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Wilderness Visitor Experiences: Progress in Research and Management

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Abstract

The workshop was convened to celebrate and review 50 years of research on wilderness visitor experience and its influence on wilderness stewardship. These proceedings are organized in three sections. The first section contains 12 papers that review literature or describe empirical research about wilderness visitor experiences. The second section provides three papers on management frameworks and the perspectives of planners and managers. The third section consists of five papers on wilderness experiences and the future.

Keywords: management frameworks, recreation management, research methods, solitude, technology, visitor density, wilderness experience

The Compiler

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Preface

The Wilderness Visitor Experience Workshop was held at the Lubrecht Experimental Forest near Missoula, MT, April 4-7, 2011. The science and management of wilderness visitors is now more than half a century old. Much has been learned over this period. And yet it seems that enthusiasm for recreation research generally and for wilderness visitor science specifically has been waning recently. With the 50th Anniversary of The Wilderness Act approaching in 2014, it seemed timely to celebrate and capture what has been learned over the past 50 years. We also wanted to revitalize this research tradition and prepare for the next half century of visitor experience research and stewardship.

For three days, twenty-one scientists and managers gave presentations and discussed important topics. The original idea for the workshop was to comprehensively survey the breadth of research on wilderness visitor experience, such that these proceedings would provide a state-of-knowledge on this topic. Indeed, a number of the papers produced are comprehensive reviews. Some participants, however, chose to present empirical papers, without comprehensive reviews, and others presented original essays suggesting important avenues for wilderness research. The result is a collection of reviews, empirical research and personal essays that provide a rich (if not comprehensive) overview of the past, present and future of wilderness visitor experience research.

Prior to the workshop, a number of driving issues and questions emerged. A number revolved around the issue of the nature of wilderness experiences and their stewardship. Specific questions under this topic included:

- Are wilderness experiences unique?
- How are high quality wilderness experiences best described?
- What are we managing for?
- Do we manage wilderness conditions regardless of the experiences people seek?
- What attributes most influence experience quality and how should we define thresholds for these attributes?
- How can management protect against threats and/or enhance experiences?
- How much should managers intervene to manage for "ideal" experiences?

A second set of issues concerned whether or not The Wilderness Act should be consider a living document that evolves over time. Specific questions included:

- How should we resolve differences between legal mandates and public preferences?
- How are socio-cultural meanings of wilderness and experience preferences changing?
- Is "solitude" still relevant?
- How much discretion do wilderness managers have to follow public opinion?
- How should management respond to constantly evolving technology?

A third topic involved a concern that experiences were not being effectively stewarded and that one barrier in this regard was ineffective interaction between scientists and managers. Specific questions included:

- What are the barriers to more effective stewardship of visitor experiences?
- Why don't managers more explicitly manage visitor experiences?
- How can managers and scientists work better to improve wilderness stewardship?
- How can research be better integrated across disciplines?

At the opening session of the workshop, Dr. Robert Lucas was honored for his pioneering work and leadership in wilderness visitor research. As a Forest Service scientist, Bob either conducted or commissioned most of the early wilderness visitor research conducted. He was Project Leader at the Lake States Experiment Station from 1960 to 1967, where he worked primarily on the Boundary Waters Canoe Area. Then he moved to Missoula, where he was Project Leader of the Wilderness Management Research Unit until his retirement in 1988. To celebrate Bob's work, he was presented with a plaque that read "Presented to **Bob Lucas**, Pioneering Wilderness Scientist. Your work on wilderness visitors serves as a foundation and inspiration for generations to come. April 2011. Participants in the Wilderness Visitor Experience Workshop."

These proceedings are organized into three sections. The first section contains a collection of research reviews and empirical research. A number of these papers are devoted to understanding the nature of the visitor experience in wilderness, either for a representative sample of visitors or for subsets of visitors, such as those who participate in wilderness experience programs. Several papers are concerned with traditional subjects such as privacy/solitude in wilderness. Several others deal with technology in wilderness. The second set of papers includes two papers by the planners/managers who participated in the workshop and an overview of frameworks useful in managing the wilderness experience. The final section consists of papers concerned with the future of wilderness management.

Financial support for the workshop was provided by the Aldo Leopold Wilderness Research Institute, Rocky Mountain Research Station, USDA Forest Service and The Wilderness Institute, School of Forestry, University of Montana. In addition to workshop participants, I acknowledge the contributions of Sarah Potenza and Laurie Yung.

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I. Reviews and Empirical Research

Wilderness Visitor Experiences: A Review of 50 Years of Research

David N. Cole
Daniel R. Williams

Abstract—This paper reviews 50 years of research on the experiences of wilderness visitors. Research on the nature of experiences began with an emphasis on motivations for taking wilderness trips and a focus on the experiential outcomes of wilderness visits. This perspective has been complemented by recent work that more deeply explores the lived experience in wilderness, its ebb and flow, and the process by which experience is constructed and developed into long-lasting relationships. In attempting to understand how wilderness settings might best be managed to protect high quality experiences, considerable work has been conducted on the effects of setting attributes on experience. In particular, the effect of use density on experience has been a prominent research theme. Among the insights of this body of research, is the realization that experiences are highly diverse and idiosyncratic and that visitors are highly adaptable and adept at negotiating the situations they experience. This suggests that it is impossible to know how to most effectively steward wilderness experiences without first deciding who and what to manage for. Moreover, given the idiosyncratic personal construction of experience, management action or inaction cannot guarantee high quality experiences for everyone.

Introduction

Wilderness preservation is a relatively recent idea, the first wilderness being designated in the United States in 1924 and wilderness legislation not passed until 1964. Part of the wilderness idea was to promote a new relationship between people and land, both in how wilderness lands were to be managed and in the experiences people might receive from wilderness visits. These experiences, the immediate thoughts, emotions and feelings associated with being in wilderness and the more enduring changes in attitudes, perceptions, and sense of self that arise from these encounters with wilderness, were considered likely to be unique and different from experiences in other recreational settings. Since they were poorly-understood, research on wilderness visitors and experiences began shortly before passage of The Wilderness Act in 1964.

The first study of wilderness visitors was conducted in 1956 and 1958 (Stone and Taves 1956; Taves and Morgan 1960; Taves and others 1960; Bultena and Taves 1961) in the Quetico-Superior (now the Boundary Waters Canoe Area and Quetico Park in Canada). Visitors to the same area were more comprehensively studied by Lucas (1964a,b), starting in 1960. Also in 1960, visitor surveys were conducted, under the auspices of the Outdoor Recreation Resources Review Commission, in seven "wildernesses": Mount Marcy in the Adirondacks, Great Smoky Mountains, Boundary Waters Canoe Area, Yellowstone-Teton, Bob Marshall, Gila and High Sierra (Outdoor Recreation Resources Review Commission 1962). The other studies conducted in the early 1960s were a 1962 study of social characteristics of camping groups in the Three Sisters (Burch 1966; Burch and Wenger 1967), a 1964 study of visitors to the Bob Marshall, Mission Mountains and Glacier Park (Merriam and Ammons 1967) and a 1965 study of visitors to the Three Sisters, Eagle Cap and Glacier Peak wildernesses (Hendee and others 1968).

Reviewing these pioneering studies helps us understand the original motivations for studying wilderness visitors and provides initial glimpses of themes, perspectives and methods that are still playing out in visitor experience studies today. Some of the questions originally asked have been quite thoroughly addressed. For example, much is known about who visitors are, what they do on their trips, and their perceptions, attitudes and preferences (Roggenbuck and Lucas 1987; Dawson and Hendee 2009) although some of the specifics have and are likely to evolve over time (for example, age and gender). Other questions—particularly those related to the character of wilderness experiences—have been less adequately answered and/or less effectively translated into practice.

The pioneering wilderness researchers clearly believed there was something unique to a wilderness experience and they were concerned that this experience was rare and at risk—that management was necessary in order to maintain high quality wilderness experiences and that appropriate management required good research. Consequently, they and succeeding generations have built a rich body of research, most of it fundamentally aimed at addressing the following questions: (1) **what do visitors experience in wilderness?** (2) **what factors influence the nature or quality of the experiences visitors have in wilderness?** and (3) **how can managers protect**

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and/or enhance visitor experiences? Embedded in the first two questions are three additional questions. How stable are the answers over time? How much variation is there among visitors? What factors might explain these temporal or social differences?

The intent of this paper is to review the approaches taken to answering the first two of these questions. Two major sections review research on the nature of wilderness experience and attributes that influence visitor experiences in wilderness. Then we discuss what this knowledge suggests in a concluding section on the stewardship of wilderness experiences. We must keep in mind that any contemporary assessment of these questions reflects current views and experiences of visitors. Looking back at the research we may be able to identify some patterns that have remained stable. Indeed most studies of trend suggest relative stability (Lucas 1985; Cole and others 1995); but there remains the possibility that visitors and their behavior may change in the future.

The Nature of Wilderness Experiences

Several papers in these proceedings address the nature of the wilderness experience from one perspective or another. The purpose of this section is to provide an overview of the various approaches to the topic. Underlying these different ways of approaching the nature of experience are two broad, contrasting perspectives on the nature of well-being or quality of experience. An important distinction in the psychological literature on subjective well-being is whether well-being is understood to be the outcome of satisfying needs and attaining goals (telic model) or the pleasure that comes from being involved in the pursuit of these goals, even when they are not met (autotelic model) (Omodei and Wearing 1990). Each of these two perspectives can contribute to our understanding of the situational (onsite) factors that influence the character and quality of a given experience. As described below, motives for wilderness generally follow a telic model focused on goal attainment. In contrast, wilderness as lived experience and wilderness as a long-term relationship tend to incorporate autotelic approaches to well-being.

Another important feature of the differing approaches involves how researchers address the temporal scope and dynamics of experience. Researchers have most often treated wilderness experiences as discrete events, conceived them as the psychological outcomes desired or attained from a wilderness visit (as if people knew exactly what was expected and desired from their visit), and studied them using quantitative techniques. Other researchers, often employing qualitative techniques, have attempted to understand experience as a long-term phenomenon (as relationship for example), have conceived of experience as emergent (as if people had little idea of what was expected or desired) and multiphasic, and have attempted to learn as much about the process of experience as the outcome. Although these latter approaches have become more prevalent recently, some elements of these perspectives were present in the very earliest studies of wilderness visitors. Clawson and Knetsch (1966), for example, made the early suggestion that recreation experiences were not limited to that which occurred at the recreation site, but also involved anticipation, travel to, travel home, and recollection. Likewise, early studies of wilderness use sought to identify the long-term therapeutic or educational value of nature/wilderness experiences (Kaplan 1974). Below we characterize and contrast the various approaches organized into three types: motivation-based, experience-based, and relationship-based.

Motives for Wilderness Visits

The motivation approach carries various descriptors including goal-directed, expectancy, outcome, benefits, and satisfactions. Often associated with the approach is some implied or explicit comparison between expectations and outcomes (Brooks and others 2006). Motivations, goals, and expectations usually connote what people seek or expect from the experience, whereas outcomes, satisfactions, and benefits refer to what people receive from the experience. Presumably a quality experience is one in which the participant receives an experience at least as good as the experience sought or expected. Also associated with the motivation approach is the idea that people seek multiple satisfactions or specific "bundles" of outcomes. Thus overall benefit or well-being is often understood in a telic model as some form of multi-attribute utility.

The earliest insights into wilderness experience came from attempts to understand the basic motivations for why people visited wilderness. In the area that now is the Boundary Waters Canoe Area Wilderness, Bultena and Taves (1961) reported that the most prevalent motives involved adventure and exploration, struggling with the elements, experiencing a less artificial setting, away from the cares of the workaday world, while Lucas (1964b) found that people visited to find solitude, be with members of one's group, learn about the area and commune with nature. Over subsequent decades, motives have been studied more systematically, most notably in the work of Driver and associates (for example, Brown and Haas 1980; Manfredo and others 1983). This work suggests that there are common motives for visiting wilderness, such as solitude and experiencing nature, but not all motives are shared. People vary in the experiences they seek (Hall and others 2010) and none of the experiences sought appear to be exclusively dependent on a wilderness to be realized (Stankey and Schreyer 1987).

Driver and associates (1987) summarized data collected in 1977-1978 for responses to 16 wilderness motivations across five Colorado wilderness areas, three North Carolina wilderness areas and four other "undesignated" wilderness areas (two from Colorado, one from Wyoming and one from Vermont). Each motivation was rated as to how much it either "adds to" or "detracts from" the respondents level of satisfaction with their visit to the particular area. These data suggest relatively little difference across areas in the most important motives, which in overall rank order were: enjoy nature, physical fitness, reduce tensions, escape noise/crowds, outdoor learning, sharing similar values, independence, family kinship, introspection/spiritual, considerate people, achievement/stimulation, physi-

cal rest, teach/lead others, risk taking, risk reduction and meet new people. They also compared these results to satisfactions associated with three "nonwilderness" areas: a sand dune area in Utah, a reservoir in Illinois, and a floatable section of the Arkansas River in Colorado. Enjoying nature, physical fitness, and reducing tensions were among the top five for all three areas as was escaping noise/crowding for all but the sand dune area. These data suggest few differences between wilderness experiences and other outdoor recreation experiences.

In a more contemporary study, Cole and Hall (2008a) summarized motivation data collected across 13 wilderness areas in Oregon and Washington in 2003. They examined 14 motivations in terms of both what was sought and what was experienced. Among the most highly sought experiences were: closeness to nature, away from crowds, sense of being away from the modern world, sense of freedom, wilderness opportunities, sense of remoteness, solitude, sense of challenge, sense of surroundings not impacted by people (average ratings > 5.0 on a 7 point scale). Lowest rated motives were: be near others who could help if needed, be my own boss, think about who I am, develop personal spiritual values, and learn about this place. Generally speaking, when asked about experiences achieved, results were similar to the results for experiences sought. However, Cole and Hall also calculated differences between experiences achieved and experiences sought by subtracting ratings on the latter from ratings on the former. The experiences that were least achieved were those for being away from crowds, solitude, sense of remoteness and sense of surroundings not impacted by people, the experiences most strongly associated with wilderness.

In part to understand whether wilderness provides unique experiences, an important question behind the motivation approach is how participants acquire their motives? Do motives reflect differences in individual personality, the amount or character of past experience, or are they dependent on cultural background and/or socialization (upbringing)? As Brooks and Williams (in press) suggest, motives for wilderness experience are at least partly learned in the process of engaging in wilderness experiences. This learning involves both direct experience of wilderness (that is, past experience in wilderness) and social interactions with others who transmit values and preferences to participants. Other researchers have shown that to some extent motives are personality-dependent; they reflect differences in one's basic orientation to nature (Knopf 1983; Driver and Knopf 1977).

A related question is how much wilderness motives vary across wilderness areas and what factors might explain this variation. Driver and others (1987) report more similarity in average motivation ratings across several wilderness areas than between wilderness and other outdoor settings. Several studies have employed "segmentation" techniques from market research to identify groups of participants who exhibit different profiles or bundles of motivations (Brown and Haas 1980; Hall and others 2010; Legare and Haider 2008). Studies have also segmented visitors based on experiential factors (such as involvement or place attachment) and described these differences in terms of motivations or benefits (Hall and others 2010; Kyle and others 2004b; Schreyer and others 1984; Warzecha and Lime 2001). These and other studies have had some success explaining these different segments in terms of such variables as demographic and trip characteristics (Brown and Haas 1980; Hall and others 2010) and experiential factors such as use history, activity specialization and place attachment (Williams and others 1990; Graefe and others 2000).

The key finding here is that different segments of visitors focus on particular motives or experiences and thus place different levels of importance on wilderness conditions such as solitude, primitiveness, social interaction, and so on. This variation in motivations helps explain why the influence on experience of attributes such as use density, discussed in the next section, are not as substantial or consistent as might be expected. The key management implication here is that stewardship actions that protect experience qualities important to one segment might have adverse consequences for a different segment. Using these "benefit segmentation" techniques it becomes possible, at least theoretically, to identify some subset of wilderness visitors who seek experiences that closely align with the qualities specified in the Wilderness Act.

Taken together motivation studies provide some insights regarding the issue of the uniqueness of wilderness experiences versus other outdoor/natural settings. There is ample evidence that motivations for visiting wilderness vary from person to person and are to varying degrees similar to other nature based activities (particularly human powered ones). Still, results suggest that for at least some segments of wilderness visitors wilderness provides some "bundle" of experience attributes that are more typically found in wilderness settings (Roggenbuck and Driver 2000). In an open-ended question about what makes wilderness experiences different, visitors to wildernesses in Washington and Oregon most frequently mentioned a combination of experiential and setting attributes—solitude, scenery, no impact, quiet, and challenge (Cole and Hall 2009).

Wilderness Experience as Lived Experience

Within the past few decades there have been a number of studies of discrete wilderness visits that more deeply explore visitor experience as the thoughts, moods, emotions, and physical responses that arise from visitors' activities, their physical and social context and focus of attention, in other words "experiences as they are lived, felt or made sense of by the people being studied" (Stewart and Floyd 2004, p. 450). What Borrie and Birzell (2001) describe as the experience-based approach: (1) more directly asks the visitor to describe their experience instead of asking them to evaluate various experiential or motivational components of it, (2) does not explicitly ask respondents to link these descriptions to setting attributes or satisfactions, (3) attempts to capture immediate conscious experience by seeking these descriptions closer in time to the event, and (4) often examines the ebb and flow of experience as it unfolds across the course of the visit instead of summarizing the entire experience into a single evaluation. Research examining lived experience has employed two distinct methodological approaches, immediate conscious experience

monitoring and retrospective accounts of experience. One way to get at the lived experience has been to "sample" the immediate conscious experience of respondents by obtaining repeated measures of their thoughts, feelings, and focus of attention at various (often random) intervals throughout their visit to wilderness. In one study on trails adjacent to the Maroon Bells Wilderness Area (CO), hikers were asked to rate items measuring mood, satisfaction, and scenic quality at 12 predetermined points along a trail (Hull and others 1992; Hull and Stewart 1995). Researchers found that much of the variation in mood and satisfaction were correlated with perceptions of scenic quality.

Other studies examined visitors' "focus of attention" at multiple points during a wilderness visit noting differences in attention to the influences of other people, the activity being undertaken, and the environmental setting. McIntyre and Roggenbuck (1998) observed how particular environmental settings influenced experience, but they also noted some general temporal dynamics that reflected the way familiarization with the setting tended to overcome initial apprehension. Borrie and Roggenbuck (2001) noted greater focus on the environment and on introspection at the conclusion of the visit compared to the entry phase and less focus on group members during the immersion phase. They also noted higher scores on humility and primitiveness during the immersion phase.

Whereas the above studies have often employed quantitative assessments of experiential features, other studies have used daily journals and/or interviews to examine the ebb and flow of wilderness experiences. Mirroring the findings of McIntyre and Roggenbuck (1998), Kaplan and Talbot (1983) noted how adolescents' diaries showed increasing comfort and familiarity with the experience over time but also became more detailed and more intensely emotional. Some of these studies focus less on the ebb and flow of experience and more on gaining deeper insight into what is being experienced. In an example drawing on content analysis of personal journals and retrospective interviews obtained from two groups of women in different wilderness settings (Boundary Waters and the Grand Canyon), Frederickson and Anderson (1999) discussed how a sense of the expansiveness of the landscape and the power of nature provided spiritual inspiration for most of the women. They also found that positive interpersonal interactions combined with immersion in a wilderness setting contributed to the perception of elements of the landscape as possible sources of spiritual inspiration. Hall and Cole (in press) studied the immediate conscious experience of visitors to three popular wilderness destinations. Interviews revealed much about wilderness experience in terms of an enriched sense of awareness and appreciation of the natural environment, self discovery and personal growth, and how people connect with others in their group.

These experience-based studies reveal much about the rich, varied and fulfilling experiences that almost everyone has in wilderness. Although people's experience appears highly varied—involving different activities and types of places—the focus of attention is most commonly on the natural environment, as shared with other people in one's group. Focus on self has been found to be less prevalent in studies of immediate conscious experience (Hall and others 2007); however, other studies, particularly those using self reports from organized wilderness outings, show that for some people there is a significant focus on self discovery. Studies have explored experience as a source of spiritual inspiration (Fredrickson and Anderson 1999), as transcendent (Williams and Harvey 2001), and in terms of emotional outcomes (Farber and Hall 2007).

Despite some commonalities, experiences are often idiosyncratic, "influenced by individuals' unique identities, their current personal projects, recent past experiences, and situational influences" (Patterson and others 1994, p. 244; Arnould & Price 1993; Patterson and others 1998). Experiences are emergent to a substantial degree, as well as dynamic, varying across the wilderness visit (McIntyre and Roggenbuck 1998; Borrie and Roggenbuck 2001). These findings suggest the limitations of characterizing experience quality in a single discrete rating or as the degree to which preconceived expectations for desired experiences are met. They also demonstrate the challenge of stewarding wilderness experiences, when experiences are highly idiosyncratic and personally constructed and given meaning. Providing or protecting certain setting attributes will not necessarily result in desirable experiences. The linkage between settings and experiences is probabilistic rather than deterministic. Patterson and others (1998) evoke the concept of "situated freedom" to make this point. Managers help structure the environment, thereby setting boundaries around what can be perceived or experienced. However, "within those boundaries recreationists are free to experience the world in highly individual, unique, and variable ways" (p. 426).

Wilderness Experience as Long-Term Relationship

A third perspective on experience focuses on the meaning or significance of the experience in terms of the role it plays in the larger context of one's life. This approach to experience emphasizes its emergent, transactional, and long-term character. Though a long term perspective is, to some degree, implicit in the conceptual work of Driver and associates regarding the benefits that accrue from experiences (Roggenbuck and Driver 2000), the focus of relationship-based studies is on the *process* of meaning making and identity affirmation rather than the attainment of specific benefits. It is emergent and transactional in the sense that the experience evolves across time and the individual is seen as an active participant in creating the experience. While sharing much in common with the notion of a lived experience, the relationship-based approach focuses on experience as an unfolding story or narrative that organizes meaning and identity for the individual (Borrie and Birzell 2000; Brooks and Williams in press).

Following from the view that wilderness experience is often "motivated by the not very well-defined goal of acquiring stories that ultimately enrich one's life" (Patterson and others 1998 p. 423), Patterson and associates (Patterson and others 1994, 1998) showed how experience is organized as an emergent narrative rather than an evaluation of outcomes relative to

expectations. In a series of interview based studies they found that experience is contextual, influenced by individuals' unique identities, their current personal project, recent past experiences, and situational influences. This contextual quality was particularly evident in the various ways visitors experienced and interpreted the challenges of negotiating a river in Juniper Prairie Wilderness (FL), which was the dominant feature of the setting. Building on the concept of "situated freedom," which recognizes that within the boundaries set by the environment participants are free to experience the setting in variable ways, the research showed how participants dealt with widely varying interpretations of the challenge they experienced in floating the river. Among those who initially interpreted challenge as mildly negatively, upon greater reflection, they often came to realize that overcoming challenges was precisely what made the experience an enjoyable story to relive. For others, challenge was so dominant and intense in defining their experience that they had little capacity to reflect on other aspects of the experience. In the end it was less a matter of whether they experienced more or less challenge than they expected, but how they made sense of those challenges.

Others have employed the relationship perspective on experience, building on the premise that some visitors may value their long-term relationships to places or to wilderness experiences generally more than the specific attributes or conditions of a particular place or wilderness visit in isolation (Brooks and others 2006; Dvorak and Borrie 2007). The relationship perspective in wilderness experience research is closely associated with the place literature (Williams 2008), particularly as it was used to describe resource specificity or dependence as a factor in conflict (Jacob and Schreyer 1980; Schreyer and others 1981). Initially much of the work focused on measuring the strength of attachments visitors held toward specific wilderness areas (Williams and others 1992b; Watson and others 1994; Kyle and others 2004a,b). Increasingly this work has focused on the social and psychological *processes* involved in developing and maintaining relationships with wilderness areas and what those processes may mean for managing the quality of visitor experience.

As discussed in Brooks and Williams (in press), applying a relationship metaphor to the study of wilderness experience focuses on the way ongoing experiences people have in a wilderness area allow them to negotiate and establish meanings not only for that place but also for themselves and their relationships with other people. Place meanings are thought to build up through continued participation with the place to the point that a relationship exists between person and place. The relationship can be used to affirm aspects of one's identity and substantially affect one's broader quality of life (Brooks and others 2006, 2007; Smaldone and others 2005).

A key idea here is that individuals play a large role in shaping the character and quality of the experience as a transaction between the person and the setting. The setting may set broad boundaries of possibilities, but situated within those boundaries individuals are free to create their own experience and meaning. They do this continuously—before, during, and after the experience—to form the elements of an identity narrative or story. Framed from within this relationship model, experience quality can be understood "as the extent to which a recreation engagement succeeds as an expression of one's self" (Williams 1989, p. 433). This assessment is not so much a summary judgment at any particular time. Instead it involves the ongoing process of identity affirmation in which our wilderness activities, both on site and off site, become symbolic expressions of our identities (Haggard and Williams 1992).

Solitude, Primitive, and Unconfined: Key Features of Wilderness Experiences?

Having briefly reviewed some of the different ways wilderness experience has been studied, one of the key unresolved issues is what if anything differentiates wilderness experiences from other outdoor recreation experiences. Given its centrality in the Wilderness Act, much attention has been devoted to the concept of solitude. Solitude is the one word, beyond the mandate to provide for primitive and unconfined types of recreation, used to describe the type of experience wilderness should provide. To psychologists, solitude means being alone, without intrusions, where others cannot observe you (Westin 1967). Since few wilderness visitors choose to be alone, Hammitt (1982) has argued that the broader psychological concept of privacy is more aligned with the intent of the Wilderness Act. If there is a high degree of privacy, wilderness visitors can freely choose how much and what type of interaction with others they want. In recent work, Cole and Hall (2008a) report results suggesting that solitude is valued but is often not viewed as critical to having a "real wilderness experience." Notably, solitude is not an "all-or-nothing" phenomenon; it can be intermittently experienced even in the most heavily-used places in wilderness (Hall and others 2007). Hammitt (in press) reviews our current understanding of wilderness privacy and solitude.

The other two experiential descriptors in The Wilderness Act, primitive and unconfined, have received far less attention in the literature. Primitiveness is often considered to be the ability to connect with raw nature absent the clutter of modern conveniences (Borrie 2004; Roggenbuck 2004). Thus, with recent advances in lightweight electronic equipment such as phones, GPS units and emergency beacons, questions about their impact in managing for primitiveness are growing (Martin and Pope in press; Shultis in press). Similarly, although an unconfined experience is one in which the visitor retains the internal locus of control over such decisions as where to go, what to do and how to behave (McCool 2004), it is also clear that wilderness management will sometimes, of necessity, restrict access and behavior.

Johnson and others (2005) explore how primitiveness, naturalness, remoteness and wilderness were defined by visitors to three wildernesses. Primitiveness was largely defined in terms of level of development and recreational impact on the environment. When experienced wilderness users were asked about primitiveness and unconfinement, primitiveness was defined in terms of a need to rely on one's personal skills and on the absence of obtrusive development and management. The most

prominent themes for unconfinement were freedom of access and lack of regulation (Seekamp and Cole 2009). While none of these attributes are unique to wilderness, in wilderness these attributes, in combination, take on unique importance.

Summary

One way to look at these differing approaches is to suggest that our understanding has shifted from telic to autotelic, from achieving desired and expected outcomes to emergent lived experiences and the formation of long-term relationships with settings and activities that lend meaning to life. While this may be the historic trend in research emphasis, moving from description to explanation, another way to look at this is to appreciate the ways in which our understanding of experience has grown from the seeds of relatively simple consumer satisfaction perspectives into a more mature set of branching models that support one another. Thus from the telic perspective, people generally have goals that motivate an experience, but they are rarely locked into those goals and in fact are often flexible and renegotiate their motives to suit the situation at hand (Cole and Hall 2008b). From an autotelic perspective, goals give the experience shape and purpose, but often the joy and pleasure comes as much from the creative, flexible, and ongoing pursuit of those goals as their eventual attainment (Omodei and Wearing 1990). Moreover, because the moment by moment quality of experience is short lived, as social and psychological beings we are compelled to organize our fleeting experiences into a coherent story or narrative that gives us meaning and helps us make sense of our lives as a whole.

Thus each model captures something essential about experience and each offers wilderness mangers potential insights as stewards of those experiences. Visitors care about the basic experiential ideals of wilderness (such as, solitude, primitive, and unconfined recreation) and these surely motivate participation even if they mean different things to different people. However, these ideas do not readily translate into precise standards because people creatively negotiate their experience as it unfolds. And beyond the immediacy of wilderness visits, visitors often form relationships with wilderness places and activities that become important aspects of their identities. This suggests that managers need to be good stewards (partners) in those relationships and not just focus on onsite experiences. Management actions, however well intended for protecting the wilderness resource and visitor experiences (such as use limits), need to consider the long term effects on these broader relationships. In addition, relationships are not only personal but are embedded in the larger cultural, technological, and environmental context that can affect the character and value of wilderness and the ways visitors interact with these places in the future (Dvorak and Borrie 2007).

In sum, studies of the nature of the experiences people have in wilderness illustrate how rich and diverse such experiences are, in terms of what people seek, perceive, and ultimately attain. In addition to being diverse and idiosyncratic, experience outcomes are to some degree adapted to suit the situation, and do not seem to be uniquely dependent on wilderness settings, making it difficult to conclude what is unique about a wilderness experience. For some visitors, wilderness may be just a particularly good place to have certain types of outdoor experience. For others however, wilderness is, in fact, seen as a unique setting in which to have the kinds of experience envisioned in the Wilderness Act. The next section provides an overview of what research shows about how various attributes of the wilderness setting shape those experiences.

Effects of Attributes on Visitor Experience

Most of the wilderness research on attributes that influence experience quality has been devoted to the effects of amount of use, as it was assumed that increasing use was the primary threat to quality wilderness experiences. Consequently, this section begins with a lengthy review of what has been learned about the effects of amount of use on the nature of the experience and experience quality. This provides an opportunity to illustrate the diverse approaches that have been employed regarding this issue. Research that has explored the influence of other attributes will also be reviewed, as will our understanding of variables that mediate the effects of attributes on experience.

Effect of Amount of Use on Experience Quality

The literature on the relationship between amount of use and experience quality is voluminous. Much of the early wilderness visitor research either emphasized or included this topic. Most studies have (1) used quantitative survey techniques, (2) been conducted after the trip—often as much as two weeks or more, and (3) required visitors to generalize about their entire trip—as opposed to individual events. In addition, the dependent variable of experience quality has usually been assessed on an ordinal evaluative scale, from good to bad, big problem to no problem, acceptable condition or not, without providing much insight into *how* experiences are affected. Despite this reliance on evaluations from post-trip questionnaires, some studies have used qualitative techniques; some have explored influences as they occur; and some have gone beyond scaled evaluations of quality to understanding how particular attributes affect the nature of the experience. Differences in approach also reflect the dependent variable selected, whether relationships are assessed under hypothetical or actual conditions and whether the ultimate independent variable is use density or some measure of interaction among groups (such as encounters).

Assessments of conditions encountered—Some studies have assessed, under actual conditions, the extent to which the quality of the entire wilderness visit (often referred to as total satisfaction) declines as use density or encounters increase. Between 1970 and 1972, Lucas (1980) conducted the first of a number of studies of the density-satisfaction relationship based on actual experiences in wilderness environments. In the eight wildernesses he studied, the relationship between use density and satisfaction with the total experience was either

weak or non-existent. Subsequent studies in other places have generally come to the same conclusion (see reviews by Kuss and others 1990; Manning 2011). In a few cases there is a statistically significant inverse relationship, but the magnitude of effect is never pronounced. Where r^2 has been used, density and encounter measures have never explained more than 10% of the variation in total satisfaction.

A second approach, also based on evaluations of actual conditions experienced on each visitor's trip, involves asking visitors to focus their attention only on use density and then evaluate this single attribute, rather than the entire experience. A number of studies have asked visitors how crowded they felt. Crowding is assumed to be a personal negative evaluation of use density. Theoretically, if solitude is important to wilderness visitors, higher use densities should result in increased levels of crowding which, in turn, should be associated with reduced experience quality or satisfaction. Numerous studies have found substantial levels of perceived crowding, but density or encounters typically explain less than 10% of the variation in crowding (Kuss and others 1990; Manning 2011). Moreover, most studies report little or no relationship between crowding and evaluations of overall experience quality (Dawson and Watson 2000; Manning 2011). Vaske and Shelby (2008) provide a thorough review of 30 years of research on the crowding construct.

Much work has been based on the commonsense conclusion that increasing use should result in increased crowding, which if it violates norms for encounter preferences should lead to support for limiting use. A good example of results that are inconsistent with these premises is provided by a longitudinal study conducted in the Apostle Islands (WI)—since designated as wilderness. This study used a panel approach, contacting the same visitors each measurement period, so changes should not reflect displacement of dissatisfied users. Between 1975 and 1985, perceived crowding actually declined as use level doubled (Kuentzel and Heberlein 2003). Visitors became more tolerant of encounters; their norms for preferred encounters more than doubled. Between 1985 and 1997, however, perceived crowding increased despite relatively stable use and stable norms for encounter preferences.

In other studies, visitors have been asked to evaluate the severity of problems with seeing other people. Without exception, such studies report that problems with the number of people encountered in wilderness are not substantial—even in the most heavily-used destinations in wilderness. For example, in a recent study conducted in 13 wildernesses in Oregon and Washington, when asked about large numbers of day users, the mean problem severity, on a scale from 1 (not at all a problem) to 7 (big problem) was 2.2 on moderate use trails and only 2.6 on the most heavily-used wilderness trails in those states (Cole and Hall 2008a). Clearly, encountering large numbers of people does not have a substantial adverse affect on most wilderness visitors and the magnitude of adverse effect is not highly sensitive to use density. In that same study, Cole and Hall (2008a) found that one's "sense of enjoyment" declined as number of groups encountered increased, but r^2 was 0.007 (less than 1% of variance explained) and an increase in encounter levels of 75 groups per day would cause just a 1 unit decrease in reported enjoyment on the 7-unit scale.

Numerous reasons for the apparent lack of relationship between amount of use and experience quality have been advanced. Some of these explanations have been methodological criticisms—particularly about lack of variation in total satisfaction measures, the need to remember how one felt several weeks ago, the need to condense an evaluation of an entire trip into a single rating, and, particularly, the limitations of generalizing across different individuals, many of whom may not be highly motivated to experience solitude. Wilderness visitors vary greatly in motivations, expectations and other characteristics likely to influence their response to any setting attribute such as use density (a subject reviewed in more detail below). The cross-sectional research designs used to address this issue have been unable to "factor out" all this variation. In essence, all the variation between individuals becomes "error", making it very difficult to detect relationships, within individuals, between density and experience quality.

In a study at Grand Canyon National Park (AZ), Stewart and Cole (2001) mitigated many of these methodological shortcomings by using on-site, daily diaries to study how the evaluations of individual visitors varied from day to day with use density. Analysis of resultant data showed highly consistent relationships between density and crowding, crowding and experience quality, and density and quality. Although consistent, the magnitude of influence was small. For example, for 60% of respondents there was a significant negative relationship between the number of groups encountered and experience quality—assessed using a five item measure modified from Ditton and others (1981). For 20% of respondents, there was a positive relationship between encounters and experience quality. For the average person with a negative relationship, encounters per day would have to increase from 1 to 80 per day to reduce quality 50%. Only five percent of respondents had strong negative relationships (defined as a slope greater than –1.0, equivalent to a 50% reduction in quality if encounters increased from 1 to 16 per day).

This study provides increased insight into the relationship between density and experience quality but does not alter earlier conclusions. For a very few people, use density has a strong adverse effect on experience quality. Some people respond positively as use density increases. Most wilderness visitors are adversely affected by meeting many other people but the effect of meeting many people on the overall quality of their experience is minor. Most people prefer to see few people—as the results of hypothetical studies indicate—but are not highly bothered when they cannot have their preferred experience.

Assessments of hypothetical conditions—Another approach is to ask visitors directly, but in a hypothetical manner, how they think different levels of interaction would affect their experience. Lucas (1964b) was the first to do this in wilderness—asking visitors to the Boundary Waters Canoe Area (MN) "how many canoeing and motorboating groups could you meet in a day before you would feel there was too much use?" As has often been found, results varied with who was asked as well as with the type of user encountered. Canoeists usually wanted to

see no motorboats and 0-5 canoes. Motorboaters usually said "no limit" for canoeists and 25-100 motorboats. This approach has since been operationalized in several different ways. Visitors have been asked about preferred numbers of encounters and maximum acceptable numbers of encounters. They have been asked to assess their likely response to different numbers of encounters, presented either verbally (Stankey 1973) or visually (Manning and others 1996). They have been asked to give their highest tolerable contact level (Shelby 1981).

In describing his results, Stankey (1973) casually described them as "norms regarding use encounters." It was Heberlein (1977), however, who proposed that the normative approach might be a worthwhile perspective for carrying capacity research. He promoted Jackson's (1965) return potential curve as a model for portraying visitor opinions about appropriate use levels as norms. Heberlein and Vaske (1977) subsequently developed return potential curves (later called impact acceptability curves) from visitor assessments of the "pleasantness" of encountering different numbers of groups. The point at which these curves crossed the neutral line—where the mean response to that number of encounters was neither pleasant nor unpleasant—was interpreted as a widely-shared encounter norm. This metric was proposed to represent the upper limit of what people will tolerate or accept (Vaske and others 1986), an interpretation that has been adopted in many subsequent research projects. Manning (2007, 2011) provides thorough reviews of results from research into norms related to amount of use.

Analysis of such data, referred to variously as satisfaction curves, preference curves, acceptability curves, or encounter norms, shows that most visitors prefer relatively low use densities and encounter levels. They perceive that their experience quality would be negatively influenced by large numbers of encounters and most are willing to identify a number of encounters beyond which conditions are unacceptable and managers ought to do something. These are the sorts of results originally anticipated by managers and many researchers, given that many people complain about encountering too many other people. However, it is important to note that (1) these are hypothetical self-reports, the validity of which has been questioned (Lee 1977; Williams and others 1992a) and (2) the dependent variable in this approach is "satisfaction with the number of people seen rather than satisfaction with the entire experience" (Shelby 1980). There is still little empirical evidence that encountering more people than one prefers (or considers acceptable) has a substantial adverse effect on the quality of most visitors' experiences. For example, among backcountry hikers in Great Smoky Mountains National Park (TN-NC), 61% of the respondents whose encounter norms were exceeded indicated that number of encounters did not detract from the quality of their experience (Patterson and Hammitt 1990).

Effects on what people experience—Relatively few studies have assessed the effect of any attribute on what people actually experience in wilderness. Lucas (1964b) found that visitors' sense that they were in wilderness declined as use density increased and, as noted above, studies have reported that people feel more crowded when use density is high. In a variation on this approach, Hammitt and Rutlin (1995) explored the relationship between encounters and "privacy achieved" among visitors to Ellicott Rock Wilderness (SC) and found that there was an inverse relationship between number of encounters and privacy achieved. They did not attempt to assess the extent to which visitors considered privacy achieved to be an important aspect of their experience. In Aravaipa Canyon Wilderness (AZ), Moore and others (1989) found that four of eight types of wilderness experience declined as social contacts increased: feelings of solitude, freedom and unspoiled wilderness, as well as the sense that no one had been there before. One's sense of discovery, security, untamed wilderness and danger were not affected by use density.

In a study of visitors to Auyuittuq National Park in Canada, Watson and others (2007) identified five prominent dimensions of wilderness experience. For two of these dimensions—taste of the Arctic and challenge and accomplishment, the degree to which these dimensions were experienced increased as encounters with others decreased. The paper did not report how substantial these effects were, however. Connection with nature, isolation in nature, and learning and appreciation did not vary with use density.

The most thorough study of use density effects on dimensions of experience was conducted in the Alpine Lakes (WA) and Three Sisters (OR) Wildernesses. The experiences of visitors to very high use trails (typically > 100 people/day) were compared with those of visitors to moderate use trails (typically 15-20 people/day) by asking about the degree to which each of 71 different experiences was attained (Cole and Hall in press a). Only nine of the 71 items were experienced more in less densely used places: a sense of being away from the modern world, a feeling of remoteness, a sense that surroundings were not impacted by people, solitude, not having solitude interrupted, peace and tranquility, quiet, getting away from crowds for awhile and feeling isolated. Most of these items are more descriptors of the setting and conditions that were encountered than of the psychological outcomes of encountering those conditions. For example, although visitors to very high use trails experienced less privacy than visitors to moderate use trails, there was no difference related to use level in ability to achieve the beneficial functions of privacy—release and personal growth (Cole and Hall 2010a). Nor were visitors to very high use trails any less able to experience the restorative benefits of a wilderness visit (Cole and Hall 2010b).

In a related study at Snow Lake in the Alpine Lakes Wilderness (WA), Cole and Hall (in press b) compared experiences of visitors on weekends (typically 200 people/day) to those of visitors on weekdays (typically 50 people/day). As they found elsewhere, use density had a much stronger effect on the setting attributes that people encounter than on on-site behavior, affective or psychological experiential outcomes or appraisals of the entire visit. Despite a four-fold difference in use density, perceived crowding was only 20% higher on weekends and the degree to which people were "annoyed" with other people was only 7% higher. Four of five experiential dimensions, absorption-connection to nature, rejuvenation, personal

accomplishment and personal reflection, were experienced to the same degree on weekends and weekdays. Only wildness-remoteness was experienced significantly more by weekday visitors than by weekend visitors and even for this factor the difference between weekdays and weekends was only 0.4 units on a 6.0 unit scale. Differences between high and low use times almost completely disappeared when visitors integrated their perceptions and concerns about other people with all the other aspects of their trip—most of which were positive, persistent and did not vary with use density. Interviews suggest that such positive attributes as Snow Lake's scenic beauty were both more important to the quality of the visitor experience and more enduring than the number of other visitors (Cole and Hall in press b).

Effects of the situational context and characteristics of those encountered—A number of studies, conducted both inside and outside wilderness, make it clear that the effect of use density on experience is influenced by both characteristics of those encountered and where encounters occur (Manning 2011). One common finding is that the adverse effects of encountering others is less when those encountered are perceived to be much like oneself (Lee 1977). Hence, people traveling in small backpacking groups are typically affected more when they encounter groups with horses than other backpackers and when they encounter large groups as opposed to small groups (Stankey 1973). Encounters also have a more adverse effect on experience when they occur in campsites rather than on the trail (Lucas 1980) and when they occur in remote parts of a wilderness (Stankey 1973), presumably where fewer people are expected or considered appropriate.

Effects of Other Attributes on Experience Quality

As the preceding paragraph suggests, use and user characteristics other than amount of use can influence experiences. Beyond attributes of the social setting, experiences can be affected by the biophysical setting and the managerial setting. Experiences can be influenced by personal attributes of wilderness visitors and by the events that happen on a trip. Although many of these influential attributes have received little empirical attention, some information can be gleaned from a handful of studies that have employed both quantitative and qualitative techniques, exploring both actual field conditions and hypothetical situations. Much more attention has been devoted to "problems"—attributes that detract from the experience—than to attributes that enhance experiences.

Assessments of conditions encountered—In a number of visitor surveys, visitors have been asked how they felt about the conditions they encountered, often on scales of "like" to "dislike" or "added to my experience" rather than "detracted from my experience." Often these questions focus exclusively on detractors and ask visitors to evaluate the severity of problems created by particular attributes. This approach has the advantage of asking visitors to judge situations they actually experienced on their trip but it can conflate attribute importance with the frequency with which an attribute is encountered. A potentially influential attribute might be overlooked simply because it was not encountered.

Studies have consistently found that the greatest source of dissatisfaction is litter (Stankey and Schreyer 1987; Moore and others 1989; Cole and others 1995; Hockett and Hall 1998). Most other "problems" are of slight importance and vary from area to area. Trail wear and tear, trampled areas from camping and walking, and impacts from recreational packstock were at least as problematic as large numbers of users in wilderness areas in Oregon and Washington (Cole and Hall (2008a). Noisy and inconsiderate groups were more of a detractant in the Shenandoah Wilderness (VA) than the number of people encountered (Hockett and Hall 1998), while close by in Shining Rock Wilderness (VA) large numbers of people were more problematic than rowdy, noisy or large groups (Cole and others 1995). Rules, regulations and other management actions are seldom considered to be much of a problem (Cole and Hall 2008a), but restrictions on access have been shown to displace wilderness visitors (Hall and Cole 2000). The most important positive effects on experience in the Shenandoah Wilderness—of those items asked about—were solitude, waterfalls and wildlife (Hockett and Hall 1998).

A richer understanding of influences, particularly positive ones, can be obtained through interviews. Hall and others (2007) conducted interviews at three popular destinations in the Mt. Jefferson (OR), Eagle Cap (OR) and Alpine Lakes (WA) Wildernesses. When asked "what has been key to your experience out here," positive influences were mentioned much more frequently than negative influences. The most prevalent positive influences—mentioned by two-thirds of visitors—were aspects of the natural environment, the fact that it was scenic, undisturbed, with natural smells and sounds. Other commonly mentioned positive influences were peace and quiet, relatively few other people, good weather, engaging in activities one enjoys, and positive interactions within one's own social group.

Although about 60% of participants mentioned at least one negative influence on their experience, only a few attributes were mentioned by more than a few people. Bad weather, bugs and fatigue or sore feet—attributes managers cannot control—were mentioned by about 20 percent of participants. The one common negative influence subject to managerial control—crowding and rude or inappropriate behavior—was mentioned by 26% of participants. Other negative attributes mentioned by a few people were airplanes, horses, regulations, litter, campsite impacts and illegal behaviors, such as having campfires where they are not allowed.

In addition to negative attributes being less-frequently mentioned, interviewees often downplayed negatives, noting that "they weren't that big a deal." As some research suggests, experience quality can be enhanced by the overcoming of conditions that are unexpected or even undesirable (Patterson and others 1998). Another insight from the interviews—suggesting why negative attributes seldom are judged to be much problem—regards the temporal distribution of positive and negative influences. Typically, wilderness visitors are perpetually surrounded by substantial positive influences, the natural

environment, peace and quiet, engaging in enjoyable activities and interacting with other group members, while negative influences are generally confined to isolated instances.

Assessments of hypothetical conditions—Visitors have also been asked to evaluate the importance of different attributes regardless of whether they were problematic on their recent wilderness visit. Evaluations are hypothetical (relevant to how respondents *might be* affected) rather than actual (relevant to how respondents *were* affected). Roggenbuck and others (1993) asked visitors to the Caney Creek (AR), Cohutta (GA) and Rattlesnake (MT) Wildernesses how much they "care about" such attributes as "the amount of litter I see" and "the number of hikers who walk past my campsite." With the exception of "number of wild animals" seen, they focused on negative attributes. The most important attributes were site impacts, particularly litter and tree damage at campsites, and human-caused noise. Wild animal sightings were also important, and encounters with other groups were less important. At Aravaipa Canyon Wilderness (AZ), Moore and others (1989) also found that litter was a major experience detractor, along with graffiti, feces and low-flying aircraft. Seeing animals, along with opportunities for recreational activities, was a major experience enhancer.

One criticism of this approach is that respondents have little guidance regarding what conditions they are evaluating. When asked about tree damage, are they imagining a clearcut or a few nails in trees? To overcome this limitation, Cole and Hall (2009), in the Alpine Lakes (WA) and Three Sisters (OR) Wildernesses, provided three levels for each attribute (for example, "no litter," "a few pieces of litter," and "lots of litter in many places"), asking for ratings on a scale from "adds a lot to the experience" to "detracts a lot." Moreover, they reasoned that the most important attributes were those with the largest variation in evaluations among levels. Again, litter was rated the most important attribute. Human sounds were considered a major detractant and wildlife sightings added substantially to the experience. In these places, the level of interaction with people outside one's own group at campsites was considered to have a substantial adverse effect on experience quality.

Effects on what people experience—Less is known about how many of these attributes influence what visitors actually experience. At Aravaipa Canyon Wilderness (AZ), Moore and others (1989) report that the presence of human feces or toilet paper substantially reduced one's experience of both untamed wilderness and unspoiled wilderness. This ability to experience untamed and unspoiled wilderness was reportedly not affected by evidence of campfires, damaged trees and vegetation, livestock manure, wildlife, low flying aircraft and firerings. The presence of litter, livestock manure and damaged trees and vegetation affected one's "feeling that no one had been here before," while feces, campfires, fire rings and wildlife did not. None of these attributes influenced feelings related to discovery, danger or security.

Although not working in wilderness, Lynn and Brown (2003) asked respondents to assess the effect of six recreation impacts (trail erosion, trail widening, trail muddiness, tree and plant damage, fire rings and litter) on each of four dimensions of experience: solitude, remoteness, naturalness and artifactualism (absence of human impact). Litter was reported to have the greatest adverse effect on all experience dimensions, while trail muddiness detracted least. Effects on artifactualism were most pronounced, while effects on solitude were least pronounced. From interviews with canoeists at Juniper Prairie Wilderness (FL), Watson and Roggenbuck (1997) identified four important dimensions of the wilderness experience: interaction with nature, challenge/primitive way finding, interaction with people and timelessness. Details from the interviews suggested attributes that influence these experience dimensions. For example, dealing with overhanging trees along the canoe route and wildlife sightings were often mentioned as major influences on interaction with nature.

On-site wilderness experiences can also be affected by off-site attributes. For example, at Auyuittuq National Park in Canada, Watson and others (2007) report that visitors' ability to experience two important dimensions of experience—taste of the Arctic and connection with nature—was dependent on the quality of pre-trip planning information.

Effects of visit and visitor characteristics—Although mostly anecdotal in nature, peoples' experience will clearly be affected by visitor characteristics (such as individuals' motivations and expectations), visit characteristics and even events that happen on the trip that are unrelated to setting attributes. Whether weather is good, bad or even life-threatening will have a profound effect on experience. Or consider the difference in experience of a group that is constantly bickering and fighting, in contrast to a group that builds life-long bonds of intimacy on the trip. Events not within the control of management are among the most profound shapers of the nature of experience and its quality, reinforcing the conclusion that managers cannot ensure that certain experiences will be attained or that visitors will be satisfied with their experience. They can only provide setting attributes that will protect opportunities for the types of experiences most enhanced by those particular setting attributes and information likely to prepare visitors for what they will experience.

Mode of travel also has a profound effect on experience. The experience of someone traveling on horseback must be different, at least in some ways, from someone who is backpacking. Experience will also be affected by whether one is visiting alone or in a group and whether the group consists of friends, family or other members of some educational or therapeutic group. Although experiences of different types of group have been studied (Ewert and McAvoy 2000; Dawson and Russell in press), comparative studies of experience are lacking.

One visit variable that has received some empirical attention is length of stay. Borrie and Roggenbuck (2001) explored how experience varies among phases of a wilderness trip, a diversity and richness of experience that is only possible on longer wilderness trips. Cole and Hall (2008a, in press a) asked both day and overnight visitors to wildernesses in Oregon and Washington the degree to which they attained certain experiences. There were more significant differences in experience related to length of stay than to amount of use. Overnight visitor

assessments of experience attainment were higher than day user assessments for all attributes that differed significantly, with the exception of relaxing physically and getting exercise. This suggests that length of stay may influence the intensity of experience more than the types of experience that are attained. Nevertheless, there are clearly certain experiences, such as setting up a tent or watching the night sky, that are largely restricted to overnight visitors.

Mediating Effects of Visitor Characteristics

Studies conducted both inside and outside wilderness show that the effect of use density and other attributes on experience varies greatly among individuals. That is, attribute effects on experience are mediated by the personal characteristics of visitors (Manning 2011). Indeed, it is important to remember that "experience is not merely a psychological *reaction* to the setting (in a stimulus-response sense), but something *created* by the individual or group through active engagement with the setting (Williams 2007, p. 30). As was discussed earlier, particularly important are visitors' motivations and expectations, prior wilderness experience, and place attachment.

It stands to reason that use density, for example, would be a more salient attribute for someone motivated to experience solitude and tranquility than for someone whose primary motivation for visiting wilderness is to get exercise. Indeed, a number of studies have shown that the effect of use density on experience is mediated by people's motivations. For example, in Yosemite National Park (CA), although use density explained only 7% of the variation in perceived crowding, the addition of experiential motives increased the explained variance to 23% (Absher and Lee 1981). In Oregon and Washington wildernesses, Hall and others (2010) clustered visitors into three groups based on motivations and wilderness involvement. For visitors with low levels of involvement and wilderness-oriented motives, the number of groups encountered had no effect on experiencing enjoyment, a sense of being in wilderness, solitude or freedom. For highly wilderness-involved and motivated visitors, all four of these experiential qualities diminished as number of encounters increased. An intermediate cluster experienced decreased solitude and sense of being in wilderness, but no difference in enjoyment or freedom.

One's attitudes toward wilderness and the extent to which they are congruent with the values espoused in the Wilderness Act—sometimes referred to as wilderness purism—are also important mediators. In the Cohutta Wilderness (GA), wilderness purists were particularly concerned about—and therefore more likely to have their experience affected by—a range of attributes reflective of human impact, natural features and processes, solitude, management confinement, primitive travel and management-aided travel (Shafer and Hammitt 1995).

The mediating effects of prior wilderness experience are more complex. It has been postulated that more experienced users should be more sensitive to attributes such as use density and low levels of impact, because more experienced users have more refined tastes and were able to experience places before they became crowded or impacted (Manning 2011). However, with experience comes more realistic expectations and one's expectations strongly mediate the influence of attributes. In the backcountry of Denali National Park, for example, the variation in perceived crowding explained by expected encounters was substantially greater than that explained by actual encounters (Bultena and others 1981b).

Indeed, results regarding the mediating effects of experience have been inconsistent. Manning (2011) suggests that most studies have found that sensitivity to use density increases with experience. However, prior experience had no effect on sensitivity to use density in studies conducted in Yosemite National Park (Absher and Lee 1981), or the Lee Metcalf (MT) and Desolation (CA) Wildernesses (Stankey 1980). In the Alpine Lakes (WA) and Three Sisters (OR) Wildernesses, more experienced visitors were much more sensitive than less experienced visitors to the influence of many different attributes on their experience, from litter to human sounds and campsite proliferation (Cole and Hall 2009). However, prior experience had no effect on perceptions of wilderness conditions in the High Peaks (NY) and Pemigewasset (NH) Wildernesses (Peden and Schuster 2008).

One's symbolic and emotional relationship to place can also mediate influential effects on experience. As with the effects of prior experience, effects of place attachment are complex, involving increased sensitivity, more realistic expectations and a lack of options for substitution. In the Caney Creek (AR), Cohutta (GA), Upland Island (TX) and Rattlesnake (MT) Wildernesses, Williams and others (1992b) found that visitors who were more sensitive to ecological impacts and horse encounters were more place attached than less sensitive visitors; however there was no relationship between place attachment and sensitivity to sight and sound intrusions or hiker encounters. Sensitivity to all four types of impact was more strongly related to attachment to wilderness generally than to place attachment.

Place identity, one's symbolic and emotional attachment to place, differs from place dependence, the functional values of a place to an individual (Manning 2011). In a study conducted on the Appalachian Trail, hikers with high place identity scores were more sensitive to a wide range of adverse effects on experience: trail development, user impact, depreciative behavior, perceived crowding, user conflict and human encroachment (Kyle and others 2004 a, b). However, those with high place dependence scores evaluated these conditions less negatively, Conceivably, those with high place dependence acquiesce to conditions, since they perceive there are no other places they can go. At Table Rock Wilderness (OR), White and others (2008) found no relationship between either place identity or place dependence and perceptions of recreation impacts.

Coping Behaviors and Human Adaptability

Humans are highly adaptable and they learn to cope with adverse conditions in wilderness, as they learn to cope elsewhere. This adaptability can explain why the same people who complain about crowding and who encounter conditions that differ substantially from what they prefer or consider

acceptable, still consider such conditions to be only a minor problem and do not support use restrictions intended to improve conditions. Reviewing a series of studies in Oregon and Washington wilderness, Cole and Hall (2008b) estimate that 25-30% of wilderness visitors do not care much about the use levels they encounter in wilderness, probably because they are not looking for solitude. Another 5-15% are highly bothered—enough to potentially be displaced at certain times from crowded places. Most visitors are adaptable, however. They would rather not encounter high use densities, but they do and in response "they learn; they plan; they adjust their expectations; they cope; they rationalize; they view things in relative terms—rather than absolutes—they say "this place offers more solitude than Seattle" rather than "this place provides no solitude;" they make trade-offs" (p. 129).

Empirical studies in wilderness show that visitors frequently use coping strategies. In the Desolation Wilderness (CA), 44% of visitors were either temporally or spatially displaced. They changed the length or route of their trip to avoid overuse (Stankey 1980). Subsequent studies suggest that many visitors make minor adjustments to their temporal and spatial use of wilderness—avoiding crowded places on weekends if they can, moving a little further down the lakeshore to get away from crowds, or selecting a trail other than the most crowded one (Hammitt and Patterson 1991; Johnson and Dawson 2004; Hall and Cole 2007). However, intersite displacement is rare (Kuentzel and Heberlein 1992). In Oregon and Washington wildernesses, only 3% of visitors reported they had completely stopped using any place in wilderness because it was too crowded, with another 4% being displaced by some other use-related condition or experience, usually stock use, vandalism or rude, inconsiderate behavior (Hall and Cole 2007).

Visitors also use a variety of cognitive coping strategies when they encounter conditions that are incongruent with their desires. They can alter their expectations, a process referred to as "product shift" (Heberlein and Shelby 1977). Or they can employ a wide array of rationalizations for suboptimal conditions, including avoiding the problem, minimizing its severity, making positive comparisons or trying to turn a negative into a positive, and acquiescing to the situation (Schuster and others 2006; Cole and Hall in press b). Visitors who are more sensitive to crowding and have lower encounter norms were more likely to use coping behaviors in Great Smoky Mountains National Park (TN-NC) (Hammitt and Patterson 1991). This might explain the surprising finding that those employing coping strategies were less satisfied with their experience (Johnson and Dawson 2004; Schuster and others 2006).

Summary

Although much remains to be learned about the processes by which visitors experience wilderness, there can be no doubt that many attributes encountered on the visit profoundly affect the nature and quality of wilderness experiences. This is true whether one views experience more as a reaction to the setting or something created through engagement with the setting. However, the idiosyncratic nature of experience makes generalization potentially misleading. For one visitor, encounters with others may destroy the experience, while someone else may find encounters enjoyable. The same person might find one encounter positive and another negative. An expanse of alpine tundra might be beautiful to one person and distasteful to another, a source of inspiration for one person and a source of fear for another. Nevertheless some broad generalizations seem warranted.

First, wilderness managers have relatively little ability to control most of the things that most profoundly affect wilderness experiences. Through the provision of pre-trip information they can perhaps have some influence on the motivations, expectations and attitudes that each person brings to the wilderness engagement, but they cannot control many of the things that transpire on the trip—weather, within-group social interactions, and so on. Even among setting attributes, many of the most important attributes—the flora and fauna, free-flowing waters, natural sights, and smells and sounds—are not subject to managerial control. Given this, one important insight is that managers can only protect settings and, by doing so, provide opportunities for particular kinds of experiences. They cannot provide, protect or guarantee that everyone will have certain experiences. In the language of the Wilderness Act, they can provide outstanding opportunities for solitude but they cannot guarantee that everyone will experience solitude.

Second, although high use density and use-related impacts, particularly litter, are probably the most serious threats to experiences that are subject to managerial control, positive influences on experience are much more prevalent than negative influences. Moreover, the attributes that positively influence experience—changing views, connecting with nature, interacting with one's social group, and many more—tend to be persistently present throughout much of the trip, whereas most negative influences occur infrequently and for short duration. This difference in the temporal distribution of positive and negative influences may have much to do with the fact that even attributes visitors complain about, such as crowding, are seldom considered substantial problems and have little effect on the overall quality of visitors' experience. As long as management does not do things to disrupt the ability of people to experience the natural environment in a primitive setting, in the company of others in their social group, virtually all visitors will have what they consider to be positive and high quality wilderness experiences.

Third, most wilderness visitors are highly adaptable and able to cope effectively with suboptimal conditions. They learn about the conditions they are likely to encounter and either adjust their expectations or they choose less crowded times or places, if this is convenient and better meets their needs. Once on-site, they adapt behaviorally and cognitively to what they encounter, minimizing the degree to which negative influences detract from the overall quality of the experience. As was explored in the section on the nature of wilderness experiences, experience quality is more than the degree to which a visitor's expectations are met. "People make their own experiences, they shape and adapt the situation, and they employ skills and knowledge to create their own satisfaction" (Williams 2007, p. 38).

Stewardship of Visitor Experiences

The primary contributions of wilderness researchers regarding actions managers should take to protect wilderness experiences have involved development of decision-making frameworks, typologies of management strategies and the organization of experiential knowledge about these strategies (Manning and Lime 2000; Dawson and Hendee 2009). Little empirical research has been conducted on the efficacy of particular protective strategies, to a substantial degree because there is little consensus on what protection of experience quality means. There have been studies of the efficacy of actions with more narrowly-defined goals. For example, if it is assumed that visitor experiences are better protected when use is widely distributed rather than concentrated, there has been work on the efficacy of actions designed to disperse use (Roggenbuck and Berrier 1981; Krumpe and Brown 1982).

Visitor attitudes toward management actions have been well-studied. Although attitudes vary some from place to place and substantially among individuals, several generalizations seem warranted. First, not surprisingly, there is much more support for actions that are not restrictive (such as education) or that only restrict certain groups (such as limits on large groups or on stock) than there is for restrictions that affect everyone (such as use limits). There is also more support for restrictions on behavior than restrictions on access (Cole and Hall 2008a). Second, restrictions are supported more in concept than in reality. For example, in a question asked in many different wildernesses, majorities always agree that "limits on use should be imposed in the future when overuse occurs." However, even in some of the most heavily-used wildernesses in the system, there is little support for limiting use now (Cole and Hall 2008a). Visitors are also more likely to support restrictions for the purpose of limiting environmental impacts than to protect visitor experiences (Cole and Hall 2008a). Third, most visitors are highly supportive of the current management regime, regardless of what it is. For example, despite general lack of support for implementing use limits where access is currently not restricted, most visitors to places that have use limits support those limits (Bultena and others 1981a). This reflects, in part, the fact that those people least tolerant of or capable of dealing with restrictions have been displaced (Hall and Cole 2000).

Science and Management

Despite the 50 years of research on wilderness experience reviewed in this paper and other papers in these proceedings, wilderness managers still struggle to decide how to protect the quality of visitor experiences and keep asking for new research to help them with such decisions. This may be asking too much of research, however (Williams 2007). Managers often make the mistake of assuming too much responsibility for experience quality by failing to recognize the degree to which visitors create their own experiences. To return to the notion of situated freedom introduced earlier, managers can try to maintain some basic setting conditions for the kinds of experiences that wilderness should provide (such as solitude and primitiveness) without prescribing precise limits on conditions and visitor behaviors. Part of the manager's task is to find ways to enhance the capacity of visitors to create their desired experiences and adapt to the varied conditions they encounter. In this sense, a quality experience is not a preformed deterministic result of setting conditions; it can only be understood in the context of the skilled improvisational performance by which the visitor responds to the conditions encountered.

Reframing experience as being reflective of performance suggests different strategies for enhancing wilderness experiences. Rather than having management focused almost exclusively on managing setting conditions, managers can devote greater attention to visitor preparation and skill development that allows them to optimize their performance in a wide range of conditions—through the provision and management of information. Although providing information is a well-established management technique, most of the information provided is designed to persuade visitors to behave in the way managers want them to behave (such as practicing Leave No Trace)(Manning 2003). More attention should be given to providing information designed to enhance experiences in wilderness, information that can positively influence motivations, expectations and attitudes, and possibly even shaping the information that visitors receive. Too much information, of particular kinds, can decrease opportunities for self-discovery and self-sufficiency, for example.

We also should recognize that managers are effectively stewarding wilderness experiences by not doing many of the things managers do elsewhere. Connecting with nature in scenic and undeveloped landscapes, in the company of one's own group, are the central components of a quality experience in wilderness (Hall and others 2007). All managers have to do to facilitate this is to not allow uses that are generally prohibited in wilderness (such as logging and motorized use), not build developments or facilities and provide access for recreation. We say this not to suggest that managers do nothing active to steward experiences but to recognize that much that is valued about experiences follows from simply not permitting many of the things that are generally not allowed in wilderness.

Williams (2007) points out that managers often seek technical solutions to what really are social and political conflicts over meanings, values, and uses, conflicts more likely to be resolved by bringing citizens together to work out their differences than through research on wilderness experience. "A greater appreciation is needed of the limits of a research approach to solving specific management problems in specific situations" (p. 38).

Who and What to Manage For

Two of the primary conclusions of the research reviewed in this paper illustrate the limitations of science in answering questions about how to protect visitor experiences in wilderness. Studies of the nature of the experiences people have in wilderness illustrate how diverse, situational, and idiosyncratic they are. Experience varies greatly in terms of what people

seek, attain and create, as well as what it means to them. One person's definition of quality differs from another person's definition. Appreciation of this variety has only increased as researchers explore the process by which experience is created, apply a relationship metaphor to understanding experience and delve more deeply, through in-depth interviews, into the meanings people attach to experience. But given this diversity of experience and opinions about what constitutes quality, how do managers decide who they are managing for?

Another important conclusion of this review is that wilderness visitors—like all humans—are highly adaptable. Although adaptability does contribute to human well-being, given the inevitability of change in the world, it does complicate questions about how to protect high quality wilderness experiences. As Dustin and McAvoy (1982) point out, the adaptable nature of humans guarantees that "regardless of the types of opportunities provided, a majority of recreationists will be satisfied with them" (p. 53). If wilderness visitors will be satisfied almost regardless of what management does, how do managers decide what they should be managing for?

Managers have several options regarding decisions about who and what to manage for in terms of visitor experiences. They can base management on tenets of the Wilderness Act and protect setting attributes that should ensure outstanding opportunities for solitude and primitive and unconfined recreation. This might mean, among other things, maintaining low use densities and minimal levels of development, regardless of what visitors want. Another option is to identify wilderness purists and then, through visitor surveys, identify the experiences and setting attributes purists think are appropriate and manage for these. The outcome of this option is not likely to differ practically from simply managing according to the tenets of The Wilderness Act, without relying on visitor studies. This approach seems vulnerable to the criticism Burch (1981) levied against carrying capacity research as one of "organized irresponsibility where managers point to the 'scientific' data as reason enough for their preferred decisions, and the scientists have the pleasure of both defining and 'proving' the value of certain wildland policies held by personally compatible social strata" (p. 224).

Managers could give preference to the average visitor, for example by using the results of normative research and defining standards on the basis of averages. This approach seems vulnerable to the criticism that the average visitor does not exist and, if values are widely divergent, managing for the central tendency may not protect anyone's values (Shafer 1969). Another option is to manage for any of many segments of visitors that might be identified through some sort of cluster analysis. But which visitor type should managers give preference to? Science can help managers approach this question, frame it and think through options, but science cannot provide a definitive answer.

Given their mandate to serve all people, it may seem undemocratic to decide who and what to manage for. This dilemma can be alleviated by embracing public engagement and providing more options for constituency collaboration in decision-making. Research can contribute by improving our understanding of different constituencies, with varied relationships to settings and divergent ideas about quality experiences and by developing and evaluating more participatory approaches to management (Williams 2007). Equally important is managing for diversity—with the goal of providing as diverse a system of appropriate environmental settings as possible (Dustin and McAvoy 1982) or a system of diverse settings that meets the needs and desires of a diverse population. This does not alleviate the need to decide, for specific places, which visitor group to give preference to and what conditions to manage for. But if different decisions are made in different places, in a coordinated manner that meets the needs and desires in the population, protection of quality should be ensured (Cole 2011).

Once managers and policymakers get beyond the hope that science can help them make political decisions about who and what to manage for—and they find some other means of making such decisions—the insights from wilderness visitor studies can better contribute to decision-making. Although much more remains to be learned, 50 years of research has enriched our understanding of the variety of visitors out there, the diverse ways they experience wilderness, and the wide-ranging ways such experiences enrich their lives and well-being. It provides insight into the types of settings that protect and enhance certain types of experiences and the likely efficacy of actions that might be taken to steward settings and experiences.

Managing for Solitude

Much of the controversy regarding stewardship of wilderness experience revolves around the issue of managing for solitude. Should managers restrict and limit use in order to protect against the erosion of opportunities to experience solitude? Since no other topic or question has received as much attention in the visitor experience literature, we conclude this review with our view of what research on this topic implies regarding management. This topic provides an example of the limitations of science and the confusion between technical solutions and socio-political decisions. The results of visitor studies can and have been used to bolster arguments for restricting and limiting use. Many of the studies reviewed earlier indicate that where use density is high, many wilderness visitors feel at least somewhat crowded, report that their solitude is periodically interrupted and that conditions are less than ideal. Their preferences and norms for encountering other people are often violated. Other results—sometimes from the same studies--bolster arguments against restriction, however. Problems with too many other people are seldom considered even moderately severe. Use density has little effect on evaluations of experience quality. And relatively few visitors support limiting use to protect solitude, if they are informed that their ability to gain access will be affected. Interviews suggest that when visitors consider the costs and benefits of use limitation, most conclude that costs (restricted access) exceed the benefits (a low use density experience).

The results of visitor studies also suggest likely explanations for these seemingly divergent conclusions. Despite its centrality

in the language of the Wilderness Act, most people consider a high degree of solitude to be less critical than experiencing scenic, natural-appearing, undeveloped landscapes and having meaningful interactions within one's own group. These latter experiences are pervasive and ever-present, in contrast to the episodic nature of having one's solitude interrupted. Moreover, they can be attained as long as access is provided, essentially regardless of use density. Most people learn to adjust their motivations and their expectations for what they will encounter and to cope with what occurs. A detailed reporting of results—going beyond measures of central tendency—show that these conclusions do not apply to everybody. Although the majority of visitors who encounter high use densities in wilderness oppose use limits to reduce densities and increase opportunities for solitude, some visitors support limits. Some visitors are highly motivated to experience uninterrupted solitude and report that their wilderness experience is severely degraded by having to cope with crowded conditions.

To generalize across visitor studies, a high degree of solitude and the very low use densities that facilitate solitude are desired but not critically important to most wilderness visitors. Most visitors prefer the freedom to choose where and when they can visit wilderness to having managers ensure opportunities for a high degree of solitude by limiting use. This leaves managers of places where use pressure is high with a difficult decision. Should they manage for the wishes of the majority of visitors and not limit use or should they maintain very low use densities, by limiting use, even if only a minority of users supports this approach? The rationale for the latter choice would be that the Wilderness Act mandates a setting characterized by a very low use density, regardless of the opinions of most users. Of course, this does not have to be an all-or-nothing decision. Perhaps use limitation could be implemented only in the places with the very highest use densities. Few would argue with the need for use limits on Mt. Whitney (John Muir Wilderness), on the Middle Fork of the Salmon River (Frank Church-River of No Return Wilderness) or popular entry points in the Boundary Waters Canoe Area Wilderness. In addition, different choices can be made in different places. Most of the wilderness system is likely to remain lightly used without use limitation. But perhaps use limits should be implemented even in some lightly used wilderness to provide extremely low use density opportunities. Conversely, perhaps use should be limited in some popular wilderness areas and avoided in other popular areas, to provide ready access to the benefits wilderness recreation provides.

Fifty years of visitor experience research has clarified these choices and improved our understanding of the likely consequences of management choices—what is likely to happen, who will benefit, and whose interests will be harmed. However, the ultimate decision is political rather than technical, reflecting a choice among values. Finally, we should note that these decisions are not trivial; they will determine the types and magnitude of benefits that flow from wilderness. We lament the fact that almost 50 years after passage of the Wilderness Act, there is still little meaningful policy to help wilderness managers make these decisions (Forest Service 2010). Rather than being made on the national stage, decisions are left to the discretion of low- to mid-level managers, who struggle with personal biases and political pressures to make wise decisions. In our opinion, this policy vacuum is a much greater barrier to progress in visitor experience stewardship than the need for more science to assist in policy development.

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Continued Wilderness Participation: Experience and Identity as Long-term Relational Phenomena

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Abstract—Understanding the relationship between wilderness outings and the resulting experience has been a central theme in resource-based, outdoor recreation research for nearly 50 years. The authors provide a review and synthesis of literature that examines how people, over time, build relationships with wilderness places and express their identities as consequences of multiple, ongoing wilderness engagements (that is, continued participation). The paper reviews studies of everyday places and those specifically protected for wilderness and backcountry qualities. Beginning with early origins and working through contemporary research the authors synthesize what diverse social scientists have learned about the long-term and continual nature of wilderness participation and its impact on the formation of identity. The thrust of the paper points researchers, planners, and managers in non-traditional directions and reframes goals and objectives for visitor planning and management in wilderness and other protected areas.

Introduction

This synthesis highlights temporal aspects of experience. Time is an inescapable dimension of all human experience and activity (Heidegger 1962; Munn 1992: 93). It allows people to visit places such as wilderness on a regular and ongoing basis if desired, and in the process, meaningful place relationships may be built and nurtured. We examine experience and identity in terms of ongoing interactions with places and other people throughout one's life, and in all one's activities (Codina 2003: 239). Similar to home, religion, career, family, or hobby we suggest that wilderness experience comprises a long-term source of identity for people who participate on a continuing basis. We offer an interview excerpt taken from Brooks and others (2004) to illustrate continued participation and ongoing experience, setting the stage for the discussions that follow.

> ***Researcher***: Would you say… that wilderness is important to you? ***Participant***: Yes, I would in a lot of ways… Gosh one of the things we were just talking about the other day that comes to mind in wilderness is the sense of slowing down… I live in Denver; it is a necessity to get away from all that and slow down and remember the speed at which things really happen… is geologically slow. I think that it's hard to get that experience in the city… the sense of really slowing down and just going where you go. [It] tends to help me bring that back to the city… the reminder of what is important, the scale of things, and the importance of preserving what we have. I mean it tends to carry all my conservationism back. It sort of comes back again for me, and I definitely get that as a result of being in the wilderness.… There really is a spiritual component that is really hard to define. I've been working on that one for years. I couldn't find a way to put it into words on any given day. But, my husband and I got married on an overlook, overlooking Rocky Mountain National Park—way outside sort of the traditional organized religion paradigm; there is something both humbling and expansive about being out in wilderness. I also think that it is important to take that back to my daily life.… ***Researcher***: Is your spirituality related to these types of settings? ***Participant***: Yes, definitely... it links into a lot of aspects of my life. It's got this trickle down effect where I find things like my commitment to recycling feels like a spiritual act… a mitzvah or something like a religious commandment. It's the determination to conserve water—all these things, I really pick them up when I am out here… getting out in the wilderness reminds me of how important it is ... it permeates a lot of aspects of my life. I'm a quilter; it gets into my quilting, the relationships that I have with people. I think that it gets into an awful lot of things.… ***Researcher***: Are there any particular places that have special importance for you? ***Participant***:… Glacier Gorge is part of the park that I know best. I've traveled it the most.… It's fairly accessible. So it's always kind of miraculous when you get up there on a quiet day. I've been up there in the winter. I've been up there in the summer and the fall… it's easy to get there and do a quick day trip. ***Researcher***: Do you associate Glacier Gorge with family, friends, memories, or beliefs? ***Participant***: Yes, some specific memories, I mean my husband and I have spent a lot of time there, so it is very much wrapped around my little nuclear family now, not so much my family of origin. Although, the day after our wedding—the biggest hike I've ever been on—probably 16 or 17 people from our wedding party went up as far as Mills Lake, and lunched by the lake. It was pretty neat. Both of our Dads were there, some of our cousins, a lot of our friends… are also big hikers, so it was a very comfortable space for them. It was great to bring some people who hadn't really been up here before. A big part of the sort of spiritual aspect

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> of the ceremony itself was for us to commit ourselves to the state of marriedness and to the rootedness of being married in this particular place on the land.… then actually to bring those people with us, and show them: This is what we are talking about… not just get the post card view, which we got at the wedding site, but to say now we're going to walk in it and run into the possibility of rain and get sore feet, and we are going to get tired and just the whole experience… of being up there… and also just great conversations that have happened over the years [on] different hikes…

For this person, the experience of the park, which is partially managed as wilderness, is a progression or continuing process that both contributes to and is interwoven with her sense of identity, well being, and relationships with others in her life. Being there clearly affects her everyday life outside of wilderness in meaningful ways, an observation supported by previous research in both wilderness (Pohl and others 2000) and long-term adventure recreation (Boniface 2006). She does not talk about being in wilderness as a discrete experience or encounter, but as an organizing narrative in the story of her family life. We conceive of continued wilderness participation, and the accumulated experiences tied to it, as a process of building and maintaining (affirming and adjusting) a coherent identity narrative—a story about oneself—that structures and infuses one's everyday life with meaning. This viewpoint contrasts with much prior research on wilderness experience, which has tended to focus on discrete recreational uses or trips in wilderness and related outcomes such as satisfaction and a myriad of other personal benefits (Borrie and Birzell 2001; Roggenbuck and Driver 2000).

The central question that we examine in this paper is how people, over time, build relationships and express their identities through experiences in places such as wilderness or other protected areas and what this means for those who study and manage these places. Beginning with early origins and working through contemporary research in a number of areas, we review what social scientists have learned during the last 50 years about the long-term nature of wilderness experience and its relationship to identity. We conclude with a discussion of implications in which we reframe goals and objectives for research, planning, and management to better account for continued wilderness participation.

Early Origins

Understanding the relationship between wilderness outings and the resulting experience has been a central theme in resource-based, outdoor recreation research for nearly 50 years. A number of temporal perspectives (that is, those accounting for variation over time) emerged out of the research conducted to support the Outdoor Recreation Resources Review Commission (ORRRC) reports in 1962. Perhaps the best known is the Clawson and Knetsch (1966) suggestion that recreation experiences were not limited to that which occurred at the recreation site, but also involved anticipation, travel to, travel home, and recollection. Despite its conceptual appeal, it received relatively little systematic attention in the research literature until much later (see Hammitt 1980; Stewart 1998). This idea has been broadened to investigate the multi-phased (for example, entry, through immersion, to the exit phase) and dynamic nature of onsite recreation or wilderness experiences (Borrie and Birzell 2001; Borrie and Roggenbuck 2001; Hull and others 1992; Hull and others 1996; McIntyre and Roggenbuck 1998). Hall and Cole (in press) addressed the topic of immediate conscious experience of wilderness. Another important temporal perspective involves research on the effects of multi-day educational and therapeutic uses of wilderness (Gibson 1979; Kaplan 1974). This topic is examined by Dawson and Russell (in press). Our focus on wilderness as a continuing pattern of recreation experience has its roots in three other lines of research that have examined patterns of leisure participation across the life course: socialization models, specialization models, and Experience Use History. All three perspectives emphasize how participants learn and refine wilderness behaviors and experiences and how, over time, such learning influences identities and attitudes.

Socialization into outdoor recreation patterns was a major focus of the ORRRC reports as it was seen as an essential tool to forecasting recreation demand into the future. In this context, socialization refers to the acquisition of the knowledge, attitudes, skills, norms, and communication and interpretive repertories that shape recreation preferences, participation, and identity (Kelly 1974). Initial attempts to examine socialization looked at demographic patterns of participation. The presumption was that demographic characteristics were indicators of living in different social worlds that would transmit different values and interests to its members. While early studies were often disappointing for both conceptual and methodological reasons (Burch 1969; Burdge and Field 1972; Meyersohn 1969), early evidence suggested that use of wilderness was related to socioeconomic status, particularly education, and gender (ORRRC 1962). Moreover, these relationships have been repeatedly observed over the years (Bowker and others 2006; Manning 2011; Roggenbuck and Lucas 1987; Roggenbuck and Watson 1989).

To move beyond the limited explanatory power of demographic aggregates, sociological studies began to examine the ways in which preferences for outdoor recreation activities are formed within small circles of family, friends, or colleagues (Burch 1969). For example, a number of studies looked at the influence of early childhood socialization to explain adult preferences for a variety of outdoor recreation activities including primitive camping (Burch and Wenger 1967) and hunting and fishing (Sofranko and Nolan 1972). Other studies have focused on one's membership in leisure reference groups, for example, socialization into the surfing (Devall 1973), drug counter culture (Becker 1953), or sport fishing communities (Ditton and others 1992). Leisure social worlds refer to an "internally recognizable constellation of actors, organizations, events and practices which have coalesced into a perceived sphere of interest and involvement for participants" (Unruh 1980: 115). Participants in leisure social worlds form shared understandings of the meaning of a certain leisure pursuit,

develop common attitudes towards participation, and acquire specialized skills.

Some socialization models focused less on agents of influence (parents, teachers, peers, and so on) and more on patterns of social roles and personal identities across the life course. Social developmental theory is based on the inevitability of these changing of roles with aging and their impact on identities (Kelly 1974, 1977, 1985; Kleiber and Kelly 1980). Accordingly, life is seen as a journey where the individual passes through a series of developmental stages where the individual seeks to have some continuity of meaning and identity rather than a haphazard sequence of disconnected experiences. Decisions to participate in particular outings are driven by an ongoing effort to become a person with a satisfying life of persistent and coherent meaning. But, as Kelly (1987: 89) argues, development is not simply a matter of passing through a sequence of roles. Rather "we actively engage others on our life journey in ways that have consequences for the kind of persons we become". How much continuity in recreation patterns exists across the life course has been a critical question. On the one hand, early studies by Kelly (1974, 1977) suggested that up to 40 percent of adult leisure activities were initiated in childhood. On the other hand, recreation is a domain in life characterized by situated role freedom within which exploration and change is more common. Thus more recent studies have begun to look at "emerging adulthood" as a critical phase in the development of leisure identities (Sharp and others 2007).

In describing a process of recreation specialization, Bryan (1977, 1979) took the idea of socialization and leisure social worlds further to suggest that one's form or style, attitudes, and preferences for an activity become more specialized as one learns and interacts with other advanced participants. Bryan focused on the idea of a leisure career to account for within activity variation. At the early stages in an activity career, there are the occasional participants who have not established the activity as a regular part of their leisure repertoire. At higher levels of specialization, participants develop technique and setting specializations, become highly committed and invested in the activity, and form distinct setting preferences. Bryan's work was largely qualitative, but the concept led to a number of investigators developing quantitative techniques for measuring specialization levels based on indicators such as equipment owned, monetary investment, level of participation, and technique and setting preferences (Scott and Shafer 2001; Virden and Schreyer 1988; Wellman and others 1982; Williams 1985).

Closely related to specialization studies has been a set of studies focused on specialization related variables including past experience or Experience Use History (Schreyer and others 1984; Watson and others 1991; Williams and others 1990), activity involvement or lifestyle centrality (McIntyre 1989; McIntyre and Pigram 1992; Selin and Howard 1988), and place attachment (Williams and others 1989; Williams and others 1992). Early on, wilderness researchers identified past experience as a simple but relatively powerful variable in explaining wilderness related attitudes and preferences (Hendee and others 1968; Lucas 1964; Nielson and others 1977; Schreyer 1982; Vaske and others 1980). Over time, more complex approaches began to look at various combinations of experience measures such as number of visits to the study area, number of areas visited, and total number of trips (Schreyer and others 1984). These studies showed that past experience influenced a number of important wilderness related attitudes and preferences including those related to crowding, conflict, impacts, management practices, and facilities and services (see Manning 2011: 237-255). Past experience also was an important predictor of more subjective measures of activity involvement (McIntyre 1989) and place attachment (Williams and others 1992). This work has demonstrated that more experienced, involved, and attached participants in outdoor activities develop higher standards of quality, are more likely to evaluate resource conditions as negative, but also are more adept at responding to negative resource conditions to create desired experiences (Williams 1988). In addition, this work shows that as participants gain greater experience over time they develop more complex motivational structures, as motivations for outdoor recreation participation tend to shift from an emphasis on escaping the pressures of modern life toward an emphasis on introspection, self-awareness, and skill development (Williams and others 1990).

Drawing broadly from these early studies examining leisure across the life course suggests that the sense of what constitutes a quality wilderness experience is largely built up in the course of learning how to engage in wilderness experiences as an ongoing process. According to this view, people must learn to experience and appreciate nature and wildness. It is not something inborn (though see Knopf 1983 for a review of research arguing that humans have an innate experience of nature). This learning involves both direct experience of wilderness (physically being in wilderness) as well as social interactions with other participants (often in wilderness but also outside wilderness). As an example of the former, Lee (1972: 70) suggested "children and adults whose experiences have seldom penetrated the invisible walls of the ghetto… have no place in their universe of discourse for assigning positive meanings to the natural features of outdoor recreation settings". As an example of the latter and following Becker's (1953) model of experiential learning, participants often learn the techniques for how to produce the wilderness experience from other more experienced participants. In other words, they learn how to see, do, hear, and smell in the wilderness environment, learn how to recognize the effect wilderness is having, and most importantly, learn how to enjoy the sensations it produces. One must learn to appreciate wilderness experiences just as one learns to appreciate art or fine wine. A key point underlying the life course perspective is that one learns from past experience as well as from other participants who inhabit one's leisure social world.

A Meaning-Based Model

As noted earlier, looking at wilderness experience across the life course is often contrasted with discrete event-based approaches. Aligned with these temporal differences, are

a number of conceptual or philosophical differences. The prevailing approach associated with experience as a discrete event draws on what Patterson and others (1994) refer to as an information processing model of human decision making and well being. Accordingly, well being occurs when specific needs or goals are met. Wilderness visitors are depicted as choosing settings and conditions in a deterministic fashion in which the relationships between environmental attributes and goal attainment are stable and predictable. In contrast, the view of experience as a continuing phenomenon often follows a meaning-based model (Fournier 1991; Malm 1993; McCracken 1987; Mick and Buhl 1992) in which well being arises directly from the nature of engagement in the activity and transactions with environmental features rather than from attaining desired goals (Omodei and Wearing 1990). Rather than seeking a package of benefits through participation in a specific activity within a definitive time frame (that is, with a beginning and end), experiences are viewed as the result of an ongoing project of constructing meaning and identity (Patterson and others 1994). People are seen as actively constructing meaning to shape a coherent biographical narrative (Williams and McIntyre 2001). In other words, people bring with them to wilderness a great "capacity for finding and making patterns" (Stewart 1986: 109) in their personal and social experiences with wilderness or other environments. When visitors find connections or see relationships between these patterns in their ongoing experiences (of self) in wilderness, they make meaning and shape identity.

One of the first efforts to expand the temporal scope of wilderness experience along these lines was proposed by Schreyer and colleagues (1985). They described recreation motives as "learned modes of expression" for describing "standard patterns of behavior". These patterns of behavior, such as wilderness visits, were motivated not as a discrete choice to satisfy a specific bundle of experience outcomes on a given occasion, but through their association with a particular cognitive-emotional state (that is, experience) that an individual has learned to create for himself in wilderness settings. Later, Schreyer and his colleagues refined this view further by characterizing these patterns of behavior as reinforcing the individual's self concept (Schreyer and others 1990; Haggard and Williams 1992; Williams and others 1989). They saw self concept as a relatively stable construct, but one that evolves over time. Drawing on self affirmation theory (Schlenker 1984), they characterized recreational patterns as vehicles for affirming identity in five ways: displays of signs and symbols of identity (for example, styles of dress, equipment); selection of careers and hobbies that permit identities to be built and maintained; selective affiliation with others whose identity appraisals are supportive; interpersonal behaviors designed to elicit identity affirming responses; and cognitive processes such as selective attention, recall, and interpretation of self-relevant information.

To examine the role of leisure activities in the self-affirmation process described above, Haggard and Williams (1992: 15) reported on two experimental studies. One examined the salience of various leisure identity images for eight activity groups (backpackers, kayakers, guitarists, chess players, weight trainers, racquetball and volleyball players, and outdoor cooking enthusiasts). The other assessed the desirability of these images. They found that a person's preferred activity could be predicted by their desire for certain identity images, noting "not only do we wear hiking boots to symbolize that we are a backpacker… but we also may become a backpacker to symbolize to ourselves and others that we are adventurous, fun loving and a nature lover". Affirming certain identity images was likely an important source of motivation for participation and, moreover, such affirmation can occur in a host of situations outside of specific engagements in the activity.

In another series of studies, Patterson and colleagues (1994, 1998: 449) explored wilderness meaning and identity arguing "that what people are actually seeking from their recreation experiences are stories which ultimately enrich their lives". Drawing on the philosophy of Gadamer (1989), these studies followed a hermeneutic approach to analyzing interview data collected from wilderness visitors (see Patterson and Williams 2002). Hermeneutics is an interpretive paradigm that involves a specific set of assumptions about the phenomenon being studied. First, the meaning underlying human action is understood as more like interpreting texts than like gaining knowledge of objects in nature. The interpretive meanings that we imply here are considered metaphoric, allusive, and highly dependent on context (Bruner 1990: 61). Second, human experience is understood as an emergent narrative rather than as the predictable outcome of persons in situations. Third, storytelling is understood as a fundamental way people construct and communicate meaning. Finally, hermeneutics allows the researcher to understand the phenomenon in context rather than inferring it from de-contextualized observations generated by more standardized psychometric methods (Brooks and others 2004; Patterson and others 1994). Drawing from interviews of primitive campers on the Great Barrier Reef off the coast of Australia and visitors to Delaware Water Gap in the USA (Patterson and others 1994) and day visitors and overnight backpackers at Rocky Mountain National Park in the USA (Brooks and others 2004), they demonstrated that experience is contextual, influenced by individuals' unique identities, their current personal project, past experiences, and other aspects of the situation. For example, Patterson and his colleagues (1994) described how a primitive camper on the Great Barrier Reef reconciled his desire for escaping civilization in the presence of commercial fishing vessels and other potentially intrusive conditions by also emphasizing issues of safety and convenience.

In a later study, Patterson and colleagues (1998) used this hermeneutic approach to study the wilderness experiences of respondents canoeing a slow moving, spring fed creek in a Florida wilderness area. They argued that experience is best understood as an emergent narrative rather than an evaluation of outcomes relative to expectations. This emergent or dynamic quality was particularly evident in how participants interpreted the challenge of navigating the river. In some cases, those who experienced an intense challenge that had unpleasant aspects debated in their own narrative whether or not the experience was positive. Several participants ultimately came to see it in

a positive light with a sense of achievement even though they would have liked to quit half way through. As another example, some participants who experienced the challenge less intensely initially complained about aspects of the setting that contributed to the degree of challenge (snags and blown down trees) but upon reflection and discussion came to realize that these were precisely what made the experience an enjoyable story to relive. Finally, for yet another kind of participant, challenge was more appropriately described as a defining characteristic of the experience which served as a key aspect in building an enduring relationship to the place that was important both to their identity and quality of life.

Parallels in Consumer Research

Mirroring the developments in recreation research, some consumer researchers have looked beyond choice and satisfaction models. Working from a meaning-based model, their work has influenced how some recreation researchers have thought about visitor experience and satisfaction. For example, Tse and his colleagues (1990) and Fournier and Mick (1999) demonstrated how the concept of consumer satisfaction is a subjective process emerging through time. Another stream of research focused on explaining "hedonic consumption" activities that involve intense, positive, intrinsically enjoyable experiences (Hirschman and Holbrook 1982). Among the varieties of hedonic consumption, Arnould and Price (1993) focused on "extraordinary experiences" which they characterized as involving high levels of emotional intensity and experience, but not necessarily the high levels of effort and independence often associated with flow or peak experiences. Their case study involved multiday whitewater rafting trips in the Colorado River basin. They noted that most participants had only vague pre-trip expectations for the experience and argued that the "disconfirmation" of expectations was not particularly useful for interpreting satisfaction with the experience. Satisfaction with river rafting "does not seem to be embodied in attributes of the experience… or any summary index of specific attributes of the trip" (Arnould and Price 1993: 25, 42). Rather the "narrative of the experience is central to overall evaluation". They highlighted certain themes to these narratives including, personal growth, self-renewal, communion with others, and harmony with nature. Extraordinary experiences involve an emotionally intense experience in which meaning emerges during the process of interaction. Satisfactory experiences are ones that build a compelling narrative of self, and satisfaction is interpreted within the broader context of the participant's life.

Similar research on interactions between consumers and product brands has influenced how some recreation researchers have thought about people's relationships with wilderness and backcountry places (e.g., Ji 2002). Drawing on tenets of Hinde's (1995) theory of interpersonal relationships, Fournier (1998: 367) demonstrated how consumers interact with product brands as partners in relationships and what they "do with brands to add meaning in their lives". She analyzed three life history cases within a framework that consists of four tenets or conditions of relationships (see Hinde 1995): relationships involve reciprocal exchange between interdependent partners; the purpose of relationships is to provide the partners with meaning; relationships have multiple dimensions and exist in a variety of forms; and relationships evolve and change over time as partners interact and environments fluctuate. Fournier (1998: 361) summarized her main conclusions from the analysis of life history interviews:

> … brand relationships are valid at the level of consumers' lived experiences. The consumers in this study are not just buying brands because they like them or because they work well. They are involved in relationships with a collectivity of brands so as to benefit from the meanings they add into their lives.… these meanings are functional and utilitarian… psychosocial and emotional… purposive and ego centered and therefore of great significance to the persons engaging them.… The processes of meaning provision… authenticate the relationship notion in the consumer-brand domain.

Fournier's relational analysis moved beyond consumer satisfaction to provide insights into the quality of brand relationships. She described *relationship quality* in terms of multiple facets or indicators evident in her interviews: emotional grounding in love and passion, strong expressions of self-connection, high interdependence between person and brand, commitment and intention to act in support of the relationship, and intimate knowledge of brands. She also discovered 15 distinct relationship forms or types in the case histories, including long-term committed partnerships. This suggests that recreation researchers and public lands managers need to consider similar diversity in the kinds of relationships that may develop between visitors and recreation places such as wilderness or other backcountry settings.

A Relationship Metaphor

In addition to highlighting important temporal aspects of experience and identity, the works reviewed thus far largely focused on psychological and socio-cultural sources of meaning learned or derived from experiences. A closely related and overlapping line of work has focused on how *relational sources of meaning* contribute to the ongoing relationships that people have with specific settings. Researchers often employ language in the form of metaphors to help think about and describe phenomena (Lakoff and Johnson 1980). Scholars in a variety of social science disciplines have applied a *relationship metaphor* as a useful framework for understanding human experiences in everyday life. Researchers must "consider the networked nature of the phenomenon" (Fournier 1998: 346) when they study the importance of one's relationship with a special place or wilderness setting. Relationships exist within networks and "both affect, and are affected by, the contexts in which they are embedded". Stewart (1986: 114) argued that "our relationships with the rest of the world can only be understood in the light of our relationships with each other". A person's relationship with a wilderness setting, community, residence, or other entity is interconnected with that person's whole set of relationships

with other people, places, and things. In the context of place relationships, Manzo (2005: 83) called this "a larger web of meaning in one's life". Recall the illustration at the beginning of the paper in which the participant described the importance of going to a backcountry place in relation to her home town, conservation ethic, hobby, and family.

Couched within a relationship metaphor, we examine two more areas of study to help illustrate the relational connections between continued participation with places and identity: research on the experience of everyday places and research on wilderness or backcountry experience, primarily in the context of outdoor recreation for the latter.

Ongoing Experience in Everyday Places

Process-oriented scholars of place have been influential in advancing the use of a relationship metaphor and its temporal qualities to study how people experience their everyday environments. For example, in a study focused on the interactions between people and places, Milligan (1998) demonstrated how place attachments are constructed in people's memories of past interactions at places and in potential experiences they imagine having there in the future. She also found that people became keenly aware of their connections to place, both past and potential (what might have been), when they experienced a loss of a popular and personally significant café at a university campus. This stream of place research demonstrates that relationships with places can be found across a broad range of contextual situations, settings, and emotions and may take a diversity of forms or types (Hay 1998; Manzo 2005). Meanings of place and relationships to place develop incrementally over time, sequentially over the life course (Hay 1998; Smaldone and other 2005), and in a process characterized by continuity, but also dynamic change (Gustafson 2001; Manzo 2003, 2005, 2008; Smaldone and others 2005). Places become much more than backdrops for activities and experiences; people use everyday places to actively construct various aspects of their identities (Korpela 1989; Manzo 2003, 2005; Twigger-Ross and Uzzell 1996), and they do this to create and maintain a coherent narrative of self that is acceptable to them as a person living and interacting in a particular place (Sarbin 1983).

Hay (1998: 5) explained that "the development of a sense of place over a person's lifetime is… part of wider human developmental processes" subject to regional and societal influences. In a case study of residents of Banks Peninsula in New Zealand, Hay (1998) demonstrated how people's relationships with place had developed across contexts and through time by examining residential status, life cycle (age stage), and development of adult pair bonds (the marriage cycle). Hay (1998: 25) demonstrated parallels between the development of relationships with place and the development of personal maturity that comes with age. This study also showed how sense of place can parallel the intimacy, attachment, and commitment that develop during the adult marriage cycle. "A sense of place, if allowed to fully develop, can provide feelings of security, belonging and stability, similar to the feelings that arise from a fully developed pair bond". In addition, he showed different kinds of place relationships. For transients and tourists, he demonstrated a "superficial connection" to place; "partial connection" to place for long-term campers, cottagers, and resident children; "personal connection" for new residents without roots in the place; "ancestral connection" for residents with roots; and "cultural connection" for indigenous residents with both roots and spiritual ties. For the last three groups, sense of place was shown to become stronger in intensity and more sophisticated as age and length of residence increased. This highlights not only the importance of temporality, but also supports the notion that place relationships develop as experiences and memories, and thus socially constructed place meanings, accumulate and expand through continued participation (Brooks and others 2006, 2007; Manzo 2005; Smaldone and others 2008).

Gustafson (2001) asked respondents to list the places they had lived and visited. In interviews, respondents discussed which of the places were most important, attributing a range of meanings to the important places in their lives. These place meanings were mapped within a three-pole, analytical model of *self-others-environment*. Gustafson's (2001: 9) analysis showed evidence of a network of relational place meanings in that "the meanings of place expressed by the respondents were often situated in the relationship *between* self, others and/or environment, rather than unambiguously belonging to just one of these categories". In other words, some place meanings were concerned with the relationships between the self and other people, other people and the environment, self and the environment, or all three—self-others-environment. An example of the latter would be a person's membership in an organization, working to preserve and protect a particular place (such as, Friends of Yosemite Valley). In this case, the overall meaning of the Yosemite Valley for an individual member cannot easily be separated (if at all) from his or her membership in the larger friends group. In a second stage of analysis, Gustafson (2001: 14) discovered underlying dimensions of place meaning in the data, including *continuity* and *change* that "introduce a temporal dimension, in which places may be regarded as processes". Gustafson did not explain these temporal dimensions in great detail, but he concluded that the meanings of places change as individual desires and group aspirations (that is, personal and collective projects) create new place meanings. Continuity in place meanings happens when individuals and groups continually reproduce and attribute current meanings of places (that is, those that exist for people's valued places at any given time in history).

Manzo (2005, 2008) analyzed interviews collected from residents of New York City in her study of place meaning. Residents told stories about their experiences, both positive and negative, in a variety of urban locales that they considered to be personally significant. Interviewees described their experiences of place at a broad range of scale (nations, cities, parks, beaches, woods, waterfalls, airports, homes, churches, bars, a photographic dark room, and a hallway closet). Significant places were found to reflect residents' evolving identities in that they allowed them to "be themselves and explore who they are" through privacy, introspection, and self-reflection—aspects

of experience that help foster personal growth (Manzo 2005: 75, 2008). For some interviewees, places where important life experiences had occurred emerged as milestones or transitional markers in the "journey of life" or "bridges to the past". Place relationships were characterized as processes in which people "collected experiences", which allowed place meanings to accrue incrementally. Interview data demonstrated how some urban residents repeatedly used a variety of places, had a diversity of experiences at those places, and thereby added layers of place meaning through continued participation:

> … one participant focused her discussions on a local park about which she told some of her most detailed stories. She met her husband there, and years later, they decided to separate there. This was also the same park where she played as a child, and where she took her children to play. This park was a significant place whose meaning developed from both positive and negative experiences (Manzo 2005: 81).

Manzo's work highlights a number of insights that are important for understanding continued participation or ongoing experience in place. First, one's "experience-in-place" is more significant than the place itself (Manzo 2008: 147), which implies an important link between experience and the creation or construction of place meanings. Meanings of place are constructed from experiences, and it is the meanings that make the place significant. Second, in her earlier review of the place literature, Manzo (2003: 57) documented how people's emotional relationships to places are part of "a conscious process where people interact with the physical environment to meet their needs, express themselves, and develop their self-concept". Experience of a place plays a role in developing and maintaining aspects of one's identity. Third, Manzo's (2005) analysis defined place relationships as life-long phenomena that develop and change over time and with experience, which makes them an appropriate unit of analysis for studying continued participation and the long-term nature of experience and identity.

Process-oriented research in the area of *place identity* has been influential in understanding place relationships. Korpela (1989: 245) defined place identity as "consisting of cognitions of those physical settings and parts of the physical environment, in or with which an individual—consciously or unconsciously—regulates his experience of maintaining… sense of self". The set of thoughts and beliefs that comprise one's place identity does not come pre-fashioned; rather, these evolve through experiences in place. Creating place meanings by interacting with the setting (and one's companions there) implies that actual behaviors are directed toward knowing the self in relation to place in order to develop and maintain one's story of self (Sarbin 1983). People define themselves (and become known to others) in the context of their relationships with people, places, and things; and people spend time thinking about their roles within these relationships and act accordingly. During the course of one's relationship with a place, that individual experiences opportunities to adjust or reshape his or her view of "self-in-place" through introspection, desire for personal growth, or by other means; and well being or distress may result as one works out one's identity relative to the relationship partner, in this case, place.

These *identity processes* have been shown to be meaningful in people's lives and communities by shaping and reshaping their relationships to place (Hay 1998; Hull and others 1994; Korpela 1989; Manzo 2005; Sarbin 1983; Smaldone and others 2005; Stokols and Shumaker 1981; Twigger-Ross and Uzzell 1996). An underlying theme in this literature portrays the concept of place identity as evolving alongside place relationships. Relationships are reciprocal, so places can play important roles in the psychological development of the self as one's place identity develops as a part of overall self identity (Proshansky and others 1983; Twigger-Ross and Uzzell 1996). Korpela (1989: 245-246) clarified his definition by explaining that emotional attachment (or aversion) to places is at the core of place identity and serves as a necessary foundation for it. Twigger-Ross and Uzzell (1996) later demonstrated that residents of an urban area in London, who were emotionally attached to the place, identified more strongly with it than those who were not attached. Drawing on Breakwell's (1986) identity process theory, they analyzed interviews with residents living in the London Docklands and demonstrated evidence that residents used place to maintain positive self esteem, continuity of self, and "to create, symbolize and establish new selves" (Twigger-Ross and Uzzell 1996: 217). Both attached and nonattached residents discussed the area in positive and negative terms at times, and they reported evidence that positive self esteem was provided and enhanced by both physical qualities of the place and feedback received from visitors to the area. The key theoretical implication of this work is that places can serve as relationship partners in the active construction of identity:

> … identity processes have a dynamic relationship with the residential environment. The development and maintenance of these processes occurs in transactions with the environment. In acknowledging this, the environment becomes a salient part of identity as opposed to merely setting a context in which identity can be established and developed (Twigger-Ross and Uzzell 1996: 218).

Other people form the basis of social ties, social interactions, family history, or family identity in place and play a substantial role in the creation and development of place meanings, identities, and relationships (Boniface 2006; Brooks and others 2006, 2007; Eisenhauer and others 2000; Fredrickson and Anderson 1999; Gustafson 2001; Korpela 1989; Kyle and Chick 2004, 2007; Low and Altman 1992; Patterson and others 2002; Schroeder 1996a; Schroeder 2002; Smaldone and others 2005, 2008). For example, simply visiting a place or taking part in an annual recreational trip to a place (just being there) is only part of a person's evolving place identity. Seeing what his or her parents, siblings, or friends do there; hearing how they discuss the place or the trip together; interacting with those people through stories or recreation activities; reliving memories of people and events from previous years; and learning how others react to their experiences of place each contribute to how that person constructs and attributes meaning to the

place. Developing (and maintaining) a relationship with a place often involves socialization processes in which learning and self adjustment occur through continued participation (that is, ongoing experience).

Place researchers have applied a relationship metaphor to better understand the complexities inherent in environmental studies of experience, meaning, and identity. This body of research has demonstrated that people do develop and maintain relationships with places and that there are at least two key processes involved: the active creation of place meanings and evolving place identities. Place relationships are created by continuous, recurring reciprocal interactions between people and the environments in which they live and visit (Brandenburg and Carroll 1995). In other words, people participate with places and places participate with people during the building and maintenance of people's relationships to place in ways similar to those involved in the development of interpersonal relationships. The broad purpose of place relationships is twofold: the provision of socially constructed meaning, both for the person and the place, and creation, maintenance, and adjustment of the self.

Ongoing Experience in Wilderness or other Backcountry Areas

A relatively small number of early researchers either directly or indirectly addressed some temporal aspects of recreation experience in their work (for example, research on specialization described earlier). At various times in the research record and across a number of contexts, recreation researchers have used language and concepts that hinted that a relationship metaphor may have been implied in their understanding of experience. In his classic paper on angling specialization, Bryan (1977: 185-186) wrote of "resource orientation", "resource dependency", "commitment to a variety of angling pursuits", "center lives around sport", and "relationship of the sport to occupation and lifestyle". Use of this language indicated that Bryan had observed that highly specialized and experienced anglers had developed a *relationship to resource* and a loyal *commitment* to a specific recreational pursuit, and that these had developed over time through a process of specialization. In the context of recreation conflict theory, Jacob and Schreyer (1980: 373), drawing from Lee (1972), accounted for conflicts that involved "varying definitions of place" by defining a concept they called "*resource specificity*—the importance an individual attaches to the use of a particular recreation resource". They went on to define the conditions of resource specificity, including "feelings of possession and the role of a place as a central life interest". The language used to describe these concepts echoes, or perhaps foreshadowed, how we have thus far described continued participation and ongoing experience, using a relationship metaphor:

> A second aspect of resource specificity, possession by knowledge (Lee 1972), also affects the *visitor-place relationship*. A person well acquainted with a recreation place has well-defined expectations about the variety and type of experiences to be found there. Standards of behavior appropriate for users of the place are known. Cases of recurring use could be motivated by simple convenience but it is also possible that an affective attachment for the place has developed over time. While its physical qualities may not be evaluated as unique, the place comes to embody memories and traditions. In this way it becomes a central life interest, a focal point of recreation participation. A sense of possession becomes manifest… (Jacob and Schreyer 1980: 374).

In a paper entitled *Forest Places of the Heart*, Mitchell and others (1993: 34) described a diversity of "use orientations" related to their interviewees' levels of attachment to recreation sites and forest resources in the Chiwawa River drainage in Washington. The objective of the study was to develop a typology that would differentiate between "visitors' relationships with their environment". For example, "dependent visitors" made repeat trips to particular places to do specific activities in "ritualized" ways. For "generalized visitors", the places and activities changed over time, and those in this group expressed "a need to return". "Periodic" and "exploratory" visitors had not yet developed clear emotional attachments to their recreational sites. Visitors categorized as "intimately associated" with a recreation site described the place as "an entity" or "as having a personality":

> Intimately associated visitors had a special relationship with the places of their affection and often personified the locations: "People are only here three months of the year and it keeps to itself the rest of the time. That's when I like to come… when it's quiet and it talks to you." One woman described returning to the area as "visiting an old friend" (Mitchell and others 1993: 33).

Adopting a relationship metaphor, we would argue that what Mitchell and her colleagues (1993) discovered were different types of place relationships at different stages of development. The language used in their study clearly reflects the relationship idea and its utility for studying wilderness or recreational experiences. Other researchers have employed language such as "human relationships with wilderness" (Watson 2004), "changing relationships with wilderness" (Dvorak and Borrie 2007), and "relationships between the public and public lands/agencies" (Borrie and others 2002; Christensen and others 2007; Watson and Borrie 2003). In his study of special places in the upper Midwest, USA, Schroeder (2002: 8) wrote, "People become attached to special places in much the same way that they become attached to a good friend or a family member". The use of this language by these authors serves the purpose of communicating an implied (or explicit) type of ongoing connection between one's experience of a place or wilderness setting and what that place means for one's life and identity.

Another study explicitly applied a relationship metaphor to research on backcountry recreation experience at Rocky Mountain National Park in Colorado. Drawing on the hermeneutic work of Patterson and colleagues (1994, 1998) and Patterson and Williams (2002), Brooks and his associates (2006) interpreted experience narratives from interviews to address the question of how visitors build relationships with the national park over time. They demonstrated interrelated dimensions of place relationships that were also evident in previous research,

and which begin to describe how relationships to backcountry or wilderness places develop. First, visitors described that time spent at the park or extent of contact with the place allowed for ongoing visitor experiences. This was comprised of purposively making return trips; gaining knowledge of the park, becoming familiar with it, and learning lessons from both positive and negative experiences; and benchmarks that served as symbols of important life stages (such as, the wedding described in the opening excerpt). Second, developing a relationship with the park involved both physical interactions with the park and social interactions with other visitors at the park. The interactions were comprised of sub-dimensions: being in and engaging with features of the setting and one's companions, staying in the park for multiple days, ritualized behaviors, family history or identity associated with the park or the outdoors in general, and socialization of children or other less experienced companions via informal training or social learning. Third, the interviews demonstrated that visitors were engaged in identity processes interpreted by Brooks and his colleagues (2006), in light of previous research, as the definition and affirmation of one's concept of self (Haggard and Williams 1992; Scherl 1989). Sub-dimensions of this theme included introspection or self-reflection, comparing self to other visitors, and recognition of how one's patterns of thinking and behaving had changed over time. For some, this self-awareness and introspection was portrayed as a sense of knowing or recognizing how their stewardship behaviors and desires to protect the park and other places had evolved or changed through time.

Visitors' relationships with the national park included "nurturing love and respect similar to how committed relationships are built between people" (Brooks and others 2006: 344). They concluded that some visitors value their committed and often long-term relationships with the park more than the attributes of the place outside of this relationship (also see Smaldone and others 2005). Visitors in this study defined their relationship as the meanings they had created for themselves and the park over the years through continued participation. To more closely examine how visitors created the place meanings that anchored their relationships with the park, Brooks and others (2007) expanded the earlier interview study by conducting a triangulation analysis that integrated findings from the interviews with findings from survey questions and observations of visitor behavior recorded in the national park with independent samples. Evidence from the observational study integrated with interview narratives showed that visitors frequently explored off designated trails as a way to personalize their interactions with both the "particularities of place" (Lane 2001: 60) and their companions. Field researchers observed visitors interacting with wildlife, trees, lakes, streams, and other physical attributes of the setting (Brooks and Titre 2003). Questionnaire data and analysis of variance showed that visitors who had spent the most time at the park were more attached and familiar with the place than those who had made fewer visits or stays. Those reporting more previous visits also reported that being in the park sparked memories of being there with friends more so than for those with less previous experience. Drawing on Gustafson's (2001) model of place meanings, Brooks and his colleagues (2007) synthesized findings from the three samples to provide a basic and preliminary description of the concept of relationship to place. Using a three-sphere Venn diagram as a schematic to organize these data, they demonstrated how visitors created place meanings and relationships through ongoing interactions between self, other people, and the place.

In a similar set of research studies, Smaldone and his associates (2005: 403, 2008) investigated and documented processes involved with the creation of place meanings and the development of place relationships for residents of Jackson Hole, Wyoming and visitors to Grand Teton National Park, USA. In an in-depth analysis of interview data, they demonstrated three primary themes that represent dimensions involved with the construction of place meanings. First, a temporal dimension labeled *life stage/course* was described as "how a place can come to embody a particular time period in one's life, and how place meanings change as one ages and passes through critical life stages". One interviewee described her relationship with the Jackson Hole area as an "ever-shifting process: sometimes the feelings and changes are subtle, and sometimes they can be more dramatic" (Smaldone and others 2005: 405). They found that changing meanings of the place were linked to important people in one's life and development and maintenance of identity for some residents and visitors. Second, *searching for a feeling* represented "how emotional needs and feelings play a role in forming and maintaining place connections and subsequently place identity". Many interviewees described how protected areas or their homes in the Jackson Hole area allowed them to regulate their emotions and conceptions of self through continued experience. Interviewees described a range of feelings they had for the area that are "built upon over time, layer by layer… what remains is the feeling instilled by those experiences at the place", and this feeling that comes from ongoing experience "actually can become the focus of meaning" for residents and visitors (Smaldone and others 2005: 408). That is, the mood or umbrella emotion created by continued participation with the place has lasting importance, more so than any one episode or event. Third, *commitment* represented "the extent to which people are committed to a place and are willing to take action to preserve it". This dimension involved both positive and negative emotions and a sense of personal sacrifice involved with one's connection to the area. Smaldone and his colleagues (2005: 412) concluded that the processes of connection to the place are as important as the attributes of the place themselves.

Dvorak (2008) and Dvorak and Borrie (2008) explored wilderness relationships that visitors had developed with the Boundary Waters Canoe Area Wilderness in Minnesota, USA. Drawing on Berscheid and Peplau (1983), Fournier (1998), and several other scholars, they explored a relationship metaphor by using survey items and statistical analyses to measure multiple dimensions and test various psychometric models of a wilderness relationship. They adapted previously published scales to measure and develop a three-dimensional framework

that consisted of relationship to self, relationship to place, and relationship to resource managers (forest service employees). Five factors were found to comprise the underlying structure of a broader relationship factor including, place identity to account for self, place meanings and place dependence to account for the place, and trust and commitment to account for relationship with the management agency. Looking beyond the place factors in the model, Dvorak (2008) concluded that trust of and commitment to managers of the wilderness area were significant components of wilderness relationships at the Boundary Waters Canoe Area. The interactions that individual visitors have with the U.S. Forest Service play an important role in the relationships that they develop with the place (Dvorak 2008). He argued that the interactions between visitors and the managers they encountered at the site represented the "human element" of wilderness relationships. One's relationship with wilderness represents something greater than the attributes of the setting and external forces that affect the experience (Dvorak 2008: 161-162). Speaking to researchers and managers, he clarified that "relationships provide a holistic view that attempts to incorporate much more about the visitor and their human experiences in wilderness" than determining how setting attributes and social conditions affect visitors' satisfaction with discrete trips.

Most readers would probably agree that the everyday experiences that they have with other people, or even organizations, influence their broader relationships with those people or organizations across time. Likewise, researchers who apply a relationship metaphor to the study of wilderness experience propose that the ongoing experiences people have in and with a wilderness area, backcountry setting, or other protected area allow them to socially construct, attribute, and maintain long-term meanings (both positive and negative) not only for the place but also for themselves and others. From this perspective, place meanings are thought to accumulate or build up through continued participation with the place to the point that an ongoing relationship is forged or built between person and place (Brooks and others 2006; Dvorak and Borrie 2007: 13). The place relationship can affirm aspects of one's identity and substantially affect one's broader life in meaningful ways (Brooks and others 2004, 2006, 2007; Smaldone and others 2005). Place meanings and place relationships are not static but change or evolve over time (Smaldone and others 2008; Davenport and Anderson 2005). This relatively new and growing line of research is concerned with understanding the nature and composition of the processes involved in developing and maintaining relationships with wilderness areas and similar places, and what those insights mean for managing the quality of visitors' engagements with both the place and the management agency through time. Studying how wilderness identities and relationships develop and change over time has been established as a valid topic for research on wilderness and recreation experience (Brooks and others 2006), but framing the quality of wilderness experience in the context of an ongoing relationship is a new direction for wilderness research and management (Dvorak and Borrie 2007; 2008).

Implications for Research

Researchers are only just beginning to focus on the long-term relationships visitors form with wilderness places. The key to understanding these relationships is to focus on narrative-oriented methods because talking, writing, and thinking about relationships is a primary means by which people come to understand who they are and make sense of their lives. Recall how the interviewee at the beginning of the paper described the personal importance of wilderness: she referenced her marriage, family, and other aspects of her life outside wilderness. For researchers, regardless of their intentions, using the language of a relationship metaphor to conceptualize one's study or describe one's results implies that people's connections to place are temporal in nature (Low and Altman 1992), and narrative processes play important roles in establishing the meanings of places and the bonding of people with places (Brooks and others 2006; Smaldone and others 2005, 2008). To describe the properties and structures of interpersonal relationships, Hinde (1995: 2) theorized that "every relationship exists over time and must be seen not as a fixed entity, but as a dynamic flux". The assumptions underpinning the theories, methods, and goals used to study ongoing experience, identity, and relationships in a wilderness context must match the nature of these phenomena (Patterson and Williams 1998). A narrative approach to social science accounts for the temporal aspects of experience and identity and allows researchers to understand and demonstrate situational context and social processes (Maines and Bridger 1992). Viewing wilderness experience and identity as long-term phenomena points researchers toward a goal of understanding rather than a goal of prediction.

For wilderness management, research questions should aim for a better understanding of the situational, cultural, and personal factors that shape experience narratives and, in particular, the role that managers may have in influencing these relationships. Temporal processes are best studied using longitudinal methods that payoff in comparative results over the long-term. This essentially means asking people to tell their story about wilderness use and what it means in their lives for the past, present, and future. There are a range of methods to generate and capture these stories, which can be broken down into structured narratives initiated by the researcher and self-initiated forms of narration. Examples of the latter are studies that ask wilderness users to keep journals and do other structured writing during a trip (Fredrickson and Anderson 1999) or recruiting visitors to write essays about the place and their visit (Schroeder 1996b). Interviews conducted by a researcher during (Arnould and Price 1993; Brooks and others 2006) or immediately following a visit (Patterson and others 1998) serve as examples of narratives initiated by researchers. Another promising approach is to elicit oral histories of long-time visitors. Steiner and Williams (2011) recently reported results from long-serving backcountry rangers and key stakeholders with long histories of participation. Some respondents reported on how their ideals about visiting and

being in wilderness had evolved. In addition, some described how certain management practices shifted their visitation patterns, often producing unintended consequences.

In natural resource social science, it is less common to use self-initiated forms of narration as research data, but we encourage researchers to use this approach. Insights on wilderness management can also be gleaned from historical sources such as early guidebooks and journals. A much more modern form of self-initiated narrative involves the trip reports being posted on websites. Williams and others (2010) reported on an effort to extract information about the perceptions of visitors to several Colorado wilderness areas from Internet postings. There are some advantages to culling through these reports as unfiltered by the pre-conceptions of the researchers, but it also means wading through large volumes of material only some of which are relevant to the needs of wilderness managers. Considerable promise exists however, in using the Internet as a means to solicit narratives about wilderness trips and relationships. These can be used as both immediate monitoring tools for managers to keep on top of conditions and place meanings that may be in conflict as these arise in the course of a season and as source material for analysis by researchers of longer-term relationships with wilderness. What is needed at this point is research aimed at developing cost-effective and informative ways to monitor and extract information about visitors' relationships with various wilderness areas.

Implications for Planning and Management

The research history reviewed in this paper has shown that place relationships are not the same thing as values, beliefs, norms, attitudes, and behaviors. Managers cannot predict specific visitor expectations or behaviors based on a typology or hierarchy of place relationships. Relationships with wilderness settings are not single experiences, encounters, evaluations of conditions, or satisfactions; they are not the same thing as motivations, expectations, or benefits and cannot be properly understood as such. Relationships with wilderness or other places are holistic and long-term phenomena that are related to human identity and nurtured through continued physical and social interactions both in and outside wilderness areas. And as such, relationships to wilderness places that develop through continued participation cannot be studied and managed in the same ways that have been applied to more reductionist conceptions of experience. That is not to say that people do not care about continuity in conditions; positive and negative sources of continuity can be one of many aspects of both interpersonal and place relationships. Controlling and manipulating setting attributes and social conditions will continue to be useful strategies in certain management situations at specific sites or times, and creating zones in which opportunities for different types of experiences may unfold should account for some diversity in experience. However, area managers should not expect that using these standard tools will completely ensure the quality of long-term relationships or necessarily enhance ongoing wilderness experience for visitors. Something more is needed to account for wilderness relationships.

We agree with Roggenbuck and Driver (2000: 46) that the linkages between wilderness settings, experiences, and outcomes are extremely complex, more so than previously thought by recreation researchers. We suggest that this realization indicates a substantial need for different approaches to research, planning, and management across the arena of wilderness and outdoor recreation and tourism experience. Leisure or environmental experiences encompass certain amounts of freedom but not complete freedom (Brooks 2003: 17; Valle and others 1989: 8). Patterson and others (1998: 425-426) applied the concept of *situated freedom* to characterize the nature of experience in outdoor recreation and leisure environments. They argued that there is structure in wilderness recreation environments that sets boundaries on what can be experienced, but within those boundaries visitors or residents are essentially free to experience the place in "highly individual, unique, and variable ways", and "experience is seen as emergent rather than predictable". This freedom is one of the many things that allow people to construct place meanings, develop wilderness relationships, and affirm or adjust their identities as their ongoing experiences emerge. These processes happen regardless of how an area is being managed as long as people continue to participate in and with that place. Societal norms, cultural mores, laws, agency regulations, and physical topography serve as some of the many social and environmental boundaries that loosely contain how an individual's experiences emerge. *People create and manage their own experiences* in wilderness, and their evolving identities and relationships do not necessarily need to be (or perhaps cannot be) managed, manipulated, or controlled in the traditional sense of recreation management. Instead they must be encouraged, fostered, and nurtured by agency staff in the role of facilitator (see also Stewart in press). Using the language of a relationship metaphor, wilderness managers can serve as match makers, progressing to marriage counselors who first come to understand relationships then work with people to preserve and nurture them. The role of planners and managers, then, is to become stewards, and perhaps even shepherds, of human relationships with wilderness (Borrie and others 2002; Dvorak 2008; Watson and Borrie 2003; Watson 2004).

Natural resources management, including wilderness recreation and experience, cannot succeed if environmental meanings are not fully integrated (Williams and Patterson 1996). Manzo (2008: 164) recommended, "If we are to develop effective policies to foster stewardship, we must begin with a better understanding of place meaning and people's relationships to place". Fournier (1998: 367) concluded that the relationships that consumers develop with their brands may often be distinct from those assumed by product managers, requiring "a new conception of brand at the level of lived experience". Stewart (2008) argued for a parallel conception of protected areas as being derived from "stories of lived experience". He argued that this alternative concept would help planners address what he described as a "crisis in representation of place meanings" in the practice of environmental planning and management. Relationships are played out in immediate conscious experience during

the course of everyday life; this lived experience is understood and communicated in meaningful ways in stories or personal narratives told (and heard) about valued brands (Fournier 1998) or places (Stewart 2008). Planners and managers will not hear the stories that make a difference in wilderness management unless they talk with and listen to their visitors on a regular basis. Agencies need to direct more resources at developing and maintaining a manager-visitor relationship through time.

Area managers can enter into visitors' place relationships through social interactions on site or in their communities and through open communication in collaborative planning processes (that is, telling and hearing stories). As people talk about their relationships with wilderness or other places, their relationships are further realized and may evolve in terms of personal growth and identity affirmation or adjustment (Brooks and other 2006: 364). Rangers and other agency staff who guide hikes and those who guide commercial visitors, for example, should purposively allow time for visitors and groups to relive their experiences on or near the site through storytelling and other types of social interaction. Another concrete action is listening to and discussing with visitors the conversations or stories that unfold at trailheads, campgrounds, and visitor centers "to learn more about how the experience relates to visitors' lives and to better understand visitors' place relationships". Brooks and his colleagues (2006) recommended that agency professionals directly and explicitly use experience narratives of long-term visitors in education and stewardship programs. People who have developed a long-term committed partnership with a wilderness area or other place should be asked to participate in the management decisions affecting that place; two concrete examples include focus groups and participation in public planning discussions.

Planners and managers should strive to become the human face of people's special places. Drawing on the principles of relational marketing, some research has indicated that building trust for and commitment to the management agency for various segments of the public is an important part of fostering relationships between members of the public and public lands (Borrie and others 2002; Dvorak 2008; Watson and Borrie 2003). Managers will need to go well beyond managing users to building wilderness partnerships and fellow wilderness stewards (Dvorak and others 2011). Knowing visitors better will help managers learn how (or if) segments of the public identify with their agency and its approaches to wilderness stewardship. In other words, do they share some place meanings to the extent that would allow mangers to adjust some environmental or social boundaries to promote resource stewardship while at the same time fostering wilderness relationships and perhaps enhancing the quality of some relationships? Managers will not be able to answer that question until they have a closer relationship with all of their publics.

Reframing the Goal

Planning and managing for visitor experience must match the nature of this phenomenon. Based on the perspective of continued wilderness participation described in this paper, we suggest a need to expand the basic goal of visitor experience management beyond providing customer services and satisfaction. Researchers intentionally reframe the goal when they apply this conceptualization of experience. The traditional goal of developing and applying universal principles of onsite visitor management should be converted into a *practice* characterized by learning as a community through social engagements (see for example, Barab and Duffy 2000; Meier 2007; Schusler and others 2003; Stewart 2008; Wenger 1998). A practice of this nature will essentially be ongoing, place-based, and built on a history of case examples. It will be highly context dependent and knowledge (meaning) will be created and shared among managers, social scientists, area residents, visitors, and other stakeholders as necessary. We formulate some broad and preliminary objectives for such a practice:

- Recognize that the place relationships that visitors develop and maintain provide them with both personal and social meanings, and relationships allow them to attribute meanings to places; it is not, however, easy nor do we recommend separating these types of meaning in practice.
- Recognize that place relationships are used to create, maintain, define, and adjust one's sense of self.
- Understand or come to know about a diversity of relationships and their underlying place meanings.
- Understand if, when, for whom, and how place meanings have changed over time by tracking or monitoring meanings and relationships for individuals and groups on a regular basis (Dvorak and others 2011). This objective needs substantial refinement through research approaches that account for time and has no history of application in recreation management.
- Better understand the linkages between continued wilderness participation, place relationships, and people's broader life stories outside wilderness, including their well being and identity.
- Nurture relationships between managers and visitors that foster trust, commitment, and shared responsibility for area stewardship (Borrie and others 2002). That is, reframe management to focus more on building relationships and less on providing customer services and satisfaction.
- In addition to maintaining relationships with visitors, we believe that managers will increasingly benefit from reaching out to residents who live near wilderness areas to learn about their place relationships (see Smaldone and others 2005, 2008).
- Position place meanings, place relationships, and everyday lived experience at the forefront of decisions about land use change (Cheng and others 2003; Davenport and Anderson 2005; Stewart 2008). Reframe wilderness and recreation planning to focus more on meanings and less on contentious issues. Place-based planning should be used to complement, supplement, and defuse planning processes that are dominated by contentious issues (Cheng and Mattor 2010).
- Reinvent planning as a series of dialog forums that "encourage scientists, professionals, and citizens to share, argue, and negotiate place meanings" (Stewart 2008: 100).

- Structure and manage dialog forums to build community, not to reach consensus or resolve conflicts over place meanings (Stewart 2008: 100).
- Explicitly show that decisions had transparent links to the planning process and dialog forums (Stewart 2008: 100). The dialog forums contain the *stories of wilderness* that managers must hear and engage with to understand the personal meanings and shared experience narratives of place that matter most for decision making.

The ultimate goal from this perspective is that managers, working with their partners in a *community of practice*, elevate wilderness experience to the larger realm of human life and well being as reflected in place relationships and identities. Work has been done toward meeting this goal, but more will be required to build a practice that allows scientists, professionals, and citizens to connect the significance of ongoing wilderness experience and relationships with changing societal and environmental conditions (Cole and Yung 2010; Dvorak and others 2011). We recommend that researchers and managers carefully think about experience in terms of long-term process, relationships, and identity. This is an important first step in meeting a continuing need for citizen engagement that accomplishes stewardship of wilderness areas in light of these inevitable changes and in terms of both subjective meanings of place and tangible natural resources.

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Disclaimer

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Immediate Conscious Experience in Wilderness: A Phenomenological Investigation

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Abstract—The nature of the immediate conscious experience (ICE) in outdoor recreation has been the focus of recent research. This paper reports a study of the ICE in three different wilderness settings in the Pacific Northwest. In-depth qualitative interviews (n = 126) and structured questionnaires (n = 252) with visitors contacted along trails, in camp, and at destinations explored the focus of people's attention, as well as their thoughts and feelings. Most participants engaged cognitively with the natural environment, appreciating the scenery, comparing the experience to other trips, or analyzing the setting around them. Most also reported engaging actively with the environment physically, through travel, weather, and using their senses. Social aspects were important for two-thirds of participants, most of whom were involved in group interaction or the collective construction of their experiences. Only one-third were engaged in personal reflection, which typically involved things outside the wilderness such as work or family. The findings demonstrate the multidimensionality and individuality of wilderness experiences, as well as the somewhat limited ability of managers to affect the visitor experience. However, they also demonstrate that—even in high use locations—at any given time visitors generally have thoughts and feelings that are quite consistent with the types of experiences wilderness managers seek to provide.

Introduction

The notion of "experience" has been described in many ways in wilderness research. For instance, researchers recognize that the experience is multi-faceted, involving contemplation before the trip; dynamic and complex thoughts, feelings, and sensations during a trip; and post-trip evaluation and integration into one's long-term identity and attachment to places (see Brooks and Williams in press). From the beginning of wilderness research, studies have focused on people's desired experiences (motivations) and their global assessments or evaluations of experiences after a trip. For instance, many studies have examined whether visitors seek and attain benefits such as solitude or personal growth.

A more recent approach examines the "immediate conscious experience" (ICE), also known as "lived experience." Such work seeks to describe what it is that wilderness visitors are doing, feeling, and sensing while immersed in the wilderness visit. While not denying that pre-trip goals are important, ICE studies recognize that actual experiences are complex person-environment transactions that cannot be fully explained in terms of goal fulfillment (Lee and Shafer 2002; McIntyre and Roggenbuck 1998; Stewart 1998; Williams 1989). Instead, recreation experiences are shaped in complex ways by characteristics of social, physical, and managerial settings, some of which may be unanticipated (Patterson and others 1998), dynamic over the course of an excursion (Waitt and Lane 2007), or interact in complex ways. Such findings help explain why—even if specific goals are not met—people may have highly satisfying experiences.

This paper describes results from a study of the immediate conscious experience of visitors (primarily hikers in small groups) to three different wilderness settings, based on in-depth interviews and self-administered questionnaires from visitors contacted along trails, in camp, and at wilderness destinations. This study will help wilderness managers understand the nature of wilderness experiences, as well as the factors that affect the quality of those experiences. In the next section, we review the literature to explore contemporary themes related to wilderness experiences and discuss ways in which our study extends previous research approaches.

Wilderness Experiences

Lee and Shafer (2002, p. 291) define "experience" as an "emerging state of mind resulting from interactions between a leisure participant and his/her surroundings." It is "meaning created through embodied perception" (Stark and Trinidad 2007, p. 1373). The immediate conscious experience itself is different from post-leisure evaluations of experience quality (Cole 2004; Reis and Gable 2000). For instance, at any point in time, a person may see campsites and flowers, may feel anxiety or exhilaration, and may engage in various activities. However, after the trip, some of these may be more memorable

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or influential in shaping an overall evaluation of the trip as a whole, as when the relatively brief experience of views from the top of a peak override other episodes of boredom, mosquitoes, or bad food. Salient aspects relevant to one's personal life project may also become integrated into the narrative of self-identity (Brooks and Williams in press).

The literature identifies several dimensions of the ICE, including a person's conscious thoughts, the focus of directed attention, somatic (bodily) sensations, and affective feelings (Hull and others 1996; McIntyre 1998). People continuously perceive the social and physical environment around them, making sense of these perceptions through cognitive processes that include the filters of cultural symbolic meanings (Waitt and Lane 2007) and linkages to personal history, as well as more basic physiological and emotional responses. Thus, lived experiences entail both inward-focused thought and externally-oriented attention (McIntyre 1998; Richardson 1999). For example, in a study of ICEs among Okefenokee canoeists, Borrie and Roggenbuck (2001) found that, at any given moment, people's focus on others within their group and on nature was much higher than their focus on self, and the same was found among canoeists in an Australian National Park's backcountry (McIntyre 1998). McIntyre and Roggenbuck (1998) also found that, during an underground river float, people's attention was focused more strongly and consistently on nature than on self or others in the group, though the focus of attention seems highly dependent on landscape attributes and activities (Hull and Stewart 1995). One goal of our study was to deepen understanding of the allocation of attentional resources during wilderness experiences, to understand the extent to which people are focusing on the elements managers care about and have the ability to manipulate in a wilderness setting.

The few studies to explore person-environment transactions during wilderness trips offer initial suggestions about what themes are likely to characterize ICEs in wilderness or similar undeveloped natural settings. Not surprisingly, a central theme revolves around awareness and appreciation of the natural environment (McIntyre 1998), particularly its scenic aspects (Hull and Stewart 1995; Nickerson and Cook 2002; Talbot and Kaplan 1986). People do not simply perceive the environment in a passive way; instead, they interpret what they perceive through culturally supplied schemas, generally reacting positively to pristine and undeveloped wilderness settings, consistent with an American romantic ideal of wilderness (Arnould and Price 1993; Glaspell and others 2003; McIntyre and Roggenbuck 1998). Certain types of settings capture attention effortlessly and are positively evaluated (Schroeder 2007). Specifically, water, mountains, or open vistas with low groundcover and scattered trees are nearly universally favored (Hill and Daniel 2008; Ulrich 1983), and exposure to them results in positive impacts on mood and cognitive capacity (Kaplan 1995). Therefore, we expect attention to nature to be dominant in the wilderness ICE.

Another theme evident from wilderness experience research is that people use wilderness experiences for self-discovery and personal growth (Brooks and Williams in press; Dawson and Russell in press; Fredrickson and Anderson 1999; Lee and Shafer 2002; Nickerson and Cook 2002). The absence of communication and modern distractions creates cognitive space for people to reflect on themselves, their concerns, and their futures (Angell 1994; Caulkins and others 2006). Additionally, being away from the conveniences of daily life, forced to rely on oneself for basic survival and facing challenges not present in everyday life, generates opportunities to test one's limits (Talbot and Kaplan 1986). For example, students on an underground float reported heightened feelings of risk when faced with the need to jump down a low waterfall (McIntyre and Roggenbuck 1998). Similarly, backpackers in Arctic National Wildlife Refuge described feeling a sense of risk and challenge in having to navigate through wild terrain far from help (Glaspell and others 2003). Even on a short canoe trip along a warm, clear stream, people described challenges of route finding and physically negotiating their way among fallen trees through a wilderness swamp (Patterson and others 1998). The literature led us to expect to identify wilderness visitors' focus on self-discovery and related aspects of personal growth as part of the ICE.

Although wilderness experiences are often associated with solitude, another finding is that connection with others—both cognitive and affective—can often be important (Arnould and Price 1993; Fredrickson and Anderson 1999; Loeffler 2004; McIntyre and Roggenbuck 1998). Sometimes this is manifest in feelings of group bonding that are intensified by virtue of sharing challenging experiences in remote settings (Arnould and Price 1993; McIntyre and Roggenbuck 1998). Other times, it is a matter of being able to spend time privately with significant others (Hammitt 1982) or sharing experiences with family (Nickerson and Cook 2002). Research in non-wilderness settings has found that companions affect recreationists' level of happiness (Csikzentmihalyi and Hunter 2003) and moods (Morita and others 2007). Nevertheless, quantitative ICE research in wilderness has found that focus on one's group is substantially lower than the focus on nature and on tasks (McIntyre 1998; McIntyre and Roggebuck 1998). Given the relative lack of research on the social aspects of the ICE, and because most previous research has been done with group adventure excursions, we did not have expectations about how prevalent attention to the social environment would be in the wilderness ICE.

Affective states—both emotions (a particular feeling elicited by specific events) and moods (more general, diffuse feelings)—are of interest to researchers who study leisure and recreation experiences. Research has shown that moods are generally positive in outdoor recreation, partly because the decision to participate is voluntary, sought because it is expected and intended to produce positive affect. Additionally, it has been demonstrated that many types of natural settings have characteristics that tend to generate positive affect (Hull 1990). However, ICE studies in wilderness have only begun to explore emotion and mood. For instance, McIntyre and Roggenbuck (1998) limited their "mood" measures to arousal, sociability, and relaxation, while Hull and colleagues (1992) included only relaxation, satisfaction, excitement, and

boredom. The other key wilderness ICE studies (Borrie and Roggenbuck 2001; McIntyre 1998) did not include emotion measures. Thus, we expanded the list of emotions covered in our study, and we expected the ICE to be characterized by strong positive emotions.

The studies discussed above suggest that—at any moment in time—a person's focus or thoughts may be on the environment, social interaction, tasks, or internal feelings. However, these studies are very limited, and some aspects such as focus on task or affect have not been widely studied. Additionally, while studies have begun to explore the content of thoughts about nature during the ICE (Patterson and others 1998; Waitt and Lane 2007), there has been relatively little qualitative work on people's subjective thoughts about self, tasks, and others.

Extending Previous Research

Most ICE research has been conducted with populations that are not representative of the "typical" wilderness visitor; they have studied unique audiences like students (Hammitt 1982; Hull and Stewart 1995; Hull and others 1996; McIntyre and Roggenbuck 1998), novices on guided multi-day immersion programs designed to foster personal growth (Fredrickson and Anderson 1999; Talbot and Kaplan 1986), or commercial clients (Arnould and Price 1993; Nickerson and Cook 2002). While useful, these studies need to be supplemented by studies of people engaged in more typical wilderness activities like hiking and backpacking. It is possible that conclusions from previous research may be unique to the study populations or their specific activities.

Previous research on ICE, in and outside wilderness, has used quantitative measures to understand focus of attention and other aspects of experiences (Borrie and Roggenbuck 2001; Hull and Stewart 1995; Hull and others 1996; McIntyre 1998). While providing clarity about the relative prevalence of different themes, quantitative approaches have limited ability to describe how people interpret and integrate different factors, such as the characteristics of the environment and personal history, to generate personally meaningful experiences (Fredrickson and Anderson 1999; Waitt and Lane 2007). Therefore, in this study, we supplemented quantitative measures with in-depth interviews.

Most ICE researchers have been interested in the ways the components of experiences vary over time. Therefore, they have employed within-subjects designs and prompted participants (often through beepers) to record measures multiple times (Borrie and Roggenbuck 2001; Hull and Stewart 1995; McIntyre 1998). Such designs have some clear advantages; however, they may suffer from high attrition (Gershuny 2004), are subject to low compliance with instructions (Reis and Gable 2000) or may sensitize participants to the topics and variables of interest to the researchers (Visser, Krosnick, and Lavrakas 2000). Thus, we chose to ask people to respond only once during their trip. While our approach has its own limitations (discussed later), it supplements other approaches and collectively helps researchers 'triangulate' on the dimensions and content of ICEs.

To extend prior research, our goal was to use quantitative measures to characterize the magnitude of different facets of the ICE and a qualitative approach to understand, more holistically, the nature of ICE in wilderness, with a focus on what people "actually do or feel" (Lee and Shafer 2002). In the phenomenological tradition, we focused on the experience as it occurred, rather than people's interpretations of or opinions about the experience (Starks and Trinidad 2007). We did this in the wilderness, as opposed to after the conclusion of the trip, to avoid problems of recall (Reis and Gable 2000; Schroeder 2007) and to ensure that appropriate context was provided (Gershuny 2004). We studied a representative sample of visitors instead of self-selected volunteers, and we used a less reactive technique than beepers. Thus, we answer Stewart's (1998) call for innovative methods to study the nature of the leisure experience.

Methods

Study Areas and Sampling

We studied wilderness experiences at three high-use wilderness sites in Oregon and Washington. The locations were chosen to capture a range of physical settings and a diversity of visitors. The first site, Marion Lake (ML), in Mt. Jefferson Wilderness, is located in an old-growth forest in the Cascade Mountains of Oregon. The 300-acre lake is renowned for its fishing opportunities and is highly accessible, being only two miles from the trailhead. Data collection took place in late May and early June, 2002, when snow was present and weather conditions were often poor. The second site, Pete Lake (PL), is located in mid-elevation mixed conifer forests of the east slopes of the Cascade Mountains in the Alpine Lakes Wilderness in Washington. The lake is four miles from parking and attracts a mix of day and overnight visitors. At the time of our data collection, in June and July, crossing flooded streams was challenging and mosquitoes were notable. The third site, the Lakes Basin (LB) in Oregon's Eagle Cap Wilderness, was studied in August and September, when the weather was excellent and insects were gone. The Lakes Basin is a subalpine area with meadows, lakes, and pockets of trees located in glaciated granite outcrops amid high peaks. It is reached by a relatively challenging 8-mile hike from the nearest access point. Overnight trips to this site are much more common here than at the other two sites.

Each study site was sampled on at least 15 days. Research was conducted within the wilderness, to capture the immediate experience and avoid memory problems, such as rosy recall or schematic bias (Koriat, Goldsmith, and Pansky 2000; Levine and Safer 2002; Reis and Gable 2000). Researchers traveled through the study location, intercepting all groups they encountered. On high use days, when more groups were present than could be sampled, researchers sampled for maximum variability—that is, they sought out groups that enhanced the variation in group size, presence of children, length of stay, and gender. When a group was contacted, one individual was asked to participate in a taped interview (selected to enhance

diversity in age, gender, and other characteristics), while the other group members were asked to complete the written questionnaire. People were quite willing to assist with the research: the response rate was approximately 80% across all three locations.

Data Collection Instruments and Analysis

The questionnaires presented 74 items drawn primarily from previous research. Several items used semantic-differential format (such as, "happy-sad," "alert-drowsy") to explore people's emotional states. Several items measured the focus of attention (such as, "how much were you focusing on the natural environment around you?" or "How much were you concentrating on the task you were carrying out?") and content of thought (such as, "I felt connected to times long ago," "how much were you thinking about things you need to do back home?"). Other items assessed physical condition (such as, "my body aches," "I feel great"). We specifically included several wilderness-specific items developed by Borrie and Roggenbuck (2001), such as, "I felt a part of wild nature," "I felt I was living like a pioneer." All items were measured with 9-point scales and asked the respondents to report about the time immediately prior to being contacted. Participants rated each on a scale of 0 (not at all) to 8 (very much). Questionnaire items intended to measure each construct (focus of thought and attention, behavioral engagement, affect, focus on task, social focus, and personal reflection) were factor analyzed (principal components extraction with oblique rotation) in groups to reduce them to meaningful latent constructs with adequately high reliabilities (Cronbach's alpha). This resulted in 17 specific factors.

With a goal of rich description and understanding (Schroeder 2007), interview questions explored the focus of people's attention, their thoughts, and their feelings in the time immediately before they were contacted (Reis and Gable 2000). We did not cue them with concepts such as "wilderness" or "solitude," so that they would instead express themselves in their own terms (Groenewald 2004). Following general guidelines for qualitative research, the wording and aims of the interview questions evolved over time as we discovered that some forms of questions were challenging or strange for respondents. Ultimately we asked questions such as these: "What have you been thinking about? What were you doing? What were you focusing on? How were you feeling?" Interviews were transcribed verbatim and imported into QSR N6 for analysis. This paper makes use only of text specifically related to the ICE from 126 interviews. Additional results from these studies are reported in Johnson and others (2005) and Hall and others (2007).

The approach to coding this material can best be considered interpretive phenomenological analysis (IPA). This is an inductive effort to make sense of others' attempts to create meanings (Brocki and Wearden 2006; Reid and others 2005), while searching for shared patterns (Darker and others 2007). IPA is especially well suited for studying complex cognitive phenomena (Brocki and Wearden 2006). We read transcripts multiple times, developed initial highly specific themes based on participants' words; organized those themes into broader categories (guided by theoretical constructs from the literature, while remaining sensitive to emergent themes); and ultimately produced a hierarchical structure (Groenewald 2004; Reid and others 2005). In presenting results, we recognize the importance of the subjective report, and therefore we use excerpts from the interviews extensively (Graumann 2002; Brocki and Wearden 2006). Excerpts are identified with the interview number, location, gender (M=male, F=female), and length of trip (OV = overnight, D = day).

Findings

Interviews were conducted with 45 women and 81 men. Eighty interviews were with overnight visitors, while 46 were with day users. The distribution of interviews across locations was roughly equal: 34 at Marion Lake, 50 at Pete Lake, and 42 in the Lakes Basin. While 16% of people were contacted at lake destinations and 2% were at scenic vistas, 38% of interviews were done in people's campsites and 44% were done when we intercepted people along the trail. Questionnaires were collected from 70 Marion Lake visitors (26 day, 44 overnight), 72 Pete Lake visitors (45 day, 27 overnight), and 109 Lakes Basin visitors (29 day, 80 overnight).

Five general themes emerged from the interviews (Table 1). The themes are not mutually exclusive, and they could potentially be organized in different ways, but this typology generally conforms to the major themes identified in ICE research. Factor analyses of the questionnaire items resulted in 17 factors (Table 2), which we grouped within the five themes from the interviews. In discussing these findings, we integrate both types of data and though we present all the themes—we emphasize those that are novel contributions of our research.

Engagement with the Environment

The most common interview theme was engagement with the natural environment, which was both cognitive—interpreting and thinking about the setting—and behavioral. The cognitive aspects were similarly prominent in the questionnaire data, where focus on nature, remoteness, wildness, and humility were all generally high. As expressed in the interviews, cognitive engagement frequently took the form of "appreciating the beauty," "enjoying the view," or thinking about "what a wonderful place it is." Often these sentiments were expressed when people were contacted at particularly scenic spots, such as "the first big view," where they were focusing on "the snow capped mountains and the waterfalls along the trail" (#27, PL, M, D) or thinking about how "the view down the Lostine canyon is just so great" (#79, LB, M, OV).

Beyond appreciation, cognitive engagement often went deeper to include focused attention to the small, varied details of the environment, such as "the different colors of the rocks along the way…the different tones of grays and tones of colors in the trees" (#14, PL, M, D) or "the ways the light plays on the rocks at all different times of the day, in the shade that is cast in the meadows" (#122, LB, M, OV). One camper captured

Table 1—Prevalence[a] of themes relating to the immediate conscious experience.

Primary Theme	Sub-theme	Percent
Engagement with the Environment: Cognitive (n=95; 75.4%)a	Scenery, beauty	34.9
	Comparison to other place or trip	30.2
	Analysis or imagination	28.6
	Micro or variety	23.8
	Wildlife	15.1
	Deliberate disengagement	11.1
Engagement with the Environment: Behavioral & Bodily (n=77; 61.1%)	Trail/travel	24.6
	Weather	22.2
	Somatic	16.7
	Bugs	10.3
	Active construction of experience	10.3
	Senses	10.3
Affect (n = 71; 56.3%)	Relaxed, peaceful, nice	41.2
	Strong positive (e.g., awe, love)	10.3
	Negative	4.8
Task (n=59; 46.8%)	Camp chores or food related	25.4
	Activity	20.6
	Making decisions	10.3
Social (84 own group; 66.7%)	Group interaction & talking	38.1
	Collective construction of experience	34.1
	Other group members' experiences	12.7
	Other groups	19.0
Personal reflection (n = 43; 34.1%)	Home or family	19.8
	Work	8.7
	Other	10.3

[a] Numbers are number and percent of interviews containing each theme.

the sense of fascination with the setting this way: "We've got a camp that has a just picture perfect window between the trees of the mountain and it's just glorious. Like I was telling Kelly, it's like a big screen TV. You got this huge picture that is beautiful, it keeps changing, and you can't stop looking at it" (#73, LB, M, OV).

Others had been engaged in an analytic process of developing explanations for what they were observing. For example, when asked what he had been thinking, a day hiker said, "one of the things I was thinking about is, I asked my friend Brian if this place had ever been logged. And he said there's absolutely no way. There's never been any roads built in here. Nothing. And I was imagining what it would be like when the Indians were here. And I wonder if they went out on this lake and fished this lake and I'm sure they probably did" (#100, ML, M, D). A camper in the Lakes Basin said, "I was actually looking at the U-shaped valleys, and thinking about how long it took to get this way, how the Lostine River did all of this work and made it like it is. Just kind of appreciating it, because I don't see this in the valley where I'm from" (#74, LB, M, OV).

Another form of cognitive engagement involved comparing the place—its smells, trails, scenery, or other aspects—to other places. Most participants had been to the study location previously, and comparisons were often to previous trips. Or the environment conjured up memories of other places, as for the day hiker who said she was "just thinking about how I miss Colorado and I miss all the outdoor stuff that I used to do there" (#20, PL, F, D).

Although wildlife was not always evident, especially during day trips, a sizeable number of people described thinking about or searching for wildlife. When observed, wildlife captured extended attention, exemplified by a camper's description of watching osprey: "I was looking at the osprey, thinking that they might have a nest with babies because they seemed to come over here and say, 'what are you doing here?' They seemed to fly kind of low over here. And I didn't think they were just fishing. They were like, 'get out of here.' So, I was really pleased to see that" (#90, ML, F, OV). This example illustrates the way participants supplied interpretations and analyzed the conditions and events they observed.

Table 2—Mean ratings[a] and factor structure of wilderness experience items.

Factor (Cronbach's alpha)	Item	Item mean (SD)	Loading[b]	Scale Mean
Cognitive Engagement				
Nature (α = .68)	Focus on the natural environment around you	6.67 (1.52)	0.83	5.64
	The feelings I was experiencing were more intense than usual	3.75 (2.38)	0.57	
	I noticed the little things of nature more than before	5.17 (2.01)	0.70	
	Focus on the scenery	6.80 (1.66)	0.81	
Remote (α = .75)	I felt like I was in a remote place	5.55 (2.01)	0.85	5.71
	I felt away from the modern world	6.16 (1.96)	0.78	
	The environment was free of human-made noise	4.92 (2.44)	0.65	
	I would call this place wilderness	6.16 (1.82)	0.75	
Pioneer (α = .62)	I felt I was living like a pioneer	2.77 (2.48)	0.74	4.18
	I felt that life is simple	4.89 (2.12)	0.78	
	I felt that time had flown by	4.89 (2.07)	0.74	
Wild (α = .89)	I felt a part of wild nature	5.02 (2.14)	0.79	5.89
	I felt a sense of freedom	6.25 (1.61)	0.73	
	I was in awe of nature's creation	6.24 (1.95)	0.76	
	I felt the tranquility and peacefulness of this place	6.58 (1.59)	0.82	
	I was feeling a special closeness with nature	6.00 (1.86)	0.84	
	I felt the simplicity of life on this trip	5.61 (1.96)	0.75	
	I was feeling totally immersed in nature	5.38 (1.97)	0.80	
Humility (α = .80)	I was feeling insignificant in the glory of nature	4.08 (2.56)	0.79	4.52
	I felt the silence of the environment	5.29 (2.16)	0.76	
	I felt connected to times long ago	3.53 (2.49)	0.78	
	I felt humbled by all of nature around me	5.15 (2.36)	0.81	
Behavioral engagement				
Physical challenge (α = .78)	The physical environment provided too much challenge	1.32 (1.58)	0.73	1.14
	I couldn't seem to catch my breath	1.13 (1.54)	0.69	
	This trip has been more difficult that I imagined	1.09 (1.74)	0.71	
	I have carried too much gear	1.29 (2.01)	0.53	
	My heart is racing too much	0.71 (1.27)	0.70	
	If I had to do it over, I would choose an easier trip	0.60 (1.35)	0.68	
	My body aches	1.74 (2.08)	0.70	
In shape (α = .73)	My body was up to the challenge	6.35 (1.67)	0.72	4.39
	I wish I had better physical endurance[c]	3.27 (2.80)	-0.77	
	I am in the best shape of my life	3.17 (2.38)	0.72	
	I am physically prepared for this trip	5.62 (2.18)	0.78	
Affect				
Vigor (r = .37)	I feel great	6.43 (1.68)	0.68	6.20
	I feel invigorated	5.96 (2.00)	0.83	
Cheerful (α = .82)	Sad - Happy	7.08 (1.22)	0.72	6.79
	Irritable - Cheerful	6.60 (1.72)	0.77	

(continued)

Table 2 (Continued).

Factor (Cronbach's alpha)	Item	Item mean (SD)	Loading[b]	Scale Mean
	Constrained - Free	6.77 (1.44)	0.67	
	Confused - Clear	6.73 (1.41)	0.66	
	Worried - Calm	6.91 (1.40)	0.78	
	Uncomfortable - Comfortable	6.60 (1.60)	0.76	
Satisfied (α = .66)	Resentful - Satisfied	6.65 (1.99)	0.81	6.68
	Relaxed – Tense[c]	6.75 (1.80)	-0.75	
	Hostile - Friendly	6.67 (1.94)	0.73	
At ease (α = .77)	I would call what I was doing leisure	6.30 (2.13)	0.56	6.65
	I was satisfied with how I was performing	5.94 (1.90)	0.55	
	I was able to be myself	6.88 (1.49)	0.72	
	I felt completely at ease here	6.70 (1.63)	0.85	
	I felt tranquil or at peace here	6.79 (1.55)	0.86	
	I wish I had been doing something else[c]	0.74 (1.63)	0.54	
Alert (α = .80)	Drowsy - Alert	5.92 (2.08)	0.75	5.91
	Passive - Active	5.98 (2.23)	0.74	
	Tired - Energetic	5.47 (2.13)	0.78	
	Weak - Strong	6.11 (1.67)	0.75	
	Excited -- Bored	6.05 (1.51)	-0.71	
Task				
Task (α = .68)	Focus on the task you were carrying out	4.69 (2.56)	0.69	3.85
	I was focusing on achieving the next goal of my trip	3.54 (2.58)	0.62	
	I was concentrating on doing my activity right	3.72 (2.61)	0.81	
	I was fulfilling some of my responsibilities[c]	3.48 (2.70)	0.70	
Social Group (r = .52)	Focus on other people in your group	4.67 (2.05)	0.83	4.84
	I felt a special closeness with others in my group	4.04 (2.01)	0.51	
Solitude (r = .27)	I experienced solitude	5.02 (2.36)	0.76	5.02
	Crowded Alone	4.67 (1.61)	0.77	
Personal reflection				
Self (α = .75)	Focus on your own thoughts	5.05 (2.14)	0.70	3.73
	Focus on your feelings and emotions	3.76 (2.19)	0.77	
	I was reflecting about myself a lot	3.41 (2.24)	0.79	
	I was very aware of my feelings	3.84 (2.32)	0.71	
	I was thinking about my place in the world	2.54 (2.49)	0.52	
Home (α = .80)	Thinking about things you need to do back home	1.66 (2.20)	0.85	1.57
	Thinking about work or school things to be done	1.16 (1.84)	0.85	
	Thinking about "real life" outside of the wilderness	1.86 (2.27)	0.83	

[a] Scale endpoints (0 = not at all; 8 = a great deal)
[b] loading on primary factor, structure matrix, oblimin rotation
[c] Item reverse coded in computing factor score.

Interestingly, several people—when asked about their thoughts—explained that they were trying "not to do a whole lot of thinking" (#63, LB, M, OV), but instead preferred to "walk with a clear mind and not think about too many things" (#18, PL, M, D). One described this as trying to "just take in what's around me" (#45, PL, F, D). Another explained that "hiking is kind of a transcendental mood—you don't really know what you're thinking about" (#94, ML, M, OV).

Physical engagement with the natural environment, as described in the interviews, involved both activities, such as hiking, and bodily sensations, such as fatigue. However, the questionnaires revealed that concerns about strenuous physical challenge were quite minor. Some people reported heightened senses as a part of their ICE, with some discussing the central role of smell: "I love the way it smells… The pines have a real distinctive dry smell" (#7, ML, F, D); "I was thinking about how great it smells, because it only smells like this in the woods" (#17, PL, F, D). Other people were paying attention to what they heard, such as "the sound of the wind in the trees" (#44; PL, F, D). One day hiker described both sound and smell: "I love the way it smells… the sound of the river—the whitewater sound is so beautiful" (#7, LB, F, D).

Some people described ways in which they actively constructed their experiences through their activities, rather than passively "absorbing" their surroundings. For instance, one hiker mentioned how she and her partner "always pick up rocks and look at them and then put them back. We talked about what the water looked like. I took pictures of it with real fast shutter speed and slow speed, so we could see the drops" (#7, LB, F, D). Another camper described how her group was deliberately quiet so they could "hear wild critters" (#57, LB, F, OV).

Many people described how aspects of the physical environment forced them to narrow their focus of attention. Some of these were described in ways that suggested people's attention was diverted from things they might rather be attending to. Often this occurred when they had to pay attention to hiking ("trail/travel" in Table 1). At Marion Lake, early in the study, snow drifts were deep and participants contacted along the trail were focusing on "staying on [their] feet" (#1, ML, M, OV). At Pete Lake, it was challenging to find the trail due to blowdown and flooded streams. One participant described it this way: "I was just sort of thinking, trying to remember our route back. It's been so broken up because of the blow downs and everything. Trying to remember which river crossings, or which creek crossing do we have on the logs" (#21, PL, M, D). While finding routes was not a problem in the Lakes Basin, some of the trails were rocky and steep, causing people to focus on "where I put my feet. Coming down hill... I don't want to hurt myself, so I'm awful careful" (#79, LB, M, OV). One hiker said she "would like to feel a little more spiritual," but wasn't able to, "because of the challenge. This is a big challenge because of the terrain and the rocky path. I look at the path and think about my footing" (#66, LB, F, OV). While challenging travel narrowed people's focus of attention to their immediate surroundings, some people also described focusing on or thinking about their physical condition, because they were "getting kind of tired" (#113, PL, F, D), "just paying attention to my feet" (#78, LB, F, D), or thinking about "how my pack sits on my back" (#95, ML, M, OV).

We included weather under physical engagement with the environment, because it generally caused people to focus on their physical comfort and affected their activities. For instance, one camper mentioned that he had been "getting all my gear dry" (#31, LB, M, OV), while another had been "thinking about whether I should get ready for rain" (#105, PL, M, OV). Although adverse weather was commonly mentioned, other people talked about how they were "really enjoying the temperature of the day" (#97, ML, F, OV) or feeling grateful that "it was nice to have a rain free evening and a sunny morning" (#63, LB, M, OV).

When mosquitoes were present, people reported having their attention inescapably drawn to them. One respondent captured both the affective and attentional effect of mosquitoes: "I've been preoccupied with all these bugs… slapping and walking, which seems to be a challenge for my coordination… If it wasn't for these bugs I would pay attention to more but mostly I've been paying attention to these mosquitoes" (#41, PL, M, D).

Tasks

Nearly half of the participants reported that they had been thinking or focusing on a specific task. This is consistent with the mid-scale rating for focus on tasks in the questionnaires. Often this was because we contacted people in their camps or at rest stops along trails, where they were preparing food or taking care of camp chores. Such tasks drew attention away from the natural environment: "Getting the tent set up, eating lunch... Just the little details of setting up a camp. Finding where everybody's stuff is and where it needs to go" (#52, PL, F, OV). A camper in the Lakes Basin said he "hadn't been thinking about too much, just the chores around the camp" (#65, LB, M, OV).

Many participants were focused on their specific recreational engagement. At Marion Lake, anglers reported things like "watching the lake to see if there were any fish rising" (#103, ML, M, D) or "focusing on fishing and just enjoying the view" (#92, ML, M, OV). Photography was another common activity that consumed people's attention: "just thinking about what would be a really cool picture and what angle could I get at it" (#120, PL, F, D); "I've been thinking a lot about the sunset and if I can get a picture of it or not" (#118, PL, M, OV).

Affect

Only 39 people were asked explicitly about their mood or emotions in the interviews, although 71 people provided such information, typically in response to questions about their thoughts. In the questionnaires, positive emotions were the most strongly rated of all the factors. Only six people expressed any negative affect in the interviews, while the majority of the rest (52 people) gave rather simple responses about mildly positive states, such as relaxation ("just sitting and enjoying the quietness" #14, PL, M, D), enjoyment ("pretty happy, content,

fulfilled" #16, PL, M, OV), or peacefulness ("it's soothing, it's hypnotic" #7, LB, F, D). Many people simply responded that they were in "a good mood," without elaborating further. Stronger emotions, such as awe or excitement, were expressed by only a handful of people. As one person put it, "I guess you might say [it is] catharsis to my spirit to be in these kind of places" (#117, PL, M, D). Another hiker discussed how much he had been missing his wife back home, but had decided to finish out his trip: "I love this place so much and I have a favorite campsite, so I'm going to stay anyhow" (#79, LB, M, OV). Overall, it was clear that moods and emotions were much more positive than negative, but that their intensity was mild.

Social Factors

Approximately 40% of interview participants said they had been talking with and interacting with group members immediately prior to being interviewed. Nearly half of these (22 people) were talking about issues "back home," ranging from film festivals, to cars, to computers, to food. Others were discussing their trip, and a common type of response was, "We were talking about just how good it was to be out here... Sitting around and enjoying each other" (#84, LB, M, OV). The prominent role of social interaction in the ICE was confirmed by the relatively high rating for focus on the group in the questionnaires.

An important aspect that emerged from the interviews was how participants co-constructed their experience with other group members. Although we asked people specifically about their own experience, many respondents used "we" language to talk about how they had been discussing things, drawing each other's attention to features of the environment or making decisions with their group: "We had originally thought we'd hike into Spectacle Lake, but we didn't realize it was so far. And we thought with the weather, the way it is, we probably won't do that today. So, we were talking about how we wanted to enjoy today" (#116, PL, F, OV). An example of collectively developing meanings can be found in the narrative of a camper who had been looking at historic mining equipment in the Lakes Basin: "My son and me were talking about the mining operations up here. Just guessing because we don't know anything about them, but we see some mining equipment around camp. Looks like there might have been some kind of a something going in. We don't know what they were mining. That's what we were talking about" (#85, LB, M, OV). When asked about her thoughts, a day hiker at Pete Lake responded, "We were thinking about how awesome, even when the trees are dead, how beautiful they still are. And we were thinking about how incredible the variety of flowers were" (#17, PL, F, D). Thus, respondents tended to expand our question about "their" thoughts to encompass the group as a whole.

A less common aspect of the social dimension of the ICE was participants' attention to the quality of their own group members' experiences, particularly when traveling with children or inexperienced group members. As one parent put it, he had been occupied around camp, thinking about "how did everybody sleep, do you want more hot chocolate?" (#65, LB, M, OV). Another discussed how he had been attending to his wife: "We had a really nice breakfast that I cooked for my wife—this is her first trip, and I wanted to make it really nice… She wants to go fishing. She hasn't been able to go fishing for a long time and so I say, okay. So, I've been taking care of the chores while she's been fishing. Making it good for her" (#111, PL, M, OV).

Much of the research on wilderness experiences, and managers' efforts to shape those experiences, has centered on the role of encounters among groups. It has commonly been assumed that having many encounters in wilderness detracts from experience quality. In our study, the percentage of interview participants who reported that they had been attending to or thinking about other groups was surprisingly small, given the high levels of use in the area; 55% of the interviews took place within sight or sound of other parties, and 16% were in sight of three or more other parties, yet many participants did not seem to be highly aware of others. When other people were mentioned, evaluations of the situation were typically neutral, as for the day hiker who said, "I guess there's people around us too. There was a couple that went by us, behind us, and… and we were just kind of chatting with them" (#99, ML, M, D). A camper at Pete Lake said, "it's been very restful up here and very pleasant…Even though there are other people here, I'm not really aware of them" (#38, PL, F, OV). In the questionnaires, solitude was rated relatively high as part of the ICE, supporting the interview findings. A small number of people expressed negative reactions to the level of use: "there are a lot of people here… It's not a huge concern to me, but this is like overkill. I've just never seen so many people on one trail at one time" (#76, LB, M, OV). Seekamp and others (in press) note that, when asked to define a "wilderness experience," many people referred to the absence of other people and a high degree of solitude. It is interesting, then, that the presence of other visitors did not seem highly salient as a specific focus of thought or attention for the same people, when asked about their immediate experience.

Personal Reflection

Approximately one third of interview participants said they had been thinking about affairs at home, whether that be family, friends, work, or other things, and the questionnaires showed focus on such thoughts to be quite low. Although few people mentioned thinking about things related to personal growth or spirituality, among those who were using the trip to work through issues, being away was an important factor. As one said, "that's part of coming out here, is to reflect on relationships and people… things in my personal life" (#117, PL, M, D). More commonly, people were thinking about typical aspects of their daily lives. As one hiker put it, thoughts encompassed "a range of things, anywhere from family matters to our kids to the potential of moving in a year out of this area" (#27, PL, M, D). Another said, "I'm getting ready to go back to work pretty soon and I've been thinking about that. What I need to do before I go" (#29, PL, M, OV). One day hiker captured the

individualistic nature of such thoughts when she said, "you want to hear everything? …Let's see, old boyfriends, traveling, building a house, heels, shoes, Italy, traveling, my old dog" (#78, LB, F, D).

Thinking about home often involved group discussions: "We sat around and talked about some of our friends from home…. That's about all we have thought about this morning" (#63, LB, F, OV). "We were actually talking about her husband and my fiancé, who were both in different places, and just talking about what they were doing. My fiancé is at the family beach house at the coast and I'm up here, and we're just talking about how it's nice and rainy here and they're probably nice and dry indoors" (#32, ML, M, OV). These examples further illustrate how people in groups co-construct their experiences.

Multi-dimensionality and Individuality of Experiences

The analysis above, organized by dominant themes, masks an important feature of experiences—their multidimensional and highly individualized nature. That is, although the general themes we identified occurred frequently, their specific manifestations and combinations were quite distinct. For instance, in the interviews, all but one of the people who described thinking about home or work also described cognitive or behavioral engagement with the environment. Similarly, 85% of those who were focusing on a task or activity were also attending to the natural environment. Almost 90% of those who were focusing on other people were also focused on the natural environment. In fact, 60% of interview participants described at least three of the five primary themes. The following examples illustrate the types of combinations and individual manifestations of experiences that emerged in response to questions about people's focus of thought and attention:

> "About nature, about the lake, about mosquitoes, about my dog, about my mother, and about work… The mosquitoes and other flies, my dog, and the water and the wind and the birds. Those flowers, they're just so amazing. The wind and the sound of the wind in the trees" (#44, PL, F, D).

> "My blisters. I think I have been thinking about how many other people we're seeing. Of course how beautiful it is. Thinking about my last trip here, last summer. Thinking about the other people in my group. Thinking about friends back home. That probably sums it up" (#67, LB, F, OV).

> "The mountains and the snow. Kind of the stillness of the water, at the lake. And how the trees above it reflect down onto the lake because it was so still. Because I was taking some photographs of that. But it was nice. It wasn't raining or anything, which is always good. And, I was noticing other people that were up there and seemed to be enjoying themselves too, they were relaxing and kind of lounging around and eating and stuff like that. You know, watching my husband fix his foot since he has blisters (#113, PL, F, D).

Discussion

In this section, we discuss how our findings relate to previous wilderness ICE research. Many of the themes that emerged from our interviews were similar to those previously reported, but there were some interesting differences.

Both Borrie and Roggenbuck (2001) and McIntyre and Roggenbuck (1998) found that attention to "nature" was more prevalent than attention to self, task, or social group. Not surprisingly, the natural environment was a nearly universal and primary focus of attention and thought for participants in our study as well, and engagement was both cognitive and behavioral. Also similar to previous research (Hill and Daniel 2008; McIntyre and Roggenbuck 1998; Schroeder 2007), people's attention was focused on particularly scenic characteristics, like mountains and flowers, as well as "pristine" wilderness features. Both the interviews and questionnaires demonstrated the extent to which people focused their attention on variety and "micro" aspects of the environment, as well as how they supplied interpretations and explanations through personal imagination or group discussions. Questionnaires revealed that people were especially likely to feel away from the modern world, experience tranquility, and feel a sense of freedom.

Beyond a general awareness and appreciation of wilderness, interviews revealed the way aspects of the environment affected the scope of attentional focus. Consistent with observations by Patterson and others (1998) and Fredrickson and Anderson (1999), there were specific things—difficult trail conditions, adverse weather, or mosquitoes—that study participants reported as restricting their focus of attention, and such environmental conditions varied across sites.

As in other studies (such as, Borrie and Roggenbuck 2001; McIntyre 1998; McIntyre and Roggenbuck 1998), it was somewhat less common for people to have been focusing on tasks or activities than on nature. In our case, this may have been because many interviews and questionnaires were administered in people's camps or along lakeshores, where people may have been relaxing and not really doing very much. Nevertheless, when people were engaged in active tasks, such as cooking, setting up or breaking down camp, or fishing, their attention tended to be highly focused on the immediate surroundings and a limited set of behaviors.

Previous ICE research has obtained varied results regarding focus on one's own group. For instance, participants in Borrie and Roggenbuck's (1998) study reported relatively high scores on feeling "special closeness" with their groups, while McIntyre's (1998) participants had relatively low scores for focus on their own group. As Borrie and Roggenbuck surveyed canoeists who were physically always together, and McIntyre surveyed students on an organized trip, such differences may be logical. Two-thirds of our interview participants had been thinking about, focusing on, or interacting with other people, nearly always their own group members, and questionnaires revealed that attention to one's own group members was quite common. It was quite evident from the interviews that wilderness visitors co-construct their experiences, drawing each other's attention to things they see, discussing how features

of the environment came to be, or imagining what it might have been like in times past. However, the ICE results also illustrate how often social interaction has little to do with the wilderness setting. Conversation was plentiful, and ranged widely from weather and wildlife, to events back home, plans for the future, and issues related to work or family.

These findings are consistent with other research in outdoor recreation, including in wilderness settings, showing that people often engage in recreation for social motivations and to forge connections with others. The high degree of sociality contrasts with the common notion that wilderness experiences are primarily individual, reflective experiences and reinforces the need to recognize important social motivations and processes. It is important to note that, despite their extensive social interactions, survey participants also reported feeling a relatively strong sense of solitude at the same time.

Emotion has not been extensively studied in qualitative research on immediate conscious experiences in outdoor settings, particularly not in wilderness. Research by Hull (1990) and Kaplan (1995) led us to expect that emotions were likely to be positive, and indeed this proved to be the case, as evident from both the interviews and questionnaires. People seemed to be in mildly pleasant moods, relaxed, at ease, and satisfied. This finding contrasts with the expectation that people on wilderness trips are likely to experience intensely powerful emotions such as awe or humility. Indeed, it suggests that the common emotional experiences in wilderness are quite similar to those that occur in other types of natural environments. It is interesting to note that these reports of the ICE appear to differ from the more intensely emotional narratives that have been reported among highly place-attached wilderness visitors (Brooks and Williams in press).

Wilderness experiences are often thought of as opportunities to focus on oneself. For instance, Borrie and Roggenbuck (2001) asked people how much they had been focusing on their own thoughts, reflecting on themselves, or considering their place in the world. In our quantitative data, scores for these items were much lower than for focus on nature, tasks, or social group. In our qualitative interviews, we found it difficult to extract focus on "self" from other points of focus. For example, some people who were thinking about or talking with their own group were thinking about their relationships with group members, while others were cognitively engaged in comparing the present trip to a previous trip, both of which could be classified as focusing on "self." Apart from these types of introspection, it was clear from both interviews and questionnaires that people were not thinking much about work and their daily lives, supporting the contention that wilderness experiences are largely about cognitive and emotional escape.

Several contrasts were evident with other wilderness experience research in relation to themes that did not emerge from our data. Specifically, other studies have discussed the importance of wilderness trips for personal growth and the role of risk or challenge (Glaspell and others 2003; Loeffler 2004; McIntyre and Roggenbuck 1998; Schmidt and Little 2007). Brooks and Williams (in press) point out that wilderness experiences are part of the overall process of forging personal identity for many people, but our interviews did not reveal that such processes were necessarily central at any given point in time during wilderness trips. In fact, while people appreciated the opportunity to relax and not think about work, few engaged in deep spiritual exploration or contemplation. It may be that connections to self-identity and life projects become more central to people after they return home. Risk and challenge only appeared in a few interviews, primarily from early in the summer, when some people found that snow or flooded streams stretched their comfort level, and the questionnaires revealed low levels of physical challenge. It is possible that the absence of risk and challenge is related to the characteristics of our study sites, which were relatively accessible by high quality trails. Other research has explored experiences in remote locations such as Denali (Glaspell and others 2003) or on challenging trips (McIntyre and Roggenbuck 1998; Fredrickson and Anderson 1999).

Another surprising finding was how few people were attending to other visitors outside their own group. Despite being in very high use areas, few people mentioned thinking about or focusing on other visitors. Although a small handful of visitors expressed dismay over crowded conditions, particularly in the Lakes Basin, most either paid little attention to others or had positive encounters.

Conclusions

This research reveals the multi-dimensionality of the immediate conscious wilderness experience, as well as the ways that common themes play out in uniquely individual ways. We had a very high level of participation in the study and were able to capture the ICE in context, thereby overcoming some limitations of previous approaches. However, our study has some limitations that should be noted. First, some people found the questions about what they had been thinking and feeling to be strange, and in many of the interviews, this material was quite brief. Richardson (1999) pointed out that respondents in studies of experiences must have high levels of verbal competence, be forthcoming and complete. Some of our participants were willing and able to communicate personal insights, but others were not. Additionally, people had difficulty separating their immediate experiences (just before being approached) from the rest of experience. As Patterson and others (1998) noted so well, people like to engage in story-telling, and many participants wanted to relate what they thought were the more interesting aspects of their entire trip, rather than the mundane details of the past hour.

Despite these limitations, our research revealed that the ICE in wilderness tends to be highly positive. Beyond this, it is complex, involving considerable attention to things outside wilderness, in addition to a person's immediate natural and social surroundings. Experiences are temporally dynamic, with the focus of attention sometimes being expansive and sometimes quite narrow, depending on one's activity, physical conditions, and companions. Overall, feelings are positive, though occasionally punctuated by negative events. Together with other research on the ICE, post-trip evaluations of experiences, and

narrative approaches, our research helps show how specific situations and conditions encountered during a wilderness trip influence people's immediate thoughts and feelings, and which aspects of those experiences later become incorporated into personal identity.

This study of the ICE in wilderness illustrates the challenges managers face in providing opportunities for specific types of experiences. First, these experiences—at least in the "typical" wilderness settings we studied—do not seem fundamentally different from what might occur outside wilderness in semi-natural environments. This is consistent with what visitors reported when directly asked about where they can find "wilderness experiences" (Seekamp and others, in press). Second, many things that people think about or attend to are outside of managerial influence, such as a person's individual life history, the social group, the weather, or insects. Nevertheless, our findings clearly reinforce the conclusion that wilderness visitors attend to (and appreciate) "pristine" nature and scenery, and that these factors contribute to feelings of "wildness." On the other hand, they illustrate the limited effect of other visitors, even in places where one might encounter dozens of other people on any given day. Thus, the data show that—even in these high use locations—at any given time people are having thoughts and feelings largely consistent with the types of experiences wilderness managers hope to provide.

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Visitors' Conceptualizations of Wilderness Experiences

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Abstract—Despite 50 years of wilderness visitor experience research, it is not well understood how visitors conceptualize a wilderness experience. Diverging from etic approaches to wilderness visitor experience research, the research presented in this paper applied an emic approach to identify wilderness experience attributes. Specifically, qualitative data from 173 on-site semi-structured interviews illustrate that wilderness visitors' conceptualizations of wilderness experiences strongly resemble characteristics described in the Wilderness Act. Furthermore, descriptions reveal that experiences are both complex and dynamic, and an assortment of personal, social and environmental factors determine experience quality. Although most participants reported experiencing wilderness, they also frequently mentioned factors that diminished the quality of the experience. Their conception of a prototypical experience was one occurring in a remote destination with few (or no) encounters where they can escape civilization. Some participants explained that such premier experiences are readily found even within high-use wilderness areas by hiking off-trail or by hiking further from trailheads, and most participants asserted that these experiences can also be found outside of designated wilderness. These data illustrate that naturalness, lack of development, and solitude remain relevant wilderness experience concepts, particularly for visitors seeking "outstanding" wilderness experiences.

Introduction

Defining a wilderness experience is important for managers to adequately protect those experiences. The Wilderness Act of 1964 mandates that managers provide visitors with "outstanding opportunities for solitude or a primitive and unconfined type of recreation." However, Hendee and Dawson (2002) point out that the testimony accompanying the writing of the Act indicated that managers should provide "a complex set of experiences" (p. 22). The types of experiences typically addressed by researchers and provided by federal agencies include freedom, remoteness, privacy, solitude, challenge, self-reliance, humility, and a sense of timelessness, all of which are complex constructs that do not yet have standardized measures. For example, most researchers explore the solitude construct through measures of encounters (for example, Hammitt and others 1984; Manning 1985; Vaske and others 1986) in which solitude is conceptualized as an outcome of acceptable use density. However, other researchers conceptualize solitude as a dimension of privacy (for example, Hammitt 1982; Hammitt and Madden 1989; Hammitt and Rutlin 1995; Hammitt in press), a more complex concept than being alone or isolation. Wilderness privacy is a product of intimacy, cognitive freedom, individualism, and remote, natural settings. Other wilderness experience attributes have varied definitions. Using the writings of Aldo Leopold, Bob Marshall, and Sigurd Olson, researchers have developed measures of primitive recreation that include connecting with the past, facing the challenges of living simply, and relying on personal skills (Borrie and Roggenbuck 2001; Shafer and Hammitt 1995). Definitions of unconfined recreation include feelings of freedom in actions (Hall and others 2010; Shafer and Hammitt 1995) and an immersion within nature that allows the human-nature transaction to unfold freely (Borrie and Roggenbuck 2001).

Guided by these notions, researchers have attempted to measure the achievement of specific experience attributes to help inform management decisions. Borrie and Birzell (2001) outline the four dominant approaches to this research: satisfaction (evaluations of on-site conditions, such as comparisons of the desired versus actual number of encounters); benefits-based (achievement of psychological outcomes, such as the ability to reduce stress or tensions); experience-based (explorations of feelings and cognitive states during multiphasic, on-site experiences, such as experiencing a sense of humility during a wilderness experience); and, meanings-based (examination of the meanings ascribed to the experience that relate to a visitor's sense of self or self-identify, such as feeling a high degree of wilderness involvement). Most research has used the satisfaction approach—particularly to measure solitude (see Dawson and Watson 2000)—that breaks down the complex and multifaceted nature of wilderness experience into smaller components (Borrie and Birzell 2001). However, it is difficult to assess the quality of dynamic and multi-phasic experiences using quantitative visitor surveys, which often require complex methodologies, such as the Experience Sampling Method

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(Borrie and Roggenbuck 2001). Despite such challenges, a few studies have used an emic approach to understanding wilderness experiences (for example, Borrie and others in press; Seekamp and Cole 2009).

An emic approach to researching wilderness experiences is based on gaining an insider (visitor) perspective on the important attributes of experience. Rooted in anthropology, this research approach has most commonly involved ethnographers striving to understand cultural beliefs from "the native's point of view" (Malinowski 1922, p. 25) by documenting the ideas and categories of meaning of members of a cultural group. In contrast, an etic approach to researching wilderness experiences focuses on isolating particular components (for example, solitude) to explore antecedents (for example, lack of crowding) and consequences (for example, satisfaction with wilderness experience quality). An etic approach, with roots in behaviorist psychology (Skinner 1933), assumes that factors affecting cultural beliefs "may not be salient to cultural insiders (Harris 1979)" (as cited in Morris and others 1999, p. 781) and, thus, focuses on the ideas and categories meaningful for researchers. Although there is much debate regarding the appropriateness, contributions, and integration of the two approaches (see Harris 1976; Headland and others 1990; Lett 1987), the purpose of this paper is not to judge the merit of one approach over the other. Rather, applying an emic approach in this research is complementary to past research efforts that aim to enhance management decisions (an etic approach). An emic approach offers the ability to (dis)confirm and expand researcher-derived concepts by asking visitors to define a wilderness experience and examining the factors visitors identify as specifically impacting wilderness experiences in their own words.

In this paper, we present qualitative data on how visitors conceptualize the wilderness experience from on-site semi-structured interviews with visitors to three high-use Forest Service wilderness destinations in Oregon and Washington. Our purpose is to discuss what people consider to be a "true" wilderness experience and the factors that contribute to or detract from that experience. The study was motivated in part by a desire to understand, from the visitor's point of view, whether and how use density affects wilderness experiences in high use locations, especially with respect to solitude. We also wondered whether visitors to these popular locations had notions of wilderness experiences that are consistent with what managers seek to provide. Thus, we sought to answer the following questions: What does the concept of a "wilderness experience" mean to wilderness visitors? Are visitors' conceptualizations of wilderness experiences different from the experiences managers seek to provide? What factors are most important in determining a prototypical, or ideal, wilderness experience? Does visitation density affect whether or not visitors have a wilderness experience?

Two other aspects to this study pertain to practical management considerations. The first relates to whether wilderness experiences are dependent upon being in designated wilderness areas, a topic that has arisen many times over the years (for example, Williams and others 1992). Hence, we ask, are wilderness experiences uniquely found in designated wilderness areas? Second, we were interested in the relationship between the experience of solitude and wilderness experiences. Research demonstrates that even in crowded conditions, visitors continue to report high quality experiences (Cole 2001; Stewart and Cole 2001) and visitors are not typically supportive of restrictions on use in order to improve solitude (Cole and Hall 2008b; Cole and others 1997; Hall and Others 2010). Perhaps, in modern society, visitors have become so accustomed to high levels of use that solitude is no longer considered a necessary part of wilderness experiences. Accordingly, we ask, is solitude still a relevant component of the wilderness experience?

Methods

We used an emic research approach to explore how visitors conceptualize a wilderness experience. An emic approach focuses on intrinsic meanings defined by members of a culture or subculture (Harris 2001). In our study, we focused on the experiences that are meaningful to wilderness visitors. This qualitative strategy reduces researcher-imposed bias by allowing the factors that define a wilderness experience to emerge from participants' responses to general, open-ended questions and clarifying follow-up questions rather than their responses to researcher-defined aspects of a wilderness experience (an etic research approach). Specifically, our semi-structured interview guide asked participants if they were having a wilderness experience and what made it a wilderness experience. When participants indicated that they were not having a wilderness experience or noted that their wilderness experience was not ideal, we asked them to describe an ideal wilderness experience and the reasons they were not having a wilderness experience. Additionally, we asked participants if they could achieve a wilderness experience outside of a designated wilderness area.

Interviews were conducted in 2002 between May and August. Researchers spent 15 days at each of three destinations: Marion Lake in the Mt Jefferson Wilderness (Oregon); Pete Lake in the Alpine Lakes Wilderness (Washington); and the Lakes Basin Management Area in the Eagle Cap Wilderness (Oregon). Marion Lake (360 acres) is located in a dense old growth forest setting, an easy two-mile hike from a trailhead that is approximately 90 minutes southeast of Portland, Oregon. Situated in a montane forest setting, Pete Lake (100 acres) is a moderate 4.5-mile hike from a trailhead that is approximately 90 minutes east of Seattle, Washington. Located seven hours from Portland, Oregon, nine hours from Seattle, Washington, and five hours from Boise, Idaho, the Lakes Basin Management Area provides a more remote experience that involves a moderately strenuous 8-mile hike to a basin with a number of subalpine lakes.

Interviews were conducted with visitors when and where contacted (n=173), and researchers recorded daily use level, with a range from 3 to 114 visitor encounters per day. All interviews were audio-recorded and transcribed verbatim. We inductively analyzed the transcripts using open coding (Corbin and Strauss 2008). For the text pertaining to questions regarding wilderness experiences, 14 primary themes and 154 subthemes

emerged. We used insider peer-debriefing (Spillett 2003) to enhance the interpretive quality of the coding process, by having multiple project researchers read through the transcripts, develop separate lists of codes, negotiate on a final codebook, and code a subset of interviews until interpretive patterns were consistent.

It is important to note that the data presented here represent a subset of the questions in the interview guide and, due to the dynamic nature of on-site interviews, not all participants were asked all questions. Therefore, although we present the data descriptively through the words of our participants and based on coding frequencies, these data are not intended to be generalized to all wilderness visitors. However, strong patterns emerged, and it is our intent to present the 'essence' of wilderness experiences as conceptualized by the 173 visitors we interviewed. Other reports derived from these interviews include Johnson and others (2005), Hall and others (2007) and Hall and Cole (in press).

Results

Participant Profile

The majority of participants were male (62 percent) and nearly equal proportions were day (46 percent) and overnight (54 percent) visitors. One-half of the interviews were conducted on high use days (>40 encounters), 28 percent on moderate use days (20-40 encounters), and 22 percent on low use days (<20 encounters). Sixty-one interviews were conducted at Marion Lake, 58 at Pete Lake, and 53 in the Lakes Basin Management Area. Similarities were found in the proportion of day and overnight visitors reporting that they either had or did not have a wilderness experience, as well as between study locations and between interviews conducted at different visitation levels. We also explored the extent to which differences in descriptive experiential codes (that is, codes representing specific characteristics of wilderness experiences) were related to user type, location, and use levels. No distinct patterns emerged. Therefore, we aggregated the data for the purposes of this paper and do not distinguish between day and overnight participants, visitors to the three areas, or participants interviewed at different visitation levels.

Having a Wilderness Experience

One hundred fifty participants were specifically asked if they were having a wilderness experience. Twenty percent of these participants indicated that they were not having a wilderness experience, responding with phrases such as "no," "probably not," "not especially," and "not 'wilderness' wilderness." One participant stated, "I'm having a forest experience, not really a wilderness experience." Another six percent of these 150 participants were unsure of whether or not they were having a wilderness experience, answering with responses such as "I am not sure" or "I don't know." For example, one participant had trouble determining whether or not she was having a wilderness experience:

> I guess not. Well. I don't know. A lot of times, I'll base it sort of on if I see a bear or something that you don't see necessarily all the time or find some tracks… I guess when you walk in you really are walking for an entire day and you don't see hide nor hair of anybody. I guess, maybe, those are the sorts of the kind of things that classify. So, I guess that just being out here, I'd say that this is more of a … sort of a wilderness experience, but sort of not, kind of.

Five percent of these 150 participants indicated that they experienced wilderness "at times" during their trip. For example, one participant stated:

> Uh, not so much today on this hike. I haven't felt as remote. I've seen a few more people but yesterday, or the day before yesterday, and we were up towards Rachel Lake, I really felt out and away from everything.

The remaining two-thirds (106) of the 150 participants specifically asked if they were having a wilderness experience answered affirmatively with statements such as "yes," "definitely," and "absolutely." However, 35 of these 106 participants qualified their response based on personal, social, or environmental factors that compromised the quality of their experience. Such qualifying descriptions illustrate that wilderness experiences are complex and, for some participants, there are varying degrees of wilderness (for example, "I would say it is pretty moderately a wilderness experience"). Participants explained that wilderness experiences may be obtained at certain times during the trip and not others. They observed that experience quality fluctuates depending on the social conditions (for example, the presence and/or number of other visitors), the biophysical impacts (for example, evidence of other visitors, such as litter or worn trails and campsites), and on management actions, such as signs and toilets. For example, one participant, who was asked to rate the experience on a 10-point scale, explained that the amount of impact and the presence of others influence the quality of a wilderness experience:

> I don't know, a 9 or a 10. I guess being out in the wilderness and not seeing a soul, and not seeing any impact, and finding your special spot, that's a 10. Running into people like yourselves, or the couple last night, who seemed to really appreciate where they were, it doesn't diminish it any. It's, and the trash, maybe that's what drops it to a 9.

Similarly, another participant stated that the presence of management structures degraded the wilderness experience:

> I would have to rate it about a 6. I don't want to say it's not a wilderness experience but at the same time I mean you have pit toilets over there and you have a pretty well established trail.

Offsetting those detractors were the derived psychological (cognitive and affective) or physiological benefits of the experience, as well as opportunities for wildlife viewing and the aesthetic quality of the natural environment. For example, one participant reflected, "Well, I guess when I think about

wilderness I think about more isolation, but in terms of the type of country and the scenery it doesn't get better than this." Another participant explained that wilderness experiences occur in "the parts where we don't see anybody else… definitely yesterday, when we were having to find our own way through the snow and nobody had been up that trail yet. And that was great. I really enjoyed that and getting up to where you had views of Mount Jefferson."

Participants also used spatial and temporal qualifiers to describe the varying degrees of wilderness experiences (table 1). Attributes associated with the quality of wilderness experiences included (1) the amount of time spent in wilderness (for example, "I think I have to be out a couple more days to make it a wilderness experience"), (2) the ability to stay in wilderness overnight ("Well I guess, it's camping at least several nights in a couple of different places along the way"), (3) the remoteness of the area ("I'm so close to civilization here. I don't feel like I'm in a wilderness per se"), (4) the distance from the trailhead ("It requires more hiking and having to plan it more, a longer duration"), and (5) opportunities for off-trail hiking ("If you hiked a little off the trail you would find those thoughts").

Factors Contributing to a Wilderness Experience

The 87 participants who were not experiencing wilderness or who indicated that their experience was compromised were asked to describe a "true" or "ideal" wilderness experience (what we refer to hereafter as a "prototypical" wilderness experience) to elicit key experience factors. In addition, we asked all participants to describe the factors that contributed to their current wilderness experience. Finally, descriptions of such factors also emerged in responses to other questions during the interview. In tables 2-6 we differentiate between these three sources of information about factors that contribute to a wilderness experience as follows: (1) information obtained at any time during the interview is reported in the "Percent Total" column as the percentage of all respondents; (2) responses regarding one's current wilderness experience is in the "Percent Current Experience" column; and, (3) responses regarding a prototypical experience, for those who were not experiencing wilderness or who indicated that their experience was compromised, is reported in the "Percent Prototypical Experience" column. Some participants provided responses included in all three categories, while others provided responses that fit into fewer categories.

Table 1—Coding frequency of spatial and temporal qualifiers of wilderness experiences mentioned at anytime during interview

Qualifier	Percent
Spatial (n=55)	
Remoteness	66
Distance traveled	44
Room to roam	11
Size of wilderness	7
Temporal (n=30)	
Trip duration	90
Overnight visit	30
Time of year visited	7
Day of week visited	5

Table 2—Coding frequency for general factors affiliated with wilderness experiences

Factor	Percent Total[a] (n=173)	Percent Current Experience[b] (n=150)	Percent Prototypical Experience[c] (n=87)
Environmental attributes	74	26	52
Social attributes	60	15	53
Psychological benefits	51	9	43
Personal skills	41	9	37
Activity engagement	21	7	11
Physiological benefits	16	3	8
Ancestral connections	7	1	7

[a] Frequencies for all interviews in which wilderness experiences were discussed.
[b] Frequencies for interviews in which specific experience factors were discussed in relation to participants' current wilderness trip.
[c] Frequencies for interviews during which participants who were not having a wilderness experience or who reported having a diminished wilderness experience were asked what factors would define a prototypical, or ideal, type of wildernes experience.

Table 3—Coding frequency for specific environmental attributes that contribute to having a wilderness experience

Environmental Attribute	Percent Total[a] (n=173)	Percent Current Experience[b] (n=39)	Percent Prototypical Experience[c] (n=45)
Natural features	53	79	56
Wildlife	23	36	29
Aesthetics	22	28	18
Vegetation	12	18	13
Mountains/elevation	10	21	7
Air quality	6	5	4
Sounds of nature	3	5	2
Water	2	10	0
Biophysical conditions	54	44	89
Natural	25	13	20
Undeveloped	17	13	27
Noise pollution	13	8	16
No trails	7	0	18
Limited human impact	6	3	11
Wild	2	0	7
Not overly maintained	3	3	2
No litter	5	10	2

[a] Frequencies for all interviews in which wilderness experiences were discussed.
[b] Frequencies for interviews in which specific experience factors were discussed in relation to participants' current wilderness trip.
[c] Frequencies for interviews during which participants who were not having a wilderness experience or who reported having a diminished wilderness experience were asked what factors would define a prototypical, or ideal, type of wilderness experience.

Table 4—Coding frequency for specific social attributes that contribute to having a wilderness experience

Social Attribute	Percent Total[a] (n=173)	Percent Current Experience[b] (n=22)	Percent Prototypical Experience[c] (n=46)
Other visitors' behaviors	3	9	4
Seeing other visitors	55	91	100
Absence of lots of other visitors	31	32	37
Seeing no one	29	59	59
Isolation	18	18	9
Alone preferred	3	9	2
Number of people not important	2	5	2
'Right kind' of people okay	1	5	0

[a] Frequencies for all interviews in which wilderness experiences were discussed.
[b] Frequencies for interviews in which specific experience factors were discussed in relation to participants' current wilderness trip.
[c] Frequencies for interviews during which participants who were not having a wilderness experience or who reported having a diminished wilderness experience were asked what factors would define a prototypical, or ideal, type of wilderness experience.

Rarely did participants identify a single factor that defined their wilderness experience; instead, they recognized a wide mix of internal and external factors that made a trip a wilderness experience (table 2). Participants most often identified environmental attributes (74 percent), social attributes (60 percent), psychological benefits (51 percent), and/or the use of personal skills (41 percent) as contributors to having a wilderness experience. Other attributes noted included engagement in specific recreational activities (21 percent), physiological benefits (16 percent), and ancestral connections (7 percent). The following sections cover each of these categories in depth.

Environmental attributes—In terms of environmental attributes, participants described factors related to either specific natural features or to more general biophysical conditions (table 3). Viewing wildlife and being in a beautiful environment were the most frequently mentioned natural features that contributed to a wilderness experience. For example, one participant explained:

> Well, I would say it's just a, it's a wonderful wilderness experience. This, it's a great setting, the mountains all around and ospreys, eagles, and typically a lot of fish.

Another participant noted that the potential for viewing wildlife contributes to the "wildness" of an area:

> Just the wildness of it, the thought that there could be a bear or a cougar or a bobcat and the fact that there are elk nearby… Even if the chance of seeing any of these things is very remote there are these things that you don't know when they are going to happen, that's part of wilderness.

Table 5—Coding frequency for psychological benefits that contribute to having a wilderness experience

Psychological Benefit	Percent Total[a] (n=173)	Percent Current Experience[b] (n=14)	Percent Prototypical Experience[c] (n=37)
Cognitive	46	64	89
Escape	42	57	76
Introspection	8	7	16
Perspective	3	0	8
Mental clarity	3	0	8
Timelessness	1	0	3
Change of pace	1	7	3
Affective	24	29	32
Enjoyment	12	14	8
Peacefulness	10	7	16
Nature connection	3	0	3
Freedom	2	0	5
Spiritual connection	2	7	3
Sense of awe	2	0	3
Inspiration	1	0	3
Humbling	1	0	3

[a] Frequencies for all interviews in which wilderness experiences were discussed.
[b] Frequencies for interviews in which specific experience factors were discussed in relation to participants' current wilderness trip.
[c] Frequencies for interviews during which participants who were not having a wilderness experience or who reported having a diminished wilderness experience were asked what factors would define a prototypical, or ideal, type of wilderness experience.

Table 6—Coding frequency for personal skills that contribute to having a wilderness experience

Personal Skill	Percent Total[a] (n=173)	Percent Current Experience[b] (n=13)	Percent Prototypical Experience[c] (n=32)
Self-reliance	27	54	66
Navigation	10	15	22
Danger/risk	8	23	25
Challenge	8	15	13
Uncertainty/surprise	3	0	13
Exploration/adventure	3	8	3
Exposure to elements	3	23	3

[a] Frequencies for all interviews in which wilderness experiences were discussed.
[b] Frequencies for interviews in which specific experience factors were discussed in relation to participants' current wilderness trip.
[c] Frequencies for interviews during which participants who were not having a wilderness experience or who reported having a diminished wilderness experience were asked what factors would define a prototypical, or ideal, type of wilderness experience.

We found that, although natural features can enhance a wilderness experience, the experience may be compromised by other factors, such as use level:

> When you have people around you, when you're out on the lake and you hear conversations and so forth, I mean, it's not a true wilderness I guess. But then, you can look overhead, like we did today, we saw a pair of eagles coming by. Osprey. We saw a deer along the bank. Especially early in the morning, when there wasn't a lot of people moving yet. So, yeah, it's, it's a certain amount of [wilderness] experience.

Other natural features that contribute to a wilderness experience included vegetation (for example, "being in the woods" and "old growth forests"), mountains or topography ("rugged looking" and "in areas with rockfalls"), air quality ("fresh air" and "you don't smell any cars"), specific sounds of nature ("the sounds of toads" and "hearing that river flowing down there"), and water ("cleanliness of the water" and "having the lake"). The relative lack of noise pollution was fairly frequently described as a biophysical condition that enhances a wilderness experience. Some participants described this condition generally ("Just being away from the noise, cars and everything else that has to do with civilization"), while others were more specific ("no airplanes flying overhead" and "not hearing people").

Participants also used more general adjectives when describing a wilderness experience. Naturalness, a lack of development ("untouched by the industrial age"), and wild ("how nature just does its own thing whether we want it to or not") were identified frequently as conditions that contribute to a wilderness experience. These were typically coupled with other factors, as by one participant who stated:

> Well, it partly means getting away, and having the sunset…I mean part of it means that you're not going to have any machines or cars, no motorized vehicles… you're far enough from a population center that you feel like you're away, can't see anything that isn't natural if you look, lots of wildlife.

Similarly, other participants described conditions with limited human impact ("a place that is more or less devoid of signs of human activity or has minimal amounts of human activity").

Trail quality played a role in wilderness experiences for some participants. For example, one participant explained:

> The trail here in front of us is twenty feet wide with no plant growth, it's all dirt, it's well packed. To me that's a well-used area. To me a wilderness experience is a more primitive trail, if any trail, and fewer people. A wilderness experience would be different from this.

For a wilderness experience, trails should not be overly maintained ("the trails are maintained just adequately to get through"), and there should be no litter ("if people pick up after themselves, it would be a lot better").

Social attributes—We categorized descriptions of the social attributes that influence a wilderness experience (table 4) as references to the behavior of others (3 percent) versus simply seeing other visitors (55 percent). When describing the behavior of other visitors, most participants explained that hearing others and unethical actions (for example, littering) detracted from or could ruin a wilderness experience. One participant said:

> I think if everybody, even if it's a lot of people, that they know what they are doing, being respectful of others, and keep a low profile – it doesn't hurt that much to have a bunch of people. It's when people come up that seem kind of like novices and are loud and obnoxious, or they don't seem very appreciative of the place they're in. That is the only time it seems not so good.

Participants frequently stated that seeing no other visitors was a defining aspect of a wilderness experience. For example, when describing a prototypical experience, one participant asserted:

> A complete wilderness experience would be… in the complete wilderness where you're using a compass and getting there and nothing, there's no people around. I'd say that's a complete wilderness experience to me.

Yet, many participants mentioned that they expected to see other visitors during a wilderness trip and that, as long as there were not many other visitors, they could have a wilderness experience. For example, one participant explained why she felt she was having a wilderness experience:

> I guess just the fact that there's not a mass populace here …I mean, you don't have to be in the woods to be in the wilderness, so to speak. Just the mass of people sort of tends to destroy a wilderness.

Another participant mentioned that seeing other people in a wilderness wasn't usually an issue for her, but that the number encountered surpassed her threshold on this trip, ultimately keeping her from having a wilderness experience. When asked to described a wilderness experience, she said:

> Not as many people. I've never been in a wilderness area that's been abused. This was the first time. I've just never seen anything as crazy before. I totally get it; it's an amazing place. Everybody was very nice and doing their own thing but somehow it's disconcerting to me.

Some participants used the terms isolation and solitude to describe a wilderness experience. For example, one participant stated that a wilderness experience:

> Would be totally isolated from people. It would be doing something very few people do, where your amenities are very low. I think of really roughing it, going out on your own with the real minimal. You might be off trail, using topo maps.

Another participant made a similar observation:

> It's not seeing people, not hearing people, or civilization. It's when you hear water running; animals, birds are part of it. There aren't very many places in this part of the country where you can find real solitude.

As is evident in these excerpts, participants typically described a complex set of factors when explaining their conception of a wilderness experience.

Psychological benefits—Participants frequently mentioned cognitive (46 percent) and affective (24 percent) benefits when describing what makes up a wilderness experience (table 5). For many participants, the opportunities to escape civilization or the demands of daily life and to enjoy themselves were described as key wilderness experience factors. For example, one participant stated:

> Key, basically we came to fish and enjoy the wildlife and get away from the routine, work and phones and computers and all that and that's what we accomplished.

Although escaping the crowds and noise of civilization was described by some participants ("I guess just the quietness, less people around makes it more wilderness. It's wilderness anytime you get away from all the people"), other participants claimed that escaping civilization doesn't necessarily have to mean that you don't see other people. For example, one participant said:

> Just getting outside and getting away from work or whatever. It doesn't necessarily mean like getting away from everybody else to me, it's just more being outside and going and doing stuff that doesn't have to do with anything other than walking around and enjoying yourself.

Another participant described a wilderness experience as an opportunity for introspection and mental clarity, as well as an opportunity to escape social pressures:

> My mind jumps back and forth all over the place, but it's definitely good no matter what I'm thinking about. It's just good to get those thoughts cleared out, and the wilderness area definitely allows you to do that. You get away from the city and you're not involved in drinking or the social problems or anything, so you

> can concentrate on your own thoughts, even if you're with a big group of people.

Other participants pointed out that a wilderness experience provides a sense of peace and a time for relaxation. For example, one participant said:

> I love the calm peaceful feeling, it's a great family place. Something you want to bring family to, which is good. Just getting outdoors, getting away from it all, just a calming, relaxing feeling.

More unique psychological benefits included a sense of timelessness (for example, "time stands still"), a change of pace ("I'm not really a high-energy person anyway, and this slows you down"), a sense of freedom ("where you just kind of go and stop and look at all the flora and fauna, and the wildlife"), a spiritual connection or sense of awe ("to be refreshed and, obviously, as a Christian, I know that God created all of this. And so, for me, that creates a sense of awe and wonder at what he made"), a humbling feeling ("the wilderness is bigger than me and more powerful"), and a connection to nature ("now that I'm older I want to get re-in touch with that kind of outdoor feel that I have in my bones").

Personal skills—Participants described the ability to use specific personal skills as a defining factor of a wilderness experience (table 6), particularly the need for self-reliance. When discussing self-reliance, participants mentioned the need to exert physical effort and fend for oneself without luxuries or excessive amounts of "stuff." For example, one participant explained that his own decisions and knowledge affected the quality of his wilderness experience:

> To be more self-sufficient, like knowing what plants in the forest are edible. And not bringing quite so much food. Not bringing so much stuff with us, would feel more like a wilderness experience to me.

Another participant stated that perceptions of remoteness enhance the need for self-reliance:

> Well, this is a ways back and it's a long ways in on the road, so you really know you're not close to towns or anything and so I think his trail, as opposed to some other day hikes where you're just off a road or something, you really feel like you worked to get in here and there's not many people back here. And further back in your mind, if you were to hurt yourself, you're not, you couldn't easily get out.

Similarly, another participant explained how a wilderness experience involves challenging oneself:

> You have to try everything, you have to be self-motivated, you have to push it, you have to be able to handle it. Basically, there are no frills here—everything is as it is. You have to adapt to it, work with it, and make it work for you. Sometimes you can't have things go the way you want and you just have to accept that. That goes with the territory.

Thus, wilderness experiences include aspects of danger, risk, uncertainty, exploration and adventure.

> To be someplace where nobody else had been, no trails. If you got in trouble, you would be in trouble because there would be no way to get out of it.

Participants also described the ability to get lost and the need to have navigational skills to find one's way back. For example, one participant explained:

> Yea, I still feel like I'm not completely out in the woods. The trails are so used. There are not that many signs, but people have been here, like you're not the first person to camp here… I've been hiking in the Brooks Range and I've climbed Denali and those to me that was true wilderness. There were no trails; it was all maps and compass readings. We have the maps, but we know we don't really need them.

A handful of participants actually used the word "primitive" to describe such personal skills. For example, when discussing the area in terms of remoteness, one participant explained:

> Oh, it's somewhat remote. But, still you get in here, you see people, you can see out for long distances, you don't have that place, a primitive feeling, where you don't know what is behind the next bluff, because you know there's no other people up here, and maybe a cougar there. And that's what I consider real primitive wilderness experience. So I think it's a little bit different than that up here.

Other wilderness experience attributes—Some participants described a wilderness experience in relation to specific activities, physiological benefits, and having an ancestral connection. Camping and fishing were often mentioned as part of a wilderness experience, though often in conjunction with other wilderness experience factors. For example, one participant explained how camping and cooking combined with scenery and exercise to make a wilderness experience:

> Just the beauty of it. Just seeing a new place. I like sleeping in a tent, cooking outside. It's just so nice to go to bed and curl up in your sleeping bag. After a hard day it always feels so good to take off your pack and once your boots are off it is so nice. It's strenuous but you always have a reward at the end of a day.

In terms of physiological benefits, one participant described rejuvenation and physical exertion by saying that a wilderness experience involves "being out away, quiet, solitude, time for introspection …it's a time to work with my body and rejuvenate my spirit." Another participant explained: "I'm telling you, you can just completely unwind up here. Your stomach pains go away, your head clears up. It's great." Illustrating the multifaceted nature of a wilderness experience, one participant explained what a wilderness experience means to her:

> To re-energize. To reduce stress. To breathe clean air. To maybe see wildlife. Hopefully. And I think it kind of puts us in our place when we come out here. When you're in your working environment and in a big city, humans tend to be so prevalent and about everything we do is so invasive. And when you come out here with just whatever you have on your back, I think it just humbles you and it makes you realize we're just kind of parasites on this earth and whatever we do is affecting

> the beauty of it and the natural rhythms of it and so I think we just like to come out to remind ourselves and put our lives in perspective.

A few participants also mentioned that an awakening of the senses is another part of a wilderness experience:

> Just being able to step onto the trail and smell the fresh air, and smell the pine needles and look at the big trees and try to wrap your arms around a big, thick-barked, Douglas fir.

Some participants said that a wilderness experience enables ancestral connections, such as to Native Americans, the ability to experience pre-colonization conditions, or being the first person to explore an area. One participant explained:

> When I think of a wilderness I think of an untouched area. I think of something like this. Even though you can tell people have been here, sometimes you feel like the first person to walk into an area or you're the first person to notice that new stuff is growing.

Another participant asserted that a wilderness experience "is like going back in time." After collecting water, one participant explained: "So I had three water bottles, and I felt like some Native American or something bringing back all the water back to the tribe."

Uniqueness of Wilderness Experiences

During the interviews, some conversations about wilderness experiences (n=91) also included a question about whether or not a wilderness experience is unique to federally designated wilderness areas. Two-thirds of these participants indicated that the experience was not unique to federally designated areas, while one-fifth found it to be unique. Other participants (11 percent) felt that, although the experience could be found outside of designated wilderness, the quality of the experience would be lower (for example, "Yes, but I don't think it would be as peaceful"). Ten percent of participants were unsure of the uniqueness of wilderness experiences, while another four percent admitted to being unsure of the federal designation of wilderness.

Among those who provided a rationale as to why other areas provided the opportunity to have a wilderness experience (n=30), most stated that other areas can be equally or even more "remote" than designated wilderness, have "limited impact on it by humans," are places where "there's nobody else around except for you," and have enough space where "you could get lost." For example, one participant mentioned being aware of "some places that are not technically wilderness, that are remote, that people just don't go into, so I can have some wilderness experience… so it doesn't necessarily have to be a designated wilderness area." Another participant stated, "if you try hard enough, you probably can" have a wilderness experience outside of designated wilderness. He explained:

> I think that it's more a state of mind a lot of times more than it is an area. There are places near where I live at where I can go hiking in and you'll pass quite a number of people during the hike but you can still find solitude. Just for the day you can step off the trail, find a rock or a group of trees or something like that and get away from the main flow of people. You can find solitude.

For these participants, wilderness is a state of mind that isn't only found in designated wilderness areas.

Some participants (n=13) who perceived wilderness experiences to be unique to federally designated wilderness areas also provided a specific rationale for their perspective. Most explained that the undeveloped nature of designated wilderness and the regulations that restrict "roads," "cars," "motors," "logging," and "buildings" made the experience unique, as well as "the lack of people." For example, one participant explained:

> Some of the hikes I've been on where I started to feel like I was having a great experience and you go over a ridge and see a clear cut, it's something that's disappointing. I thing that designated wilderness areas are better places for wilderness experiences than places maybe in a national forest that are open to development.

Discussion

We set out to understand what wilderness visitors think a "wilderness experience" is and whether visitors considered their wilderness visits to be wilderness experiences. Prompted by discussions about the changing demographics of wilderness users and increases in use—especially in day use—we wanted to know if visitors to these high use places, where solitude may be compromised, shared a conceptualization of wilderness experience similar to that set forth in the Wilderness Act, and whether they felt that use density affected the realization of a wilderness experience.

Our data show that natural features (for example, wildlife and scenic mountain vistas), natural and undeveloped conditions, and limited to no encounters with other visitors provide people with the opportunity to escape civilization, find isolation, and be self-reliant. As such, we found that wilderness experiences are multifaceted (Borrie and Birzell 2001), and the key attributes of ideal wilderness experiences identified by visitors are highly consistent with those outlined in the writing of the Wilderness Act (Hendee and Dawson 2002). We also found that most (67 percent) visitors interviewed at the three high use destinations reported having a wilderness experience. However, these participants often qualified their response by explaining how hiking off-trail, spending multiple days in wilderness, and hiking further from the trailhead makes an excursion into a truer wilderness experience. That is, we found that visitors conceptualize a wilderness experience on a sliding scale, with the most outstanding opportunities being in remote, undeveloped areas where they can be alone and find psychological relief from the modern world. Additionally, we found that these attributes can also be found—and are sometimes purposefully sought—outside of designated wilderness areas.

It seems then that use density affects the realization of wilderness experiences—especially in relation to solitude—as participants claimed that low use levels contribute to the feeling of a wilderness experience. Therefore, we were surprised by the

consistency with which participants reported having a wilderness experience regardless of type of user (day or overnight), place of contact (three rather different high use destinations), and use density at the time of our interviews (low, moderate, and high). We anticipated that day and overnight visitors would have different experience 'thresholds'—particularly during periods of different use density—with overnight visitors holding more stringent experience requirements. The lack of difference between day and overnight users supports recent research that has revealed few differences based on length of stay (Cole and Hall 2010a, 2010b). Indeed, as many wilderness visitors are quite experienced, having taken many day and overnight trips, it is perhaps reasonable to expect them to identify the same set of factors that leads to a wilderness experience.

Given that use density varied so markedly day-to-day in each of the three study areas, we expected visitors to differ in the extent to which they felt they were actually having a wilderness experience at the time we contacted them. However, the lack of difference expressed in qualitative interviews is consistent with the weak relationship between use density and perceived crowding (Cole 2001) reported in quantitative studies, such as those that use satisfaction as a means of assessing effects on solitude (for example, Dawson and Watson 2000). The effect of use density on wilderness experience achievement may be masked by the variation in experience quality over the course of an entire trip. This effect would be consistent with the finding that some visitors were having a wilderness experience at certain times of their trip, substantiating Borrie and Roggenbuck's (2001) notion of dynamic, emergent and multi-phasic wilderness experiences.

We also expected different degrees of wilderness experience achievement to emerge between the three destinations—particularly given the remoteness of the Lakes Basin Management Area—as each differed in distance from metropolitan areas to trailheads and distance from trailheads to specific attractors (lakes). In regards to the similarities found between the three destinations, it may be that just knowing that more outstanding opportunities exist further down the trail or in cross-country zones (off the trail) may wash out the influence of the area's remoteness. That is, if high quality wilderness experiences are desired, visitors can find the escape and isolation desired near high use destinations by putting forth extra effort, spending more time or using advanced navigational skills. This may relate to the adaptable human phenomenon (Cole and Hall 2008a) in which people report high levels of satisfaction by altering their desired experiences to meet the conditions encountered during a wilderness visit.

Implications

These findings have several interesting implications. First, our findings verify that, to visitors, wilderness experiences are complex and dynamic. That is, wilderness experiences encompass assorted combinations of personal, social and environmental factors. These factors make having a wilderness experience not an "all or nothing" thing. Experience quality varies between trips and during trips because the experience is not just one thing. Additionally, there does not appear to be an obvious threshold beyond which an experience is not "a wilderness experience," as the degree to which an experience is a wilderness experience is subjective and complex. As found in previous research (for example, Seekamp and Cole 2009), there do not appear to be any "clear-cut" distinctive elements of a wilderness experience due to its multifaceted nature. From a management standpoint this means that a specific adverse condition (such as use density) is not likely to destroy the experience, because there are likely to be many other positive conditions at the same time. Such diverse and adaptable experience factors may explain why high satisfaction levels are reported in quantitative assessments of wilderness experiences (for example, Dawson and Watson 2000).

Second, managers and researchers often argue that visitors are often naïve and do not know what a "wilderness experience" (as per the Wilderness Act) is. Our data do not support this assertion; most visitors articulated characteristics quite consistent with the language of the Wilderness Act. Many descriptions included the same words used by managers and researchers (remoteness, escape, solitude, natural, undeveloped, and self-reliance), while other words were less frequently included (freedom, primitive, isolation, privacy, challenge, humility, and a sense of timeless). Although some visitors have these "ideal" types of wilderness experiences in the high use places we studied, most are experienced enough to recognize that their experiences deviate in some ways and to some degree from this ideal due to the signs of use or management, or to the presence of other visitors.

Third, the characteristics and qualities of ideal or prototypical wilderness experiences amplify the need for quiet, undeveloped, natural areas to escape civilization, be away from other visitors, and be introspective. What, then, do these findings mean for management of wilderness destinations that receive high use? Do such areas provide wilderness experiences of high quality? While 67 percent of visitors reported that they were having a wilderness experience, one third of these people said that the experience was compromised in some way, and another 20 percent of all participants said they were not having a wilderness experience at all. Many of the conditions that led to these negative responses are conditions that managers can address, such as campsite impacts or the number of other visitors present. Thus, one might conclude that wilderness experiences are in jeopardy at these locations, and managers should take action to bring experiences more in line with what visitors recognize as "true" wilderness experiences. Yet, visitation density at the time of the interview did not appear to play a substantial role in whether or not visitors reported having a wilderness experience. Some visitors noted that although high use, high impact places do not provide the most "outstanding" wilderness experiences, a more outstanding wilderness experience could be had by visiting more remote locations of the wilderness (i.e., increasing the distance they traveled or hiking off-trail). Thus, they recognize that, across each wilderness as a whole, outstanding opportunities for wilderness experiences are not presently in jeopardy, even if some high use destinations are quite heavily used.

Fourth, the majority of visitors do not think that wilderness experiences are unique to designated wilderness areas; most believe that similar experiences can be had outside of designated wilderness. Similar to seeking "outstanding" wilderness experiences beyond or adjacent to high use destinations, visitors often explained that other remote areas exist outside of legally designated wilderness that provide similar experiential opportunities. However, other visitors recognized that experience quality may be lower or could easily become degraded in areas outside of wilderness, as certain activities are not restricted (for example, motorized recreation) or management controls are not present (for example, designated campsites). Given the potential for degraded or compromised experiences in areas outside of designated wilderness, managers should continue to foster outstanding wilderness experiences inside designated wilderness. This will help ensure that high quality wilderness experiences can be enjoyed by current and future generations, as envisioned by The Wilderness Act.

Finally, solitude continues to be a relevant part of a wilderness experience, especially where managers want to provide the most outstanding opportunities for wilderness experiences. Most of the people we interviewed mentioned the social environment as affecting wilderness experiences, even without prompting by us. However, other research suggests that people are generally unwilling to accept the tradeoffs (more restrictions) necessary to maximize solitude in order to achieve those true "wilderness" experiences (Hall and others 2010). It seems that many visitors to high use destinations have expectations that align with the actual use levels and elect to visit these destinations for other reasons (for example, high aesthetic value). Some of our participants even articulated knowing how to achieve solitude, if desired, during their trip (for example, hiking beyond the destination). Thus, managers face a quandary. Our interviews suggest that actions such as limiting use would improve the wilderness experience; yet most visitors prefer not having their access restricted and are generally quite satisfied with the "not quite ideal" wilderness types of experiences they can attain, even in these high use locations.

Conclusions

Most studies of the wilderness experience have asked visitors how satisfied they were with their experience or the extent to which they experienced phenomena researchers consider important. In this emic study, visitors were allowed to describe the wilderness experience in their own words. The words most visitors use to describe a wilderness experience are highly consistent with the language of the Wilderness Act, researcher-derived attributes of wilderness experiences, and the types of experience wilderness managers seek to protect. They recognize the experience as being complex and dynamic, understand that there are many factors working to detract from an ideal experience, and have learned to cope with such factors. This suggests that visitors have a highly nuanced understanding of the wilderness experience and are much less naïve than is often assumed.

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Naturalness, Privacy, and Restorative Experiences in Wilderness: An Integrative Model

William E. Hammitt

Abstract—It is suggested that the wilderness experience is a restorative experience that results from the interconnectivity between naturalness/remoteness and privacy/unconfinement and the four components essential for an environment to be restorative. A model-framework is offered to illustrate the linkages among the environmental, social, and restoration components of wilderness experiences, and the consequences/threats to the wilderness experience. It is concluded that the wilderness manager of the future will be a "human dimensions restoration manager," with a role not much different from that of restoration ecologists, restoration architects, and restoration psychologists.

Introduction

Henry David Thoreau, during his two-year "being away to" Walden Pond experience, said he had three chairs at his cabin—one for solitude, two for company, and three for crowds. Solitude, in its truest sense, is a one-chair, one-person, alone, solitary, absent from the presence of others, phenomenon. Yet, the authors of the National Wilderness Preservation Act of 1964, and most recreation users of wilderness areas today mean something different when they speak of solitude.

Thoreau, for his two-year experiment in civil disobedience, chose the natural, remote, and unconfined character of Walden Pond as his laboratory. Though only a mere two mile distance from the developing village of Concord, it was far enough for Thoreau to be self-reliant, to self-regulate concerning thought and behavior, and to be in an environment free from the everyday restraint and command of others. While the Wilderness Act does speak of preserving the natural, remote, and unconfined, it does not speak of civil disobedience. Yet, each wilderness area designation and visit can be seen as an act of disobedience against the restraint and authority of an increasing population, expanding settlement, and the growing mechanization and technological burden that accompanies urbanization.

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Thoreau found the two years he spent at Walden Pond to be rewarding and restorative and it spurred him to say, "In Wilderness is the Preservation of the World." Nevertheless, he did return to the everyday hassles of a developing Concord. Wilderness users today also choose but to visit wilderness for a short while. While Thoreau considered the experience at Walden Pond a success in terms of civil disobedience, the real success of the experiment may have been his discovery and recognition of an "ecological intelligence" (McCallum 2008) and "psychological restoration" (Kaplan 1995) that accompanies natural, remote, and unconfined places, where recovery from everyday mental fatigue can occur.

This paper postulates that many people, like Thoreau, need natural, remote, and unconfined places where mental restoration can occur. Furthermore, it is suggested that wilderness recreation experiences are similar to Thoreau's experience at Walden Pond, and that the National Wilderness Preservation System is our laboratory. The aim of this paper is to connect the naturalness/remoteness of wilderness places with the solitude/unconfinement of wilderness experiences and to suggest how these elements of wilderness are connected to ecological intelligence and restorative experiences. The ultimate goal is to integrate the connectivity among these wilderness elements into a human restoration model for understanding wilderness recreation experiences of the future. It will be argued that the wilderness recreation manager of tomorrow will be a "human dimensions restoration manager," with a role not much different from that of restoration ecologists, restoration architects, and restoration psychologists (Hammitt 2005).

Natural/Remote and Ecological Intelligence

The Wilderness Act begins by stating, "In order to assure that an increasing population, accompanied by expanding settlement and growing mechanization, does not occupy and modify all areas within the United States and its possessions, leaving no lands designated for presentation and protection in their natural condition…" (Section 2.(a), Public Law 88-577). The Act goes on to say in Section 2.(c) that "An area of wilderness is further defined to mean in this Act an area of undeveloped Federal land…"

What is meant by preserving (and perhaps managing) the natural and remote conditions of wilderness is not explicitly defined by the Wilderness Act. This has led to an interesting

dilemma as to what natural conditions and management for naturalness should exist. For example, should naturalness be conceptualized and managed as: (1) the primeval conditions that existed before white-man dominance, (2) conditions where the wild forces of nature are more dominant than those of humans and the community of life is untrammeled by humans, or as (3) conditions of great biodiversity and dynamic ecosystem structures that demonstrate unaccelerated rates of alteration over time. Refer to Cole and Yung (2010) for a more complete discussion of these different concepts.

While the naturalness dilemma is complex, interesting, and of great significance to the understanding of how we preserve/manage naturalness in wilderness, it does not address the question of why humans have felt a connection with nature, value its influence on human well-being and have fought so hard to preserve it. Of particular importance to this paper is the question: why do humans consider nature and naturalness a significant aspect of wilderness recreation experiences?

Perhaps the answer is in what Ian McCallum (2008) terms "ecological intelligence." Many authors have written about the human-nature relationship, stressing the deep visceral and emotional importance of this relationship in dealing with the everyday world we live in, and the healing/recovery aspects of natural/remote areas (for example, Abbey 1968; Wilson 1984; Winston 2002). McCallum uses the term ecological intelligence to refer to the fact that humans are a part of the web of life in which everything is genetically and molecularly linked and that human perception and cognition have deep evolutionary roots. We may be culturally resistant to accepting our evolutionary basis but we have to recognize its significance when interacting with the natural world (McCallum 2008, p.3). McCallum states that the evidence is there: the unraveling and mapping of the human genome and subsequent discovery that more than 90 percent of it is shared with every other mammal is proof that humans are perhaps more a product of evolution and ecological intelligence than cultural intelligence. However, there is no denying that both are at play in human relationships and meanings associated with natural and remote places.

As related to wilderness experiences, McCallum argues:

> "I believe that our identity is intimately associated with a deep historical sense of continuity with wild places and the animals that live there—that we have an ancient, genetic memory of where we have come from. These are the places that permit us to say, sometimes unreservedly, it is as if this place is in my blood…it is as if I have come home." (p. 3)

A medical doctor and psychiatrist, McCallum also believes that wild places help humans heal from what he terms a restless depression or "homesickness." More will be said about the relevance of the healing/recovery effects of wild places later when restorative environments and experiences are considered.

In summary, natural and remote conditions matter to humans and an affinity exists for wild and natural/remote places. We are human-animals, as defined by our DNA and past evolutionary roots, and perhaps, possess an innate ability and intelligence to perceive, understand, function, and feel "at home" in natural environments. Perhaps the Wilderness Act of 1964 was but one small result of our ecological intelligence…an instinctive act to preserve natural places to come home to, now and in the future.

Solitude and Privacy

The Wilderness Act did not stop with the preservation of "natural areas without permanent improvements or human inhabitation." It went on to state that these natural areas should have "outstanding opportunities for solitude or a primitive and unconfined type of recreation" (Section 2.(c).)

Outstanding opportunities for solitude could infer the ultimate condition of being completely alone, absent of others when experiencing wilderness. Obviously, the authors of the Act meant something different than solitary recreation, for people are seldom alone in wilderness, particularly when on overnight trips. More importantly, being alone is not what most wilderness visitors want; nor is it necessary for most wilderness recreation users to experience outstanding opportunities for solitude. Less than two percent of wilderness users stay overnight alone (Dawson and Hendee 2009). So, if the wilderness recreation experience does not mean outstanding opportunities to be alone, what does it mean?

The concept of privacy and its various dimensions is a more meaningful psychological descriptor of the solitude most users want to experience in wilderness. Most wilderness users want to be alone with others (Lee 1977) —not truly alone. They want to have selective control of access to the self and one's group (Altman 1975) and to determine for themselves or their group when, how, and to what extent information about them is communicated to others, and from others to them (Westin 1967). Privacy is a vital basic need of humans, and its presence can be found in most environments. It serves as a coping mechanism for controlling the socio-environmental situation in which one must function. It is a boundary control and regulating mechanism, similar to an osmotic membrane, which basically serves as an instrument for achieving a desired environmental state and individual freedom of choice (Proshansky and others 1976). Too little privacy means too much access and interaction with others, whereas too much privacy can lead to loneliness (Pedersen 1997).

Privacy is not a permanent state of being, but a voluntary withdrawal of a person from everyday society through physical and/or psychological means, either in a state of solitude or small-group intimacy or, when among larger groups, in a condition of anonymity or reserve (Westin 1976). Wilderness solitude is generally recognized to include other realms of privacy than being alone, particularly small group intimacy (Hammitt 1982). Acknowledging that privacy is a meaningful, basic underlying component of wilderness experiences, it may serve well to summarize Westin's four dimensions of privacy and the four functions it serves (Table 1), and to summarize research supporting the dimensions and functions of privacy in wilderness.

Research investigating Westin's states and functions of privacy in wilderness indicate that Intimacy and the function of Emotional Release are key elements of wilderness experiences.

Table 1—Definitions of Westin's (1967) dimensions and functions of privacy.

Dimensions of Privacy	
Solitude—complete isolation	The individual is separated from the group and freed from the observations of others.
Intimacy	The individual is acting as part of a small unit, seeking to achieve a close, personal relationship between two or more select members.
Anonymity	The individual is in a public setting, but still seeks and achieves freedom from identification, surveillance, and social roles.
Reserve	The individual keeps a "mental distance," creates a psychological barrier against unwanted intrusion, and reserves the right not to reveal certain aspects about oneself.
Functions of Privacy	
Emotional release	It provides for respite from the psychological tensions and stresses of social roles in everyday society.
Self-evaluation	It integrates one's experiences into a meaningful pattern and allows one to be in control of events.
Limited communication	It provides opportunities needed for sharing confidence and intimacies with those trusted.
Protected communication	It serves to set necessary boundaries of mental distance in interpersonal situations

For example, only 10 percent or less of visitors agree that they "cannot have a profound sense of solitude unless completely alone" (Cole and Hall 2010a). Other research on achieved level of desired privacy in wilderness found that intimacy, going into wilderness in small groups of intimate friends, is the major form of wilderness privacy (Hammitt 1982; Hammitt and Madden 1989; Priest and Bugg 1991; Hammitt and Rutlin 1997). Furthermore, these studies suggest that privacy, primarily in the form of intimacy of small groups is what the wilderness user may really be seeking regarding solitude, and may be the meaning behind the language of the Wilderness Act (Hammitt 1982; Cole and Hall 2010a).

Limited research on the functions of privacy in wilderness (Hammitt and Brown 1984; Priest and Bugg 1991; Cole and Hall 2010a) reveals that emotional release, recovery from everyday stress and tension, is the major function of wilderness privacy. Studies have consistently indicated that "resting the mind from anxiety and mental fatigue" and "mental rejuvenation" are major components of wilderness privacy. Privacy frees the mind of routine events and allows for an attentional state where reflective thought, self-evaluation, and the integration of events take on importance. Also of importance is the privacy benefit of devoting less attention to the behavior of other individuals when operating in wilderness environments. "Other individuals" are an important and salient component of environmental perception, attracting and occupying our attention when they are present. Privacy offers relief from the need to devote direct attention to others, eliminating the need to monitor and cope with the behavior of others. Even during the privacy state of intimacy, one is associated with "familiar others," individuals whose behavior is quite predictable and, therefore, requires less monitoring. It is argued in the next section that simply freeing the mind from monitoring the presence of others allows for devoting more voluntary attention and mental capacity to personal autonomy, reflective thought, and associated restorative aspects of wilderness privacy in natural environments.

Wilderness Restoration and Restorative Experiences

A major premise of this paper is that the natural and remote elements of wilderness places allow for the solitude/privacy and unconfined type of recreation that promotes the recovery, healing and restorative aspects of wilderness experiences. Although not stated specifically in the Wilderness Act, early writings on the need for wilderness note the human need for natural and remote places conducive to mental recovery and human restoration. Marshall (1930) asserted that "convalescing in the wilderness was a psychic necessity," given the "terrible neural tension of modern existence" and Zahniser in 1949 wrote that wilderness visits can assist in "healing the mental disorders resulting from too much continuous crowding with other people and from the tensions in abstracting mental activity from physical exertion, which is so characteristic of modern living" (as cited in Harvey 2005; Cole and Hall 2010b).

These early statements about wilderness have been buttressed by the considerable research that has been conducted on restorative environments and restoration (Kaplan 1995; Korpela and Hartig 1996; Kaplan and others 1998; Hartig 2001; Hartig and Staats 2003; Herzog and others 2003; Hammitt 2005; Berto 2005; Chang and others 2008; Cole and Hall 2010b). Guiding most of this work has been the theoretical framework of

Attention Restorative Theory (Kaplan 1995), which provides an explanation for both the mental fatigue that occurs in everyday life and recovery aspects of restorative environments and restoration experiences. Because I believe psychological restoration is a critical function of wilderness recreation, the wilderness experience, and human well-being in general, the restoration process will be summarized in some detail.

Wilderness Recreation and Restoration

For most people, the wilderness experience is about recreation. Kelly (1996) states that:

> "recreation stems from the Latin *recreatio*, which refers to restoration or recovery. The term implies the restoration of ability to function. Recreation contains the concept of restoration of wholeness of mind, spirit, and body. It presupposes some other activity that depletes, tires, or deteriorates that wholeness" (p.25).

It is the wholeness of mind in terms of recovery from mental fatigue that is the outcome of restorative recreation and wilderness experiences. Kelly's restoration definition of recreation serves well as an introduction to the components and role of Attention Restoration Theory (ART) in wilderness experiences.

Attention component—The *Attention* component of ART concerns two types of mental focus or attention states utilized by humans while processing information and functioning in various environmental settings (Kaplan 1995). The first type of attention, *Involuntary Attention*, requires little effort on the part of humans in terms of keeping focused on the environmental information to be processed. It is employed when stimuli, both content and process, are interesting, involving, and automatically hold our mental alertness and focus. Involuntary attention is a pleasure mode of environmental information processing and functioning, and comes at no cost to humans. Unfortunately, not all environmental stimuli are interesting and involving in terms of information processing and functioning. In fact, the majority of our everyday existence may find us in environmental settings where the stimuli we must deal with are not the most interesting and involving, yet must be processed and acted upon. Driving to work each morning in busy traffic or dealing with complex tasks at work are examples. In these situations, humans must call upon *Directed Attention*, which involves a forced and burdensome form of focused attention that requires great effort. The stimuli that must be dealt with may be mentally demanding, and of little interest in terms of desired mental involvement.

While humans seem to be quite efficient at using directed attention, it comes at a mental fatiguing cost and can be employed efficiently for only so long. As the mind (and perhaps body) fatigues from the forced attention required, the mind often wanders to more appealing stimuli, thereby decreasing the efficiency of directed attention. When this occurs, a recovery period is necessary, where humans can recover from mental fatigue and restore the ability to once again use directed attention when called upon.

Restoration process—The restoration process involves recovery from the cost and pain of directed attention and mental fatigue. Kaplan (1995) has theorized that the restoration process involves the recovery of a worn-out inhibitor control mechanism that is employed by humans during directed attention to ward-off or inhibit more appealing stimuli from dominating our attention. The means by which the inhibitor control mechanism is restored is to not use it; to use no-cost involuntary attention (such as natural areas, the TV room, and so on) instead of directed attention. This is done by seeking environmental settings where the dominant form of information processing and functioning is involuntary attention. Kaplan identifies such environments and experiences as *restorative.* Restorative environments and experiences provide for states of involuntary attention, where the inhibitor control can recover. This restores the ability to again use directed attention when needed. Thus, restorative environments are key to the restoration process that occurs in natural areas such as wilderness.

The restorative environment—Recovery and the restoration process during wilderness recreation depend entirely upon the availability of restorative environments. Most outdoor recreation environments qualify as restorative environments because natural areas contain stimuli and informational content that rank high in the psychological components and attention states necessary for an environment to have restorative qualities. Kaplan, Kaplan, and Ryan (1998) postulate that four psychological components must all be present for an environment to be restorative: Being Away, Extent, Fascination, and Compatibility.

Being away—Restorative environments must offer the opportunity and qualities to be in a different geographical and/or physical location that is removed from the everyday routines of one's life. However, it is not restorative to just be away to a different environment if everyday routines and tasks accompany you. As Kaplan (1995) stresses, where one is being *away to* is every bit as important as to where one is being *away from.* The Being Away component is not the same as escape, because the environment one is going to and its qualities are of utmost importance to the restoration process. In the words of McCallum (2008), "coming home" to nature is important.

Extent—Being away to another environment is not sufficient for restoration, for the scope of the other environment must be considered. Restorative environments must offer new *worlds of mental exploration* which provide new environmental information to process and function within. The everyday environment we commonly function within can become familiar and limited in the scope of new information to process. It can become demanding in terms of uninteresting information that must be processed. Outdoor environments provide "other" settings and worlds of information that are extensive in scope yet fascinating to explore.

Fascination—Environmental stimuli and information that is fascinating calls forth involuntary attention and holds it, making this attribute important to the restorativeness of the environment. Fascination refers to not just novel, exciting,

and active content and processes within the environments (such as animal sightings), but also to more passive elements, such as water flow, sunsets, snow fall, and the whistling wind. Movement is also not necessary, for the structure and form of mountain ranges, for example, can occupy our attention for long periods of time.

Compatibility—Compatibility concerns the element of agreement or fit between how one wants to function, socially, mentally, and physically, within an environment and how that environment affords the opportunity to function as desired. It refers to the environmental fit between human intentions and environmental affordances. Environments that demonstrate a great deal of congruity between individual inclinations, environmental patterns, and the actions required by the environment have restorative properties.

Restorative Process and Experiences

Environments then, of which wilderness environments are one example, are restorative if they contain all four of the psychological components: being away, extent, fascination, and compatibility. They are restorative in the sense that the four components facilitate the use of involuntary attention, which in turn promotes the recovery from directed attention and mental fatigue, resulting in restorative experiences for humans.

A Wilderness Experience Restoration Model

The ultimate purpose of this paper is to connect the natural/remoteness of wilderness places, the solitude/privacy of wilderness settings, and the restorative qualities of wilderness environments into an integrative model to better understand and manage opportunities for wilderness experiences (Figure 1). The model is based on the premise that there are interconnected environmental, social, and mental conditions associated with wilderness that are conducive to human restoration during wilderness recreation experiences. There are also threats to these preferred conditions. Knowledge about these preferred conditions and threats can be used by wilderness managers to enhance or correct, respectively, conditions that further restoration experience opportunities. For example, preferred environmental conditions include the natural, undeveloped, and remote aspects of wilderness that facilitate the being away, extent, fascination, and compatibility qualities of restorative environments. Remoteness allows for being away to a different geographic place with different routine and task functions. The size of wilderness is related to the scope of information available. Naturalness allows for the diversity of organisms, structure, and ecological processes that provide fascination. And natural and undeveloped conditions rank high in compatibility

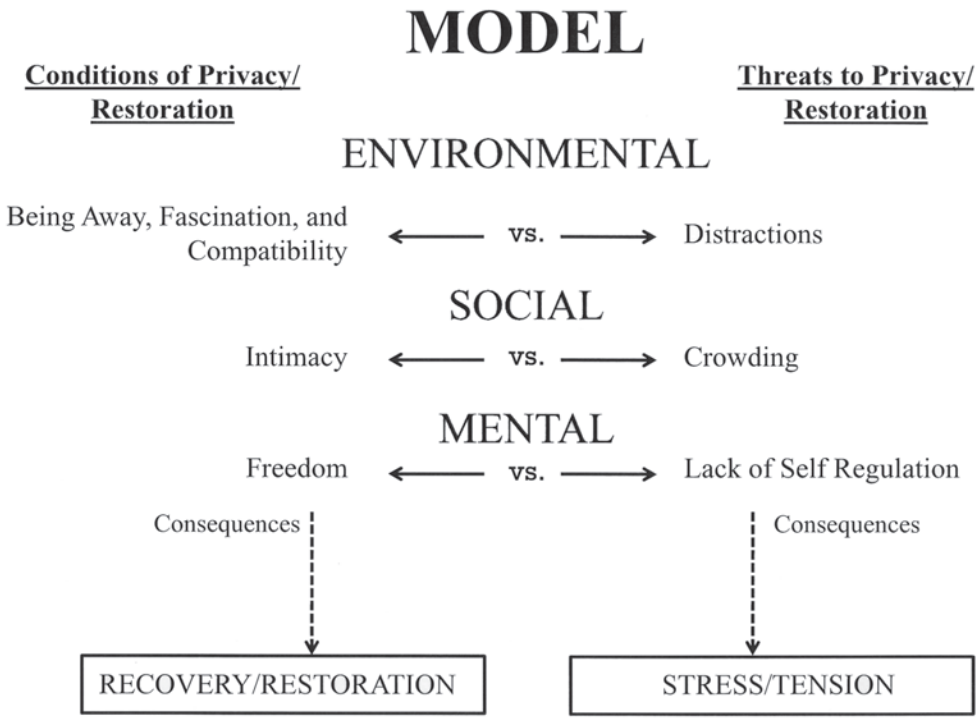

Figure 1—An integrative model of environmental, social, and restorative components during wilderness recreation experiences.

qualities, particularly from the perspective of ecological intelligence and functioning in wilderness. The social conditions of privacy and intimacy are also closely connected with the natural and restorative components of wilderness. Wilderness privacy implies being away to natural and remote conditions where the potential for intimacy and restoration are substantial. Privacy is a process involving a continuous interplay of opposing forces—shutting oneself off from others at one moment (to self-regulate) and opening oneself up to interpersonal (intimacy) contacts at another time. Wilderness allows for this optimizing process (Hammitt and Rutlin 1995). Adapting Altman's (1975, 1977) ecological analysis of privacy, wilderness privacy can be defined as "a geographic, social, and mental boundary control process that regulates, paces, and control's accessibility at various information processing levels to give coherence and restoration to people's being."

As this modification of Altman's definition infers, the geographic and social boundaries of privacy in wilderness are closely integrated with the mental conditions, boundaries and restorative elements of wilderness. For example, just as one can have incompatibility between what one wants to do and what the physical environment demands, so can one have incompatibility in the degree of social information one desires to process and what one is required to process. Central to the functions served by wilderness privacy, particularly emotional release, tranquility and peacefulness, is the avoidance of distractions. Distractions are incompatible elements of the wilderness experience that require directed attention. Distractions cause extra effort on the part of individuals to stay with the task at hand, and lead to a state of mental incompatibility between what needs to be attended to and what one wants to attend to. User conflicts, management rules and regulations, and environmental hassles are but a few examples.

It is this connectivity between the natural/restorative properties and the desired privacy dimensions of wilderness that should allow involuntary attention to operate. This is the mental component of the model in Figure 1. When the mind is free of distractions in a restorative environment, involuntary attention can take over, mental capacity recovers, and restoration can occur. The model suggests that wilderness should provide opportunities for restoration. Research in natural environments (Ulrich and others 1991; Percell and others 2001; Herzog and others 2003) and wilderness areas (Cole and Hall 2010b) indicate that most visitors do report "substantial stress reduction and mental rejuvenation, and most experience the environment in ways considered conducive to restoration" (p.806).

The threats in the model pertain to distractions and conflicts—both environment and privacy related—that often result from undesirable interactions, behavioral interference that requires directed attention. The need to employ directed attention threatens recovery, leading to an inability to self-regulate information processing and eventually, to mental fatigue and stress.

Implications

Several implications can be drawn from this discussion of naturalness, privacy and restorative experiences in wilderness that might serve managers and researchers in the future.

1. The wilderness experience is as much about enjoying "outstanding opportunities for natural conditions" as it is about "outstanding opportunities for solitude or a primitive and unconfined type of recreation." Humans have had a long, genetics-based history with nature and have developed an ecological intelligence for understanding and functioning with nature. They value nature as an important component of the wilderness recreation experience. It is naïve to consider the natural component of wilderness to be the domain of the ecologist, and the solitude, primitive and unconfined recreation component the domain of the social scientist. As the model in Figure 1 illustrates, the natural/remote elements of wilderness are interconnected with the elements of wilderness privacy. Together they facilitate the restorative benefits of the wilderness experience. Wilderness managers must be cognizant of restorative opportunities in wilderness environments. This perspective will require a new understanding and training for wilderness managers regarding psychological perspectives on the restoration process in restorative environments.
2. While ecologists may currently define naturalness in terms of diversity, it is this same diversity (in term of type and number of species) that provides for the fascination, compatibility, and involuntary attention that humans find so restorative. Thus, it is the same diversity of natural environments that also accounts for much of the well-being and restorativeness of wilderness experiences.
3. Wilderness experiences are more about privacy than about solitude. Wilderness privacy and the many realms of being away with others and freedom of choice that humans seek in remote natural environments provide a more complete understanding of wilderness solitude than "being alone." Wilderness privacy is not so much individual isolation as it is a form of privacy in a specific environmental setting in which intimate individuals experience an acceptable and preferred degree of control and choice over the type and amount of information they must process. The seeking of wilderness privacy may be a coping strategy by which humans optimize freedom to experience tranquility, peace of mind, and mental recovery from everyday environments and the fatigue associated with focused attention. Wilderness managers and researchers must consider the essential question: Is wilderness (and the associated experience) a natural, primitive place of unconfined conditions where mental freedom is promoted and metal states of tranquility and peacefulness are restored (Hammitt and Madden 1989)?

4. Many managers are concerned with use density and number of user encounters in their wilderness. However, density and number of encounters are only surrogate measures of wilderness congestion, solitude/privacy and the wilderness experience. Moreover, they may be poor surrogate measures. Just as use density and number of encounters have not been adequate predictors of wilderness experience satisfaction (Manning 2011), of wilderness crowding (Shelby 1980), and wilderness solitude/privacy (Cole and Hall 2010a; Hammitt and Rutlin 1997), they are not expected to be good predictors of the wilderness experience. This is because perceived crowding and solitude/privacy are not a direct function of number of people per unit area. Rather, they are an environmental assessment that results from perceptual and evaluative processes (Hammitt 1983). They involve a negative appraisal of an environmental situation (Schmidt and Keating 1979). In interacting and functioning within any environmental setting, humans must perceive the information present in that environment, appraise that information, and decide to what degree the immediate environmental situation is appropriate for the human action desired.

   Stokols and others (1973) suggest that certain physical, personal, and social factors sensitize people to actual or potential spatial constraints in an environmental setting. People may be predisposed to attend to the various environmental cues that serve to forewarn them of possible restrictions created by social density. In appraising a crowded and/or non-private wilderness setting, users often perceive an inability to deal with conditions created by spatial/functional density and hence anticipate or experience goal blockage, spatial restrictions, or mental overload (Stokols 1976). Thus, use density for an entire wilderness or for an entire trail is likely to be a poor indicator of "outstanding opportunities for solitude" and the wilderness experience.
5. The consequences of "going home" (McCallum 2008) to natural/remote places where privacy can be experienced, and the elements of restorative environments prevail, is a restorative experience. Threats to the restorative experience in wilderness are impacts, distractions, and conflicts that interfere with the connectivity and stability of wilderness ecosystems and wilderness experiences. Negative impacts to the naturalness/remoteness of wilderness environments, and to the privacy/unconfinement of wilderness environments and privacy experiences, are threats to the recovery potential of restorative experiences. As stated earlier in this paper, a threat to the diversity of wilderness ecosystems is also a threat to one or more of the four restoration components of a restorative environment. Just as greater diversity in number and richness of species adds stability to wilderness ecosystems, privacy opportunities and greater freedom of choice add stability to wilderness experiences. Wilderness managers must work toward the protection and/or management of the consequences and/or threats associated with restoration processes in wilderness.

Conclusion

Based on the literature reviewed in this paper, the interconnectivity of the topics discussed, the model linkages presented, and the fact that a standard definition of the wilderness experience does not exist, it is argued and concluded that:

- Outstanding opportunities for naturalness and remoteness are as important as outstanding opportunities for solitude and a type of unconfined recreation to providing restorative wilderness experiences.
- Wilderness privacy, particularly the intimacy dimension and emotional release function, provide a more meaningful understanding of the wilderness experience than does wilderness solitude.
- The wilderness environment is a restorative environment and the wilderness experience is a restoration/recovery experience. While the wilderness experience can be argued to be many things, it is ultimately about an experience where the human mind, body, and spirit are restored (Kelly 1996).

Current wilderness managers may not be aware of and have an inadequate understanding of the integration model presented, and the appreciation of wilderness experiences as restorative experiences. If so, education and training may be necessary. As argued elsewhere (Hammitt 2005), wilderness managers are ultimately in the business of restoration. They are "human dimension restoration managers." As such, their role is similar to that of (1) restoration ecologists, whose mission is to restore worn-out environments to some accepted natural condition; (2) restoration architects, who refurbish run-down buildings to some original state; and (3) restoration psychologists, who help mentally fatigued and dysfunctional individuals to again function as they once did. This will be the role of the wilderness manager for the next 50 years, and beyond.

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Wilderness Experiences as Sanctuary and Refuge from Society

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Abstract—Wilderness areas provide a sanctuary from human domination, for the plants and animals that exist there and also for the visitors who come there to escape the demands and pressures of modern society. As a place of refuge and sanctuary, we have found wilderness to allow experiences of connection, engagement and belonging. Two studies help illustrate the role of wildness (freedom from intentional human control) in wilderness, one focusing on gendered experiences of wilderness and another considering spiritual experiences in wilderness. Following the intent of Howard Zahniser, architect of the Wilderness Act of 1964, we call on managers to maintain the freedom and wildness of wilderness, lightening the burden on nature and on the experience of nature.

Introduction

The definition of wilderness used to establish the National Wilderness Preservation System (*Public Law 88-577* (16 U.S. C. 1131-1136)) clearly places wilderness in contrast to a human dominated location:

> Sec. 2. (a) "In order to assure that an increasing population, accompanied by expanding settlement and growing mechanization, does not occupy and modify all areas within the United States and its possessions, leaving no lands designated for preservation and protection in their natural condition, it is hereby declared to be the policy of the Congress to secure for the American people of present and future generations the benefits of an enduring resource of wilderness."

Wilderness provides a counter to modern, technological society; a society in which we continue to grow, expand and occupy. Protected areas such as wilderness provide a space for freedom of movement, unrestrained by outside human intention, not only for animals but also for visitors. As such, wilderness areas provide a sanctuary or refuge in which plants, animals and visitors can freely engage with each other and potentially with spiritual beings or gods. In wild places, the demands and impositions of human society are distant and less intrusive. This autonomy, or wildness, was a central purpose of the Wilderness Act according to its primary author (Zahniser 1992a). Likewise, in 1946 influential conservationist Sigurd Olson (2001) suggested that the "real function [of wilderness] will always be as a spiritual backlog in the high-speed mechanical world in which we live" (p. 65).

This paper explores the role of wilderness as a contrast to the highly human-modified world in which most of us live. Jack Turner (1991) suggests that while wilderness is both a concept and a place it is wildness that is the important quality. In discussing wildness, it will be apparent this quality applies both to ecological as well as experiential conditions in wilderness. Indeed, in contrast to a dualistic separation of humans from nature, we suggest wilderness offers outstanding opportunities for healing that separation. As a place of refuge and sanctuary, we have found wilderness to allow feelings of connection, engagement, and belonging. Two studies are described here that examine these experiences of wilderness, one focusing on gendered experiences of wilderness and another examining the phenomenology of spiritual experiences in wilderness. We begin first with a discussion of wildness, noting however that to distill down the many facets and meanings of wilderness into any one quality, such as wildness, is problematic; there are other qualities, such as naturalness, that are deeply intertwined.

Wildness

Trying to define wildness is tricky at best. While it is quite common to view it as freedom from intentional human control, the process of explaining and diagramming the concept is itself a human practice of containment. Henry Bugbee (1958) has argued that,

> "The world does not become less 'unknown' … in proportion to the increase of our knowledge about it. We might be nearer the mark in saying that the understanding of our position is not fundamentally consummated merely as knowledge about the world. The world is not unknown, for example, as a secret withheld from us is unknown to us. As Marcel would put it, our experience of the world involves us in a mystery which

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> can be intelligible to us only as mystery. The more we experience things in depth, the more we participate in a mystery intelligible to us only as such; and the more we understand our world to be an unknown world. Our true home is wilderness, even the world of every day" (p. 76).

Just because wildness is by definition less knowable, however, does not make it any less valuable. Perhaps to understand wildness is to first acknowledge what science does not, and may not be able to, know. There are some excellent discussions (such as, Landres 2010) and source writings (such as, Griffiths 2006; Snyder 1990; Turner 1996) that can help us identify the aspects of wildness worth thought and protection. That is, instead of a predictive goal, a descriptive role may suffice. Our actions may need to be less grounded in predictable circumstances and more in the context of unknowable and presumably chaotic occurrences and consequences. A certain humility of unknowing and an openness to experience may be important. As one of us has written elsewhere (Borrie 2004, p. 18), there is a,

> "deliberate setting apart of wilderness from the forces of change that are associated with modern, technological society. … Wilderness is symbolic of restraint and reserve, suggesting the importance of lightening the burden of humanity on nature and upon the experience of nature."

The Wilderness Act of 1964 makes particular use of the word "untrammeled" in its prescription that:

> "A wilderness, in contrast with those areas where man and his own works dominate the landscape, is hereby recognized as an area where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain. "(Sec. 2. (c))

While some scholars (such as, Callicott 1991; Cronon 1995) have interpreted this as a separation of humans from nature, Zahniser (1992b) saw it differently, noting in 1955 that:

> "We are a part of the wildness of the universe. That is our nature. Our noblest, happiest character develops with the influence of wildness. Away from it we degenerate into the squalor of slums or the frustration of clinical couches. With the wilderness we are at home" (p. 65).

A trammel is a hobble or shackle used to teach a horse to amble. It restricts and restrains free movement. Additionally, a trammel net is a gill net in which fish are entangled and caught in mesh. Cole (2000) in similar fashion suggests that untrammeled is, "synonymous with unconfined, unfettered and unrestrained, however, "untrammeled" actually suggests freedom from human control rather than lack of human influence" (p. 78). This parallels how Ridder (2007) suggests "an area is wild if the behavior of the nonhuman inhabitants is wild" (p. 10), by which he means a minimal degree of rationally planned human intervention or agency. As Whitesell (2001) notes, "Wild is the quality of freedom from human control. Its geographic expression is wilderness" (p. 187). Wildness is uncaged, self-willed, self-governing, and not subject to the impositions of another. While wildness is conceptually different from naturalness (Aplet & Cole 2010), it is a mandate for natural process to operate freely.

Wildness is also a characteristic of human action. That is, visitors seek a place to escape the worries of human society, a place free from external constraints and full of freedom of movement. As Driver and others (Driver & Knopf 1977; Driver 1983; Manfredo and others 2000) have found, wild places are often sought, or preferred, for escape from the personal and social expectations, pressures, and demands of everyday life. Patterson and others (1998) described one wilderness area in which seeking challenges and decisions not faced in everyday life is a dominant theme of the experiences there.

This suggests that the idea and reality of wilderness is more than spectacular scenery, more than charismatic megafauna and more than outstanding challenges for one to dominate and win. Instead, it is a place for the full expression of what it means to be human in a wild place. As Zahniser (1992b) suggested in 1955, "the true wilderness experience is one, not of escaping, but of finding one's self" (p. 66). In passing through wilderness, as compared to conquering and claiming it, we can find ourselves clearly reflected back. With a humility of action that matches the place we may experience previously unexpressed aspects of who we are. Pohl (2006) suggests that "experiencing wilderness calls upon us to develop skills, patience, openness, humility, reverence and perceptiveness to the things around us" (p. 161-2). Freedom of being can allow greater fullness of life. Nelson (2001), for example, says, "I never feel more fortunate, more free, and more alive than when I am afoot in the wild country of home" (p. 191).

Wildness calls for a humility of action by humans. While it is a place of freedom and feelings of being fully alive, we should seek a relationship with other beings that does not impose on their freedom and ability to live according to their own path. Gary Snyder (in Ebenkamp 2010), for instance, posits that "the wild requires that we learn the terrain, nod to all the plants and animals and birds, ford the streams and cross the ridges and tell a good story when we get back home" (p. 26). Wilderness is not so much an enemy as it is a chance for kinship—to wildness, both within and outside of ourselves.

Whereas wilderness was once commonly viewed negatively, as a threat to civilization (Nash 2001), given the dominance of modern, technological society today it is less so. Light (1995) points out that if, "Wilderness is bad, evil and cruel, it must be separated from humans —it must be marked off as distinct and kept out of civilized spaces" (p. 197). But, if wilderness is considered a home, a place we feel comfort, connection, and an ease returning to, then it is part of us and we no longer need separation from it. Instead of thinking of wilderness contributing to a separation between humans and nature, it provides a space in which to freely explore society's relationship to nature and how we should act ethically and wisely within it (Havlick 2006). As Vandana Shiva is quoted as saying, "the wild is not the opposite of cultivated. It is the opposite of the captivated" (Griffith 2006, p. 37).

Wildness thus presents a challenge for managers (Turner 1996). That challenge is to be guardians, not gardeners. Managers should not feel the necessity to always 'play God' and determine the conditions under which particular species can flourish. Rather than modifying wilderness and other protected areas in compensation for outside sources of anthropocentric change such as habitat destruction, global climate change and ubiquitous air pollution, it is a call for the reduction of those human actions. In addition, wildness is a call for managers to cautiously reject the manipulation of wilderness for human preference. For instance, management should question such practices as the stocking of fish species in wilderness for recreation benefit, the impoundment of wilderness watersheds for downstream irrigation benefit, and the use of fire suppression and fuel reduction burns in wilderness to protect life and property outside the boundary. While each of these practices has been extensively studied, wildness fundamentally questions our ability to fully understand the processes of nature as well as our ability to know the full range of consequences of our actions. Having good intentions does not excuse failed experimentation or unanticipated outcomes (Landres 2010). To be clear, the presence of humans does not negate wilderness, but our actions there may. Snyder (in Ebenkamp 2010) says, "it is a matter of how much wildness as process is left intact" (p. 12).

Two recent studies, while not specifically designed to investigate wilderness as a contrast and sanctuary from human society, have provided illumination along the lines discussed above. Each was conducted in the generalized context of opportunities for experiences in wilderness. The first considered how people with non-heteronormative genders and sexualities experience their bodies and their genders in wilderness. What we found were stories of freedom, refuge, safety, relationship and a sense of ecological belonging. The second documented a phenomenology of spiritual experiences in wilderness. Building, reinforcing and extending previous studies, we found study participants to be talking about the importance of immersion in primitive and simple ways of being, escaping information technology and their digital selves, reconnecting with themselves, their gods, and their story of the land. Across both studies we find the importance of wilderness as a place to fully be, a place to re-orient identities and self within relation to one's environment. The essential wildness of wilderness, as described above, thus allows a necessary refuge and sanctuary.

Gendered Experiences in Wilderness

A significant body of research explores how outdoor experiences can foster empowerment for women (for example, Beale 1988; Brace-Govan 1997; Burden and Kiewa 1992; Mason-Cox 1992; McDermott 2000; Miranda and Yerkes 1985; Scherl 1990). Similarly, most of the literature that looks at gender and wilderness also focuses on women and empowerment (Angell 1994; Bialeschki and Henderson 1993; Hart and Silka 1994; Kohn 1991; Mitten 1994; Pohl and others 2000; Powch 1994; Stopha 1994). While these studies have been insightful and important, we believe the focus of much of this work on self-improvement and empowerment only captures a part of the many ways that women experience the outdoors, nature and wilderness. The study described here aims to document how women, in particular gbtlq (gay, bi-sexual, transgendered, lesbian and queer), experience their gender and body in wilderness.

Twenty self-identified gbtlq women volunteered to participate in semi-structured, in-depth interviews which were held either in private residences, quiet study rooms on campus, or over the telephone. All participants had recreated or worked in wilderness. With permission, all interviews were audio-taped with lengths ranging from thirty-nine to ninety-four minutes. After transcription and coding, the qualitative data analysis software MAXQDA was used to follow a grounded theory approach (Corbin and Strauss 2008) to identify overarching themes and analytical stories present in the data. We provide here only a portion of the full analytical story. Complete details can be found in Meyer (2010).

A sense of ecological belonging represented the overarching wilderness experience for most study participants. We heard stories of a profound sense of connection and of how wilderness was a safe place to escape the structures, judgments and technologies of society and re-connect to the body and to the natural world. Bodily experiences of wildness were commonly described, mirroring the suggestions of Abram (1996) that, "ultimately, to acknowledge the life of the body, and to affirm our solidarity with this physical form, is to acknowledge our existence as one of the earth's animals, and so to remember and rejuvenate the organic basis of our thoughts and our intelligence" (p. 43).

As study participant Sage explained,

> "And when we got there—we were hot and tired and dirty and we hadn't seen water like this in a while. And so we all just stripped off our clothes and you know threw down our packs and stripped off our clothes and frolicked in the water. And we felt—to me—it was like such perfect embodiment of—we were so animal in our bodies at that point. They were our tools, they were our engines, they were the things that were sustaining us, they were us. And we were a community of that together. And ah—in a way that felt like wow—I'm not gonna get to glimpse this kind of connection to myself and connection to others and connection to a landscape simultaneously."

Note that wilderness does not so much offer space for women and gbtlq to *resist* hetero-patriarchy as it offers space for creative expression and to experience engagement with other, non-judgmental things. In saying this, we recognize wilderness not as a separation from nature but a reclaiming of the 'ground of continuity' (Plumwood 1998). This reflects what Gaard (1997) would describe as a different kind of "perceptual orienteering, a different way of locating oneself in relation to one's environment" (p. 17).

In contrast to feelings of alienation, separateness and otherness that participants described in society, in wilderness they described feelings of wholeness, integration and connection. In wilderness, our study participants described feelings of

kinship, neutrality (in that nature does not seem to care about gender or perceived sexuality) and comfort. For instance, study participant Beatrice said,

> "Wilderness is a place away from society… kind of at times away from reality. It's a place for me where I can be comfortable being myself and not fitting into anything and really a way just to get away from life, get away from everything—just relax… And early on I didn't know what it was. I didn't know what I was feeling. I didn't know why I felt comfortable. And really I think a big part of it was I was just really comfortable in not having to look at myself as male or female or straight or gay or lesbian or bisexual. It didn't matter. It really didn't matter. I was just another creature out in the woods."

In wilderness, notions of being watched or monitored are replaced largely by positive feelings of vulnerability (predator-prey relationships, heightened senses and awareness of surroundings, connection as animals in an ecosystem) in contrast to a gendered vulnerability (fear of rape, violence, judgment, discrimination or shame). At the heart of this vulnerability is control, and in wild places humans are no longer in control. As an example, when asked what it feels like to be physically immersed in wilderness, Zara expressed,

> "The places I go are usually pretty high risk. You know god forbid I'd ever have to shoot or spray at anything. But you know if I was without protection then that puts a whole different aspect on it. 'Cause then all of a sudden it's the hunter-prey and you're prey and you'd better watch your butt…. So—for me going by myself in the backcountry and like say an area of high concentration of grizzlies. To me—that's exciting. You know and it's scary 'cause you could die and I think that's the allure of it to me. It's because you're not in control of everything as we are in this society. The rules change. The games change."

Across our sample, people distinguished between society and wilderness not solely on legal designation, but also on features of wildness such as unpredictability, boundlessness, potentiality, exploration, lawlessness, and unpatrollability. Being immersed in such wildness was described as providing opportunities to touch what is wild within us. As study participant Sophia-Margeaux describes, "It supports the wildness that's beyond human culture within me".

In wildness, we can find a freeing of social systems, structures, and rules. As Margret says,

> "It's in part an escape from society and from you know social definitions or interactions… It's this kind of escape… I guess I go into wilderness because for me it's like a more pure existence and it makes me feel more alive."

In wilderness, participants also described finding unpredictability, challenge, and a way to live in the moment. Sasha, for example, explains,

> "I think it feels very freeing. I think there's a contentment or satisfaction that comes from you know being present or just feeling like you know today I have to chop wood or today I have to build a fire. Now I have to eat… or go do whatever I'm doing. Go climb to the top of this summit. So it's very day to day—moment by moment—which is very different from how our society is structured."

In some ways, our findings mirror the ecotheology scholarship of Susan Bratton (1993; 1998) in which she describes a thousand year monastic tradition of reciprocity in wilderness. Early Christian experiences in wild areas are shown to be providing freedom from secular and worldly concerns and the opportunity to practice Christian virtues such as simplicity, fellowship, love, contemplation, faithfulness and harmony. The second study described below further explores spiritual experiences in wilderness.

Phenomenology of Spiritual Experiences in Wilderness

In this study, thirty-two semi-structured interviews were conducted in-situ with overnight visitors to a U.S. water-based wilderness to update and add to our understanding of the spiritual aspects of experiences in wilderness. Previous work (Young and Crandall 1984; Stringer and McAvoy 1992; Fredrickson and Anderson 1999) was also set in such a wilderness. Along with other work (Ashley 2009; Ellard and others 2009; Fox 1997; Heintzman 2000, 2010; Marsh 2007; Schmidt and Little 2007), this provides a basis for saying that natural settings have important characteristics that support spiritual experiences.

Within the peak visitation season of July and August 2010, respondents were approached late afternoon/early evening in their campsite. These campsites were randomly selected on each of six wilderness lakes (three lakes being closer to the periphery of the wilderness area and three more internal). At each campsite, after reading the recruitment script, the person with the most recent birth date was specifically asked to participate. In two exceptional cases, two respondents were interviewed at once but each was asked to tackle each interview question. All interviews were conducted *in-situ* a short distance away from the center of the campsite, either lakeside or just above the camp.

As in the first study described above, these interviews were voluntary and were tape-recorded for later transcription. Both idiographic (individual-level) analyses along with nomethetic (overall pattern) analyses were conducted using the techniques of grounded theory (Corbin & Strauss 2008). A phenomenological study such as this aims to situate comments made in the moment (lakeside, inside the wilderness, in this case) within the life-world of the respondents. Thus, we were able to identify important characteristics of the wilderness setting, as well as a comparison of wilderness settings with other locations of spiritual practices and processes. Themes of the role of spiritual experiences in wilderness within a person's life surfaced in the data, with a particular contrast to the heavy imposition of information technology outside of wilderness. The themes presented here are a selection and summary of the full study. More details can be found in Foster (2011) and in Foster & Borrie (2011).

For the respondents, wilderness means different things to different people. For some, wilderness was just another place, just slightly different from their regular fishing location; for others, it is a wholly different world; and for yet others the area is not even true wilderness, given that it is possible to paddle the tracts of wild country immediately north without seeing people for weeks.

However, a majority of respondents explained their attachment to wilderness as comparable to no other place. The wilderness context provides unique opportunities and potential for spiritual experiences because of its naturalness, its pristineness and its remoteness. Sometimes on their own, but often in combination, the solitude, roughness, beauty, intricacy, and/or the calmness or fierceness of the weather offered conditions very different from the ordinary. The activities of paddling, carrying canoes, and daily routines of gathering firewood, filtering and carrying water, and cooking in the open all provide or provoke the opportunity for contemplation and acknowledgement of different ways of being. Fewer distractions, more immediate concerns, direct and unambiguous feedback for actions, and the general sense that larger forces are at play, all contribute to a lessened sense of individual power and control. Wilderness provides a window into a powerful, mysterious unknown. As one participant explained, "This environment is … you are right there—God has total control over you, the wind, the waves, the weather, all of that. That isn't bad, it is pristine. When you leave God alone, it is pristine."

Spiritual experiences are understood as complex and multidimensional, but our interviews particularly revealed the importance of rituals in facilitating spiritual experiences and development. Many of these rituals, such as rising early in the morning and seeking solitude and silence a little ways from camp, are learned from mentors and become quite habitual. Several study participants mentioned a relative or family member taught them the beauty of doing things the 'right way'.

Visitors also remember and draw upon spiritual practices from prior memories and experiences. It is mentioned that they revisit and search out the feelings and emotions that they had experienced. The meaning of those experiences is then explored, discussed and shared and then folded into their personal and social worlds. One participant, for example, described her perspective saying,

> "I definitely feel more connected to my girls and feel more connected to—I feel more stationed in my life. I feel like being out here gives you more time to think about your goals and what is actually important to you. So I guess I feel more sturdy and planted in what I believe."

Participants underscored that through immersion in the primitive and simple we remember basic needs, life supporting practices and remember the core of our being. While the notion of primitivism may be problematic (Borrie 2004; Potter 2010), our participants described the clarity and simplicity that wilderness practices allow. One noted that,

> "Whatever sorts of problems you may have in your everyday life, you can come out here or reflect on here, and realize how unimportant they really are; this is definitely a place for me to let go and be myself."

The idea is that visitors go to wilderness to gain perspective on their lives. A common phrase was "recharging their batteries". Wilderness was a means towards being more grounded. Words with a *re-* prefix were common (re-center, re-focus, re-discover, re-consider, re-define, and re-develop). Wilderness allows a remembering and a reinvestment in identity and relationship.

The data contain numerous mentions of a desire to disconnect from the information society, feeling free from technology's grasp and stressing the growing importance of escaping routines that are choreographed by information technology. Many participants highlighted the freedom that exists in wilderness, particularly the freedom to choose what to pay attention to and when. As one explained,

> "I feel that I can be myself more; you know, with friends and stuff. I just kind of have to—I don't know—pay attention all the time, I have to be involved in everything that is going on. Up here, I can be involved as much as I want. I can just sort of wander off and be on a rock alone. And I like that."

In wilderness, visitors can leave behind their 'digital selves' and not feel the necessity to maintain their online presence and image, as well as leave behind the stresses and expectations of the digital world. Nearly three-quarters of study participants mentioned the joy of disconnecting from communication technology (phones, emails, texts, tweets, and status updates). For example, one of the participants said,

> "I guess I just turn off everything else and just soak in what is around me and take time to be thankful for it. (pauses) Hmm, I guess I don't think about these things much unless I am here and have the time—I am just able to be thankful that I am here and it is here."

These results highlight the importance of wilderness in allowing for unplugging and leaving behind the intrusions of modern, technological society. The isolation, freedom, and simplicity of being in wilderness allow a different pace and a different focus, which in turn allows space for renewing and reinforcing relationships. We found frequent mention of the intimacy and privacy that wilderness provides, which in turn strengthens communication and attention whether they be to self, to other species, or with higher beings. Wild places teach and remind what it means to be human in relation to the natural world. Escaping daily routines, demands, interruptions and expectations into a time and space of refuge and sanctuary allows exploration of our place in the wider world. In wilderness, we found that social constraints are lessened. The cultural information to be processed is limited, immediate practices are common, and unfiltered or raw encounters with the natural world more frequent. In these conditions, the human relationship with the larger wild can be kindled, stoked, and sustained.

Discussion

While wilderness managers may feel challenged in their ability to provide opportunities for spiritual experiences in

wilderness, our respondents reinforced the importance and significance of those experiences. Furthermore, while managers frequently limit their intrusions into wilderness, they are still potential conduits or facilitators for such intrusions. Interactions with rangers (and researchers!) inside the wilderness can interrupt the tone and rhythm of visitor experiences, setting up potential concerns of surveillance, monitoring, and policing. Managers and management facilities such as huts, airstrips, and ranger stations may have communication and other technologies such as satellite phones, internet links and entertainments like CD and mp3 players. Rangers and scientists may carry radio-like walkie-talkies that can announce their presence well before visitors see or otherwise know those people are there. These remind and propel the outside world into the context of wilderness. While it may be relatively easy for visitors to deny or avoid these elements of the outside world, the burden to do so has been imposed upon visitors, a form of subjugation in itself. An untamed state may be unsettling or somewhat threatening to an ethos of management. But such wildness and freedom should be considered the norm and part of the purpose of wilderness areas.

The challenge for researchers remains the hesitancy to document and elucidate the very personal, intimate and core concerns of wildness, identity, security, relation and freedom. The line between description and understanding on the one hand and measurement and monitoring on the other is a fine line, indeed. To document and judge the achievement of particular experiential outcomes is an act of taming in that things shift into the realm of knowing and known. Wilderness is in this way being thought of through a machine metaphor—capable of efficiently producing predictable outcomes given the input of preferred conditions. All of which diminishes "discovery and surprise and independence and the unknown, the very qualities that make a place wild" (Turner 1991, p. 22). The hazard, then, is a spiral of greater and greater intrusion rendering increasing evaluation, accountability, regulation and control. This would be a taming, an objectifying and a profaning of the experience of wilderness. It is our intent here to help elucidate the very nature of wilderness as a place of wildness, self-determination, and refuge such that it is a call for restraint, humility and acceptance of unpredictable fallibility.

Both the studies mentioned here demonstrate the role wilderness can play as a haven or sanctuary from modern society. Much as the notion of wildness can mean freedom from human domination for the plants and animals there, so too should wilderness provide a respite for humans from the demands and pressures of modern society. In that space, away from the expectations and watchfulness of secular and societal concerns, we have room for personal expression, identity and relationship. In wilderness, there is time for the unknown, the new, and the profound. It is a place to belong, connect and fully, freely be.

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The Effect of Use Density and Length of Stay on Visitor Experience in Wilderness

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Abstract—We assessed the degree to which visitor experiences vary between (1) very high use and moderate use places and (2) day users and overnight users. The study was conducted at 10 trailheads in the Alpine Lakes Wilderness, WA, and the Three Sisters Wilderness, OR. Some visitors were asked about trip motivations as they started their trip; others were asked what they experienced after their trip. Questionnaire items were drawn from Recreation Experience Preference (REP) scales, experiences consistent with wilderness, including a number of items regarding the privacy functions of solitude and Attention Restoration Theory (ART). We hypothesized that visitors to very high use trailheads would have lower experience achievement for many of these experiences (for example, solitude and privacy). We also hypothesized that very high use visitors would have a harder time having the experiences they wanted--that the difference between pre-trip motives and post-trip experience achievement would be greater than for moderate use visitors. Our hypotheses were both correct for only seven of the 72 experiences we asked about. All seven of the items experienced less by visitors to very high use places are more descriptors of the setting and conditions that are experienced than of the psychological outcomes that result from what is experienced. None of the experiences that are clearly psychological outcomes were affected by amount of use. More wilderness experiences were influenced by whether one had stayed overnight in the wilderness than by use levels.

Introduction

Wilderness areas are to be managed such that they provide opportunities for high quality visitor experiences, of a type appropriate for wilderness. There is widespread concern that the quality of wilderness experiences is diminished in places where high use levels lead to congested conditions. This raises the question, how do wilderness experiences differ between high-use places in wilderness and places that are less popular? Moreover, day use makes up an increasing proportion of total wilderness visitation. Much of the concern about the "high-use problem" is a concern about day use in these places. Thus there is considerable interest in how the experience of day visitors differs from that of overnight visitors. Which accounts for more of the variation in experience, use density or length of stay?

The primary objective of the research reported here was to explore certain types of experience that people have on trips in wilderness—the experiences they were seeking, the experiences they attained, and the degree to which they were able to have the experiences they were looking for. In particular, we were interested in the extent to which experiences sought and attained varied between (1) very high and moderate use wilderness and (2) people on day and overnight trips.

The Nature of Wilderness Experiences

For this study, we drew on four different sources to explore the nature of experience. One source of experiential descriptors was the words of the Wilderness Act and concepts common to those writing about wilderness experiences and their values and benefits (Stankey and Schreyer 1987; Shafer and Hammitt 1995; Borrie and Roggenbuck 2001). The language of the Wilderness Act suggests that visitors should experience a setting characterized by: solitude; lack of confinement (sense of freedom); primitiveness (away from modern world); naturalness (including lack of human impact); and remoteness (because wildernesses are large). Moreover, visitors to wilderness should also have the opportunity to experience varied physical responses and cognitive states. In articulating the values and purposes of wilderness, early advocates such as Bob Marshall and Howard Zahniser spoke of such experiences as: challenge; physical revitalization; growth (personal, spiritual); connection to the natural world; absorption (in present moment, timelessness); and serenity (peace, tranquility). Borrie and Roggenbuck (2001) studied the experiences visitors had on a trip to the Okefenokee Wilderness, Georgia. They demonstrated that the experiences visitors had varied over time during their trip. Certainly, some of this variation must be a result of changing settings, but more work is needed on the influence of setting attributes on experience.

Our second source of descriptors was the positive psychological outcomes or benefits that visitors obtain as a result of their wilderness trip. To explore these, we drew on the work of Bev Driver and colleagues on psychometric scales that measure the dimensions of people's recreation experience. These scales, known as the Recreation Experience Preference (REP) scales, have been used for varied purposes in numerous studies (Manfredo and others 1996). They can be used to assess motivations for or the psychological outcomes desired

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from a specific trip, as well as the extent to which outcomes were obtained. Motivations are best assessed pre-trip, while experiences attained can only be assessed post-trip. The REP scales are specific to recreational experiences, but not to wilderness. Some of these items are similar to the wilderness-related experiences just described.

Of 19 experience domains, we explored 16 that seemed most relevant to typical wilderness experiences: achievement/stimulation; autonomy/leadership; risk-taking; family togetherness; similar people; new people; learning; enjoy nature; introspection; creativity; nostalgia; physical fitness; physical rest; escape personal-social pressures; escape physical pressure; and risk reduction. The domains we excluded were equipment, social security and teaching-leading others. Studies of wilderness visitors, using REP scales, have been used to describe the relative importance of various motivations for taking wilderness trips (Brown and Haas 1980; Manfredo and others 1983; Driver and others 1987). Less information is available about experience attainment in wilderness and we are not aware of any work on the effects of use density and length of stay on experience attainment.

The third source of descriptors came from an intensive exploration of the concept of solitude, the descriptor most often associated with the wilderness experience and explicit in the Wilderness Act. To psychologists, solitude means being alone, without intrusions, where others cannot observe you (Westin 1967; Marshall 1974; Pedersen 1999), but few wilderness visitors choose to be alone. Hammitt (1982, in press) has argued that this is too strict a definition of the experience opportunity mandated in the Wilderness Act. He suggests that the broader psychological concept of privacy is more aligned with the likely intent of the Act's authors. Privacy refers to the ability to control the amount and type of access one has with others (Altman 1975; Pedersen 1999). If there is a high degree of privacy, wilderness visitors can freely choose how much and what type of interaction with others they want. Freedom of choice and spontaneity of action are often considered important to the wilderness experience (Stankey and Baden 1977). The unit of privacy can be one's self (being alone) or one's group (alone together) (Altman 1975), so solitude (being alone) is just one type of privacy.

There have been several attempts to identify different types of privacy, as well as the different functions of privacy in society. Westin's (1967) initial typologies have been most widely adapted and explored in the wilderness recreation literature (Hammitt 1982; Priest and Bugg 1991; Dawson and Hammitt 1996). However, factor analytic studies have led to modifications of Westin's dimensions by Marshall (1974) and Pedersen (1999). Pedersen (1999) has identified six different types of privacy: intimacy with family (being alone with family); intimacy with friends (being alone with friends); solitude (freedom from observation by others); isolation (being geographically removed from and free from observation by others); anonymity (being seen but not identified or identifiable by others; and reserve (not revealing personal aspects of one's self to others).

In our work on experience, we were most interested in exploring the functions of these varied types of privacy. These are more enduring psychological outcomes of experiencing different types of privacy during a wilderness visit. Pedersen (1997) has identified five functions of privacy: contemplation (reflecting on one's self); autonomy (freedom of choice and behavior); rejuvenation (recovery and refuge from others and outside world); confiding (intimacy with trusted others); and creativity (develop ideas, work on solutions). Most of these potential outcomes of privacy resonate with the types of benefits articulated by early advocates arguing for wilderness preservation (see, for example, discussions in Graber 1976; Stankey and Schreyer 1987).

The scales Hammitt developed to assess dimensions of wilderness privacy (based on Westin's work) have been field tested in several wilderness settings (Hammitt and Madden 1989; Dawson and Hammitt 1996). Hammitt and Rutlin (1995) also showed that wilderness visitors' ratings of achieved privacy (on a simple 10-point scale) decreased as number of encounters increased and as encounters exceeded individual normative standards for encounters. But the multi-dimensional privacy scales have never been employed to explore how various dimensions of achieved privacy vary with use conditions.

The final conceptual basis for thinking about wilderness experience that we used is the Attention Restoration Theory (ART) developed by Stephen and Rachael Kaplan and colleagues (Kaplan and Kaplan 1989; Kaplan 1995). This theory posits that in their day-to-day lives, people experience mental fatigue as a result of a fatigue of *directed attention.* Directed attention is attention to something that is not particularly interesting but required (such as doing our work, driving in traffic, and so on). Maintaining focus, under these circumstances, requires considerable energy and one's capacity to exert this type of attention is limited. *Involuntary attention*, in contrast, requires little effort because stimuli are inherently interesting and involving (such as listening to music or watching wildlife). ART suggests that restoration of fatigued directed attention can occur by spending time in restorative environments, environments that are conducive to *involuntary attention* and characterized by four properties: being away (being distinctly different, either physically or conceptually, from the everyday environment); fascination (containing patterns that hold one's attention effortlessly); extent (having scope and coherence that captures the mind, fosters exploration and allows one to remain engaged); and compatibility (fitting with and supporting what one wants or is inclined to do) (Kaplan 2001).

Restorative experiences are not exclusive to recreation; nor are they exclusive to wilderness. However, they have much in common with some of the important benefits of recreation and, in particular, of recreation in wilderness. It is not coincidental that one of the Kaplans' long-term research interests has been about experiences in wilderness (Kaplan 1984). In addition, wilderness has often been described as a place to "be away" from the hustle and bustle of everyday existence. Although a number of studies have used rating scales based on ART to assess the restorative qualities of various environments, no such studies have been conducted in wilderness. Previous studies have found that natural environments are more restorative than urban ones (for example, Herzog and others 2003), suggesting

that wilderness might generally possess substantial restorative qualities. The restorative qualities of wilderness have yet to be empirically assessed, although Talbot and Kaplan (1995) interpret observed psychological outcomes of wilderness trips in the terminology of ART. Nor has there been any work on how setting attributes, such as use density, might influence those qualities.

Methods

We administered three different questionnaires. Two focused on trip motivations and were given to visitors at trailheads as they started their trip. One used Recreation Experience Preference (REP) items; the other asked about privacy and various experiences consistent with wilderness. The third questionnaire was given to visitors at trailheads as they exited. It focused on the experiences people attained, using REP scales and items related to privacy, Attention Restoration Theory (ART), and other wilderness-relevant experiences.

The Sample

The survey was conducted at 10 trailheads in the Alpine Lakes Wilderness, WA, and the Three Sisters Wilderness, OR. At Alpine Lakes, we worked at two very high use trailheads (Snow Lake and Pratt Lake), as well as three moderate use trailheads (Cathedral Pass, Gold Creek and Waptus River). At Three Sisters, we also worked at two very high use trailheads (Devils Lake and Green Lakes) and three moderate use trailheads (Sisters Mirror Lake, Elk Lake and Six Lakes). Visitation at the very high use trailheads, which are probably among the 10 most popular trails in Forest Service wilderness in Oregon and Washington, was typically at least 100 people per day. Use on sunny weekend days sometimes exceeded 300 people. This contrasts with typical use levels of 15-20 people per day at moderate use trailheads. At these trailheads, there were summer weekdays when nobody visited. Even on peak weekend days, use levels seldom exceeded 50 people.

Typically, each group of trailheads was sampled twice during the July-August summer season, each time over a 9-day block of time. Researchers were present for at least six hours per day (usually eight hours), with sampling times adjusted to match the times of day that people were likely to be present. Researchers attempted to contact all adult (16 years and older) members of all groups, either as they entered or exited the wilderness and asked them to participate. Nobody was given both an entry and exit survey. Approximately 72% agreed. We obtained 1531 completed questionnaires, 1010 at the very high use trailheads and 521 at the moderate use trailheads. We obtained 380 completed questionnaires from overnight visitors and 1151 from day users.

Data Analysis

We separately analyzed data from the four sources of experiential descriptors: the wilderness-related experience descriptors, the Recreation Experience Preference domains, the privacy functions and experiences related to Attention Restoration Theory (ART). For each of these other than ART, we used factor analysis of pre-trip motivations (principal components factor analysis with promax rotation) to identify clusters of related individual experience items. Our purpose was more data organization than data reduction. Then we used two-factor analysis of variance to assess the influence of trail use level and length of stay on experience achievement (assessed post-trip). Specifically we hypothesized that visitors to moderate use trails would have higher experience achievement scores than visitors to very high use trails. We also hypothesized in most (but not all) cases that overnight users would have higher experience achievement scores than day use visitors. We present tables for each of the main factors (use level and length of stay), including values for F and p based on two-tailed results. Differences were generally considered significant at $\alpha = 0.10$ if scores were higher for moderate use visitors or overnight visitors. For the few items (such as getting exercise), where it was not logical to hypothesize higher experience achievement for moderate use visitors, differences were considered significant at $\alpha = 0.05$. In the few cases where there was a significant interaction between use level and length of stay, we assessed the effect of each factor at both levels of the other factor.

We also used multiple regression to explore the effect of more precise estimates of amount of use on experience achievement. Independent variables were four different measures related to amount of use, as well as a dummy variable for length of stay. Two measures were objective counts of the number of groups who entered the wilderness and who exited from the wilderness during the period of time (usually 8 hours) that we were handing out questionnaires. Although these measures should provide highly accurate estimates of use density in the area during the sample day, they are not accurate estimates of what visitors encountered. Depending on where and when they came and went, some visitors might see most of the other groups in the area while others might see none. The two other measures were judgments we asked the visitors to make. We asked them how many other groups they encountered and we asked them the percent of time they were in sight of other groups. Such judgments, if accurate, should be more meaningful estimates of use density, from the perspective of influence on the visitor experience. However, such estimates might not be very accurate, because they require remembering the number of other groups encountered and, in the case of the time estimate, the ability to factor in time. Such estimates are likely to vary with attitudes, preferences and expectations. For example, of two individuals encountering the same number of people, a person who felt crowded or expected to see few people is likely to report more encounters than someone who did not feel crowded or who expected to see lots of people.

The two objective counts were highly correlated ($r = 0.84$). The two judgments were less highly correlated ($r = 0.55$). Estimates of the number of groups encountered were more highly correlated than time estimates with trailhead counts. For number of groups entering, correlations were 0.62 for encounter estimates and 0.41 for time estimates. For groups exiting, correlations were 0.65 for encounters and 0.50 for time estimates.

We conducted two-factor analyses of variance using data on pre-trip motivations—the experiences visitors desired--collected as people entered the wilderness (similar to our analyses of post-trip experience achievement). These data are not shown but can be found in Cole and Hall (2008a). We used t-tests to assess the significance of differences between pre-trip motivations and post-trip experience achievement scores. Where post-trip scores are significantly lower than pre-trip scores, we conclude that visitors were unable to have the experiences they desired. Finally, we tested for significant interaction between use level and pre- and post-trip differences (that is, whether the degree to which desired experiences were achieved differed between visitors to very high use and moderate use trails). We also tested interaction between length of stay and pre- and post-trip differences. For this purpose we used analyses of variance with the factors, pre-post trip, use level and length of stay.

Results

All participants were hikers and most came in small groups (Table 1). Day users made up 77% of our sample. Most of the sample had quite a bit of wilderness experience. Wilderness is important to most participants and most participants (70%) reported knowing at least "a little bit about what legally classified Wilderness is"; 24% thought they knew "a lot." Some of these attributes varied with trail use level and between day and overnight visitors (Table 1). The time spent on day trips was significantly longer ($t = 8.3$, $p < 0.01$) on very high use trails (mean of 4.7 hours) than moderate use trails (mean of 3.8 hours), while the mean number of nights spent on overnight trips was 2.0 regardless of use level. Mean age was greater for day users ($F = 92.3$, $p < 0.01$) and on moderate use trails ($F = 7.5$, $p < 0.01$). Gender did not differ significantly with trail use level ($\chi^2 = 0.1$, $p = 0.75$), but males were significantly more prevalent ($\chi^2 = 16.8$, $p < 0.001$) among overnight users (63%) than day users (52%). Groups were significantly larger on very high use trails, but this was only true for overnight users ($t = 4.11$, $p < 0.001$). Similarly, overnight groups were significantly larger than day use groups, but only on the very high use trails ($t = 4.95$, $p < 0.001$).

Day users generally had greater levels of wilderness experience. They were less likely to be on their first trip ($\chi^2 = 5.2$, $p = 0.02$) and had been to more other wilderness areas (gamma = 0.17, $p < 0.001$). They visited wilderness more frequently (gamma = 0.33, $p < 0.001$) and had visited the place we contacted them more often (gamma = 0.20, $p < 0.001$). Experience did not vary with trail use level except that visitors to the very high use trails had been to more other wildernesses (gamma = -0.11, $p = 0.01$) than visitors to the moderate use trails. In contrast, overnight users (gamma = -0.14, $p = 0.001$) and visitors to moderate use trails (gamma = 0.20, $p < 0.001$) reported a higher level of knowledge about wilderness. Wilderness attachment scores did not vary significantly with use level or length of stay. With just one exception, these findings about how sample attributes varied with trail use level and length of stay were consistent with what we found in a study of visitors to 36 trailheads with a wide range of use levels in 13 wildernesses distributed across Oregon and Washington (Cole and Hall 2008b). In that study, group size did not vary significantly with use level or length of stay.

Wilderness Related Experiences

A factor analysis of pre-trip motivations, using experiential descriptors from the language of the Wilderness Act and wilderness writers, suggested that the 23 individual items could be clustered into five factors (Table 2). The cluster of items most important to visitors was labeled Wilderness Setting Attributes because the items within this factor are more descriptors of the setting that is experienced than of physical or psychological outcomes of the experience. The factor contains six items that reflect the language of the Wilderness Act (solitude, primitiveness, unconfinedness, naturalness, remoteness and wilderness). The second most important factor was labeled Physical Response because it consists of two items that

Table 1—Variation in visitor attributes with trail use level and length of stay[a].

	High	Moderate	Day	Overnight
Age (mean of those over 16 years)	38[c]	40[d]	42[c]	35[d]
Male (%)	54	55	52[c]	63[d]
Group size (mean number of people)	3.5[c]	3.0[d]	3.2[c]	3.8[d]
On first wilderness trip (%)	3	2	2[c]	4[d]
Other wildernesses visited (median number)	11-15[c]	6-10[d]	11-15[c]	6-10[d]
Visit wilderness more than 5 times/yr (%)	49	48	54[c]	33[d]
Visited "this place" more than 5 times (%)	21	19	23[c]	12[d]
Know "a little" or "a lot" about classified wilderness (%)	67[c]	77[d]	69[c]	76[d]
Wilderness attachment score (mean)[b]	1.46	1.53	1.47	1.52

[a] Values with different superscripts within a row are statistically different ($p \leq 0.05$).
[b] Mean agreement with 3 items ("I find that a lot of my life is organized around wilderness use," "I feel like wilderness is a part of me" and "I get greater satisfaction out of visiting wilderness than other areas", on 7-point scale from strongly agree (+3) to strongly disagree (-3).

Table 2—Use level effects on wilderness-related experiences achieved[a].

Factors and Individual Items	High Use Mean	High Use S.E.	Mod. Use Mean	Mod. Use S.E.	ANOVA F	ANOVA p[b]
Wilderness Setting Attributes						
Being away from the modern world	5.11	0.08	5.54	0.11	5.3	**0.02**
A sense of freedom	5.21	0.07	5.51	0.12	2.1	0.15
A feeling of remoteness	4.34	0.09	5.28	0.14	13.1	**<0.01**[c]
Surroundings not impacted by people	4.09	0.09	4.89	0.14	13.6	**<0.01**
Solitude	4.19	0.09	5.32	0.14	12.9	**<0.01**[c]
Wilderness opportunities	4.80	0.10	5.13	0.15	0.1	0.71
Physical Response						
Physical revitalization	4.99	0.08	4.83	0.14	1.6	0.20
Challenge	4.87	0.09	4.53	0.14	10.2	**<0.01**
Connection to the Natural World						
Fascination with the natural environment	5.56	0.08	5.26	0.13	7.9	**<0.01**
Connection with or part of wild nature	5.34	0.07	5.40	0.11	0.1	0.74
Being at home in the natural world	5.31	0.07	5.42	0.12	0.5	0.49
The simplicity of life	5.06	0.09	5.20	0.15	0.4	0.54
Free from reliance on modern technology	4.87	0.10	5.25	0.14	0.8	0.37
The dominance of the natural world	4.70	0.09	4.50	0.16	2.9	0.09
Serenity and Absorption						
Peace and tranquility	5.28	0.07	5.73	0.11	3.0	**0.09**
Living in present rather than past or future	5.20	0.09	5.25	0.15	0.3	0.58
Being totally absorbed in what I am doing	4.66	0.08	4.72	0.14	0.4	0.53
Having solitude interrupted by others	3.61	0.09	2.75	0.13	20.5	**<0.01**
Feel insignificant part of world around me	3.97	0.11	3.72	0.17	5.3	**0.02**
Personal Growth						
Awe and humility	4.72	0.10	4.11	0.17	13.6	**<0.01**
Sense of personal growth	4.16	0.10	4.07	0.16	2.1	0.15
To focus on matters of importance to me	3.56	0.11	3.71	0.17	0.6	0.46
Sense of spiritual growth	3.74	0.10	4.06	0.17	2.0	0.16

[a] Means for individual items are responses to questions about how much visitors experienced each item, on a scale from 1 (not at all) to 7 (very much, most of the time). Items are clustered by pre-trip motivation factor.
[b] p based on two-tailed tests. For items such as "peace and tranquility," where we hypothesized higher scores for visitors to moderate use trails, differences are considered significant when $p \leq 0.10$.
[c] Interaction between use level and length of stay is significant for these items. For solitude and remoteness, use level is significant for day users only.

describe a physical response to the wilderness setting—being physically revitalized and experiencing challenge. The three remaining factors consist of psychological outcomes or states of mind resulting from experiencing the wilderness setting. The most important of these to visitors is Connection to the Natural World, six items about being fascinated with, connected to, at home in or feeling the dominance of the natural world, freedom from modern technology and sensing the simplicity of life. A fourth factor, Serenity and Absorption, contains five items: peace and uninterrupted solitude, living in and being absorbed in the present and feeling an insignificant part of the world. The least important factor—still with a mean importance of almost 4.5 on the scale from 1 to 7—is Personal Growth. This factor consists of four items, personal and spiritual growth, awe and an ability to focus on important matters.

The ability to achieve some of these experiences varied with use level (Table 2). Each of the five factors contained items that differed significantly between very high use and moderate use trails; 10 of the 23 individual items differed significantly. Visitors to very high use trails had significantly lower experience achievement scores for four of the individual items under the Wilderness Setting Attributes factor. Visitors to very high use trails, whether on day or overnight trips, were less able than moderate use trail visitors to experience "a sense of being away from the modern world" and "a sense that the surroundings haven't been impacted by people." For the items "a feeling of remoteness" and "solitude," there was a significant interaction between use level and length of stay. Day users were more able to experience remoteness and solitude on moderate use trails than on very high use trails; but overnight users were equally able to find remoteness and solitude on very high and moderate use trails.

This suggests that visitors to very high use trails had a harder time than visitors to less popular places experiencing the setting attributes that wilderness is supposed to provide. However, differences were not particularly large. The largest difference between means, for the item "solitude," was 1.13 units (16%) on the 7-point scale. Even on the very high use trails, experience achievement scores for these items were above the scale mid-point of 4.

Surprisingly few of the physical and psychological outcomes were experienced to a greater degree by visitors to moderate use trails. Peace and tranquility, one of the items under the Serenity and Absorption factor, was experienced more on moderate use trails and moderate trail users were less likely to have had their solitude interrupted. However, visitors to very high use trails experienced challenge—one of the items under Physical Response—to a greater degree than visitors to moderate use trails. Visitors to very high use trails experienced more "fascination with the natural environment" (Connection to the Natural World), more feeling of "being an insignificant part of the world around me" (Serenity and Absorption) and more "awe and humility" (Personal Growth).

There were more significant differences between day and overnight visitors than there were between visitors to very high and moderate use trails. Overnight visitors had significantly higher experience achievement scores for items under each of the five factors and 13 of the 23 individual items (Table 3). Day users did not have higher scores for any items.

We explored these relationships in more detail with multiple regression analyses based on the four measures of amount of use we had collected. Use level and length of stay were each significant variables for 11 of the 23 experiences (Table 4). The negative values for the standardized beta coefficients indicate that overnight users had higher experience achievement scores than day users and that experience achievement declined as use increased. Although this suggests a more pronounced effect of amount of use than was suggested by the analyses of variance, the magnitude of effect was small. The change in R^2 approximates the additional amount of variation in experience achieved resulting from including that variable. The largest variance explained by all use level variables and length of stay combined was 17% for solitude.

The five experiences that were achieved more on moderate use trails ("being away from the modern world," "a feeling of remoteness," "a sense that the surroundings haven't been impacted by people," "solitude" and "peace and tranquility") (Table 2), varied significantly with one or more of the four measures of amount of use (Table 4).

On average, then, experience achievement tends to decline as use increases, but there is substantial variation among people. For example, eight of the 53 individuals who reported seeing other groups more than 50% of the time assigned a score of 6 or 7 to the item "solitude" (on the 7-point scale with 7 being

Table 3—Length of stay effects on wilderness-related experiences achieved[a].

	Day Use		Overn. Use		ANOVA	
Factors and Individual Items	**Mean**	**S.E.**	**Mean**	**S.E.**	**F**	**p[b]**
Wilderness Setting Attributes						
Being away from the modern world	5.17	0.08	5.47	0.14	1.4	0.23
A sense of freedom	5.27	0.07	5.39	0.13	0.1	0.81
A feeling of remoteness	4.46	0.09	5.20	0.15	6.3	**0.01**
Surroundings not impacted by people	4.25	0.09	4.56	0.17	0.3	0.56
Solitude	4.33	0.09	5.24	0.15	7.9	**<0.01**
Wilderness opportunities	4.81	0.09	5.21	0.17	1.6	0.20
Physical Response						
Physical revitalization	4.93	0.08	4.99	0.16	0.2	0.67
Challenge	4.58	0.09	5.50	0.14	26.8	**<0.01**
Connection to the Natural World						
Fascination with the natural environment	5.40	0.08	5.73	0.15	4.3	**0.04**
Connection with or part of wild nature	5.31	0.07	5.57	0.13	2.4	0.13
Being at home in the natural world	5.30	0.07	5.54	0.13	2.1	0.14
The simplicity of life	5.01	0.09	5.46	0.15	5.2	**0.02**
Free from reliance on modern technology	4.84	0.09	5.56	0.15	9.6	**<0.01**
The dominance of the natural world	4.50	0.09	5.20	0.17	13.7	**<0.01**
Serenity and Absorption						
Peace and tranquility	5.35	0.07	5.69	0.12	1.9	0.17
Living in present rather than past or future	5.16	0.09	5.42	0.17	1.2	0.28
Being totally absorbed in what I am doing	4.59	0.08	5.02	0.16	4.4	**0.04**
Having solitude interrupted by others	3.30	0.08	3.53	0.17	5.4	**0.02**
Feel insignificant part of world around me	3.71	0.10	4.65	0.21	17.5	**<0.01**
Personal Growth						
Awe and humility	4.41	0.09	5.09	0.19	13.8	**<0.01**
Sense of personal growth	4.02	0.09	4.58	0.18	6.7	**0.01**
To focus on matters of importance to me	3.47	0.10	4.14	0.21	5.9	**0.02**
Sense of spiritual growth	3.76	0.10	4.12	0.20	2.0	0.16

[a] Means for individual items are responses to questions about how much visitors experienced each item, on a scale from 1 (not at all) to 7 (very much, most of the time).
[b] p based on two-tailed tests.

Table 4—Multiple regression results[a] relating four estimates of amount of use and length of stay[b] to the extent wilderness-related experiences were achieved[c].

	Entering Groups		Exiting Groups		Groups Seen		Time Seen		Day/ Overnight	
Factors and Individual Items	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β
Wilderness Setting Attributes										
Being away from the modern world	-	-	.01	-.12	-	-	.04	-.13	-	-
A sense of freedom	-	-	-	-	-	-	.03	-.18	-	-
A feeling of remoteness	.02	-.14	-	-	-	-	.06	-.19	.02	-.13
Surroundings not impacted by people	.01	-.13	-	-	-	-	.04	-.14	-	-
Solitude	.02	-.15	-	-	-	-	.11	-.27	.04	-.19
Wilderness opportunities	-	-	.02	-.15	-	-	-	-	-	-
Physical Response										
Physical revitalization	-	-	-	-	-	-	-	-	-	-
Challenge	-	-	-	-	-	-	-	-	.05	-.22
Connection to the Natural World										
Fascination with the natural environment	-	-	-	-	-	-	-	-	-	-
Connection with or part of wild nature	-	-	-	-	-	-	.01	-.11	-	-
Being at home in the natural world	-	-	-	-	-	-	-	-	-	-
The simplicity of life	-	-	-	-	.01	-.10	-	-	-	-
Free from reliance on modern technology	-	-	-	-	-	-	-	-	.03	-.16
The dominance of the natural world	-	-	-	-	-	-	-	-	.02	-.15
Serenity and Absorption										
Peace and tranquility	-	-	-	-	.05	-.14	.01	-.13	-	-
Living in present rather than past or future	-	-	-	-	-	-	-	-	-	-
Being totally absorbed in what I am doing	-	-	-	-	-	-	-	-	.01	-.10
Having solitude interrupted by others	.03	.20	-	-	-	-	.09	.22	.01	-.09
Feel insignificant part of world around me	-	-	-	-	-	-	-	-	.03	-.18
Personal Growth										
Awe and humility	-	-	-	-	-	-	-	-	.02	-.15
Sense of personal growth	-	-	-	-	-	-	-	-	.01	-.12
To focus on matters of importance to me	-	-	-	-	-	-	-	-	.02	-.14
Sense of spiritual growth	-	-	-	-	.01	-.10	-	-	-	-

[a] Values are (1) the change in R^2 (variance explained) that results from adding significant variables to the stepwise model and (2) standardized beta coefficients of the full model (illustrating directionality and magnitude of effect). Negative beta indicates experience achievement declines as use increases or is higher for overnight than day users.

[b] Independent variables are (1) number of groups entering during the day, (2) number of groups exiting during the day, (3) visitor estimates of number of groups seen, (4) visitor estimates of percent time in sight of other groups and (5) a dummy variable for day vs. overnight use.

[c] Responses to questions about how much visitors experienced each item, on a scale from 1 (not at all) to 7 (extremely).

an extreme level of achievement). Conversely, four of the 69 individuals who reported seeing other groups less than 1% of the time assigned a score of 1 or 2 to the item, suggesting little ability to get away from crowds even though they only saw a few others.

In addition to being highly variable, the relationship between use and experience was weak—that is, large differences in amount of use resulted in quite small differences in experience. To illustrate this graphically, we divided each measure of amount of use into ten categories, each with roughly equivalent numbers of observations (about 50 individuals in each category). For each use category (for example, 14 to 16 groups entering, 6-10% of time in sight of others), we calculated means and standard deviations. These were plotted on graphs, using the midpoint of each use category, and fitted with straight lines. In effect this separated the variability associated with differences between respondents (illustrated by the standard deviations) from the effect of use on experience (how well the mean values can be fitted to a model—in our case a straight line).

Figures 1a-d show how the ability to have "solitude" varied with each of the four use measures. This is one of the two experiences most influenced by amount of use. For each measure, the high degree of variability is evident. However, there is clearly a tendency for solitude to be more difficult to experience as use levels increase. This suggests that low r^2 values reflect variability among people in the amount of solitude they experience given a particular use density rather than the lack of a linear relationship between use and solitude for each respondent. This is consistent with the findings of Stewart and Cole (2001) at Grand Canyon National Park, where they were able to study how the same person responded to different use densities.

Figure 2 shows how the relationship between amount of use and solitude achievement varies between day and overnight users. Day users experience less solitude than overnight users at all but the lowest use densities. Moreover, solitude declines more with increasing number of encounters among day users. Consequently, differences between day and overnight users are greater at the higher use levels. This difference may reflect

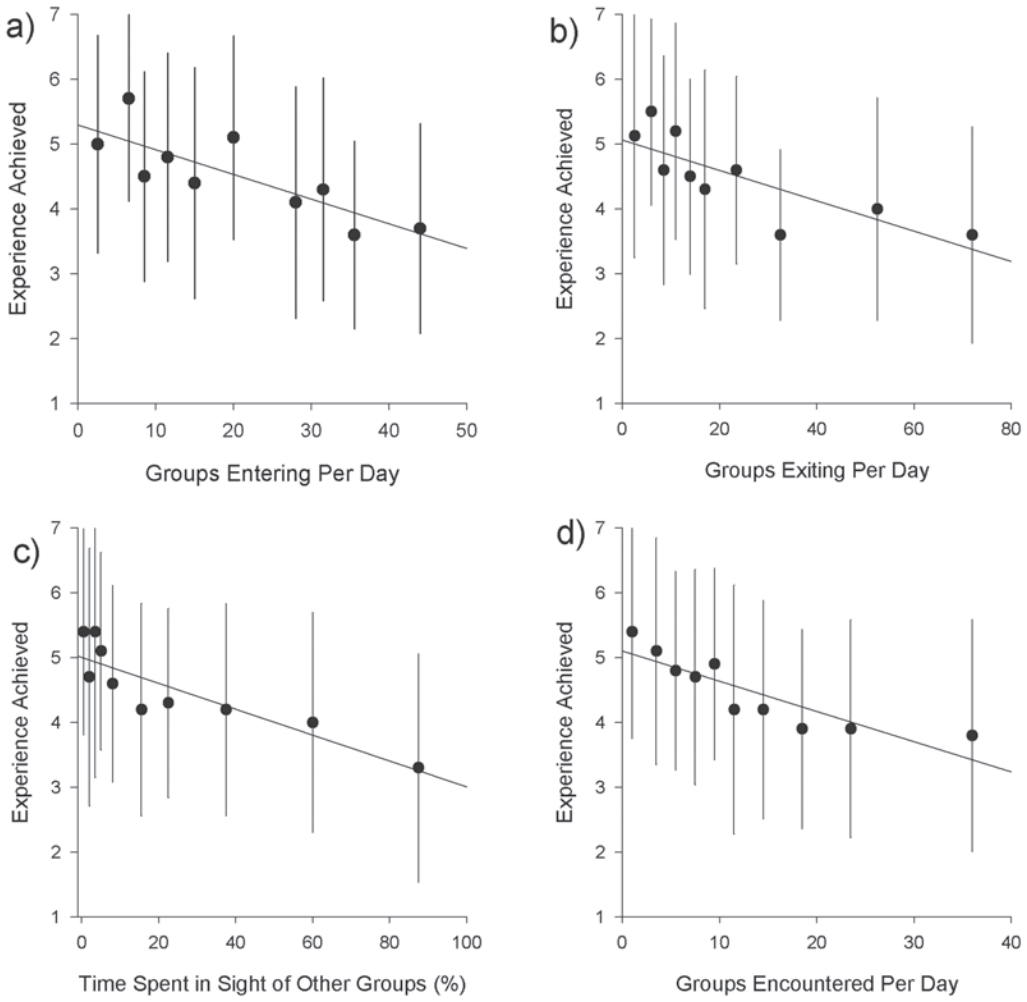

Figure 1—Relationship between four different measures of amount of use and the extent to which solitude was achieved on a scale from 1 (not at all) to 7 (very much). Values are mean responses and standard deviations within each of 10 use level classes.

the ability of overnight users in popular places to have solitude at their camp, despite encountering many other groups during the day.

The six experiences, in addition to solitude, that were achieved to a significantly higher degree on moderate use trails (Table 2) are shown in Figure 3, using the measure of use density with the most explanatory power. Clearly, increasing use has adverse effects on experience achievement but the magnitude of effect is small. Even at the highest levels of use, mean experience achievement scores are above the scale midpoint, except in the case of surroundings that have not been impacted and remoteness.

For the experiences that vary most with amount of use, the subjective judgments of amount of use explain more variation than the objective counts. This may mean that the judgments are better approximations of what was actually experienced or it may reflect biased estimation in which those feeling less solitude or more crowding report higher encounter levels than those not feeling that way.

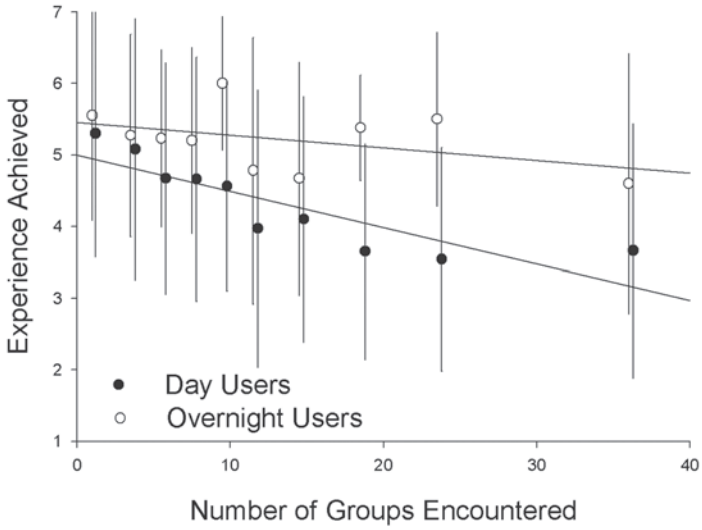

Figure 2—Difference between day and overnight visitors in the relationship between group encounters and the extent to which solitude was achieved on a scale from 1 (not at all) to 7 (very much). Values are mean responses and standard deviations within each of 10 use level classes.

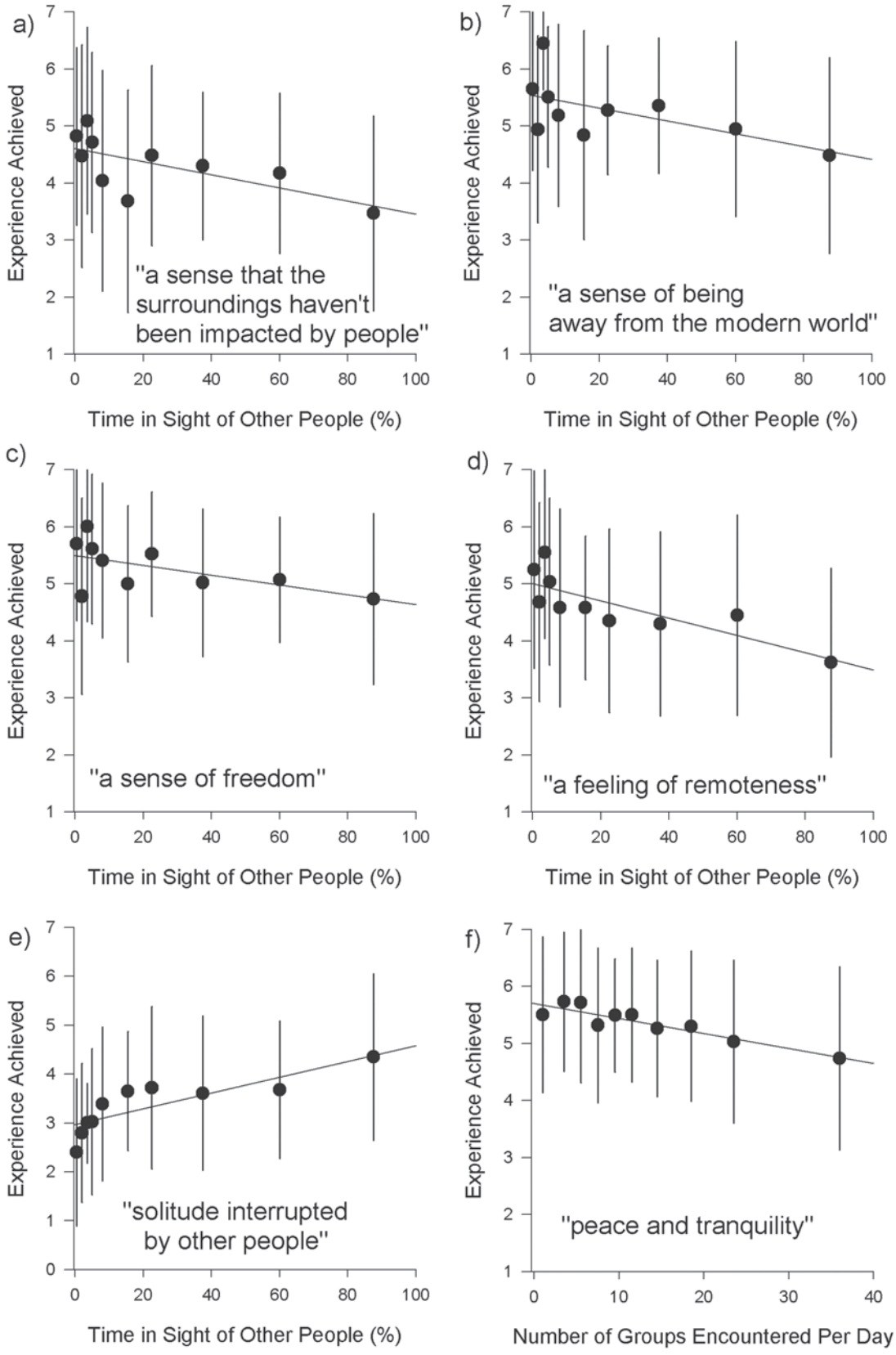

Figure 3—Relationship between the time other groups were in sight (%) and the experiences (in addition to solitude) that were most influenced by amount of use on a scale from 1 (not at all) to 7 (very much). Values are mean responses and standard deviations within each of 10 use level classes.

Satisfaction with one's experience is a function of motivations and expectations (Manning 1999). Therefore, in addition to interest in the ability to achieve certain experiences, we were also interested in the relationship between desired experiences (motivations) and achieved experiences. A low level of experience achievement is less problematic if there is little desire for that experience. We examined differences between mean pre-trip and post-trip scores and tested for interaction between these differences and use level, as well as length of stay. A significant interaction suggests that the relationship between motivations and experiences differs with use level or length of stay. For example, visitors on moderate use trails both desired and achieved more solitude than visitors on very high use trails. Since the difference between use levels was greater for what was experienced than for what was desired, the interaction between pre-post trip differences and use level was significant, suggesting that very high use trail visitors were less able to have the solitude experience they wanted. This contrasts with similar data for "a sense of being away from the modern world." Again, visitors on moderate use trails both desired and achieved more sense of being away. In this case, however, the interaction is not significant. Moderate use visitors were no more able than very high use visitors to achieve the level of feeling away that they desired. For solitude, very high use visitors both experienced less solitude and were less able to experience what they desire. For feeling away from the modern world, very high use visitors experienced less of a sense of being away but were no less able to experience what they desire.

For nine of the 22 experiences, pre-trip motivations differed significantly from experiences achieved (Table 5). The item about interrupted solitude is not included because the fact that it was asked differently makes pre-post differences difficult to interpret. Eight experiences were achieved less than they were desired. These included items from each factor other than Serenity and Absorption. One experience was achieved more than it was desired--feeling "free from reliance on modern technology."

For three of the six items under the Wilderness Setting Attribute factor and the individual experiences "not having my solitude interrupted by other people," "feel an insignificant part of the world," and "feel awe and humility," there was a significant interaction between pre-post trip differences and use level (Table 8). For the Wilderness Setting Attribute items and for "not having my solitude interrupted," very high use visitors were less able to experience what they desire than moderate

Table 5—Difference in wilderness-related experiences between pre-trip and post-trip evaluations; interaction between this difference and use level and length of stay[a].

Factors and Individual Items	Pre-Trip	Post-Trip	Use Interaction F	Use Interaction p	Length Interaction F	Length Interaction p
Wilderness Setting Attributes						
Sense being away from the modern world	5.62	5.24	0.1	0.71	0.7	0.40
A sense of freedom	5.51	5.29	0.0	0.88	0.0	0.95
A feeling of remoteness	**5.36[c]**	**4.58[d]**	2.7	**0.10**	1.9	0.17
Sense surroundings not impacted by people	**5.34 [c]**	**4.34[d]**	3.5	**0.06**	0.5	0.49
Solitude	**5.26 [c]**	**4.52[d]**	5.2	**0.02**	5.1	**0.02**
Wilderness opportunities	5.11	4.87	0.2	0.64	1.0	0.32
Physical Response						
To be physically revitalized	**5.64[c]**	**4.94[d]**	1.4	0.24	0.1	0.82
To be challenged	4.86	4.76	0.5	0.49	7.4	**<0.01**
Connection to the Natural World						
Be fascinated with the natural environment	5.64	5.46	2.3	0.13	2.0	0.16
Feel connected with or part of wild nature	**5.56[c]**	**5.32[d]**	1.7	0.19	0.3	0.58
To feel at home in the natural world	5.41	5.32	0.2	0.64	0.8	0.36
To sense the simplicity of life	5.28	5.09	1.1	0.29	3.7	**0.05**
Free from reliance on modern technology	**4.70[c]**	**4.96[d]**	0.0	0.92	7.8	**<0.01**
Sense the dominance of the natural world	4.54	4.62	2.3	0.13	6.6	**0.01**
Serenity and Absorption						
To feel peace and tranquility	5.59	5.40	0.5	0.50	0.7	0.39
Living in present rather than past or future	5.26	5.24	1.8	0.18	0.3	0.60
To be totally absorbed in what I am doing	5.00	4.68	0.7	0.40	3.0	**0.08**
Feel solitude not interrupted by others[b]	**4.83[c]**	**3.31[d]**	54.8	**<0.01**	1.7	0.20
Feel an insignificant part of world	4.13	3.91	7.3	**<0.01**	9.2	**<0.01**
Personal Growth						
To feel awe and humility	**4.87[c]**	**4.52[d]**	7.0	**<0.01**	4.3	**0.04**
To feel a sense of personal growth	**4.45[c]**	**4.09[d]**	0.8	0.36	0.4	0.55
To focus on matters of importance to me	**4.43[c]**	**3.61[d]**	0.6	0.42	2.4	0.12
To feel a sense of spiritual growth	4.13	3.81	0.1	0.74	0.3	0.56

[a] Pre- and post-trip values are means for responses to questions about how much visitors desired or experienced each item, on a scale from 1 (not at all) to 7 (extremely). Items with different superscripts are significantly different ($p \leq 0.05$). We hypothesized greater ability to have desired experiences for overnight visitors and visitors to moderate use trails, so differences are considered significant when $p \leq 0.10$.

[b] Before the trip, we asked about the desire to not have solitude interrupted; after the trip we asked about experiencing interruptions of solitude. For this item, the larger the difference between pre-and post-trip, the less solitude was interrupted.

use visitors. For the experiences "feel an insignificant part of the world" and "feel awe and humility", very high use visitors were more able to experience what they desire than moderate use visitors.

There were also eight experiences for which there was a significant interaction between pre-post trip differences and length of stay. In all cases, the difference between desires and experience achieved was greater for day users than overnight users. For "solitude," neither type of visitor had their desires met, but day users were less able to experience what they desire. For "to be challenged, "sense the simplicity of life," "sense the dominance of the natural world," "to be totally absorbed in what I am doing," "feel an insignificant part of the world" and "feel awe and humility," overnight visitors achieved more than they desired while day visitors were not able to meet their desires. For feeling "free from reliance on modern technology," experience achieved exceeded experience desired for both groups, but pre-post trip differences were smaller for day users.

Recreation Experience Preferences

We explored the psychological outcomes and benefits of wilderness experiences further by drawing on three different theoretical frameworks. One of these was the Recreation Experience Preference (REP) scales developed by Driver and others (1987). A number of the items in these scales (such as, having a sense of solitude) are similar to those described in the previous section. We explore them separately here because these scales were developed through a process not exclusive to examining wilderness experiences.

A factor analysis of pre-trip motivations suggested that the 27 individual items can be clustered within six factors (Table 6). The factor most important to visitors, **Enjoy Nature and Learning**, contained items from two of Driver's experience domains: Enjoy Nature and Learning. **Solitude and Autonomy** contained items from two of Driver's domains: Escape Physical Pressure and Autonomy. The third factor, **Family and Friends**, contained two items

Table 6—Use level effects on experiences achieved[a], using Recreation Experience Preference scale items.

	High Use		Mod. Use		ANOVA	
Factors and Individual Items	**Mean**	**S.E.**	**Mean**	**S.E.**	**F**	**p[b]**
Enjoy Nature and Learning						
View the scenery	6.33	0.05	6.27	0.08	0.1	0.72
Be close to nature	5.77	0.07	5.93	0.06	0.1	0.70
Explore the area	5.28	0.09	5.71	0.11	0.2	0.64
Gain a better appreciation of nature	5.33	0.08	5.33	0.14	0.9	0.35
Learn about this place	4.33	0.10	4.57	0.15	1.1	0.30
Solitude and Autonomy						
Be where it's quiet	5.36	0.08	5.97	0.11	6.7	**0.01**
Get away from crowded situations awhile	4.44	0.10	5.79	0.12	32.2	**<0.01**
Experience the open space	5.79	0.07	5.92	0.10	0.0	0.99
Have a sense of solitude	4.20	0.09	5.40	0.14	17.1	**<0.01[c]**
Be my own boss	3.46	0.11	3.31	0.17	2.9	0.09
Feel isolated	3.68	0.09	4.42	0.17	6.0	**0.01**
Family and Friends						
Do something with my companions	5.36	0.11	5.78	0.14	3.1	0.06
Do something with my family	3.72	0.13	4.46	0.21	6.4	**0.02**
Introspection, Relaxation and Personal Growth						
Give my mind a rest	4.92	0.09	5.28	0.13	1.0	0.31
Get away from the usual demands of life	5.03	0.10	5.28	0.14	1.4	0.25
Relax physically	4.84	0.10	4.78	0.16	0.0	0.99
Grow and develop spiritually	3.62	0.11	3.83	0.18	0.1	0.72
Think about who I am	3.39	0.10	3.44	0.17	0.5	0.47
Gain a new perspective on life	3.66	0.10	3.70	0.17	0.4	0.55
Reflect on past memories	4.13	0.10	3.96	0.16	3.9	**0.05**
Achievement and Physical Fitness						
Get exercise	6.26	0.06	6.04	0.10	4.1	**0.04**
Gain a sense of accomplishment	5.15	0.09	4.72	0.15	9.8	**<0.01**
Show myself I could do it	4.24	0.11	3.79	0.17	8.8	**<0.01**
Develop my skills and abilities	3.75	0.10	3.54	0.16	3.9	**0.05**
People and Risk						
Experience risky situations	3.10	0.10	2.76	0.14	14.6	**<0.01[c]**
Feel other people could help if I need them	3.20	0.11	2.85	0.16	0.9	0.35
Be with and observe others using the area	2.86	0.10	2.28	0.13	13.1	**<0.01**

[a] Means for individual items are responses to questions about how much visitors experienced each item, on a scale from 1 (not at all) to 7 (extremely).
[b] p based on two-tailed tests.
[c] Interaction between use and length of stay is significant for these items. For solitude, use level is significant for overnight users only; for risk, use level is significant only for day users.

from the domains Family Togetherness and Similar People. A fourth factor, **Introspection, Relaxation and Personal Growth**, contained seven items from the domains Driver called Introspection, Escape Personal-Social Pressures, Nostalgia, Physical Rest and Creativity. A fifth factor, **Achievement and Physical Fitness**, contained four items from the domains Driver called Achievement and Physical Fitness. The final factor, **People and Risk**, contains three items Driver called Risk-Taking, Risk-Reduction and New People.

The ability to achieve some of these experiences varied with use level (Table 6). Visitors to very high use trails had significantly lower experience achievement scores for four individual items related to Solitude and for the item "do something with my family." For the item "have a sense of solitude", there was a significant interaction between use level and length of stay. Overnight users were more able to find solitude on moderate use trails than on very high use trails; but day users were equally able to find solitude on very high and moderate use trails.

Visitors to very high use trails had significantly higher experience achievement scores for all four items in the factor Achievement and Fitness, as well as the individual items "reflect on past memories," "experience risky situations," and "be with and observe others using the area" (Table 6). For the item "experience risky situations," there was a significant interaction between use level and length of stay. Day users on very high use trails felt more risk than day users on moderate use trails; but overnight users' sense of risk did not vary with amount of use..

None of the items related to Enjoy Nature and Learning—the most important motivation—varied significantly with use level. Neither did most of the items related to Introspection, Relaxation and Personal Growth.

More items differed significantly between day and overnight visitors. Overnight visitors had significantly higher experience achievement scores for items in five of the six factors: Enjoy Nature and Learning, Solitude and Autonomy, Introspection and Personal Growth, Achievement and Physical Fitness and New People and Risk (Table 7). Overnight visitors had significantly

Table 7—Length of stay effects on experiences achieved[a], using Recreation Experience Preference scale items.

	Day Use		Overn. Use		ANOVA	
Factors and Individual Items	**Mean**	**S.E.**	**Mean**	**S.E.**	**F**	**p[b]**
Enjoy Nature and Learning						
View the scenery	6.31	0.05	6.34	0.10	0.6	0.43
Be close to nature	5.78	0.07	5.93	0.13	0.4	0.56
Explore the area	5.28	0.08	5.89	0.11	5.9	**0.02[c]**
Gain a better appreciation of nature	5.30	0.08	5.48	0.16	0.6	0.44
Learn about this place	4.22	0.10	5.10	0.18	11.0	**<0.01[c]**
Solitude and Autonomy						
Be where it's quiet	5.42	0.08	5.99	0.12	5.7	**0.02**
Get away from crowded situations awhile	4.68	0.09	5.40	0.16	3.4	**0.07**
Experience the open space	5.79	0.07	5.99	0.11	1.0	0.32
Have a sense of solitude	4.38	0.09	5.28	0.15	8.1	**<0.01[c]**
Be my own boss	3.26	0.10	4.03	0.21	10.8	**<0.01**
Feel isolated	3.65	0.09	4.88	0.17	25.1	**<0.01**
Family and Friends						
Do something with my companions	5.43	0.10	5.71	0.19	0.8	0.36
Do something with my family	3.95	0.13	3.89	0.27	0.7	0.42
Introspection, Relaxation and Personal Growth						
Give my mind a rest	4.95	0.08	5.29	0.17	1.1	0.29
Get away from the usual demands of life	5.01	0.10	5.67	0.16	7.5	**<0.01**
Relax physically	4.94	0.09	4.37	0.20	7.2	**<0.01**
Grow and develop spiritually	3.55	0.10	4.18	0.21	5.9	**0.02**
Think about who I am	3.33	0.09	3.70	0.21	2.1	0.15
Gain a new perspective on life	3.59	0.09	3.99	0.20	2.7	0.10
Reflect on past memories	3.96	0.10	4.55	0.18	6.7	**0.01**
Achievement and Physical Fitness						
Get exercise	6.24	0.05	6.01	0.12	2.6	0.11
Gain a sense of accomplishment	4.91	0.09	5.52	0.15	11.9	**<0.01**
Show myself I could do it	3.95	0.10	4.77	0.20	13.8	**<0.01**
Develop my skills and abilities	3.53	0.09	4.36	0.19	16.7	**<0.01**
People and Risk						
Experience risky situations	2.79	0.09	3.89	0.19	30.7	**<0.01**
Feel other people could help if I need them	3.05	0.10	3.32	0.20	3.5	**0.09**
Be with and observe others using the area	2.60	0.09	3.07	0.20	8.1	**<0.01**

[a] Means for individual items are responses to questions about how much visitors experienced each item, on a scale from 1 (not at all) to 7 (extremely). Items are clustered by pre-trip motivation factor.

[b] p based on two-tailed tests. For items such as "get away from crowded situations for awhile" where we hypothesized higher scores for overnight users, differences are considered significant when p ≤, 0.10.

[c] Interaction between use and length of stay is significant for these items. For each, length of stay is significant on high use trails only.

higher scores for 16 of the 27 individual items. Day users had significantly higher scores for only one item—"being able to relax physically". The only factor that did not vary significantly with length of stay was Family and Friends.

Multiple regression analyses, using the four measures of amount of use we had collected and a dummy variable for length of stay, also suggest that whether one is on a day trip or an overnight trip affects more of these experiences than amount of use (Table 8). Length of stay was a significant variable for 17 of the 27 experiences, while amount of use was significant for 13 of the experiences. The magnitude of effect was small, however. The largest variance explained by length of stay was 6% for "experience risky situations." For most experiences, variance explained was just 1-2%. The negative values for most standardized beta coefficients indicate that overnight users had higher experience achievement scores than day users. Day users had higher achievement for "relax physically" and "get exercise."

The five experiences that were achieved more on moderate use trails ("be where it's quiet," "get away from crowded situations for awhile," "have a sense of solitude," "feel isolated" and "do something with my family"), varied significantly with one or more of the four measures of amount of use (Table 8). However, amount of use did not explain much of the variation in experience achieved for any of these experiences and the relationship between use and experience was weak; large differences in amount of use resulted in quite small differences in experience.

For 14 of the 27 experiences, pre-trip motivations differed significantly from experiences achieved (Table 9). Nine experiences were achieved less than they were desired. These included particularly items in the Solitude and Autonomy and the Introspection, Relaxation and Personal Growth factors. Five experiences were achieved more than they were desired. These were mostly items related to Achievement and Physical Fitness.

Table 8—Multiple regression results[a] relating four estimates of amount of use and length of stay[b] to experiences achieved[c].

	Entering Groups		Exiting Groups		Groups Seen		Time Seen		Day/ Overnight	
Factors and Individual Items	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β
Enjoy Nature and Learning										
View the scenery	-	-	-	-	-	-	-	-	-	-
Be close to nature	-	-	.02	-.14	-	-	-	-	-	-
Explore the area	-	-	.03	-.16	-	-	-	-	.02	-.14
Gain a better appreciation of nature	-	-	-	-	-	-	-	-	-	-
Learn about this place	-	-	.03	-.15	-	-	-	-	.02	-.14
Solitude and Autonomy										
Be where it's quiet	-	-	-	-	.02	-.15	.07	-.18	.02	-.13
Get away from crowded situations awhile	.01	-.13	-	-	.20	-.24	.04	-.22	.02	-.11
Experience the open space	-	-	-	-	.02	-.13	-	-	-	-
Have a sense of solitude	.02	-.15	-	-	-	-	.11	-.27	.04	-.19
Be my own boss	-	-	-	-	-	-	-	-	.02	-.16
Feel isolated	-	-	.03	-.15	-	-	-	-	.02	-.14
Family and Friends										
Do something with my companions	.01	-.10	-	-	-	-	-	-	-	-
Do something with my family	-	-	.01	-.09	-	-	-	-	-	-
Introspection, Relaxation and Personal Growth										
Give my mind a rest	-	-	-	-	-	-	-	-	-	-
Get away from the usual demands of life	-	-	-	-	.01	-.12	-	-	.02	-.12
Relax physically	-	-	-	-	.01	-.12	-	-	.01	.13
Grow and develop spiritually	-	-	-	-	-	-	-	-	.01	-.10
Think about who I am	-	-	-	-	-	-	-	-	-	-
Gain a new perspective on life	-	-	-	-	-	-	-	-	-	-
Reflect on past memories	-	-	-	-	-	-	-	-	.02	-.12
Achievement and Physical Fitness										
Get exercise	-	-	-	-	-	-	-	-	.01	.09
Gain a sense of accomplishment	-	-	-	-	-	-	-	-	.02	-.13
Show myself I could do it	-	-	-	-	-	-	-	-	.03	-.17
Develop my skills and abilities	-	-	-	-	-	-	-	-	.03	-.18
People and Risk										
Experience risky situations	-	-	-	-	-	-	-	-	.06	-.24
Feel other people could help if I need them	-	-	-	-	-	-	-	-	-	-
Be with and observe others using the area	-	-	-	-	.01	.12	-	-	.01	-.13

[a] Values are (1) the change in R^2 (variance explained) that results from adding significant variables to the stepwise model and (2) standardized beta coefficients of the full model (illustrating directionality and magnitude of effect). Negative beta indicates that experience achievement declines as use increases and is higher for overnight users than day users.

[b] Independent variables are (1) number of groups entering during the day, (2) number of groups exiting during the day, (3) visitor estimates of number of groups seen, (4) visitor estimates of percent time in sight of other groups and (5) a dummy variable for day vs. overnight use.

[c] Responses to questions about how much visitors experienced each item, on a scale from 1 (not at all) to 7 (extremely).

Table 9—Difference between pre-trip and post-trip experience evaluations, using Recreation Experience Preference scale items, and interaction between this difference and use level and length of stay[a].

Factors and Individual Items	Pre-Trip	Post-Trip	Use Interaction F	Use Interaction p	Length Interaction F	Length Interaction p
Enjoy Nature and Learning						
View the scenery	6.27	6.28	0.1	0.74	0.1	0.76
Be close to nature	**6.17[c]**	**5.78[d]**	0.1	0.95	0.1	0.70
Explore the area	**5.87[c]**	**5.32[d]**	0.5	0.48	1.3	0.26
Gain a better appreciation of nature	5.19	5.22	0.7	0.40	2.2	0.14
Learn about this place	4.69	4.37	0.3	0.56	2.0	0.16
Solitude and Autonomy						
Be where it's quiet	5.70	5.48	2.9	**0.09**	0.6	0.46
Get away from crowded situations awhile	**5.57[c]**	**4.79[d]**	23.3	**<0.01**	0.3	0.60
Experience the open space	**5.50[c]**	**5.78[d]**	1.6	0.20	0.9	0.34
Have a sense of solitude	**5.06[c]**	**4.52[d]**	6.2	**0.01**	1.1	0.29
Be my own boss/free to make own choices	3.56	3.18	7.8	**<0.01**	7.0	**<0.01**
Feel isolated	4.03	3.83	0.0	0.87	3.9	**0.05**
Family and Friends						
Do something with my companions	5.54	5.49	1.5	0.23	0.2	0.68
Do something with my family	**4.55[c]**	**3.94[d]**	0.0	0.93	0.1	0.72
Introspection, Relaxation and Personal Growth						
Give my mind a rest	**5.69[c]**	**5.03[d]**	0.5	0.48	0.2	0.63
Get away from the usual demands of life	5.08	5.10	0.1	0.79	0.1	0.80
Relax physically	**5.05[c]**	**4.81[d]**	0.0	0.84	2.1	0.15
Grow and develop spiritually	**4.35[c]**	**3.69[d]**	0.2	0.68	0.0	0.87
Think about who I am	**4.12[c]**	**3.41[d]**	0.2	0.64	0.2	0.68
Gain a new perspective on life	3.93	3.65	0.3	0.61	0.0	0.88
Reflect on past memories	**3.81[c]**	**4.09[d]**	1.0	0.32	2.2	0.14
Achievement and Physical Fitness						
Get exercise	**5.76[c]**	**6.19[d]**	0.4	0.53	3.8	0.05
Gain a sense of accomplishment	**4.84[c]**	**5.04[d]**	2.5	0.11	3.1	0.08
Show myself I could do it	**3.92[c]**	**4.11[d]**	1.1	0.30	2.0	0.16
Develop my skills and abilities	3.61	3.71	1.6	0.21	1.0	0.32
People and Risk						
Experience risky situations	3.22	3.00	4.3	**0.04**	5.1	**0.02**
Feel other people could help if I need them	3.05	3.11	1.4	0.23	0.2	0.65
Be with and observe others using the area	2.81	2.68	3.2	0.07	2.7	0.10

[a] Pre- and post-trip values are means for responses to questions about how much visitors desired or experienced each item, on a scale from 1 (not at all) to 7 (extremely). Items with different superscripts are significantly different ($p \leq 0.05$). For items such as "be where it's quiet," where we hypothesized higher ability to experience what was desired for moderate trail users, differences are considered significant when $p \leq 0.10$.

For three of six individual items within the Solitude and Autonomy factor and the individual item "to experience risky situations," there was a significant interaction between pre-post trip differences and use level (Table 9). For "have a sense of solitude" and "get away from crowded situations awhile," very high use visitors were less able to experience what they desire than moderate use visitors. For "be my own boss" (asked pre-trip as "be free to make my own choices") and "experience risky situations," very high use visitors were more able to experience what they desire than moderate use visitors. There were also four experiences for which there was a significant interaction between pre-post trip differences and length of stay. For "be my own boss," overnight visitors achieved more than they desired while day visitors were not able to meet their expectations. For "feel isolated" and "experience risky situations," neither type of visitor had their desires met, but day users were less able to have their desires met. For "get exercise," experience achieved exceeded experience desired for both groups, but pre-post trip differences were smaller for overnight users.

Wilderness Privacy

In addition to exploring the degree to which visitors experienced solitude in wilderness, we were also interested in the functional outcomes of such experiences. For this purpose, we explored the extent to which visitors desired and experienced various privacy functions. Factor analyses of motivations aligned closely with Pedersen's (1997) five privacy functions (Table 10). The most important of the privacy functions was Rejuvenation. The mean score of the two items under this function was 5.5 on a scale of 1 (not at all important) to 7 (extremely important). Somewhat less important were the functions Autonomy and Confiding. The least important functions, Contemplation and Creativity, did not load on separate factors; their mean importance was slightly above the midpoint of 4.

Although visitors to moderate use trails achieved a higher degree of solitude than visitors to very high use trails, they did not experience the functional outcomes of privacy to a higher degree. None of the privacy function factors and none of the

Table 10—Use level effects on experiences achieved[a] for experiences related to privacy functions.

Factors and Individual Items	High Use Mean	High Use S.E.	Mod. Use Mean	Mod. Use S.E.	ANOVA F	ANOVA p[b]
Rejuvenation						
To release stress and tension	5.16	0.08	5.26	0.13	0.1	0.71
To feel mentally rejuvenated	4.81	0.09	4.89	0.14	0.1	0.75
Autonomy						
Sense of personal freedom/independence	4.39	0.09	4.89	0.14	0.6	0.45
To feel free to behave as I want	4.31	0.09	4.74	0.15	0.7	0.42
Confiding						
To feel close to my companions	4.31	0.11	4.67	0.17	0.5	0.50
To confide in others I trust	3.27	0.11	3.44	0.17	0.1	0.79
Contemplation and Creativity						
To meditate and reflect	4.19	0.09	4.26	0.16	0.2	0.66
Develop/explore new thoughts and ideas	4.23	0.09	4.30	0.13	0.4	0.51
To discover who I am	3.39	0.09	3.35	0.15	1.8	0.18
To work on solutions to personal problems	3.15	0.10	3.45	0.17	0.4	0.51

[a] Means for individual items are responses to questions about how much visitors experienced each item, on a scale from 1 (not at all) to 7 (extremely). Items are clustered by pre-trip motivation factor.
[b] p based on two-tailed tests.

individual items differed significantly between visitors to very high and moderate use trails (Table 10). Whether one was on a day or an overnight trip, in contrast, did have a significant effect on the functional outcomes of privacy. For all of the items other than those related to Rejuvenation, overnight users had higher experience achievement scores than day users (Table 11). Day users were less able to have experiences for all functions other than Rejuvenation. A more detailed treatment of results is available in Cole and Hall (2008a, 2010a).

Attention Restoration Theory

Visitors were asked how much they experienced the wilderness in ways theorized to allow for recovery from directed attention fatigue: fascination, being away, compatibility and coherence (Kaplan and Kaplan 1989). Of the four domains, visitors were most able to achieve the experiences associated with Fascination (Table 12). Three items ("I felt bored by the environment," "I was focused on things I had to get done after the trip" and "A feeling that there was too much going on") were asked in a reverse format—where a high score indicates low achievement. For these items, values in tables have been recalculated to be consistent with other items (by subtracting scores from 7).

There was no evidence that visitors to very high use places in wilderness were less able to experience environments in ways that are conducive to the restoration of attention. None of the domains varied significantly with use level; only one individual item did and, for this item, experience achievement increased as use level increased (Table 12).

Table 11—Length of stay effects on experiences achieved[a] for experiences related to privacy functions.

Factors and Individual Items	Day Use Mean	Day Use S.E.	Overn. Use Mean	Overn. Use S.E.	ANOVA F	ANOVA p[b]
Rejuvenation						
To release stress and tension	5.19	0.08	5.21	0.17	0.0	0.97
To feel mentally rejuvenated	4.81	0.09	4.89	0.14	0.4	0.53
Autonomy						
Sense of personal freedom/independence	4.35	0.09	4.96	0.17	7.8	**<0.01**
To feel free to behave as I want	4.31	0.09	4.95	0.17	5.5	**0.02**
Confiding						
To feel close to my companions	4.30	0.10	4.89	0.19	5.3	**0.02**
To confide in others I trust	3.14	0.10	4.05	0.21	15.3	**<0.01**
Contemplation and Creativity						
To meditate and reflect	4.07	0.09	4.77	0.17	11.8	**<0.01**
Develop/explore new thoughts and ideas	4.17	0.08	4.60	0.17	3.1	**0.08**
To discover who I am	3.28	0.08	3.76	0.17	4.8	**0.03**
To work on solutions to personal problems	3.09	0.09	3.84	0.19	8.4	**<0.01**

[a] Means for individual items are responses to questions about how much visitors experienced each item, on a scale from 1 (not at all) to 7 (extremely).
[b] p based on two-tailed tests. For items such as "develop and explore new thoughts and ideas," where we hypothesized higher scores for overnight users, differences are considered significant when $p \leq 0.10$.

Table 12—Use level effects on achievement of experiences related to attention restoration theory[a].

Factors and Individual Items	High Use Mean	High Use S.E.	Mod. Use Mean	Mod. Use S.E.	ANOVA F	ANOVA p[b]
Fascination						
There was much to attract and hold my attention	5.37	0.09	5.12	0.13	5.5	**0.02**
I was absorbed in my immediate surroundings	5.28	0.08	5.20	0.12	1.1	0.29
I felt bored by the environment[c]	5.27	0.07	5.19	0.12	0.2	0.62
Being Away						
I felt removed from my daily routines	5.05	0.10	5.39	0.14	0.8	0.36
Away from other people's demands and expectations	4.57	0.11	5.01	0.15	0.4	0.55
I was focused on things I had to get done after the trip[c]	4.16	0.09	4.34	0.15	1.5	0.23
Compatibility						
I felt I could easily handle the problems that arise here	4.69	0.10	5.08	0.14	0.5	0.47
I sensed that I belong here	4.84	0.10	4.70	0.15	3.3	0.07
What I wanted to do was what needed to be done here	4.18	0.11	4.18	0.17	1.0	0.31
Coherence						
I sensed that the elements around me fit together	4.67	0.09	4.71	0.15	0.0	0.85
I felt immediate surroundings were part of larger whole	4.58	0.10	4.69	0.16	0.2	0.68
A feeling that there was too much going on[c]	4.50	0.09	4.65	0.14	0.9	0.35

[a] Means for individual items are responses to questions about how much visitors experienced each item, on a scale from 1 (not at all) to 7 (extremely). Items are clustered by theoretical restorative domain.
[b] p based on two-tailed tests.
[c] For items asked inversely to other items, scores were subtracted from 7 (i.e. higher scores indicate less agreement with the item)

Whether one was on a day trip or an overnight trip affected more of these experiences, particularly those in the domains Being Away and Compatability. A more detailed treatment of results is available in Cole and Hall (2008a, 2010b).

Discussion

The objective of this study was to explore the nature of visitor experiences in wilderness and the degree to which experience varies with use levels and length of stay. The very high use places we studied are among the most popular, heavily-used places anywhere in wilderness. Crowds of people are common there and the impacts of use are conspicuous. The moderate use places are more like the conditions that might be provided if use of very popular places was limited. Despite these differences in setting, visitors' assessments of the nature of their experiences were not very different in very high use places than in much more modestly used places.

We asked visitors about 72 different experiences and the degree to which they had each experience. We hypothesized that visitors to very high use trailheads would have lower experience achievement for many of these experiences. We also hypothesized that very high use visitors would have a harder time having the experiences they wanted--that the difference between pre-trip motives and post-trip experience achievement would be greater than for moderate use visitors. We assessed this latter hypothesis by examining the degree of interaction between pre-post trip assessments and use level in analyses of variance.

Our hypotheses were both correct only for the following seven of the 72 experiences: feeling of remoteness; sense that surroundings are not impacted by people; solitude (from the general wilderness experience questions); feeling that solitude is not interrupted by others; be where it's quiet; get away from crowded situations awhile; and have a sense of solitude (from the Recreation Experience Preference scales).

More experiences and a more diverse array of experiences differed with length of stay. There were 15 experiences for which (1) achievement was lower for day users than overnight users and (2) it was more difficult for day users to have the experience to the degree desired. These were: solitude; challenge; to sense the simplicity of life; to feel free from reliance on modern technology; to sense the dominance of the natural world; to be totally absorbed in what I'm doing; to feel an insignificant part of the world around me; to feel awe and humility; to be my own boss; to feel isolated; to experience risky situations; to feel free to behave as I want; to feel close to companions; to confide in others I trust; and to work on solutions to personal problems.

Driver and Brown (1975) proposed the idea of a recreation demand hierarchy—that it is important to think about recreation demand in terms of activities, settings, experience (psychological) outcomes and enduring benefits. Visitor experience can also be usefully described in these same terms—activities, settings, experience (psychological) outcomes and enduring benefits. In wilderness (as elsewhere), visitors experience the activities they are doing; they also experience the setting (physical, social and managerial) they are doing these activities in. The hiking experience is different from the boating experience and hiking in an urban park is a different experience from hiking a wilderness trail. Engaging in a particular activity (such as hiking) in a particular setting (a remote wilderness without trails) results in psychological outcomes—both transitory (a momentary sense of awe) and enduring (spiritual growth). The more enduring outcomes are often thought of as benefits.

Table 13—Length of stay effects on achievement of experiences related to attention restoration theory[a].

Factors and Individual Items	Day Use		Overn. Use		ANOVA	
	Mean	S.E.	Mean	S.E.	F	p[b]
Fascination						
There was much to attract and hold my attention	5.26	0.08	5.45	0.14	1.4	0.23
I was absorbed in my immediate surroundings	5.18	0.08	5.53	0.14	4.1	**0.04**
I felt bored by the environment[c]	5.30	0.07	5.02	0.15	3.3	0.07
Being Away						
I felt removed from my daily routines	5.05	0.09	5.58	0.16	4.7	**0.03**
Away from other people's demands and expectations	4.59	0.10	5.15	0.17	3.5	**0.06**
I was focused on things I had to get done after the trip[c]	4.29	0.09	3.92	0.19	4.2	**0.04**
Compatibility						
I felt I could easily handle the problems that arise here	4.66	0.09	5.40	0.13	9.7	**<0.01**
I sensed that I belong here	4.75	0.09	4.97	0.18	0.7	0.40
What I wanted to do was what needed to be done here	4.07	0.11	4.60	0.19	4.2	**0.04**
Coherence						
I sensed that the elements around me fit together	4.65	0.09	4.78	0.17	0.2	0.62
Felt immediate surroundings were part of larger whole	4.54	0.10	4.90	0.18	1.8	0.18
A feeling that there was too much going on[c]	4.62	0.08	4.25	0.1 8	4.9	**0.03**

[a] Means for individual items are responses to questions about how much visitors experienced each item, on a scale from 1 (not at all) to 7 (extremely).
[b] p based on two-tailed tests, both for entire factor and individual items. For items such as "away from other people's demands and expectations", where we hypothesized higher scores for overnight visitors, differences are considered significant for $p < 0.10$.
[c] For items asked inversely to other items, scores were subtracted from 7 (i.e. higher scores indicate less agreement with the item).

Of these four classes of experiential descriptors, our study focused primarily on experiences expressed in terms of the setting that was experienced (for example, surroundings not impacted by people) or of psychological outcomes for example, to meditate and reflect). All seven of the items experienced less by visitors to very high use places are more descriptors of the setting and conditions that are experienced than of the psychological outcomes of those experiences. Five items refer explicitly to setting attributes conducive to opportunities for solitude—having it, not having it interrupted, being away from crowds and, consequently, being where it's quiet. Closely related are a sense of remoteness and being in a place that has not been impacted much by people.

Even where use level affected what people experience, the magnitude of effect was not large. The largest difference between very high use and moderate use trails, for any of these variables, is 1.3 units on a 7-unit scale. In multiple regression analyses, use never explained more than 25% of the variation in experience achievement and seldom explained more than a few percent. Even where use explained substantial variation, large decreases in amount of use were associated with quite modest increases in experience achievement. One of the common explanations for amount of use not having much effect on visitor satisfaction has been the multi-faceted nature of satisfaction (Manning 1999). In this study, we separated this multi-faceted concept into its individual components and experiences. Use level still had little effect.

None of the experiences that are clearly psychological outcomes were affected by amount of use. Although solitude was affected by use, privacy functions—the purposes served by solitude and privacy—were not affected. Nor were the types of experience that contribute to restoration of direct attention fatigue—the mental and physical rejuvenation that comes from getting away from the stress, demands and routines of modern life. In interviews with wilderness visitors about their experiences, most visitors characterized their experience as doing an activity in a natural environment with their companions (Hall and others 2007). These experiences—along with peace and quiet—were the most important pre-trip motivations. They were not affected substantially by use level. Nor did use affect the ability to grow personally or spiritually or to experience such attributes as timelessness, simplicity, awe, and humility. What was affected was the ability to experience the setting attributes that are most unique to wilderness—remoteness, lack of human impact, lack of crowds and solitude.

Wilderness experiences were determined more by whether one was staying overnight in the wilderness than by use levels. The experiential domains that varied significantly with length of stay were diverse, with most relating more to the psychological outcomes of experiences than the setting and conditions that were experienced. Magnitudes of difference were similar (typically small) to magnitudes of difference related to use level.

For decades, scientists and managers have been concerned that heavy use changes the nature of recreational experiences and diminishes their quality (Manning 1999). Our research suggests that visitors to very high use wilderness places have experiences that are very similar in nature to those of visitors to less popular wildernesses. Where there is any difference, it is one of degree of achievement.

In relation to Driver and Brown's (1975) proposed hierarchy of experiences, our research suggests that the primary experiential effect of amount of use is on how the setting is experienced. Previous research suggests that the

activities visitors participate in do not vary much with use level (Roggenbuck and Lucas 1987). We found surprisingly little effect on psychological outcomes—either transitory (for example, a sense of awe) or longer-lasting (for example, physical revitalization). Although we did not study enduring benefits, there is little reason to think they would differ given the lack of difference in psychological outcomes. Indeed, Patterson and others (1998) and Glaspell (2002) explored the meanings of wilderness experience (on the basis of in depth interviews) in highly divergent wilderness settings (the heavily-used, mostly day use Juniper Springs Wilderness in Florida and the remote Gates of the Arctic Wilderness in Alaska). Although the details of what was experienced obviously differed, the domains of meaning that visitors drew from those experiences (such as challenge and being close to nature) were remarkably similar between the two wildernesses.

Most previous studies of day and overnight visitors have concluded that the trip motivations of the two groups differ, with day users being less interested in a "true" wilderness experience. In Montana wilderness, Grossa (1979, p. 125) concluded that "day users…are visiting the wilderness for recreational activities and other pursuits which are not dependent exclusively on a truly wilderness environment." In the Shenandoah Wilderness, in Virginia, Papenfuse et al. (2000, pp. 152 and 153) conclude that "few day visitors see the trip as primarily a wilderness one" and that "day visitors were seeking something other than a wilderness trip." Cole (2001) speculated that expectations may differ more than motivations—that day users may want most of the same experiences as overnight visitors (including true wilderness experiences), but that they know from previous experience that they are less likely to achieve them. In our study, we did not assess expectations. However, we did find that day and overnight users differed more in experience achievement than in experience motivation. Motivations were significantly different for 20 items, while achievement was significantly different for 38 items. Clearly day users had less intense desires than overnight users for many of the experiences we asked about; they were also less able to have most of these experiences to the degree that overnight users did.

Management Implications

Very popular places in wilderness had a very different social setting from less popular places. For example, visitors to our very high use places reported a mean of 16 encounters with other groups per day and being in sight of other groups 30% of the time. In contrast, visitors to moderate use places had a mean of 5 encounters per day and were in sight of others 8% of the time. Visitors to very high use places experienced conditions that were not entirely consistent with the wilderness ideal. They experienced crowds and surroundings that had been impacted by people. This caused them to feel somewhat less remote and to experience somewhat less solitude and quiet. However, these were the only experiences we studied that differed between very high use and moderate use wilderness. The psychological outcomes derived from wilderness visits were as substantial in very high use wilderness as they were in less heavily used places. This suggests that the enduring personal and social benefits of a wilderness trip may not be greatly diminished in very high use places. Experiences in very high use wilderness were different—because a few attributes of the setting differed—but it seems misleading to state, from the perspective of the visitor, that they were substantially lower in quality.

Much more important to experience quality than amount of use was length of stay. Many more experiences varied with length of stay than with use level. If the goal is to increase opportunities for desired psychological outcomes of a wilderness trip, convincing people to stay out overnight would be more effective and beneficial than reducing use levels. But, even for length of stay, the magnitude of difference in experience was small.

Use has already been limited in some wildernesses and there are many advocates for more widespread use limits. There are both biophysical and social reasons for such limits. Research we have reported elsewhere suggests that visitors are more supportive of biophysical reasons for limits (less impact on plants, soil and wildlife) than social reasons (Cole and Hall 2008b). If the reason for limits is social, our research suggests that managers should provide a rationale other than to provide higher quality experiences. Even in very high use wilderness, visitors had high quality experiences, realizing many desired psychological outcomes that are likely to have substantial enduring personal and social benefits. What differed was primarily the setting that was experienced. In very high use wilderness, visitors experienced less of several attributes that lie close to the core of what wilderness is. They experienced less remoteness, solitude and quiet and they were confronted with more human impact.

Our research suggests that the primary experiential justification for use limits should be to maximize opportunities to experience wilderness as a unique setting that simultaneously provides a high degree of remoteness, primitiveness, solitude and perceived naturalness. To paraphrase the Wilderness Act, use limits can increase opportunities to experience wilderness "as wilderness." This obviously is justifiable—even necessary—at least in some places. But there is little evidence that limits will consistently lead to substantially different or higher quality experiences. Moreover, managers should understand that most visitors do not consider the benefits of experiencing a wilderness with less people and more solitude to be equal to the cost associated with being denied access (Cole and Hall 2008b). In part this is because, even in very high use wilderness, visitors find most of the attributes they are seeking and have most of the experiences they desire (Hall and others 2007). Moreover, they know that there are many other wilderness destinations that provide less crowded conditions, where they can go when those attributes are important to them (Cole and Hall in press).

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Wilderness Experience Quality: Effects of Use Density Depend on how Experience is Conceived

David N. Cole
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Abstract—Different conceptions of experience and experience quality can explain ambiguous relationships among use density, crowding, experience and experience quality. We employed multiple methods to quantify experiential dimensions at a popular lake in the Alpine Lakes Wilderness, WA. Comparing weekdays to weekends, when use density is typically four times as high, we assessed the sensitivity of various experiential dimensions to variation in use density. Use density profoundly affected the setting attributes that people experienced. However, differences related to use density diminished when experience was conceived as on-site behavior, affective or cognitive experiential outcomes, or appraisals of the entire visit.

Introduction

High quality experiences are a primary goal of recreation management. In wilderness areas, and on other lands where facilities, development, interpretation and most management interventions are considered inappropriate or to be limited, managing the social setting, particularly use density, is one of the primary means of protecting the quality of experiences. Given its managerial relevance, numerous studies have attempted to assess the influence of use density on recreation experience quality (see the reviews in Manning 2011 and Cole and Williams in press). Conclusions regarding the nature of that relationship remain ambiguous, however. Many studies report substantial levels of crowding in recreation areas (for example Vaske & Shelby 2008) and positive correlations between use density and crowding (Tarrant and others 1997). These findings support the conclusion that high density adversely affects experience quality and the efforts of public land management agencies that have limited use, on rivers, in parks and in wilderness, to preserve high quality experiences. However, studies that have explored the effect of use density on visitor satisfaction with experiences typically report little relationship (Graefe and others 1984).

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One common explanation for these apparently contradictory results is that they reflect methodological differences (Manning 2011). Studies using different methods come to different conclusions. In a study of river users in Vermont, for example, Manning and Ciali (1980) used two different methods to assess the relationship between use density and satisfaction. Under hypothetical conditions, when asked to focus exclusively on the effects of use level, satisfaction declined as use level increased. Under actual field conditions, where attributes other than use density are considered and other variables mediate, use level had no effect on satisfaction. Stewart and Cole (2001) used an ipsative within-person design to study the relationship between use density and satisfaction, increasing statistical power by eliminating the "noise" of between-person variability. They were able to conclude that density had a consistent adverse effect on satisfaction, but a small one. This suggests the importance of using multiple methods to assess experience quality, including behavioral approaches.

Another explanation for seemingly divergent results stems from varying conceptions of experience quality. Rather than develop a singular concept of how experience quality is best defined and then assess the influence of use density on that, attention has typically been devoted to finding a dependent variable, reflective of experience quality, which varies substantially with user density. Because use density is more consistently related to single-attribute measures of satisfaction than to global measures, some authors conclude that a single-attribute measure provides a more appropriate way to conceive of experience quality (Shelby and Heberlein 1986; Manning 2011). Given this inconsistency, it seems worthwhile to take a new look at an old topic—to focus attention on the varied ways experience and experience quality have been and can be conceived and explore the influence of use density on those varied dependent variables.

The quality of experience might be conceived of as either (1) what is actually experienced or (2) as an appraisal or evaluation of that experience. In the first case, quality is high if recreationists have the kinds of experiences deemed appropriate, such as encountering few other people, experiencing mental rejuvenation or feeling happy. High and low quality experiences are qualitatively different; they differ in nature. To evaluate experience quality, managers, visitors, researchers or someone else must clearly articulate what the experience should be and then the degree to which recreationists have this experience must be assessed. In the second case, in

which quality is conceived of as an appraisal, quality is high if recreationists evaluate their experience positively, regardless of what is experienced. High and low quality experiences are quantitatively different, varying on some scale (from good to bad, more to less satisfied) but perhaps not in nature and, to assess quality, there is no need to articulate what the experience should be.

In addition to the issue of whether the concern should be the nature of the experience itself or how positively the experience is evaluated, studies have focused on varied dimensions of experience. What is experienced can be external to the self, such as characteristics of the physical, social or managerial setting (*I experienced crowds of people*). What is experienced can also be internal to the self—affective (*I felt joy*), cognitive (*I worked through issues and problems*) or somatic (*I felt tired*). Experiences can be short-lived psychological outcomes (*I experienced tranquility*) or provide long-lasting benefits (*I experienced an increase in self-confidence*). These experience dimensions vary in importance, in their sensitivity to external factors and degree of managerial control.

The Complexity of Wilderness Experience Quality

Drawing on models of recreation demand hierarchy (Manfredo and others 1983), crowding/satisfaction (Manning 2011) and stress/coping (Schuster and others 2003), Figure 1 presents a graphic that links varied ways experience quality might be conceived of and assessed. First, the graphic recognizes that each individual brings with them their own motivations, expectations, norms and other antecedent states that influence experience quality but are not relevant to understanding what quality is. Given this, as people engage in recreation activities in particular settings, they perceive, appraise and respond to attributes of that setting.

Although appraisals and responses to the setting can be positive or negative, most attention has been given to the latter. Recreationists can report feeling crowded (Vaske and Shelby 2008) and they can perceive particular setting attributes to be problematic. If setting qualities are deemed to be adverse, coping mechanisms are adopted. These too are part of the experience. Traditionally classified in the psychological

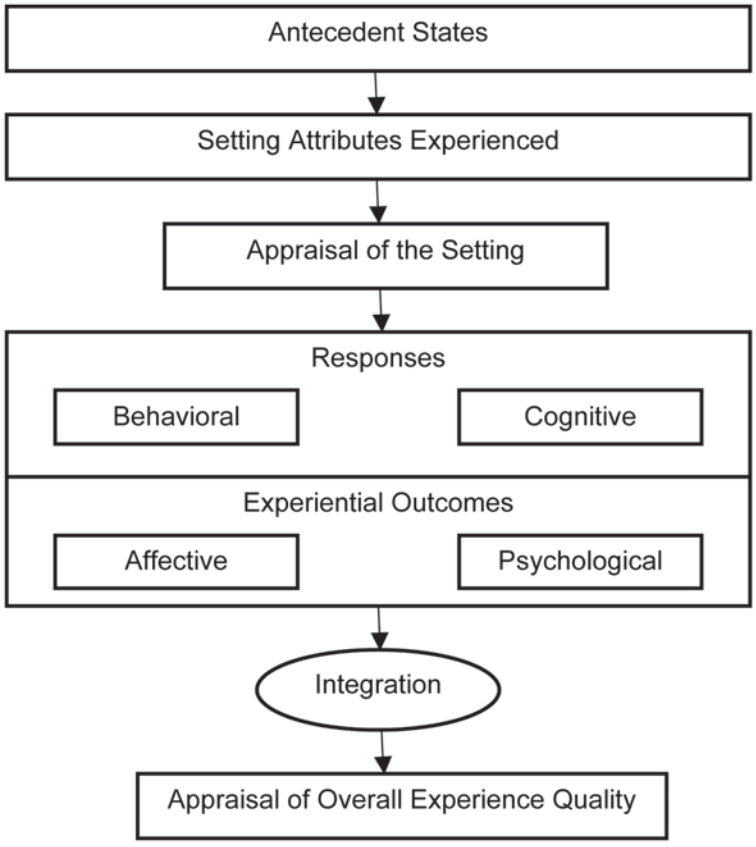

Figure 1—A conceptual model of linkages between different ways that experience can be conceived and experience quality can be evaluated.

literature as either emotion or problem-focused coping behaviors (Lazarus and Folkman 1984), most recreation studies have explored one problem-focused strategy, displacement, and two emotion-focused mechanisms, rationalization and product shift (Manning and Valliere 2001). Although recent analyses suggest a richer typology of coping strategies (Miller and McCool 2003; Schuster and others 2003; Duhachek 2005), we classify them generally as behavioral (problem-focused) or cognitive (emotion-focused) here. If the response to other visitors is deemed to be positive, these responses can also be either behavioral (such as, enjoying conversation with others) or cognitive (such as, noting that it is beneficial for so many people to be visiting wilderness). To this point in the model, experience quality might be assessed in terms of appraisals of the situation (*how crowded is the area? how do you feel about or how satisfied are you with the number of people encountered?*) or the type and intensity of coping strategies and other responses to the setting that are employed. It might even be assessed in terms of the setting attributes that are experienced (*how many people were encountered?*), although this is more a measure of experience opportunities than experiences themselves.

Experience can also be conceived of as the affective and psychological outcomes resulting from the recreational engagement. While some experiential outcomes, like affect, are immediate, short-lived and vary during a wilderness visit (Borrie and Roggenbuck 2001), others are so long-lasting that they are often referred to as enduring personal and social benefits (Manfredo and others 1996). In recognition of the fact that enduring outcomes might be adverse, we refer to these as enduring experiential outcomes. Some sort of integration with the larger narrative of one's life story must occur for ephemeral recreation experiences to become enduring outcomes, although little is known about this process. In this vein, we do not include in our model some recent concepts of experience as transaction and narrative (for example, Patterson and others 1998; Farber and Hall 2007), because this research has focused on understanding experience more in an idiosyncratic than a generalizable manner. Experience quality might be assessed as the magnitude to which certain affective (emotional) or psychological outcomes are attained.

Integration also occurs in moving to a final means of assessing experience quality. Appraisals of the entire recreational experience require integrating appraisal of individual attributes (such as the number of people in the area) with all other attributes of the engagement (weather, scenery, bugs and so on). This is the concept sometimes referred to as a global measure of satisfaction (Manning 2011).

Our Study

Protection of experience quality depends on a clear understanding of what experience quality means (how it is conceived) and how it might be assessed (how it is operationalized). Our study sought to explore the diverse ways experience quality might be defined, using multiple research methods. We used Snow Lake, Washington, an extremely popular wilderness destination, as a case study. We employed observations, interviews and written surveys to assess the constructs portrayed in Figure 1. We compared what hikers encountered, what they experienced, and how they appraised those experiences at times when use density at the lake was very high with experiences at times when density was more modest. This provided insight into the sensitivity of various potential measures of experience quality. Although we could have explored the influence of many attributes on experience quality, we chose use density because it remains an important and controversial focus of attention.

Methods

Snow Lake, in the Alpine Lakes Wilderness, WA, is among the most popular wilderness hiking destination in the Pacific Northwest. A spectacular mountain gem, the mile-long lake is an easy 3-mile hike from a trailhead that is a one hour drive for most of the 3.5 million people who live in the Seattle-Tacoma metropolitan area. Consequently it gets tens of thousands of visits each year. Most visitors come for only a few hours, although overnight camping is allowed. Data were collected over 27 days between July and September, distributed in blocks of time in order to provide adequate samples of both weekdays and weekends. For 17 days, we collected observational data, conducted on-site interviews at the lake, and distributed questionnaires to visitors as they left the lake. On 10 different days, we distributed questionnaires to hikers as they exited the trailhead.

Observational Data

Two types of observational data were collected within a quarter-mile long stretch of lakeshore where most use occurs. First, we observed the behavior of 120 systematically-selected target groups of people as they arrived at the lake and selected a place to stop and do whatever they wanted to do at the lake. We recorded attributes of the social setting that they encountered while selecting this "stopping place," as well as during the first 30 minutes at the stopping place or until they left, whichever occurred first. Second, we conducted an audit of human-caused noise. Every ten minutes, for a period of one minute, we noted whether or not we heard yelling, barking dogs, children, airplanes or other human noises. Noise was audited for 603 time periods.

Observations were generally taken between 10:00 A.M. and 5:00 P.M. Two trained individuals took all observations, with the same individual both observing visitor behavior and auditing noise (the other person was conducting interviews). The observer was stationed in a location where it was possible to observe the entire focal area of the lake. Target groups were the first group to arrive at the lake after the observer was situated (or resituated) at the observation point. Although group members typically stayed together, an individual was selected for observation in case the group separated. For groups that went beyond the focal area, the only observation was that they chose not to use the focal area.

Interviews and Questionnaires

Hikers were interviewed and questionnaires were distributed about one-quarter mile from the lake, at the point where the trail exited the lake basin. By surveying visitors on-site, we hoped to better assess their immediate experience. When done with one group, the interviewer contacted the next group of people exiting the lake. One adult from each group (the one closest to the interviewer) was selected for an interview, while other group members were asked to fill out a written questionnaire. Interviews were semi-structured, lasted about five minutes and were taped. Interviewees were informed that we were studying popular wildernesses and that we were interested in the experiences people have in wilderness, the types of things that affect experiences and how visitors think such places should be managed. Interviews were transcribed verbatim, coded using QSR N*Vivo. The on-site questionnaire asked about the conditions experienced at Snow Lake, responses to other groups encountered and support for a use limit. As with the interview, the questionnaire could be completed in about five minutes. The interviewer also recorded the total number of people entering and exiting the lake basin, providing hourly estimates of use density in the basin.

On 10 days when interviewing was not being conducted, hikers were given written questionnaires as they ended their hike at the trailhead (3 miles and typically about 1.5 hours from the lake). Each member of the group was given a questionnaire. This questionnaire contained batteries of questions about what was experienced on the hike. We obtained 124 interviews (a 79% response rate), 340 valid on-site questionnaires (91% response rate) and 157 valid trailhead questionnaires (78% response rate).

Measures

Using these varied methods, we developed measures of all the constructs in Figure 1 that might be used to assess experience quality (Table 1). By comparing weekdays to weekends, we were able to explore how the effect of use density on experience quality varied with these different conceptualizations and measures.

Attributes of the social setting—In addition to daily use density counts, we used observational data to quantify the following attributes: (1) lakeside use density—number of other groups along the lakeshore when target groups arrived; (2) trail encounters—number of other groups the target group encountered on trails around the lake; and (3) destination encounters—number of encounters with other groups while at the stopping place, classified as either proximate (within about 100 feet) or distant, whether or not the other group could be heard by the target group and, if it was heard, whether or not the encounter involved verbal contact; (4) constrained site selection—whether target groups avoided already occupied stopping places (stopping places were easily recognizable clearings in the otherwise dense vegetation); (5) territorial intrusion—whether target groups stopped and stayed on an already occupied site; (6) displacement of others—whether groups located at or close to the target group's selected stopping site left shortly after the target group arrived; and (7) displacement by others—whether target groups left their stopping spot shortly after another group intruded on their spot.

Appraisal of the social setting—In the on-site questionnaire, we asked respondents how crowded they felt at Snow Lake, on a scale from 1 (not at all crowded) to 9 (extremely crowded). We also asked respondents if they were bothered by five individual attributes of the social setting and, if so, to rate how bothered they were "at the worst moment", on a scale from 0 (didn't bother me at all) to 6 (bothered a great deal).

Responses to other visitors—In the on-site questionnaire we included a battery of 24 behavioral and cognitive coping items, most of them replicated or adapted from prior coping studies (such as, Manning and Valliere 2001; Miller and McCool 2003; Schuster and others 2003). Respondents were asked to rate how well each item described how they responded "to encountering other people at the lake", on a scale from 0 (does not describe) to 6 (describes very well). Further insights into behavioral responses and coping were gleaned from interview questions about how people responded to other people at the lake.

Affective outcomes—Three important negative emotions are anger, anxiety and sadness (Lazarus 1991). In the on-site questionnaire, we presented respondents with two different items for each of these emotion categories, asking them how well the item (such as, "I felt uneasy") described how they felt, on a scale from 0 (does not describe) to 6 (describes very well).

Psychological outcomes—Interviewees were asked to describe their experience at Snow Lake. Then they were asked, specifically, if they had experienced solitude. The trailhead questionnaire was devoted exclusively to assessing the degree

Table 1—Measures that operationalize experience quality (refer to Fig. 1), using observations (o), questionnaires (q) and interviews (i).

Setting attributes experienced
• Use density (o)
• Interaction with other groups (encounters, site occupancy, displacement) (o)
• Noise (frequency and type) (o)
Appraisal of the setting
• Perceived crowding (q)
• Problem prevalence (q)
Responses to others
• Coping mechanisms (q, i)
Experiential outcomes
• Affect prevalence (anger, sadness, anxiety) (q)
• Descriptors of what was experienced (i)
• Psychological outcomes (recreation experience preference) (q)
Appraisal of overall experience quality
• Global satisfaction measures (q)

to which respondents had experienced varied psychological outcomes, on 7-point scales. For 15 short-lived outcomes, we asked how often each was experienced, from never to most of the time. For 20 more enduring outcomes we asked how much each had been experienced, from not at all to very much. For 19 recreation experience preference items, as recommended by Manfredo and others (1996), we asked how much each added to the trip, from not at all to very much.

Appraisal of overall experience quality—On the on-site questionnaire, to obtain an overall appraisal of the quality of their experience, respondents were asked the extent to which they agreed or disagreed, on a scale from 3 (strongly agree) to -3 (strongly disagree) with three statements: "I thoroughly enjoyed this trip," "I was disappointed with some aspects of this visit to Snow Lake," and "I cannot imagine a better place to be than here." Presumably, in responding to this question, visitors integrate a variety of trip attributes in their appraisal—not just their evaluations of the social setting.

Data Analysis

We hypothesized that, on weekends, visitors would have more encounters, experience more noise, appraise the social setting more adversely, employ coping strategies more, experience more negative emotions, experience beneficial psychological outcomes to a lesser degree, and appraise overall experience quality less positively. Depending on the level of measurement of the dependent variable, hypotheses were tested by assessing differences between weekends and weekdays, based on tests using the t-statistic (interval), Somers d (ordinal) or chi-square (nominal). Differences were considered significant if p was ≤0.05. Individual items for the coping strategies and the psychological outcomes were factor analyzed following the recommendations of Costello and Osbourne (2005). We used the maximum likelihood method of extraction and direct oblimin rotation method. The number of factors selected was based on examination of scree plots, with eigenvalues greater than 1.0. To be retained, factor items had to have loadings ≥ 0.32 (Tabachnick and Fidell 2001) and minimal cross-loading. Internal consistency reliability of resultant scales (Cronbach's alpha) was ≥ 0.70.

Results

Our sample consisted almost exclusively of day users (96% of interviews, 94% of on-site surveys, and 93% of trailhead surveys). A slight majority of those surveyed (55%) were male. Mean age (of those 16 and older) was 38 years. Most groups were small; group size median and mode were two people; only 10% of groups were larger than five. Slightly less than one-half were visiting Snow Lake for the first time and 20% had visited more than five times.

Attributes of the Social Setting

On the days we worked at Snow Lake, daily use levels varied between 30 and almost 400 people. The average number of people entering the lake basin per day was about 200 on weekend days and 50 on weekdays. Consequently, the social setting at the lake varied substantially between weekends and weekdays. Use densities and most types of encounters at the lake were typically two to three times higher on weekend days than on weekdays (Table 2). As weekend groups arrived at the lake and searched for a stopping place, they passed within speaking distance of an average of 1.9 other groups on the trail or along the lakeshore. The average number of enroute encounters on weekdays was 0.7. On weekends, groups had an average of 3.6 encounters (Table 2) with other groups at their stopping place in the time we observed them (usually about 20 minutes, since we observed them for 30 minutes and groups typically spent 10 minutes enroute to their stopping place). This includes distant groups that could be seen but not heard. On weekdays, the mean number of encounters at stops was one-half this number. Differences were particularly large for verbal encounters. On weekends, about 50% of groups talked with another group during the short time we observed them at their stopping place.

Since there are only three separate desirable spots to spend time along the lakeshore, most weekend visitors found all of these places already occupied. So either their freedom to go where they wanted was inhibited or they were forced to intrude on another group's space. On weekdays, there were typically about two other groups on the lakeshore, so at least one of the desirable spots was available for most arriving

Table 2—User density and encounter levels[a]: Weekends vs. weekdays.

	Weekend	Weekday	t	p
Groups along lakeshore	4.0 (0.4)	1.8 (0.2)	4.9	<0.01
Groups encountered enroute to stopping place	1.9 (0.2)	0.7 (0.1)	5.3	<0.01
Other groups seen or heard at stopping place	3.6 (0.3)	1.8 (0.2)	5.1	<0.01
Verbal encounters with other groups	0.5 (0.1)	0.1 (0.1)	3.6	<0.01

[a] Values are means (standard errors). One-tailed t-test of difference between weekends and weekdays.

groups. This difference affected the site selection process. On weekend days, significantly more people passed over an already occupied desirable site, selected an already occupied site, displaced other groups by intruding on them and, in turn, were themselves displaced by new arrivals (Table 3).

In addition to their effect on the ability to choose where to spend time at the lake and the number and type of encounters with other groups, use levels also affected noise levels at the lake. The most common human noise was talking, which could be heard 45% of the time during the day when in the focal use area (during 45% of the minute-long observation periods). Planes were heard 14% of the time—more often than yelling (8%). Sounds from swimming were audible 6% of the time and dogs were heard barking 2% of the time. Talking and swimming were heard significantly more often on weekend days than on weekdays, but there were no differences between weekends and weekdays in the frequency of yelling, dogs barking, or sounds from airplane overflights (Fig. 2). On weekends, some sort of human noise was audible more often than not.

Appraisal of the Social Setting

Negative appraisals of the social setting were more common among weekend visitors than weekday visitors. When asked how crowded they felt at Snow Lake, weekend visitors reported feeling significantly more crowded than weekday visitors did (Somers d test, $p < 0.01$). On weekends, median perceived crowding was five on the 9-point scale, compared with a median of three on weekdays. On weekends, 44% of visitors felt at least "moderately crowded" (rating of 6-9), compared to only 13% of visitors on weekdays (Fig. 3).

Although perceived crowding is intended to be a "subjective and negative evaluation of a use level" (Manning 2011, p. 105), survey respondents might be answering the question from a descriptive and value-neutral perspective. Seeking appraisals on a scale that more clearly ranges from good to bad, we asked visitors how much they were bothered—"*at the worst moment*" of their visit—by five people-related "problems": noise from other people, inappropriate behavior, too many people on

Table 3—Site searching behavior and displacement: Weekends vs. weekdays[a].

Percent of groups who:	Weekend	Weekday	χ^2	p
Passed over an occupied preferred site	49	30	4.3	0.02
Selected an already occupied site	38	7	14.6	<0.01
Displaced another group by intruding on site	13	4	2.6	0.05
Were displaced by new arrivals	7	0	3.5	0.02

[a] One-tailed Pearson's chi-square test of difference between weekends and weekdays.

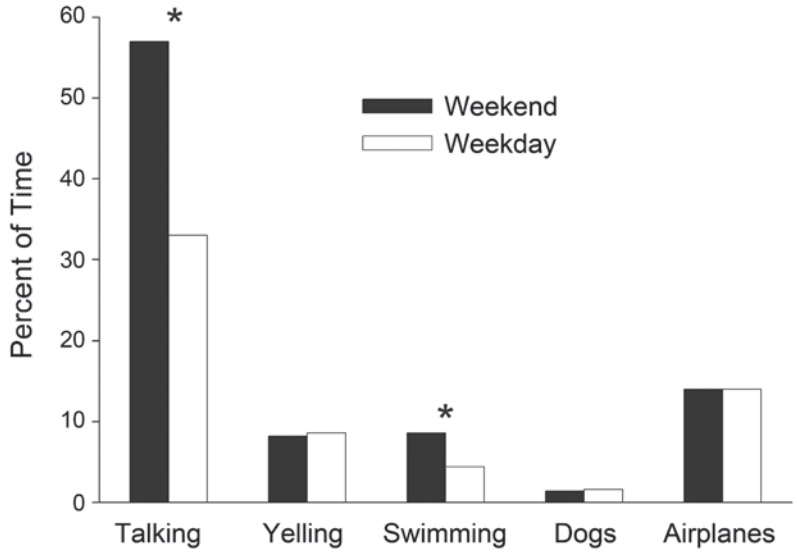

Figure 2—Frequency of various noise sources: weekend days vs. weekdays (* denotes significant difference, chi-square, $p < 0.05$).

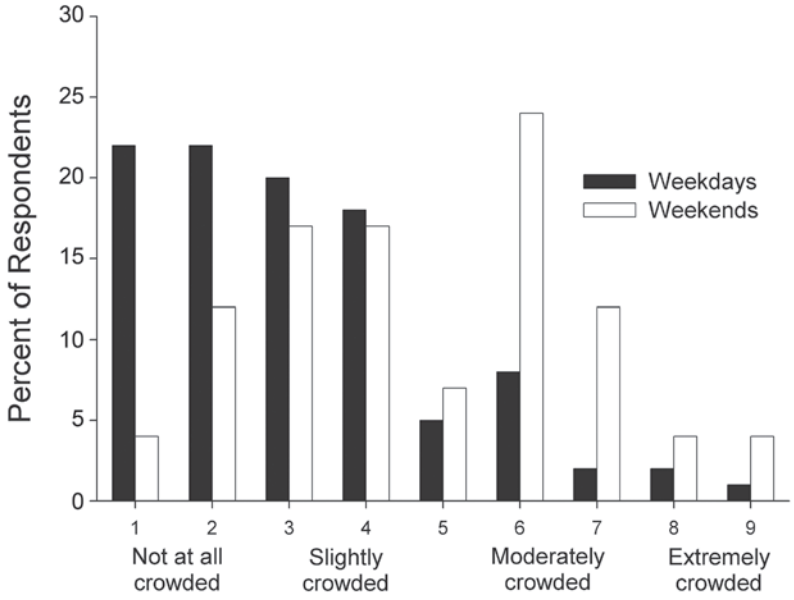

Figure 3—The extent to which weekday and weekend visitors felt crowded. Differences are significant, Somer's d, p<0.01).

trails, too many people at the lake and visitors intruding on their space. For four of these "problems," a majority of visitors reported they were not bothered at all; for "too many people on the trail, median response was 1 on a scale from 0 ("didn't bother me at all") to 6 ("bothered me a great deal"). Clearly, many people who report feeling crowded do not consider resultant social setting attributes to be very problematic. We also asked about problems resulting from attributes other than the social setting. More people were bothered by "bugs" than by any of the people-related problems. Weekend visitors were significantly more bothered by these "problems" than weekday visitors (Table 4). However, even on weekends, none of these attributes was more than a slight bother to more than a small proportion of respondents.

One possible explanation for our finding that many people report feeling somewhat crowded but do not consider this problematic, is that these people had realistic expectations for what they would experience. Indeed, for both weekend and weekday visitors, the number of groups encountered was close to what was expected (Fig. 4). Having more encounters than expected was more common than having fewer encounters than expected. This was more true on weekends than on weekdays, although differences were not statistically significant (Somers d test, p = 0.10). This finding (that weekend visitors were about as likely as weekday visitors to have their expectations met, despite large differences in number of encounters and perceptions of crowding) indicates how capable most visitors are of adjusting their expectations appropriately. From the interviews, it is clear that many people were aware that they adjust their expectations to cope with the situations they find themselves in, "*I expected it because it was a nice day—we expected a lot of people, so we didn't have a grand plan for being alone"* (IA12).

Responses to Others

Factor analysis of the items asking about how people responded to others suggested one behavioral dimension and four cognitive dimensions: positive thinking, acquiescence-acceptance, avoidance-distancing and minimization-denial (Table 5). Other than the micro-scale behavioral adjustments in site selection mentioned above, behavioral responses were uncommon.

Table 4—Evaluations of people problems: Weekends vs. weekdays.

Percent of visitors at least moderately bothered [a] by:	Weekend	Weekday	T	p
Too many people on trails	27	10	-6.1	<0.01
Noise from other people	19	11	-1.9	0.03
Too many people near the lake	14	5	-5.2	<0.01
Inappropriate behavior of other visitors	11	4	-1.7	0.04
Other visitors intruding on your space	9	4	-3.5	<0.01

[a]Values are percent of responses at the midpoint (3) or higher on a scale from 0 (didn't bother me at all) to 6 (bothered me a great deal). One-tailed Somers d test of difference between weekends and weekdays.

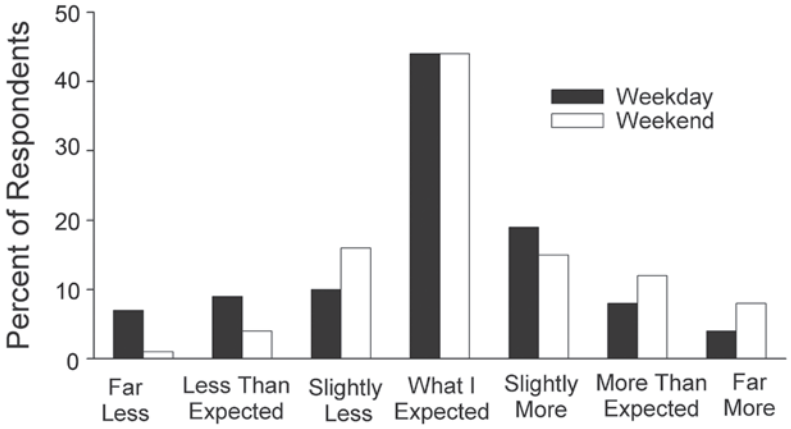

Figure 4—How the number of other groups encountered on weekday and weekend visits compared to what was expected. Differences were not significant (Somer's d, p = 0.10).

Table 5—Use of coping strategies: Weekends vs. weekdays[a].

Factors and individual items	Factor Loading	Weekend	Weekday	t	p
Acquiescence-Acceptance (alpha = .81)		3.19 (0.12)	2.80 (0.17)	1.9	0.03
Decided the situation was OK for Snow Lake	.93				
Accepted the situation given Snow Lake's proximity to Seattle	.75				
Didn't think much about the situation	.49				
Realized what bothered me was not that important	.44				
Minimization-Denial (alpha = .84)		2.90 (0.13)	2.82 (0.18)	0.3	0.36
Realized the situation didn't bother me as much as I thought it would	.76				
Went on as if nothing happened	.61				
Refused to get too serious about it	.61				
Accepted the situation as part of the experience	.60				
Positive thinking (alpha = .83)		2.85 (0.13)	2.49 (0.16)	1.8	0.04
Admitted to myself that nothing could be done	.77				
Reminded myself things could be worse	.65				
Realized that lots of people means there are lots of wilderness supporters	.55				
Acknowledged that I am also part of the problem	.47				
Tried to view the situation in a positive way	.42				
Avoidance-Distancing (alpha = .71)		1.95 (0.11)	1.46 (0.13)	2.9	<0.01
Tried not to think about the other people	.70				
Tried to focus my attention on something other than the other people	.66				
Wished the situation would go away	.61				
Behavioral Coping (alpha = .78)		0.65 (0.06)	0.51 (0.09)	1.4	0.09
Didn't do some of the things I planned to	.77				
Left Snow Lake earlier than planned	.71				
Expressed anger about encountering other people	.70				
Didn't spend time in some of the places I wanted	.65				
Went out of the way to avoid people	.48				
Altered my intended hiking route	.39				

[a] Exploratory factor analysis; one-tailed t-test of difference between weekends and weekdays. Values in weekend/weekday columns are means (standard errors) for how well each coping strategy describes how the visitor responded to encountering other people at the lake on a scale of 0 (does not describe) to 7 (describes very well).

In interviews, we asked people if they had to hurry or change what they were doing because of other people. Consistent with our finding that on-site behavioral coping responses were uncommon, 84% of people reported that they had not altered their behavior because of other visitors. Twenty percent of weekend visitors reported that they altered their behavior due to other visitors, compared to 11% of weekday visitors, a difference that is not statistically significant (chi-square test, p = 0.14).

Cognitive responses were more prevalent than behavioral ones, but even the most common coping response, acquiescence to or acceptance of the situation, was only moderately prevalent (Table 5). Acquiescence/acceptance was readily apparent in the interviews, as with the interviewee who stated, "*I'd rather that nobody was there but I can't have it by myself, so it was alright"* (I21). Minimization or denial involves actively attempting to minimize the significance of an adverse situation. One interviewee stated, "*I would have liked some solitude, but it's not a real problem*" (I9). Positive thinking involves actively attempting to reappraise the situation in a positive light. A number of people expressed sentiments similar to the following: "*You know there are enough hikes that are hard to get to that if people want solitude they can get it, so I think it is great that people who normally don't get out can use this place"* (I26). Finally, avoidance or distancing involves actively attempting to avoid negative thoughts. These sentiments seldom described responses well (Table 5) and were not apparent in the interviews.

Acquiescence-acceptance, positive thinking and avoidance-distancing were all employed more by visitors on weekends than on weekdays (Table 5). Differences related to use density were most pronounced for avoidance-distancing coping strategies, the least prevalent coping strategy. However, even for this strategy the magnitude of difference was not substantial (mean difference of just 0.5 unit on a 7-point scale). Neither behavioral coping nor minimization-denial was significantly greater on weekends.

Affective Outcomes

When encountering other people, respondents reported experiencing emotions associated with anger (annoyed, frustrated) and sadness (disappointed, unhappy) more than emotions associated with anxiety (tense, uneasy) (Table 6). However, few visitors expressed strong negative emotional responses of any kind to the situation at Snow Lake. For all of these affective states, the median response was 0—"does not describe (how I felt) at all." Anger and sadness were experienced significantly more strongly on weekends than on weekdays, by the small minority who were emotionally affected (Table 6). Even on weekends, however, less than 4% expressed a strong sense of disappointment or annoyance (5-6 on the scale) in response to their encounters with other people. In the questionnaire, we did not ask about positive affective outcomes. Our impression from interviews was that positive affect resulting from the overall experience at Snow Lake would have been very high. Even regarding encountering other people, positive affect might have exceeded negative affect for most people.

Psychological Outcomes

When asked in an open-ended question in interviews what their experience at Snow Lake had been like, 94% of interviewees used positive terms, while only 10% used negative terms. Twenty-eight percent mentioned scenic beauty. Seventy-six percent referred to the visit as good, pleasant, great or wonderful. Some interviewees elaborated further, mentioning their ability to relax, the peacefulness of the area, lack of litter and the nice condition of the trail. The most common negative comment was that the area was crowded, but only 8% mentioned crowding. Other negative attributes were the presence of bugs, annoying visitors and the presence of litter. The 96% of weekday visitors who described their experience as positive was not significantly different (chi-square test, p = 0.33) from the 94% of weekend visitors who reported positive experiences. Fourteen percent of weekend visitors responded that crowding was a negative aspect of their experience, compared to only 2% of weekday visitors, a difference that is statistically significant (chi-square test, p < 0.01).

Factor analysis of experiential outcomes suggested five experiential dimensions: absorption-connection to nature, personal reflection, personal accomplishment, sense of wildness-remoteness and rejuvenation (Table 7). Of these, visitors reported experiencing absorption-connection to nature and rejuvenation most and personal reflection least. For example, 90% of respondents reported experiencing at least

Table 6—Affective responses to encountering other people at Snow Lake[a]: Weekends vs. weekdays.

Percent of visitors who felt:	Weekend	Weekday	t	p
annoyed	13	6	-3.6	<0.01
disappointed	11	6	-2.5	<0.01
frustrated	8	5	-3.2	<0.01
unhappy	6	4	-2.2	0.01
tense	8	4	-1.5	0.07
uneasy	7	4	-0.6	0.29

[a] Values are percent of responses at the midpoint (3) or higher on a scale from 0 (does not describe) to 6 (describes very well). One-tailed Somers d test of difference between weekends and weekdays.

Table 7—Attainment of experiential outcomes[a]: Weekends vs. weekdays.

Factors and individual items	Factor Loading	Weekend	Weekday	t	p
Absorption-Connection to Nature (alpha = .90)		3.89 (0.11)	4.15 (0.19)	-1.3	0.11
Connection with or being part of wild nature	.91				
Being at home in the natural world	.88				
Fascination with the natural environment	.69				
Peace and tranquility	.67				
The dominance of the natural world	.58				
The simplicity of life	.57				
Living in the present moment, rather than past or future	.55				
Gaining a better appreciation of nature	.50				
Being totally absorbed in what I was doing	.48				
Freedom from reliance on modern technology	.47				
Rejuvenation (alpha = .77)		3.81 (0.14)	3.92 (0.22)	-0.4	0.33
Physical revitalization	.81				
Release of stress and tension	.68				
Getting away from the usual demands of life	.50				
Relaxing physically	.43				
Personal Accomplishment (alpha = .84)		3.66 (0.13)	3.89 (0.18)	-1.1	0.15
Showing myself I could do it	.86				
Gaining a sense of accomplishment	.83				
Challenge	.71				
Developing my skills and abilities	.56				
Getting exercise	.39				
Sense of Wildness-Remoteness (alpha = .79)		2.96 (0.13)	3.35 (0.18)	-1.8	0.04
To be away from crowds of people	.81				
Solitude	.70				
A feeling of remoteness	.69				
Sense the surroundings haven't been impacted by people	.57				
Sense of being away from the modern world	.43				
Personal Reflection (alpha = .92)		2.50 (0.13)	2.45 (0.22)	-0.2	0.43
Opportunity to work through problems	.89				
Ability to focus on matters of importance to me	.85				
Opportunity to confide in others I trust	.78				
Feeling free to behave as I wanted	.55				
Meditation and reflection	.55				
Gaining a new perspective on life	.55				
Sense of spiritual growth	.55				
Sense of self-discovery	.54				
To think about who I am	.53				
Intimacy with my companions	.52				
Reflecting on past memories	.44				

[a] Exploratory factor analysis; one-tailed t-test of difference between weekends and weekdays. Values in weekend/weekday columns are mean (standard errors) for how much/often each experience factor was experienced on a scale of 1 (not at all/never) to 7 (very much/most of the time).

a moderate degree (at or above the 7-point scale midpoint) of "connection with or being part of wild nature," compared to 50% who reported experiencing a similar "ability to focus on matters of importance to me." Weekend visitors were as able as their weekday counterparts to experience four of these five experiential dimensions: absorption-connection to nature, rejuvenation, personal accomplishment and personal reflection (Table 7). Only wildness-remoteness was experienced significantly more by weekday visitors than by weekend visitors (Table 7). Even for this factor, the difference between weekdays and weekends was only 0.4 units on the 7-unit scale.

Appraisal of Overall Experience Quality

Visitors were asked several questions intended to provide an overall evaluation of the quality of their trip or what has often been referred to as global satisfaction. Once differences in use density are considered within the context of all the attributes that influence experience quality, differences largely disappear. For two of the three questions asked, differences between weekend and weekday visitors were not statistically significant (Table 8). Even on weekends, virtually everyone agreed that they thoroughly enjoyed the trip and more than

Table 8—Positive evaluations of visits to Snow Lake[a]: Weekends vs. weekdays.

Percent who agreed that:	Weekend	Weekday	t	p
I thoroughly enjoyed this trip	99	98	1.6	0.11
I was disappointed with some aspects of this visit to Snow Lake (% who disagreed)	77	81	-1.3	0.10
I cannot imagine a better place to be than here	49	64	3.4	<0.01

[a] Values are percent of responses above the midpoint (0) on a scale from -3 (strongly disagree) to 3 (strongly agree). One-tailed Somers d test of difference between weekends and weekdays.

three-quarters disagreed that there were disappointing aspects of the trip. Weekday visitors were significantly more likely to agree with the statement "I cannot imagine a better place to be than here." Notably, even on weekends, more visitors agreed with this statement than disagreed.

Visitor Opinions about Management

Although it is not a measure of experience quality, we were also interested in visitor opinions about the need to manage Snow Lake for a higher quality experience than it currently provides. When asked if the Forest Service "should take further action to improve solitude, given that the area is a designated wilderness," most people (72%) said that management was fine the way it is. Support for current management was higher among repeat visitors (78%) than first-timers (70%), although this difference was not statistically significant (chi-square test, $p = 0.19$). Clearly there is no truth to the assertion that support for more restrictive management is greater among more experienced and place-attached visitors. Further management action was supported by more weekend visitors (31%) than weekday visitors (21%), but this difference was not statistically significant (chi-square test, $p = 0.17$).

Many different reasons were offered by those who felt that the Forest Service did not need to improve opportunities for solitude. Fifteen people (13% of those who responded to the question about need for further action) noted that if a person wanted solitude, he or she should go somewhere else or hike further. Twelve people specifically stated that access to Snow Lake should not be limited and eleven participants indicated that the current ease of access (for all types of people) is good. As one person noted, "*There is too much limitation and restriction that has cropped up all over the wilderness to the point where people are denied the experience and to me having the experience is more important than seeing a few people" (I102).*

Restricting access to Snow Lake was the most common suggestion among the minority of visitors who thought further action was needed. Fifteen interviewees (13% of those who responded to the question about need for further action) felt restrictions on access were or would be needed. Weekend and weekday visitors were equally likely to support use restrictions. Fewer repeat visitors supported use limits (8%) than first-timers (14%), a difference that was not statistically significant (chi-square test, $p = 0.21$). However, few people were unequivocal supporters of limits. Four felt limits were not needed now, but would be in the future. Three felt that only overnight use should be restricted (either limited or prohibited). Two thought that only weekend use needed to be limited. Three people thought that restricting access would improve opportunities for solitude, but were ambivalent about whether or not the Forest Service should restrict access at Snow Lake. They were concerned that their own ability to gain access might be diminished, the tradeoff might not be worth it (because other areas might become more impacted), and limits would unfairly restrict access for people who want to visit despite the crowded conditions. Internal conflict and consideration of trade-offs was obvious in the response of the person who said, "*I am torn. I would say yes, just for my personal needs, but I think it is just a great location that I would not want to necessarily cut off from all the people that want to be here, yet"* (I5S).

In the questionnaire, the only question we asked about management involved opinions about use limits. As was found in the interviews, there was little support for limits (Table 9). While a slight majority supported the concept of limiting use if limits were necessary, only about 15% thought that limits were necessary now. Moreover, given the tendency

Table 9—Visitor opinions about the need to limit use, now or in the future[a].

	Weekend	Weekday
	- - - - - - Percent- - - - - -	
There should never be a limit on use	42	42
No limit is needed now, but should be imposed in the future when overuse occurs	42	44
A limit is needed now to hold use at the current level	11	11

[a] Percentages did not differ significantly between weekend and day visitors (chi-square test, $p = 0.70$).

for differences between weekends and weekdays to disappear as visitors evaluate conditions (adjusting expectations and coping), it is not surprising that support for use limits was similarly low among weekend visitors and weekday visitors. Even on the busiest days (weekends) in this most heavily used wilderness location in the Pacific Northwest, only 6% thought use levels should be reduced from their current levels.

Discussion

Experience can be conceived and experience quality can be assessed in varied ways. Quality can be considered high if preferred experiential outcomes are attained to a substantial degree. Or quality can be considered high if whatever is experienced is appraised as being "good" or satisfying. Experiential quality can also be assessed by evaluating the desirability of the setting attributes that are encountered. Outcomes can be affective, cognitive or somatic and they can be short-lived or long-lived. Some conceptions of experience focus on one or a few specific attributes while others are more integrative, reflecting the gestalt of experience. Some conceptions privilege attributes that managers consider appropriate or that are mentioned in enabling legislation (The Wilderness Act of 1964) while others do not.

We employed multiple methods (observations, qualitative interviews, and a quantitative survey instrument) to describe and quantify the different experiential dimensions illustrated in Figure 1. Snow Lake visitors experienced unusually high densities of people by wilderness standards. Common user experiences included persistent noise, lack of unoccupied places to stop by the lake and intrusions on one's personal space. Most visitors appraised this setting as being at least slightly crowded but few were bothered more than slightly by the situation. Most people coped with the social setting cognitively, in diverse ways. They accepted the situation by actively recasting it in a positive manner, by avoiding negative thoughts entirely, by accepting the situation or by downplaying the significance of negative thoughts. Previous work has typically referred to all these responses as rationalization (Heberlein and Shelby 1977; Manning and Valliere 2001). In contrast to cognitive coping, few people responded behaviorally on-site through large-scale spatial displacement, temporal or activity substitution (Miller and McCool 2003. However, quite a few interviewees did mention one off-site temporal displacement strategy, avoiding Snow Lake on the weekends. Self-selection bias provides an alternative explanation for some of the differences (or lack of difference) that we found, in that some of the users who were most sensitive to density might have avoided Snow Lake on weekends.

There was little evidence that the high use density and resultant social setting at Snow Lake had a profound effect on either the affective or psychological outcomes that are significant elements of most visitors' immediate conscious experience. Very few people experienced the negative emotions of anger, anxiety or sadness because of their encounters with other people. Most people reported experiencing, at least to a moderate degree, many experiential outcomes deemed appropriate to wilderness and that provide enduring personal and social benefits (Manfredo and others 1996): absorption-connection to nature, personal reflection, personal accomplishment, sense of wildness-remoteness, and rejuvenation. Most people evaluated overall experience quality as high. Given this, it is not surprising that most visitors were opposed to efforts to improve solitude, particularly if the means to increasing experience quality involved restricting access.

Effect of Use Density

Although there is little to suggest which dimension of experience is the "best" way to define a high quality experience, the effect of use density on experience quality depends on how experience is conceptualized. Apparently divergent conclusions about the relationship between use density and experience quality can be explained to a substantial degree by differences in how the dependent variable is defined. Use density had a much stronger effect on the setting attributes that people encounter than on the prevalence of coping behaviors, affective or psychological experiential outcomes, or appraisals of the entire visit.

Most weekend users experienced several times as many interactions with other groups as weekday users did, substantially more frequent noise, and much less freedom to choose where to go, when to stop, and how and to what extent to interact with others—important aspects of privacy (Hammitt and Madden 1989). Although weekend visitation was typically four times as great as weekday visitation, topography, visitor behavior and other variables operated to attenuate this large difference, such that encounters at the lake were typically only twice as high on weekends. As people processed information and managed the situation, differences related to use density were further diminished. As Manning (2011) suggests, the tendency of most visitors to not evaluate or affectively respond to crowded conditions very negatively can be explained by such factors as the expectations people have (Shelby and others 1983) and the ways they cope cognitively and behaviorally with the conditions they expect and/or find (Heberlein and Shelby 1977). We found that people adjusted their expectations more on weekends to reflect higher use densities on weekends. We also found more use of both cognitive and behavioral coping strategies on the weekend. From our interviews, we found that many of the people who expressed a desire for less crowded conditions had learned to time their trips to avoid particularly crowded times.

Differences between high and low use times almost completely disappeared when visitors integrated their perceptions and concerns about other people with all the other aspects of their trip—most of which were positive, persistent and did not vary with use density. Interviews suggest that such positive attributes as Snow Lake's scenic beauty were both more important to the quality of the visitor experience than the number of other visitors and more enduring. While a bad encounter with another visitor might have lasted a minute or two, the experience of the lake's beauty lasted much longer. Weekend visitors were as likely as weekday visitors to experience such

important psychological outcomes as absorption-connection to nature, personal reflection, personal accomplishment and rejuvenation. Consequently, it is not surprising that weekenders agreed as strongly as weekday visitors that they "thoroughly enjoyed this trip" and disagreed as strongly about being "disappointed with some aspects of this visit."

The one psychological outcome that did vary significantly, although not substantially, between weekdays and weekends was sense of wildness-remoteness. This is the factor most closely related to the setting attributes most unique to wilderness and central to the intentions of many wilderness managers—providing opportunities to experience few people, an undisturbed environment and minimal modern technology.

Coping Behaviors

Our findings regarding coping behaviors were not so much new as more richly detailed, given our inclusion of observations and interviews. The interviews made it clear that advance planning is a frequently-employed behavioral response to the fact that Snow Lake is very crowded at times. Most people are aware that Snow Lake can be highly crowded on weekends. If and when people think that encountering crowds would be bothersome, many simply choose to go elsewhere or visit on a weekday. Once on-site, as has been found in earlier studies (Manning and Valliere 2001; Miller and McCool 2003; Schuster and others 2003), visitors cope behaviorally and, particularly, cognitively, but are not highly bothered by having to do so. Many people would walk a few tens of yards to avoid other people or to select a place to stop, but few people walked even several hundred yards to find a more solitary place. A surprising number of people mentioned that they could find more solitude if they wanted it, but few chose to do so. After watching people, listening to the meanings and explanations they offered in the interviews, and interpreting their responses to the questionnaire, we concluded that, with a few notable exceptions, visitors nearly eliminate cognitive dissonance and dissatisfaction by planning ahead and coping on-site.

Management Implications

We chose to work at Snow Lake because it provides a microcosm of wilderness crowding in the extreme. Conditions there were often highly crowded and far from the wilderness ideal. However, from the perspective of the vast majority of visitors, even conditions as crowded as they are at Snow Lake on a sunny summer Sunday are not a serious problem. For most visitors, they are considered appropriate, to be expected and even viewed positively by many in that they show that many people support and care about wilderness and want to get out, exercise and experience wilderness.

Dramatic reductions in use could have substantial effects on the social setting at the lake. A fourfold reduction in use, the equivalent of limiting weekend use to what it is on weekdays, would turn away close to one-half of the people who currently want to visit Snow Lake. Our results suggest that such a program would reduce weekend encounters at the lake by about 50% and the need to select an already occupied site would be nearly eliminated. Verbal encounters with other groups would drop about 80% and periods of time without human noise would double. These are all changes in setting attributes that most would view as highly positive, bringing conditions closer to most notions of a high quality wilderness experience.

Despite these large effects on the setting that people encounter, however, effects on experience appraisals, affective and psychological experiential outcomes would be much smaller. The largest effect would be a mean 20% reduction in how crowded people feel. For most visitors, there would be virtually no increase in how thoroughly they enjoyed their trip.

Our findings that use reductions will have little effect on most dimensions of visitor experience do not mean that wilderness managers should not limit use to protect experience quality. Managers have a legislative mandate to manage these places to perpetuate their wilderness character and qualities. Moreover, there is a small minority of users that was substantially more bothered by high weekend use and that was less able to attain desired experiential outcomes. Our findings do suggest, however, that use reductions are likely to be unpopular with most of the public.

If undertaken, the purpose of use limits should be carefully articulated. Reducing use to minimize ecological impacts is reportedly more acceptable to most visitors than reducing use to protect experiential quality (Cole and Hall 2008). Since what people encounter is more responsive to use density than experiential outcomes, it might also be more appropriate to state that limits are needed to protect desired setting attributes rather than to protect experience quality. Perhaps the focus should be more on protection of wilderness character than experience quality. This, in turn, implies a need to articulate more precisely which setting attributes are desirable, including who gets to decide. It also implies that monitoring of setting attributes is at least as critical to protecting experience quality as monitoring of experience and satisfaction with experiences.

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The Impact of Technology on the Wilderness Experience: A Review of Common Themes and Approaches in Three Bodies of Literature

John Shultis

Abstract—In the last decade, increasing concern has been expressed about the impact of new technologies—especially communication technologies—on the wilderness experience. Many authors have suggested a tipping point has been reached, with new technologies changing the very nature of the 'traditional' wilderness experience in various ways. The loss of direct experiences creating new perceptions of risk among wilderness users has been a common complaint. As very few wilderness researchers have conducted empirical studies on this issue, I review these anecdotal, deterministic concerns in this body of literature. Then I identify key debates and approaches in two other literatures that consider the complex relationship between technology and recreation: leisure studies and science and technology studies. Within the latter field, I concentrate on Albert Borgmann's discussion of focal practices, which shows promise as a conceptual foundation for this issue. Common themes within each of these three distinct literatures are identified, providing some indications of the key issues and topics that might be assessed by much-needed future research.

Introduction

In the beginning of the twenty-first century, at least two different conceptualizations of wilderness exist. The traditional view of wilderness, reflecting a realist epistemological perspective, is of a primordial, relatively untouched natural area where natural forces dominate, and human presence is limited to visitation by outdoor recreationists and the limited infrastructure (such as, trails and campsites) they require. This hegemonic conceptualization is buttressed by the Western separation of nature and culture—in existence from at least the Enlightenment Era—and other Western appurtenances (science, religion and capitalism).

The second view of nature is much more recent, reflecting postmodern perspectives and a relativist epistemological perspective. A social constructionist approach—a critical theory which sprung from a relatively small number of social scientists' discontent with the realist views of nature and science—is often embedded within this second model. In this view, wilderness only exists as a result of the sociocultural meanings generated by the continual construction and re-construction of individuals within society. While most social constructionists do not question the existence of external reality (for example, relatively untouched nature can still be said to exist around the world), they suggest that the constellation of meanings we provide to concepts like wilderness generate the only 'reality' that humans can understand: we live only through the imperfect mental representations provided through our cognition and language.

The rise of this new conceptualization of wilderness in the 1990s, beginning with Cronon's (1995) classic book chapter, generated a storm of protest, with many wilderness researchers suggesting that it was a dangerous challenge to wilderness preservation. These protestations (see Callicott and Nelson 1998; Nelson and Callicott 2008) should not have come as a surprise, as the 'cultural turn'—the rise of interpretive perspectives and qualitative research methods within science in the 1970s—caused similar offense in broad scientific circles, leading to what became known as the 'science wars' (for example, Ashman and Baringer 2001), a now almost forgotten battle between the hegemonic realists and the upstart relativists who seemed ready to uproot traditional views of science and established truths. The dust created by the battle between wilderness realists and relativists has also settled, perhaps in part because of the recent decline in wilderness-related research and publications.

Nonetheless, the tension between these two opposing conceptualizations of wilderness still exists, and as I document in this paper, is reflected in the study of the impact of technology on wilderness. Most of the very limited analysis of the potential impact of recreation technology on the wilderness experience follows a realist perspective of wilderness, and outlines a deterministic lens towards the potential impact of technology such as cell and satellite phones, GPS units and web-based applications on wilderness recreation. Further, the vast majority of wilderness scientists' consideration of the impact of technology of the wilderness experience typically ignores the considerable research on the broader social impacts of technology provided in other research areas.

The purpose of this paper is to review three distinct literatures assessing the impact of technology on society and wilderness

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recreation as a means of highlighting basic epistemological approaches and research findings and identifying potential directions for future research. The first research area, primarily written by wilderness researchers, directly addresses the issue of the impact of technology on the wilderness experience. A second literature, from the broader realm of leisure studies, considers the impact of technology on leisure more generally, and potentially useful findings from this research for wilderness researchers are reviewed. The third body of literature comes from science and technology studies (STS), which includes the social construction of technology (SCOT) literature (Cutcliffe 2000; Sismondo 2004), as some of this research relates to wilderness and the use of technology in wilderness recreation. In this third realm, Albert Borgmann's work will be highlighted, as his work seems to provide a commonly cited and potentially useful approach to future research assessing technology and its impact on the wilderness experience. Finally, after synthesizing these bodies of literature, I will provide recommendations for future research on this topic.

Wilderness Researcher Perspectives on the Impacts of Technology on Wilderness

Broad Findings from this Literature

As intimated above, the most immediate reflection on the limited literature attempting to assess the possible impacts of technology on the wilderness experience is the lack of empirical data on this subject. Martin and Pope (in press) provide an exploratory empirical examination of this topic. The vast majority of the literature summarized below reflects wilderness researchers' anecdotes and personal insights into these potential impacts. While this provides a useful foundation for future research, it is normally atheoretical, reflects the hegemonic realist conceptualization of wilderness, and tends to view the impact of technology in a primarily deterministic manner. Technological determinism suggests that social change is primarily led by technological development; indeed, technology is the most important variable affecting Western society, "an encompassing and irresistible force" (Borgmann 2006, p. 353; see also Smith and Marx 1994; Winner 2001). For example, a topic which is closely related to the impact of technology on wilderness is the potential impact of the computer on children's leisure and particularly outdoor recreation patterns. Richard Louv's (2005) and Pergams and Zaradic's (2006, 2008) very influential works reflect a negative deterministic perspective. The rise of the computer and various electronic media are seen to have directly led to social change, in this case altering children's relationship with nature and thus decreasing outdoor recreation and park visitation. Determinism, either positive or negative, is balanced by instrumentalism, which Borgmann (2006) suggests is the dominant view in contemporary society. Technology is portrayed as neither inherently good nor evil; it is what we decide to do (or not do) with technology that really matters. This is normally the perspective taken in the two bodies of literature reviewed below.

With regards to the wilderness and technology literature, the strongly deterministic lens seems to suggest that technology will automatically lead to significant and negative changes in the wilderness user and wilderness itself, and these changes are unlikely to be altered after the relevant technology becomes part of the wilderness experience. Although minor positive impacts of technology on wilderness recreation are often noted (such as easier access, increased safety and comfort), most of the literature focuses on the potentially negative impacts of technology. These are seen to overwhelm any positive effects. The concern is that too much technology in wilderness will impact the traditional wilderness experience, which has been linked to escaping the evils of civilization (including its technology), being able to become emotionally engaged with untouched nature, and adopting the 'simple' ways of life associated with our idealized ancestral past (see Ray 2009). Much as the crowding/carrying capacity literature focuses on use limits, the main option for controlling technology in wilderness seems to be limiting the type and amount of technology allowed in the wilderness. However, calls for such restrictions are rare, perhaps tempered by the increasing social concern over liability and safety issues in the wilderness; researchers are much more likely to highlight potential impacts without identifying any particular limitation to the use of technology in wilderness use.

Another common perspective in these works relates to the focus on only electronic forms of modern technology (such as, cell phones and GPS units) on the wilderness experience. That is, it seems that certain forms of 'traditional' technology (for example, automobiles, jet travel, synthetic materials) are rendered almost invisible, while concerns over the more recent electronic innovations are amplified. This amplification of attention on certain forms of technology seems to mirror research on the social amplification of risk (for example, Pidgeon and others 2003), which uses a social constructionist perspective to suggest that risks "interact with psychological, social, institutional, and cultural processes in ways that may amplify or attenuate public responses to the risk or risk event" (Kasperson and others 1988, p, 177). That is, certain risks can either be focused on or ignored, depending on a wide variety of social and cultural processes (such as, social norms, media engagement and current political ideology).

Also, much of the literature by wilderness researchers renders invisible the historical, complex relationship between technology and wilderness use. For example, the rise of the national park movement seems to have been closely associated with the social impacts related to the technology which enabled the Industrial Revolution. The Romantic and Transcendentalist movements' conceptualization of wild nature as a spiritual and moral force untainted by the negative aspects of civilization—perhaps best articulated by John Muir's body of work—was a necessary prerequisite for the preservation of wild nature. Also, the ability of well-heeled tourists to visit the monumental scenery in these areas via an expanding railway system (and the railroad companies' impetus to designate these protected areas) were critical to the popular and political support for national parks. Other technological innovations that had significant

impacts on the recreational use and creation of wilderness areas include the automobile, which led to the backcountry boom after World War II (Havlick 2002), and the introduction of synthetic fabrics and other materials in outdoor recreation equipment (nylon, Gore Tex) often initially developed for the military or the space program (Shultis 2001).

The rise of mass recreation provided by the automobile was also critical to the development of the Wilderness Society and thus the Wilderness Act itself. Much of the rhetoric emanating from wilderness leaders in the mid-twentieth century voiced concerns over the impact of technology, especially the automobile, on wilderness use. The preamble in the Wilderness Act specifically noted the growing mechanization of society as a rationale for protecting wilderness in the Unites States (Sutter 2002). As Stankey (2000, p. 17) notes, "However ironic it may appear, technology was, and continues to be, what gives meaning to the concept of wilderness"; technology has become conceptualized as the 'opposite' of wilderness despite clearly being a *sine qua non* of wilderness use. This paradoxical relationship between technology and wilderness—as both enabler and destroyer—continues in contemporary debates. Just as the central question of the carrying capacity of wilderness became framed as the 'limits of acceptable change', perhaps the question of how much or what type of technology is appropriate for 'proper' wilderness use is the central issue to be debated in the relationship between technology and wilderness.

Specific Findings from Wilderness Researchers

What are the specific issues identified by wilderness researchers assessing the impacts of technology on the wilderness experience? While some researchers suggested that increasing technology in recreation equipment would increase wilderness use (Ewert and Hollenhorst 1997; Roggenbuck 2000), other social trends and issues, including increased costs of wilderness use and decreasing costs of international travel, have meant that use levels in wilderness and many protected area have decreased from the 1990s in the United States, Canada and several other countries (Shultis and More 2011). Ewert and Shultis (1999) identified five aspects of the wilderness experience that are influenced by technology: access/transportation, comfort, safety, information and communication. These aspects work both independently and in an integrated fashion; that is, increased information on weather conditions could increase comfort, safety and the use of communication devices in the backcountry.

Wiley (1995) has suggested that four integrated tensions between wilderness and technology exist: risk versus security, solitude versus connectivity, mediation versus direct experience, and knowledge versus the unknown. Perhaps the greatest focus has been on the first and third of these tensions, the impact of technology on risk perception and risk taking and its relation to a lack of direct experience (for example, Dickson 2004). Borrie (2000, p. 88) suggests that "wilderness used to be its own certifier"; that is, direct experiences over time allowed wilderness recreationists to slowly and humbly gain increasing levels of expertise in decision-making. Technology fast-forwards our abilities and cocoons us from these experiences, creating what Ewert and Hollenhorst term the "illusion of safety" (1997, p. 21; see also Hendee and Dawson 2001; Attarian 2002). As a result, when technology fails or accidents occur, some wilderness users will not be able to draw upon previous experiences.

Again, there is little empirical evidence that supports this idea, although the existence of this relationship seems to be a common discourse in the wilderness recreationist and researcher populations. For example, in a rare empirical study, one author noted in an unpublished thesis that the amount of wilderness experience was "positively correlated with the belief that technology creates a false sense of safety, with more experienced visitors (measured by number of overnight trips in the last 12 months) more likely to believe that technology makes visitors feel they have a safety net that in reality may or may not exist" (Pope 2010, p. 17, 19). Concern is also commonly expressed about the impact of communications technology (such as, cell and satellite phones and personal locator beacons). Many suggest that rescues of ill-prepared and inexperienced visitors have significantly increased (Hohlrieder and others 2005; Heggie and Heggie 2009; Heggie and Amundson 2009) due to the increasing use of these technologies in the wilderness.

The loss of solitude from technology is the second tension identified by Wiley (1995). If one can always be connected to the Internet, work, friends and family via electronic communication, can one ever truly be alone in wilderness? Finally, there is concern that technology will provide 'too much' knowledge and information about the wilderness. The wilderness experience has always contained a longing for primitive experiences and idealized the life of early explorers and settlers (Borrie and Freimund 1997; Borrie 2004). Technology may destroy this desire, even if we know it is an illusion. While Leopold complained, "Of what avail are forty freedoms without a black spot on the map?" (1949, p. 158), the use of GIS technology in wilderness ensures a lack of white areas on digital maps.

Ultimately, increased use of technology may change the very nature and meaning of the wilderness experience. Authors such as Rothenberg (1993) and Strong (1995) have eloquently written of the ability of technology to redefine wilderness. Rothenberg (1993, p. xiv) believes that "What we want to do is changed by what we can do—technology never simply does what we tell it to, but modifies our notions of what is possible and desirable". This warning seems to mirror philosopher Winner's suggestion that "technologies are not merely aids to human activity, but also powerful forces acting to reshape that activity and its meaning" (1986, p. 6). Each generation will have its own baseline of appropriate or acceptable technology (Dawson 2007), and the current generation's increasing use of technology in the wilderness could delineate a new relationship between humans, the natural world and protected areas, and change the meaning of the wilderness experience itself.

Watson optimistically suggests that, as technology becomes the dominant force in Western society, "the primitive end becomes more valuable to society as a point from which to compare and understand the benefits and threats technology

offers to society" (2000, p. 57). More pessimistically, it may be that as technology surrounds us, our society will become increasingly distanced from naturalness, and the few wilderness areas left from an advancing population will become commodified images of an increasingly idealized past. Roggenbuck has highlighted the role of consumerism and self-identity in the wilderness-technology dichotomy, suggesting that future wilderness users will desire "quick, convenient, intense, scenic and sanitized experiences in wilderness" (2000, p. 16):

> "At superstores, 'gearheads' purchase expensive outdoor paraphernalia to smooth the bumps, soothe the inches, and light the darkness of wilderness. All they ask is that these products be convenient, comfortable and exciting and that the goods enhance their identity as nature lovers" (p. 15).

These different possibilities exemplify the disconcerting vagueness and incomprehensibility of technology: while seemingly restructuring our very lives and society before our eyes, it does not illuminate a single path forward, providing a range of possible futures for humanity and wilderness.

To deal with this lack of clarity, many wilderness researchers have called for a public debate over the role of technology in wilderness use (Borrie and Freimund 1997; Roggenbuck 2000; Stankey 2000; Van Horn 2007), but such a debate has not been forthcoming. There are many reasons for this. Perhaps most importantly, our society rarely seems inclined to question the impacts of technology (Shultis 2001); Winner called our seeming lack of concern about technology "technological somnambulism" (1986, p. 5), and believed that "the interesting puzzle in our times is that we so willingly sleepwalk through the process of reconstituting the conditions of human existence" (p. 10). In addition, wilderness managers and agencies face many other issues, including potentially decreasing use levels. Also, economic and political systems at the local, regional, federal and international levels all conspire to deflect any meaningful questioning of the hegemonic acceptance of 'progress' and the technology associated with this process (Winner 1986). Philosophers such as Winner and Borgmann also recommend such a dialogue, and we will consider Borgmann's philosophical orientations towards technology and wilderness after turning to the empirical evidence from leisure studies researchers who consider the impacts of technology on various leisure activities and experiences.

Leisure Studies Researcher Perspectives on the Impacts of Technology

The wilderness researchers noted above are based in the United States and assess the link between technology and wilderness using primarily anecdotal knowledge. A small number of leisure studies researchers, usually based outside the United States, have empirically assessed the impacts of technology on a wide variety of leisure pursuits. These researchers typically use a relativist epistemological stance and qualitative research methods, often with a social constructionist lens from which to view technology. This lens, which I believe is still viewed suspiciously by many wilderness researchers, may be one reason why most of the wilderness research does not access this literature (and vice versa).

This is unfortunate, as many of the themes identified in the previous section are also discussed in this body of literature. For example, I will focus on the role of consumption in technological use, as this is a key intersection between technology and society for many leisure researchers. For example, Ryan's (2002) research suggests that the outdoor recreation media glamorizes the use of recreational technology, resulting in the emergence of three assumptions:

> "(1) that technology is unconditionally good, (2) that its benefits are so great one would have to be a fool to venture outside without them, and (3) that cultures or people with different access to or attitudes about technology are somehow less civilized than Euro-North American cultures that embrace technology (an ethnocentric bias)" (p. 271).

The attraction of technology, which has always seemed to enthrall Western society in a particularly spellbinding way, is enhanced by these discourses, with wilderness recreationists envisioning new technology as necessary to open up new recreational possibilities and experiences. As Haldrup and Larsen (2006) note, "Things and technologies can be understood as 'prostheses' that enhance the physicality of the body ands enable it to do things and sense realities that would otherwise be beyond its capability" (p. 278). Michael's (2000) discussion of the impact of boots on the mundane experience of walking is a particularly relevant one for wilderness researchers. He suggests walking boots "mediate the sublime relationship" between humans and the environment, intervening in four main ways:

> "first, there is the role of boots as mechanical technologies that can cause pain, dissolving identity and the relation between humans and nature'; second, there is the role of boots as signifying style and identity; third, there is the role of boots as embodiments of procedures of standardization and objectification; and finally there is the role of boots as technological means of physical and ecological damage to nature" (p. 115).

The link between the consumption of recreation technology and self-identity is often noted. Consumers are seen to produce their identities through the processes embedded within consumption, including buying, using, and selling the product and through remembering and narrating their experiences with the product: "The 'objects' thus used and consumed construct, express and produce the personal identities and contribute to the life projects, themes and journeys of the participants involved" (Berger and Greenspan 2008 p. 91). Berger and Greenspan (2008) also link consumption of technology with Belk's concept of the 'extended self'. Belk (1988) suggested that technology can extend the self when it provides experiences or allows users to do activities and see places they could not normally access. Michael (2000) and Rossiter (2007, p. 303) similarly highlight the ability of technology to "afford possibilities for the reinvention of selves and the spaces within which they act and dwell". Berger and Greenspan's fascinating

study of a Mt. Everest expedition reveals "a kind of symbiotic bonding" between technology and climbers, where the tourists demonstrated emotional, psychological and physical relationships with the technology they brought to the mountain, and these relationships and bonding helped create and maintain their adventure tourist identities (2008). Unfortunately, the role of consumption in the wilderness experience has yet to be tackled, but the literature noted above suggests that wilderness recreation technology has the ability to shape (or re-shape) the meanings of wilderness activities and experiences, a concern also noted by wilderness researchers.

Finally, Foley and others (2007) add a gender analysis to the study of technology consumption and self-identity. Their research on women's use of cell phones in Britain highlights both the constructive and destructive aspects of leisure and technology; they suggest that while young women are drawn to cell phones for conspicuous consumption, this technology also provides the "self-confidence, sexuality and autonomy which defies the male gaze in public spaces and may allow adolescent women to reject traditional images of femininity" (p. 189). As wilderness still remains a largely male dominated public space, it would be interesting to assess if gender differences in communication technology use exist. For example, might women use cell phones in the wilderness at least in part to avoid this 'male gaze' and provide a refuge from possible unwanted male attention or possible danger?

Science and Technology Studies Researcher Perspectives on the Impacts of Technology

STS is a relatively new field of study, and like many recent interdisciplinary areas of research, was propelled into existence by a variety of social changes in the 1960s and 1970s. The 'cultural turn' in science in this era, partly a result of Thomas Kuhn's discussion of paradigm shifts within the philosophy of science, led social scientists to challenge the traditional realist epistemological stance used in social science research. The rise of the environmental movement and the increasing awareness of the impact of technology on ecological systems also influenced the birth of STS. But even more influential was the rise of interpretive perspectives in social research and the use of relativist perspectives in science. Of particular importance was the rise of social constructionism in the 1970s: this remains the primary stance taken by STS researchers (Sismondo 2004).

While earlier researchers espoused ideas that were eventually considered in STS (for example, Lewis Mumford), the key work that sparked researchers' interest in STS was *The Social Construction of Technical Systems* by Bijker, Hughes and Pinch (1987). As the title suggests, this was also a key work in championing the social constructionist approach to the study of technology, an area of study that came to be known as SCOT, housed within the broader STS literature (Clayton 2002). Researchers from sociology, history and philosophy—often using a fascinating combination of each discipline—are most commonly associated with STS and SCOT (Cutcliffe 2000).

Cutcliffe (2000) suggests there are three main approaches to STS. A systems theory approach suggests that a system or web of networks, composed of technology and the people and social institutions which create this technology, create a momentum which is hard to stop or even visualize. Social constructionists stress the impact of the negotiations between special interest groups and other public and private actors to create a 'technological frame', a "system of thought and practice in which the device is embedded" (p. 31). Finally, network theorists focus on the 'actor network' concept, a blend of animate and inanimate entities (political institutions, nature, technology, policies) that support the success or failure of specific technologies. Each of these entities must be viewed to assess how and why certain technologies are adopted. As noted above, a social constructionist approach is common to each of these approaches. While technological objects obviously exist, the use, meaning and functions of technology are continuously constructed and de-constructed by various actors or systems within society, at both the individual and collective level. Only humans can give technology meaning, and the constructed meanings are not inevitable or static. As one researcher succinctly stated, "Technology is neither good, nor bad; nor it is neutral" (cited in Cutcliffe 2000, p. 16).

Of course, like any scientific approach, STS and SCOT are not without their weaknesses. Winner (1993) has provided the most provocative criticism of STS generally and SCOT specifically, noting that SCOT is too formulaic, focuses too strongly on the design stage of technology and disregards the social consequences of technology; other complaints focus on the lack of discussion in SCOT about the power relationships that shape the development and consumption of technology (Clayton, 2002). STS also generally tends to provide various researchers' perspectives on one case study, but rarely provides any critical analysis of each of these studies, a characteristic that one philosopher termed the "paradox of continual beginning" (cited in Higgs, Light and Strong 2000a, p. 5).

Philosopher Albert Borgmann's work in STS is very influential. He is one of the few STS researchers to have generated any critical exchange (Higgs, Light and Strong 2000b). His work is particularly relevant to the study of the connections between technology and wilderness, as Borgmann himself uses the example of wilderness use—although not in as detailed a manner as wilderness researchers might like—as an exemplar of what he termed 'focal practices'. Borgmann begins by agreeing with many of the main points noted in the previous sections: he believes that technology has become "the decisive current in the stream of modern history" (1984, p. 35), providing a foundational but nearly invisible pattern in our lives. Borgmann also links consumerism with technology, suggesting that "Universal consumption of commodities is the fulfillment of the promise of technology" (1984, p. 52).

Borgmann's most significant contribution deals with his conceptualization of focal things and practices. He compares the traditional hearth or fireplace (a thing) with modern central heating (a device) to illuminate how technology changes the very meaning of human lives and behavior. He suggests 'things' create their own worlds and generate a contextual engagement

with the world. For example, a hearth used to serve as a focal point in daily existence:

> "a fireplace provides warmth, but inevitably provides those many other elements that compose the world of the fireplace [e.g., assigning various family members specific tasks]. We are inclined to think of these additional elements as burdensome, and they were undoubtedly often so experienced. A device such as a central heating plant procures mere warmth and disburdens us of all other elements. These are taken over by the machinery of the device. *The machinery makes no demands on our skill, strength, or attention*, and it is less demanding the less it makes its presence felt. In the progress of technology, the machinery of a device has therefore the tendency to become concealed or to shrink" (1984, p. 42; emphasis added).

Borgmann's belief that technology makes no demands on us seems to reflect one of the central concerns of wilderness researchers, that our use of cell phones, personal locator beacons, GPS units, and so on in the wilderness will strip away the skills and experiences delivered through direct wilderness experience. Similar to maintaining the hearth, experiencing the discomforts and dangers in the wilderness can be a great burden, but Borgmann's analysis supports the concern by wilderness researchers that recreation technology will erase the wisdom learned by mistakes in the wilderness. Borgmann also seems to echo wilderness researchers' expressed concerns with the loss of direct experience:

> "Physical engagement is not simply physical contact but the experience of the world through the manifold sensibility of the body. That sensibility is sharpened and strengthened in skill. Skill is intensive and refined world engagement. Skill, in turn, is bound up with social engagement. It molds the person and gives the person character" (1984, p. 42).

Moreover, Borgmann seems to speak to the mixture of guilty excitement many feel in adopting new forms of recreation technology, suggesting that despite the "persistent glamour of the promise of technology" (1984, p. 105), and our relief from lifting burdens from ourselves and others,

> "these sentiments are tinged, especially in retrospect, with feelings of loss, sorrow, and of betrayal, both in the sense that one has betrayed a thing or a tradition to which one owes an essential debt, and in the sense that one has been betrayed in one's aspirations. Implication in technology then receives an admixture of uneasiness which results in what may be called complicity" (p. 105).

The resulting complicit emptiness is often filled with even more consumption, creating a never ending cycle which tends to create leisure experiences based on "instantaneity, ubiquity, safety, and ease" (p. 130): we consume comfort. In our rush to commodify consumption of technology, "We have constructed a large and complex machine that delivers effortless experiences" (Borgmann 2010, p. 9). But this comfort and effortlessness also come with a price:

> "it is an entirely parasitic feeling that feeds off the disappearance of toil; it is not animated by the full-bodied exercise of skill, gained through discipline and renewed through intimate commerce with the world. On the contrary, our contact with reality has been attenuated to the pushing of buttons and the turning of handles. The results are guaranteed by a machinery that is not of our design and often beyond our understanding. Hence the feelings of liberation and enrichment quickly fade; the new devices lose their glamour and lead into the inconspicuous periphery of normalcy; boredom replaces exhilaration" (2010, p. 140; see also Borgmann 2006).

Borgmann highlights the need to hang on to focal things and practices, as only 'things' (rather than devices) are embedded within the "rich, experiential context discovered through engagement" (Fandozzi 2000, 155). Indeed, it is only by (re) discovering these focal things and practices that we can reform our technological fixation to move towards a 'good life'. More specifically, focal reality

> "is simply a placeholder for the encounters each of us has with things that of themselves have engaged body and mind and centered our lives. Commanding presence, continuity with the world, and centering power are signs of focal things. They are not warrants, however. Focal things warrant themselves" (Borgmann 1992, p. 119-120).

Like the hearth, focal things interweave means and ends, require effort, concentration and skill, and both invigorate and center us (Strong and Higgs 2000).

For Borgmann (1992, p. 120), "the wilderness has the clearest voice among eloquent things", allowing us to engage with the land in a meaningful way despite—and in part because of—the technological world that surrounds it. Indeed, "wildness attains new and positive significance within the technological setting" (1984, p. 182). It restores non-technological time and space to us. In the wilderness, "we let things be in the fullness of their dimensions, and so they are more profoundly alive and eloquent" (p. 192). We can, for a time, escape our consumptive and destructive selves and understand that wilderness stands apart from our technological society. Finally, wilderness can teach us respect, humility and the need to control our normally unquestioned adoption of technology:

> "Technology kills the wilderness when it develops it with roads, lifts, motels and camping areas. It keeps the wilderness at bay when, without affecting untouched areas permanently, it insulates us from the engagement with the many dimensions and features of the land, as it does through rides in jet boats or helicopters. Here we can see that technology with its seemingly infinite resourcefulness in procuring anything and everything does have a clear limit. It can procure something that engages us fully and in its own right only at the price of gutting or removing it. Thus the wilderness teaches us not only to accept technology but also to limit it" (p. 195).

The above quote demonstrates some of the limitations of Borgmann's discussion of how wilderness links to the technological society. The dangers of interdisciplinary work are perhaps also reflected in his somewhat Romantic and simplistic conceptualization of wilderness. To be fair, at the time his main work was published in 1984, the rise of recent communication technology was still far away, although more recent works

(Borgmann 1992; 1999; 2006; 2010) do not update these positions. If wilderness can teach us to limit technology, it certainly has not done so yet, as any limits to technology in protected areas—beyond the traditional restriction of mechanized recreation—are exceedingly rare. For example, on the contrary, the Parks Canada Agency, in a bid to attract more visitors, has recently introduced a new technology in national parks. "Using a program called Explora and handheld computers with Global Positioning System (GPS) capabilities, Parks Canada plans to deliver location-specific content to hikers. As visitors hike with Explora, they are able to see their location on a map and interact with location-related text, images, sounds, video and quizzes" (Lunn 2011, unpaginated). Certainly, we have long hoped that protected areas can teach us humility and help forge a new relationship with nature, but this new respectful relationship has yet to appear outside of an individual level despite decades of wilderness use. Perhaps the forcefulness of the technological allure is an important barrier to these changes in social values and attitudes.

Yet these concerns do not completely bury the possible utility of many of Borgmann's ideas. The example of wilderness use as a focal practice—one that binds wilderness visitors with things rather than devices, creating a rich, centering experience not yet mediated by the loss of meaning created by devices—still holds promise for future research opportunities. Unless, of course, the new forms and increasing use of technology exemplified by communication technologies have not put the focus of the wilderness experiences on the devices rather than the experience itself: this seems to be the concern of many wilderness researchers, but has yet to be directly assessed.

Discussion and Conclusion

What can we learn from this brief review and comparison of these three distinct literatures? Several patterns have emerged. The most self-evident pattern is the lack of empirical research on this topic. Wilderness recreation research is almost entirely anecdotal, primarily deterministic, and has not proven successful at engaging managers or administrators to meaningfully debate the issue. The dispersed leisure studies research contains the greatest amount of data, but relatively few studies are focused directly on the wilderness experience, although their discussion of the impact of technology in society provides many potentially useful insights. The limited STS and SCOT research relating to wilderness and outdoor recreation tends to be philosophical in approach, rarely critically examined in any detail and only occasionally used by wilderness researchers. While it is more than trite to simply call for more research on this (or any) topic—is there a more clichéd expression in academia?—the lack of any empirical results to support or reject the possible issues identified in previous sections of this paper restricts our ability to gain a deep understanding of this topic. While I hesitate to privilege empirical forms of knowledge, adding this dimension would help triangulate existing findings; empirical evidence also tends to have greater public and political influence. But the existing literature provides a valuable roadmap for future research, suggesting potential topics and conceptual frameworks which can serve as potential launching points for wilderness researchers.

Given the lack of direct observations, both realist (quantitative) and relativist (qualitative) perspectives and approaches are needed. Quantitative research—normally on or off site user surveys—can provide an indication of how many wilderness users use which technologies and their basic attitudes towards technology in wilderness and potential management strategies. Wilderness managers' attitudes and approaches could also be assessed, and content analysis of media reports on technology in wilderness areas could be analyzed. Qualitative research would probably use interviews or focus groups of users and non-users of wilderness technology, and could provide a deeper analysis of the meanings and contexts that link wilderness users, technology and society. For example, these approaches could assess how users negotiate the complicities that Borgmann (1984) spoke of: do wilderness technology users experience this complicity and if so, how is it manifested? Wiley's four tensions between technology and wilderness use could also be assessed: do users of technology describe these or other tensions in their narratives/discourses?

The second pattern relates to the common topics embedded within each of the literatures. While each literature is broader than that represented in this brief review, a key finding was the common concern with the link between technology, consumption and self-identity. In our consumer society, there seems to be a discord between the discourses which portray recreation technology as wholly positive, necessary accoutrements to the modern wilderness experience, enabling recreationists to pursue activities, settings and experiences beyond the current reach of visitors in greater safety, comfort and ease; at the same time, the love-hate relationship between society and technology is brought into the wilderness, and the wilderness becomes both a refuge from technology and an experience activated and maintained by increasing amounts of technology. The loss of direct experiences from the use of what Borgmann (1984) terms 'devices' and its potential impact on the perception and experience of risk is also a shared concern in each literature. The lack of direct experience, especially those not 'tainted' by new technology, is thought to have significant effects on perceived risk and decision-making. This potential link between risk, technology and the wilderness experience is a fascinating one, but has not received sustained examination.

The invisibility of technology—at least, some forms of technology—is another common theme. Why are only certain pieces of wilderness technology (such as GPS) imbued with the power to transform the 'traditional' wilderness experience (whatever that is), while others (such as boots) are not considered to be transformative? What is and isn't 'technology' to wilderness users? Finally, Borgmann's concept of focal things and practices, and his inclusion of wilderness use in this short list of focal realities, seemed to reflect the purity and centering power of the wilderness experience expressed (or at least implicitly assumed) by wilderness and leisure researchers. Could this concept be used, despite the somewhat frustrating lack of specificity of this concept in Borgmann's work, to explain the significance of this experience for individuals and Western

society? Can focal practices like wilderness use—if not already too 'uncentered' by communication technologies—provide a way forward to the 'good life' highlighted by Borgmann? Could wilderness experiences provide us a means by which we could resist the siren call of technology?

A third pattern is the disconnect and tension between the three literatures' epistemological stances and methodologies. The wilderness research almost exclusively follows a realist perspective, and thus uses quantitative methods and statistical analysis to describe reality. Researchers in the other two areas primarily use a relativist stance, and use qualitative methods and interpretive analysis (especially social constructionism) to describe contextual realities. As noted above, each approach has its own strengths and weaknesses, and both are needed equally, but the difference in approach is possibly a challenge for integrating the widespread research on the impacts of technology on wilderness recreation. Certainly, up to the present, few wilderness researchers studying technology issues incorporate findings from the other literatures in a significant way. Perhaps it also demonstrates the need for an increased emphasis on interdisciplinary and/or mixed method approaches to research the impact of technology on the wilderness experience.

Technology both enables and disables wilderness. For almost a century—from Model Ts to iPads—technology has simultaneously led to successful rallying cries to protect the wilderness (for example, the passing of the Wilderness Act) and concern that its use will diminish or even destroy the wilderness experience itself. At present, the debate over the role and impact of technology seems to be focused at the individual level: wilderness users have an internal debate over what they consider to be appropriate levels and types of technology on each wilderness trip. A wider debate seems limited at one level by the capacity and willingness of land management agencies: other concerns (declining visitation and climate change, for example) have taken center stage, and budget cuts in a strongly neoliberal political environment have diluted the agencies' enthusiasm for wilderness and wilderness research in general. The unwillingness of Western society to question the use of new technology or consider its impacts, the commodification of leisure experiences in our consumer society, and the public desire for safety, comfort and ease also provide challenging roadblocks to such a public debate. A champion is needed to maintain the focal experiences provided by wilderness: research that addresses these and other issues may help us cut through these barriers to engage this debate.

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The Influence of Hand-Held Information and Communication Technology on Visitor Perceptions of Risk and Risk-Related Behavior

Steven R. Martin
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Abstract—As devices like personal locator beacons become more readily available, more visitors may bring them into wilderness and use them to request rescues and may develop unrealistic expectations of rescue. In an exploratory study in 2009, 235 overnight visitors to the King Range Wilderness in California completed a written survey. Of the respondents, 40 percent considered themselves to be risk-takers. Of those, 80 percent admitted to having done something in a wilderness that they knew at the time was unsafe, and 85 percent admitted to having done something that in retrospect they considered unsafe. These risk takers were also significantly more likely to take chances that could increase their exposure to risk if they had information/communication technology with them. They were also significantly more likely to believe that technology reduces many of the dangers people associate with being in the wilderness. Both more-experienced visitors and visitors with personal experience of a serious wilderness accident were more likely to believe that technology creates a false sense of safety for wilderness users than were less-experienced visitors and those who have not been involved in a serious wilderness accident.

Introduction

John and Rebecca are backpacking in the John Muir Wilderness, a part of the High Sierra they have not visited before. They have a trail map. They are not carrying a compass, but neither really knows how to navigate by map and compass anyway. They do, however, have a state-of-the-art GPS, and have been using it to follow a highly recommended route they downloaded in advance from the internet. They know their exact UTM coordinates at any given time and with those could find their location on their trail map if they so desired, thus removing much of the anxiety they had about getting lost. Neither was particularly confident in their navigational skills. John and Rebecca also have a smartphone with a SPOT Connect app, which not only allows their family and friends to track their progress via the internet, but also allows John and Rebecca to send custom messages of up to 41 characters to their social network contacts via Facebook and Twitter and to contact 9-1-1 emergency responders with their GPS coordinates and a custom SOS message if they need to be rescued (although few 9-1-1 centers are yet equipped to handle text messages). During the course of their seven-day trek, John and Rebecca spend quite a bit of time updating their Facebook pages with messages about their trip, and sending tweets to their family and friends via Twitter.

Managers and researchers (or anyone else for that matter) may be in no position to tell John and Rebecca whether or not they had an "authentic wilderness experience." However, their experience might have been lacking some of the fundamental elements that have traditionally defined a wilderness experience, elements such as a certain degree of separation from the technologically-advanced aspects of modern civilization and the heightened opportunity for contemplation and self-reflection that may come with it; self-reliance; exposure to uncertainty and risk; and the sense of accomplishment derived from relying on one's own skills to overcome uncertainty and risk. These are elements that contemporary wilderness visitors say contribute to a wilderness experience (Seekamp and others in press).

It is the fourth day of their trip and John and Rebecca are faced with a decision. Although it is not on their pre-programmed GPS route, they see on their map that there is a high alpine lake in a steep basin perched above them. It promises to be very scenic, but also quite exposed to weather, and will require some steep, off-trail climbing to get to; the footing could be difficult. They also notice some clouds starting to build up in the early afternoon and are wondering if a storm might be moving in. They stop for a snack and to talk about their options. Should they climb up to the lake? They discuss the fact that they have their GPS and SPOT, so if they do get into trouble, they can always request help. Based on the confidence that those devices give them, they decide to proceed to the lake. Was it the right decision? Do they return safely and on their own, or did the (over)confidence that stemmed from having their technological devices create a false sense of safety and

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an unrealistic expectation of rescue, ultimately resulting in a rescue operation that could have been avoided?

Clearly, not all wilderness experiences are the same—they vary greatly across people, across places, and across time. Indeed, what would Bob Marshall have thought of today's freeze-dried food, lightweight tents, tiny propane stoves, and Gore-Tex raingear? That said, do we risk losing something important if communication and information technology like that described above (and whatever else is coming next) removes much of what sets wilderness experiences apart from non-wilderness recreation? Today's backpacking equipment that Bob Marshall might scoff at makes wilderness travel easier and more comfortable, but is a lighter tent and better raingear as fundamentally different from the tents and raingear of his day as is the ability to communicate with the outside world via cell or satellite phone, fix your exact spot on a map by way of GPS, or request a helicopter rescue at the push of a button? As Grann (2010, p. 234) recounts in *The Lost City of Z*, even the Royal Geographic Society "recognized, wistfully, that a Rubicon had been crossed" when in 1925, explorer Alexander Rice first communicated via wireless radio with the outside world while on an expedition deep into the Amazon, and the New York Times reported that "the Brazilian jungle has ceased to be lonely."

Setting aside the issue of whether such technology changes the very nature of the wilderness experience, to what extent might a dependence on such technology change visitor behavior (consciously or unconsciously), encouraging visitors to make decisions they otherwise would not have made and to take risks they otherwise would not have taken? Technology that reduces actual risk may change the very nature of experience, by reducing the consequences of visitors' decisions, and thereby may change visitors' decisions and behaviors, since those decisions and behaviors may now carry less risk. Even if technology reduces only the perception of risk, that may still lead visitors to make unsafe decisions they otherwise might not have made, with potentially disastrous consequences.

Information and communication technology that reduces exposure to risk, or that is believed to reduce risk, may have the effect of opening up areas for travel that were previously thought by some people to be beyond their skill level. In effect, the technology expands the areas or lands into which some people are comfortable pursuing their desired activities and experiences. Whereas before such technology existed, travel into remote and rugged areas, or cross-country travel across a trailless landscape, might have been considered too dangerous by some, now people equipped with a GPS and a SPOT, or a Smartphone with a SPOT Connect app, might not be deterred. While there may be some advantages to this, there are some obvious disadvantages as well. In addition to the potential for spreading visitor impacts into formerly pristine or near-pristine areas, there is also the potential for underprepared or overly confident users to substitute technology for common sense, experience and skill and to make decisions based on unrealistic perceptions of both risk and the ease and availability of rescue. This could lead to an increased number of accidents, injuries and deaths, and an increased number of search and rescue events, which are expensive and potentially dangerous to the rescuers.

In this paper we will first review the literature on this topic. Then we will provide empirical results from a single exploratory study of wilderness visitors to a coastal wilderness in California, in which we examine beliefs and behaviors relative to information and communication technology in wilderness. The research questions that we asked were to what extent do information and communication technologies influence visitor perceptions of both risk and rescue in wilderness, and how might those perceptions in turn influence risk-related decisions that visitors make in wilderness?

Literature Review

McCool and Braithwaite (1992) define hazards as "uncontrollable components and processes encountered in natural environments that may lead to the injury or death of recreationists." They describe risk as the "exposure to hazards" or "the likelihood of being harmed by a hazard." They differentiate between risk that is voluntary, sought out as part of the recreation experience and seen as a controllable factor (what some have called challenge risk) and risk that is uncontrolled and not sought (what some have called danger risk), acknowledging that what is challenge risk to one person may be danger risk to another. As Ewert and Hollenhorst (1997) point out, it is the inclusion of and proximity to risk that "adds consequence to individual decision making."

How might the introduction of handheld information and communication technology reduce risk (or at least the perception of risk), reduce the consequences of decisions, and influence visitors' decision-making? A number of authors have noted that such technology may serve to create the illusion of safety or a false sense of security (Borrie 2000; Ewert and Hollenhorst 1997; Stevenson 2011; Wiley 2005). For example, Ewert and Hollenhorst (1997) explain that while a GPS can provide navigational information, it cannot provide the knowledge necessary to safely use that navigational information in difficult terrain. GPS devices can make it more difficult to get lost and easier to specify one's location to rescuers (Wiley 2005), but can also, as Borrie (2000) points out, increase visitors' confidence in their ability to go anywhere and decrease their willingness to turn back. Holden (2004) wonders if this false sense of security makes participants feel less vulnerable to threats.

Technology is not always reliable and functional in a wilderness environment (Attarian 2002). For example, a hiker in New Zealand fell off a cliff, broke several bones, and lost his personal locator beacon (PLB) in the fall, leaving him stranded (Chapman and Stokes 2009). Another New Zealand camper went missing and activated his PLB, but the signals were not received, possibly due to canopy cover (Pepperell 2011). In April 2011 SPOT, a leading manufacturer of personal locator beacons in the U.S., recalled over 15,000 devices due to reports of product failure in temperatures below 40 degrees Fahrenheit (dBune News 2011). Inexperienced visitors relying on sometimes unreliable equipment, without experience to

serve as a backup in case of faulty technology, is a potentially dangerous combination.

Even if the devices work properly, one cannot assume that the user knows how to use them correctly. Stevenson (2011) points out that carrying a GPS and knowing how to use it are two different things. Sandrik (2010) reports that, in Yosemite National Park, search and rescue rangers are seeing more cases of people putting themselves in precarious positions because they relied too heavily on one type of technology—GPS. Valley District Ranger Eric Gabriel said, [It's] "more and more common, and what happens is that people rely solely on the GPS as opposed to having a map, a compass, and good judgment and skill to use those things." Lack of knowledge about device capabilities can also create dangerous situations. The Rocky Mountain Rescue Group spent two months searching for the source of a personal locator beacon that was triggered in Colorado nine times between December 2009 and February 2010. They finally solved the mystery, learning that a backcountry skier thought it was an avalanche beacon, activating it every time he went skiing. He had received it as a gift and never read the instructions (Willoughby 2010).

One of the major differences between devices (such as SPOT) and equipment (such as a topographical map and compass) is that equipment requires skill and practice as well as incorporating environmental knowledge; devices may provide instantaneous results, but they fail to involve or engage us with the surrounding environment (Pohl 2006). This lack of engagement with one's environment can contribute to a lack of visitor autonomy, self-sufficiency, and sense of self-responsibility. In turn, these factors may contribute to changes in visitor behavior and use patterns, including increased risk-taking behavior, not understanding the dangers involved with particular behaviors, and overestimating the availability of rescue assistance. Technology may serve to insulate visitors from the consequences of their actions to the point where they fail to recognize the severity of a situation (Borrie 2000).

Anecdotally, many wilderness managers feel that the average level of experience, knowledge and skill among users is decreasing as more people venture into the wilderness with information and communication technology. The technology may be used as a substitute for skill, knowledge, experience and preparation (Stevenson 2011) and may allow people with less skill to access areas that were once available only to the highly skilled (Hollenhorst 1995). Dickson (2004), commenting on the increase in rescue requests via cell or satellite phone, asks:

> "But why do they need rescuing? Did they venture that far, or into that area, because they thought they could make a call and be rescued? Are they depending upon the technology and the knowledge and skills of others to keep themselves safe rather than developing personal skills to navigate and explore the outdoors? Would they have gone there if they had to depend totally upon their own skills?"

Many visitors may come to rely on these devices in the wilderness instead of developing appropriate knowledge, abilities, experience, and skills. The now-infamous Royal Arches foursome (see Pope and Martin 2011) is an example of an inexperienced group that used their beacon as a substitute for appropriate knowledge, abilities, experience, and skills. When rescuers asked the men what they would have done had they not possessed a personal locator beacon, they said: "We would have never attempted this hike." As a result of this type of incident, some rescuers refer to personal locator beacons as "Yuppie 911" (Cone 2009).

There is little (if any) disagreement that technology like personal locator beacons, cell phones, and satellite phones makes it easier to request a rescue, often leading to an increased, and sometimes unrealistic, expectation of rescue. One of many examples is of hikers in British Columbia who ignored trail closure signs, became stranded because they were unprepared for conditions, called 9-1-1 to request rescue, then became impatient that the rescue was taking too long (Sullivan and Cooper 2011). Stevenson (2011) says that too many unprepared visitors treat technology like a "get out of trouble free" gadget instead of as an emergency backup. The subsequent diminished capacity for self-rescue can lead to a "society of rescuers and rescuees," where rescue (including self-rescue) is a specialized niche instead of an essential skill.

As the use of technology expands into wilderness areas, it is important to address people's expectations of technology in a backcountry environment and the dangerous blending of expectations between frontcountry road-accessible areas and backcountry settings (Pohl 2006). Unrealistic expectations can occur when individuals bring technology into the wilderness, falsely believing they can rapidly summon help if needed. Likewise, bringing technology into the wilderness can create a false sense of security that may compromise a group's self-reliance (Borrie 2000; Holden 2004). Even when used successfully, it can still take a considerable amount of time for rescue crews to respond. Without appropriate self-rescue abilities, even the most technologically-equipped wilderness visitor can be in considerable danger waiting for help to arrive. As technology improves with time, it remains to be seen if these improvements will simply create ever higher expectations of safety and more unrealistic views of rescue.

Now that many wilderness visitors bring technology on trips and rely on this technology in the event of an emergency situation, they are often no longer prepared to, as Bob Marshall (1930) once said, "satisfy all requirements of existence," and may rely on professional rescuers to fill in the gaps. San Bernardino County Emergency Coordinator John Amrhein deals with the repercussions of this on a daily basis. "In the past, people who got in trouble self-rescued; they got on their hands and knees and crawled out," Amrhein said. "We saw the increase in non-emergencies with cell phones: people called saying 'I'm cold and damp. Come get me out.' These [devices] take it to another level" (Cone 2009). Some visitors may call for rescue prematurely before even attempting to self-rescue (Holden 2004), while others place rescue calls upon becoming temporarily disoriented (Huffman 1999). Heggie and Heggie (2009) noted a "general feeling among many search and rescue unit managers in the United States that cell phones are being used to request search and rescue assistance in what turns out

to be minor situations." Or as Lomax (2006) notes, "We've confused emergency with convenience." Examples of this (too numerous to even list) abound not only in the United States, but are becoming increasingly common in England, New Zealand, and Australia (see Fea 2011; Martin 2011; Roberts 2011).

Very little empirical research exists to support the notion that possessing this type of technology influences visitors' risk-related behavior. Two studies, however, have examined this notion. Holden (2004) studied Outward Bound outings in North Carolina. The group leaders carried a satellite phone on the multi-day trips. The student participants in some of the groups knew that their group leader had a satellite phone; participants in the other groups did not know that their group had a satellite phone. Holden looked at whether knowledge of the satellite phone increased students' propensity for risk-taking. In a written questionnaire administered after the trips, students answered questions about the extent to which they felt safe and the extent to which they felt comfortable taking risks. He found no significant difference between the two groups on either item. However the degree to which these findings are generalizable to other wilderness visitor populations is debatable, since most wilderness visitors are not students visiting in a structured, facilitated outing such as an Outward Bound trip.

Hohlreider and others (2005) studied the influence of avalanche transceivers (the equivalent of a personal locator beacon for skiers) on mortality rates from avalanches. They found that while the transceivers reduced the mortality rate during backcountry activities involving ski tourers in free alpine areas, it did not reduce mortality during off-piste activities near organized ski slopes. In searching for an explanation, they state that "our data suggest that those few off-piste skiers and snowboarders equipped with a transceiver tend to be involved in more [frequent] serious accidents. The perceived additional security offered by [the transceivers] may stimulate skiers and snowboarders to accept higher risks. As a consequence, mortality is unchanged or even increased in off-piste activities despite the use of [transceivers]." They conclude that a false sense of security created by transceivers may encourage skiers and snowboarders to enter more hazardous terrain.

One conclusion of this literature review is that information and communication technology is quickly changing the nature of the relationship between wilderness visitors and rescue organizations. Despite limited empirical evidence, there is much concern that this technology, and the new relationship it has forged between visitors and rescuers, could have the effect of encouraging more risk-taking on the part of visitors, a concern described very well by Stevenson (2011).

Methods

The Lost Coast Trail follows 25 miles (40 km) of remote Northern California coastline, nestled between the Pacific Ocean and the mountains of the King Range National Conservation Area. Managed by the Bureau of Land Management (BLM), 42,585 out of the 68,000 acres in the King Range National Conservation Area are designated as wilderness. Visitation is steadily increasing, from 3,302 self-registered visitors in 2007 to 4,646 in 2009, with an estimated registration compliance rate of 80 to 90 percent (Carr 2009, Pritchard-Peterson 2010). The topography is so rugged that engineers had to locate coastal roads farther inland. This rugged isolation makes the area an excellent place to study technology and rescue.

Lost Coast Wilderness dangers include high tides that leave miles of trail underwater, unexpectedly large "sneaker" waves, high winds, precarious cliffs, river crossings, slippery rocks, environmental hazards, and wildlife. Rescues often involve multiple agencies. No one agency keeps comprehensive records of Lost Coast Trail rescues.

From May through September 2009, 235 overnight visitors to the King Range Wilderness completed a survey along the Lost Coast Trail. Sampling occurred on a stratified sample of weekdays, weekends, and holidays at three points along the trail: the northern trailhead (Mattole Beach), southern trailhead (Black Sands Beach), and a popular resting spot three miles south of the northern trailhead (Punta Gorda Lighthouse). All adult visitors on an overnight backcountry trip were asked to complete the survey.

Respondents answered questions about their wilderness skills, experiences and beliefs regarding risk, rescue and technology in the wilderness. Questions consisted of logical items as suggested by the literature and personal experience, and were further refined by way of a focus group of experts. Respondents answered some questions on a 7-point scale ("not at all" to "a lot" or "not important" to "very important"). Other questions were answered by checking "yes" or "no" or one of several provided responses.

Results

The response rate was 92%. Respondents ranged in age from 18 to 80 (median age was 28). Sixty-five percent of respondents were male. Subjects reported a median of 10 years of experience making overnight wilderness trips, with a median of 2.5 trips (6 nights total) in the previous 12 months. Median group size was 4. Additionally, 32 visitors (14%) reported serving in a leadership or guide role on a wilderness trip in the previous 12 months.

We asked respondents to indicate the extent to which they believed different factors were responsible for visitors making unsafe decisions in wilderness. Overestimating one's abilities and not fully understanding or realizing the consequences of one's decisions were seen as the top two factors responsible for unsafe decisions in wilderness (Table 1).

We also asked respondents to indicate the extent to which they believed different factors contributed to the need for visitor rescue in wilderness. Poor judgment, lack of preparation and inexperience, all factors firmly in the control of the recreationist, were perceived to be the primary factors contributing to the need for visitor rescue (Table 2).

We used two measures to assess the degree to which respondents were risk takers. The first was a single item measured on a scale of 1 (not at all) to 7 (a lot), asking "Do you see yourself as a risk taker?" The second measure consisted of two

Table 1—Visitor perceptions of the factors responsible for unsafe decisions in wilderness.

	Percentage of respondents rating 1-3 on a 7-point scale [a]	Percentage of respondents rating 5-7 on a 7-point scale [a]
Overestimating abilities	5.4	76.3
Not realizing consequences	10.7	71.9
To prove themselves	13.6	60.5
Adrenalin/endorphin surge	25.1	49.3
Fear of looking weak	24.7	48.9
Feeling they can call for help	42.3	32.4

[a] Measured on a 7 point scale, 1 "not at all," 7 "a lot"

Table 2—Visitor perceptions of the factors contributing to the need for rescue in wilderness.

	Percentage of respondents rating 1-3 on a 7-point scale [a]	Percentage of respondents rating 5-7 on a 7-point scale [a]
Poor judgment	3.9	86.1
Inexperience	6.5	84.9
Lack of preparation	4.8	84.8
Bad weather	8.7	61.3
Equipment failure /wrong equipment	33.2	28.3
Bad luck	47.3	24.3

[a] Measured on a 7 point scale, 1 "not at all," 7 "a lot"

behavior-based questions: (1) "Have you ever done something in the wilderness that you felt at the time was unsafe?" and (2) "Have you ever done something in the wilderness that you felt in retrospect was unsafe?" Of the 69 respondents (31% of the sample) who considered themselves to be non or low risk takers (less than 4 on the 7-point scale), half still admitted to having done something in a wilderness that they knew at the time was unsafe, and half also admitted to having done something that in retrospect they considered unsafe. But of the 89 respondents (40% of the sample) who considered themselves to be risk takers (greater than 4 on the 7-point scale), 80% admitted to having done something in a wilderness that they knew at the time was unsafe and 85% admitted to having done something that in retrospect they considered unsafe. The self-identified risk takers were, in fact, much more likely to make decisions and take actions in wilderness that were admittedly unsafe, and they usually knew at the time that their action or decision was unsafe.

For the purposes of our survey and to make our questions clearer to our respondents, we defined technology as information and communication devices such as GPS, cell and satellite phones, and personal locator beacons. We then asked a series of questions about this type of technology and its place in the wilderness. Most respondents reported that this technology was not a successful substitute for skill, experience, and knowledge in the wilderness, nor would they be likely to take chances that could increase risks if they had technology with them. Nor did they believe that technology reduces many of the dangers people associate with being in the wilderness. Half of the respondents felt that technology creates a genuine increase in safety for wilderness users, while a little more than half felt that it creates a false sense of safety. Respondents were equally split on whether they would feel safer by having technology with them, and whether or not having technology makes people feel their safety is not their personal responsibility (Table 3).

Next, we used our two measures of risk (the self-assessment and the behavioral questions) to group respondents into one of three levels of risk takers—low, moderate, and high—and compared the responses of the three groups on each of the eight technology questions. We used a Kruskal-Wallis test to identify significant differences across the three levels of risk-takers and a Student-Newman-Keuls post-hoc comparison test to identify which specific groups differed from one another (Table 4).

The question on which the three groups differed the most was "Would you be more likely to take chances that could increase risk if you had technology with you in the wilderness?" Although the mean for all three groups was below the mid-point of the scale, all three groups differed significantly from one another. The higher the level of risk taking, the more likely they were to report that they would take chances that could increase their exposure to risk if they had information/communication technology with them. Both moderate and high risk takers were significantly more likely to believe that technology reduces many of the dangers people associate with being in the wilderness, and both were significantly more likely to think that having technology makes people think that their safety is not their personal responsibility. Finally, moderate and high risk takers were more likely to believe that technology creates a genuine increase in safety for wilderness users.

We also used the questions in Table 3 to do a K-means cluster analysis and classify respondents based on their beliefs about technology in wilderness. A "pro-technology" group (55% of the sample) felt that technology increased one's safety in wilderness. This group was more likely than the "anti-technology" group to use technology to request a rescue, take chances that could increase risk if they had technology with them, and believe that technology can successfully substitute for skill, experience, and knowledge. The "anti-technology" group felt quite strongly that technology cannot substitute for skill, experience, and knowledge. Members of this group were very unlikely to take chances that could increase risk just because they had technology with them, and did not agree that technology reduced dangers and made them feel safer in the wilderness. An analysis of these two technology clusters and the three levels of risk taking indicated that high risk takers are significantly overrepresented in the pro-technology cluster (23% of the sample), and significantly underrepresented in the anti-technology cluster (Chi-square, $p = .013$).

Table 3—Visitor perceptions of technology use in wilderness (n from 218 to 224).

To what extent…	Percentage of respondents rating 1-3 on a 7-point scale [a]	Percentage of respondents rating 5-7 on a 7-point scale [a]	Overall mean score [a]
Do you think technology in the wilderness can successfully substitute for skill/experience/knowledge?	82.0	6.8	2.2
Would you be more likely to take chances that could increase risk if you had technology with you in the wilderness?	68.9	16.3	2.7
Do you feel technology reduces many of the dangers people associate with being in the wilderness?	56.2	17.1	3.2
Would you be more likely to use technology to request rescue when you could make it out on your own but the process of self-rescue would be long and uncomfortable?	42.6	37.2	3.8
Do you think technology in the wilderness makes people feel that their safety is not their personal responsibility?	39.0	38.6	3.9
Do you / would you feel safer by having technology with you on a wilderness trip?	34.3	36.2	4.0
Do you think technology creates a genuine increase in safety for wilderness users?	18.7	50.9	4.6
Do you think technology creates a false sense of safety for wilderness users?	13.8	56.3	4.8

[a] Measured on a 7 point scale, 1 "not at all," 7 "a lot."

Table 4—Contrasting perceptions of information and communication technology in wilderness across levels of risk-takers.

To what extent…	Low risk takers *n*=81	Mod. risk takers *n*=64	High risk takers *n*=77
Do you think technology in the wilderness can successfully substitute for skill/experience/knowledge?	2.1[a]	2.4[a]	2.2[a]
Would you be more likely to take chances that could increase risk if you had technology with you in the wilderness?[d]	2.2[a]	2.7[b]	3.3[c]
Do you feel technology reduces many of the dangers people associate with being in the wilderness?	2.9[a]	3.4[b]	3.4[b]
Would you be more likely to use technology to request rescue when you could make it out on your own but the process of self-rescue would be long and uncomfortable?	3.7[a]	3.9[a]	3.7[a]
Do you think technology in the wilderness makes people feel that their safety is not their personal responsibility?	3.5[a]	4.0[b]	4.1[b]
Do you/would you feel safer by having technology with you on a wilderness trip?	4.0[a]	3.9[a]	4.1[a]
Do you think technology creates a genuine increase in safety for wilderness users?	4.2[a]	4.7[b]	4.9[b]
Do you think technology creates a false sense of safety for wilderness users?	4.6[a]	4.8[a]	5.0[a]

Values are mean scores on a 7 point scale, 1 "not at all," 7 "a lot." Scores with different superscripts are significantly different at $p < 0.05$, Student-Newman-Keuls post-hoc comparison test.

Amount of previous wilderness experience may also be a factor when assessing beliefs about these devices. Experience (measured by combining both number of overnight trips in the last 12 months and number of years making overnight wilderness trips) is positively correlated with the belief that technology creates a false sense of safety (r (211) = 0.194, $p < .01$). The more experience visitors had, the more likely they were to believe that technology makes wilderness visitors feel they have a safety net that in reality may not exist. Experience is also positively correlated with the belief that technology makes people feel that their safety is not their personal responsibility (r (205) = 0.159, $p < .05$).

About 11% of King Range Wilderness visitors reported having been personally involved in a serious wilderness accident and 41% knew someone involved in a serious wilderness accident. Half (52%) of the respondents who reported personal involvement in a wilderness accident said they had used a technological device in a wilderness emergency. Tellingly, those with personal experience of a serious wilderness accident are more likely to believe that technology creates a false sense of safety for wilderness users than those who have not been involved in a serious wilderness accident (Mann-Whitney U test, $p < .05$), as do those who know someone who was involved in a serious wilderness accident (Mann-Whitney U test, $p< .05$).

Discussion

Our results are consistent with what many authors have previously speculated. In our sample of wilderness users, a majority of respondents (56%), particularly experienced visitors and visitors who have been involved in a serious wilderness accident, believe that possessing information/communication technology creates a false sense of safety (though some may also concurrently believe that it increases safety). A reliance on technology to summon rescue may create a false perception of a "safety net" when people's expectations of technology and rescue do not correspond with the actual capabilities of the technology and the rescuers. It may also lead to people taking more risks than they otherwise would take, relying on technology to "take up the slack." Our empirical findings suggest this as well, as self-identified risk takers were significantly more likely to take chances that could increase their exposure to risk if they had information/communication technology with them.

Our analysis found a substantial subset of visitors (high risk takers in the pro-technology cluster; 23% of the sample) with a combination of traits that managers have expressed concern over—high risk takers who (1) believe that technology reduces many of the dangers people associate with being in the wilderness, (2) think that having technology makes people think their safety is not their personal responsibility, (3) believe that technology creates a genuine increase in safety for wilderness users, and (4) are willing to take more risks and then use that technology to bail themselves out of trouble.

Other results may also give managers pause. Our sample of visitors admitted that not fully understanding or realizing the consequences of one's decisions was one of the top two factors responsible for visitors making unsafe decisions in wilderness. They noted that poor judgment, lack of preparation, and inexperience were the primary factors contributing to the need for visitor rescue. All of these factors may be susceptible to, or exacerbated by, an inappropriate reliance on technology. While off-site access to information may help some visitors better prepare for a trip (sometimes to the extent of removing virtually all the uncertainty and mystery), Stevenson (2011) laments the potential influence of technology on creating unprepared visitors who head into the mountains without having done their homework, relying instead on their GPS for navigation and their cell phone and/or personal locator beacon if they happen to get into trouble.

We found that amount of previous wilderness experience may influence perceptions of technology and the safety net that it provides. This could prove dangerous given findings that individuals who lack experience often reach inaccurate conclusions and make bad choices. They often do not realize that their conclusions and choices are poor, falsely believing they are doing everything right. Novices have fewer metacognitive skills than experts, and are less likely to accurately judge the difficulty of the problem at hand (Kruger and Dunning 1999). Optimism bias also affects the perception of risk, leading people to believe they are less at risk than others would be in a similar situation. This is particularly prevalent when people believe they can control the risk, that it is unlikely to happen, or if they lack experience with the risk (Powell 2007). Optimism bias can "harness us to a wishful, thereby inaccurate, and therefore dangerous image of the world," with misperceptions leading to accidents (Udall 1987). Coupling inexperience with a reliance on technology would thus seem a recipe for disaster.

Conclusion

As technological devices such as cell phones, satellite phones, and personal locator beacons become more readily available, greater numbers of recreation visitors will undoubtedly bring these devices into the wilderness and use them to request rescues. While these devices have sometimes alerted rescuers to emergencies early enough to save lives, some visitors, particularly those with limited wilderness experience and skills, appear to be developing unrealistic perceptions of the inherent risks of wilderness travel, as well as unrealistic expectations of the institutional capacity for rescue, based on their possession of and reliance on these devices.

The combination of our results and the findings of Hohlreider and others (2005) paints a cautionary tale for agencies and other organizations responsible for backcountry rescues—a decline in the ability and/or willingness of wilderness visitors to self-rescue, an increased expectation of the institutional capacity for rescue, and an increase in the number of rescue requests from visitors, particularly requests that turn out to be non-emergencies. Stevenson (2011) suggests that what is needed is to "create new guidelines and training for how satellite-enhanced communication devices should be used on the trail. For instance, no gadget should be considered a substitute for a detailed map and compass. . . . treat cell phones and satellite beacons just like the emergency kit in the trunk of your

car: You know the kit is there, but you should do everything possible not to use it." In other words, if you take technology with you, whether for navigation (GPS) or communication (cell/sat phone, PLB), learn to use it as the last resort, not the first resort.

Limitations

In interpreting our results, we acknowledge several limitations. This was an exploratory study and the questions we used to assess beliefs about technology in wilderness are, to our knowledge, the first such survey questions formulated to examine this issue. They would undoubtedly benefit from further refinement. Some of those questions asked about "you," while some asked about "others." This difference in question phrasing style should be noted. It is less a concern in this study, since the scores from these items were never combined into a summative scale score. However, future research using summative scales should bear this in mind if adapting the items used here. Finally, although we used a bivariate measure of experience use history (number of trips in the last 12 months, and number of years participating in the activity), we did not use a common third measure—a self-assessment by respondents of how experienced they believe themselves to be. Further research into this topic would benefit from such a multivariate measure of experience use history.

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Wilderness Experience Programs: A State-of-the Knowledge Summary

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Abstract – One of the defining characteristics of Wilderness Experience Programs (WEPs) is the centrality of wilderness—settings, conditions, and characteristics—to the delivery of the program and the client or visitor experience. Wilderness Experience Programs have been classified into three types based on their primary program aim: education, personal growth, and therapy and healing. While WEPs are generally considered to provide many human and societal benefits, the research documentation is slowly growing to support the notion that nature and wilderness can and do provide restorative client and visitor experiences. However, additional research and information to help managers understand and manage WEP activities, programs, and appropriate use of wilderness is needed.

Introduction

The restorative benefits and effects of experiences in nature and natural environments have been widely discussed in the environmental psychology literature (Kaplan and Kaplan 1989; Hartig and others 1991; Kaplan 1995). Some people come to wilderness to escape the stress and complications of everyday life or urban environments and discover many personal and societal benefits (Kellert and Derr 1998; Dawson and Hendee 2009). Others come to experience wilderness through a growing number of adventure recreation programs and activities in wilderness and wild places (Ewert and Hollenhorst 1997; Kellert and Derr 1998; Miles and Priest 1999; Gass 1993). Others have come to wilderness experiences for personal growth and leadership since the start of experiential programs such as Outward Bound in 1962, the National Outdoor Leadership School in 1965, or the more recent WildLink program that started in Yosemite in 2000 through an innovative partnership between federal agencies and non-profit organizations (Bacon 1983; WildLink 2011). Additionally, some come to wilderness to address problem behaviors and to make changes in their lives in one of the hundreds of therapeutic and clinical programs for youth, young adults, cancer survivors, or returning veterans from conflicts over seas (Russell 2008). Finally, some segments of the U.S. population have been searching for inner personal understanding of their own human nature through connections and experiences with nature (for example, Foster and Little 1998) and wilderness (Foster 2000; Frederickson and Anderson 1999).

The connection between wilderness areas and restorative effects is well documented and has become institutionalized with numerous public, private, and non-profit organizations providing access to wilderness areas through residential programs, travel services, educational workshops, wilderness overnight and day trips, and a variety of other mechanisms to help visitors gain experience (Easley and others 1990; Friese and others 1995; Friese and others 1998; Dawson and Hendee 2009; Ewert and McAvoy 2000; Ewert and others 2010). Wilderness areas in the National Wilderness Preservation System (NWPS) are used, as allowable under the 1964 Wilderness Act (U.S. Public Law 88-577), by commercial and nonprofit organizations to deliver programs designed to provide education, personal growth, and therapy and healing for members, students, or paying clients.

The approach to reviewing this topic included our past and ongoing research on this topic and a recent survey of the literature. The intention in this manuscript is not to discuss and list every published report or article. Rather we aim to reference representative publications that document and illustrate our summary observations after reviewing the literature. We found that while the amount of literature on some types of WEPs is growing (for example, therapy and healing), literature on other types of WEPs is sparse (for example, educational).

Wilderness Experience Programs

One diverse category of programs that consciously and directly seeks restorative and educational experiences in wilderness and is dependent on a wilderness setting to enhance program outcomes has been termed Wilderness Experience Programs (WEPs). Friese (1996) outlined three criteria to determine if a program was a WEP: (1) the program provides experiences and activities that are dependent on wilderness settings, conditions, and characteristics; (2) the program provides experiences and activities that are consistent with wilderness use and primitive recreation and travel, such as noted in the definition of wilderness in the 1964 Wilderness Act; and (3) the program provides experiences and activities

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that include interpersonal and intrapersonal approaches to enhance development, intervention, education, therapy, or leadership during the wilderness experience. The three types of WEPS that have been defined and are referred to herein are: educational use, personal growth, and therapy and healing (Easley and others 1990; Dawson and others 1998a).

A continuum of WEP themes and methods was proposed and measured in a national survey of WEPs (Friese 1996, Friese and others 1999; Dawson and others 1998a). The study results identified three major themes and each contained three methods to achieve the aim of that theme:

- Wilderness as teacher—mountains speak for themselves; rites of passage and initiations; and reflection by participants.
- Wilderness as teacher and wilderness as classroom—environmental education; expedition learning; and field classroom.
- Wilderness as classroom—challenge and adventure activities; conscious use of metaphor; and counseling.

The continuum embraces all three types of WEPs and most programs were found to include more than one aim and multiple methods; however, the emphasis between these aims and methods varied across the three types. For example, while counseling was used in 63% of all therapy and healing WEPs, only 15% of personal growth and 2% of educational WEPs used that method.

Most programs use more than one theme or include some degree of all three themes and they evolve over time as the program develops. A single program may be represented by one aspect of the continuum in the beginning phase of the program (wilderness as teacher) and shift toward another place on the continuum towards the latter phase of the program as more in-depth and focused learning is facilitated by leaders to help in transfer of learning of the experience to their daily lives (wilderness as classroom).

Not all aspects of these programs require designated wilderness, as some activities are carried out pre-trip and post-trip off site and some programs use wildlands that are not designated wilderness but have wilderness qualities (such as large undeveloped, remote, natural vegetated lands with opportunities for solitude and primitive travel and recreation) (Dawson and others 1998b). In other words, not all activities in each program are dependent on wilderness as a designated place (such as the NWPS), but rather on wilderness conditions that may occur on publicly or privately-owned lands (that is, lands with wilderness characteristics).

Growth in these WEPs and their use of wilderness was documented in several studies in the 1980s and 90s. Reed and others (1989) surveyed managers in the NWPS about WEP programs being conducted in their wilderness units during 1987 and a significant number of managers reported such programs: educational (38%), personal growth (17%), and therapy and healing (12%). Furthermore, 5% to 12% of managers said these types of WEP uses were increasing in their wilderness unit. By 1995, 67% of managers surveyed in the NWPS reported WEP use was increasing in their wilderness area, 32% said it remained the same, and 1% said it was decreasing (Gager 1996; Gager and others 1998). Additionally, 36% of managers reported that WEP use was growing by 25% per year or more. Friese and others (1998) reported locating 700 potential WEPs and through surveys documented 366 of those WEPs as meeting the three criteria listed above.

WEPs are of varied size and operate with small to large client groups. Friese and others (1998) reported from a 1994 survey that 25% of WEPs offered 5 or fewer trips per year, 14% offered 6 to 10 trips, 28% offered 11 to 30 trips, and 33% offered 31 or more trip per year. The number of clients that participated in WEP trips ranged from 17% of WEPs serving 25 or fewer clients per year, 24% serving 26 to 100 clients, 29% serving 101 to 500 clients, and 30% serving more than 500 clients per year.

The clientele served by WEPs include a wide variety of segments from the general public to specialized programs for women (Cole and others 1994; Powch 1994), to adults (Day and Petrick 2006), to troubled adolescents and teens (Ferguson 2009; Cooley 1998; Russell 2008), and to older, urban-based adults (Riley and Hendee 2000).

Educational Use

Educational use of wilderness is defined as use for wilderness and protection/conservation education program field trips, study areas for student research and projects, and as a source of examples for instruction. Educational WEPs are supported by colleges and universities that teach protected area or wilderness management and stewardship courses, conduct outdoor education programs or lead student orientation trips. Some programs, such as youth organizations, colleges and universities, and non-governmental organizations (for example, Boy Scouts, Girl Scouts, Teton Science School), have a component, or even an emphasis, on recreational activities (such as, teaching adventure, travel, and survival skills).

Descriptive research studies in the mid-1990s reported more than 200 educational WEPs most often focused on youth and young adults (Friese and others 1998; Dawson and others 1998a). For example, colleges and universities took more than 1,500 students into wilderness as part of a course in 2002 (Dawson and Hendee 2004), a 30% decrease from previous studies in 1982-83 (Hendee and Roggenbuck 1984). Most courses focused on wilderness appreciation and use, legislation and policy, protection and management, and history; some university programs focused on environmental education, natural ecosystems, and conservation biology. Given the decline in enrollment in natural resource and forest management programs and the loss of some programs over the last decade, it is expected that the number of courses in wilderness management has continued to decline.

Literature specifically reporting on the outcomes of educational WEPs is sparse, except as a part of more generalized studies on WEPs. The general working model is that exposure to wilderness and stewardship principles will influence WEP participants toward proactive and supportive wilderness and environmental attitudes. For example, one study suggested that

wilderness program participants may be more likely to have ecocentric attitudes (balance between protecting the environment and appropriate human visitation) toward wilderness areas and stewardship (Hanna 1995). Anecdotal evidence and public interest in such programs remains very positive on the outcomes and benefits of educational related WEPs; however, additional rigorous research is needed to better document and measure outcomes that can be attributed to educational WEPs.

Personal Growth

Personal growth WEPs include programs that focus on leadership, organizational development, and personal development by challenging participants to expand and extend their abilities, skills, and personal view to exceed what they previously thought possible (that is, reduce or eliminate self limiting imagery and thought processes) and take these new found capabilities back to their everyday life and work place (Hendee and Brown 1988; Friese and others 1999).

Descriptive research studies in the mid-1990's reported more than 230 personal growth WEP's took students and clients into wilderness, including several very large programs such as Outward Bound with 30,000 clients annually. Many smaller programs serve only a hundred clients or fewer annually (Friese and others 1998; Dawson and others 1998a). Wilderness travel is often for a week to a month in duration and serves a wide range of clients in all age and social-economic classes. Different programs serve varied clientele from business executives seeking higher performance and confidence to women's empowerment groups and from youth groups to elder hostel groups.

Enhanced self-esteem and other forms of personal empowerment are the most often mentioned outcomes for participants in personal growth WEPs (Friese and others 1995; Moore and Russell 2002; Ewert and McAvoy 2000). For example, a study of students taking a 7-day WEP designed to empower and strengthen the skill and motivations of youth-at-risk in four Federal Job Corps programs was tested during 46 trips. Reported results include improved communication with other students and authority figures, a more positive attitude toward their Job Corps program, and a sense of personal accomplishment (Russell and others 1998).

Individual components of personal growth WEPs have been studied to measure their impact, such as the solo experience (Bobilya 2004), vision quest (Riley 1997), personal reflection time, group debriefing sessions, and recreational activities (Gassner and Russell 2008). The long-term impacts of personal growth WEPs have been studied through observation, self-reporting, journaling and other methods and found to have positive effects on self-esteem and personal empowerment (Moore and Russell 2002; Daniel 2003; Gassner and Russell 2008). These effects are generally measured based on staff observation and participant self-reported measures following the program; however, more rigorous research is needed to determine which components of the program contribute to the positive outcomes. Programs evolve overtime in response to staff perceived contributions of program components to participant outcomes. Rigorous research is also needed to objectively measure the amount of effect over time following the WEP program. For example, do participants change to less self limiting behavior when returning to everyday life and work places?

Therapy and Healing

Therapy and healing WEPs seek to restore some level of balanced and normal functioning for clients with behavioral issues (such as, anger management, depreciative and vandalism activities or illegal actions) and substance abuse problems (such as, alcohol and drug use). Some programs also deal with mental health issues that can be managed in an out-patient setting. Programs involve use of the natural consequences of primitive living and travel to provide the stimulus for surfacing stress and behavioral patterns that can then be addressed through individual and group therapy sessions, as well as some solo activities in certain programs. Often these therapy and healing WEPs operate for long periods of time (21 to 60 days) in wilderness or wildland areas and are supported by professionally trained mental, social, and medical staff that travel in the field near the group to provide programmatic and emergency services as required.

Russell and others (Russell and others 2000; Russell and Hendee 2000) synthesized the delivery of wilderness therapy WEPs into three types of models:

1. **expedition** programs remain in the wilderness for the duration of the program and treatment process and are further subdivided into (a) **contained** expedition programs that are typically shorter and up to three weeks in length with the clients and treatment team travelling together and (b) **continuous flow** expeditions that are longer and up to eight weeks in length with leaders and therapists and other staff rotating in and out of the field during the program and treatment period;
2. **base camp** programs include structured facilities and activities in a base camp from which they take shorter expeditions and then return to base camp for follow up activities; and
3. **residential** programs that use wilderness experiences as a trip away from their facilities for some of their clients in longer-term residence programs like the Job Corps Centers.

A 1998 survey reported 38 therapy and healing WEPs operating. Five of these WEPs reported serving over 12,000 clients annually during 350,000 wilderness field days (Friese and others 1998; Dawson and others 1998a). These WEPs tend to focus on youth-at-risk and to some extent a wider clientele, who are referred by social service agencies, medical insurance companies, judicial authorities, and school officials. Many of the therapy and healing WEPs are part of a self-developed Outdoor Behavioral Healthcare (OBH) industry council to develop and keep high standards for their operation and to ensure the health and safety of their clientele. More recent

research is available about the OBH programs than for other therapy and healing WEPs.

While therapy and healing WEPs are a small number of programs within the broader WEPs, they have a well developed theoretical basis for their counseling and therapy activities. They fit well within the restorative aspects of wilderness as a place in nature where individuals learn to face some of their stresses and behaviors to foster growth in personal and social responsibilities and emotional growth to return to society (Kimball 1983; Gass 1993; Davis-Berman and Berman 1994a, 1994b, 2008; Russell and Hendee 2000; Russell 2001, 2006).

Therapy and healing WEPs are part of an emerging Outdoor Behavioral Healthcare (OBH) movement that uses similar theoretical approaches, therapy practice, expected outcomes, and standards of care and practice; however, not all OBH programs operate in wilderness (Russell and Hendee 2000). OBH programs most often serve adolescent males with a variety of emotional and behavioral disorders who have been to traditional counseling services and were unsuccessful and are now in an OBH program as an alternative, either through adjudication or referrals. A study in 2006 of the OBH programs in North America (Russell and others 2008) reported that the industry was still relatively unknown to those outside the industry and that standards were improving for the OBH industry programs, but were not uniform. The study summary noted these 2006 benchmarks that were improving for OBH programs:

- 84% were licensed in an operating state as an OBH program;
- 51% were nationally accredited by an OBH Council that requires monitoring of outcomes and the ratio of licensed staff to clients;
- 30% were nationally accredited by an outdoor education association that requires risk management and staff credentials;
- 88% had licensed mental health professional staff; and
- 95% evaluated treatment outcomes for clients & family.

One of the reasons that the OBH industry has worked at improving its accreditation standards is concern about several well publicized cases of abuse and death in programs for troubled youth (Kutz and O'Connell 2007). While cases of abuse and neglect are rare, they are of great concern to the public and the public agencies charged with oversight of the health care industry. Oversight includes reviewing whether programs were achieving desired outcomes or not (Winterdyk and Griffiths 1984). The OBH industry and some of its prominent spokespersons and program leaders have shown the necessary leadership and research evidence on the positive therapeutic outcomes and social benefits of their programs to maintain a positive and constructive force for therapy and healing WEPs.

Given the need for evaluation and assessment of the therapy and healing WEPs and the OBH and overall health care industry, more published literature exists for measuring the outcomes and results from these types of programs than any other type of WEP. The number of publications, especially peer-reviewed articles, and scholarly work has increased in the last decade and has focused on six subjects that relate to therapy and healing WEPs:

- WEP and OBH program delivery process, techniques, and activities used to achieve program goals and desired outcomes (Russell 1999; Russell and Hendee 2000; Russell and others 2000; Wilson and Lipsey 2000; Russell 2000; Russell and Phillips-Miller 2002; Russell 2008; Walsh and Russell 2010);
- Client self esteem issues (Harper and others 2007);
- Client improved emotional and behavioral self control (Harper and others 2007; Gillis and others 2008);
- Maintenance of positive change, such as abstinence from drugs and alcohol (Harper and others 2007; Gillis and others 2008);
- Family involvement in the OBH and WEP process (Harper and others 2007; Harper and Russell 2008); and
- OBH and WEP staff well-being and safety (Marchand and others 2009).

The publications shown as examples are part of a growing movement toward more rigorous evaluations of programs, their outcomes—both immediately and over time—and factors that foster success and maintenance of positive behaviors in personal life and in home environments. Generally, these publications report positive short-term and long-term changes in behavior toward overall health, mental and emotional balance, better personal decision-making, less self destructive behavior, and a variety of other outcomes related to client needs and program goals. The overall effect of these programs varies from little or no measurable immediate effect to more dramatic and immediate effects; however, more research is needed to document these positive therapeutic outcomes and social benefits over a longer time frame and to compare outcomes between therapy practices.

Research Conducted

The research conducted to date has been largely descriptive studies of the various types and number of WEPs, types of clientele, operational size and approaches, risk assessments, and WEP goals and objectives (Gibson 1979; Friese and others 1995; Moore and Russell 2002). Some hypothesis and theory driven research has been conducted to assess the performance and outcomes from therapy and healing WEPs, but very little hypothesis and theory driven research on educational or personal growth WEPs (Friese and others 1995; Russell and Hendee 2000; Moore and Russell 2002). Following a detailed review of 187 pieces of research-based literature regarding WEPs, the OBH industry, and visitor experiences in wilderness, Moore and Russell conclude with this summary observation:

> "Findings tend to support the notion that participation in wilderness experience programs results in positive benefits, such as enhanced self esteem and sense of personal control, and negative results from participation are virtually non-existent. However, this compilation of research based literature suggests that much of the

> research in the field is reported in non-peer reviewed outlets and 'grey' literature, with less than expected in scientific journals and serialized professional outlets. Consistent with this observation is a lack of rigor noted in the sources of data on which findings are based (heavy to surveys) and the principle research methods used (few experiments or comparative studies). Additionally, there are few long term studies." (2002, p. 144)

Since that review, a growing body of research has been published in a wide variety of peer-reviewed journals that have given credibility to the OBH industry, in particular, and the WEPs, in turn, have used this research to improve programs, operations, and outcomes. Following the development of the WEP typology, research on WEPs has indicated six emerging trends: (1) the number of WEP programs and overall client numbers remain fairly stable even though the smaller programs come and go and the larger programs continue to survive and adapt to changing economic conditions; (2) access is the key issue for all programs as wilderness use permits become more difficult to obtain and use continues to increase; (3) all WEPs are developing very sophisticated risk management programs to deal with the perception that WEPs are risky, especially therapeutic programs; (4) as social issues arise, WEPs are becoming increasingly specialized, such as OBH programs for veterans dealing with Post Traumatic Stress (Ewert and others 2010), cancer survivor programs and young adults struggling with substance use issues ages; (5) the increasing presence and communication within an international community that helps to improve and inform practice; and (6) the incorporation of cultural and place factors in the design and development of WEP programs.

Management Concerns And Research Needed

Wilderness management concerns have been raised about managing WEPs related to social, ecological and managerial impacts, as well as how, where, and under what conditions to allow WEP use of wilderness (that is, where it is appropriate to have larger groups that spend long periods of time in wilderness). One example of a management concern that has been widely expressed is whether WEPs are partially or completely wilderness dependent or whether they can use wildlands that are not designated wilderness (Krumpe 1990; Dawson and others 1998a; Ewert and others 2006). A survey of WEPs found that 75% to 92% of WEPs reported that they were moderately to highly dependent on wilderness characteristics for delivery of their program, regardless of the type of WEP (Table 1). Only 50% to 57% of WEPs reported that they were moderately to highly dependent on NWPS wilderness areas for delivery of their program, regardless of the type of WEP (Table 2). Only 32% to 55% of WEPs reported that they spent 51% to 100% of their trip or program time in wilderness (Table 3). These findings are in contrast to a study of wilderness managers that overwhelmingly perceived WEPs as **not** being dependent on designated wilderness (Gager and others 1998). Krumpe (1990) has recommended that WEPs should be encouraged to use areas with wilderness characteristics but outside designated NWPS areas when possible, which is seemingly what some WEPs are already practicing. More recent research has not been published on this trend.

Most of the seven other general types of management issues raised require additional research and have been raised as concerns by both managers and the WEPs. The priority order for those research projects is proposed to be as follows, based on the need to balance WEP use of wilderness with wilderness stewardship principles:

- the policy issues of how to regulate and permit WEP use of wilderness and whether they should pay to use wilderness (Krumpe 1990; Dawson and others 1998a; Gager and others 1998; Ewert and others 1999; Ewert and others 2006; Dawson and Hendee 2009);

Table 1—Dependence on wilderness characteristics by percent of wilderness experience programs reporting (Dawson and others 1998a).

Dependent	Education	Personal growth	Healing/ therapy
High	61	76	50
Moderate	24	16	25
Somewhat	15	8	25
None	0	0	0
Total	100	100	100

Table 2—Dependence on National Wilderness Preservation Systems areas by percent of wilderness experience programs reporting (Dawson and others 1998a).

Dependent	Education	Personal growth	Healing/ therapy
High	24	27	31
Moderate	30	30	19
Somewhat	29	25	25
None	17	18	25
Total	100	100	100

Table 3—Percent trip/program time in wilderness by percent of wilderness experience programs reporting (Dawson and others 1998a).

Time	Education	Personal growth	Healing/ therapy
0 to 10%	26	10	25
11 to 30%	27	12	19
31 to 50%	15	23	19
51 to 75%	16	26	6
76 to 100%	16	29	31
Total	100	100	100

- how to balance use by WEPs with other user groups like commercial and private recreational groups (Gager and others 1998; Dawson and Hendee 2009);
- whether WEPs pose an activity and goal conflict with other users through sight, sound, or physical equipment used during counseling, recreational, or physical and adventure challenge activities (Dawson and others 1998a; Krumpe 1990; Gager and others 1998; Ewert and others 2006);
- whether the longer time periods of occupancy and larger group travel in wilderness causes disproportionate environmental or social impacts compared to other users (Krumpe 1990; Gager and others 1998);
- whether risk assessments of WEP programs are conducted and any increased need for search and rescue operations (Dawson and others 1998a; Krumpe 1990; Ewert and Hollenhorst 1997; Gager and others 1998; Tangen-Foster and Dawson 1999; Cooley 2000);
- whether there is any need for increased law enforcement in areas where youth-at-risk WEPs operate (Ferguson 2009); and
- how the expected human and social benefits of restorative wilderness experiences can be better documented (reduced recidivism, reduced substance abuse, and so on) (Moore and Russell 2002).

Additional research and information to help managers to understand and manage WEP activities, programs, and appropriate use of wilderness is needed (Krumpe 1990; Gager and others 1998; Russell and Hendee 2000). Dawson and others (1998a) concluded that "wilderness managers need to better understand WEPs and work with them to foster a better appreciation of wilderness as a resource for a variety of users, appropriate wilderness use and user behavior, and the need for wilderness management" (p. 104). This conclusion still applies today. While some managers would like WEPs to operate outside of designated wilderness areas, as much as program delivery would still allow the program to achieve positive outcomes, this may reduce some support for wilderness and future designations.

WEPs are generally considered to provide many human and societal benefits and the research documentation is slowly growing to support the notion that nature and wilderness does provide restorative visitor experiences. Thus, WEPs may become increasingly important as a vehicle for some people to experience and appreciate wildness, wilderness, and nature, especially when their other life experiences may not have brought them in contact with wilderness.

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Wilderness at Arm's Length: On the Outside Looking in at Special Provisions in Wilderness

Alan E. Watson

Abstract—While there is a long history of research on factors influencing wilderness recreation visitor experiences, there has been little focused research to understand the experiences of users visiting wilderness under legislative special provisions or the impact of these special provisions on wilderness recreation visitors. There are some exceptions. For example, contrasting motorboat user and canoeist experiences and their impacts on each other in the Boundary Waters Canoe Area Wilderness were topics of research even before the Wilderness Act was passed. Livestock grazing in wilderness is a particular kind of commercial special provision which impacts visitor experiences and has been studied in Colorado wildernesses. River floaters in at least one Idaho Wilderness can encounter motorized jet boats (a special provision use).We know these are often negative encounters for floaters. We commonly approach the jet boat user as a nonconforming user and thus a source of the conflict rather than trying to understand the experiences they are receiving and how to manage encounters to benefit both types of users. Aircraft, a unique special provision providing access in a few places in the Lower 48 and broadly in Alaska, play different roles in experiences in different places. Commercial use, though it is sometimes described as a traditional use of wilderness in the U.S., is actually a special provision in the Wilderness Act to the extent necessary for realizing recreational or other wilderness purposes. There is not a great deal of evidence that non-commercial visitors are influenced negatively by encounters with commercial visitors, though commercial and non-commercial user experiences are believed to be very different. Some limited research has begun to look at combinations of commercial and access special provisions (such as Denali visitors who use air taxis to reach remote glaciers, or Denali visitors who take a bus on a road bordered by the Wilderness). This research describes unique experiences associated with wilderness dependent activities that may be only "near wilderness" experiences or experiences that keep wilderness at arm's length, in the process revealing some values of protecting these places as wilderness not previously described.

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Introduction

There is a long history of studies to understand some aspects of wilderness visitor recreation experiences (Cole and Williams in press). Hendee and others (1978) described one of the central themes of the wilderness movement as a focus on solitude experiences offered by unmodified natural settings. There has been a great deal of research to understand these solitude experiences to assure that managers are protecting them in wilderness. Some of that research continues to be replicated in 2012, often with a need for place-based guidance to protect unique experiences or protect experiences from unique threats. Guided by direction within the Wilderness Act to protect these places for enjoyment as wilderness, work by pioneering scientists in the 1960s and 1970s was largely focused on exploring the implications of specific terminology (such as, opportunities for solitude) within the Wilderness Act to guide management decisions (such as, use limits) and monitoring (such as, crowding). Understanding how this enjoyment was impacted for visitors has been a significant task, particularly because people do not generally agree on evaluations of influences on visits to these places. Some people may have specific social characteristics they know they desire, such as true solitude or opportunities to interact with their small group in relative isolation and natural conditions, and some may be more focused on the environmental attributes or activities they engage in there (Watson and others 1993).

Early scientific exploration of wilderness purism and wilderness values extended across visitor perceptions of the importance of a broad array of attributes. Research to define influences on experiences in wilderness focused mostly on things that influenced solitude such as crowding, or on visitor impacts, such as heavily used campsites, that defined low-impact concerns and depicted how wilderness was going to be different from other public lands places. Hendee and others (1978), however, suggested there were many aspects of wilderness experiences, including nature appreciation, education, freedom, solitude, and simplicity, as well as spiritual, aesthetic, and mystical dimensions of a wilderness experience. But the only one of these experiences specifically listed in the Wilderness Act was solitude. Hendee and others (1978), in the first edition of the *Wilderness Management* textbook, concluded, however, that the listing of solitude, along with primitive and unconfined type of recreation in the definition of wilderness in Section 2(c) of the Wilderness Act was to help Congress

clarify its intent, not as specific requirements for inclusion as wilderness. But they also concluded, in 1978, that naturalness and solitude were distinguishing qualities of classified wilderness, differentiating it from other public lands. These scientists certainly influenced the focus of wilderness experience science on solitude as the most important aspect of visitor experiences for research and for management strategies. Dawson and Hendee (2009), in the fourth edition of the *Wilderness Management* textbook, continue to emphasize solitude and naturalness as the defining qualities of wilderness conditions.

This solitude research manifested itself in studies of crowding and response to human encounters for many years. By the 1990s, however, Watson and Williams (1995) emphasized the need to look beyond the concept of crowding more to define wilderness experiences; there were many things influencing visitor experiences and scientists had only recently begun to study some of them—at that time, mostly only primitive and unconfined aspects of experiences (such as, Shafer and Hammit 1995). Watson and Williams (1995) demonstrated that while wilderness experience research had mostly been studied from the perspective of interaction with other wilderness recreation and its management, there are many more influences on wilderness experiences that need to be understood, monitored and managed (Figure 1). This discussion extended to such examples as the impact of livestock on wilderness experiences, encountering mining or water projects, and "other." If we developed this matrix today, we would probably more likely, and more appropriately, lump these examples into legislative special provision uses, or legal exceptions. At that time we had not developed the interest or a strategy for studying special provisions and their role in wilderness experiences.

Watson and Williams (1995) concluded that with such a broadened perspective of potential influences on wilderness experiences, desirable wilderness experiences were yet to be defined and agreed upon and, as such, the benefits, meanings and values of wilderness and wilderness experiences were poorly understood. More research to address a broader range of threats to wilderness experiences was encouraged and a significant need was evident to extend research beyond "conforming" uses and acknowledge there were many things going on in wilderness that were not defined within the Wilderness Act definition in part 4(c), which prohibited commercial enterprise, permanent roads, motor vehicles, motorized equipment, aircraft landing, mechanical transport, structures, and installations. These things were sometimes allowed as special provisions in specific places and likely influenced wilderness experiences substantially.

Sometimes referred to as "nonconforming uses," Section 4(d) of the Wilderness Act includes eight special provisions that apply to all of the Wilderness designations in 1964 as well as all subsequently designated wilderness. Browning and others (1988) defined special provisions as "specific guidelines for allocation and management based upon unique circumstances of local or regional concern." When included in wilderness legislation, special provisions or other specific management directions establish legal direction for designation and also for management of use of a wilderness (Dawson and Hendee 2009).

The special provision data base on *wilderness.net* (a web site provided by the U.S. federal wilderness management agencies through The University of Montana), described by Craig and others (2010) provides access to legislative content for several

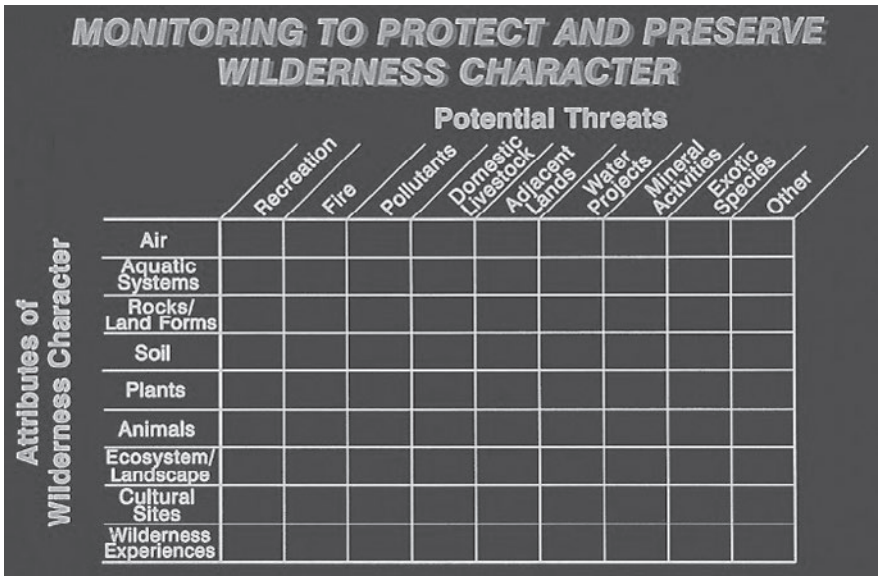

Figure 1—A monitoring framework from the early 1990s illustrates the complex set of hypothesized influences on wilderness experiences (Landres and others 1994, Cole 1994, Watson and Williams 1995).

categories of special provisions or specific management directions contained in legislation: access, commercial use, general administration, motorized/mechanized use, public use and facilities, natural and cultural resource management and water (see Table 1) or by wilderness area. This data set is simply an electronic form of the special provisions collected across all legislation, in one place. There is no listing of associated research or any visible presentation of information under any of these categories to guide interpretation of the legislation for managing to protect or enhance visitor experiences in the context of special provisions.

Dawson and Hendee (2009) concluded that legislative intent is a complex matter that often requires additional understanding about the situations that led to the need for the special provision in order to make management decisions. Since 1964, and passage of the original Wilderness Act, 170 additional laws have been passed that set aside more than 700 areas and 107.4 million acres in forty-four states (Dawson and others 2010). These analysts predict that there will be a continuing trend in wilderness laws toward omnibus legislation covering more than one area, often in individual states, and the inclusion of more language to affirm and clarify management direction to address local concerns. Congress will likely hold the line, however, on proposals for major exceptions and unique provisions in wilderness laws or amending the Wilderness Act (Dawson and others 2010).

A Process for Incorporating Special Provision Intent into Management Decisions

Watson and others (2004a) argued we should work to understand these special provisions and the people who they serve and we should work to both protect these legislated public purposes of wilderness outside the definition of Section 4(c) of the Wilderness Act and to minimize impacts of these special provisions on wilderness use and users that are described in Section 4 (c) of the Wilderness Act. Watson and others (2004a) acknowledged that while there was very little research on special provisions, more than half of our National Wilderness Preservation System (NWPS) at that time had entered into the system in Alaska under the Alaska National Interest Lands Conservation Act (ANILCA), which is itself very much like a special provision, and also has many special provisions. This analysis provided a foundation for several studies to take an open-ended approach to define wilderness experiences that were not well defined in the Wilderness Act (such as, Patterson and others 1998, Watson and others 2004b, Glaspell and others 2003, Knotek and others 2007, Watson and others 2008), as well as complimentary work in the eastern arctic of Canada (Watson and others 2007), in South Africa (Shroyer and others 2003), and Brazil (Magro and others 2007) to further explore place-based wilderness attributes and experiences in other cultures.

Watson and others (2004a) outlined a science process for investigating special provisions and then demonstrated that process through a series of studies on jet boat users on the Main Fork of the Salmon River in Idaho (Table 2). Jet boat use preceded wilderness designation of the Frank Church – River of No Return Wilderness (FC-RNRW)by the Central Idaho Act of 1980 and therefore jet boat use was "provisioned in" at a level "…not less than that in existence in 1978." Although the Main Fork of the Salmon River is running through the middle of the Frank Church – River of No Return Wilderness, it is classified as a Wild and Scenic River with a recreation emphasis. The amount of both floater and jet boat use is limited during the high use season. In the process described by Watson and others (2004a), incorporating guidance from Meyer (1999), the legislative history of this special provision is first documented. Meyer described a process for approximating the judicial review hierarchy to fully understand legislative intent. The content of a statement during legislative negotiation may not be as important as where and when it is said. Context is everything, so to speak.

Next, a study that focused on understanding the relationship between jet boat community leaders, the place and the activity, was undertaken to develop a baseline understanding of the things they would like to have protected about their experiences and use, whether they are called for in the special provision legislative history specifically, or not. These jet boat

Table 1—Categories of special provisions database on wilderness.net (Craig and others 2010)

Special provision category	Examples
Access	easements, motorized, tribal
Commercial Use	grazing, mining, recreation, timber
General Administration	buffer zones, administration, inholdings, pre-existing uses/rights
Motorized/Mechanized Use	aircraft, motorboats, vehicles
Public Use and Facilities	structures, roads, signs, hunting
Natural and Cultural Resource Management	fire management, insects, invasives, fisheries, monitoring, wildlife management
Water	facilities, resources, rights/laws

Table 2—A sequential process for investigating special provisions, used with jet boat use on the Main Fork of the Salmon River in Idaho by Watson and others (2004a).

Essential steps to understand special provisions
1. Document and determine legislative intent
2. Develop understanding of the relationship special provision users have with the place and the activity (deep meanings) through qualitative studies
3. Develop understanding and test hypotheses with the larger population of special provision orientation through quantitative studies
4. Examine impact and causes of that impact on other (conforming) visitor experiences

community leaders needed to establish better understanding of the standing of their demands, as well as establish common ground with federal managers about the things they value about this place and activity. Hypotheses were developed from this in-depth understanding and a whole set of questions were posed to a much larger population (everyone who could be identified as ever being on a jet boat on the Salmon River inside the FC-RNRW) of visitors in order to understand how consistent the important things jet boat association leadership perceived were to the larger participating public. And finally, as part of a study of floaters, scientists developed knowledge about what aspects of jet boat use affect floaters in what ways. While managers do not generally have the luxury of this level of knowledge about every special provision use in wilderness, there is some knowledge about some of these uses and the impacts on them and their impacts on other users.

The purpose of this paper is to briefly describe research knowledge accumulated about several special provision uses in wilderness. Specific interest is in understanding first if there are unique experiences of the participants in these special provision activities, whether or not specified in the Wilderness Act, but important to protect. Second, what do we know about how implementation of these special provisions interacts with other attributes of wilderness to influence "conforming" user experiences? A third purpose of this paper is to identify important potential research areas needed to guide management decisions better into the future.

Special Provision Case Studies

Six specific uses that are enabled through special provisions legislation have been studied enough in the wilderness context to contribute to development of a common body of knowledge. This paper will present some examples of research on motorboats, livestock, jet boats, aircraft, ANILCA (with its own set of special provisions), and commercial use. While there are some studies that have included individual questions to assess public opinion about some of these and other special provisions, it is difficult to find additional studies or papers that contribute collectively to our knowledge on these topics.

Motorboats

Lands and water on the Superior National Forest in northern Minnesota have been managed for wilderness qualities for a long time. Even prior to wilderness designation, Lucas (1964) was surveying visitors there to explore differences in perceptions of wilderness attributes among motorboat and canoe paddlers in what was later designated the Boundary Waters Canoe Area Wilderness. Just prior to the initial designation of lands and water there as wilderness, 75% of paddlers and 62% of motorized users were able to describe the "wilderness qualities" of their visits there. Motorized boat users, however, tolerated heavier use, more roads and more developments within their definition of wilderness experiences (Lucas 1964). Lucas (1964) also reported that canoeists in the Boundary Waters Canoe Area preferred much lower use levels than did motorboat users. He also concluded that the level of use people report as preferred or tolerable is not independent of the type of use involved. Similar to the long standing and replicated research at the Boundary Waters Canoe Area that demonstrated asymmetric conflict between these two groups (such as, Adelman and others 1982, Ivy and others 1992, Lucas 1964), it appears that these two groups experience and evaluate wilderness attributes at the same place very differently.

While there are not many places where motorboats are a special provision in wilderness, the Boundary Waters Canoe Area Wilderness presents an opportunity for longitudinal understanding of this special provision and how it likely interacts with wilderness experiences (Lucas 1967, Cole and others 1995, Watson 1995, Dvorak and others in press). Visitor studies in 1991 and 2007 displayed very different proportions of private motorboat users, with a decrease from 11% to 5% at the BWCAW. Possibly related, across all users, the proportion fishing decreased from 83% to 77%. The motorized use there is mostly connected to fishing. Those indicating fishing was a priority for the trip decreased from 47% to 35%. There were many changes evident at the BWCAW from studies in the 1960s to 2007, including an older group of visitors, slightly smaller group sizes and higher education and income levels. Trip length demonstrated a slight increase trend for overnight visitors. Among the most dramatic changes, however, were perceptions of being overcrowded at this, the most heavily

used wilderness in the U.S. In 1969, 73% reported not being overcrowded; that level fell to 44% in 1991 and further dropped to 38% in 2007. Impacts from encounters with motorboats seem to be a fairly small problem at this area and likely decreasing, with an historic motorboat use segment in only a couple of areas authorized under a special provision.

Cattle/Livestock Grazing

The Wilderness Act included a special provision that allowed livestock grazing to continue where it existed prior to the designation of an area as wilderness. The 1980 Colorado Wilderness Act further clarified that livestock grazing could not be curtailed because of wilderness designation. In the 1980s, more than 35% of U.S. wilderness areas had active commercial grazing rights established (Reed and others 1988), and at that time it was predicted that grazing was likely to increase as mid and lower elevation BLM roadless areas were added to the NWPS. Dawson and others (2010) found 19 wilderness designation laws that included similar management direction as the Colorado Wilderness Act of 1980, concerning grazing activities and facilities on U.S. Forest Service and Bureau of Land Management wilderness lands.

As early as 1949, scientists were trying to understand public attitudes toward grazing in areas publicly protected as wilderness (Johnson and others 1997). Well before passage of the Wilderness Act, these studies found qualified acceptance for grazing as a nonconforming use "only by sufferance and with a view to its eventual elimination" (Johnson and others 1997). Livestock grazing was never suggested as a value or use protected by the Wilderness Act, but in fact, has always been acknowledged to be nonconforming and a negotiated commercial interest compromise in order to protect other wilderness attributes of these areas. While livestock grazing has been categorized (Craig and others 2010) as a commercial special provision, there has been some limited research on public response to it more as a nonconforming use than just a commercial activity. Encountering cattle in an area protected for enjoyment as wilderness is more than just encountering a commercial activity, probably due to the widespread physical impacts very evident from cattle and sheep.

Brunson and Steele (1994), for example, found the public believed overgrazing and poor water quality due to livestock impacts were important problems on public rangelands. A majority of the public supported the establishment of more rangeland areas as wilderness but did not support livestock grazing in established wilderness. In addition to the ecological impacts that concerned the public, grazing impacts have been found to affect aesthetics perceptions for visitors (Sanderson and others 1986).

Johnson and others (1997) reported from a sample of nearly 600 visitors to several wildernesses in Colorado that 40% considered livestock grazing in wilderness to be unacceptable (Table 3). Only 32% could accept grazing in wilderness with improved range conditions and responsive adjustments in livestock numbers and management methods; the rest either thought grazing was okay (11%) or did not have clear positions on the issues (17%). A majority of the wilderness visitors surveyed reported that direct encounters and livestock impacts detract from a wilderness experience. Johnson and others (1997) also found some specific things about cows that had negative impacts on visitor experiences: cows near camp (87% said it was negative), manure in camp (88% said it was negative), and cows or their impacts near streams (82% said it was negative). However, the public did identify some things that they might enjoy about encountering cows, including calves with mothers (18% said it added to the experience), cattle in the distance (15% said it added to the experience), and cowboys with cattle (16% said it added to the experience). Although these are the most positive things about encountering cattle, even these things had even higher percentages of visitors who considered them a negative impact on experiences (52%, 54%, and 47%, respectively). There seems to be nothing about cattle grazing in wilderness, except seeing cowboys with cattle, that does not detract from the experience of the majority of visitors (Johnson and others 1997).

Table 3—Wilderness visitor agreement with position statements regarding livestock grazing in wilderness. (Johnson and others 1997)

Position statement	Percent (%) agree
Grazing in this wilderness, as it is now managed, is acceptable. Numbers of livestock and grazing fees should be kept at current levels.	11
Grazing in this wilderness is acceptable as long as management continues to improve the range condition; protection of streams, lakes, and native flora and fauna, and reduces conflicts with other users. Adjustments in livestock numbers and management maybe be necessary	32
Grazing is not an acceptable use of this wilderness. It degrades the land, favors livestock over wildlife, is not cost-effective, and conflicts with other uses.	40
I do not know enough about grazing in this wilderness and therefore cannot make a fair judgment about any of the positions stated above.	17

Biophysical impacts of grazing were more objectionable than were the social impacts of cattle (Johnson and others 1997). Eighteen per cent of visitors said their experiences were interfered with by other visitors (crowding, litter, inappropriate behavior) while 15% reported livestock to be a problem with their experience. Nineteen per cent of visitors attributed problem resource impacts to people, 17% to livestock. Two-thirds reported direct encounters with cattle detracted from a wilderness experience. But they also reported that their wilderness experiences were negatively impacted by encounters with outfitters (65%), cowboys with cattle (63%), other visitors (54%), horses or mules (51%), and dogs (48%). The cows have never seemed to mind the recreation visitors, though ranchers are sometimes nervous about potential impacts to grazing areas from potential increases in recreation users due to designation of areas as wilderness.

Jet Boats

A special provision that did not include regular motorboats or jet ski use on the Salmon River, did make a provision for jet boats. Rafters on the Main Fork of the Salmon River, floating through the heart of the Frank Church – River of No Return Wilderness (FC-RNRW), were asked hypothetically about their likely response to the number of jet boats they might see. The number of jet boats to be seen was ranked seventh in whether it would matter to their wilderness experience, behind human waste, litter, tree damage, number of wild animals seen, groups camping within sight or sound, and human caused vegetation loss they encountered. The number of delays to their downriver trips caused by jet boaters (while coming up through rapids or passing rafts) was tenth, immediately after the size of float parties seen, and amount of time spent within sight of floaters while moving down the river (Hunger and others 1999).

When asked about problems they had on their specific trips, however, jet boat encounters was ranked first, followed by number of modern structures and low-flying aircraft. Overall, Main Fork floaters desired visitor experiences centered on perceived naturalness (getting away from crowds, feeling a part of nature, experiencing peace and tranquility, escaping noise, leisure, seeing wildlife). This was more important than personal wilderness challenges, health and spirituality, historical and cultural influences, but not higher than being with friends. For jet boaters, 66% also indicated they enjoy solitude while jet boating, although 52% indicated the number of other people they meet on the river is not important to the experience they have, 70% said the number of structures they might see is not important and 85 percent said their experience is not influenced by seeing small aircraft flying overhead. Of these jet boat users, 85% think of this time as an important family experience and 98% consider it important or very important to protect access to this activity at this place for future generations. Seventy-nine percent agreed that their experience while jet boating on the river was the same as the experience of nonmotorized floaters and 76% thought it was the same as those riding horses. Only 33% would go on the river if they couldn't go on jet boats, however. Some people might interpret special provisions like this one as creating "exceptions" to true wilderness, whereas others, like these jet boaters, interpret them as means of accommodating different orientations toward wilderness (Table 4).

Table 4—Propositions generated from in-depth interviews of jet boat association leadership and tested through quantitative survey of jet boat community.

Propositions:
1. Being close to nature is important to jet boaters.
2. Opportunities to experience solitude in a remote setting is valued by jet boaters.
3. Jet boating is a family experience, or an opportunity to pass on important values to others.
4. Jet boaters exhibit strong attachment to place, or opportunities to spend time in the Salmon River Canyon is important to them (they have a strong personal history, are deeply involved).
5. Jet boating is challenging, with a certain amount of risk as in any whitewater activity, and current regulations influence the perception of safety by limiting the ability of boaters to travel in groups.
6. Jet boats are consistent with wilderness and wild and scenic values to jet boaters.
7. Jet boaters appreciate the cultural history of the river corridor.
8. Jet boaters perceive some other users as having unrealistic expectations about their journeys along the Salmon River.
9. River planning should be addressed from a regional perspective, not river by river.
10. Jet boaters believe that environmentally responsible behavior by all users is important in order to protect the resource.
11. It is important to teach river etiquette to all users.
12. Jet boaters believe in "responsible shared use" – fair, equitable access to the resource and opportunity for growth with other user groups.

The Central Idaho Act of 1980 was silent on the nature of the experience to be provided to these jet boaters. Research on jet boaters, however, focused on understanding user experiences and relationships to place (Watson and others 2004a). On the one hand, results suggest that jet boaters seek traditional wilderness values, but on the other, it reveals apparent contradictions. However, rather than reflecting a unique situation, these sorts of contradictions or tensions are evident among other wilderness uses at other places as well (Glaspell 2002).

Aircraft

The Wilderness Act states that "..within wilderness areas designated by this Act the use of aircraft or motorboats where these practices have already become established may be permitted to continue subject to such restrictions as the Secretary of Agriculture deems desirable" (section 4(d)1). Three wildernesses outside of Alaska have active airstrips, in Montana and Idaho (Meyer 1999). These provisions provide access for hunting, fishing, boating, wilderness administration and scientific research. In addition, touchdowns, where pilots land on backcountry airstrips for the challenge of the landing rather than for access to the wilderness, are popular among some pilots.

In 1999 the FC-RNRW had 31 operational airstrips within its boundaries, 12 on federal land. "The sights and sounds of aircraft operating at or near landing strips and the noise of low level overflights probably disturb the quiet of the wilderness, and aircraft activities have the potential to affect wildlife species, particularly those at landing sites located on or near key wildlife habitat" (USDA Forest Service 1998:1-37). In the FC-RNRW, jet boaters were not bothered by overflghts. On the Middle Fork, private boaters, however, rated low flying aircraft as a big problem for 29% of the people, while only 5% of commercial boaters rated them a big problem.

There have been no known studies specifically focused on the experience motivations of wilderness pilots or aircraft passengers in the lower 48 wildernesses, though some studies in Alaska have touched on this topic. In Alaska, these special provisions provide access for flightseers that might touch down in Wilderness or not, glacier landings in remote locations, private recreation pilots, subsistence users, and commercial flight access for backpackers, rafters, and hunters and anglers. Aircraft access is a large part of access to remote locations in Alaska.

Fidell and others (1996) suggested that the prevalence of aircraft noise-induced annoyance (in any degree) among respondents in several wilderness areas ranged from 5% to 32%. So, annoyance of people and how that might interact with wilderness experiences is still unclear, but Tarrant and others (1995) suggested that overflights have a greater effect on visitor solitude and tranquility than on annoyance—that whatever the annoyance level might be, impacts on solitude experiences is much higher.

Alaska National Interest Lands Conservation Act (ANILCA)

Watson and others (2004b), in an attempt to illustrate unique aspects of wilderness experiences in Alaska, cited one student at the University of Alaska – Anchorage, who commented that "In the Lower 48, if you can drive there it isn't wilderness, you have to walk. In Alaska if you can walk there it isn't wilderness, you have to fly" (Figure 2). Another quote from a

Figure 2--One Alaska student commented "In the Lower 48, if you can drive there it isn't wilderness, you have to walk. In Alaska, if you can walk there it isn't wilderness, you have to fly" (Watson and others 2004). US Forest Service photo.

different student trying to express perceptions of unique aspects of Alaska wilderness was "In the lower 48 the wilderness is surrounded by development, in Alaska the development is surrounded by wilderness, and that is surrounded by wilderness." Both of these quotes are intended to help people understand that while the Wilderness Act was mostly aimed at protecting threatened lands in the continental 48 states, there is tremendous wild country in Alaska, some of which is protected and some of which is not. When the Alaska National Interest Lands Conservation Act (ANILCA) was passed in 1980, establishing over 50 million acres of wilderness protection in Alaska, not only was the geography different, but the relationships people have with these places were different, too. ANILCA acknowledged these differences by providing for motorized access, subsistence benefits and some continued mineral extraction and other commercial uses.

In recent years, several studies have tried to capture some of the unique aspects of wilderness experiences in Alaska (for example Glaspell and others 2003, Watson and others 2004b) and in some cases some of these special provisions have been found to be especially important parts of the experiences. For instance, at Gates of the Arctic National Park and Preserve, "access" and "risk and uncertainty" were found to be important dimensions of current park experiences that managers may find unique enough to try to protect. In fact, these dimensions may represent what is most unique about the experience opportunities at Gates of the Arctic (Glaspell and others 2003).

While these proceedings are intentionally focused on recreation visitors to wilderness, it is the intent of this paper to explore research conducted on the experiences of people engaged in these special provision activities. In Alaska, subsistence users are not only Alaska Native people, but rural people following a traditional path of survival and relationships with nature (see for example Collins and Collins 2005, Whiting 2004). Whiting (2004), in particular, describes data obtained from active hunting and gathering families in the Western Arctic of Alaska that suggests their experiences, while in federal wilderness (or any other areas where they engage in traditional hunting and gathering activities), are centered on identity, traditional way of life, survival, opportunities for personal growth, expression of humility, maintaining mental and physical health, and expression of independence associated with self-sufficiency. While other segments of society may also attribute some of these meanings to wilderness, they are not terms used within the Wilderness Act and management to protect these benefits is not commonly prescribed.

The things they suggest impact these experiences are sometimes more unique to federal protected lands, such as agency restrictions and regulations—the National Park Service not understanding the Qikiktagrugmiut "way of life," their perception of competition with the National Park Service for land in-holdings, trash, lack of respect shown by outsiders, NPS employees camping nearby when native people are on the land, airplanes, sport hunting, and the increasing number of visitors to these areas. But they also acknowledge threats to their experiences from modern technology, global warming, and their own lack of teaching land ethics to their young people. Research on wilderness visitor experiences in Alaska has mostly been separate from management of subsistence use and users. More recent examples, however, suggest the value of combining these purposes, though with sometimes different methodologies, to explore the interaction between these two very different orientations with wilderness and other wild places in Alaska (see for instance Christensen and others 2006).

Commercial Use

In the Wilderness Act, section 4(c) states "Except as specifically provided for in this Act, and subject to existing private rights, there shall be no commercial enterprise … within any wilderness area designated by this Act.." But in section 4(d), among the special provisions listed is item 6: "commercial services may be performed within the wilderness areas designated by this Act to the extent necessary for activities which are proper for realizing the recreational or other wilderness purposes of the areas." Dawson and Hendee (2009, p. 360) suggest that outfitting in some areas has drawn criticism for stressing comfort, convenience, and excessive facilities and technology that conflict with wilderness values, though they also describe commercial outfitting not as a special provision, but as "…a traditional use of wilderness permitted by the Wilderness Act and encouraged by wilderness managers in some areas.." In many areas, these commercial activities can be seen as both protecting traditional American wilderness values and being allowed under special provisions to accommodate existing uses and potentially impacting Wilderness values of other, non-commercial visitors.

Nationwide, the wilderness outfitting business is believed to be responding to the need for wilderness use that is light on the land, leaving no trace of use, and responsive to wilderness values and other users (Dawson and Hendee 2009). Some outfitters and some wilderness areas reflect this trend more than others. Outfitters can serve as educators of wilderness users to enhance visitor experiences and to promote wilderness stewardship. But there is suspicion that commercial visitors are very different people than private users. They may be there for different reasons and evaluate impacts on their experiences very differently.

Research at the FC-RNRW found that commercial floaters were about the same age as private floaters, but come from much more urban areas now, grew up in more urban areas, have much higher education levels, tremendously higher incomes, much less experience on the Salmon River, much less experience on any river, lower experience with commercial guides, far fewer trips where they guided their own boat and many less years since their first overnight float trip. They were more likely to self-evaluate themselves as beginner or novice (71%) rather than as intermediate or advanced or expert, to float in substantially larger groups and take shorter trips (Hunger et al. 1999) (Table 5). Commercial boaters were more likely to report fewer larger groups seen, more time within sight of other float parties and less time delayed at major rapids. They were less observant of modern structures each day, less observant of

Table 5—Launch-point survey results comparing characteristics of private and commercial floaters on the Salmon River, Frank Church – River of No Return Wilderness (Hunger and others 1999).

Characteristics	Private floaters	Commercial clients
Age (average years) [a]	41.9	42.9
Grew up in major metropolitan center of over one million people (%) [b]	12.0	21.7
Now live in major metropolitan center of over 1 million people (%) [b]	11.5	26.5
Educational achievement equip. to Ph.D. (%) [a]	13.8	20.6
Household income above $100,000/year (%) [b]	14.0	43.4
Previous overnight float trips on any segment of the Salmon River (average) [a]	5.1	.5
Previous overnight float trips on any river (average) [a]	27.4	3.9
Previous trips with a commercial guide (average) [a]	5.8	2.4
Previous trips where you guided your own boat (average) [a]	33.5	4.0
Years since first overnight float trip (average) [a]	12.2	5.8
Self-evaluation of river-running skills [b]		
a. Beginner or Novice (%)	33.6	71.0
b. Intermediate or Advanced (%)	53.7	28.1
c. Expert (%)	12.8	.8
Float party size (average) [a]	12.0	16.0
Length of trip in days (average) [a]	6.5	5.6

[a] means were significantly different for the two groups at $p \leq .05$ (Student t-test)
[b]Distributions of responses were significantly different for the two groups at $p \leq .05$(Chi-square analysis)

low-flying aircraft. They noticed less human-caused vegetation loss and bare ground at campsites, saw less human-damaged trees at campsites, and less litter, though it is difficult to believe they are really exposed to less of these things than private boaters. More likely, due to less experience and the dependence on guides to tell them what to do and how to evaluate what they see, they simply do not focus on the same things as private floaters.

It is easy to conclude that these commercial users, probably due to less experience and a much more casual relationship with wilderness and this river, have very different experiences when they encounter the same attributes as non-commercial visitors. But since their experiences are different, their attitudes toward management options are also different. Commercial users are much more likely to say number of people seen each day is not a problem. They say that camping within sight or sound of another party was not a problem, report less of a problem arising from human-caused vegetative loss and bare ground at camps, the number of modern structures seen, the amount of litter seen daily and the number of low-flying aircraft seen (Table 6). They are also much less supportive of reducing the allowable number of people per party or most other regulations aimed at protecting the wilderness character of this river.

Commercial user experiences as something we need to protect or as a specific influence on wilderness experiences (either of the outfitted or the guided or the effect of these outfitted or guided on noncommercial visitors) has not been explored nearly enough. Determining methods of judging "the extent necessary" is a high priority in wilderness management at the current time. Cable and Watson (1998) determined there were many proposed models for commercial use allocation decision-making, but very few are articulated well and many are not tested at all.

While commercial users and guided visitors to wilderness have not been studied extensively, there is a considerable literature on the role of guides in commercial ecotourism. Ecotourism is a subset of nature-based tourism with focus on raising awareness of the environment and its natural and cultural values. Guided ecotourism is often successful at gaining understanding about the environment for visitors and motivating visitors towards environmentally responsible behaviors (Haig and McIntyre 2002). While there are examples of studies that show a benefit of having guides to protecting the resource (Boren and others 2009), there is a large gap in the literature about the role of tour operators in protected area management, in terms of accomplishment of visitor management and resource protection objectives (Armstrong and Weiler 2010). In recent analyses of the role of tour guides, however, it is believed the potential contributions of their work can be described in four ways: instrumental (reaching their destination with safety and providing access), social (responding to tourist preferences to increase trip satisfaction), interactionary (promoting interaction between tourists and the environment) and communicative (instructing on what to see and how to behave) (Reisinger and Steiner 2008). Different types of guides tend to focus on different roles, but the aim generally is to produce mindful

Table 6—Take-out survey results indicating problems for private and commercial floaters on the Salmon River, Frank Church – River of No Return Wilderness (Hunger et al. 1999).

Potential Problem	Private floater no problem (%)	Commercial client no problem (%)
Number of people seen each day*	46.0	65.3
Amount of time within sight of other float parties	41.9	54.2
Number of times delayed at rapids by other float parties	78.4	79.2
Number of float parties that pass campsite	61.6	75.8
Camping within sight or sound of another party*	75.6	89.0
The amount of human-caused vegetative loss and bare ground at camps*	39.5	59.7
The amount of trees around a campsite damaged by people	54.8	68.6
The number of modern structures seen*	44.4	58.5
The amount of litter seen daily*	46.8	75.8
The number of low-flying aircraft seen*	46.8	56.7
Encountering human waste	68.5	80.7

*Distributions are different for the two groups

visitors (Reisinger and Steiner 2008), with higher satisfaction achieved on nature-based trips and greater support for protected area objectives.

For some time, the Forest Service has had a priority of better management of commercial uses in wilderness, but research topics have been difficult to define and resources hard to assemble. Recent interactions with wilderness-oriented membership associations have suggested that our managers must come up with better ways to evaluate "extent necessary" and consciously weigh benefits of wilderness special provision management alternatives for decision making.

Very closely related, recent research at Denali National Park and Preserve on commercial use has investigated the experiences of two kinds of primarily commercial users. Both have complex relationships with access provisions. At Denali, Hallo and Manning (2010) have described the near-wilderness experience of visitors who pay to ride a Park bus, a commercial bus, or drive their own recreation motorhomes along the 90 mile stretch of Denali Park Road (Figure 3). While nearly 2 million acres of Denali National Park are designated as wilderness, this 300-foot-wide corridor is excluded from this designation. The vast majority of visitors who venture beyond

Figure 3—The vast majority of visitors to Denali National Park and Preserve who see the wilderness see it from the park road, most on a commercial bus. US Forest Service photo.

the visitor center to actually see the wilderness of the park, see it from this road. Even most visitors who backpack, first travel to their trailhead via the park bus system. Well over half of the road users affirmed a feeling of being in the wilderness while traveling or stopping along this road. They described the road as surrounded by a vast, natural landscape. There was not much traffic or use along the road, few buildings and lots of wildlife while on the road. The wilderness dependency of experiences here are obvious, even though Hallo and Manning (2010) differentiated it from a normal wilderness recreation visitor experience as "on the edge, peering in."

Similarly, Watson and others (2008) studied commercial customers of air taxi operators at Denali. These flights were over very remote parts of the park, including wilderness, and landed at backcountry locations, managed under ANILCA for their wilderness recreation values. They found that gaining perspective of one's size and scale relative to their environment, seeing climbers, and landing on a glacier were among some of the potential factors important to flightseers' experiences. Again, while these experiences were not the typical, self-sufficient, self-reliant visits of many wilderness visitors, they were very dependent upon the wilderness resource. In this case, Watson and others (2008) described this wilderness dependent experience as "on the outside looking in" or "wilderness at arm's length," to differentiate it from other types of wilderness experiences, but emphasizing the wilderness dependency of the experience (Table 7). Fortunately, both of these studies were able to discover many of the things that influence these experiences, besides wilderness dependency. Hallo and Manning (2010) advocate for more research and better knowledge about the perceived but authentic wilderness experiences that many visitors receive in these near-wilderness provisions.

Conclusions

Special provisions sometimes facilitate wilderness-dependent, wilderness recreation, or near-wilderness experiences, though not exactly the wilderness experiences most specifically prescribed in the Wilderness Act. However, many activities allowed through special provision terminology in legislation are in contrast to the activities described in the Wilderness Act and do not conform to the purposes of this Act. Some non-conforming wilderness dependent activities and experiences are occurring outside the boundaries of officially protected wilderness. Most wilderness special provisions have negative impact on conforming wilderness recreation visitor experiences, sometimes the largest impact of things they encounter on wilderness trips. Recent research illustrates that the cumulative number of wilderness laws with special provisions or management directions is relatively high and management direction and special provisions tend to repeat themselves in subsequent legislation. It is unlikely that radically different exceptions, or special provisions, are going to be supported for legislative approval, however.

There was some increase in interest in exploring special provisions and conflict implications for wilderness experiences in the 1990s, but that has come to fruition in only isolated studies without a clear strategy or support for coordinated addressing of major questions identified. Probably the most visible application has been to initiate new research as part of a large initiative in Alaska. Coordinated international projects were also initiated to try to understand experience dimensions and influences on experiences on lands that were created to protect wilderness experiences or provide opportunities for wilderness recreation activities. In both Alaska and in other countries, either special provisions allow non-conforming uses, or commercial services somehow mediate the wilderness experience to such an extent that it does not meet the true purpose of wilderness visitation as "enjoyment of wilderness as wilderness" as described in the U.S. Wilderness Act.

There are a high number of experiences, however, that have been defined as wilderness dependent, or near wilderness, or wilderness recreation experiences that warrant protection and could even be among the most unique aspects of visits to some places. The impacts of these wilderness dependent experiences that are mediated by commercial services, or other special provisions, on other users, however, continue to challenge managers. A vocal wilderness constituency often expresses concern that management of these special provisions, particularly commercial outfitting and guiding, is not evaluated on the basis of their impact to the resource or other visitor experiences and these voices from the wilderness are being heard in louder calls for action.

Table 7—Terminology used to describe wilderness-dependent experiences for access/commercial special provision users in Denali National Park & Preserve.

Qualitative research interpretation	Source
On the outside looking in	Watson and others (2008)
Wilderness at arm's length	Watson and others (2008)
Near-wilderness	Hallo and Manning (2010)
On the edge peering in	Hallo and Manning (2010)
Wilderness dependent	Watson and others (2008)
Unconventional type of wilderness experience	Hallo and Manning (2010)

There is need for advanced research to determine in great detail how guided services are influencing the experiences of customers who choose to visit wilderness on these trips. By further contrasting the experiences of commercial and non-commercial visitors we can better understand the extent these services are necessary. This decision could focus on the instrumental purposes of commercial activity (how many people could not get to their destinations or could not get there safely, without guided assistance). It could focus on the extent the social component of commercial activities is necessary (determine the role of guides in creating more enjoyable or satisfactory trips). It could focus on the extent commercial services create more close relationships between the visitors and the environment, or it could evaluate all aspects of communication including the values of developing an itinerary, giving out correct information, and helping the visitor understand what they have seen. In addition, we must have a better understanding of the relative influence commercial use has on the experiences of conforming users. Just because special provisions in legislation may prescribe continued use of a certain nonconforming type, as a negotiated exception to achieve wilderness designation, it does not mean that these uses cannot be managed in ways to reduce their negative impact on other users or even increase wilderness benefits of their own visits. The overall public purpose of these places is still related to those benefits associated with wilderness and focus must stay on achieving these purposes.

At the 9th World Wilderness Congress in Mexico (Martin 2010), there was a continued, growing trend towards discussion and support for extending wilderness protection to marine ecosystems. While some limited marine areas are protected in combination with adjacent terrestrial zones, true wilderness protection is only now coming to the top of the discussion list. A concept paper has been developed cooperatively between the U.S., Canada and Mexico that offers justification for such designation and protection, defines the benefits and threats to be addressed, and begins to address specific aspects of uses, attributes, restoration and complimentary issues of high importance for decisions. While past analysis of special provisions suggest that extension of special provisions beyond their current types is likely limited, this example of protection of wilderness in this very fluid environment may challenge that expectation. Whether some uses on the surface might be excepted from exclusion through special provisions, whether some uses in the water column or the undersea surface might be allowed due to limitations on access, past use or commercial influences remains to be seen. But a coherent science approach to contribute to the discussion of what is to be protected, from what and why is absolutely essential at the earliest possible stage of designation discussions and policy formation.

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II. Management Perspectives and Frameworks

The Challenges and Related Strategies of Planning for Wilderness Experiences

Kerri Cahill

Abstract—Planning is where science, public interests and management of wilderness areas come together. Unfortunately, science and information specifically supporting wilderness experiences, if any exists, is often perceived by managers as subjective, value laden, and hard to defend. This can sometimes lead to the tough decisions about providing high quality wilderness experiences being "kicked down the road" for another time/manager. This paper outlines the challenges and related strategies of planning for wilderness experiences from the perspective of a National Park Service planner. These challenges and strategies relate to the need for sufficient investment in understanding wilderness experiences, and the thoughtful integration of this knowledge in planning and decision-making processes.

What are the unique and important characteristics of visitor experiences in a wilderness area? What are the appropriate activities and how should they be managed? What are the setting conditions that will promote these experiences and activities? What are the most significant visitor use management concerns that need to be addressed to ensure good wilderness stewardship, including providing high quality wilderness experiences? These are just a few of the frequently asked questions that may need to be resolved during a planning process for a wilderness area.

Planning for wilderness stewardship is the time and place where science, public interests, and management of wilderness areas come together. It is a process of negotiation amongst often competing interests and issues. To be most effective, planning should be thoughtful, proactive and inclusive. This includes gathering and analyzing scientific data, public input, and best professional management judgment as the basis for good decision-making.

Unfortunately, the issues and needs surrounding wilderness experiences are often not well understood or appreciated, so they may not be given sufficient standing in this important negotiation process. Planning for wilderness experiences is value-laden and can be complicated. At times it may even seem overwhelming given the subjectivity that surrounds it. In addition, planning for wilderness experiences can seem mysterious given the frequent situation of having limited information and time to address the topic adequately. However, these challenges can be overcome through increased commitment and professionalism around planning and managing for wilderness experiences. This paper outlines some of the key challenges and associated strategies for planning for wilderness experiences.

Overview of Planning Challenges

Similar to the importance of gathering information and understanding baseline conditions for natural and cultural resources as part of planning and decision-making, assessing knowledge on wilderness experiences will aid future decision-making and day-to-day operations. Unfortunately, there is often limited recognition of the utility of this type information because few staff are specifically trained in its application. In addition, science and information specifically supporting decision-making related to wilderness experiences, if it exists, is perceived by many managers as subjective, value laden, and hard to defend. It is often referred to as "soft," "fuzzy," and/or "not real science." There is also confusion over and inconsistent implementation of law and policy requirements related to managing wilderness experiences. Recent litigation over law and policy requirements, such as addressing user capacity and evaluating the "extent necessary" of commercial services in wilderness, illustrate this issue.

Finally, there is limited funding and staffing within the agencies specifically dedicated to planning, management, and monitoring for wilderness experiences. This hinders effective integration of science and public input into planning efforts. For example, the National Park Service's social science program consists of less than a half dozen staff and a relatively small budget to support social science activities for the entire agency, including visitor experiences in wilderness. In addition, there is no central, dedicated funding source to support social science activities in the agency, so park staff usually must use their own park funding to support research and monitoring initiatives.

Overview of Planning Strategies

These are significant challenges, but with increased awareness and commitment from public land agencies, they can be overcome. One of the most important strategies is to develop guidance and train staff on better integration of basic data,

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science and public input to more effectively define the goals, objectives, and desired conditions for wilderness experiences in both qualitative and quantitative terms. It is important to articulate what experience opportunities will be provided, the appropriateness of various recreation activities, and the setting conditions needed to maintain those experiences and activities. This goes beyond just defining the facilities and services that will be provided. Wilderness planning efforts would benefit from increased awareness and instruction on the importance of these planning elements and the related data and analysis needs. Recent efforts to provide guidance on more clearly articulating and monitoring wilderness character as part of wilderness planning is a good step forward in addressing this need. These initiatives include the development of the interagency *Keeping It Wild* framework (Landres and others 2008) and the NPS' efforts to integrate wilderness character into a new *Wilderness Stewardship Plan Handbook* (Stutzman and others in press).

Another strategy is to focus science on better understanding wilderness experiences, particularly for those conditions within management control. This includes collecting data and conducting research to directly support the issues and needs (and related schedule) being addressed in planning, and helping managers prioritize information needs. For example, during the planning process for Isle Royale National Park, visitor surveys and a visitor use simulation model were developed in direct consultation with park staff and the planning team to help address specific visitor experience issues and possible management strategies related to backcountry camping (Lawson and Manning 2003a, b). Agency staff should also be trained in facilitating research related to wilderness experiences to maximize the effectiveness of data collection efforts. In addition, agency and university scientists should collaboratively identify research priorities and participate in on-going assessments of lessons learned from those research efforts. With continual attention to emerging issues and related information needs, social science will be targeted to addressing management questions.

A related strategy is to better integrate scientists as more active participants throughout the planning process. One of the most helpful elements of this strategy is having scientists at the table during key points in the planning process to "be the voice" for research findings and help understand related implications to decision-making. For example, during the general management planning process for Golden Gate National Recreation Area and Muir Woods National Monument, scientists that had conducted various visitor studies at several areas in the park attended a planning meeting to help park staff address user capacity issues. In addition to giving presentations of the data, scientists were asked to join small group discussions throughout a three day workshop to help park staff develop indicators and standards that would be used to monitor visitor experiences and resource conditions for the next twenty years (National Park Service 2009). This strategy also includes having scientists and agency representatives working together to carefully consider the most effective means of conveying information to managers and planning teams. Through targeted delivery of information, both in terms of techniques and timing, information on wilderness experiences will be more effective and well-received.

A final strategy is to increase agency capabilities related to the study, planning, management, and monitoring of wilderness experiences. Understanding the intricacies and complexities of wilderness experiences should be a priority for public land managers and it requires the same level of professionalism and science as other land management topics. More investment in terms of both funding and staffing is needed, including training staff in best management practices. In addition, more guidance on the interpretation of law and policy requirements is needed so managers can consistently implement legally defensible methods and tools. The need to more comprehensively address these issues was recently acknowledged within several public land management agencies by the formation of an Interagency Visitor Use Management Council in August, 2011. The council will develop guidance, tools and training specific to managing visitor use on public lands. Participants in the council include the National Park Service, Forest Service, Bureau of Land Management and the United States Fish and Wildlife Service. The council will provide a consistent and updated source of information on best practices for visitor use management being applied across the agencies (Interagency Visitor Use Management Council 2011). With more investment in this area, planning for wilderness experiences can be demystified and more fully integrated into the broader discipline of public land management.

Summary

Planning sets the roadmap for the future. It is the forum for negotiating how a place will be managed. Valuing and understanding wilderness experiences is a key part of this dialogue. Increased appreciation for and commitment to the planning, management and monitoring of wilderness experiences is needed. Further, wilderness managers and the academic community need a comprehensive and sustained dialogue on the challenges and strategies around planning for wilderness experiences. By working together, new information can be collected, new insights can be discovered, and new best management practices can be formed to ensure high quality wilderness experiences now and into the future.

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Humans Apart From Nature? Wilderness Experience and the Wilderness Act

Mark Fincher

Abstract—Wilderness managers are faced with making judgments about the appropriateness of different types of recreational activities. One of the criteria they use is wilderness dependence-the notion that an activity should be allowed, or privileged if rationing is required, if it depends on a wilderness setting for much of its value. Inherent in this concept is the idea that much of the value of wilderness experience lies in an integration of humans and nature. But the very idea of a modern integrative wilderness experience has recently been attacked by critics, in part based on recent trends in wilderness recreation. Participants in both contemplative and interactive recreation report experiences that belie this critique, suggesting that opportunities for communion with nature are indeed inherent in the wilderness experience. Managing for both types of experiences may therefore be appropriate under the auspices of the Wilderness Act.

Introduction

> Man is a fugitive from nature. He escaped from it and began to make history, which is trying to realize the imaginary, the improbable, perhaps the impossible. History is always made against the grain of Nature. The human being tries to rest from the enormous discomfort an all–embracing disquiet of history by "returning" transitorily, artificially, to Nature in the sport of hunting. We are such paradoxical creatures that each day will require greater artifice to give us the pleasure of sometimes being "natural beings." But no matter how great and ingenious the artifice may be, it will be in vain if that ferocious instinct, already evanescent, is completely erased in our species.
>
> Jose Ortega y Gasset, Meditations on Hunting (1995)

The nature of the wilderness experience has changed through time, yet through the arc of this evolution certain themes have remained. The Wilderness Act is considered a distillation of the wilderness idea, but it represents only a point on this arc. This paper examines a contentious question: Do wilderness experiences reinforce the notion that humans are a part of nature, or do they in fact increase our alienation from the natural world? In particular, how is this question answered for the different types of wilderness recreation that have evolved over the last one hundred years? What was the intent of the framers of the Wilderness Act on this issue and how should that intention be reflected in management of wilderness experience?

The Deconstructionist Critique

In the last twenty years a great deal of thought has been devoted to what has come to be known as the "deconstructionist critique" of the wilderness idea. Without revisiting most of that well trodden ground, it is worth considering at least one aspect of the critique that touches on wilderness experience. The deconstructionists save some of their strongest criticism for the phrase of the Wilderness Act which states that wilderness is a place "where man himself is a visitor who does not remain." Callicott (1991), for instance, states that "this definition assumes, indeed it enshrines, a bifurcation of man and nature," while Cronon (1995) states that the "central paradox" of wilderness is that it "embodies a dualistic vision in which the human is entirely outside the natural…by definition wilderness leaves no place for human beings, save perhaps as contemplative sojourners enjoying their leisurely reverie…" In short, the Wilderness Act definition is seen as divorcing humans from nature rather than considering them as a part of nature.

Yet even a cursory look at the intellectual and legislative history of the Wilderness Act shows that the intention of the Act was the opposite of this assertion. Howard Zahniser, who became the primary author of the Wilderness Act, wrote that "In brief, one might define wilderness in the qualitative sense as an area with a quality of wildness so little modified by human action as to impress its visitors with their relationships to other forms of life rather than their human prowess resulting from inventions and contrivances" and "We tend in our urban mechanized civilization to forget about the places of our origin, and the reality of our dependence upon other forms of life. In the wilderness we can perceive that" (U.S. Congressional Research Service 1949). A 1952 Sierra Club Bulletin article noted "Wilderness is not the only device to renew the man-earth contact but it is potentially one of the best because it allows us to go all the way back to man's beginnings…" (Bradley 1952). Hubert Humphrey, the Senate sponsor of the wilderness bill, testified that he introduced the bill "so that 100 years from now somebody's children may be able to take a canoe and portage up through these forests and commune with nature" (National Wilderness Preservation Act Hearings 1957b).

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This sentiment is reflected in the first version of the wilderness bill introduced in the Senate, which defined wilderness as a place "where man himself *is a member of the natural community*, a wanderer who visits but does not remain and whose travels leave only trails" (U.S. Congress 1957). This language was simplified twice more, to the final version, fairly quickly. It is unlikely, however, that this simplification was a philosophical statement about humankind's place in, or apart from, nature. The Wilderness Act is a law, not a comprehensive statement of philosophy, subject not only to political compromise but also legislative requirements. Laws must articulate a clear legal standard that the agencies can implement, so it is not surprising that a mandate that a visitor be "a member of the natural community" was excised from the definition.

Nor is it surprising that the "non-residence" clause remained in the Act. Sutter (2002) has chronicled how the rising ubiquity of the automobile and the attendant road building, settlement, and recreational development drove the modern wilderness movement. Indeed, one of the first manifestations of the movement was Arthur Carhart's recommendation to the Forest Service to refuse a proposal for summer homes at Trapper's Lake, Colorado, in 1919. This was just four years after the passage of the Term Occupancy Act, which authorized long term permits for summer homes in the National Forests through the Recreational Residence Program. This program peaked in the 1950s, as the Wilderness Act was starting its legislative journey.

The "visitor who does not remain" clause may also reflect the post war transition to the more modern form of wilderness recreation: the rise of modern backpacking. In the post war years there was significant discussion about recreational impacts to wilderness. The worst of these impacts were associated with long term camps where traditional, more primitive living skills were practiced. Backpacking is inherently more transient than a traditional camp: one is less likely to move when significant effort has been expended building lean-tos, cutting pine bough beds, building deadfall traps, and so on. The long term camp was seen as an unacceptable impact to wilderness character. Zahniser, for instance, wrote that "Campers who establish long term camps make an intense use beyond those who daily move their camps…" (U.S. Congressional Research Service 1949).

After the language in the definition of wilderness had been changed to its final version, the lead house sponsor, John Saylor, quoted Zahniser during a hearing on the wilderness bill:

> "Deep down at the base of all our needs for wilderness is a profound, a fundamental need…essential to a true understanding of ourselves, our culture, our own natures, and our place in nature. This need is for areas of the earth within which we stand without our mechanisms that make us immediate masters over our environment—areas of wild nature in which we sense ourselves to be, what we are, dependent members of an interdependent community of living creatures that together derive their existence from the sun."

In the same speech Saylor quotes Harvey Broome, one of the founders of the Wilderness Society in saying that one of the benefits of preserving wilderness is that "then, indeed, will Thoreau's Lord of Creation work as a member and not as a fumbling outsider—in the community of living things" (Wilderness Preservation System Hearings 1962).

The intent of the framers of the Act is clear. Wilderness experience should increase the feeling of unity with nature. Whether the legal language of the Act itself reflects that intention can be debated, but as Snyder (2007) points out, "We should not let the legislative definition (of wilderness) henceforth dominate our language."

Contemplation, Engagement, and Wilderness Dependence

Part of the perception of wilderness as a divisive force between humans and nature may stem from more recent trends in wilderness recreation. Turner (2002) has traced how wilderness recreation has changed since the early part of the twentieth century. Traditional, more interactive forms of recreation, that often caused high impact, changed into the low impact, more contemplative ideal epitomized today by the Leave No Trace program. There is a tension between these two types of wilderness recreation which is beginning to assume greater prominence in management decisions. This tension is reflected in policy. National Park Service policy, for instance, encourages activities that "will promote enjoyment through a direct association with, interaction with, or relation to park resources" but "can be sustained without causing unacceptable impacts…"(National Park Service 2006, 8.2). As Leave No Trace practices have evolved, the range of "unacceptable impacts" has expanded, leaving some formerly acceptable activities marginalized. Questions about the appropriateness of both traditional and emerging recreational activities involve this distinction, so it is worth further consideration.

In particular, the question of wilderness dependence is assuming a more prominent role in these discussions. One of the basic principles in the standard text for wilderness management reads: "Whenever one or more uses conflict, the principle of dependency, that calls for favoring activities that depend the most on wilderness conditions, is used to resolve use conflicts and prevent overuse" (Hendee and others 1978). This principle is incorporated into policy, and has even been prominent in recent lawsuits over wilderness management (High Sierra Hikers v. Blackwell 2004; High Sierra Hikers v. Weingardt 2007). It is worth considering, then, how these two distinct types of wilderness recreation--activities that involve a material engagement with the landscape on the one hand, and activities that are primarily focused on a scenic, aesthetic, or contemplative appreciation of wilderness on the other—provide opportunities for a mental or spiritual integration with the wilderness landscape, thereby realizing the intention of the framers of the Act.

The Economic Experience

Turner (2002) describes the woodcraft movement at the turn of the century, epitomized by the Boy Scout Handbook

and Joe Knowle's return to the Maine woods. Woodcrafters lived off the land and a successful vacation required substantial knowledge of the natural world as well as skills and experience to comfortably live within it. It is essentially an economic relationship with the land, one that mimics the lives of those who lived in an earlier time. As Turner notes, the philosophy of this type of recreation flows from Frederick Jackson Turner's frontier hypothesis through Aldo Leopold and into the Wilderness Act, and is embodied in the Act as "primitive and unconfined."

The Wilderness Act generally prohibits commercial enterprise but does not prohibit personal economic activity. Indeed, maintaining opportunities for hunting and fishing is repeatedly mentioned in the legislative history of the Act. Roggenbuck (2004) has examined the values of the primitive experience, noting that some of the benefits include "becoming a creature of the wild, or an ecological citizen." Turner describes how concerns about the impacts of overuse gradually transformed the typical wilderness experience from an economic relationship to a contemplative one. While hunting and fishing are still sanctioned in most areas, pine bough beds and lean-tos are illegal in most areas; and campfires, while still legal in many areas, are officially discouraged.

The deep, local, complex knowledge and skill inherent in native cultures is the paradigm for the concept of humans as part of nature. It is the ideal held by the deconstructionists when they dismiss modern, interactive economic wilderness visitors as "elite urban tourists and wealthy sportsmen" who "project their leisure-time frontier fantasies onto the American landscape" (Cronon 1995). The economic wilderness experience more closely mimics this paradigm than other types of recreation. The literature of hunting and fishing certainly suggests an integration of humans and nature. Ortega y Gasset (1995), for instance, says that "by hunting man succeeds, in effect, in annihilating all historical evolution, in separating himself from the present, and in renewing the primitive situation. " Leopold (1966) states that hunting "reminds us of our dependency on the soil-plant-animal-man food chain, and of the fundamental organization of the biota." A more recent example comes from Nelson (1989):

> "Living from wild nature joins me with the island as no disconnected love ever could. The earth and sea flow in my blood; the free wind breathes through me; the clear sky gazes out from within my eyes. These eyes that see the island are also made from it; and the heart that loves the island has something of the island's heart inside."

It is unfortunate that the demands of an increasing population mean that some higher impact economic wilderness experiences are now prohibited or discouraged in order to protect biological values. The adoption of Leave No Trace principles is entirely appropriate given the recreational demand in many wilderness areas. But managers should not disregard the Act's mandate for primitive recreation. Rather, they should allow such uses in areas where low visitation and a resilient ecosystem may allow them without unacceptable levels of impact.

Risk and Adventure

There is another category of interactive experience which James Morton Turner does not mention. As the woodcraft movement was starting to fade, in the 1930s, specialized forms of wilderness adventure, such as rock climbing, river running, and Nordic skiing became more popular. After World War II, the widespread availability of more sophisticated equipment, such as surplus rubber rafts and nylon ropes, and easy access to distant wilderness via the modern highway system, led to both greater popularity of these sports and to more challenging adventures. These trends have continued as these sports evolved. More sophisticated equipment and easy access have led to increasing numbers of participants and higher technical levels of achievement.

These activities have a number of qualities in common. Most involve substantial risk. While they are not an economic activity, the consequences of failure are severe, which produces intense mental and emotional engagement with the landscape. They require an intimate knowledge of at least a portion of the environment—the ability to read a section of whitewater, estimate the difficulty and hazards of different climbing routes, or understand likely avalanche hazards and crevasse patterns on a high mountain ski traverse. To participate with a reasonable degree of safety at a high level, they demand a long apprenticeship involving increasing levels of difficulty.

These types of recreation are sometimes criticized as being mere thrill seeking, more appropriate to a playground than to wilderness. Because of the level of risk taking and athleticism required at the higher levels of these sports, some assume that they are not wilderness dependent—that there can be little connection to nature because the focus on the physical achievement is so involving. But the participants in these activities often make the opposite assertion, that it is the very level of risk and commitment that produces an intimate connection with the natural world. Consider this passage about the seventh day of a demanding rock climb:

> "We now felt at home. Bivouacking in hammocks was completely natural. Nothing felt strange about our vertical world. With more receptive senses we now appreciated everything around us. Each individual crystal in the granite stood out in bold relief. The varied shapes of the clouds never ceased to attract our attention. For the first time we noticed tiny bugs that were all over the walls, so tiny they were barely noticeable. While belaying, I stared at one for 15 minutes, watching him move and admiring his brilliant red color. How could one ever be bored with so many good things to see and feel! This unity with our joyous surroundings, this ultra-penetrating perception gave us a feeling of contentment that we had not had for years" (Chouinard 1966).

Robinson (1996) reflects on this passage in his essay *The Climber as Visionary*, where he notes:

> "Chouinard's vision was no accident. It was the result of days of climbing. He was tempered by technical difficulties, pain, apprehension, dehydration, striving, the sensory desert, weariness, the gradual loss of self. It is a system. You need only copy the ingredients and commit yourself to them. They lead to the door. It is not

> necessary to attain to Chouinard's technical level—few can or do—only his degree of commitment."

Presumably, "unity with our joyous surroundings" is possible whether the commitment is launching a kayak into a tricky rapid, turning a pair of skis down a steep gully, or persevering on a difficult climb.

Athleticism

Wilderness activities that involve a high degree of athleticism are often singled out as either inappropriate or not wilderness dependent. Almost every traditional wilderness form of recreation has a small minority of participants who are interested in speed or extreme difficulty. Trail running, speed ascents, and speed hiking are all variations on this theme. The quest for ultimate difficulty, often but not always including significant risk, is another variation.

These athletic activities share many of the elements noted by Robinson (1996), as well as a Zen-like element that can produce a transcendent experience. Again, some who participate in these forms of wilderness recreation claim that the very athleticism of the activity fosters a connection to nature. Consider this blogger: "Running like a wild man or woman through the woods nurtures the soul. Trail running satisfies a primal need for movement through nature" (Frazier n.d.). Or consider this writer, describing adventure running:

> "…you find personal challenge where self-reliance is essential and the participant becomes intimate with nature…I used to think rushing through climbs precluded experiencing such things as the sunrise and sunset, sleeping under the stars, and fully appreciating the scenery… The rush I get from adventure running is similar to a "runner's high" generated after a good race or training session, but it is also much more. The sentiment is tough to precisely describe, but it is a feeling of freedom and inner contentment, a refuge from the complexities and worries of society, and an experience of the beauty of nature in its purest form" (Pantilat 2008).

Another trail runner writes that:

> "Trail running makes me think that the same might be true of our minds embrace of this earth: lungs alive, billowing in and out with the very substance of the sky, trading atmospheric gases with every tree and all the green grasses, our arms and legs alive in a million-year-old motion coded to make us feel fleet, and also make us feel happy and right when we fly along" (Duane 2011).

Formal competitions in wilderness are prohibited by policy (National Park Service 2006 6.4.5; U.S.D.A. Forest Service 2007, 2323.13h). Yet informal competitions or breaking speed records have the same emphasis on athletic achievement. Of course, an individual competing against themselves or others looks the same as a person going fast or hard for the joy of it. And appearances are key to many of the objections to such activities. National Park Service policy states that "unacceptable impacts are impacts that, individually or cumulatively, would…unreasonably interfere with the atmosphere of peace and tranquility …in wilderness…" (National Park Service 2006, 8.2) Does that include the whoops and hollers of rafters going through big waves or a pair of rock climbers yelling belay signals? What if the yells come from thirty pairs of climbers and what about visual "interference"?

Part of the complaint about interactive wilderness recreation is that the participants are a distraction; they interfere with the contemplative experience. Both traditional and emerging interactive wilderness activities are often very visible. Upper Yosemite Falls is in designated wilderness and is a popular destination for both day hikers and backpackers. Rock climbers can frequently be seen performing a spectacular Tyrolean traverse from the summit of Lost Arrow Spire back to the rim of Yosemite Valley. Other non-traditional activities have been practiced here in recent years, including tightrope walking from the spire to the rim and across the front of the falls (Jenkins 2011). A vertical dance troupe has performed on the wall to the side of the falls (Rudolph 2000). In other parts of the valley, climbers have purposely taken enormous falls onto climbing ropes. Hang gliders soar over the walls (taking off and landing in non-wilderness) on weekends. At what point does this become a circus-like atmosphere? How many people need to be engaged in these sports before they "unreasonably interfere with the atmosphere of peace and tranquility?"

A number of societal trends have increased the perception that such sports are focused more on achievement than any kind of communion with nature. These include the media fascination with highly contrived "extreme" sports, the ease of publicizing one's exploits in the digital age, the growing popularity of "collecting" summits or whitewater descents or hikes of iconic trails (the "bucket list" phenomenon), and the sponsorship of leading outdoor athletes by gear companies, which motivates the athletes to stay in the public's eye by performing ever more "extreme" feats. These factors can lead to a perception of superficiality, egoism, and commercialism.

Sax (1980) notes that both Frederick Law Olmsted and Aldo Leopold discussed the distinction between recreation and achievement—a distinction between activities performed for one's own satisfaction in a natural setting versus those performed for others. Sax goes on to say, in the context of National Parks, that:

> "The attitudes associated with an activity may be more important than either the activity itself or its setting. To the extent that we infuse the parks with symbolic meaning by the way in which we use them, the symbolism attached to particular uses itself becomes the critical factor in the meaning that parks have for us."

Most of these types of recreation may be technically legal under the Wilderness Act (although there is certainly room for argument) and the participants are likely to claim that it makes them feel like a part of nature—that the wilderness setting is integral to the experience. The anecdotes noted above make it clear that the opportunity for such integration is inherent in these activities. Wilderness dependence, in these cases, is in the head of the participant, which is a place where wilderness managers in most cases cannot and should not go. The attitudes, perceived or real, of the minority operating at the extremes of risk, athleticism, or publicity for a given wilderness activity

should not taint the manager's perception of the appropriateness of that activity as a whole.

Managers should be careful about jumping to conclusions about the wilderness dependence of a new activity. The primary factors for assessing a new activity should include not only the amount of physical impact, but also a careful analysis of legality under the section 4 (c) prohibitions of the Wilderness Act and the potential for conflict with other wilderness visitors. The determination of section 4 (c) legality is not always easy, as the lengthy debates over *structure, installation,* and *mechanized* have demonstrated. In many cases conflict between activity types can be minimized because the more athletic or adventurous activities are temporally or spatially separate from contemplative activities. When such activities do overlap, social science may help understand the degree of conflict or disruption that is likely.

The Contemplative Experience

The roots of the aesthetic, contemplative experience of wilderness go back to Muir, Emerson, and beyond. While all wilderness travel, being non-mechanized, is in some way physically demanding, the emphasis in this type of experience is on appreciation of scenery and immersion in a natural environment. The rise of the minimum impact ethic has led to the majority of wilderness visitors having little economic or material engagement with the landscape. This has led critics to charge that these experiences are inherently superficial and that wilderness divorces humans from nature.

Vale (1999), in *The Myth of the Humanized Landscape*, persuasively refutes these charges, giving a dozen examples, from historic to modern, of wilderness visitors "for whom the wild landscape, through all the senses, is intimately known and emotively valued." Vale concludes with the observation that:

> "The failure to recognize such reactions stigmatizes unfairly contemporary people, leaving the wilderness landscape forever removed from intimate human knowledge and warmth, leaving the wilderness visitor "a person who does not belong, a stranger in Paradise." (Solnit 1992) Such omission creates a stereotype no more valid than that of the uncaring savage: For at least some, perhaps many, Americans, even those lacking an Indian heritage, wilderness is a part of home."

The Modern Context

Howard Zahniser, primary author of the Wilderness Act, said that "'Wilderness' is a term that has significance because of the things that it negates" (National Wilderness Preservation Act Hearings 1957a). This is key to understanding the intent of the Act. Wilderness does not negate human presence or economic activities like hunting, fishing, or gathering, or the history or economic uses of previous residents of the land: According to Zahniser, wilderness areas "are samples of the natural world without the influence of *modern* man" (U.S. Congressional Research Service 1949, emphasis added). It does negate modernity—specifically, it negates "mechanized and related aspects of the urban, industrial life to which modern man is increasingly confined" (U.S. Congressional Research Service 1949) and "the inventions, the contrivances whereby men have seemed to establish among themselves an independence of nature" (Zahniser 1957). In the Act itself, wilderness is defined as a place "in contrast with those areas where man and his works *dominate* the landscape…" (emphasis added). The goal of the Act was to stop that domination on the few tiny remnants of the American landscape that were still largely unmodified by such tools—in short, to stop the bulldozers.

This context seems to be missing from the deconstructionist critique. When asking the question of whether a wilderness experience causes visitors to perceive themselves as a part of nature or separate from nature, the relevant point of comparison is not the physical, mental, and spiritual integration of Native Americans living in their home landscape. Rather it is the modern American, whose alienation from nature continues to increase. The relevant question is not whether today's wilderness experiences can match the authentic integration with nature embodied by native cultures, but rather whether modern experiences, however "transitory" and "artificial", can reduce our alienation from nature by providing a meaningful, innate sense of our true place within nature. The wilderness experience, both interactive and contemplative, can decrease such alienation by providing an environment without "inventions and contrivances," and therefore enable visitors to feel more a part of nature than they would without such experiences.

Every component of modernity that the Wilderness Act was intended to "negate" has increased in scope and intensity in the years since the Act was passed. Population has exploded; the destruction of natural systems has accelerated; commercialism is all pervasive; self-reliance has been reduced by a hyper-connected and specialized society; and our lives are more urbanized, frenetic, and insulated from nature than ever before. In short, the need for wilderness experiences is greater than ever.

Restraint

There is another benefit to the wilderness experience that is sometimes overlooked in the debate over integration and dependence. All wilderness recreation involves ethical restraint. Such restraint not only preserves the wilderness for the future, it also provides a higher level of satisfaction to the visitor. As Sax (1980) writes:

> "Such recreation tests the will to dominate and the inclination to submissiveness, and repays their transcendence with profound gratification. Plainly such activities are not limited by any specific forms. They range from the purely contemplative wanderer in the woods who, like Thoreau or John Muir, has the capacity to detach himself from social convention and structured activity, to the agile climber arduously working his way to the meaning of the summit."

The Leave No Trace, minimum impact approach thus reinforces the humility and restraint that Leopold, Zahniser, and others identified as central to the concept of wilderness.

More importantly, it provides an opportunity for the visitor to understand the values of ethical behavior, both to the natural world and to his or her own gratification. These lessons can then be carried over to everyday life. This is what Zahniser (1957) called "the *distinctive* ministration of wilderness to modern man."

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Frameworks for Defining and Managing the Wilderness Experience

Robert E. Manning

Abstract—A large and growing body of research on outdoor recreation and the wilderness experience has been conducted over the nearly 50 years since passage of the Wilderness Act of 1964. A number of conceptual and empirical frameworks have emerged from this body of knowledge that can be used to help define and manage the wilderness experience. First, wilderness experiences can be understood as behavior that is driven by visitor motivations and potential benefits. For example, some wilderness visitors backpack in remote areas because they seek solitude and associated benefits. Second, wilderness recreation activities and settings can be instrumental in facilitating satisfaction of visitor motivations and benefits. Following the above example, opportunities for hiking in wilderness settings that are remote and lightly used are most likely to satisfy the motivation of solitude and lead to associated benefits. Third, wilderness settings/opportunities can be defined by a three-fold framework, including resource, social, and managerial conditions. Examples include, respectively, soil and vegetation impacts at campsites, the number of groups encountered along trails, and the level and type of facility development. Fourth, definition of the quality of the wilderness experience has evolved from global measures of visitor satisfaction to include measures of the degree to which wilderness recreation opportunities provide the experiences for which they are designed and managed, and the extent to which the system of wilderness recreation opportunities meets the inherently diverse needs of society. This leads to multiple definitions of the quality of the wilderness experience based on scale: the visitor, the manager, and society at large. Fifth, wilderness recreation should be guided by management objectives, and these objectives should be stated in empirical terms of indicators and standards that specify the "limits of acceptable change" for wilderness recreation settings and opportunities. For example, providing opportunities for solitude is a reasonable management objective for many wilderness areas, the number of groups met per day on trails may be a good indicator of solitude, and a maximum of five groups encountered per day on trails may be a good standard that specifies the limits of acceptable change. Sixth, formulation of indicators and standards/limits of acceptable change should be informed by social norms of wilderness visitors and other stakeholders. The sample indicators and standards suggested above are drawn from normative studies of wilderness recreation. Seventh, indicators and standards that define wilderness recreation opportunities can be configured in alternative combinations to help guide provision of a spectrum of wilderness opportunities and experiences designed to meet the diverse needs of society. This approach adapts and applies the conceptual foundation underlying the Recreation Opportunity Spectrum. These conceptual and empirical frameworks can be integrated and applied to help guide definition and management of wilderness experiences, and this is illustrated in a series of propositions, conceptual models and diagrams. Alternative interpretations of research on outdoor recreation and the wilderness experience are also discussed. It is concluded that research on outdoor recreation offers theoretical and empirical foundations for defining and managing the wilderness experience, but that this will require exercise of management judgment and a continuing program of research.

Introduction

A large and growing body of social science research on outdoor recreation, including the wilderness experience, has been conducted over the nearly 50 years since passage of the Wilderness Act in 1964. The "wilderness experience" has been found to be a diverse and complex phenomenon. However, several conceptual and empirical frameworks have emerged from the scientific and professional literature that can be used to help define and manage the wilderness experience (McCool and others 2007; Manning 2011). For the purposes of this paper, a framework is a set of organizing principles, a conceptual model, an empirical method, and/or a process that brings order and understanding to an inherently complex phenomenon. Frameworks don't answer questions or solve problems directly, but they offer a structured approach that can be used to enhance understanding and guide informed management.

The frameworks discussed in this paper address motivations for visiting wilderness areas, the relationships between wilderness settings and the visitor experience, a three-fold framework of wilderness recreation, definitions of the quality of the wilderness experience, the use of management objectives and associated indicators and standards, the limits of acceptable change, normative standards for guiding management of the wilderness experience, and application of the Recreation Opportunity Spectrum to wilderness management. This paper outlines these conceptual and empirical frameworks and suggests how they can be integrated and applied to guide wilderness management. Alternative interpretations of outdoor recreation research and the wilderness experience are also discussed.

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Conceptual and Empirical Frameworks

Motivations and Benefits

Early empirical research in outdoor recreation was primarily descriptive, focusing on the activities and socioeconomic and cultural characteristics of visitors, and their attitudes and preferences about management. But even as this descriptive foundation of information was being built, there were early signs of a deeper, more analytical interest in outdoor recreation, specifically the question of why people visit outdoor recreation areas, including wilderness.

Illustrative of this early interest in motivations for outdoor recreation was a study of fishing in the Quetico-Superior Area, MN (Bultena and Taves 1961). Observing that fishers returning to camp with empty creels were not necessarily dissatisfied with their experience, the authors hypothesized that there must be multiple motives involved in outdoor recreation. Tentative support for this hypothesis was found in an exploratory element of this study, which asked visitors to the area to rate the importance of seventeen potential motivations for their visits. While many visitors were certainly interested in catching fish, many respondents also reported that they thought of their trips as a means of escaping familiar routines and the cares associated with living in an urbanized society, along with other diverse motivations. An analogous study of hunting proposed a "multiple satisfactions approach" to this recreation activity, expanding measures of satisfaction from the traditional count of game bagged to include more varied motivations and dimensions of satisfaction (Hendee 1974). Early studies of camping and wilderness were also suggestive of multiple motivations in outdoor recreation (Stone and Taves 1958; Wildland Research Center 1962; LaPage 1967; Catton 1969; Shafer and Mietz 1969).

Beginning in the early 1970s, Driver and associates began building a conceptual foundation for the study of motivations in outdoor recreation (Driver and Tocher 1970; Driver 1975; Driver and Brown 1975; Driver 1976; Driver and Bassett 1977; Driver and Brown 1978; Haas and others 1980; Driver and Rosenthal 1982; Driver 1985; Schreyer and Driver 1989). Empirical approaches to testing these concepts were also developed and have received wide application. The conceptual foundation of this work began with a fundamental look at the nature of recreation, noting that the traditional view of recreation is based on activities—fishing, swimming, camping, and so on (Driver and Tocher 1970). While this "activity approach" has been useful for a variety of descriptive purposes, it leaves unaddressed a number of potentially important issues:

> Why is the recreationist participating in the activity? What other activities might have been selected if the opportunities existed? What satisfactions or rewards are received from the activity? How can the quality of the experience be enhanced? (Driver and Tocher 1970:10).

To better answer these questions, a "behavioral approach" was proposed whereby recreation is defined as "an experience that results from recreational engagements" (Driver and Tocher 1970). This approach is based on psychological theory which suggests that most human behavior is goal-oriented or aimed at some need or satisfaction (Crandall 1980). Perhaps the most widely recognized expression of this theory is Maslow's (1943) hierarchy of human needs beginning with the most basic requirements for physiological sustenance and ranging through more aesthetic concerns. The work of Driver and associates is based more directly on expectancy theory developed in social psychology, which suggests that people engage in activities in specific settings to realize psychological outcomes that are known, expected, and valued (Atkinson and Birch 1972; Fishbein and Ajzen 1974). Thus, people select and participate in recreation activities to meet certain goals or satisfy certain needs. In this context, recreation activities are as much a means to an end as an end in themselves.

The behavioral approach to recreation has been expanded to recognize four levels or hierarchies of outdoor recreation as illustrated in Table 1 (Driver and Brown 1978, Haas and others 1980). Level 1 represents demands for activities themselves and has been the traditional focus of much recreation research and management. Level 2 represents the settings in which activities take place. An activity such as camping, for example, can be undertaken in a variety of environmental, social, and managerial settings, each representing different recreation opportunities. Level 2 demands do not exist in and of themselves; people participate in activities in different settings to fulfill motivations as represented by level 3 demands. These motivations are desired psychological outcomes. Examples include enjoyment of the out-of-doors, developing and applying skills, strengthening family ties, learning, getting exercise, exploring, reflecting on personal values, temporarily escaping a variety of adverse stimuli at home or at work, and taking risks. Typically, more than one motivation is sought and realized from recreation participation. Finally, Level 4 demands refer to the ultimate or higher-order benefits that can flow from satisfying experiences derived from recreation participation. These benefits may be personal, social, economic, and/or environmental. However, these higher order benefits are somewhat abstract and are challenging to measure and associate directly with recreation participation. For this reason, empirical study of the behavioral approach to recreation has focused primarily on Level 3 demands and motivations.

A large group of studies on recreation motivations is based directly on the conceptual and empirical work of Driver and associates as described above. To test their conceptual formulations of a behavioral approach to recreation, these researchers have developed and refined a wide-ranging list of potential recreation motivations, along with a series of corresponding scale items representing potential motivations for participating in a designated recreation activity. Scale item measurements are usually then reduced through cluster analysis to "domains" representing more generalized categories of motivations. This research approach can be especially useful to outdoor recreation managers because of its direct focus on outdoor recreation activities and its standardization as a result of extensive empirical testing. The motivation scales have been developed and refined through dozens of empirical studies, and tests have generally

Table 1—Four levels or hierarchies of demand for outdoor recreation. (Adapted from Haas and others 1980.)

Level	Example 1	Example 2
1. Activities	Wilderness hiking	Family picnicking
2. Settings		
A. Environmental setting	Rugged terrain	Grass fields
B. Social setting	Few people	No boisterous teenagers
C. Managerial setting	No restrictions	Picnic tables
3. Motivations	Risk taking ChallengeChange of pace Physical exercise	In-group affiliation
4. Benefits		
A. Personal	Enhanced self-esteem	Enhanced personal health
B. Social	Lower crime rate	Family solidarity
C. Economic	Lower health care costs	Increased work production
D. Environmental	Increased commitment to conservation	Higher quality environment

confirmed both the reliability and validity of the motivation scales (Rosenthal and others 1982; Manfredo and others 1996).

The first generation of these studies was applied to a variety of recreation activities, but published results focused primarily on fishing (Knopf and others 1973; Driver and Knopf 1976; Driver and Cooksey 1977) and river users (Roggenbuck and Schreyer 1977; Schreyer and Roggenbuck 1978; Graefe and others 1981; Knopf and Lime 1984). Several motivational domains of recreationists have been isolated in these studies, and differences in motivations were found between selected "types" of recreationists. Trout fishers, for instance, were found to rate the motivation of "affiliation" substantially lower than did lake and bank fishers.

Recreation motivation scales were included in a series of nationwide studies investigating a broad spectrum of recreational uses of rivers (Knopf and Lime 1984). Resulting data illustrate the potential management implications of this research approach. Table 2 presents two examples. The first compares responses of river floaters on two rivers to seven motivations. Floaters on both rivers rated "view scenery" and "peace and calm" very highly, but differed substantially on other motivations. Floaters on the Delta River placed much more emphasis on learning, developing skills, exercise, escaping crowds, and being alone than did their counterparts on the Salt River. Though floaters on both rivers desired "peace and calm," they apparently define it in different ways. The implications of these findings translate directly into river management objectives, particularly with respect to appropriate use levels.

The second example in Table 2 illustrates that even floaters on the same river can differ substantially on motivations. Both first-time and repeat visitors to the Rio Grande River, NM, rated "view scenery," "peace and calm," and "learn new things"

Table 2—Motivations for river floating. (Adapted from Knopf and Lime 1984.)

			Rio Grande River	
	Delta River	Salt River	First-time visitors	Repeat visitors
	Percentage of respondents			
View scenery	97	77	88	94
Peace and calm	85	73	62	82
Learn new things	80	50	78	73
Develop skills	78	34	48	76
Escape crowds	76	30	52	82
Exercise	64	48	34	65
Be alone	28	8	6	22

highly. But there were substantial differences between the two groups of floaters on the other four motivations, indicating that repeat visitors were substantially more sensitive to and intolerant of high use levels and associated impacts. Unless this is taken into account in river management, many repeat visitors are likely to be dissatisfied and perhaps eventually displaced. The study concludes that data of this kind illustrate the advantage of managing for outdoor recreation experiences rather than activities:

> "It is clear that repeat visitors on the Rio Grande are looking for different experiences than first-time visitors. It is also clear that Delta River visitors differ in orientation from Salt River visitors. Yet, all four populations are participating in the same recreation activity, river floating. From an activity perspective, they would be viewed as essentially equivalent and not differing in resource requirements. But from an experience perspective, they would be viewed as distinct recreation populations with separate requirements" (Knopf and Lime 1984:15).

Studies of the motivations of recreationists have become an important part of the scientific and professional literature on outdoor recreation, including wilderness, and have been applied to a diverse array of recreation activities, settings, and issues. Examples include rafting and other river uses (Fluker and Turner 2000; Vagias and others 2006), biking (Skar and others 2008), national forests (Graefe and others 2000; Hendricks and others 2004), tourism/ecotourism (Holden and Sparrowhawk 2002; Yoon and Uysal 2005), temporal changes in motivations (White and Pennington-Gray 2002; Schramm and Gerard 2004; Legare and Haider 2008), the relationship between motivations and experience/skill level (Todd and others 2002; Todd and others 2003; Meisel and Cottrell 2004), place attachment/involvement (Kyle and others 2004a; Kyle and others 2006), and race/ethnicity (Hunt and Ditton 2001).

All of these studies were able to identify several groups of respondents with distinctive recreation motivations. Moreover, there were often relationships between the various types of recreationists identified and other characteristics of respondents. For example, motivations of a nationwide sample of river users were found to vary with experience level of respondents (Williams and others 1990) and by type and size of user group (Heywood 1987). Motivations of state park visitors were related to visitor expenditures (McCool and Reilly 1993). And motivations of mountain climbers were related to experience level of respondents (Ewert 1994).

A second generation of studies has added another methodological step to identify types of recreationists based on motive structure. After appropriate motive domains have been isolated as described above, a further clustering procedure is used to identify groups of respondents having relatively similar patterns of response to the motive domains. In this way, groups or "market segments" of recreationists sharing similar motivations are identified.

A study of wilderness visitors is illustrative of these second-generation studies (Brown and Haas 1980). This study involved a survey of visitors to the Rawah Wilderness Area, CO. Initial cluster analysis identified eight motivational domains important across the sample as shown in Table 3. Respondents were then grouped through a second clustering procedure according to their scores on the eight motivational domains. Five basic "types" of visitors were thus identified. The study describes each visitor type and suggests ways in which this kind of information might be incorporated in wilderness management. For example, visitor types 1 and 2 both place moderate to strong emphasis on seven of the eight motivational domains, but differ on the eighth, Meeting/Observing Other People. Type 1 visitors (19% of the sample) rated this domain as slightly adding to satisfaction, while type 2 visitors (10% of the sample) rated this domain as moderately detracting from satisfaction. These findings suggest that two wilderness zones might be created serving somewhat different objectives and visitors. Both zones would be managed to serve the first seven motivations described (Closeness to Nature, Escape Pressure, and so on), but with different use and contact levels allowed.

The behavioral approach to understanding recreation was illustrated in Table 1. This model identifies four levels or hierarchies associated with recreation. The empirical research described above has focused primarily on Level 3 or motivations. However, conceptual and empirical work has explored Level 4 as well, the ultimate or higher-order benefits of recreation that flow to individuals and society at large. This body of work and its application is generally termed "benefits-based management" (BBM), and BBM is the operational component of the broader paradigm, Beneficial Outcomes Approach to Leisure (BOAL) which is a conceptual expression of the behavioral approach to recreation as described above (Driver 2008). These approaches have been extended to broader leisure and amenity-related concerns under the rubric of Outcomes Focused Management (OFM) and Outcomes Focused Paragon (OFP), respectively (Driver 2008).

Benefits potentially associated with recreation are broadly defined (Driver 1990; Driver 1996; Driver 2008). First, the fundamental concept of benefits can include attainment of a desired condition, an improved condition, and/or prevention of an unwanted condition. Second, benefits can be seen as accruing to individuals, society at large, the economy, and the environment (Driver and others 1991; Stein and Lee 1995). Personal benefits might include advances in physical and mental health and personal growth and development. Social benefits might include strengthening of family relationships, enhanced community pride, and reduction of social deviance and dysfunction. Economic benefits might include increased productivity, reduced health costs, and local economic growth. Environmental benefits might include reduced pollution levels, protection of endangered species, and critical wildlife habitat. Benefits associated with recreation are sometimes seen as linked through a "benefit chain of causality" (Driver 2008). For example, the physical and psychological benefits accruing to individuals can result in a healthier society, a more productive economy, and a greater commitment to environmental protection. However, relatively little is known about such potential relationships.

Table 3—Five types of visitors to the Rawah Wilderness Area, CO. (Adapted from Brown and Haas 1980.)

	Motivational Domain[b]									
Type	Number of respondents	% [a] of sample	Relationship with nature	Escape pressures	Autonomy	Achievement	Reflection on personal values	Sharing/ recollection	Risk taking	Meeting/observing other people
1	50	19	Most strongly added	Most strongly added	Strongly added	Strongly added	Strongly added	Strongly added	Slightly added	Slightly added
2	27	10	Most strongly added	Strongly added	Strongly added	Strongly added	Strongly added	Moderately added	Slightly added	Moderately detracted
3	44	17	Strongly added	Strongly added	Moderately added	Strongly added	Moderately added	Strongly added	Neither	Slightly added
4	53	20	Strongly added	Strongly added	Strongly added	Moderately added	Moderately added	Slightly added	Slightly added	Neither
5	60	23	Moderately added	Moderately added	Moderately added	Slightly added	Slightly added	Slightly added	Neither	Neither

[a] Thirty respondents (11 percent of the sample) were identified as unique in the sense that they were not grouped with any of the five types. This was primarily a function of missing data for these respondents rather than their true uniqueness.

[b] Respondents were asked to state the importance of these motivations to their satisfaction

The objective of benefits-based management is to allow managers to more directly measure and facilitate benefits associated with recreation participation (Allen 1996; Allen and McGovern 1997). Managers are encouraged to specify the benefits they wish to provide, design facilities and services to facilitate these benefits, and measure the extent to which benefits have been realized. Among other things, this requires an understanding of the potential relationships among the four levels of recreation as outlined in Table 1. In other words, what benefits are associated with fulfillment of recreation motivations, and how are motivations, in turn, related to recreation activities and the settings in which they occur? Initial empirical studies are suggestive of such relationships (Tarrant and others 1994; Borrie and Roggenbuck 1995; Stein and Lee 1995; Tarrant 1996) and a useful series of 18 case studies has been compiled by Driver (2008). However, this issue is complex and study findings are not definitive. Research on this issue is described more fully in the next section of this paper and is addressed again in a later section on the Recreation Opportunity Spectrum (ROS), a framework for addressing the structural relationships comprising recreation experiences.

Linking Activities, Settings, Motivations, and Benefits

The previous section on motivations and benefits suggested that recreation can be understood within the behavioral approach or model. This model outlined a basic structure under which recreationists participate in selected activities in specific settings to fulfill motivations that in turn lead to benefits. Under this model, managers might be able to provide recreation opportunities (comprised of alternative activities and settings) designed to fulfill certain motivations and produce related benefits. ROS, described in a later section of this paper, suggests a series of relationships among these factors and begins to provide a formal structure within which this model can be made operational.

Some of the linkages among activities, settings, motivations, and benefits appear intuitively obvious. Opportunities for contact with the natural environment, for example, are likely to be enhanced through limited development of the setting. Opportunities for solitude might be enhanced in relatively low use areas. And opportunities for challenge and risk-taking should be greater in areas providing only low-standard trails and few other improvements. But these are only generalities, and knowledge about such relationships can be enhanced through empirical testing.

A number of studies have begun searching for these relationships. An early study of visitors to three western wilderness areas examined both motivations and physical setting preferences (Haas and others 1979). Respondents reacted to a series of scaled items for both motivations and physical setting attributes, and these response sets were cluster analyzed following the procedures developed by Driver and associates described in the preceding section. Several domains for both motivations and setting attributes were identified, but no attempt was made to relate the two. A second study of visitors to the Glenwood Springs Resource Area, CO, attempted to go a step further (Brown and Ross 1982). Multiple regression analysis was used to explore for relationships between motivations and settings, and a number of such relationships were found. The statistical significance of these relationships was generally enhanced when the sample was grouped according to activity. In other words, people sharing the same activity had more uniform relationships between motivations and setting preferences than all recreationists considered together.

Several studies have included more thorough tests of these relationships. One study surveyed visitors to three wilderness areas, asking respondents to rate a number of motivation, setting attribute, and management action scale items (Manfredo 1983). Each set of scale items was cluster analyzed, and five of the motivation clusters were selected for further object cluster analysis, isolating three visitor types based on similar motivation ratings. Type 1 visitors were labeled High Risk/Achievement Group, type 2 visitors were labeled Low Risk/Social Interaction Group, and type 3 visitors, who represented the largest proportion of visitors (60% of the sample) and tended to be less distinctive in their motivation ratings, were labeled Norm Group. The three types of visitors were then examined to see whether there were significant differences among them in activities engaged in and preferences for setting attributes and management actions. A number of differences were found. Though there were no differences among the three groups with regard to the four activities having the highest participation rates and the one activity with a very low participation rate, there were differences for the two activities with moderate participation rates. In addition, there were statistically significant differences among the three types of visitors on seven of the setting attribute clusters and four of the management action clusters. Though the magnitude of the differences was generally not large, the sample was relatively homogeneous—all respondents were wilderness visitors. A more diverse respondent group may have yielded greater levels of statistical significance.

A second study surveyed visitors to the Cohutta Wilderness, GA/TN and the Okefenokee Wilderness, GA (Shafer and Hammitt 1995). Visitors were asked to rate the importance of five motivations for wilderness recreation; the importance of selected resource, social, and managerial conditions in wilderness; and the extent to which visitors adopted selected behaviors to direct or control the recreation experience. A number of significant correlations were found suggesting that visitors who rated selected motivations as important tended to associate certain wilderness settings with those motivations, and often behaved in ways designed to maximize attainment of those motivations. For example, visitors who rated the "unconfined" nature of wilderness experiences as highly important tended to use wilderness areas where fewer management restrictions were present.

Several other studies have explored the relationships among selected elements of the behavioral model. Most have found what might best be described as "modest" relationships. These include relationships between the activities in which respondents participated and the type of resource selected within an

Australian national park (Collins and Hodge 1984), activities and motivations of Delaware state park visitors (Confer and others 1997), and setting attributes and type of resource selected by anglers in Colorado (Harris and others 1985). However, a study of visitors to five protected areas in Costa Rica found little relation between motivations of visitors and setting preferences (Wallace and Smith 1997).

Two studies have taken a "wilderness perceptual mapping" (WPM) approach to test the assumed relationships in ROS, a framework constructed on assumed relationships among recreation activities, settings, and experiences. A study in New Zealand measured judgments about the desirability of related activities, facilities, and experiences among visitors to 19 wilderness areas (Kliskey 1998). Resulting data were used to create four classes of wilderness recreation based on the notion of "wilderness purism" (Stankey 1973; Kliskey 1998). These four classes of wilderness were mapped and compared to conventional ROS maps. The analysis concluded that "a significant association was obtained between the WPM and ROS mapping", and this suggests ROS generally captures and incorporates the activities and settings that recreationists feel are appropriate for a range of wilderness-related experiences (Kliskey 1998:86). A similar research approach was taken in a study of the San Juan National Forest, CO and this study also found a close relationship between perceived wilderness conditions and ROS mapping (Flanagan and Anderson 2008). For example, 96 percent of lands perceived as "wilderness" by "strong wilderness purists" were all included in the "primitive" land classification of ROS.

The research reviewed in this section offers some support for the conceptual foundations of motivations and benefits, ROS, benefits-based management, and related frameworks. However, definitive relationships among the elements comprising these frameworks are far from clear (McCool and others 1985). It may be unrealistic to expect to find such highly structured relationships. It seems reasonable, for example, to expect that some motivations for recreation might be fulfilled through multiple activities and/or settings (McCool 1978). For instance, the motivation to experience nature might be fulfilled through mountain biking as well as hiking, and might be found, at least to some degree, in a city park as well as a national park. Indeed, some motivations, as well as benefits, may be nearly universal. Moreover, the empirical relationships assumed in ROS and related frameworks may be partially masked by limited choices that often confront recreationists and by peoples' inherent adaptability. The emotional and symbolic meanings that recreationists may assign to some recreation areas may confound the relationships assumed to underlie ROS. Finally, the dynamic character of some recreation activities (such as, hiking) can extend across multiple ROS classes and this can confound the types of studies described above.

Three-fold Framework of Wilderness Recreation

An early focus of research on outdoor recreation, and wilderness use in particular, examined the topic of carrying capacity, or the amount and type of recreation that can be accommodated without unacceptable impacts. Concern about this topic was largely a function of the rapid growth in outdoor recreation during the Post-World War II period (DeVoto 1953; Clawson 1959). The first rigorous application of carrying capacity to outdoor recreation was conducted in the early 1960s (Wagar 1964). Perhaps the major contribution of this conceptual analysis was the expansion of carrying capacity from its dominant emphasis on ecological impacts of outdoor recreation to a dual focus including social or experiential considerations:

> "The study reported here was initiated with the view that the carrying capacity of recreation lands could be determined primarily in terms of ecology and the deterioration of areas. However, it soon became obvious that the resource-oriented point of view must be augmented by consideration of human values" (Wagar 1964: Preface).

The author's point was that as more people visit an outdoor recreation area, the quality of the recreation experience is degraded as well as the natural environment. Thus, carrying capacity was expanded to include consideration of the social environment as well as the natural environment. The effects of increasing use on recreation quality were illustrated by Wagar by means of hypothetical relationships between increasing use level and visitor satisfaction.

Wagar's original conceptual analysis hinted at a third element of carrying capacity, and this was described more explicitly in a subsequent paper (Wagar 1968). In this paper, it was suggested that carrying capacity might vary according to the amount and type of management activity. For example, the durability of natural resources might be increased through practices such as fertilizing and irrigating vegetation, and periodic rest and rotation of impact sites. Similarly, the quality of the recreation experience might be maintained or even enhanced in the face of increasing use by means of more even distribution of visitors, appropriate rules and regulations, provision of additional visitor facilities, and educational programs designed to encourage desirable user behavior. Thus, carrying capacity, as applied to outdoor recreation, was expanded to a three-dimensional concept by the addition of management considerations.

This three-dimensional view of carrying capacity has been extended to outdoor recreation and wilderness use more broadly and suggests that recreation opportunities are comprised of these three components—the condition of natural/cultural resources, the type of social/experiential conditions, and the type and level of management intervention (Manning 2011). All three of these of these components can be of importance to visitors and should receive explicit attention from managers.

Definitions of Wilderness Quality

As in most other areas of life, "quality" has been the underlying goal of those involved in outdoor recreation and wilderness more specifically. Managers want to provide high-quality outdoor recreation opportunities, and visitors want to have high-quality outdoor recreation experiences. Researchers want to understand what contributes to and detracts from high-quality

outdoor recreation experiences. As a consequence, the concept of quality is contained, explicitly or implicitly, in the goals and policies governing most outdoor recreation areas and is an underlying objective of most of the social science research on outdoor recreation and wilderness use. But how is quality defined and measured?

Beginning with the influential studies of the Outdoor Recreation Resources Review Commission (ORRRC) studies in the late 1950s and early 1960s, quality in outdoor recreation has conventionally been defined in terms of visitor satisfaction. Satisfaction as a measure of quality in outdoor recreation has been suggested throughout the literature and over time. The focus on satisfaction arises out of the need for some evaluative communication between visitors and managers. Because use of public parks and wilderness is traditionally free or priced at a nominal level, managers generally lack the clear feedback mechanism available in the private sector in the form of "price signals" (that is, if the quality of a product or service is low, consumers will refrain from purchasing and the price will drop, but if quality is high, consumption and price will rise). Most managers recognize the potential usefulness of visitor opinions and evaluations, within the constraints of resource and management factors, in meeting the quality objectives of outdoor recreation areas. In fact, the Government Performance and Results Act (GPRA) of 1993 requires federal land management agencies such as the National Park Service and U.S. Forest Service to assess and report measures of productivity, and customer (visitor) satisfaction has been a primary component of this program (University of Idaho 2008; Absher 1998; Graefe and others 2001).

The dominant conceptual basis for defining and measuring satisfaction in outdoor recreation has been rooted in expectancy theory (or the expectancy disconfirmation paradigm as used in broader consumer research) (Vroom 1964; Fishbein and Ajzen 1975; Mackay and Crompton 1990; Burns and others 2003; Tian-Cole and Crompton 2003; Brunke and Hunt 2007). Expectancy theory suggests that participants engage in recreation activities with the expectation that this will fulfill selected needs, motivations, or other desired states. The congruence between expectations and outcomes is seen to ultimately define satisfaction. This conceptual base is clearly reflected in an early and often cited definition of satisfaction in recreation as "a function of the degree of congruence between aspirations and the perceived reality of experiences" (Bultena and Klessig 1969:349).

Measurement of satisfaction (and quality), however, has proven to be more complex than anticipated (La Page 1963; Propst and Lime 1982; La Page 1983; Williams 1989). Several conceptual and methodological issues contribute to this complexity. First, general or overall measures of satisfaction may be too broad to be fully useful to either managers or researchers. Satisfaction is a multidimensional concept, affected by a number of potential variables (such as, environmental conditions, use level, facility development, weather), some under the control of managers and many not. Measures of overall satisfaction may not be sensitive enough to detect changes in the variables of interest to managers and researchers. This issue has been illustrated in a number of wide-ranging studies that have found overall satisfaction to be influenced by elements of the resource, social, and managerial environments (Dorfman 1979; Foster and Jackson 1979; Beard and Ragheb 1980; Connelly 1987; Rollins and Chambers 1990; Williams et al. 1991; Herrick and McDonald 1992; Floyd 1997). Multiple-item scales have been developed to measure alternative dimensions of satisfaction, and these have proven more useful than global, single-item measures (Graefe and Fedler 1986; Rollins and Chambers 1990; Vaske and others 1991).

Second, satisfaction is a relative concept that can be mediated by visitor characteristics and other variables. One of the most commonly occurring themes in the outdoor recreation literature is that visitors to outdoor recreation areas often differ in ways that fundamentally affect the perceived quality of recreation opportunities, and ultimately, satisfaction. Visitors have varying socioeconomic characteristics, alternative cultural backgrounds, varying levels of experience, and a range of attitudes, motivations, and norms. While objective elements of recreation opportunities (such as, type of facilities provided, use level) can be important in influencing satisfaction, they are filtered by subjective interpretations of individual visitors (Graefe and Fedler 1986).

A closely related issue addresses the concept of quality in outdoor recreation and its relationship to satisfaction (Baker and Crompton 2000). Quality might most appropriately be defined as a measure of the recreation opportunity provided (its naturalness, the number and type of facilities, and so on), while satisfaction is a more emotional state that is driven at least in part by quality, but might also be affected by other issues (weather, social group interactions, etc.) that are not under direct control by managers.

A third issue suggests that emphasis on visitor satisfaction may ultimately lead to diminished quality or at least a level of quality as defined by a low common denominator. The relative nature of satisfaction as described above suggests that some visitors may be more sensitive than others to environmental, social, and managerial impacts of increasing use levels. If such visitors are "displaced" by those who are less sensitive to recreation-related impacts, then visitor satisfaction (at least as measured in conventional on-site visitor surveys) may remain high despite a substantive change in the type or quality of recreation opportunities (Dustin and McAvoy 1982). A number of studies have documented spatial and temporal displacement of outdoor recreation visitors (Clark and others 1971; Stankey 1980; Hammitt and Patterson 1991; Manning and Valliere 2001; Fleishman and others 2007; Hall and Cole 2007).

Fourth, most studies have found very high levels of satisfaction among visitors to a variety of park, outdoor recreation, and wilderness areas (Brewer and Gillespie 1967; LaPage and Bevins 1981; Greenleaf and others 1984; Applegate and Clark 1987; Rollins and Chambers 1990; Vaske et al. 1991; Dwyer 1993; Jacobson 2001). For example, GPRA-related findings for the U.S. National Park system indicate that 94% of the over 20,000 visitors sampled at 313 national parks in 2008 were satisfied with their outdoor recreation experience (University

of Idaho 2008). This may be related to the broad and relative nature of satisfaction as described above. However, it should not be surprising as recreation experiences, by definition, are self-selected by visitors. This suggests that most visitors would choose recreation opportunities that are in keeping with their tastes and preferences. Despite the underlying reasons, uniformly high levels of satisfaction are of only limited usefulness to recreation managers and researchers interested in understanding relationships between outdoor recreation opportunities and experiences.

A final issue concerns methodological aspects of measuring visitor satisfaction. It was noted above that multiple-item measures of satisfaction have proven more useful than general, single-item measures. However, no standardized measures have been developed and advanced. Moreover, concern has also been raised about when such measures should be administered. In the broadest sense, recreation experiences are dynamic and evolve over time. Research suggests that satisfaction and other evaluative measures also change and evolve over the duration of the experience (Hull and others 1992, Stewart and Hull 1992). However, it is unclear as to what is the most appropriate time to administer measures of satisfaction—during the experience, immediately after, or at some later period.

An alternative approach to defining and measuring quality in outdoor recreation builds on the concept of visitor satisfaction, but links it to the inherent diversity of outdoor recreation. Diversity in outdoor recreation has been a recurring theme in the literature in regard to recreation activities, socioeconomic and cultural characteristics of visitors, attitudes about management, preferences for services and facilities, sensitivity to crowding and conflict, experience level, degree of specialization and place attachment, and motivations for recreation participation. Diversity in tastes for outdoor recreation is found equally in studies of developed campgrounds and investigations of wilderness hikers. For example, an early study concluded that "wilderness visitors are not in any sense a uniform or homogeneous population… Represented among wilderness visitors are value systems that cover a wide and often conflicting range" (Stankey 1972:92).

Research points out that not only are there differences in taste among people, but that people's tastes change over time as well. A study in the Pacific Northwest found that the type of camping chosen (wilderness camping, automobile camping, or some combination of the two) was strongly related to changes in stage of the family life cycle (Burch 1966). A nationwide panel study of campers found similar relationships between camping activity and family life cycle (LaPage 1973). Based on these relationships, it has been suggested that "The forest camping system is like an omnibus—the seats are often full but often occupied by different persons as they adjust to the flow of time" (Burch 1966).

Diversity is also evident when the "averaging issue" in outdoor recreation is recognized. A classic paper titled "The Average Camper Who Doesn't Exist" emphasized that statistical averages sometimes obscure diversity in research data and can create a model of reality that no visitors actually fit (Shafer 1969). The potential problem of relying too heavily on averages has been elaborated as it might apply to camping (Wagar 1963, 1966; Lime 1974). Studies show that some campers prefer very elaborate facilities for comfort and convenience, while others prefer simple, rustic facilities. Moreover, there is a wide range of opinion between these extremes. Providing a single, uniform type of camping opportunity—near the midpoint of the range based on averages, indeed at any point along the range—will leave many campers, quite possibly even the majority, less than fully satisfied. However, by offering a range of possibilities, more campers' preferences can be met.

Diversity as a measure of quality in outdoor recreation has also been rationalized in economic terms using an example of a hypothetical undeveloped recreation area (Wagar 1974). If the area were to be used for wilderness recreation, it might support 3,000 recreation visitors each year. If intensively developed, it might support 300,000 recreation visitors. But the decision between these two alternatives should take into account the issue of scarcity. If developed recreation opportunities are relatively plentiful and wilderness recreation scarce, society may place more value on creating additional wilderness recreation opportunities even though they will accommodate fewer visitors. This is in keeping with the economic theory of marginal utility: the more we have of some good or service, the less value is placed on each additional unit.

Diversity has also been rationalized in political terms (Burch 1974). It can be argued that without broad political support, parks, wilderness, and other outdoor recreation areas are not likely to be maintained by society at large, and that this support is not likely to be forthcoming if outdoor recreation areas do not serve the needs of a broad spectrum of the population. Therefore, managers should strive to serve this diversity and not necessarily adhere too closely to the preferences or tastes of any one group or type of visitor.

Difficulty in distinguishing between quality and type of recreation opportunities has been a persistent problem for both outdoor recreation visitors and managers. It is common to subjectively associate certain types of recreation opportunities with high quality. Those whose recreation tastes are oriented toward the remote and primitive, for example, may consider wilderness recreation to be of high quality and automobile-accessible campgrounds as something less. But high quality can and should be found among all types of recreation opportunities.

Research on visitor satisfaction and diversity can be synthesized to develop a clearer and more useful understanding of quality in outdoor recreation (Wagar 1966). The concept of quality might best be expressed in different ways as it is applied in alternative contexts or at different scales. At the level of the individual participant, satisfaction is an appropriate measure of quality, though satisfaction for selected components of the experience (for example, environmental conditions, use level/crowding, number and type of facilities) is more useful than global or overall measures. Such measures of satisfaction address the degree to which a park or outdoor recreation activity or area meets the needs of the visitor.

Quality can also be defined in the context of management. Given the diversity in public tastes for outdoor recreation, a

park (or site within a park) could be managed for many types of outdoor recreation (a developed campground, a wilderness campsite). Thoughtful consideration should be given to the most appropriate type of opportunity to be provided, and this decision should be expressed in terms of management objectives and associated empirical measures (this approach to management is described more fully in a later section of this paper). Quality is then defined and measured as the degree to which recreation opportunities meet the objectives for which they are designed and managed. This approach to defining quality and guiding management avoids the problem of displacement of visitors as described above and the related process of unintended incremental change in recreation opportunities possible when quality is defined simply in terms of visitor satisfaction.

Finally, quality in outdoor recreation can be defined at a broad societal level as provision of a diverse system of outdoor recreation opportunities. Given broad and diverse tastes in outdoor recreation, a comparably diverse system of outdoor recreation opportunities should be provided. Each opportunity within this system should be managed for a defined set of objectives as determined by inherent capabilities of natural and cultural resources, assessment of the demand and supply of recreation opportunities, and the mandate and capacity of management agencies.

Management Objectives, Indicators and Standards, and the "Limits of Acceptable Change"

As noted earlier in this paper, the issue of carrying capacity has attracted intensive focus as a research and management concept in outdoor recreation, and especially in wilderness use. A principal challenge in defining and managing carrying capacity lies in determining how much impact or change should be allowed within each of the three components that make up outdoor recreation opportunities: environmental and cultural resources, the type and quality of the recreation experience, and the extent and type of management actions. Recent analyses have suggested that these issues are not only at the heart of carrying capacity, but must be addressed in the broader context of sound park, outdoor recreation, and wilderness planning and management (Manning 2011; Whittaker and others 2011; Graefe and others 2011).

The growing research base on outdoor recreation indicates that increasing recreation use often causes impact or change. This is clear with regard to environmental resources (Cole 1987; Hammitt and Cole 1998; Kuss and others 1990; Leung and Marion 2000). An early study in the Boundary Waters Canoe Area, MN, for example, found that an average of 80% of ground cover vegetation was destroyed at campsites in a single season, even under relatively light levels of use (Frissell and Duncan 1965). Research also suggests that increasing recreation use can impact the social or experiential component of outdoor recreation through crowding and conflict, as well as the management component of outdoor recreation through the need to implement more intensive management practices (Manning 2011). Despite increasing knowledge about outdoor recreation use and resulting impacts, the critical question remains: how much impact or change should be allowed?

This issue is often referred to as the "limits of acceptable change" (Frissell and Stankey 1972, Stankey and others 1985). Some change in the recreation environment is inevitable, but sooner or later the amount, nature, or type of change may become unacceptable. But what determines the limits of acceptable change? This issue is illustrated graphically in Figure 1. In this figure, a hypothetical relationship between visitor use and impacts to the environmental, social, and management components of outdoor recreation is shown. This relationship suggests that increasing recreation use causes increasing impacts in the form of damage to fragile soils and vegetation, crowding and conflicting uses, and more direct and intensive recreation management actions. However, it is not clear from this relationship at what point these impacts have become unacceptable. X1 and X2 represent alternative levels of visitor use that result in corresponding increases in impact as defined by points Y1 and Y2, respectively. But which of these points—Y1 or Y2, or some other point along the vertical axis—represent the maximum amount of impact that is acceptable?

To emphasize and further clarify this issue, some studies have suggested distinguishing between descriptive and prescriptive components of outdoor recreation management (Shelby and Heberlein 1984, 1986). The descriptive component focuses on factual, objective data such as those that define the relationship in Figure 1. For example, what is the relationship between the amount of visitor use and perceived crowding? The prescriptive component of outdoor recreation management concerns the seemingly more subjective issue of how much impact or change in the recreation environment is acceptable. For example, what level of perceived crowding should be allowed?

The scientific and professional literature in outdoor recreation suggests that answers to prescriptive questions can be found through formulation of management objectives and associated indicators and standards (Frissell and Stankey 1972; Brown 1977; Lime 1979; Stankey and others 1985;

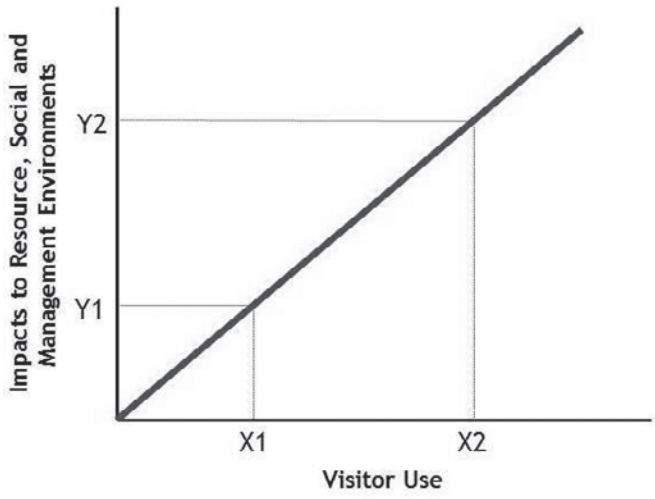

Figure 1—Hypothetical relationship between visitor use and impact to the recreation environment. (From Manning and Lime 1996.)

Stankey and Manning 1986; Graefe et al. 1990; Manning 2001; McCool and Lime 2001; Cole and others 2005; Manning 2007; Manning, 2009; Manning 2011). Management objectives are sometimes called "desired conditions". This approach to recreation management focuses on defining the type of park and outdoor recreation conditions to be provided. Management objectives are broad, narrative statements defining the type of park and outdoor recreation conditions to be provided and maintained, including the condition of natural and cultural resources, the type of recreation experience, and the type and intensity of management actions. Indicators are more specific, measurable variables reflecting the essence or meaning of management objectives. They are quantifiable proxies or empirical measures of management objectives. Indicators may include elements of the resource, social, and management environments that are important in determining the quality of the visitor experience. Standards define the minimum acceptable condition of indicator variables or the limits of acceptable change.

An example may help illuminate these ideas and terms. Review of the Wilderness Act of 1964 suggests that areas contained in the National Wilderness Preservation System are to be managed to provide "opportunities for solitude". Thus, providing opportunities for solitude is an appropriate management objective or desired condition for most wilderness areas. Moreover, research on wilderness use suggests that the number of other visitors encountered along trails and at campsites is important in defining solitude for wilderness visitors (Manning 2011). Thus, trail and camp encounters are potentially good indicators for the management objective of solitude. Research also suggests that wilderness visitors may have normative standards about how many trail and camp encounters can be experienced before opportunities for solitude decline to an unacceptable degree or violate the limits of acceptable change. (Normative standards are discussed more fully in the next section of this paper.) For example, a number of studies suggest that many wilderness visitors find it unacceptable to encounter more than three-to-five other groups per day along trails (Manning 2011). Thus, a maximum of five encounters per day with other groups along trails may be a good standard for managing wilderness solitude and defines the limits of acceptable change.

Formulation of management objectives and associated indicators and standards of quality can be informed by empirical research, historical precedent, analysis of relevant legislation and associated policy, interest group politics, and other sources. Management objectives, indicators and standards, and limits of acceptable change have been incorporated into several contemporary frameworks for planning and managing wilderness and outdoor recreation more broadly. Prominent examples include the Limits of Acceptable Change (Stankey and others 1985; McCool and Cole 1997) and Visitor Experience and Resource Protection (National Park Service 1997; Manning 2001).

Normative Standards

Developed in the disciplines of sociology and social-psychology, normative theory and related empirical methods have attracted substantial attention as an organizing concept in outdoor recreation research and management (Heberlein 1977; Shelby and Heberlein 1986; Vaske and others 1986; Vaske and others 1993; Shelby and others 1996; Manning and others 1999; Manning 2007; Manning 2011). Much of this literature has been organized around the work of Jackson (1965), which developed a methodology for measuring norms. Adapting these methods to outdoor recreation, visitors and other stakeholders can be asked to evaluate alternative levels of potential impacts caused by increasing recreation use. For example, visitors might be asked to rate the acceptability of encountering increasing numbers of recreation groups while hiking along trails. Resulting data would measure the personal crowding norm of each respondent. These data can then be aggregated to test for social crowding norms, or the degree to which norms are shared across groups.

Social norms can be illustrated graphically, as shown in Figure 2. Using hypothetical data associated with the example

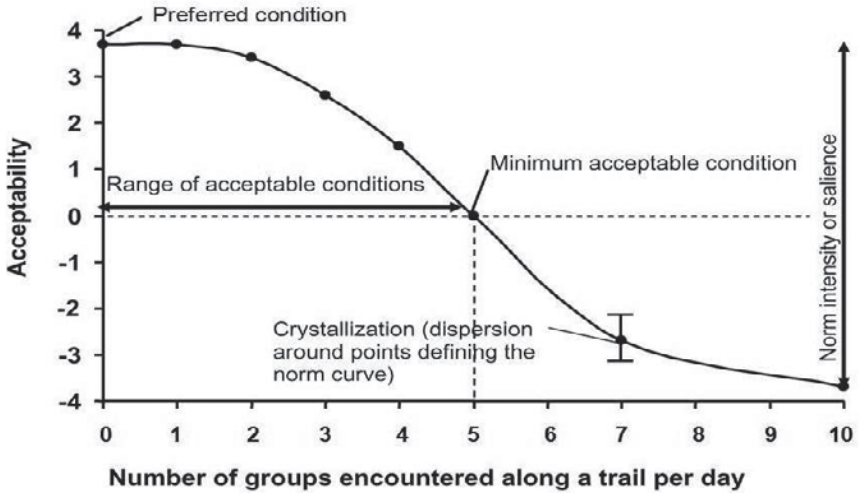

Figure 2—Hypothetical social norm curve.

described previously, this graph plots average (mean or median) acceptability ratings for encountering increasing numbers of visitor groups along trails. Data for this type of analysis might be derived from a survey of wilderness hikers. The line plotted in this illustration is sometimes called an "encounter" or "contact preference" curve (when applied to crowding-related variables), or might be called an "impact acceptability" curve more generally, or simply a "norm curve."

Norm curves like that illustrated in Figure 2 have several potentially important features or characteristics. First, all points along the curve above the neutral line of the evaluation scale—the point on the vertical axis where aggregate evaluation ratings fall from the acceptable into the unacceptable range—define the range of conditions acceptable to a majority of visitors. All of the conditions represented in this range are judged to meet some level of acceptability by about half of all respondents. The "optimum condition" is defined by the highest point on the norm curve. This is the condition that, absent other considerations, received the highest rating of acceptability from the sample as a whole. The "minimum acceptable condition" is defined as the point at which the norm curve crosses the neutral point of the evaluation scale. This is the point at which aggregate ratings fall out of the acceptable range and into the unacceptable range. Norm "intensity,"—the strength of respondents' feelings about the importance of a potential indicator—is suggested by the distance of the norm curve above and below the neutral line of the evaluation scale. The greater this distance, the more strongly respondents feel about the indicator or the condition being measured. High measures of norm intensity suggest that a variable may be a good indicator because respondents feel it is important in defining the quality of the recreation experience. "Crystallization" of the norm concerns the amount of agreement or consensus about the norm. It is usually measured by standard deviations or other measures of variance around the points that describe the norm curve. The less variance or dispersion of data around those points, the more consensus there is about norms.

Research has measured normative standards for a variety of indicators that address the resource, social, and managerial components of outdoor recreation opportunities, and this information has been compiled in several sources (Manning 2011). In these studies, most respondents are able to report norms for most indicators included in the study and normative standards are reported most often and are most highly crystallized in wilderness or backcountry areas.

Recreation Opportunity Spectrum (ROS)

The discussion of quality in outdoor recreation in an earlier section of this paper noted that many studies have documented diverse tastes in outdoor recreation, and that a corresponding diversity of recreation opportunities is warranted. Designing diversity into outdoor recreation requires a systems-oriented approach to planning and management. It would be difficult for a single recreation or wilderness area, regardless of size, to provide a full spectrum of visitor opportunities. Examining each recreation area in isolation will usually lead to management decisions favoring the majority or plurality of potential visitors. While this is justified in many cases, this process will ultimately result in an entire system of recreation areas designed for the "average" visitor while neglecting a desirable element of diversity. Instead, each recreation area should be evaluated as part of a larger system of areas, each contributing as best it can to serve the diverse needs of the public. In this way, low density and other minority recreation opportunities can be justified (Wagar 1974). It has been suggested that this systems approach be applied on a broad, regional basis or on a landscape level; this way management can best ensure "a diverse resource base capable of providing a variety of satisfactions" (Stankey 1974).

Recognition of the need for diversity has led to a number of suggested classification or zoning systems for recreation areas. However, the most highly developed and widely used approach is ROS. ROS is a conceptual framework for measuring and managing diversity in outdoor recreation opportunities. A range of levels of attributes (or "indicators" and "standards" as used in an earlier section of this paper) that define recreation experiences are combined in alternative configurations to describe diverse recreation opportunities.

ROS has been formalized and translated into management guidelines. The relationships among indicators and standards that combine to define recreation opportunities have been arranged in configurations that suggest relatively standard categories of opportunities. Moreover, the system has been adopted by several park, wilderness, and outdoor recreation management agencies, including the U.S. Forest Service and the Bureau of Land Management (Buist and Hoots 1982; Driver and others 1987). ROS was developed simultaneously by two groups of researchers: Clark and Stankey (1979a) and Brown, Driver, and associates (Driver and Brown 1978). The approaches are quite similar, but some important differences also exist.

Both approaches to ROS recognize the four-fold hierarchical framework of demands for recreation as described in an earlier section of this paper—activities, settings, motivations, and benefits—and the focus of both approaches is on Level 2 demands, settings. Brown, Driver, and associates take a more empirically oriented approach to ROS, seeking to link settings to the motivations or psychological outcomes they fulfill. This is a natural extension of their work on motivations for recreation as outlined above.

Clark and Stankey (1979a) take a more applied approach. They note that as knowledge of linkages between recreation settings and psychological outcomes improves, so will the efficacy of meeting visitor demands. But in the meantime, managers should emphasize the provision of diversity in recreation settings based on the assumption that a corresponding diversity of experiences will be produced.

ROS has been adapted and applied to several more specific types of outdoor recreation areas and uses, including wilderness (Flanagan and Anderson 2008). For example, there is a Wilderness Recreation Opportunity Spectrum (WROS) that is based on a series of physical-biological, social, and managerial indicators and standards that combine to form four classes of

wilderness recreation opportunities labeled Transition, Semi-primitive, Primitive, and Pristine as shown in Table 4.

ROS is a conceptual or organizing framework for understanding and managing recreation opportunities. It explicitly recognizes that experiences derived from recreation activities are related to the settings in which they occur, and that settings in turn are a function of resource, social, and managerial factors. By describing ranges of these factors (or alternative standards), ROS illustrates the potential diversity of recreation opportunities. The underlying rationale for ROS is sometimes referred to as "experience-based setting management" (Manfredo 1983; Floyd and Gramann 1997).

ROS can be used in several ways, perhaps most importantly as an allocation and planning tool. Taking into account demands for recreation opportunities and their relative abundance, ROS can help guide allocation decisions so that each recreation area contributes to the diversity desirable in a complete system of recreation opportunities. Moreover, once an appropriate opportunity type has been chosen, ROS can help define specific management objectives for each setting attribute. Using noise as an example, Clark and Stankey (1979b) illustrate how ROS can be helpful in formulating an appropriate management objective and ensuring that limits of acceptable change or standards are not violated. The ROS concept has been adopted as an integral part of frameworks designed to address carrying capacity as discussed earlier (Stankey and others 1985; National Park Service 1997). The specific setting attributes or indicators used in ROS can also be useful in designing and conducting inventories of recreation opportunities (Kliskey 1998). ROS also provides an explicit framework within which consequences of alternative management actions can be evaluated. ROS also provides a means of matching desired visitor experiences with available opportunities. ROS provides relatively specific descriptions of available recreation opportunities, and this can help visitors more readily identify those opportunities most likely to meet their desired experiences. This can also reduce potential conflict between incompatible recreation activities (Daniels and Krannich 1990). If recreation areas are consistently managed for defined types of opportunities that are made known to the public, this is likely to have substantial benefits to both visitors and managers (Jubenville and Becker 1983). Visitors are more likely to be satisfied with the opportunities they select, and managers are less likely to have to resort to regulatory measures designed to control inappropriate visitor use.

Discussion

The frameworks described above enhance understanding of the wilderness experience and can be integrated to help guide wilderness management. Figure 3 presents an integration of these frameworks in a single conceptual model accompanied with an example of their application. As figure 3 suggests, visitors to wilderness are driven by an array of motivations, for example seeking solitude. These motivations lead visitors to select recreation activities and settings that are most likely to fulfill these motivations, hiking in the wilderness for example. Recreation settings are defined by resource (few social trails), social (few encounters with other groups along trails), and managerial (low standard trail) characteristics. If visitors are successful in fulfilling their motivations, then they are likely to be satisfied and associated benefits of recreation may accrue, perhaps a sense of peace in our example. Wilderness managers play an important role in this process by formulating management objectives for wilderness areas (such as, opportunities for solitude), and translating these objectives into indicators (number of groups per day encountered along trails) and standards that represent the limits of acceptable change (no more than five groups per day encountered along trails). Standards

Table 4—Wilderness Recreation Opportunity Spectrum. (From Arthur Carhart National Wilderness Training Center n.d.)

	Wilderness Recreation Opportunities			
Indicators	**Transition**	**Semi-Primitive**	**Primitive**	**Pristine**
Vegetation loss & bare, compacted mineral soil at campsites (sq. feet)	1,000	625	400	225
Number of trees with roots exposed, or percent (whichever is less)	10 50%	6 25%	4 25%	0 0%
Encounters—80% probability—maximum number of encounters per day when traveling—primary use season	10-20 Generally 10, but up to 20 on a case by case basis.	10	7	1
Party size—people & stock combined	12	12	12 Encourage 6 or less people, 0 stock	12
Campsites visible when occupied	3	2	1	0
Dead woody debris available for firewood	Appears to be natural levels compared to adjacent similar areas			

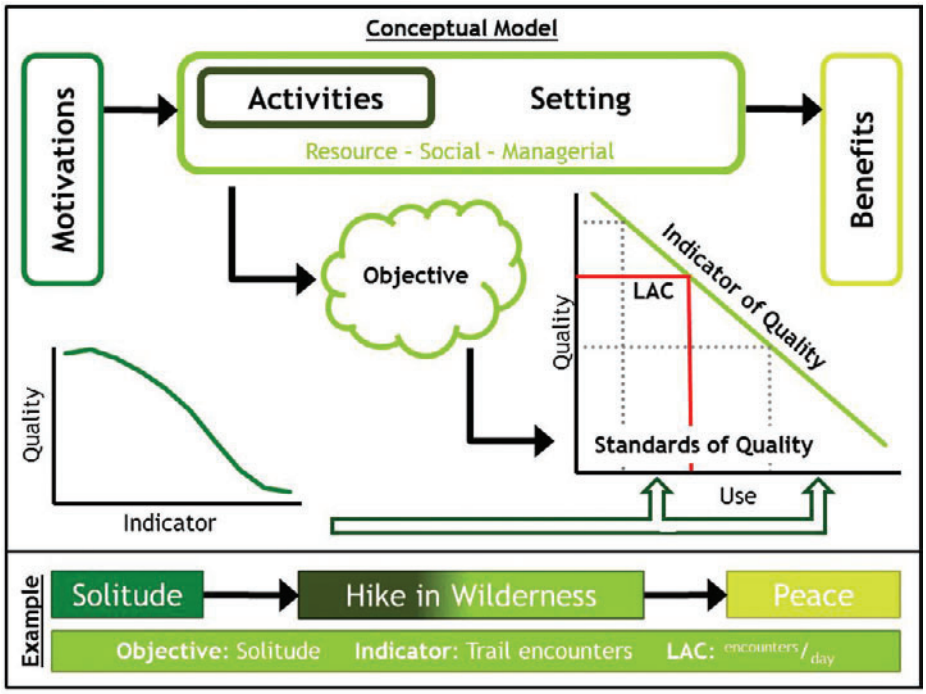

Figure 3—Conceptual model to integrate frameworks for defining and managing wilderness experience.

or limits of acceptable change are informed by the wilderness recreation norms of visitors and other stakeholders, along with other types of information such as resource scarcity and sensitivity, law and policy, and available funding and staffing.

Table 5 adds elements of diversity and quality to this model. Following the discussion above, visitors select wilderness recreation activities and settings based on motivations and the satisfaction and potential benefits to be attained. Managers formulate objectives for sites and areas that are expressed in empirical terms as indicators and standards/limits of acceptable change. Indicators and standards can be combined in alternative ways to facilitate a range of wilderness settings or

Table 5—Integrated framework to manage for diverse, high quality wilderness opportunities.

Scale	Measure of Quality	Framework Element	Example Wilderness Opportunities		
Visitor	Visitor satisfaction	Motivation	Physical challenge	Time with friends & family	Immersion with nature
		Activity	Trail Running	Camping	Backpacking
		Setting	Trail network	Scenic landscape	Remote backcountry
		Benefit	Competency & esteem	In-group cohesion	Connection & knowledge
Manager/ Unit	Maintain standard/ LAC	Objective	Facilitate access to backcountry	Minimize visitor conflicts	Minimal human intrusion
		Indicator	Trail mileage & maintenance	Campsite sharing	% time aircraft audible
		Standards Or LAC	≥ 80% of trails open at any time	No groups must share campsites	≤ 10% of the time
Society/ Landscape	Diverse spectrum of opportunities	ROS	Transition	Primitive	Pristine

opportunities, in this case labeled "transition", "primitive", and "pristine." Measures of quality can be applied at three levels. For visitors, quality is the satisfaction associated with fulfilling motivations and attaining benefits. For managers of a wilderness area or site, quality is defined as maintaining the standards that have been formulated (or not violating the limits of acceptable change). For society at large (or a system of wilderness areas at the landscape level), quality is provision of a spectrum of wilderness opportunities designed to meet the needs of a diverse population.

The conceptual and empirical frameworks reviewed and synthesized in this paper should not be interpreted too literally, nor should the knowledge derived from the long-term program of research on outdoor recreation and the wilderness experience be overstated. For example, many studies have found only modest relationships among variables such as motivations, activities, settings, and benefits. Study hypotheses are sometimes not supported, and it is hard to synthesize and generalize cross-sectional studies rooted in a variety of places and times. Perhaps more importantly, there are alternative interpretations of recreation and wilderness research. In particular, some of the frameworks advanced in this paper have been critiqued as more highly structured, linear, and mechanistic than warranted, sometimes being labeled a "production process", the "commodity metaphor", and "experienced-based setting management" to emphasize their structured approach (Williams and others 1992, Patterson and others 1998; Pierskalla and Lee 1998; Stewart 1998; Stewart and Cole, 1999; Borrie and Roggenbuck 2001; Borrie and others 2001; More 2002a, b; More and Kuentzel 2000). To suggest that selected recreation activities and wilderness settings will unerringly lead to satisfaction of corresponding motivations and attainment of known benefits would be an overstatement. Some researchers have advanced alternative interpretations which have been variously labeled as "process-based", "transactive", "dynamic, emergent, and multi-phasic", and "situated freedom" to emphasize less highly structured relationships. This critique includes several dimensions.

First, the behavioral interpretation of recreation that underlies some of the frameworks described in this paper is built on expectancy theory which assumes that human behavior is goal-oriented and that choices about recreation activities and areas are made in rational ways (Pierskalla and Lee 1998; More and Kuentzel 2000; More 2002a). However, such decisions are often made without full information by recreation participants, and the psychology underlying such decisions may be complex and influenced by emotion as well as intellect. For example, several studies have found that "mood" can be an important influence in recreation experiences (Hull et al 1992; Stewart 1992; Hull and Michael 1995, Hull and others 1996). Moreover, "sense of place", "place attachment", and related emotional connections between recreationists and park and wilderness areas can strongly influence recreation choices, behaviors, and attitudes. This issue has become an important part of the professional and scientific literature on outdoor recreation (Williams and others 1992; Warzecha and Lime 2001, Kyle and others 2004 a, b, c; Smaldone and others 2005).

Recent research has also suggested that recreation experiences can be highly dynamic and that this can confound analyses and application of the conventional behavioral approach to recreation (McIntyre and Roggenbuck 1998; Patterson and others 1998; Pierskala and Lee 1998; Stewart 1998; Borrie and Roggenbuck 2001; Breejen 2007). For example, a study of canoeists in the Juniper Prairie Wilderness, FL used qualitative interviews to explore the character of the wilderness experience (Patterson and others 1998). Many respondents reported that "challenge" was an important component of the experience, but challenge was interpreted in both positive and negative ways depending upon characteristics of participants and specifics of the experience. While challenge is a potentially important motivation for outdoor recreation in the context of the conventional behavioral approach to recreation, it may have alternative meanings and implications across places, times, and participants. The authors advance the idea that recreation opportunities (that is, activities, settings) might be most appropriately interpreted and characterized by the notion of "situated freedom" which they describe as

> "structure in the environment that sets boundaries on what can be perceived or experienced, but that within those boundaries recreationists are free to experience the world in highly individual, unique, and variable ways. Under these conditions, the nature of experience is seen as emergent rather than predictable" (Patterson and others 1998:425-426.).

A related study employed an "experience sampling method" to examine recreation experiences at the Okefenokee Wilderness, GA (Borrie and Roggenbuck 2001). Respondents were asked to report the character of their wilderness experience at randomly-assigned intervals throughout their trips, and findings suggest that the experience often varied significantly along dimensions of both space and time. For example, respondents reported greater focus on the environment and on introspection during the "exit" phase of the experience compared to the "entry" phase, and less focus on others/social acceptance during the "immersion" phase. The authors conclude that recreation experiences can be characterized as "dynamic, emergent, and multi-phasic", and this may introduce a level of complexity to the assumptions underlying conventional behavioral interpretations of recreation.

A final critique notes that strong, empirically defined relationships among recreation activities, settings, motivations, and benefits have yet to emerge (McCool 1978; McCool and others 1985; More and Kuentzel 2000; More 2002 a,b). Studies reviewed earlier in this paper offer more mixed findings on this topic.

As in many of these types of scientific and professional discussions, the "truth" probably lies somewhere in the broad middle ground of the two extremes of this issue. Human behavior is complex and adaptable, but is not random. Managers can help facilitate psychological and other outcomes for wilderness visitors, but cannot dictate such ends. However, it seems hard to deny that we have learned a lot about outdoor recreation and the wilderness experience over the past several decades and that this knowledge can be integrated and synthesized

into a series of organizational frameworks that can support informed decision-making about defining and managing the wilderness experience. Ultimately, this will require exercise of some element of management judgment. And, of course, more research is needed!

Conclusion

A substantive body of research on outdoor recreation has emerged over the past several decades and this work has important implications for defining and managing the wilderness experience. The conceptual and empirical frameworks described in this paper lead to the following series of propositions:

1. Wilderness experiences can be understood as behavior that is driven by visitor motivations and potential benefits.
2. Wilderness recreation activities and settings can be instrumental in facilitating satisfaction of visitor motivations and benefits.
3. Wilderness settings/opportunities can be defined by a three-fold framework, including resource, social and managerial conditions.
4. Definition of the quality of the wilderness experience has evolved from global measures of visitor satisfaction to include measures of the degree to which wilderness recreation opportunities provide the experiences for which they are designed and managed, and the extent to which the system of wilderness opportunities meets the inherently diverse needs of society.
5. Wilderness recreation should be guided by management objectives, and these objectives should be stated in empirical terms of indicators and standards that specify the limits of acceptable change.
6. Formulation of indicators and standards/limits of acceptable change should be informed by social norms of wilderness visitors and other stakeholders, as well as other relevant sources of information.
7. Indicators and standards that define wilderness recreation opportunities can be configured in alternative combinations to help guide provision of a spectrum of wilderness opportunities and experiences designed to meet the diverse needs of society.

The frameworks and associated propositions that have emerged from the scientific and professional literature can be used to provide some order and understanding to the inherently complex topic of the wilderness experience. While there is some debate over the degree to which these frameworks can be interpreted and applied in a literal way, they can provide conceptual and empirical guidance in defining and managing the wilderness experience.

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III. Wilderness Futures

Potential Roles of Research in Enhancing the Performance of Management in Securing High Quality Visitor Experiences in Wilderness

Stephen F. McCool

Abstract—Does research help managers provide opportunities for visitors to have high quality experiences in wilderness? Difficulties in applying visitor experience research result from several factors: the nature of wilderness itself, the character of the wilderness visitor experience challenge as a research and management topic, and the paradigm of research applications employed by wilderness scientists. Many wilderness visitor research applications seem to be built upon a "hypodermic needle" model of knowledge transfer rather than the more interactive approach needed in a context of rapid policy and social change and uncertainty. This paper suggests scientists and managers consider the long-established, but little used, approach to research applications of forming a community of practice.

Background

The unique qualities of wilderness landscapes in the United States provide a diverse range of opportunities for visitors to experience naturalness, wildness, a sense of challenge, adventure, and solitude. Wilderness landscapes may serve as the virtual crucibles that enhance one's spiritual well-being and strengthen families and friendships. The landscapes preserved through wilderness designation afford opportunities to learn about the natural world and appreciate the role of nature's ingenuity in providing for human life. The breathtaking beauty, absence of human development, and dominance of natural processes improve our understanding of our heritage and our future.

Opportunities for visitor experiences are explicitly recognized and mandated in Section 2(b) of the Wilderness Act of 1964 which describes wilderness in part as containing "outstanding opportunities for solitude or a primitive and unconfined type of recreation". Section 2(b) of the Eastern Wilderness Act (1975) provides a more inclusive description of a desired visitor experience to include not only solitude but also "physical and mental challenge…inspiration and primitive recreation." Of all the congressional legislation dealing with parks, wilderness and other types of protected areas in the U.S., these are the only two national-scale laws that prescribe the type of opportunity wilderness affords visitors, although similar phrases to the one appearing in the Eastern Wilderness Act do appear in a few state and individual wilderness designation acts. As a result, these experiences are vulnerable to lapses in attention because nowhere else in the American landscape are opportunities for such experiences formally preserved.

I assume this description of a visitor experience is something that Congress was serious about and for which it expected agencies to provide stewardship. While providing for visitor experiences of the type described in the legislation may not be judged a required obligation of wilderness management agencies, the social and cultural importance of opportunities for specific components of visitor experiences cannot be denied.

Relationships between biophysical, social and managerial conditions and these experiences have been subject to a wide variety of research over the last 50 years, beginning most notably with Lucas's work in the Boundary Waters Canoe Area (1964a,b). The diverse character of those studies demonstrates the importance of solitude and primitive recreation to visitors, that experiences are multi-dimensional, that not all visitors to wilderness come to experience solitude, that there are many ways to conceive of visitor experiences, and that the relationships between setting attributes and experiences are probabilistic rather than deterministic.

And yet, despite this extensive research and the explicit mandate from Congress to provide opportunities for specific types of experiences, there are problems in implementing management strategies, policies and techniques to ensure that such opportunities exist. For example, Cole and Williams (in press) argue that managers have been challenged in managing opportunities for the experiences described in the Wilderness Act and Eastern Wilderness Act. In part, this challenge is derived from what can be broadly termed as "inefficiencies" in the transfer of knowledge from this science to actual practice.

In this paper, I focus principally on the underlying structures and mental models of research application in use by science to transfer knowledge and understanding needed to meet the unique visitor experience opportunities mandated by the Wilderness Act and the Eastern Wilderness Act. In

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writing this paper, my observations are impressionistic rather than explicitly empirical and thus remain as hypotheses to be explored, assessed and debated. The paper first puts forth four characteristics of wilderness that make research and its application challenging even to the most competent scientist and the most capable manager. Then the paper moves on to a description of what appears to be the "mental model in use" in contemporary research applications. This mental model will only work if its fundamental assumptions prove to be valid, an issue discussed in a section which re-interprets the character of wilderness visitor management research and suggests the need for another model of research applications. The final section suggests an approach to research applications that should work more efficiently in the 21st century context of post-normal science.

Science plays important roles in assisting management in providing for experiential opportunities. One significant role is "simply" helping frame the question of visitor experiences. As Bardwell (1991) has noted, natural resource problems are often challenging to frame in such a way that they can be successfully resolved. An outstanding example where science has helped frame visitor experience management was the shift from asking the question "how many visitors are too many?" to one that enquires "what are the appropriate and/or acceptable conditions to be maintained in wilderness?" The former oversimplifies questions of visitor management while the latter compels a discussion of the underlying values of wilderness and visitor attitudes.

A second role is to provide empirically-based understanding of what people expect and experience during a wilderness visit. This role encompasses the traditional view of science in visitor management as an "objective" activity that provides management with the data and information needed to not only determine what management direction should be chosen but also to increase understanding of the consequences of each alternative. This role also encompasses developing and testing new concepts and methods for thinking about visitor experiences.

A third role involves helping managers develop frameworks and systematic approaches to the application of science. While data and information are often required as a basis for decision-making, management often needs to "work through" the difficult and messy challenges of visitor management. Frameworks can help management think more critically. Stankey and Clark (1996) suggested that an effective framework (1) identifies tradeoffs between provision of recreation opportunities with the resulting local economic impacts and protection of biodiversity values, (2) appreciates and addresses complexity (rather than suggesting reductionistic approaches), and (3) accommodates the array of constituencies with interests in the specific area or issue.

Recreation and tourism planning frameworks make decision making (1) efficient by focusing attention on important elements of the political and social environment, (2) effective by gaining the public support that is needed for implementation, and (3) equitable by forcing consideration of who wins and who loses in different choices. In an overall sense, a framework increases the opportunities to practice the "mindfulness" Weick and Sutcliffe (2001) argued is important to deal with the inevitable surprises occurring in an uncertain context.

The saliency and efficacy of such roles, however, are a function of the mental models of knowledge transfer and research applications that both scientists and managers hold and which influence their behavior (Senge 1990). The fundamental assumptions about science, management and systems to transfer research determine the behavior of scientists and managers with respect to their own work and how they perceive and respond to each other. When there are inefficiencies in carrying out these roles due to mental models that are no longer appropriate, science may be inaccurately cast as being irrelevant or unhelpful. In these situations, research problems are rarely framed with the definitive sideboards that classic scientific empiricism requires.

On the Context for Conducting Research About Visitor Experiences in Wilderness

Wilderness is not an easy place to conduct research of any kind, including that on visitor experiences. Not only are visitors often widely dispersed among trails, trailheads, campsites and areas, they often visit to escape the very intrusions social scientists pose as they seek to better understand the experiences these visitors desire. Beyond these practical considerations, there are four specific characteristics of wilderness (McCool 2003a) that make research particularly challenging, even though it may serve as an ideal "laboratory" for visitor experience research.

First, wilderness exists within a dynamic social, political and biophysical context. Change is ever present, at all scales and domains. Wilderness is deeply entrenched in and influenced by trends and patterns occurring within larger social, political and biophysical contexts. Writing about the increased interest in community based conservation advocated by so-called "social constructionists", Belsky (2000) notes

> "A fatal implication of the social constructionists' ascendancy is lack of attention to how political and economic institutions and relations operating at the global or "nonplace based level" affect social and ecological interactions at multiple scales."

When this context changes, such as the importance of various wilderness related values, the character of visitor experiences also changes. In particular, the acceptability of wilderness conditions that facilitate experience may change. For example, changes in preferences for solitude may mean that visitors are willing to accept a greater use density than they formerly did. Changes in preferences may be linked to larger scale social changes. Such changes may occur at speeds and scales that are imperceptible at one time and revolutionary at other. Thus, the meaning of science, conducted at local, site level scales, needs to be interpreted within the context of social processes and preferences occurring at larger scales.

Second, wilderness as a social-ecological system (Andereis and others 1994) is characterized by uncertainty. By system, I mean a holism consisting of a variety of components interacting at different scales with such interactions described by varying temporal delays and spatial discontinuities. Andereis and others (1994) proposed that such systems consist of the resource (wilderness), resource users (visitors), infrastructure (accesses, trails, campsites, information, and so on), and infrastructure providers (the managers, as well as supporting scientists). This system is, of course, nested within the larger dynamic context identified above.

Uncertainty exists because the relationships between causes, such as management actions, and results, such as a specific dimension of visitor experience, are unknown—because of the complexity of the system, the lack of definitive research, and the nature of the coupling between causes and effects. Research-management interactions, under conditions of uncertainty, are bound to be significantly different than when cause-effect relationships are known. Such uncertainty includes how experiences can be conceptualized, defined and measured and what assumptions underlie research-management relationships. The world is uncertain, particularly in the relationship between setting attributes and the experiences visitors construct. In spite of 50 years of research, scientists have conceived of visitor experiences in diverse ways. The variety of approaches to visitor experience research documented in this volume and others (see especially Freimund and Cole 2001) indicate science will continue to raise new explanations and seek new understandings that challenge current ways of thinking. This unsettled character means that the choice of theories or conceptual frameworks to guide research requires considerable dialogue and deliberation.

Third, relationships within the social-ecological system, which not only define wilderness but in which wilderness itself is embedded, are loosely, rather than tightly, coupled. A tightly coupled system is evidenced by quick responses in the dependent variable to changes in the independent variable. In contrast, in a loosely-coupled system, there may be multiple causes for some effects as well as spatial discontinuities and temporal delays between causes and effects. For example, management actions to reduce visitation levels at one trailhead or one wilderness may result in increased use someplace else at a later date. Exactly where and when may not be predictable with any level of accuracy. And given the fragmented nature of wilderness jurisdictions, managers in a wilderness adjacent to another may see unexpected rises in visitation without any forewarning.

Loosely coupled systems are particularly challenging to understand and model, as the temporal and spatial delays involved may be considerable thus limiting our ability to understand relationships between causes and effects. Large scale changes in societal beliefs and preferences about wilderness experiences, for example, may not "appear" in visitor expectations, attitudes and behavior until such changes are well established in society. In the arena of visitor experience quality, research has repeatedly shown, for example, that the correlations between dependent and independent variables (such as use density and satisfaction) are low with Cole (2001) noting: "Where r^2 has been used, density and encounter measures have never explained more than 10 percent of the variation in total satisfaction."

Fourth, wilderness social-ecological systems tend to be nonlinearly dynamic. In some cases, for example, a small change in one variable may lead to a large change in another. The well established relationships between use level and both biophysical and social consequences are examples of such nonlinearity. Research has demonstrated, for example, that changes in use level when use is relatively low lead to rather substantial changes in biophysical conditions but at higher levels of use, biophysical changes are relatively small (Cole 1987; Hammit and Cole 1987). In research linking visitor encounters with satisfaction regarding solitude, for example, Stankey (1973) found that above a very low level of encounters per day—say in the range of four to six—visitors become rapidly dissatisfied with their experience.

Thus, relationships between variables are not only loose, but are non-linear, further challenging our ability to understand them. As a consequence, management actions that unintentionally raise encounter levels, however small in an absolute sense, may decrease the flow of benefits to visitors. Actions that limit daily entries on trailheads and river access points that previously had a great deal of daily variation may have effects opposite what is intended. When entry levels are "evened" out, some visitors lose opportunities for solitude that they may have been seeking when choosing a specific day to enter.

The dynamic complexity of wilderness social-ecological systems means that both researchers and managers should expect surprises. Cause-effect relationships established at alpha $< .05$ may not be true at all times and all places. The research-management relationship then needs some type of resiliency built into it, requiring periodic monitoring, assessment and evaluation, followed by change in management.

In a very real sense, then, the problem of visitor experience management is a wicked (Rittel and Weber 1973) or messy one (Ackoff, 1974). Batie (2008) states: "The causes and effects of the problem are extremely difficult to identify and model; wicked problems tend to be intractable and elusive because they are influenced by many dynamic social and political factors as well as biophysical complexities."

A characteristic of wicked problems is that there is a lack of scientific agreement on cause-effect relationships and broader society lacks agreement on goals. Lack of scientific agreement is clearly visible in the technical discourse when researchers propose and critique various conceptual approaches to wilderness visitor experiences (such as the normative approach debate). There is confusion over what is a "primitive and unconfined" experience. The lack of social agreement leads to conflict and contention over how visitor use of wilderness should be managed not only in civil society but among managers as well.

The role of development and transfer of knowledge in these situations is considerably different than in "tame" situations where science and society agree on cause-effect relationships and goals respectively. McCool and Stankey (2003) conclude:

> "Wicked problems and messy situations—imbued with high levels of scientific uncertainty and conflict

> over goals—require new ways of thinking and acting. They highlight the need for decisionmaking grounded in learning—as a means to enhance understanding of both biophysical and social relationships—in accommodation—to address the multiple interests invested in the decision—and in consensus building—to develop the necessary political understanding and support to facilitate effective implementation."

Progress on such wicked problems requires collaboration, particularly between researchers and managers. Researchers query managers to better understand how problems are framed and managers query researchers about the kinds of knowledge and understandings they may provide. McCool and others (2007) assert that the great success of such visitor management frameworks as the Recreation Opportunity Spectrum and Limits of Acceptable Change lies in the manager-researcher collaboration that led to their development. In both cases, the collaboration resulted not only in processes for implementation but also in reframing the problem into a form more productive and useful than previous incantations.

The Commonly Used Mental Model for Research Applications

It is within this challenging and often contentious context that wilderness visitor experiences are debated, researched and managed. In either developing a research applications program or providing data and implications, scientists are influenced by this context as well as the organizational environment and culture in which they work. That environment generally preferences and rewards publication of results in technically refereed journal articles over working with wilderness managers to see that research outcomes are applied.

It should not be surprising, therefore, that many scientists give little attention to the mental models underlying their approach to research applications and transfer of knowledge to management. It is my impression that, for many, the implicit model at the foundation of application of science to management is depicted as shown in Figure 1. Van Wyk and others (2006) describe this as a "push" approach. What scientists do in this model is provide "stuff" (defined below) to managers to enhance their professional competency such that their performance in visitor experience management will be improved. Enhanced performance may be briefly defined as greater ability to provide satisfactory experiences consistent with wilderness.

This model is based on certain assumptions about the character of the research applications system and the nature of the world. These assumptions (such as, relationships are linear and the world is predictable and with enough data, ultimately knowable), given the description of wilderness above, are likely not to be valid.

What is the "stuff" that science provides managers? For many scientists, the response to this question would be the data collected, the relationships uncovered, and the hypotheses tested and rejected (or confirmed) resulting from a specific empirical study. This perception represents a classic example of "positivistic" thinking that still dominates much of the visitor experience science today. In positivism, meaningful science is that which comes from direct observation or use of our senses, although as an approach to science, this position itself cannot be empirically demonstrated, thus making a logical inconsistency.

However, science provides other and many times more useful stuff. Ackoff (1996) provides a useful categorization of the stuff provided to managers by science: data, information, knowledge, understanding, and wisdom (Table 1). The contents of these categories (what we learn to strengthen professional competency), Ackoff argues, are not only different but also form a hierarchy of "increasing value" to decision-makers, in this case wilderness managers.

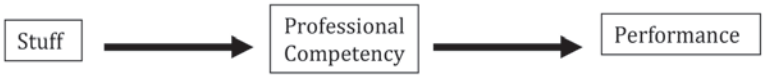

Figure 1—Implicit model of research applications apparently used by scientists.

Table 1—Character of "stuff" scientists communicate to managers, after Ackoff (1996)

Item	Definition
Data	Symbols representing objects, events and properties—product of measurement
Information	Data that has been processed into forms useful for decisions—information is useful in deciding what to do, not how to do it
Knowledge	Consists in know-how, how to do something. Knowledge is derived from experience or others who have experience. Transfer of knowledge is the basis of training, but not of education.
Understanding	Provides answers to questions about why—understanding is needed to assess the relevance of data and information
Wisdom	The ability to perceive and evaluate the long term consequences of behavior—needed to make tradeoffs between short and long terms effects

The stuff that is frequently transmitted to managers is comprised of data and information, the direct outputs of empirical research. For example, researchers provide managers with reports that detail preferences for site conditions (such as encounters with others), attitudes toward management actions (such as visitor use rationing mechanisms) and responses to questions about desired experiences (how important is solitude, being with friends, challenge and so on). Frequently, this data is quantitative. This is quite natural given positivist tendencies among scientists and the terms of reference for research that managers develop. They want answers to questions such as what experiences do visitors want, how many visitors are encountered in a specific wilderness or what is the relationship between inter-visitor encounters and attainment of solitude. Such data and information is transmitted through the use of written reports and in many situations, a summary oral presentation, supported by Powerpoint slides.

This researcher-manager relationship assumes a "hypodermic needle" approach to capacity building. Inject managers with data and they will act accordingly. In many respects, this relationship is one characterized as a consultant-client affiliation, where researchers acting as consultants hold a contract with the client (manager) to provide certain expertise and information to the client. The contract emphasizes physical deliverables, such as reports and presentations.

Underlying the contractual agreement is an assumption that there is a direct relationship between the presentation of data and information and enhanced professional performance. This model is evident when scientists complete studies and submit reports to wilderness management clients and then move on to other projects in other places. However, reports and presentations, while perhaps efficient ways to communicate data, are not necessarily the efficient and effective approaches for transmitting the knowledge, understanding and wisdom needed to improve managerial performance.

A Re-Interpretation of the Conditions in Which Wilderness Visitor Mangement Occurs

Science about wilderness visitor experiences has generally progressed along the framework of classical positivistic models of science as noted earlier: literature is reviewed, concepts or theories proposed, hypotheses (implicit or explicit) identified, data collected, analysis conducted and hypotheses supported or refuted. However, there is a real question about the appropriateness of this model of science for management of visitor experiences in wilderness settings characterized by change, uncertainty and contentiousness. Science may progress along the course identified above when conditions are "normal" (Kuhn 1970), but when ""facts are uncertain, values in dispute, stakes high and decisions urgent" (Funtowitz and Ravetz 1991), other approaches to science and applications are needed. Visitor management is a wicked problem and science in such situations needs an approach appropriate to this situation.

I argue here, that the conditions that contextualize wilderness and the visitor experiences afforded by it are not normal, but fit Funtowitz and Ravetz's description above. In general, these conditions can be characterized as follows:

1. A lack of certainty about who is the preferred client for wilderness experiences. This uncertainty derives in part from confusion between the ultimate beneficiary of wilderness preservation (American citizens) and a subset of those citizens who directly receive certain benefits from an on-site experience. It also derives in part from the tendency of visitor research to use averages when reporting visitor data rather than focusing on the various segments of wilderness visitors.
2. The question of what experience opportunities to provide remains problematic. On the one hand, the Wilderness Act provides the mandate of section 2(b); yet on the other hand, managers are often confronted with demands for access to areas for recreation. These competing demands represent conflicting values among visitors.
3. Visitor research does demonstrate that, when considered within the context of solitude, visitors are sensitive to the presence of others. Increases in inter-visitor encounter levels makes attainment of solitude difficult. Decisions that give preference to access over solitude represent potential irreversibilities.
4. Pressures on managers to make decisions urgently are immense, frequently accompanied by little time to conduct the type of research that would fully describe the consequences of alternative decisions.

Funtowicz and Ravetz (1991) argue that these conditions require a sort of "post-normal science", a term developed in response to Thomas Kuhn's (1970) notion of normal science—the course of research where scientists base their activity on the existing conceptual and methodological paradigm. But, as Kuhn argued, eventually evidence mounts that the existing paradigm no longer adequately explains cause-effect relationships and new paradigms are developed in response. This is what Funtowicz and Ravetz describe as a "post-normal" situation.

In post-normal settings, both facts and values are not only in dispute, but confusion between the two is often at the basis of social discourse, making problem framing fundamentally difficult. Thus, in Yellowstone National Park, is the controversy about snowmobiling in the park one about the values that Yellowstone is supposed to preserve or is it about the consequences to the biota of allowing snowmobiles in the park? The former is a statement of conflict in goals, the latter a question of technical knowledge. Even if the policy question is about the latter, managers are still confronted with making value laden decisions, such as how much impact from snowmobiles is acceptable? Acceptability is a fundamental judgment about social preferences.

Funtowicz and Ravetz (1991) contend that the conduct and use of science in a "post-normal" situation (hard decisions must be made with soft facts) must be different than in a "normal"

condition. When faced with socially problematic challenges, science engages an "extended peer community" and considers evidence other than that collected according to strict scientific protocols in addressing these challenges.

Ravetz (2004) states in reference to post-normal science:

> "This new science does not have the luxury of abstracting from the complex problems encountered in the real world; it must cope with them directly. These include not merely the complex interactions at the level of the natural world, but in addition their synergies with profit, bureaucracy, poverty, exploitation and war. For comprehending all this, a science needs clarity and self-understanding; the isolated puzzle-solving approach of traditional 'normal science' is self-defeating here."

The application of science in its purest form, Funtowicz and Ravetz (1991) assert, is inadequate alone to successfully address policy problems in complex social-ecological systems. Extended peer communities (involving researchers, research users, decision makers, and constituencies) help frame problems, determine unforeseen eventualities, identify social acceptabilities, and otherwise deal with the uncertainty of complex social ecological systems. By engaging a variety of perspectives in a dialogue about the character of the problem and the alternatives available, science can provide more useful responses.

An Alternative Approach to Research Applications

Thus, the post-normal age in which wilderness managers find themselves requires consideration of models of not only how research is conducted, but its framing, methodology and communication of results as well. Most significantly, there remains the question of the desired output of research (such as, data or understanding). Effectively communicating research results on the applied, value-laden problems of wilderness visitor experiences requires a different model from that shown in Figure 1. That model of knowledge transfer implicitly emphasizes data and information, has little focus on learning, emphasizes capacity rather than performance and does not recognize the messy and wicked character of wilderness visitor management.

To manage for high quality wilderness experiences, managers need more than data and information; they need knowledge, understanding and even wisdom. I follow Ackoff's (1996) argument that much of the existing learning for wilderness experience management is oriented toward transmission of data and information from scientists to managers. This "stuff" is of substantially less value for decision-making than the knowledge and understanding that would come from reflection about underlying patterns, structures and trends. Data tends to be setting specific, and could be constructed, developed and disseminated out of conceptually faulty and analytically troubled methods. A manager may be the receiver of such limited data, but be operating under an illusion of construct validity.

Ultimately, the goal of applied research, in this context, is to improve managerial performance. Improved performance is based on an understanding of the context of science-manager interaction, not just the results of research. If we use systems thinking (Senge 1990), we might conceive a model of science manager interaction which might look like Figure 2.

This model suggests the significant role of factors other than science in enhancing the performance of wilderness managers. In particular, the organization and its basic values, the opportunity to practice (for example implementing a visitor experience management regime, monitoring its effectiveness and changing management as needed) and confidence of the manager represent several factors that Cook (1997) feels are critical to enhanced performance.

While the end objective of applied science is to enhance performance of managers in providing opportunities for high quality visitor experiences dependent on wilderness, an intermediate goal is to build the technical capability (or capacity) to achieve this end result. Technical capacities deal with the knowledge and skills held by managers. For example, increased knowledge about visitor experience preferences is an enhanced capacity. However, this enhanced capacity may not turn to performance because of other factors as shown in Figure 2.

In this model, every one of the linkages contains errors and delays. For example, there is often a delay between scientists presenting the findings of a particular study and implementation of management based on those findings. Too, scientists may err in communicating findings; alternatively, managers may misinterpret findings. In some cases, one manager may commission a particular study, but be transferred elsewhere. The replacement may not attach as much urgency to the research as the original manager.

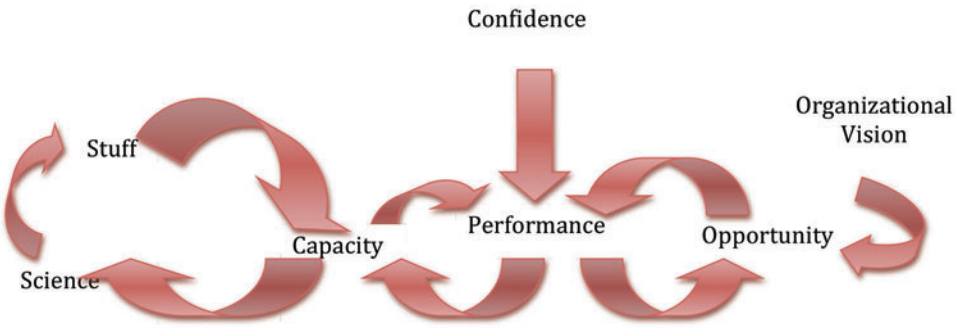

Figure 2—More realistic model of capacity building in post normal situation

For example, the model suggests that an organization's vision may impact its priorities. This, in turn, may lead to increased or decreased opportunity which then may affect performance in either a positive or negative way. Of course, there may be other factors in an organization affecting performance, so incentives are just one example. The figure also shows that enhanced performance can increase capacity. As managers are able to practice and learn from that practice, their capabilities to ask more sophisticated questions and absorb more complex data and knowledge also improve.

Application of the results of wilderness visitor experience research thus requires a process to enhance the transfer of understanding and knowledge that is needed for the change in paradigms that Funtowicz and Ravetz propose. As noted earlier, managers generally suffer from a greater lack of acquisition from scientists in these areas than in data and information. Managers often experience a data overload, much of it irrelevant, that is perhaps promoted by researchers as necessary to making decisions.

What sort of process would facilitate understanding appropriate for post-normal situations? One such process might be the model of research applications suggested by Havelock (1972) many years ago (Figure 3). In this model, managerial and scientific systems are linked through a series of interactions or dialogues. The dialogues serve to transmit problems to scientists, as well as understanding of those problems (need processing). They serve to transmit "solutions" (word used by Havelock, not mine) and understandings to managers. They serve to enhance user (manager) self-servicing and they serve to build methodological and theoretical competency (solution building).

Micro-systems processing is the engine of this knowledge transfer model. Micro-systems processing involves the interpersonal interactions and relationships between scientists and managers. A sense of collegiality is needed for effective communication and, as van Wyk and others (2006) argue, helps build shared values and cultures upon which knowledge transfer can occur.

While data is often important in a specific situation, building competency and enhancing performance requires more in the way of knowledge and understanding than data. Can managers and scientists develop the macro-systems needed to enrich the efficiency of research application? This is a good question for the Havelock model has long been proposed in recreation and protected area research applications (McCool and Schreyer 1977; McCool 2003b).

This model can be implemented, but would require changes in the macro-system environment for both scientists and managers. Scientists generally work in academic settings and their behavior is greatly influenced by the reward systems emplaced by those institutions. This reward system generally favors publication in technically refereed journals over iterative discourse with managers. Publication raises the profile of a university and is influential in securing competitive grants and awards.

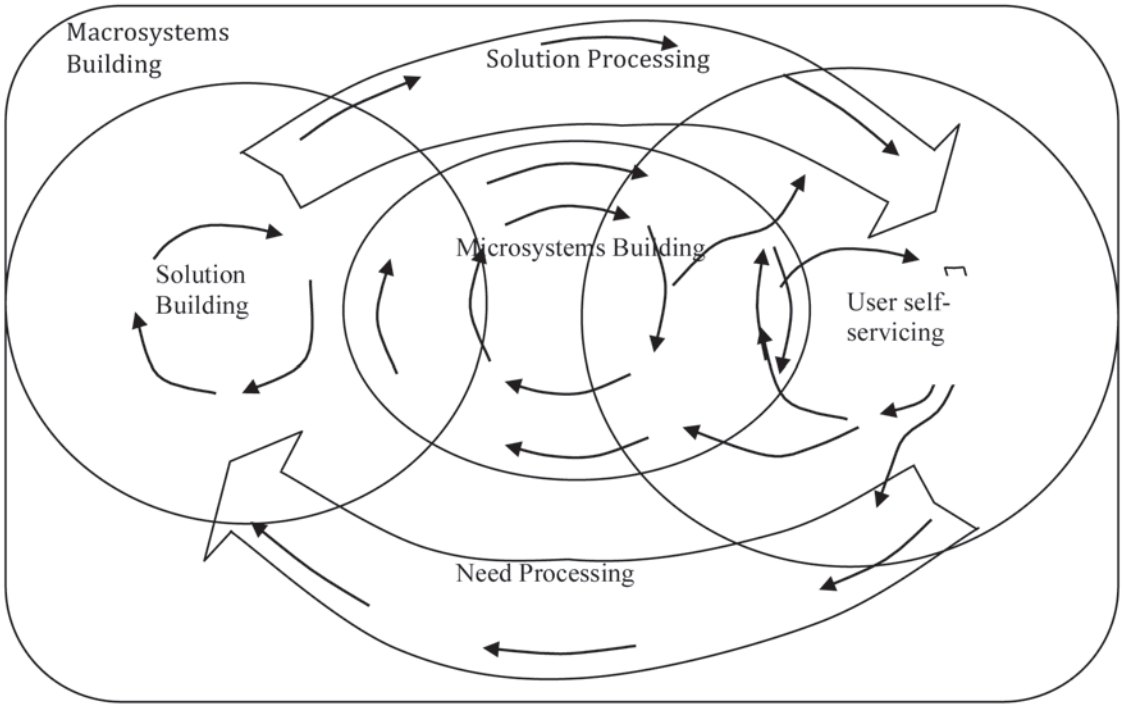

Figure 3—Model of research applications and technology transfer developed by Havelock and Havelock 1972.

In addition, at the micro-systems processing level, scientists would need to understand the culture and priorities of management. Engaging managers through professional meetings and workshops, on-site assessments and field trips, classroom discussions, joint problem framing, and informal dialogue helps bridge the cultural gap between management and science and lays the foundation for better communication. Transfer of knowledge, understanding and wisdom is an iterative and symmetrical process.

But more than micro-systems processing is needed to effectively address management of wilderness visitor experiences. One reason concepts such as the Recreation Opportunity Spectrum and Limits of Acceptable Change have become popular is that scientists and managers worked jointly to produce frameworks for implementing the concepts. These frameworks were based on insights gained from research and essentially archived knowledge and understanding. These frameworks were developed by acknowledging the presence of formalized agency planning processes and mandates. To some extent, both ROS and LAC can be integrated into these processes, thus making them easier to adopt.

While there is a substantial research record with respect to wilderness visitor experiences, that record at this point has not been translated into an effective, consumable framework for implementation. The macro-system indicates that experiences need to be attended to, but there is a question whether the micro-system exists to support the scientist-manager discourse to develop a framework for implementing a management regime.

One way to address the question of micro-systems is to develop a community of practice. Wenger and Snyder (2000) define such communities as "groups of people informally bound together by shared expertise and passion for joint enterprise". Advancing knowledge and enhancing performance in a community of practice is facilitated through voluntary engagements, critical discourse, shared experiences and "creative ways that foster new approaches to problems." Rather than focusing on implementation and monitoring of contractual agreements for research, the output is enhanced knowledge and learning, something difficult to quantify and measure. Ultimately the goal is enhanced performance.

A community of practice, as Wenger and Snyder state, is not a team within an agency nor a formal work group initiated to develop a product, service or policy. What makes a community of practice distinctive is the passion with which members pursue learning and excellence in a voluntary way. Such a community of practice involving both practitioners and scientists in the arena of wilderness visitor experience management does not now exist. Developing and maintaining a community of interest works only if membership is voluntary and potential members share commitment to learning.

Conclusion

The arguably fragile and scarce opportunities for experiences mandated by the Wilderness Act and the Eastern Wilderness Act can only be sustained if managers have the opportunity, confidence and technical proficiency to do so. Research plays a significant role in building technical proficiency, but I believe has been too focused on communicating data and information rather than the knowledge, understanding and wisdom important for improving performance.

There are many reasons for this, both in the managerial and scientific realms. Structural issues with respect to academic performance incentives and mental models of research applications can be seen as responsible for scientist behavior. Models of data transfer developed out of formal contractual agreements fail to improve managerial performance in a post-normal context because (1) the focus is on data and information rather than knowledge and understanding and (2) do not sustain the micro-systems processing needed to bridge the cultural gaps between science and managers that prevent effective communication.

The post-normal character of visitor experience management requires approaches to scientist-manager interaction that differ from those used in the past. This interaction emphasizes joint learning and problem framing. In the long term, building a community of practice will enhance both managerial and scientific performance. A community of practice focusing on visitor experience management involves scientists and managers on an equal footing with shared goals. Production of data and information in this context will be far more useful than at present.

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Research Needs for a Better Understanding of Wilderness Visitor Experiences

Stephen F. McCool
Chad P. Dawson

Abstract—What information is needed to facilitate enhanced management of visitor experiences in wilderness? The final session of the workshop comprised a facilitated process with the 20 participants to identify research and information needs to support wilderness visitor experience management. The Wilderness Act and the previous presentations and discussions not only provided a context for this process but also a foundation of knowledge and managerial experience. Forty-four topics were identified in an initial roundtable listing. Participants then clarified topics and ranked them using a simple voting process. Six topics were identified as holding highest priority for research to support management of high quality visitor experiences within wilderness.

Introduction

The National Wilderness Preservation System (NWPS) was created by the 1964 Wilderness Act (U.S. Public Law 88-577) and 172 Congressional legislative acts following it. The NWPS now includes 109 million acres and 790 areas managed by four federal agencies—Forest Service, National Park Service, Bureau of Land Management, and Fish and Wildlife Service. This legislation provides the general framework for federal agency stewardship of wilderness, and development of agency implementation policies (Dawson and others 2010).

However, public values and attitudes have changed as the NWPS has grown (Cordell and others 2003; 2005) and societal preferences have evolved. Similarly, demand trends for wilderness opportunities and visitation to wilderness areas have shifted over time (Cordell 1999; 2004). Demands on wilderness and public expectations for wilderness stewardship and protection have not only been intensifying, but also diversifying into multiple values (Cordell and others 2005). Thus, wilderness exists within a context of change occurring at a variety of spatial, social-organizational, and temporal scales. Such changes often bring unexpected contention and debate over what functions wilderness serves.

As research and management experience have accumulated over the past 50 years, we have learned that all knowledge is tentative; theories are proposed, tested, assessed and revised, if not replaced. A continuous program of research, application and demonstration is needed to continue to develop the best explanations concerning visitor experiences, how they are produced, and how they can be sustained. The papers in this proceedings demonstrate that the current state of knowledge about visitor experiences remains tentative and in flux. Thus, workshop participants asked questions and discussed the research needed to support management that embraces a better understanding of wilderness visitor experiences within the context of the Wilderness Act.

Method

Identification of research needs occurred during a two-hour session based on a modified Nominal Group Technique (Delbecq and VandeVen 1971). The Nominal Group Technique (NGT) places emphasis on initial individual creativity followed by discussion focused initially on clarification and then on evaluation.

Workshop participants were asked to respond to the following question: "What research is needed to support management that embraces a better understanding of wilderness visitor experiences within the context of the Wilderness Act and the previous two days of the workshop outlining the current state-of-knowledge on this topic?" Each participant silently listed as many responses to the question as possible within a ten-minute period. Then, each participant was asked to verbally share one response at a time in a round-robin process. This process continued through the group several times until no new responses were identified. The research needs identified were listed on flip charts as participants suggested them. Following a break and time for consideration, each participant voted on the three "most important" research needs according to their own assessment. The overall results were tabulated by simply counting the number of votes for each response. Because time was limited, consolidation and grouping of items could not be conducted nor could a consistent level of specificity be ensured. This may have influenced results.

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Results and Discussion

Workshop participants identified over 40 potential research needs. After the voting and discussion process was completed, these needs were placed into one of three categories as shown in Table 1. In this section, we briefly describe what may be involved in each of the six research needs identified as highest priority, based on the overall workshop discussion and notes taken during this session. We do this as a basis for further discussion; our observations are designed to be suggestive rather than conclusive. There is no particular order to these six higher priority topics.

Table 1—Wilderness visitor research topics by priority as identified and ranked by workshop participants.

Highest priority (most workshop participant votes)

- How do commercial uses and special provisions affect wilderness experiences? How do we develop a better understanding of commercial services as a facilitator or constraint on experiences?
- What is the cumulative effect of management structures and regulations on wilderness experiences?
- Develop a system for archiving practice-knowledge and share that knowledge in a community of practice.
- Gather information and acquire knowledge about the impact of identity, consumption, and technology on wilderness experiences.
- Test the efficacy of actual management practices.
- Literature reviews, case studies, and synthesis of knowledge from existing and published information about visitor experiences.

Moderate priority (some workshop participant votes)

- Wilderness scenarios—what relationship will people have with wilderness in the future in the US given changing demographics and population trends?
- Identify indicators and standards for wilderness experiences—indicators of the experience as well as elements of the setting that affect the experience.
- Changing demands for traditional wilderness experiences.
- How is the research information transferred to managers and how is it being used?
- Longitudinal research—people's longer term identity narratives related to wilderness.
- Sociodemographic differences—participation rates and constraints for different ethnic segments.
- Information that helps staff manage to the spirit of the Wilderness Act. How do we operationalize or interpret the legal language; conduct law review or policy science type approach?
- New strategies and techniques for representation of the publics beyond public involvement—includes emotion and values, oral histories and shared heritage.
- Identify elements of a wilderness experience that are unique to wilderness and unlikely to be had outside wilderness.
- Effects of setting attributes on what people experience in wilderness.
- How can we improve citizen stewardship? What do we need to know to work with them; role of citizen stewardship within wilderness management?
- Maintain place-based focus in understanding dimensions and influences on experiences including diversity within the NWPS.

(continued)

Table 1—(Continued)

Moderate priority (some workshop participant votes)

- What processes are best suited for scientist-manager-constituency interactions in a post-normal world that promote understanding and wisdom and trust?
- Research on capacity issues that get away from simplistic number approaches.
- Map the different discourses of wilderness about wilderness across society.
- What is "appropriate" in wilderness in terms of behavior and crowding when at visitor thresholds?
- Day use and how to manage it. What management tools might be effective for lowering crowding among day users?
- Better understanding of root metaphors that managers bring to wilderness management.

Lower priority (some workshop participants nominated, but received no votes)

- Archive the history of management practices, by wilderness areas and in a broader context.
- Shared heritage of wilderness—different groups in society and how the values and benefits of wilderness reflect within their cultures.
- Public involvement in cooperative stewardship planning and decision making; develop models of engagement and analysis of public input.
- Purism—who are the people highly consistent with the Act; what proportion of users are purist? How prevalent are the values expressed in the Act among contemporary users?
- Effect of commercial use on non-commercial users.
- Test pro and con assertions of commercial users and those opposed to commercial use (such as, safety, behavior, economic incentives to behave badly).
- What does "post-modern thought" mean to managers or influence managers?
- What setting attributes are needed to achieve unique wilderness experiences?
- Understanding of the commodification and marketing of experience, especially regarding allocation questions and trends toward privatization.
- Impact of technology on risk taking behavior and visitor decision-making.
- What effect or goal conflicts do the fun-seekers have on contemplative visitors; especially new uses (such as, base jumping)?
- Research on the impact/necessity of the duration of the experience—how long does it take to "get" the wilderness experience?
- How does conflict duration affect visitor experiences?
- Different roles and effect of different types of information (and timing of information use) on the wilderness experience.
- How to extend the benefits of wilderness experience (not direct visitor experience) across society—experiences of people who do not consider themselves visitors.
- Understanding non-visiting wilderness experience (indirect use; symbolic use; vicarious use)—nonuse values compared to an experiential context.
- Map the sources of uncertainty in wilderness research and management.
- Develop an understanding the experience outcomes and benefits of simulated or virtual vs. real (on site) wilderness visits.
- Effects of adjoining land management on experiences, such as visibility and ability to hear civilization.
- New strategies and representation for setting standards and making tradeoffs.

The six research needs identified and described were:

1. *How do commercial uses and special provisions affect wilderness experiences? How do we develop a better understanding of commercial services as a facilitator or constraint on experiences?*

   According to section 4(d)(6) of the Wilderness Act commercial services are permitted "to the extent necessary for activities which are proper for realizing the recreational or other wilderness purposes of the areas." Agency policy indicates that outfitting and guiding concessions provide important contributions to visitor experiences by facilitating visitation. Facilitated visitation includes hunting, fishing, photography, education, observing wildlife and scenery, and river floating. Visitors may be transported by horse, raft, kayak or canoe. In many situations, visitors hike, either carrying their gear and food or having it transported by horse, mule, or donkey. A number of policy and management issues arise: Are the experience opportunities offered consistent with the Wilderness Act? Do the practices of outfitters, guides and concessionaires facilitate primitive recreation? In areas where use limits exist, are commercial services favored over those who want to visit on their own? Larger groups are needed to make commercial services financially feasible, but when non-outfitted groups encounter outfitted ones, what is the response and impact to experiences?

   How such policy issues are addressed in any given wilderness impact the character and quality of experiences visitors receive. For example, for some visitors, encountering commercially outfitted groups may impact the level of satisfaction received. Allocation and rationing decisions may impact access to any given Wilderness.

2. *What is the cumulative effect of management structures and regulations on wilderness experiences?*

   Rules and regulations comprise an important component of wilderness settings. Regulations are designed to protect both the biophysical setting and visitor experiences. This includes, for example, regulations on group size, length of stay, campsite locations, and use of campfires. Regulations can both facilitate and hinder experiences. Some researchers question the impact of regulations on visitor behavior and experiences because of the Wilderness Act's mandate for "primitive and unconfined experiences" and "outstanding opportunities for solitude". The relationship between these setting attributes and experiences is not deterministic, but rather probabilistic and indicates a need for research to better understand what linkages exist.

   While wilderness is a nature-dominated environment where man is just a visitor, many wildernesses contain structures such as patrol cabins, corrals, horse barns, bridges, signs, trail corduroy, and in a few, graveled airstrips. The impact of these structures, along with associated human activity, on visitor experiences is largely unknown, but probably negative for individuals seeking solitude and a sense of primitiveness and challenge.

   The cumulative effects of increasing regulations (e.g., requiring camping in designated sites, hanging food in bear country, restrictions on group size, prohibitions on campfires) are unclear. It is possible that each regulation by itself has limited impact, but a growing number and diversity of regulations and/or encounters with structures can incrementally diminish the character of the visitor experience.

3. *Develop a system for archiving practice-knowledge and share that knowledge in a community of practice.*

   Fifty years of research and management have resulted in the accumulation of an enormous quantity of knowledge about management of visitor experiences. For research, that knowledge is archived in journals and other publications, but for management, practice is not necessarily archived in a way that can be easily retrieved, processed, and applied. Developing a community of practice (Wenger 1998) might be a useful and effective method of conveying managerial experience from one manager to another and between research and management. A community of practice "involves groups of people informally bound together by shared expertise and passion for a joint enterprise. Knowledge is shared in free flowing, creative ways that foster new approaches to problems" (Wenger and Snyder, 2000, p.139). For example, the recently formed Wilderness Stewardship Society may be one venue for enhancing this community of practice. More specifically, a community of practice around visitor experience management needs to be explicitly developed.

4. *Gather information and acquire knowledge about the impact of identity, consumption, and technology on wilderness experiences.*

   Recent research on the self identity of individual visitors to wilderness has begun to show that identity (of self) is a filter through which visitors perceive their experience and, in turn, develop a relationship with wilderness. How visitors "consume" a wilderness experience is dependent on their mode of travel (for example, facilitated or not), their traveling companions and equipment, and a variety of other factors. Technology, seemingly contradictory, has always been a part of a visitor's experience—whether it includes saddles, neoprene rafts, vibram soled boots, gas stoves, or nylon tents. These forms of technology have facilitated access to wilderness settings for people who would never have attempted to visit otherwise.

   Recent advances in other forms of technology, primarily those dealing with communication and information, have triggered debates over their role,

appropriateness, and influence on visitor experiences and behavior. Communication technologies such as cell and satellite phones keep people connected to areas outside of wilderness. Information technologies such as the internet and portable Global Positioning Satellite receivers allow visitors to travel within wilderness without relying on traditional map reading and navigational skills.

The presence and use of communication and information technologies raises many questions: Does the presence of these technologies change visitor behavior in ways that increase risk? Do they change the experience in ways consistent or inconsistent with the notion of wilderness, particularly the ideas of "primitiveness", "unconfined" and "solitude"? Or do these technologies simply facilitate access to a greater range of people?

5. *Test the efficacy of actual management practices.*

Wilderness management involves several objectives, one of which is stewardship of the kinds of wilderness experience mandated by legislation. Managers need an enhanced understanding of the efficacy of alternative management actions, especially given the uncertainties and complexities of the real world, the lack of knowledge about cause-effect relationships, and the relative scarcity of wilderness experience opportunities. Managers manipulate three components of the setting: biophysical, social, and managerial. While there is a growing literature on visitor experiences, there is less on the consequences of management on visitor experiences. For example, the extent to which "use limit" policies have been effective in protecting visitor experiences has rarely been assessed despite the frequency with which this type of regulation is used. Additional research on management efficacy would be helpful in developing a more systematic archive of experience.

6. *Literature reviews, case studies, and synthesis of knowledge from existing and published information about visitor experiences.*

This research topic demonstrates the need for communicating knowledge and understanding resulting from scientific studies in addition to the data and information individual studies produce. Ackoff (1996) notes that knowledge and understanding are more highly valued than data and information in decision-making settings, but are actually fairly scarce. Case studies can be effective learning tools, especially when designed appropriately and used as part of a professional development program. Some synthesis exists, such as in several texts (such as Dawson and Hendee, 2009) and proceedings from the two Wilderness Science symposia (Cole and others 2000; Lucas 1987) that have been held. These syntheses could be expanded and updated periodically and oriented around questions driven by managerial needs.

Conclusion

Workshop participants identified a wide variety of potential research topics. These were identified without reference to the needs of specific wilderness areas and, thus, represent an assessment of the state of practice and knowledge in the NWPS. Their applicability to specific areas will vary. Developing and implementing a systematic program of research that explores these topics would most likely advance the state-of-knowledge, although such advances may not resolve individual area management problems. Implementation of a program of research faces a severe barrier in that most research on wilderness visitor experiences is now funded by individual wildernesses without the objective of advancing the state-of-knowledge for management of the entire NWPS.

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Managing for Wilderness Experiences in the 21st Century: Responding to the Recent Wilderness Critique

Joseph W. Roggenbuck

Abstract—This essay describes five major critiques of the wilderness idea and how wilderness managers might shape experience opportunities in wilderness in response. These challenges include the notions that the wilderness idea separates people from nature, that it denies the human story in "pristine" lands, that it privileges a kind of recreation favored by elites and consumed by gadgets, that it distracts attention from the environmental crisis at home, and that wilderness management is based on an outmoded concept of naturalness. My suggestions include management directives and educational programs that encourage more intimate contact with wildness and with the resource. Educational programs must extend beyond Leave No Trace to include active partnership with managers in care of the wilderness, in programs for resource monitoring, and Adopt a Spot. Educational programs must foster experiential benefits, learning about the environment, and commitment to environmental sustainability beyond the wilderness boundaries and the visit. Researchers and managers need to focus on the meaning and facilitation of primitive experiences in wilderness, with special concern given to recent modern entertainment and communication technology in wilderness. Finally, managers, with input from an informed public, must consider alternate models to the protection of wild ecosystems and landscapes: "hands off," ecological integrity, historical fidelity, and ecological resilience.

Introduction

At many levels, wilderness represents one of America's great success stories. The idea of wilderness, its meanings in the American mind, has changed profoundly over the decades and the centuries. Each successive wave of immigrants coming onto American soil and bringing with them their unique set of cultural, religious, and scientific beliefs about nature assigned new meanings to wilderness. Immigrants moved across the American continent, confronted wilderness, and changed wilderness. But just as surely, wilderness changed the immigrants, and in the process helped to make them Americans, a hardy and independent people forged on the frontier. Artists, painters, and writers travelled with early exploratory parties and settlers and their romantic images and stories of the wild and rugged landscape of the West captured the hearts and minds of opinion leaders back East (Nash, 1982). Through time, attitudes about wilderness changed and wilderness took on new and multiple meanings. Thus, by the mid-twentieth century, wilderness was a place to find God, to find larger truths, to step away from the evils of industrialization and consumerism, to find serenity and peace, to confront the sublime in all its beauty or horror, to step back from modernity and all its "too-muchness," to face challenge and test one's skills, to test one's virility, to contact raw wild nature, to escape noise and din, to escape technology, to live more simply, to respect and protect other creatures of the planet, to let other creatures be, to practice restraint, to experience firsthand the mystery and powers of the primal evolutionary forces of nature… in short, in the words of Henry David Thoreau (Torrey and Allen 1906), to confront only the essential facts of life, lest when we come to die, discover we have not lived. It all seems so good. It all seems so American.

Then the 1964 Wilderness Act codified into law the most elemental and pervasive of these American values and established a system of federally protected wilderness areas. This Act, the first of its kind in the world, protected places where "the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain… land retaining its primeval character and influence… managed to preserve its natural condition… and has outstanding opportunities for solitude or a primitive and unconfined type of recreation" (Wilderness Act, 1964; U.S. Public Law 88-577). This Act immediately established 9 million acres of legal wilderness on USDA Forest Service lands. By 2011, through the efforts of conservationists throughout the country, legally protected wilderness lands in America has grown to 107 million acres in 44 states and in four different federal agencies (the Forest Service, the National Park Service, the U.S. Fish and Wildlife Service, and the Bureau of Land Management). Visitor use of these areas has reached about 20 million visitor days. In addition, the Wilderness Act and the slow but steady addition of acres to the system have come to symbolize the best of America's efforts to protect its natural heritage and to provide the benefits of wilderness to its people. Many countries

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around the world have adopted this means of protecting special areas as wilderness. It all seems good, and so American.

But all is not well with wilderness in America. Starting in the mid-1990s and continuing until the present, the very philosophical, scientific, and ethical foundations of the American idea of wilderness have been under attack by scholars both at home and abroad. Perhaps the first, the most thoughtful, and the most influential critique of the wilderness idea came from environmental historian William Cronon in the 1996 article, "The Trouble with Wilderness, or, Getting Back to the Wrong Nature." Two large edited volumes by environmental philosophers J. Baird Callicott and Michael P. Nelson followed: "The Great Wilderness Debate" (1998) and "The Wilderness Debate Rages On" (2008). All three authors are pleased that so many acres of land in America are protected as wilderness. But they question the worth of the American wilderness idea, the idea that has come down to us from our nation's forebears, as a wise and effective means to protect nature and to foster a responsible ethic and behavior about the environment. Indeed, Callicott and Nelson (1998) report that the "wilderness idea is alleged to be ethnocentric, androcentric, phallocentric, unscientific, unphilosophic, impolitic, outmoded, even genocidal" (p. 2). In line with the contention that the wilderness idea is unscientific and outmoded, many landscape ecologists and a few environmental philosophers have been critical of the mandate of the Wilderness Act to protect and manage for naturalness in wilderness (Callicott 2008, Cole and Yung 2010). These authors note many problems with the concept of naturalness: its meaning is nebulous; it suggests humans are not part of nature; it ignores the fact that lands currently protected as wilderness have been profoundly influenced by humans in the past; and it suggests that in the absence of humans these areas will return to a steady state or climax condition representative of some historic past before the arrival of Anglo-Americans. All of these assumptions about nature and naturalness are unfounded.

While I believe some of these criticisms of the wilderness idea and in effect wilderness protection and management are overstated for dramatic effect, much of the critique has important implications for appropriate and ideal experiences in wilderness and how to manage for them. I believe that appropriate experiences in wilderness could largely defuse many of the criticisms of wilderness. Given this, I see an important role for social scientists and resource managers in responding to "the raging wilderness debate," and facilitating wilderness protection, management, and experiences to meet the ideals and challenges of the 21st century.

Overview

For the remainder of this essay I list and describe five specific critiques of the wilderness idea: wilderness separates humans from nature; wilderness denies the human story in "pristine" lands; wilderness distracts attention from an environmental crisis at home; wilderness privileges recreation and recreation elites highly devoted to consumerism and technology; and wilderness with its focus on naturalness has its ecology wrong. For each of these criticisms I suggest ways that experiences in wilderness can ameliorate or negate their negative import. As I do this, I often draw upon the writings of the critical reviewers themselves or upon the words of those wilderness philosophers or activists whom they criticize. In doing this, I find the writings of environmental historian William Cronon especially helpful. I then list specific actions that wilderness resource managers and research social scientists might take to encourage appropriate and ideal experiences.

Critique #1: Wilderness Separates Humans From Nature

Description

The dualism of humans and nature inherent in the wilderness idea and in the way wilderness is protected and managed in America is a subject of pervasive criticism. This dualism runs deep, all the way back to the beginnings of Western civilization, philosophy, and beyond. Indeed, this separation goes back to the beginnings of Judeo-Christian religion and to the Genesis story. In this story, God gave humans special status apart from nature and with dominion over nature. This status received added power and urgency when humans were cast out of paradise (Eden) and had to gain a living from nature. Millenia later, in a country and culture like America that is dominated by religion, this story still retains power (Stoll 2007). When the Pilgrims of a Reformed Protestant sect first settled the rocky coastline of New England, the wilderness was outside, dark, desolate, and dangerous. But over time and across space, the notion of wilderness among Puritans and ultimately among Americans made a polar switch. Wilderness was still apart in some other place, but now the place was goodness, a place to find truth, a sublime place, a paradise, but a place where defiled man did not live. Hence, the Wilderness Act of 1964 specifies that wilderness is a place where man is a visitor who does not remain.

But many environmental philosophers and historians think this story of humans, their relationship to nature, and the meanings given by our American forebears to wilderness is unscientific, unphilosophic, and outmoded. Not only is this story inaccurate, it does considerable harm to the environment. This separation of humans from wilderness reduces deep contact with wild nature and it also suggests nature of civilized landscapes is not wild, is not pure. It fosters an aloofness from nature and prevents a deep intellectual and visceral contact with nature. Hence, opportunities for learning and respecting nature's ways and limits are lost.

I agree with this critique. To the best of our knowledge, we humans are of the same stuff, the same wild matter, with all its complexity, mystery, and seemingly miraculous power, as all of the rest of nature. Yet at the same time we have obvious differences from the rest of nature. We have the ability to learn (and continue to learn) about nature's processes, to learn to respect nature, to feel kin with all of nature through our cognitive and our emotive abilities, to exert considerable control over nature, and to purposefully act with restraint over the rest of nature (Ouderkirk 2008).

I believe also that both the Judeo-Christian tradition and the great American wilderness philosophers (who tended in their mature years to reject the Judeo-Christian view of nature) can teach us about ideal human-nature relationships, about ideal experiences in wilderness, and how, ideally, to manage for them. For example, Sanders (2008) speaks of wilderness as representing in space what the Sabbath represents in time. For him, the Sabbath represents a "day free from the tyranny of getting and spending, a day given over to the cultivation of the spirit rather than the domination of matter" (p. 603). It represents a day away from work, control, and frantic busyness, a time for serenity and reflection. It also marks a day when farm boys such as myself as a youth (and others who worked for a living) could go off "when church was over" and spend the day "wild in nature". There in creek bottoms, lakeshores, and woodlots we found wildness; we explored; we discovered and came to revel in the marvels of unclaimed earth. We found something beyond us whose ways were not our own, whose ways we came to respect and admire. And with the help of the Sabbath, we came to the wisdom of restraint, a kind of humility that guides our behavior as adults today. Without this day of the Sabbath, this totem of Judeo-Christianity, I am sure we would have worked seven days a week. Today, the Sabbath and its meaning in time can be found for many in a visit to wilderness. Wilderness contains similar meanings in space, as a cathedral in space, a place to reflect and to come in contact with wild nature, a place with rules we did not write, with ways we do not always understand, and with power that both nurtures us and humbles us. Most importantly, in wilderness we can learn and practice restraint.

Our great wilderness philosophers, our forebears whose ideas have come under criticism, shared the same "Sabbath" notions. Most famously, Henry David Thoreau withdrew from society to live more than a year in a primitive cabin, there to confront nature on its terms, to observe deeply and slowly, to touch with his spirit what his matter (his body) and its life force so forcefully demonstrated. He daily went on long walks near Concord to drink and learn at the fountains of nature. He called for New England villages to protect the woods, fields, and primitive swamps in their midst so that poets, philosophers, and all seekers of wisdom could find moral and intellectual truth. But not only did he call for contact, respect, and protection of nature close to home (the middle ground), he also called for poets and philosophers from time to time to leave their villages and bordering lands and go to the recesses of the wild, and there to make intense contact with the bracing tonic of wildness, large tracts of wildness, "not for idle sport or food but for inspiration and our own true re-creation" (to realize who and where we are) (Dean 2007, p. 84).

This Thoreau did himself on his now-famous climb of Mount Katahdin in Maine, a journey on which wild nature shook the very foundation of his "village truth" and perhaps even his "cabin truth." On the Mount Katahdin climb, he contacted truly wild nature, a nature of forest fire and desolation, a nature that seemed not at all to care about him. He came off the mountain a changed man; his experience was transcendent. Thoreau and others since have written much about his Katahdin experience. For me, and what matters in this essay, there are three things. First, he acknowledges the power and mystery of raw nature when real contact is made: "What is it to be admitted to a museum, to see a myriad of particular things, compared with being shown some star's surface, some hard matter in its home! I stand in awe of my body, this matter to which I am bound has become so strange to me… What is this Titan that has possession of me? Talk about mysteries" (Torrey and Allen 1906 [p. 77-79]). Here Thoreau contacts living matter, the matter of the mountain, the same matter which is his body. But this matter has power beyond him, a power he does not know. He experiences mystery, fear, and awe. But he gives us a way out (our second lesson): "Think of our life in nature—daily to be shown matter, to come in contact with it—rocks, trees, wind on our cheeks, the solid earth! the actual world! the common sense! Contact! Contact! Who are we (our spirits)? Where are we (our bodies)?" The lesson here is contact. Contact is not separation from nature. Finally, and very importantly, Thoreau's insights on Mount Katahdin provide us insights about transcendent, transformative experiences fostering human-nature connection. On the mountain, Thoreau discovered elemental wildness infused into matter, and once infused in matter, this wildness recycles through life, death, and rebirth, a recycling that preserves the physical world. Thoreau came to know this on the raw mountain, a place where there was both slow birthing and dying (mountain construction and destruction) and dramatic desolation and slow rebirthing (the forest fire). In both these slow and dramatic acts of wildness, Thoreau and we who follow see life feeding on death and being reborn. We realize we are part of this, part and parcel of nature. We realize our own limitations and mortality and we realize that we are not the measure of all things (Dean 2007). There is no separation from nature here. We humans can and should find wildness in our villages, but even as astute an observer of nature as Thoreau did not make his elemental breakthrough there. He called for us to go to wild places.

Other American wilderness philosophers and activists have valued, promoted, and lived a life of deep contact between humans and nature in wilderness. John Muir went on long treks over weeks into the wilds of Yosemite. He climbed trees and clung to their tops to feel the fury of wild storms and to learn the message of wildness. Bob Marshall went on prodigious hikes and climbed mountains. He lived with native people in Alaska to learn their human-nature interactions. Aldo Leopold, considered by many to be the father of modern protected wilderness in America, successfully lobbied for wilderness protection of wild land so that the common man, the common hunter, would not lose intimate contact with wild nature and would not have a contact filtered and cushioned by new technology (in those days, roads and the Model T).

Yet the recent critique of wilderness suggests that today's wilderness idea, given its human-nature dualism, is not fostering human-nature contact and connection. I now make suggestions on how wilderness managers and social scientists might facilitate experiences that enhance deep contact with wildness in wilderness.

I preface my suggestions with some words of caution and humility. One of the great values of the wilderness idea and wilderness as place is freedom… freedom to let nature be and freedom to let humans be (and of course I am writing to reduce the divide between them). Second, I see ever greater need for the management of wilderness to be nuanced. It should not be, it cannot be, the same for all areas across the entire wilderness preservation system. The wilderness idea is complex; it allows for different values to be emphasized across space and time. Individual wilderness areas have different histories, different ecologies, different use levels, and different agency traditions and mandates. Each area is a separate place with its own place meanings. Whatever suggestions I make must be evaluated in the context of the individual place. This makes the wilderness manager's job more complex and more difficult. But providing more meaningful visitor opportunities will result in richer experiences and will protect nature better.

Suggested Management Actions

- Encourage an increase in length of stay in wilderness; promote overnight use rather than day use. For example, at the Boundary Waters Canoe Area Wilderness, the amount of overnight use is restricted and a fee is charged. Day use has no such use limitations and no fee is charged. To promote deep contact with wildness, this policy might be reversed.
- Encourage repeat visits to a given wilderness area so that visitors might develop a richer understanding, commitment, and relationship to the place. This might be done by developing and promoting a wilderness area-specific protective association to which the public might join. Members of such an association would assist in certain management activities in the area. Another possibility would be to free repeat visitors from certain access restrictions or user fees.
- Encourage visitors to slow down, to spend more than one night in one spot, to get to know the spot.
- Conceptualize solitude not as the number of encounters with others per day, but instead as time spent alone with nature, time in silence, time in meditation or reflection in the presence of wild nature.
- Encourage visitors to "Adopt a Spot," to become involved as partners with managers to care for, protect, and if necessary, restore a spot, a community, a place in wilderness. Professional resource managers need to provide both oversight on partner practices and incentives to maintain long-term involvement. Resource managers need to provide partners with educational workshops on agency and resource policies and practices along with assistance with on-the-ground management interventions.
- When possible (in lightly used wildernesses and in lightly used wilderness zones) move beyond LNT (Leave No Trace). LNT advocates leaving little human imprint on the land and for that it has value in high-use areas. But it can divorce people from the land, lessening contact. It can isolate the wilderness and wilderness use from the larger environmental context (Simon and Alagona 2009). As examples, the LNT principle "minimize campfire impacts" recommends the use of lightweight camping stoves instead of open fires. But the principle likely inadvertently reduces ecological learning, learning about what lives in and under dead and down wood, what kind of wood burns best, how to start a campfire and how to cook over a fire. It likely lessens contact with wildness within us and with nature around us. It also supports the use of petroleum, a nonrenewable natural resource that is transported across the long sea lanes of the world. Under the principle of "leave what you find," LNT suggests that recreationists carry in camp chairs rather than construct makeshift furniture in the wilderness. But how about sitting on the ground or on a rock? The portable chair cushions one from the environment. It reduces contact. I fear LNT will become Smokey the Bear—valuable when applied with nuance, an environmental mistake when applied carte blanche across time and space.
- As a general rule, encourage visitor use of wilderness zones that vividly demonstrate nature's wildness. Examples might be areas of recent great natural disturbance such as the recent wind-throw and forest fire areas of the Boundary Waters Canoe Area Wilderness. Use quotas for access into these areas might be increased. The purpose would be to provide visitors with a Mount Katahdin experience, to come in contact with raw nature. Another possibility, where ecologically permissible, would be to increase the level of visitor contact with keystone species in wilderness. As Dustin (1999) suggests, wilderness is an ideal place to come in contact with life unfolding, to marvel at life unfolding, to discard the protective armor that shields us from life itself, and to live life at the edge. Dustin believes if you take risk out of life, you take life out of life.
- Where wilderness managers now teach LNT at visitor contact points, instead or in addition, tell a story of a positive human-nature interaction at the place. This story might be about past human use of the area. It might be an Adopt a Spot story; it might be a story about a transcendent experience. It could be a re-wilding story or a story about humans helping a keystone species.
- Encourage visitors to leave communication technology with the outside world behind. Such technology likely distracts. It likely slows down the gradual escape from the frenzied consumerism of the outside world. This technology tends to focus attention on Lord Man. It likely clashes with primitive values for which wilderness was created. It reduces contact with wildness.

Of course, these suggestions beg for a social science research program. Do these practices reduce dualism between humans and nature? Do they reduce freedom too much? Do they conflict one with another? Do they increase ecological knowledge and commitment to conserving wild nature? Do they encourage humility and human restraint about the environment? Do they do more harm than good?

Critique #2: Wilderness Denies the Human Story in "Pristine" Lands

Description

This critique suggests that American wilderness philosophers, activists, and authors of the 1964 Wilderness Act got their science and their history wrong. The wilderness idea celebrates pristine land—land largely without humans and their works. The Wilderness Act seeks to protect such lands in their natural or natural-appearing state. But Cronon (1996), Callicott (2008) and Denevan (1992, 1996) all contend that at the time of European contact, the landscape of the New World was entirely a humanized one. The number of Native Americans certainly numbered in the millions. These people lived across the Americas and through hunting, farming, and use of fire they had drastically altered the landscape and the ecology of the hemisphere. The Native Americans might be considered a keystone species. The vacant land encountered by settlers, with its dark forests and abundant wildlife, sublime in its horror and its beauty, was in fact quite artificial. Upon contact, European diseases such as smallpox and influenza had traveled through the native population ahead of the advance of the settlers and reduced the population by as much as 90%. This "unnatural" state allowed a very cultural landscape to go wild.

In addition, the wilderness critics contend that European-Americans displaced living Native American communities from their land in the name of the wilderness idea. This accusation seems problematic (Havlick 2006). Sadly, Native Americans were pushed off their lands for timber, farming, mining, grazing, commerce, settlement, and even a bit for national parks, but not for wilderness. Protection of "pristine" lands for wilderness values did not happen until the administrative reserves of the 1920s and the legal reserves after 1964. This was long after the last forced removal of Native Americans from their lands. Indeed, with the passage of the Alaska National Interest Lands Conservation Act (ANILCA) (U.S. Public Law 96-487) and the establishment of large blocks of legally designated wilderness lands in Alaska, management agencies have worked diligently with Native Americans to respect and permit their continued traditional uses of the land.

Finally, with passage of the so-called Eastern Wilderness Areas Act of 1975 (U.S. Public Law 93-622), many areas in the East and Midwest with a long history of settlement and use by American settlers were placed in the National Wilderness Preservation System. These areas are re-wilding, but they are by no means "pristine." They have a human story and to pretend otherwise is a denial of history (Cronon 1996). It is also a denial of ecology. The effects of the labors of European-Americans are typically visible on the landscape. Cronon's essay (2003) on the recently established legal wilderness on the Apostle Islands National Lakeshore represents a case in point. These islands were used and inhabited by white fur traders, loggers, fishermen, quarry excavators and farmers for hundreds of years. Native Americans altered the landscape for thousands of years before that. Cronon believes that this human story should be told. Without it, visitors go away without a complete and rich story of a place and its landscape ecology. To ignore this story is to be dishonest and to lose a chance for deep contact with a "humans within wild nature" story.

Suggested Management Actions

- Learn the extent of past human use and imprint upon your wilderness. Some wilderness areas and zones of wilderness have high past use. But Native Americans, explorers, or pioneers apparently did not live in some wilderness areas or zones. Instead they periodically moved through the areas, hunted in them, gathered there for special occasions or simply visited them for rest and leisure. Other areas, often "the rock and ice" portions so common to wilderness, have had little past human use (Vale 1999). Areas with different levels of human imprint should be managed differently.
- Unless past human activity (such as, structures, landscape modifications, and even apple trees) are causing unsafe conditions or serious ecological harm, let them be. They tell a story for the visitor. They help embed the visitor in nature.
- Many wilderness areas have a current human use story beyond public recreational use. These include grazing, some water developments, and outfitters making a living and raising families anchored in wilderness use. In the past wilderness managers and researchers sometimes labeled at least some of these uses as nonconforming but allowable. These wilderness activities should instead be embraced and the story of the complexities of their management in wilderness and as a part of wilderness should be told.
- Recognize, acknowledge and interpret off-site the human story of the wilderness. Look especially for compelling stories; often those stories will be environmentally sensitive and even reflect restorative effects of inhabitation by humans. But sometimes the story might be one of past human destruction and how nature was later able to re-wild. Cronon (2003) recommends having interpretation of past human activity done within wilderness. I would tell the story outside wilderness, with suggestions on how visitors on their own might find, observe, and connect with the human story within wilderness.
- Place as much emphasis upon telling the human ecology and the re-wilding story as on teaching Leave No Trace, at least in mid- to lightly used areas.
- Learn and manage for the layered meanings of the place. Some would call this creating and protecting public memory of the wilderness (Stewart in press). People act to protect a specific place as wilderness because of the meaning it has for them. Often these meanings are informed by past deep interactions or memories of the place. Acting out these memories can solidify long-term commitment to a specific place.

Environmental change is constant and normal. Research by archeologists, anthropologists, and landscape ecologists is

needed to learn about the additional long-term environmental change caused by Native Americans. Native Americans themselves can help with the interpretive story. Researchers need to discover and document the environmental use histories of wilderness landscapes by European settlers. Social scientists must help to find layered meanings of the place and to determine whether firsthand contact and interpretation of the human story results in greater understanding, enjoyment, and commitment to human-nature integration.

Critique #3: Wilderness Distracts Attention and Offers Little Help on Environmental Crises at Home

Description

This critique comes largely from Cronon (1996) and he does so largely on philosophical grounds. Cronon purports that the wilderness idea has so romanticized pristine nature that human activity, development, and industrialization represent a fall from grace. In this romantic view, humans come in contact with the mysterious Other, the life force of nature that flows without any need of humans, a force that engenders wonder and humility in pristine nature, in places away from where we make our homes. We protect these pristine places but we cannot live there. We do not see wildness in the tulip poplar in our backyard, where there may be a life and death struggle among aphids, ladybugs, and the tree (Lewis 2007). We have "pristine blinders" that prevent us from seeing wonder all around us and from learning lessons of beauty and promise. We fail to engage in environmental problems and possibilities at home.

But there is no research to show that wilderness activists or frequent wilderness visitors are less likely to engage in sensible environmental activities and activism at home. Indeed, one could argue that just as courses in art appreciation and visits to an art museum can increase sensibilities to beauty, so too might encounters with the wild of a sublime nature in wilderness increase the likelihood of finding the wild in a dandelion growing in the crack of the sidewalk. Certainly Thoreau's Mount Katahdin experience changed what he saw and how he felt about what he saw on his daily walks at the border of the village. Cronon, late in his essay, and Havlick (2006), in response to the essay, hint that the philosophical divide between humans in pristine nature and humans at home might be bridged. I now turn to that with suggestions for wilderness managers.

Suggestions for Management Actions

Suggestions on how to facilitate transcendent and wonder experiences are contained under Critique #1. What follows here are suggestions on how to translate learning benefits of the wilderness to the home environment.

- Foster ecological empathy and learning during wilderness visits. Emphasize pervasive environmental threats that occur both inside and outside the wilderness, such as global climate change, air pollution, and water pollution. Engage wilderness visitors in monitoring ecological processes and pollutants.
- Facilitate partnerships with the public on ecological restoration activities. Wilderness users and interest groups can Adopt a Spot in wilderness.
- Facilitate wilderness use and learning by educational groups. Consider removing group size limits and permit requirements for educational groups in low use wildernesses or during shoulder or low use seasons of high use areas. This is to permit more youth to have contact with wildness and wilderness. Provide hands-on learning, monitoring, and restoration activities.
- Teach decision-making strategies and practices regarding sustainability in wilderness that reach beyond LNT, strategies and practices that extend behavior ethics beyond time of visit and boundaries of the wilderness. Wilderness sustainability includes the same dimensions as sustainability at home—a concern for the environment, a concern for community and social justice and a concern for economic wellbeing. Questions of environmental sustainability in wilderness address the dimensions of water conservation and pollution, soil conservation, biodiversity protection, and carbon footprint, just as for the environment at home. Wilderness visitors should be asked to consider the ecological, social, and economic ramifications of the clothes they wear, the food they eat, and the gadgets they use in wilderness. They should think about resources they use to transport themselves to wilderness and ways to reduce resource consumption. Wilderness visitors should be encouraged to think about the amount of energy used to produce and transport the goods and services they use. They should think about whether labor and environmental laws were followed and whether fair labor practices were used. They should know and consider who gets the economic benefits of their wilderness use, whether it is the local community surrounding the wilderness or whether the benefits largely flow outside the region. They should know how protection and management of their wilderness is funded and ask themselves if the funding mechanism is equitable and sustainable. Helping the visitors ask the right questions and find meaningful answers for themselves seems to me as important as prescribing a set of actions, actions that almost certainly cannot be appropriate for all wildernesses all the time. Possible questions asked or possible prescriptions of a beyond-LNT ethic might include Conscious Impact Living (CIL), a call to live simply; think globally and plan ahead; follow the precautionary principle; reduce, reuse, recycle, relearn; follow nature's lead and blend into one's surroundings; use appropriate technology and use technology appropriately; and show respect and compassion for all forms of life (Moskowitz and Ottey 2006; Cachelin, Rose, and Dustin 2011). Another possible and idealistic working model for an outdoor recreation ethic in wilderness might be ASAP (As Sustainable As Possible)

(Bulger, Sveum, and Van Horn 2008). This prescription considers gear (renewable materials, recycled materials, carbon emissions, distance from production to purchase, synthetic compounds, and multi-use), location (purpose of trip, distance traveled, mode of transportation, and knowledge and skill of local practices) and food (organic, local, non-genetically modified, and home-grown and locally gathered). Again, one prescription almost certainly does not fit all. My call is that managers recognize that the wonder and close contact with nature common to the wilderness experience foster empathy for nature and this empathy is conducive to environmental moral reasoning and pro-environmental attitudes and behaviors (Berenguer 2007, 2010). Resource managers can and should build upon this to promote sustainable environmental behavior both in the wilderness and in the communities within which visitors live their daily lives.

Research is needed on whether current wilderness visitors and activists engage in environmentally sensitive behavior and activism at home any more than does the general public or non-wilderness recreationists. Does involving the wilderness visitor in monitoring and restoration activities in wilderness reduce or enhance the quality of wilderness recreation experiences? Would such activities result in greater wonder, appreciation, knowledge, commitment, and action? How can managers encourage the commitment of visitors and interest groups to these activities across time? Would involvement in these stewardship activities foster greater environmental sensitivity, commitment, and action at home?

Critique #4: Wilderness Privileges Recreation and Recreation Elites Highly Devoted to Consumerism and Technology

Description

This critique is summarized well by Callicott (2008) and as so often happens with his writing about wilderness, his words do take my breath away. Callicott complains that American wilderness was created for the wrong reasons—for virile and unconfined recreation and for spiritual rapture in monumental scenery. This has made wilderness preservationists strange bedfellows with the wealthy urban elite, a social class with enough time and money for both the desire and the ability to trek into remote wilderness. Wilderness areas are the playground for the minority bourgeoisie. In addition, while law mandates that wilderness recreation be primitive, over time the activity has become the most gadget-laden and rule-bound of all sports available (Callicott 2008). Instead, Callicott believes that in today's global conservation crisis, wilderness areas have a much higher calling. They must become biodiversity reserves. They must be selected, protected, and managed as places for non-humans, for species that have a need to roam widely, and for species that do not co-exist well with humans. In short, these areas must become places where natural processes flow freely and where species threatened and endangered by humans can be restored. Callicott suggests that the job of wilderness science should be reserve selection, design, and management. The task of social science research should be finding a more politically appealing name than "biodiversity reserve."

Certainly wilderness areas are currently playing a large role in landscape ecology. The wilderness idea has formally included ecological values since at least the time of Aldo Leopold. Foreman (2008) makes the case that the so-called Eastern Wilderness Areas Act (P.L. 93-622) was explicitly about extending ecosystem representation in the National Wilderness Preservation System and it formally recognized that damaged ecological systems could re-wild as wilderness. But I agree with Callicott that our wilderness areas can and must play a larger role in biodiversity protection in the future.

I turn now to Callicott's critique of recreational use of wilderness. As Callicott well knows, the experiences in wilderness about which we social scientists care so much have the force of law and stand on more than 200 years of American thought and identity. Callicott stretches the truth a bit when he suggests that wilderness values are elitist. While some early proponents of the wilderness idea and wilderness protection (for example, Teddy Roosevelt, Henry David Thoreau and Bob Marshall) lived lives of privilege, other early and current activists for wilderness did not. John Muir grew up on a humble Wisconsin farm and as an adult worked as a machinist and as a sawmill operator. Both Edward Abbey and Dave Foreman claimed to be rednecks (Cahalan, 2001; Foreman 1991). Dave Foreman takes pride in his dirt poor Scots-Irish ancestry. Callicott is right that current wilderness visitors are more likely to be male and they tend to have somewhat higher-than-average incomes and come from urban areas. But so do almost all outdoor recreationists. The one characteristic where wilderness visitors are very different from other Americans, and even other outdoor recreationists, is their higher level of education. The desire to spread the opportunities for wilderness experiences to a larger segment of the American population is one that wilderness policy makers, planners, and managers all share (although Callicott apparently does not).

The more interesting controversy is deciding what the mandated "primitive recreation experience" is and how to manage for it. There has been little discussion about the meaning of this value (Borrie 2004). Almost no research has been done on what contributes to and takes away from experiencing the primitive, while most available research funding has been spent studying the comparable value of solitude. The value of primitive living in the American mind apparently comes from the frontier era when contact between humans and nature was unmediated, unfiltered, uncushioned, and more direct. Such contact had spiritual and intellectual value (see Henry David Thoreau) and also physical and psychological value (see Bob Marshall). Testing oneself in nature, on one's own, on the frontier, in wild nature, and developing coping skills without the crutches of modern gadgetry apparently builds and built the American spirit of independence, competence, and strength. The learning of woodcraft in the 1920s and 1930s, and the scouting and camp movements of that time, demonstrate this

strong cultural value (Turner 2002). Leopold first called for wilderness protection of land when he saw opportunities for primitive recreation (such as the horse pack trip and hunting) slipping away. He was reacting against roads and the Model T invading wild country. He was also trying to retain two other important values: the opportunity to engage deeply with the place at hand (the national forest) and to permit the common man, even the poor man, to have access to wilderness hunting trips, packing trips, and trips to backcountry lakes (Havlick 2006).

But the question today is what technology violates the prescription of primitiveness? Each year there are more gadgets for wilderness recreationists to consume and to make wilderness trips more safe and comfortable. Should only motorized travel and mechanical equipment be prohibited? What about kevlar canoes, lightweight backpack stoves, fish finders, GPS units, satellite phones, cell phones, and all sorts of communication technology? Havlick (2006) defends today's wilderness by noting that almost all human products and activities, modern or not, are allowed. For him wilderness is not a retreat to a pre-industrial age. It is instead a chance to encounter each other and the environment under a different set of prescribed conditions than at home. But for Callicott and for me, many of these gadgets should be discouraged in wilderness. For me, gadgets that enable contact with modernity outside wilderness should be discouraged. They reduce the likelihood of contact with wild nature inside the wilderness. Other gadgets of all sorts that filter, cushion, and reduce contact might be discouraged. But here, much public input and judgment are required. I am certainly not suggesting a prohibition on lightweight backpack tents. Finally, gadgets that hold the potential to reduce or disrupt other people's contact with wild nature should be discouraged or used in a considerate manner.

Suggested Management Actions

- Consider ways to encourage a broader segment of the American population to visit wilderness. Work with schools, women's groups, and Elderhostels to introduce currently underserved populations to wilderness/wildness.
- Recruit young people into wilderness. Work with school groups, scouts, and camps. Encourage youth to leave communication and entertainment technology at home. Remove any institutional barriers to wilderness visitation by youth groups.
- Encourage primitive woodcraft skills, at least in lightly used wilderness areas and zones. This is to encourage contact with wildness.
- Discourage use of communication and entertainment technology in wilderness. This is to encourage personal contact with the unfettered wildness of nature.
- Encourage visitors to learn ecological processes and conditions such as fish finding, way finding and reading the weather without the crutches of modern technology.
- Evaluate current recreational activities in wilderness to see if some might be done in a more primitive way, in a way that encourages deeper contact with wildness. For example, if hunting occurs, could there be an archery hunt or a black powder hunt?

A research program related to these suggestions might include questions of whether recruitment activities result in more long-term use and enjoyment by currently underserved groups. Does learning woodcraft skills result in increased knowledge, sensitivity, and commitment to nature protection? How much does the public support or resist discouragement of use of modern communication and entertainment technology in wilderness? Does modern communication and entertainment technology increase or decrease contact with wildness in wilderness?

Critique #5: Wilderness With its Focus on Naturalness has its Ecology Wrong

Description

This critique comes primarily from evolutionary biology, conservation biology, and landscape ecology. But it lies at the very heart of wilderness protection and management. Indeed, the Wilderness Act calls for "wilderness to retain its primeval character and influence… protected and managed so as to preserve its natural conditions and which generally appears to have been affected primarily by the forces of nature, with the imprint of man's works substantially unnoticeable…" (Wilderness Act, P.L. 88-577). This represents a clear call for management for naturalness. But the naturalness concept is now known to be vague and ambiguous. Chase (1986) in his book "Playing God in Yellowstone" has pointed to huge mistakes made by resource managers in their efforts to protect naturalness in Yellowstone National Park. Naturalness has multiple and conflicting meanings. It might mean that wilderness lands should be self-willed, that ecosystems and landscapes should be free to go their own way without the imprint of man. But we know that the imprint of man is ubiquitous; it is everywhere. Indeed, many would argue that *homo sapiens*, at least the primitive human, was a keynote species affecting the function, composition, and structure of ecosystems and landscapes everywhere. To get back to some historical state would simply be a value-laden selection of a date and time. But whatever time is chosen, say the time of European contact, would require active human intervention to attain. It certainly could not be achieved by "letting the system go its own way." Too many past and present influences, such as habitat fragmentation, loss of top predators, invasive species, altered disturbance regimes, pollution, and climate change, have profound effects on protected areas (Stephenson and others 2010).

When the Wilderness Act was passed in 1964, popular conceptions of ecological thought still reflected the belief that ecosystems, if left alone, protected from human activity, would achieve a stable state, a state of equilibrium and a climax community. From time to time, natural disturbances would occur, setting back succession, but then the orderly process toward a

stable climax community would begin anew. We now know that disturbance is the norm, often by nature and more frequently by humans. The norm is a state of flux (Callicott 2008). With recent pervasive anthropocentric disturbance, ecosystems might evolve into systems never before seen in historic and even prehistoric times.

So what is a wilderness manager to do? Cole and Young (2010), in their edited volume, provide four options, each of which is based on but might be considered an extension of the naturalness construct. The first is a "hands-off approach"; let nature roll the dice in wilderness. We do not know what we will get; we might lose biodiversity. But in allowing nature to be self-willed, we accept nature's autonomy. We celebrate wildness. We accept evolutionary change. We develop scientific respect (Landres 2010). A second approach is to manage for ecological integrity. The goal here is the conservation of nature and biological diversity. It does this by protecting all the important parts and proper functions of ecosystems. This approach assumes that humans have been keystone species in most systems and active management by humans is integral for the success of this approach. Humans select ecological goals, indicators, and prescriptions for the system (Woodley 2010). A third kind of naturalness is to manage for historical fidelity—to restore an ecosystem (such as a sequoia grove) or landscape to some valued condition of the past. As already indicated, this goal can only be relative, not absolute. It requires active management by humans, and while historical processes are important, fidelity to past composition and structure is essential. A possible drawback is that it constrains possible novel evolutionary elements of biodiversity, thus potentially reducing ecological integrity and resilience (Cole and others 2010). Finally, managers might have a goal of ecosystem resilience, or enhancing the capacity of the system to adapt to change (Zavaleta and Chapin 2010). This requires active intervention by humans and views the ecosystem in its larger regional context. It seeks to reduce exposure and sensitivity to stresses. It seeks to build adaptability into the system. Humans intervene by viewing the ecosystem in a matrix of scales across the region. They connect the protected area with both ecological paths and cultural memory. They connect the system to local people. Managers look at crisis as an opportunity for constructive change. A novel outcome might be the "natural" outcome of evolutionary change.

The lesson here is that there is no one approach to system protection. In addition, each approach has different outcomes. Each involves human intervention in varying degrees. Whatever approach is ultimately chosen for a wilderness or a wilderness system involves a value judgment. This value judgment cannot be and should not be made by public policy-makers and managers alone. Instead, an interested, knowledgeable, and involved citizenry is required. The most effective protection of biodiversity and attainment of human goals is likely to result from a diversity of approaches. Even after a general strategy of resource conservation is selected, more specific objectives and indicators of performance must be selected. Finally, managers are treading new pathways here. They need the freedom to experiment, to monitor results, to adapt, to begin anew. In the end, nature bats last. We can never know for certain where evolutionary forces, where wildness, will lead us.

Suggested Management Actions

Implications for management flowing from the critique of naturalness primarily involve the ecological aspects of protected area management, but some involve human response to wilderness.

- Educate the public, interest groups, and wilderness visitors about the past and current human-induced changes on protected area systems.
- Educate the public, interest groups, and wilderness visitors about the values and required human intervention of the four strategies for protected area conservation: "hands off," ecological integrity, historical fidelity, and ecological resilience.
- Obtain input from the public, interest groups, and wilderness visitors on which of the four conservation approaches is preferred or which combinations are preferred.
- Obtain public input on the selection of goals, objectives, and performance standards for the conservation strategy(ies) selected.

Research is needed on how best to educate the public and obtain their preferences on the four conservation strategies outlined here.

Conclusion

The meaning of wilderness in the American mind has evolved and will evolve across time. Today the idea is represented in part by a system of about 107 million acres placed in the National Wilderness Preservation System. This system represents a special kind of resource protection and, unique in the world, special kinds of experiences for people. The kinds of experiences that are celebrated and models of resource protection employed typically flow slowly across the American scene. But from time to time, philosophers, writers, and scientists offer and advocate wilderness ideas that jolt conventional ways of thinking about wild nature. The last two decades in America represent one such time of change. Environmental historians, philosophers, conservation biologists, and landscape ecologists have offered a major critique about wilderness and the way it is protected and managed. In this essay, I subjected five of these challenges to thoughtful analysis and suggested implications for the delivery of experiences in wilderness. These challenges include the notions that wilderness separates humans from nature, that it denies the human story in "pristine" lands, that it privileges a certain kind of recreation that is out of touch with today's social and environmental values, that it distracts attention away from environmental crises at home, and that its management is based on an outmoded concept of naturalness. Much of this critique seems valid to me. I have suggested ways that wilderness managers can shape opportunities for experiences that may begin to address these criticisms.

These include emphasizing different aspects of the wilderness experience, calling for different visitor regulations and different educational messages and the way they are delivered, and the implementation of different kinds of resource protection models. All represent an effort to bring wilderness visitors in more intimate contact with wild nature, with wildness, and to take the learning benefits of wilderness to their home environment. To accomplish these tasks, managers will have to be more astute and agile than ever. They will need more help in the future from wilderness visitors, interest groups, wilderness outfitters and guides, and the general public than they have had in the past.

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Research to Create Public Memory of Wilderness

William Stewart

Abstract—If wilderness experiences are distinct from general outdoor recreation experiences, then wilderness visitor research needs to reflect the distinction. If there are distinguishing characteristics, they would be linked to social and cultural meanings embedded in the Wilderness Act of 1964 and contemporary interpretations of it. Most research on wilderness visitor experience is conducted through psychological approaches that do not recognize social and cultural meanings, leaving open questions regarding the social and cultural relevance of any given wilderness area. Public memory is explored as a strategy to create an evolving and unique set of place meanings for a designated wilderness area. Researchers could more fully understand wilderness experience by exploring public memory. The evolving public memory of wilderness as a philosophical concept is distinguished from lack of any public memory for a given wilderness area. The point of public memory is not to preserve the past, but to adapt it in ways that are relevant to the present. There are three sources of information on which to base public memory of wilderness: (1) the reason for designation embedded in wilderness legislation which has led to a national narrative of all wilderness areas as places untrammeled by humans, (2) the story of the designation of the given area and changes in operations that have been generated due to wilderness management regimes, and (3) connections to experiences of visitors and the memories they share. The latter two sources of information have largely been neglected, privileging the public memory that coincides with the national narrative of wilderness. A strategy to create public memory would be a three-step process to share stories of wilderness experiences, engage others to react and comment on the shared stories, and build a credible set of narratives from the engaged public to fit a specific wilderness area.

Introduction

What makes wilderness experiences different from general outdoor recreation experiences? If there is a difference, then the difference needs to be reflected in research. My starting point on wilderness experiences is the Wilderness Act of 1964, which provides substance for the meaning of places so designated. The Act suggests a narrative of the history of American culture and puts forth a uniquely American justification for land designated as wilderness. The meaning of wilderness, as embodied in the Act, is one that connects with social and cultural values of American life (Callicott and Nelson 1998; Nash 2001). This contrasts with the study of wilderness experiences which has been largely framed as individualized experiences, psychological benefits, and personal preferences. To be sure, trips in wilderness provide a wide array of individualized experiences and benefits, and these could be linked to personal preferences for settings. However the argument that distinguishes wilderness from outdoor recreation experiences has yet to be fully developed. Social and cultural meanings of wilderness generally do not surface in the empirical research on wilderness experiences, yet social and cultural meanings are essential to distinguishing wilderness from general outdoor recreation experiences.

In his critique of wilderness, Cronon (1995) brought visibility to the social and cultural contexts of wilderness recreation. Over the past two decades there has been a growing critique, largely from sociologists and policy scholars, of wilderness management as favoring an "able-bodied white middle class user" (Taylor 2000, p.178; see also Bullard 1993; Mohai 1985). For me, Cronon's essay problematized the reliance on a psychologized view of wilderness experience and suggested the need for approaches to research that would integrate social and cultural contexts of one's wilderness visit. The purpose of this paper is to explore the potential of public memory as a strategy to build connections between individual experience and the cultural meaning of any given wilderness area. A secondary purpose is to advocate that recreation researchers and wilderness managers play more active roles in stewardship of social and cultural meanings of wilderness, and expand their current roles as stewards of the onsite visitor experience through manipulation of social and setting attributes.

Public memory is about creating value for something or some place. When people share knowledge of an event, it leads to a conversation where new meaning becomes embedded in the place of interest. When such conversations engage a wide audience, place meanings are created and the value of a locale is enhanced. The process of creating value for some place through an evolving conversation about its significance is the basis for public memory. The point of public memory is not to preserve the past, but to adapt it in ways that affect the present (Lowenthal 1985); in other words, our understandings of the past change as our present conditions change (Blair and others 2010).

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Consider the memories you have shared about a past wilderness trip and the reaction of others to your recollections. These memories, reflected in stories of the past, color meaning for the places visited on the trip and do so in ways that purposefully enrich the present. The basis of public memory of wilderness is within forums that invite the sharing of stories of wilderness that allow others to react and provide commentary and ultimately work to build a narrative or synthesis. Creating public memory of wilderness is about social and cultural layerings on top of our individualized meanings, resulting in a collective knowledge of place (Assmann 1995). Both recreation researchers and wilderness managers have important roles to play in the creation of public memory for wilderness.

Importance of Social and Cultural Meanings of Wilderness

Developing strategies for creating public memory of wilderness invites the experience to grow into a narrative larger than any one person. For wilderness management to keep pace with contemporary values, social and cultural meanings about wilderness need to come to the surface and otherwise be more explicit in social science research. Public memory creates a sense of place with potential to bring people together and provide a positive identity. As an example, war memorials offer a public memory of significant cultural values that led to a country's involvement in war and create a sense of place to honor those who fought in war. Although war memorials are common place, their meanings are anything but common. Rather they distinguish specific men and women from a given locale for a given war who sacrificed themselves for the unique purposes of the war. Stated differently, war memorials are not about remembering a collection of people dying overseas, they are a coming together of individual sacrifice and a shared remembrance of a local history that connects with national pride (Cimprich 2005). If all we know about visitors to a war memorial is their psychological experiences, we have not fully captured its significance as a war memorial. There are social and cultural meanings of a war memorial that directly contribute to individual experiences. Wilderness visitor research has focused on individual experiences and generally has neglected any social and cultural meanings that contribute to such experiences. For research to distinguish wilderness visitors from general outdoor recreationists, it requires a framework that recognizes wilderness as a cultural institution.

As part of a process that builds place meaning, counter-narratives may develop that resist and otherwise critique any given place meaning. Such counter-narratives play important roles in bringing people together to critique or give voice to alternate meanings. For example, like most places of public memory connected with Christopher Columbus, Denver's memorial draws protests from American Indian groups on the official Columbus Day holiday (Noel 2010). Over time the dominant and counter-narratives of Denver's Columbus Memorial have become linked to one another and function as a progressive dialogue as the meaning of Columbus Day evolves. Likewise, the Wilderness Act of 1964 has been critiqued as lacking sensitivity to the history of many wilderness areas, including historical factors related to American Indian homelands, impact of management regimes, practices of restoration ecology, and problematizing wilderness in relation to gender, race, and class (Cronon 1995; Elliot 1997; Plumwood 1998). Developing forums to create public memory of wilderness will likely provoke social and cultural critiques of a given wilderness that will connect with visitor experiences.

Over the past few decades, there has been a growing literature that addresses social and cultural meaning-making within contexts of recreation and leisure (Kelly 1974; Patterson and others 1998; Stokowski 1996). Lee (1972) was one of the first researchers to frame outdoor recreational sites as having a social meaning beyond the descriptive aspects of the resource conditions and opportunities for activities. Recognizing that outdoor recreation generally occurs in activity groups comprised of family and friends, Lee's (1972) simple premise has profound implications to understanding the social construction of place-meanings of parks, campgrounds, and other outdoor sites. From a framework of outdoor recreation as a dynamic process, McIntyre and Roggenbuck (1998) provide further evidence of the development of place-meanings as intimately tied to the unfolding interactions between recreationists, their social group, and their place. Using a metaphor of "place as a relationship partner," Brooks and his colleagues (Brooks and others 2006; Brooks and Williams in press) provide a convincing argument, coupled with evidence from visitor experiences, that place-meanings are constructed due to long-term social and physical interactions with a place that regulates one's sense of identity. In another strand of research inspired by psychological models, Smaldone and others (2008) studied visitor and resident experiences, concluding that people develop deep-seated emotional attachments over time that accumulate like layers of memories to create place-meanings. From a variety of perspectives, outdoor recreation researchers have addressed visitor experiences as essentially meaning-making processes embedded within social and cultural contexts (Watson 2004).

Three common themes identified across this growing literature are relevant to creating public memory of wilderness. The first is a focus on place-meanings as being a central part of the outdoor recreation experience. The second is a framework that indicates place-meanings, rather than being static and mono-dimensional, evolve and accumulate across time due to interaction with people and places. The third common theme, more implicit than explicit in this literature, is that place-meanings are shared in ways that allow people to learn about themselves and each other. Because of these three themes, the literature on recreational place-meanings provides an important starting point for research that addresses problems with the lack of a public memory of wilderness.

What Is Public Memory of Wilderness?

Public memory is the way a society makes its past meaningful. The past is selectively remembered in ways that unify and build identity for people of the present (Blair and others 2010). Public memory is not an objective remembrance. Indeed, creating public memory is also about a public forgetting, erasure, and possibly silencing (Connerton 2008). Society makes meaning from its past by creating compelling narratives to inspire and build positive value for places and events. Public memory often evokes feelings of respect, loyalty, pride, patriotism and other aspirations for the past.

At its core, public memory is a collective remembering (Phillips 2004). If it were a public history or public understanding, the connotations of these terms imply claims to accuracy, objectivity, and lead to place-meanings as being singular and authentic. "Memory" is purposely employed as the appropriate term due to the multiple and fluid ways in which place-meanings are created. Rather than asserting an absolute truth, public memory is about a narrative that holds layers and accumulates meaning. Public memory is like a palimpsest where meaning accumulates or gets written over, much like a canvas upon which layers of distinct portraits have been painted with each potentially influencing the next (Blair and others 2010).

Although any given wilderness area usually lacks public memory, the concept of wilderness has its tradition of one. In other words, the image of a generic wilderness has been the target of an accumulating public meaning. This public memory is embodied in the writings of intellectuals (such as Cooper 1826; Nash 2001; Olson 1938, 1956; Stegner 1954) in which American natural landscapes are characterized as being untainted and romanticized as being a unique part of the American experience. The Wilderness Society, established in 1935 by Bob Marshall and others, has been a traditional advocate for legislation that designates land to be left in an undeveloped state. The Wilderness Act of 1964, largely written by Howard Zahniser of the Wilderness Society, is an outcome of the long journey for wilderness advocacy. This Act was largely directed at the American West, where large parcels of land were considered untrammeled by humans. However, the Act was problematic for many who felt that the eastern U.S. held land parcels, albeit smaller compared to western standards, that should be included in the National Wilderness Preservation System. The so-called Eastern Wilderness Act of 1975 was built upon the 1964 Act and allowed smaller parcels of land with visible histories of human disturbance to be designated as wilderness. The debate surrounding the 1975 Act was largely focused on esoteric discussions of purity and pristineness (Hendee and others 1990). The public dialogue for the 1975 Act was restricted to a more narrow set of actors compared to the 1964, Act including congressional staff, special interest groups, and President Gerald Ford who signed it.

In the past three decades, the public memory of wilderness as a concept has largely been asserted by scientists and other intellectuals. Various forums, not necessarily public, have enhanced the accumulated values of wilderness as a philosophical concept (Cole and Yung 2010; Roggenbuck in press). Like a palimpsest, the public memory of wilderness has grown as a philosophical concept to include meanings tied to biodiversity (Botkin 1990), ecosystem services and sustainable development (Callicott 1991), ethical responsibility to nature (Rolston 1991), deep ecology (Naess 1995), future generations (Nash 2001; Noss 1991), and in a curious twist that poses the ultimate dichotomization of humans and nature, a public memory that claims pristine nature is forever dead (McKibben 1989; see Plumwood 1998 for a persuasive rebuttal). Outlets and forums to influence the public memory of wilderness as a philosophical concept include books, academic literature, land planning workshops and reports, and conferences related to conservation and land preservation. For wilderness in the abstract, there has been an evolving public memory. However participation in it has generally been limited to people of the same status and characteristics of the people involved with the 1964 Wilderness Act—able-bodied white males trained in various scholarly disciplines or closely tied to land management.

Left out of the dialogue is a public memory of specific wilderness areas. With few exceptions, the public memory of any given wilderness is not problematized by politicians, agencies, special interest groups, or intellectuals. Although there are no doubt concerns for specific sites within wilderness areas, such concerns are generally not grist for creating public memory of wilderness. There may be resistance to creating idiosyncratic public memories of specific wilderness areas due to a perception that such place meanings could threaten traditional dogma about wilderness as a place that is pristine, pure, untouched, and otherwise fresh from God's creation (Cronon 1995). Creating public memory of any given wilderness could conflate, and possible contradict, the commonly accepted narrative of an untrammeled American landscape as first seen by white settlers. Hence there may be pressures on any given wilderness to eliminate special provisions (such as, motorized boats, stock grazing, aircraft access) and label them as non-conforming or conflict-inducing. Any attempt for a specific wilderness area to accumulate layers of meaning that stray from the nationalized narrative of wilderness may be viewed as threatening the quality of the wilderness and detracting from its purity. In short, whereas there has been an aloof public memory evolving about wilderness as a philosophical concept, there has been little public memory associated with any given wilderness area.

There are sources of information (or meanings) that could be developed to create public memory of specific wilderness areas. Wilderness areas do not simply represent the past; they accumulate their own past. There are three sources of information that could serve as a foundation for public memory (Loewen 2000) and each of these would be applicable for any given wilderness area. The first and most obvious source of information is the reason for designation tied to the Wilderness Act or the national narrative of wilderness as a place untrammeled by humans. This is currently the primary source of information being used to create public memory of wilderness. This source of information by itself is not sufficient to enhance the social relevance of any given wilderness area.

Nor has it visibly inspired research to distinguish wilderness visitor experiences.

Fortunately public memory also includes two other sources of information that have been subtexts in the development of wilderness. The second source of public memory is the story of the designation for any given wilderness area. Designation and subsequent changes in managerial and visitor operations are usually not stories considered worthy of telling, in part, because they point to historic uses and suggest evidence of human disturbance. Sometimes previous historic uses are brought forth as relevant for telling, and if so, such contexts are often of first settlers and pioneers confronting the wilds of America—a story that invites visitors to identify with the pioneers of yore (Cronon 1995). However there could be additional stories of the history of designation that could include counter-narratives with argument and evidence for the land's value and cultural meaning prior to being designated as wilderness.

A third source of information that could stimulate public memory of a specific wilderness area is its connection to the visitors' present moment. The current experience of the visitor, although an important concern for managerial operations, has curiously not made a significant contribution to public memory. Although there have been countless assessments of wilderness visitor experiences (see Manning 2011 for a thorough rendering), such assessments have not been fodder for an evolving public memory of their respective wilderness areas. Research on wilderness visitor experiences has largely aligned with managerial needs to conform to the concept of wilderness and thus is concerned with generic questions associated with satisfaction, crowding, conflict, and solitude. The research has seldom been used to understand or shape the uniqueness of any given wilderness area.

The three sources of information (or meanings) for public memory are dependent on one another. During a visit to a wilderness area, one may come upon prehistoric rock art and reflect on the centuries of time and people who have come before. The individual experiences of witnessing the rock art as novel, interesting to learn about or providing satisfaction, are not immediately cultural values or meanings. Visitor experience research often characterizes the individual experience and through analysis will attempt to explain the degree of novelty, learning or satisfaction by searching for relationships with management-based variables. The individualized framing of the experience aligns with the national narrative of wilderness as being land untouched by the modern world, and both the researcher and land manager will understandably be intrigued by results that show, say, relationships between learning about rock art and increased satisfaction. However if the research ends at this point, the other two sources of information to build public memory will not surface.

To illustrate the palimpsest qualities of public memory, further consider the example of a visitor who encounters ancient rock art. If this visitor was to share the experience regarding personal growth that led to an awareness of centuries of time, this sharing might affect others. Another person might extend the meaning to a felt sense of human mortality and connect it to geologic time. If both of these stories become shared with others, the place might be perceived as sacred given an understanding that others were left profoundly affected by the place. Senses of time, mortality, and sacredness are all meanings derived from the experience of the place in which the rock art was found. None are true in an absolute sense; rather they reflect multiple place-meanings created by those who visited. Yet another participant in the dialogue may argue that the locale had been homeland to American Indians long before it became a recreational playground for hikers and assert rights of land tenure for native people. A fifth participant in the dialogue may be a wilderness patrol ranger who describes the years of managerial action to fortify the ancient rock art site to make it less susceptible to erosion and vandalism due to a designation effect of increased use. Within this example, various sources of information and meaning have been shared that are relevant to encountering the ancient rock art. Collectively they provide a context for characterizing the social and cultural meanings of the wilderness area. Some of the suggested social and cultural meanings include appreciation of cultural heritage, need to protect cultural heritage, history of tribal land tenure, western conquest and settlement, and a profound sense of time linked to ancestral sacredness. Some of these meanings conform to the national narrative of wilderness while others deviate from it. The point here is to illustrate the variety of sources of information that could contribute to public memory.

There are both traditional and new-found roles for researchers to cultivate the development of these three sources of information as a basis to create public memory of wilderness. However to fully appreciate research-based strategies to create public memory of wilderness, the problems with a lack of public memory need to be explained.

Problems With a Lack of Public Memory

Shared dialogue and public memory is noticeably absent from contemporary American contexts of wilderness areas. Several problems with a lack of public memory of specific wilderness areas ultimately detract from both wilderness and its management.

First, to many people wilderness is defined in a negative sense. That is, we know wilderness as an environment by what is not there and what should not be done there. The "leave no trace" and other recreational minimum impact land ethics have been widely accepted by agencies and visitors. Indeed, I have been on several commercially guided trips in which patrons have been scolded for not urinating in the proper place or for inappropriately disposing of an apple core. There are good reasons to conform with "leave no trace" behavior, however absent a positive public memory, prospective visitors may be left wondering about the over-abundance of behavioral norms and confused by seemingly extensive regulation (Cachelin and others 2011). Wilderness areas generally beg for some positive definition of their meaning beyond the individual benefits of outdoor recreation and leave questions related to "what is the purpose of this particular wilderness area?"

Second, for many people wilderness management is a "hands off" operation. Because it is perceived as perfectly natural and untouched, there is no need for management. After all, doesn't the wilderness landscape manage itself? Any human tinkering could be seen as playing God (Chase 1986). Rather than some kind of natural regulation, the truth of most wilderness landscapes is much different (Cole and Yung 2010). As known by wilderness managers and restoration ecologists, wilderness areas are managed in well-defined and thoroughly-deliberated ways to appear perfectly natural and untouched (Davis and Slobodkin 2004; Hammitt and Cole 1998). Creating a public memory of wilderness would make wilderness management more transparent due to a shared dialogue that would include agency staff and other stakeholders.

Third, if wilderness management is "hands off," then there would not be a need for volunteer organizations to maintain wilderness landscapes and settings. Yet the settings of most wilderness areas have been influenced by the activities of numerous volunteers, special interest groups, wilderness advocates, commercial outfitters, and many others. Each group is motivated by specific intentions that appreciate the wilderness area and their efforts affect wilderness settings in significant ways. The lack of a shared dialogue for public memory precludes any open appreciation or public acknowledgement of the effect of these groups on the landscape and perpetuates the myth of wilderness as perfectly natural and untouched. Creating public memory gives credit to human activities that maintain settings and illuminates the diversity of motivations and social values for doing so. Acknowledging human influence on wilderness and the motivations for such activity would allow critiques and counter-narratives to emerge.

As the fourth and final problem stemming from the lack of a public memory of wilderness, where other institutions of American society have been democratized, wilderness is still aloof to most of the American public. The history of wilderness appreciation has been closely tied to elite white males who live in urban areas (Cronon 1995; Nash 2001), and is anchored in the dominant cultural meanings of the mid-twentieth century (Gottlieb 1993). Yet the meaning of many cultural institutions has changed since the 1960s. As examples of public meanings that have evolved over the past 50 years, consider changes in the meaning of institutions such as marriage, family, public schools, health care, indigenous people, and professional sports. The evolution of public meanings is usually a process that engages Americans from all walks of life regardless of gender, race or class. In the case of wilderness, public memory is still largely influenced by people and organizations tied to the discourse of the 1964 Act: staff from federal land management agencies, special interest groups, and outfitters. Democratizing wilderness would parallel other American cultural institutions and empower current visitors to share experiences, represent place meanings, and ultimately help shape place meanings of wilderness to align with contemporary American social and cultural values.

For several reasons, social and cultural values are essential contexts for understanding wilderness experiences. The Wilderness Act of 1964, like any act of Congress or historical event, is one that becomes re-interpreted as American society moves forward. The Wilderness Act is a living document (Roggenbuck in press). Whether or not the Wilderness Act "should" be a living document is not a useful question. Interpretation of all legislation evolves and so too does the cultural lens for interpreting the Wilderness Act. Without purposeful development of connections to contemporary cultural meanings, any given wilderness will be vulnerable to a lack of public understanding of its purpose, management, and the numerous people and organizations that care about it in a variety of appreciative ways. Creating a public memory for each wilderness area, and the role of researchers in doing so, is discussed herein as a strategy to address the above problems with wilderness.

Research Strategy to Create Public Memory

The three sources of information suggest a strategy to create a unique public memory of a given wilderness area. The strategy is a three-step process to: (1) share stories of wilderness experiences, (2) engage others to react and comment on the shared stories, and (3) build a credible set of narratives from the engaged constituents to fit a specific wilderness area.

For the *first step*, sharing stories of wilderness experiences is about democratizing the discourse about wilderness. There are strategies that could facilitate building a wider circle of participants beyond the traditional place-makers of management agencies, outfitters, and special interest groups. There are currently various kinds of social media linked to blogs, Facebook, Twitter, YouTube, and other networking resources being used to share stories of experiences in wilderness areas. They run the gamut of topics and connect to specific wilderness areas: some messages advertise goods and services for wilderness travel, allow disgruntled wilderness managers to vent their concerns, promote programs related to the wilderness area, show clips of organized groups of backpackers—like boy scouts or church groups on a re-vegetation crew, and portray unusual tasks conducted by ranger staff (such as, clearing trail, hauling-out plane wrecks). Although there may be forums (in this example, websites) dedicated to sharing stories of a given wilderness, they are currently not immediately visible or easily accessed. Developing an appropriate set of forums—developed either by the agency or a "friends of" group—for sharing stories of wilderness experiences is an important first step.

A *second step* in creating public memory of wilderness is to engage others in reacting to and providing commentary on the stories being told (Blair and others 2010). Whatever set of forums are developed to share stories, they also need to engage others to listen, learn, and react to such stories. The ability of various forums to bridge personal experiences with cultural meanings of wilderness needs exploration through a close working relationship between researchers and constituents of a given wilderness area, including the land managers themselves. An example of such a forum to share stories of a wilderness area is found on a YouTube video explaining the

Forest Service's pack mule program for wilderness areas on the east side of the Sierra Nevada Mountains. The video describes a vision for the wilderness area, suggests unique qualities about the area and the need to spread gravel in streams to restore a fisheries spawning ground. A few comments posted below the video indicate a growing dialogue about the need to use pack mules to restore habitat and enhance biodiversity. They portray others who have worked to restore stream habitat with pack mules and tell a history of the specific wilderness area as being "opened-up" by pack mules. In this example the story told on the video, along with the YouTube forum, fostered others to deliberate about the value and place-meanings of this wilderness area.

The *third step* to creating public memory of a wilderness area requires the development of a credible set of narratives. Engaging others to react and provide commentary to the stories being told does not necessarily lead to credible narratives of a wilderness area. A structure is needed to identify linkages across wilderness experiences and social and cultural meanings. In addition, the structure developed needs to result in narratives of public memory that are relevant to, and believed by, a significant portion of constituents. A critique of the concept of wilderness is that it lacks appreciation for roles played by humans in creating the landscape and falsely posits a landscape void of human influence. This premise has given rise to a popular myth that wilderness does not require management. In the example of the YouTube video about a wilderness pack mule program, the series of commentaries that followed from the video appreciate the history of pack mules and trace the beneficial conservation work that uses pack mules as part of management operations. A general narrative for this series of commentary is about roles for humans and mules in the conservation of biodiversity and habitat for this wilderness area. The extent to which this narrative is credible to constituents is an open question; however, it is likely to be credible to the people who watched the video (more than 10,000 hits since first posted in January 2010) and followed the commentary. By creating public memory that includes the experiences of pack mule trips, the consequences of managerial operations become evident, and others learn of human efforts that support the landscape. Awareness of these human efforts may, in turn, influence visitor experiences and their place meanings. Rather than a static national narrative of a landscape untouched by humans, this wilderness area on the eastern side of the Sierras becomes connected with an evolving public memory about stream restoration, fisheries conservation, and essential roles for the pack mule program. Researchers can play a critical role in exploring narratives that develop and incorporating this understanding into a richer appreciation of the human experience of wilderness.

Conclusion

The orientation of this essay is that the traditional cultural narrative of wilderness needs updating and synchronization with the evolving path of American cultural values. This does not imply that the values embodied in the Wilderness Act (Callicott and Nelson 1998; Nash 2001) should be abandoned. Rather, the point is that wilderness, like any institution, needs relevancy as an integral part of American culture. Creating public memory of wilderness is not about good/bad, right/wrong, or erosion of purity and sacredness. It is about a localized process of investing place-meanings by those who care about a wilderness area. Along with the traditional meanings of wilderness, there are bound to be additional layers of meanings tied to personal experiences, families, friendships, communities, and others that may problematize and work to reconcile issues related to gender, race, class, and natural and cultural histories. Creating public memory of wilderness will lead to a messy narrative that is multi-layered and complex and will be unlike the relatively concise argument posed in the Wilderness Act that is abstracted and indifferent to the uniqueness of a given place.

There are two major take-away points from this chapter. The first is that research on wilderness visitor experience needs to distinguish itself by connecting with social and cultural meanings. Creating a public memory builds a unique identity for any given wilderness area based upon the integration of personal experiences with contemporary social and cultural values. The research developed on recreational place meanings provides a substantial platform for further inquiry to integrate social and cultural meanings with wilderness recreational experiences (Brooks and Williams in press; Kruger and others 2008). Without such a linkage, there is no distinction between wilderness and general outdoor recreation experiences. Stated differently, although studying recreationists in wilderness areas is an important step in understanding wilderness experiences, this does not mean that wilderness experiences will be fully studied or framed as wilderness experiences.

The second take-away point is that researchers and managers have the potential to play active roles in facilitating the creation of public memory of wilderness. Roles for researchers need to be expanded beyond the provision of descriptive information to managers about users to include the facilitation of dialogue forums that share experiences, learn from one another, prompt commentary, and develop credible narratives for any given wilderness (McCool in press). The shift in roles for recreational social scientists moves away from a sole focus on understanding visitor experiences, to include the creation of values and place meanings for a public memory of specific wilderness areas. A significant product is a unique set of narratives that generate a value basis for managerial objectives. Stated differently, rather than social sciences solely "discovering" preferences or social values, the roles for research expand to facilitating the creation of meaning amongst constituents of wilderness areas. Although the Limits of Acceptable Change and related frameworks provide a basis for managerial objectives (see Manning 2011: 84-87), such a basis stems from a premise that managers are technical stewards restricted to the manipulation of onsite resources. In contrast, creating public memory of wilderness frames managers as providing leadership for stewarding a social and cultural resource called wilderness. Creating public memory of wilderness is viewed as an essential complement to, rather than competition with, frameworks such as Limits of Acceptable Change.

To be sure, there is growing awareness among tourism professionals, and to some extent among land managers, of the need to provide leadership in creating public memory of destinations and natural landscapes (Buzinde and Santos 2009). Such awareness may not be termed "public memory;" however, the efforts work to do so. For example, the Buffalo Bill Historical Center in Cody, Wyoming has developed as a center for visiting the greater Yellowstone area, and in general, a keeper of the "Spirit of the American West" (http://bbhc.org/). As part of the Center's programming, there is a running commentary to foster dialogue among visitors about the American West. Visitors provide written comments about their reaction to—in this case—a wolf re-introduction exhibit in the Center and post them on a corkboard that becomes a "place for visitors to talk with one another, and to engage their predecessors who have left comments" (Pahre in press:18). Although these discussions were focused on the topic of wolf reintroduction to the Yellowstone ecosystem, they have the potential to involve other issues, such as land tenure of American Indians, the meaning of wilderness to American Indians, and de-constructing the role of Buffalo Bill Cody in creating the "Old West" (Pahre in press:17-18). There are other strategies that have been developed that lead to more intimate engagement with visitors and democratization of the discourse about a landscape. It is just such strategies that have the potential to create a public memory of wilderness.

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Imagining Wilderness

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Abstract—The future of wilderness is open for discussion and debate. In this paper we invite readers to consider four wilderness scenarios, any one of which, or combination of which, seems possible based on current demographic, social, and cultural trends. The purpose of the paper is not so much to try to predict the future as it is to prod readers into pondering the future—a future where wilderness may or may not be valued in the same fashion it is today.

> "All America lies at the end of the wilderness road, and our past is not a dead past, but still lives in us. Our forefathers had civilization inside themselves, the wild outside. We live in the civilization they created, but within us the wilderness still lingers. What they dreamed, we live, and what they lived, we dream."
>
> — T. K. Whipple, *Study Out the Land*

The purpose of this paper is to encourage readers to ponder the future of wilderness in the United States. In 2064, the 100th anniversary of the Wilderness Act, what meanings might we ascribe to wilderness? What might visitor experiences be like? How might wilderness be managed? In short, what place might wilderness hold in our lives?

Speculation of this sort is tenuous for a number of reasons, not the least of which is that the future of wilderness may well take a number of different twists and turns depending on a number of different occurrences—some anticipated, some not. Moreover, to assume that the future of wilderness will be largely a function of human planning is also dubious. There are many countervailing forces at work, from changing demographics, to advancing technology, to climate change, to the depletion of non-renewable natural resources, to energy exploration, to increasing globalization, all of which will likely impact the wilderness condition. Consequently, any attempt on our part to predict *the* future of wilderness would most certainly be futile.

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The best we can do is offer up a range of alternative wilderness scenarios, any one of which, or combination of which, seems plausible given current demographic, social, and cultural trends. Specifically, we begin by briefly describing several features of contemporary life, including a growing urban population, an increasingly diverse citizenry, a widening separation between city dwellers and ecological systems, the prominence of technology, and the generally sedentary nature of modern life. We then project where these trends might lead us in relation to wilderness by imagining four different wilderness scenarios that typify how wilderness might be viewed in 2064. Fifty years down Whipple's (1930) "wilderness road" is not so far away. If we truly value wilderness, it is none too early to think seriously about its preferred state, and then to see what we can do about achieving it.

Demographic, Social, and Cultural Trends

The United States is approximately 85% urbanized. We are a nation of city dwellers and our lifestyles tend to reflect urban upbringings. The implications are far reaching. In *Last Child in the Woods: Saving Our Children from Nature-Deficit Disorder*, Louv (2005) describes the deleterious effects of distancing young people from their biological moorings. Whether this distancing will result in a greater perceived need to reconnect future generations with nature or whether it will lead to a heightened sense of disengagement from nature is unclear, but the fact remains that modern American life is spent largely inside the city limits.

Widening this divide between America's citizenry and the land that sustains us are rapidly advancing technologies that make it easier and easier to remove ourselves from a sense of being connected to, and dependent on, the surrounding environment. Technology often serves as a buffer that insulates us from the elements. Most of our life is lived in comfort and convenience, and we spend 95% of our time indoors, leaving little time for outdoor activity (Robinson and Godbey 1997). Pergams and Zaradic (2006) even coined a term, "videophilia," to describe the degree to which our lives are now ensconced in electronic media. We are a stay-inside society that is increasingly tethered to electrical outlets. Our lives, in turn, have assumed a sedentary quality that has led to an epidemic of obesity, diabetes,

and a host of other maladies attendant to physically inactive lifestyles (U. S. Department of Health and Human Services 2008).

Adding to the complexity is an increasingly diverse citizenry. We are a multi-colored people reflecting a wide range of ethnic, racial, and spiritual origins. We come from dramatically different social and cultural traditions that result in a wide range of differing attitudes and beliefs about our relationship to, and interest in, the natural world. Outdoor pursuits are less homogenous these days, and for many groups of people, less appealing than they were in bygone years. Indeed, as active engagement with the out-of-doors has lessened among children (Outdoor Industry Foundation 2008; Clements 2004), and as visits to national parks have declined in recent years (Pergams & Zaradic 2006), federal land managing agencies have had to turn their attention to the question of how best to generate a newfound enthusiasm for nature among the nation's rapidly expanding minority populations, as well as among youth.

In sum, we are experiencing a fundamental shift in the way Americans live life. This shift is illustrated in part by a growing urban population that is largely disengaged from recreating in the out of doors. Rapidly advancing technology makes it possible for many of us to live increasingly insulated lives, connecting with others in cyberspace without having to leave the confines of our own homes or communities. At the same time, and via the same technologies, the outside world is brought inside for our viewing pleasure. We can remain stationary and sedentary and still feel like we are participating in the larger unfolding of events. In many ways, we are becoming a nation of onlookers.

These demographic, social, and cultural trends portend a future flavored by more of the same in greater intensity—more people, more globalization, more urbanization, more congestion, more sophisticated technology, and more stay inside sedentary lifestyles. Just what this might mean for the future of wilderness is an intriguing question to ponder.

Range of Wilderness Possibilities

As we consider the implications of these demographic, social, and cultural trends, four scenarios emerge as possible wilderness futures: 1) a growing disinterest in wilderness for recreational purposes combined with increasing scientific interest in wilderness for its biodiversity value; 2) a heightened interest in wilderness as an antidote to an increasingly congested, urbanized, technologically transfixed, and stay inside society; 3) mixed feelings about wilderness as reflected in disputes over access, safety, and technology; and 4) a radical new conception that views wilderness not as the antithesis of civilization, but as a profound expression of what it means to be civilized. These four scenarios are by no means exhaustive. They merely represent what, in our opinion, are the most likely possibilities for wilderness in 2064.

Wilderness Scenario #1

More people, more globalization, more urbanization, and drastic environmental problems have led to a future characterized by an emphasis on sustainability. The American concept of wilderness has been modified to embrace a focus on local and global sustainability that has resulted in the establishment of large biodiversity reserves, increased greening of urban centers, and protection of surrounding natural areas. This shift in thinking would not have occurred without years of effort by environmental educators who promoted ecologically responsible living practices, which have now been integrated with economic principles, resulting in a deep cultural awareness of the value of sustainable living.

The year is 2064. As the number of people populating the planet has continued to increase, as oil reserves have been diminished, and as climate change has put increasing pressure on modern lifestyles around the world, people have turned increasingly to science for answers. However, there has been a deep shift in the way science is pursued, understood, and applied. No longer are scientists criticized for maintaining a narrow focus on their own specific areas of study. Instead, scientists now employ integrated, interdependent thinking that requires collaboration across disciplines to focus on interrelationships. This new scientific worldview has ultimately influenced the way Americans view wilderness.

No longer is science primarily interested in the extraction of natural resources for profit. The growth and development economy has been completely dismantled because modern people have listened to scientists and understood that only an economy that is based on sustainability will support human life on earth long into the future. People appreciate and respect that there are limits to growth and ecological principles drive that understanding. The new economic framework has grown out of a philosophy founded on scientific knowledge that has gained political traction as the environmental health of the planet declined throughout the 21st century. Ecologists explained the interconnectedness of the natural world, and corporate business leaders and politicians finally acknowledged the integrated relationship between nature's health and economic health (Heinberg, 2010).

The need to protect large tracts of land to support global environmental health is no longer debated and the idea of wilderness in America has been altered. Where wilderness areas were once preserved largely for humans to visit and enjoy, the primary purpose of wilderness protection programs in the modern world is to add to the growing number and scope of biodiversity reserves. The focus is on protecting threatened and endangered species of plants and animals while simultaneously trying to better understand the workings of complex and highly interdependent ecosystems.

This "new" wilderness is largely devoid of people, save the ecologists and botanists who make their daily rounds. Animal rights activists are pleased, as they truly believe that biodiversity reserves offer the best chance of species preservation, and Deep Ecologists are on board as well. These and other supporters of biodiversity reserves see wilderness as the embodiment of a philosophical and ethical stance put forth by Aldo Leopold over 100 years ago. "A thing is right," Leopold reasoned, "when it tends to preserve the integrity, stability and beauty of the biotic community…" (Leopold, 1989, p. 224).

In these biodiversity reserves, recreational activities are strictly regulated. Wilderness is still roadless and untrammeled, but it is protected with even more vigilance. Recreational use is secondary to protection and scientific study. Other areas, selected for their recreational quality as well as their proximity to urban centers, have been set aside to support recreational pursuits. While there have been some disgruntled wilderness enthusiasts, most have come to understand the need for increased regulatory efforts, and they have supported efforts to protect wilderness through expanding the biodiversity reserve system.

This framework for managing and protecting wilderness is an outgrowth of a dramatically new cultural perception of nature. We now realize that we can no longer conceptualize wild nature as a place that exists beyond a Forest Service or National Park Service sign. We now live with the awareness that we are ecological beings. We have removed the duality from our teaching and thinking. Wilderness is no longer "othered," "out there," "strange," and "disconnected" from us. We see ourselves as part of nature (Cachelin and others 2011), and that perspective has seeped deeply into the American psyche.

There is also widespread agreement that the promise of present and future conservation efforts lies in our ability to educate young people about basic ecological principles in such a way that they develop a lasting sense of connection to wild places. Well-informed educators understand the importance of early life experiences in shaping interest in the natural environment, and their educational efforts now focus on helping young people develop basic understandings of ecological principles as they connect with the outside world.

Environmental and outdoor education is now an established part of public and private school systems. These educational programs were designed in response to the recommendations of early 21st century scholars and visionaries such as Sobel (1996), Louv (2008), and Chawla and Cushing (2007). These programs no longer focus on making young people aware of humanity's role in the failing health of the planet, and no longer focus on "shoulds" and "oughts," or "dos" and "don'ts." Instead, they focus on inspiring young people to connect with wild nature. Over time, this has resulted in a citizenry that values the conservation of natural areas. We are experiencing extraordinary growth in the greening of urban centers and extensive protection of natural areas in and around our modern cities.

Increasing access to wild nature for youth is now deemed a practical necessity for cultivating ecologically responsible adults. It is also widely understood that books alone cannot suffice for this kind of environmental education. Decades ago, Cachelin, Paisley, and Dustin (2009) observed that an emphasis on both knowledge and affect is required to encourage responsible environmental conduct. This understanding now guides our decision-making when designing environmental education programs. Johnson (2007) summed it up well: "If we are serious about education for sustainable living, we must do more than piecemeal, infusion-model teaching. We need integral, coherent education programs that help people construct ecological understandings, develop feelings for the natural world, and craft appropriate lifestyles" (p. 93). Such efforts have been so successful that the natural areas in and around our modern cities serve as new and highly accessible wildernesses.

Many years ago, Johnson (2007) suggested that outdoor education programs should include four key content areas; energy flow, matter cycling, interrelationships, and change. He reasoned that these topics should be delivered through authentic opportunities to interact with nature as a way to promote both conceptual understanding and to develop personal feelings toward the natural world. Viewing outdoor education programs from Johnson's perspective has taught us to move toward the integration of content knowledge and personal experiences. It has resulted in a new concept of wilderness that is now integrated into our daily lives as well as protected in biodiversity reserves. Wilderness in America has been transformed from what in years past was a narrow mandate of Congress to what is now a widespread culturally embedded focus on interdependence and sustainability that was required in response to the devastation caused by previous economic models and the failure to respond quickly enough to rapidly growing environmental problems.

Wilderness Scenario #2

Wilderness is understood to be a powerful antidote to a highly congested, urbanized, technological, and stay-inside society. Wilderness is valued for the same reasons the National Wilderness Preservation System was established in 1964, only more so, because civilization has advanced 100 years farther "down the track."

The year is 2064. The number of designated wildernesses has grown steadily over the one hundred years since the establishment of the Wilderness Act. Recently, in fact, many public lands have reverted to the wilderness character they once displayed. Not only has every president since Lyndon Johnson established new wildernesses, but members of state legislative and executive branches have demonstrated their support for the expansion of the Wilderness Preservation System by rededicating state park land as wilderness, thereby contributing it to the expansion of the system. By 2009, 109 million acres of land had been set aside as wilderness. Since then, that number has increased to nearly 130 million acres. A large portion of the new acreage is the result of wilderness designation of state park lands "becoming" wilderness in fiscally challenged states such as California and Oregon as a result of the economic downturn early in the century.

As is often the case, designation of new wilderness has been met with resistance by locally affected populations; however, such designations have generally enjoyed widespread national support (Appell 2010). Some local citizens believed converting state park lands to wilderness was an abandonment of the state park system and the people that earned their livelihood from park visitation, while others in locales such as Texas and Georgia, where states rights were traditionally considered tantamount, were happy to shift the financial burden from state to federal coffers. Not surprisingly, wilderness advocates thought it was in keeping with the original intent of the

Wilderness Act, believing that humans were truly "visitors" to these wild places. A handful of creative conservationists with an economist's eye saw that the management of typical visitation was, by default, being minimized in many state parks with wilderness characteristics, and lobbied the public to embrace this retreat and return those lands to an approximation of the pristine lands they once were.

Anza Borrego Desert California State Park (the nation's second largest state park), for example, which contained tens of thousands of acres of land possessing wilderness characteristics, was neglected over time by land managers unable to keep up financially with maintenance demands. At the same time, remote washes like Anza Borrego's Coyote Canyon were experiencing a revival in visitors seeking solitude and spiritual renewal, while traditional users of the area who expected recreation opportunities closer to the developed end of the spectrum were declining in number. Poorly maintained trails and access points were slowly being reclaimed by the desert, and motor vehicles were stopped several miles short of destination campsites due to washed out or poorly maintained roads. These were tangible signs of a nation's fiscal inability to provide recreational opportunity and access to places containing spiritual, scientific, and historical value. These desert landscapes once contained the San Antonio to San Diego Mail routes and the Butterfield Stage Line, which followed the Great Southern Overland Route between 1857 and 1861 to San Francisco. Battalions of soldiers had once traveled through this desert to fight in the Civil War, and American Indian Tribes had established many trails and villages throughout the area (Bice 2011). Conservationists argued that letting these places return to the condition they were in during the pioneer days would allow people to experience a glimpse of their nation's history. All the while, of course, commercial enterprises outside the park worried that wilderness designation would reduce an already dwindling visitation to insignificant numbers.

Despite increasing contention over wilderness "regeneration," wilderness areas have continued to be set aside. Roads have disappeared, group sizes have decreased, and the designation of wilderness has brought a new mystique to former state park lands. The result has been a change in the type of visitation, and an increased interest in wildness. These "new" wilderness areas are now being visited by individuals who are trying to escape the continued growth, congestion, and urbanization characterizing modern American life.

These have not really been new considerations as much as they have been a revival of the rationale invoked in the years preceding the establishment of the Wilderness Act in 1964 (Nash 2001). Similar to the beliefs of Emerson, Thoreau, Leopold, and Marshall, conservationists behind the movement to "return to wilderness" explained that the state parks no longer represented what was uniquely American. These places were becoming symbols of American disappointment rather than symbols of American heritage.

More so than ever before, wilderness is now viewed as an antidote to urbanization and technological advancement. Transcendentalist ideals, such as Thoreau's belief that "in wildness is the preservation of the world," are becoming widely apparent to those who experience less and less wildness in their daily existence. Visitors who may have come to state park lands as children are now coming to wilderness areas to reconnect with nature and the simplicities it affords. Yet, despite an increased yearning for wild places, current generations are less experienced in the outdoors, less connected to the environment, and more sedentary than generations before them. This dualism has created a unique visitor who is seeking adventure, but who is not particularly well-suited to encounter one.

For instance, it is common to see multi-day backpackers attempting to "go light." They carry minimal equipment and intend to travel quickly on foot covering many miles each day. Despite their intention, these ambitious wilderness enthusiasts remain tethered to their psychological safety nets of technology. It is rare to encounter visitors who have genuinely disconnected from the civilization they intend to escape. Most visitors carry cell phones, global positioning systems, or both. Furthermore, many carry trip reports, internet posts of route descriptions, and details of good campsites, all of which can serve as buffers between the visitors and their desire to experience adventure and exploration.

As a result of the increase in wilderness visitation by a more civilized visitor, the need for guide services and outdoor recreation education has increased. These services are needed to fortify potential wilderness adventurers with the necessary skills to safely enjoy wilderness. Similarly, wilderness users are now more likely to encounter wilderness rangers on patrol to ensure that visitors are minimizing their impacts, traveling appropriately, and otherwise providing assistance to wayward travelers when necessary.

The uniqueness of the American idea of wilderness is also now profoundly demonstrated by the increase of visitors from developed nations across Europe and Asia. Internationally, globalization has pushed nations, both developed and developing, into the same quagmire of desire for economic advancement at the cost of wilderness. As battles for preservation are lost abroad, support for wilderness in America has strengthened. Not surprisingly, international visitation to America has increased by over 80% as it has become one of the few accessible places remaining for individuals to seek solitude from urbanization and places "untrammeled" by humankind. Wilderness experiences in America have become events that build national pride and a sense of global responsibility. Internationally, America is seen as a steward of wilderness and the efforts made to return public lands to their wild condition have become a model for nations worldwide.

Wilderness Scenario #3

Wilderness looks the same, but there are serious conflicts revolving around issues of access, safety, and technology. There is much debate about the intent of the language in the Wilderness Act as words like "primeval," "primitive," "untrammeled," and "solitude" are parsed in search of a common interpretation of the place wilderness ought to occupy in contemporary life.

The year is 2064. Wilderness today looks pretty much like it did at the turn of the 21st century: islands of relatively untrammeled lands sequestered in the United States' various public lands, most of which are disproportionately located in the American west. As our human-inhabited spaces have become more crowded and contested, the country's wilderness spaces have become more crowded and contested as well. The last half century has seen a number of political battles, with various environmental groups staking claim to wilderness expansion while resource extractors exercised various legal techniques to open preserved areas to the still growing "needs" of humanity and modernity. In sum, the 1964 Wilderness Act, Howard Zahniser's crowning legislative achievement, has been supported, defended, derided, and amended, but in many ways, wilderness today is just as it was back then—except not exactly.

Some of the inherent contradictions of the capitalist world economy (Boswell and Chase-Dunn 2000; Li 2008) are finally starting to expose themselves more fully, with the incompatible goals of growth and conservation illustrating that one cannot really exist simultaneously in concert with the other. Population growth peaked in 2027 in the United States, with a slowly decreasing population ever since. With a more chaotic and desperate political and social world of 10 billion people inhabiting a crowded and finite planet, it appeared as though wilderness might be an unfortunate sacrifice to a resource- and space-hungry humanity in competition with itself. Oil, coal, uranium, copper, and a host of other extractable non-renewable resources have long since passed their peak extraction rates (Heinberg 2007), with many of them being close to total depletion.

Many years ago, Jackson (2010) hypothesized that "the future of agriculture long before the end of the fossil fuel interlude will depend on knowledge gained from our ecosphere's wild ecosystems" (p. 7). He was right. The rapidly urbanizing world of the early 21st century lost much of the environmental knowledge that is not only helpful for advancing the natural sciences, but also the knowledge that has sustained humanity for thousands of years (Heinberg 2007). Today, some of the nation's most pristine wildernesses do not allow citizen access (for example, Southern Nantahala, Marble Mountain, and Pecos), primarily because they are being used as "laboratories" for testing genetic variations of various plants and animals for medicinal, agricultural, and horticultural uses. Other wildernesses are also closed to humans (for example, Glacier Peak, Golden Trout, Mount Evans, and Sycamore Canyon), primarily because these areas contain the headwaters for our most precious and valuable resource: clean water. We have learned that wilderness areas are vital to the human condition; they are often the sources of our streams, our drinking water on a planet where the price of potable water long ago outpaced the price of fossil fuels or any other singular component of our energy needs. In the American west, the sites of most of our wilderness and park lands, the arid climate has only exacerbated these drinking and agricultural difficulties, prompting many groups to support further efforts to preserve watersheds, designating them wildernesses, national parks, or affording them some other protected status.

Long ago, scientists predicted that climate change would have significant impacts on the national parks (National Park Service 2010), but they failed to see the implications. The geothermal energy provided by the Yellowstone Caldera now supports electrical production throughout much of the Intermountain West, as do the solar arrays in Joshua Tree and Saguaro in the southwest. There was stiff resistance to privatizing portions of these national parks, but it remains preferable to the bio-prospecting (Hayden 2003) that has taken place in other parts of the world where there are even fewer environmental regulations. The subsequent phenomenon of privatizing biodiversity forced land management agencies to guard these spaces with increased fervor, lest the knowledge be stolen and patented, as takes place throughout the world (Shiva 2005). Because wilderness is one of the few places where biodiversity still exists, there is increasing commodification of the knowledge and materials that can be extracted there. Within this expanding economic horizon, biopharmaceutical, biotechnological, and biomedical industries—in conjunction with governmental agencies—figure as prominent actors and drivers of important economic and social policy that have both global and local ramifications. With all of this taken into account, most wildernesses appear today just as they might have 50 years ago, save dramatic changes in vegetation types and unpredicted animal migrations and extinctions resulting from globalization and its inherent burning of fossil fuels.

And what can be said of the human experience with wilderness? Recreation ecologists have long documented the detrimental effects of various outdoor experiences (Hammitt and Cole 1998), ultimately leading to many outdoor pursuits being regulated and curtailed significantly, if not eliminated completely. Since the turn of the 21st century, advocates of wilderness recreation, feeling pressure to expand the number of individuals who have more regular interactions with wilderness, continue to want more people to hike the trails, climb the mountains, and canoe the lakes. This is understandable, but it is at odds with the realities of visitor impacts. Basically, more people in wilderness relates directly to more material impacts on wild ecosystems. This inherent contradiction sits at the center of many land management debates, and it ultimately underscores the largest and most pressing issue of our time: What is and what ought to be people's relationship with the natural world?

Due to access, technology, and safety issues, today's human-wilderness experience is highly orchestrated by land managers, leading to a false sense of security while experiencing the outdoors. Wilderness today, while in some sense existing as it always has, is much more of an illusory construct (Leitch 1978), a romanticized remnant of a past that may or may not have ever existed.

Decreased public support for wilderness has required the cultivation of a new kind of citizen that values nature more than we have in the past, and what better way for folks to value wilderness than to have them experience wilderness? Part of the access problem is rooted in basic demographics. In an increasingly urbanized world, fewer and fewer people come into direct contact with natural processes on a regular

basis. Beyond our rapid movement to cities, our cultures have become increasingly interwoven, partly through processes of human migrations, and partly through the cultural processes of globalization. We increasingly encounter large swaths of people who have never left the cities in which they grew up. This phenomenon is often associated with young people, and is frequently counteracted through initiatives such as the "No Child Left Inside" movement decades ago, or other educational and/or experiential programs.

It is in this broad socio-demographic landscape that access to wilderness is so inescapably entangled. Should wilderness access be expanded to "reach out" to individuals, groups, and communities? If so, how might this be done in a way that is thoughtful, compassionate, reasonable, and just? If wilderness access is, in fact, expanded, does it then lose some of the qualities that made wilderness what it was to begin with? Would this expansion compromise the ecological integrity of the wilderness ecosystem? Would it compromise traditional notions of what a wilderness experience "should" be?

Picture yourself backpacking through a remote alpine valley only to find that your desired camp spot near the lake is already occupied by two groups of 6th graders from downtown Cleveland who are part of a program seeking to expose urban youth to the outdoors. Not only will you forego your favorite camp spot, but your new spot, a few hundred feet away, features an evening filled with the students' favorite pop songs belted out at full volume, punctuated by intermittent nighttime screams and giggles, and one student who stumbles through your site looking for a bathroom spot. The next morning, as you wearily pack up to continue on your way, you notice the visible "traces" of the group's experience—increased litter, a campsite that was too close to the alpine lake, and a forgotten tent pole.

As the population increases and as wildernesses maintain their current sizes and regulations, defensive and offensive battle lines place people and nature in difficult positions. Groups demanding greater access and availability of wilderness now seek greater permitting flexibility, while other groups actively oppose such a move. The traditional views of environmentalists, wilderness advocates, land managers, and scientists all point to increased access as a direct path to degradation of the qualities that made the area worthy of wilderness designation in the first place. Can a place be "primitive," "untrammeled," and promote "solitude" (as mandated by the 1964 Wilderness Act) while simultaneously allowing for greater access?

Of course, the dichotomy between increased access and maintenance of wilderness character is a false choice. There is a balance to be worked out, a dynamic balance that adjusts for seasonality, the ecology of the place, and the level of "need" for access. However, as we seem to see daily in our local, state, national, and global political processes, the tendency for particular advocacy groups to seek a moderate amount of resources is fairly exceptional. One instance of granting greater access is often met with another demand for even further access. One denial of access to wilderness strengthens future requests being denied.

The way out of this ideological stalemate now rests with the legislatures and the courts. Political processes in the United States are saturated with lobbyists, campaign contributions, and donations. The courts offer both avenue for democratic review and an endless line of lawsuits and appeals, both of which are also directly corrupted by the influences of money. Advocacy groups, either for or against greater access, turn to their legislators to get laws on the books, and then turn to the courts to either strike down those laws or condemn those who try to fight them. Either way, the stalemate that many citizens feel regarding political processes only intensifies, and the losses are felt heavily by both people and nature.

With this increased focus on legal stratagems as a response to the intensified wilderness debate, a tool of both sides continues to be the perceived and actual safety of visitors to wilderness areas. Lawsuits continue to wreck havoc on court systems and communities, and the ultimate reliance upon a logic of "safety" remains paramount. Such a premise is not without (rhetorical) merit. Who wouldn't want this world to be a little safer, a little better, and a little more comfortable than it used to be? Imagine if an increasingly safe world *wasn't* the case, if each generation had life a little tougher, a little harder than the generation before. The arc of human existence hasn't pointed us in this direction yet, and it remains difficult to imagine a world in which society (with the legal system being part of it) would support such a stance.

While proposals for "no rescue" wilderness scenarios (McAvoy and Dustin 1981) offer insight into human psychology and behavior, there remains little support for such practices on the ground. Debates currently rage as to who should pay for wilderness rescues (the user? private insurance? the land management agency?), and there is little to suggest that the rescues themselves might be eliminated, whether due to managers' policies or due to a basic sense of human compassion for others in need. There is a trend toward people wanting greater safety and security while recreating in the wilderness, not less. With regard to this aspect of the internal contradictions of "wilderness management," the opposing sides are people who spend time in wilderness and those who are ultimately responsible for their safety in the case of emergencies, the land management agencies.

When considering such a dilemma in practice, fundamental questions arise. Is it appropriate for there to be a log crossing where a trail intersects a stream at spring melt? Should there be a handrail? Should trails be well marked, or even marked at all, if a hiker loses a map or doesn't know how to read one effectively? These questions have persisted for years, even before the Wilderness Act of a hundred years ago, and they continue to persist today.

The safety question is further complicated by the technological aspects of the contemporary visitor experience. At the turn of the 21st century, many wilderness managers were struggling with GPS technologies. Some managers banned GPS use due to the increased numbers of rescues, while other managers went the opposite direction, requiring GPS-enabled satellite phones while recreating in the backcountry. Today, this "controversy" has largely subsided, as managers have succumbed

to the massively interconnected social world in which we live. Almost all visitors now carry their phones into the backcountry, and with satellite positioning and internet capabilities, there is very little difference technologically between camping in the Tuolumne high country versus sitting in an apartment in downtown San Francisco. Most land management agencies have adapted by implementing full-time switchboard operating systems to accept incoming distress calls from wilderness recreationists. These automated systems then make instant decisions as to when to initiate a rescue or not.

Most wilderness managers see the increases in technology as a bad thing; it is an imposition on what used to be "real" wilderness experiences when we had to think for ourselves and deal with the consequences of our decisions. However, paper maps are a thing of the past, and we haven't had a lost party in over three decades now. Many groups who do not have sufficient outdoor skills are able to just look up the skill on their mobile devices. The devices also help by allowing visitors to coordinate with other backcountry users as to when and where they plan to camp, and by updating others in real time about the conditions of trails, trailheads, and facilities.

Despite the material advantages that technology brings, it leaves many wilderness enthusiasts questioning just how wild our wildernesses are nowadays. It's easy to find videos, blogs, and photographs of any hike, climb, or camping spot. The detail of online maps is so great that one barely has to look at the world in order to navigate it. We no longer have animal attacks on humans because most mobile devices emit a high pitched frequency that deters animals, but animal encounters are also increasingly rare. Detailed weather forecasting has enabled people to head into wilderness areas with fewer and fewer articles of gear, which helps lighten the load, but it also means more rescues when the forecasts are slightly off. All of these technological advancements are subject to visitors' choices, but rarely do visitors choose to be less comfortable, less in the know, or less safe.

It has been 75 years since McKibben (1989) predicted the end of nature as we know it, and that time is now upon us. Change is inevitable, both in the material existence of wilderness and in the various ways in which we conceptualize our relationship to the natural world. Land managers, wildlife ecologists, environmentalists, and participatory citizens ought to take notice of what is, with the intention of thoughtfully assisting in guiding what is to come. We may find that in the coming years humans will have to continue to adjust to a world without pristine nature, forcing us to manage environments in ways that go beyond creating and maintaining protected areas (Wapner 2010). Today's wildernesses and wilderness experiences may indeed be less wild than they were 100 years ago, but our cities, suburbs, farms, and industrial sites are most certainly wilder.

Wilderness Scenario #4

Wilderness, rather than being seen as the antithesis of civilization, has come to be seen as an integral part of what it means to be civilized. People are considered part of nature rather than apart from nature, and they come home to wilderness rather than visit it.

The year is 2064. In a sense, wildness is now internalized. Wilderness is no longer "the antithesis of an unnatural civilization that has lost its soul" (Cronon 1996, p.80). Nor is it "a place of freedom in which we can recover the true selves which we have lost to corrupting influences of our artificial lives" (Cronon 1996, p.80). In fact, designated wilderness areas no longer exist. They no longer make sense. When we learned that the inherent dualism of separate wilderness areas fostered irresponsibility at home, the soiling of local landscapes, and a fragmented sense of the environment that was out of step with reality, we recognized the need for radical change. Rather than depending on conceptions of backcountry that demanded differential treatment (that is, leaving no trace) for physical and spiritual renewal, we have incorporated green spaces within bioregionally-based communities and we welcome other living things as part of the larger ecosystem that we depend on.

We are able to see that ecological health begins with the places in which we work, live, learn, and play. It includes the places that our food and materials come from and the places that stuff we cannot use goes to. Environmental education no longer includes field trips to remote places; rather, it is about learning to live well in our own places. We have learned that we cannot use parts of ecosystems (natural resources) more quickly than ecosystem processes can renew them, and that we cannot discharge wastes more quickly than they can be absorbed (Hardin 1985). The environment has become a powerful context for integrating all disciplines. This conception alleviates many issues of environmental justice because internalized wildness mandates emphasis on community, a place-based approach, and a holistic sense of responsibility for what, how, and where we produce and consume. We have come to appreciate that an internalized wildness is the only way to truly protect the landscape and the biotic community as a whole.

Across the globe, people have come to realize that humans impact all the earth, no matter how remote or how devoid of human presence. From climate chaos to toxins in remote areas of the ocean, human behavior has touched every corner of the planet. People have come to understand that the best way to maintain wilderness and healthy ecosystems is to control humans, not "natural resources." In this future, it is widely understood that by designating certain places as *wilderness*, or *backcountry*, or *Nature* we defined them as "other" and there was a critical sense in which we literally changed them from subject to object. We now understand that our past orientation to nature was not one of awe and humility, but of control. We commodified nature and wildness with fees attached not only to transportation, access, and experiences in designated wilderness, but even in the peddling of outdoor wares through the promotion of fear appeals of what might happen if one "braved" wilderness without expensive gear. But now the majority opinion holds that the best way to protect wild places is to reduce the human footprint at the broadest possible scale, and to return to humility and awe, not just of the far away, but of wildness in all forms near and far.

Birding is the epitome of this new wilderness experience. Birders are an amazing sort. They see and hear things that most of us don't. Sure they dress funny, move slowly, and have ridiculous hats. But they have a connection to wildness, a connection that many other people lack. They view the landscape as an opportunity for discovery, not in a controlling way, but with a sense of humility and awe. The landscape offers bright visual and auditory "gifts" that feed them without requiring consumption. Ask them why they have devoted their time to learning to identify birds by ear or sight and they'll use words like magic, beauty, diversity, liveliness, wonder, connectedness, seasonality, camaraderie, and artistic appeal. They understand that there is always something more to learn. Add to the list freedom, beauty, amazement and transformation, and there you have it. They know what birds share their home environment and when to expect them. They also know what habitats support what sorts of birds. The return or departure of certain birds speaks to the seasons and indicates appropriate human behaviors like planting vegetables or putting up storm windows. When birders travel, they look for new birds to introduce them to new landscapes, connecting with the newly discovered places and with each other. Information is freely exchanged between birders: what they've seen, where they've seen it, and how sightings this year compare to sightings in years past. Really, it's a poor "sport," valuing cooperation over competition. You'll never see a birder wearing day-glow colors; the birder's costume, silly hats aside, is intended to blend into the landscape. Theirs is one vision of how people can relate to place, finding the wildness in every landscape, regardless of political designation or geography. According to the poet Gary Snyder, "a person with a clear heart and open mind can experience the wilderness anywhere on earth. It is a quality of one's own consciousness" (as cited in Cronon 1996, p. 89). In this way, we can begin to see ourselves as a part of something larger, as a part of nature rather than apart from it.

This future has required a complete metamorphosis of thought about human-environment relationships. Now, rather than seeing people as separate from nature, people are seen *as* nature. While this may seem improbable, consider that human conceptions of wilderness changed from seeing nature as savage and brutish to seeing nature as sanctuary or cathedral (Cronon 1996). Rather than write humans out of wilderness, we have now come to recognize that we are a part of wildness, a part of nature. We recognize "environmental" problems for what they really are—social problems—and we seek treatment of root causes rather than symptoms. We have transcended the current vision of modernity, recognizing our problem as:

> "the positive-feedback system comprising overpopulation, urbanization, outrageously high standards of living, outrageously unjust distribution of basic goods; the conjunction of classical science, technology, the state, and market economics that supports the high standard of living; the endless presumptions concerning our rights, liberties, and privileges; and the utter absence of a spiritual life that might mitigate against these forms of greed" (Turner 1994, p. 180).

The beginnings of these transitions from global to local happened as far back as the early part of the 21st century as evidenced by the number of farmer's markets increasing five-fold between 2004 and 2010 (USDA 2010), urban "buy local" movements' rampant growth, and experimentation with local currencies in many cities. "Modern" ideas were increasingly rejected in favor of progressive ones.

Because the preservation of wilderness required a revolution against social pathology, we have learned that human management rather than land or resource management is the most productive and enjoyable way to protect ourselves and our fellow species in intact landscapes. We have learned to give our homes and local communities the level of care and respect that used to be reserved for the backcountry, so that the distinction between wilderness and home, between frontcountry and backcountry, has dissolved. "Homo petroliens," as Foreman (1994) referred to our fossil fuel dependent selves, are now extinct, having been replaced by true Homo sapiens who embody Leopold's land ethic with a resurgence of community economies and ecologies.

Just like birders, we have finally learned to find wildness in our everyday landscapes, living by the credo that cooperation is a better strategy than competition. While we continue to find magic and meaning and important ecologic lessons in large and diverse landscapes, we also find less need and less virtue in traveling to faraway places to repair damaged souls. The healing now begins and ends at home, as we carry on our work together, creating and maintaining healthy localized communities based on informed restraint, responsibility, and holism.

The Path Home

We have presented four wilderness scenarios from an infinite pool of possibilities. Just which one, or which combination, is likely to become a reality is open for discussion and debate. Perhaps some other scenario, even an unimaginable one, will come to pass. Time will tell, of course. In the meantime, it is easy to be pessimistic about the future. It is easy to assume current trends are irreversible and that the future is in large measure already set, already predetermined by choices we have already made. If the path to the United States of America's future is going to be paved with more cities, more technology, more people, more demands on limited non-renewable natural resources, and more staying-at-homeness, then how can the prospects for wilderness possibly be good? People are, after all, highly adaptable creatures (Dustin and McAvoy 1982), and why should we believe that the general public is incapable of adjusting to a future without wilderness?

We take some comfort in the thought that our forbearers put certain legislative, executive, and judicial safeguards in place to help protect wilderness should future political uncertainty challenge the wilderness idea. Indeed, the tendency to date has been to afford parks, monuments, and primitive areas even more protection over time. Moreover, the creation of

new national parks, monuments, and wildernesses has been a common legacy left to us by virtually all of our outgoing presidents since Theodore Roosevelt, no matter their political persuasion (Dustin and others 2005). When our nation's leaders begin thinking about what they want to be remembered for, they typically do something good for the environment (Dustin and Barbar 1998). And as Appell (2010) has observed in his review of wilderness and the courts, the judicial branch of government has looked favorably upon wilderness as well.

We Americans, it seems, are generally in favor of wilderness even if we do not visit it. The idea of wilderness pleases us. While there are certainly widespread differences of opinion about the ways in which wilderness should be managed, any objection to the existence of wilderness per se is likely to be overruled by popular opinion. The real threat to wilderness is much more likely to come from external forces than from wilderness enthusiasts loving wilderness to death. Running out of fossil fuels or clean water or precious metals that we depend on for our collective material well-being should be of more immediate concern to anyone who cares about protecting the sanctity of wilderness. Recreational impacts on wilderness can be mitigated in ways that impacts from non-renewable natural resource extraction cannot.

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