

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

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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).

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

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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

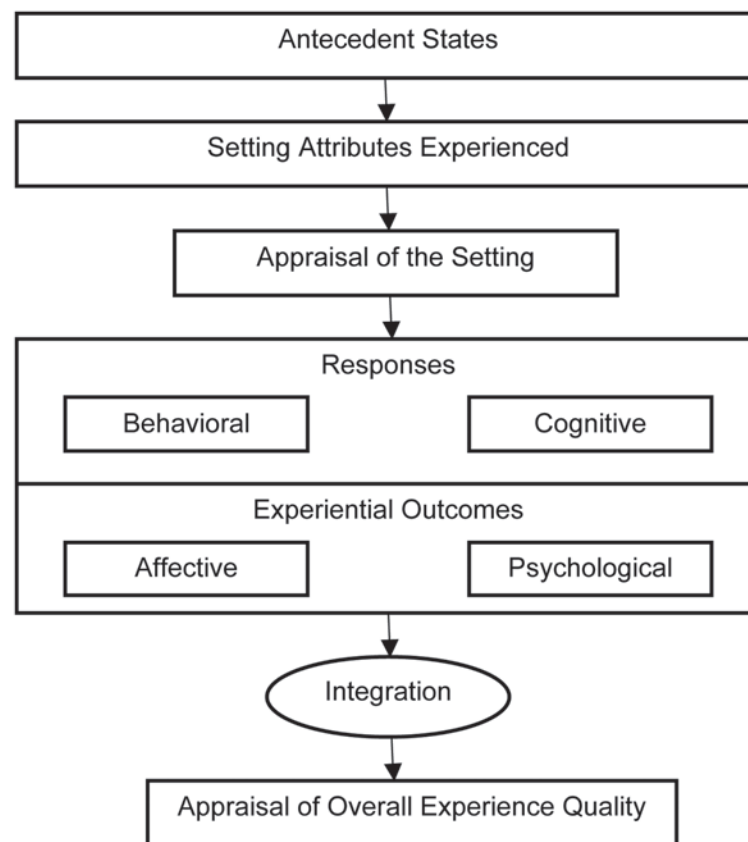


Figure 1—A conceptual model of linkages between different ways that experience can be conceived and experience quality can be evaluated.

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 week-days 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.

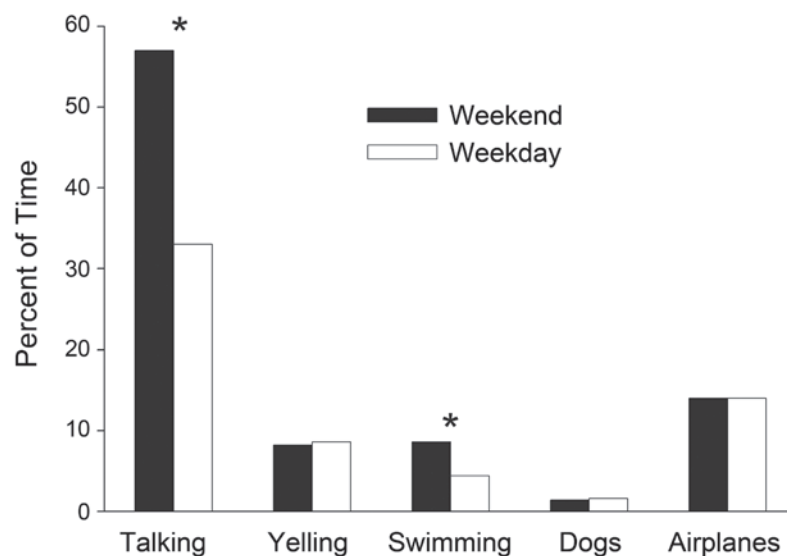


Figure 2—Frequency of various noise sources: weekend days vs. weekdays (* denotes significant difference, chi-square, $p < 0.05$).

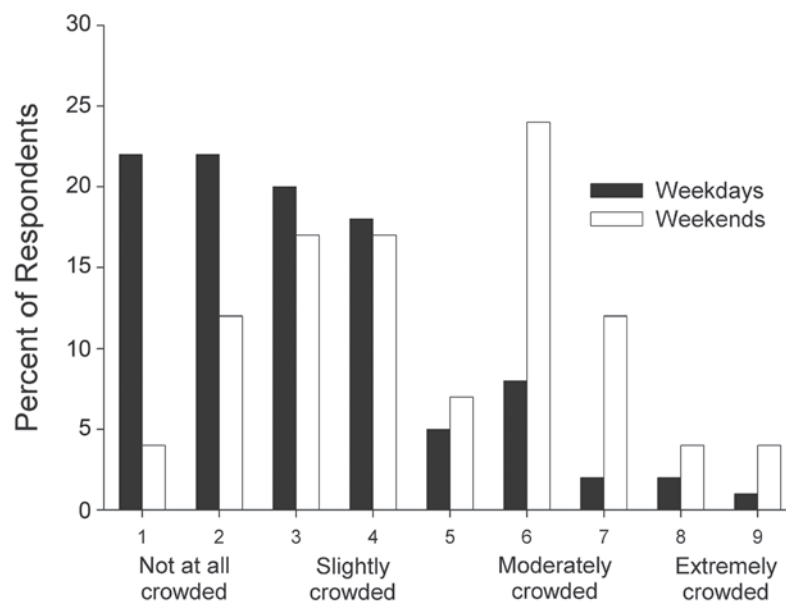


Figure 3—The extent to which weekday and weekend visitors felt crowded. Differences are significant, Somer's d, $p < 0.01$).

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 (Somer's 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

^aValues 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 Somer's d test of difference between weekends and weekdays.

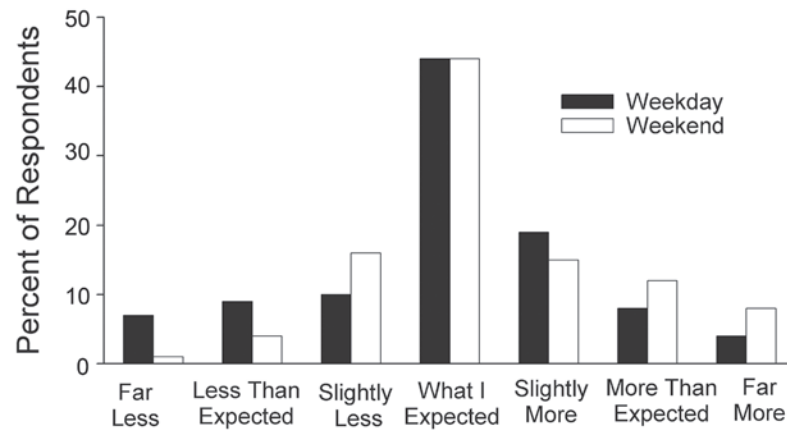


Figure 4—How the number of other groups encountered on weekday and weekend visits compared to what was expected. Differences were not significant (Somer's d, $p = 0.10$).

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

^aValues 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

^aPercentages 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 (Hammit 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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