meanings residents and visitors assign to those areas. Increasingly, changes in WUI areas can affect the public's emotional connection and may even displace current visitors (Warzecha & Lime, 2001).

Identifying visitors' preferences and attitudes (e.g., meanings) about WUI areas is potentially important for WUI planners and managers. Most research on meanings ascribed to natural places has focused on more natural and reserved settings (Stein, 2005). Like all nature-based recreation users, most users of WUI areas seek beneficial experiences through recreational activities (Stein, 2005). However, not much information is known about WUI user groups' perceived beliefs, emotional attitudes and management preferences for WUI areas and how they might differ from visitors to more pristine natural areas. Management of WUI areas may improve when managers understand visitors' attitudes towards WUI attributes and the meanings people place on those attributes. It is particularly important to understand how visitors, local communities, and ecosystems benefit from natural area management (Anderson, Nickerson, Stein, & Lee, 2000; Driver & Bruns, 2008; Lee & Driver, 1999). Research concerning recreation-related benefits is common in more pristine areas, but is lacking in WUI areas (Driver, 2008). Identifying socially valuable aspects of natural resources in WUI areas from the viewpoint of users who perceive various tangible and intangible meanings can be important in providing effective recreation and benefit opportunities. This study attempts to accomplish this through two objectives:

1. Understand the influence that place meanings have on WUI visitors' benefits sought and preferences for landscape attributes and trail settings and
2. Explore management implications.

2. Literature review

2.1. WUI and ecosystem services

The wildland–urban interface is an area where developed structures (e.g., residential, business facilities or public structures) meet or intermingle with undeveloped vegetation (USDI & USDA, 2001). The WUI can be divided into two categories: intermix and interface (USDI & USDA, 2001). Intermix WUIs are areas where urban and wild environments intermingle and developed structures are scattered throughout (or among) wildland vegetation. There is no clear line of demarcation between the natural and developed areas. Alternatively, interface WUI areas are where developed structures and wildland vegetation are directly abutted or adjacent, and there is a clear boundary between natural and developed areas (Dwyer & Childs, 2004; Radeloff et al., 2005; Silvis Lab, 2010; USDI & USDA, 2001).

Given the proximity of development and people, WUI managers often struggle to apply natural resource management strategies (e.g., prescribed fire, timber harvesting, and trail construction). The public tends to have inherent attitudes and values, and they expect managers to integrate their values into management actions (Dwyer & Chavez, 2005). Research to identify specific user groups' important values or meanings of interface areas is needed to better manage the socio-ecological system to simultaneously produce opportunities to benefit from these areas and conserve the areas' sensitive natural attributes. Research along this vein can be based on the evolving outcomes-focused management concept, centering on the provision of the values and benefits of WUI areas to environments, humans and society.

2.2. Outcomes-focused management

Limiting the value of natural resources, including landscapes in most U.S. rural areas, to traditional commodity or market-driven values (e.g., timber and minerals) fails to consider numerous social values people bestow on nature (Kellert, 1996; Stein & Anderson, 2002; Williams, Patterson, Roggenbuck, & Watson, 1992). Planning efforts to identify how humans value natural areas within the context of planning and management of natural ecosystems is ongoing (Stein & Anderson, 2002) and outcomes-focused management (OFM) was designed to assist in this integration (e.g., Driver, 2008; Stein & Anderson, 2002).

OFM is a planning framework that centers on managing nature-based tourism and recreation areas to provide opportunities for a variety of values and benefits for humans (e.g., visitors and local communities/residents), economy, and environments (e.g., natural ecosystems) (Driver, 2008; Stein, 2005; Stein & Anderson, 2002). Benefits are the outcomes that are propitious products gained from resource management and recreational uses (Driver, 2008). Benefits include not only realization of satisfying on-site individual experiences (e.g., personal benefits) but maintenance or improvement of desired conditions beneficial to on-site and off-site individuals, society, economy, and environments (Driver, 2008). The former derives from engagement in recreation and the latter accrues from both resource management and/or participation. Thus, the latter is more encompassing and includes longer-term outcomes. Furthermore, natural resource managers do not directly provide benefits to people in most cases, rather they produce benefit opportunities by managing biophysical, social, and managerial characteristics of natural areas, so people can realize their own desired benefits (Lee & Driver, 1999; Stein & Anderson, 2002). For example, a maintained trail into a forest provides the opportunity to attain benefits such as physical fitness, nature learning, family-togetherness, and stress relief.

The recreation opportunity spectrum (ROS) articulates guidelines to manage natural areas in order to create opportunities for people to realize desired experiences (Clark & Stankey, 1979). ROS guidelines include natural and managed settings and benefits sought by visitors (Anderson et al., 2000). However, ROS was designed to manage large protected natural areas, and managers continue to struggle with how to apply ROS guidelines to WUI areas.

2.3. Place meanings

The concept of place is a hub of subjective meanings built by human experience. As suggested by Tuan (1977), "what begins as undifferentiated space becomes place as we get to know it better and endow it with value" (p. 6). Spaces are more general and broad with indefinite meanings, while places are more specific and concrete and evolve from human experiences and interactions (Tuan, 1977) and represent more than physical environments (Tuan, 1974). For example, as people visit a specific setting, they ascribe meaning to those areas, such as a wilderness area might be a place for person to escape and relax while a local park might be a place for families to bond and exercise (Stedman, 2003). As people ascribe favorable meanings to specific places, they likely become more attached to those places and regard those areas