

Examining the Potential Effects of Management Actions on Visitor Experiences on the Summit of Cadillac Mountain, Acadia National Park

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Abstract

Qualitative interviews were used to understand visitors' experiences on the summit of Cadillac Mountain in Acadia National Park, and the potential effects of resource protection interventions on those experiences. Results suggest the summit of Cadillac Mountain is a centerpiece of the park, and visitors' experiences are centered on the aesthetics and naturalness of Cadillac Mountain. Site management structures that were perceived to blend in with the surroundings, be constructed of natural materials and protect vegetation generally appear to be of little consequence to visitors' experiences. In contrast, fencing and regulatory messages on signs were more likely to negatively affect visitors' experiences, in part because they were perceived as demonstrating a lack of trust in visitors.

Keywords: *qualitative interviews, visitor use management, recreation ecology, stated choice, crowding*

Introduction

Managers of national parks and related protected natural areas often struggle with decisions about how to balance the conservation of national park resources with public use and enjoyment of the parks. At the center of this struggle are the difficult judgments managers must make to select what they consider to be the most effective and appropriate management action(s) intended to reduce or prevent social and ecological impacts of visitor use. Alternative management actions or practices used to address impacts of visitor use are commonly classified along continua from direct to indirect actions, and obtrusive to unobtrusive (Manning 1999). Previous research suggests that visitors prefer indirect, unobtrusive management approaches, such as those relying primarily on visitor education over more direct, obtrusive management practices, such as use limits, visitor regulations, and site

management (Peterson and Lime 1979; McCool and Christensen 1996; Lucas 1983; Hall 2001b; Manning 1999). At least in some situations, however, indirect management approaches may not be as effective in achieving management objectives (e.g., resource protection) as direct management actions (McAvoy and Dustin 1983; Cole 1993). Thus, a primary challenge for national park managers is to strike the "right" balance between direct and potentially obtrusive management approaches that may be particularly effective at protecting resources with indirect, unobtrusive approaches that may not be as effective but provide park visitors with greater freedom and enjoyment.

Striking a balance between protecting park resources and providing for quality visitor experiences may be especially difficult at intensively visited attractions, where social (e.g., crowding, conflict) and resource (e.g., trampling of vegetation and soils) impacts, as well as intensive site management features (e.g., fencing, boardwalks, signs, etc.) are often prevalent. Cadillac Mountain, in Acadia National Park, is an example of an intensively visited national park "icon" site. At 1,532 feet, it is the highest point on the North Atlantic seaboard, and offers magnificent views of the park's glaciated coast and island landscape. The winding, scenic 3.5 mile road that leads to the summit was built in 1931, and the 0.3 mile paved summit loop trail make the summit and its vistas easily accessible to most park visitors. A 1998 visitor use study reported that the summit of Cadillac Mountain was visited by 76% of Acadia National Park visitors (Littlejohn 1999), and current peak season visitation to the summit is estimated to be as high as 4,000 to 6,000 visitors per day (Jacobi 2003). Intensive summer visitation during the past 50 years, coupled with a management policy that allows visitors to roam freely and explore the summit, has resulted in the loss of fragile sub-alpine vegetation and soils (Jacobi 2001).

Recently, the park has applied a variety of indirect management approaches to address the diminishing resource conditions on the summit of Cadillac Mountain. The park's ef-

forts center on the use of visitor education messages encouraging visitors to stay on durable surfaces and off of fragile mountain plants and soils, and the installation of low wooden barriers around selected areas to allow trampled vegetation and soils to recover. Despite these efforts, a substantial proportion of visitors walk off-trail, trampling vegetation and soils on the mountain summit. Consequently, park managers are faced with difficult decisions about the future management of Cadillac Mountain. On the one hand, park managers could choose to continue with the current indirect management approach, but it is likely that resource conditions will continue to deteriorate on the mountain summit. Alternatively, park managers could attempt to achieve a higher degree of resource protection on the summit of Cadillac Mountain, but this would likely require more direct and potentially obtrusive management actions. In either case, park managers are faced with difficult choices that involve potential tradeoffs between resource protection and visitor enjoyment.

To help inform decisions about how to balance resource protection and visitor enjoyment, a number of studies have been conducted in national parks and protected areas using stated preference techniques to examine visitors' preferences for balancing the social, resource and managerial conditions of outdoor recreation settings (Cahill et al. in press; Lawson and Manning 2002, 2003; Lawson et al. 2006; Newman et al. 2005). In a companion study to the research presented in this paper, stated preference methods were used to examine visitors' preferences for managing visitor-caused damage to vegetation and soils on the summit of Cadillac Mountain (Bullock and Lawson in press). Results of the study suggest that Cadillac Mountain visitors consider protecting vegetation and soils on the summit to be a high priority, and that they are willing to accept restrictions requiring visitors to stay on formal trails and site management structures such as signs, rock borders, and even fencing if necessary to protect natural resources on the mountain summit. However, the study findings suggest that visitors to the summit of Cadillac Mountain are strongly opposed to limiting public access to the mountain summit as a means to achieve resource protection objectives.

The results of the stated preference study on Cadillac Mountain can help managers anticipate the extent to which visitors will support alternative resource protection and visitor use management strategies; however, the study, and other stated preference studies like it, provide little or no information about whether and how various management interventions alter the nature or quality of visitors' experiences on the summit of Cadillac Mountain. For example, do some management actions or interventions designed to protect vegetation and soils on the Cadillac Mountain summit, even those visitors generally support, interfere with visitors' ability to have the kinds of experiences they seek? How does the pres-

ence of management structures such as signs, rock borders or fencing placed along trails to keep people from going off-trail and trampling vegetation and soils alter the nature of visitors' experiences on Cadillac Mountain? Do educational or regulatory messages designed to minimize off-trail hiking influence the type and quality of experiences visitors have? Why do some management actions enhance, while others detract from the quality of visitors' experiences? In this study, qualitative interviews were conducted with visitors to the summit of Cadillac Mountain in Acadia National Park to develop an in-depth understanding of visitors' experiences on the mountain summit, and to examine the potential effects of alternative resource protection interventions on those experiences. Thus, this paper complements the findings from the companion study of Cadillac Mountain visitors' management preferences described above. In particular, the results of the stated preference study conducted at Cadillac Mountain provide managers with information about visitors' relative support for alternative strategies for protecting natural resources on the mountain summit. The research presented in this paper provides insight into the nature of visitors' experiences on the Cadillac Mountain summit and how those experiences may be altered by management actions designed to protect park resources.

Literature Review

Qualitative methods are useful for examining and developing an understanding of phenomena about which little is known, and allow for the discovery of in-depth information about the subject of study (Strauss and Corbin 1990). Furthermore, qualitative research is inductive, allowing study participants to describe what is meaningful and salient to them without the researcher presupposing what the important dimensions of the phenomenon under study will be (Patton 2002). Qualitative research is not designed to produce results that can be generalized to a larger population; rather a primary purpose of qualitative research is to provide a richness of detail about a smaller number of people and cases than is typically developed through quantitative research methods (Patton 2002; Patterson et al. 1998). For example, in recreation research, in-depth interviews with visitors allow for the documentation of the subjective nature of visitors' experiences and discovery of unanticipated findings (Davenport and Anderson 2005). The focus of study findings is on each individual's in-depth description of his/her experience in the context of the setting, rather than statistically generalizable findings about visitors' experiences (Patterson et al. 1998). Quantitative methods, in contrast, rely on the use of standardized scale items to measure and aggregate the perspectives and experiences of individuals for the purposes of developing statistically generalizable results.

This study is based on assumptions about visitors' experiences of a recreation setting associated with the concept of situated freedom (Patterson et al. 1998). Situated freedom within the context of outdoor recreation experiences suggests that the recreation setting or environment sets boundaries on what can be perceived or experienced. For example, visitors on the summit of Cadillac Mountain cannot experience a congested interstate highway, but they can experience a mountain top with views of the Maine coastline. Further, while the recreation environment sets bounds on what can be perceived or experienced, within those boundaries recreationists are free to experience the setting in highly individual, unique and variable ways. Thus, to understand the nature of visitors' experiences, the concept of situated freedom suggests that it is necessary to collect *individualized* rather than *standardized* information that can be statistically generalized. Given these assumptions about the nature of visitors' experiences and the characteristics of qualitative research methods described above, we chose a qualitative research approach as the most suitable method for developing an in-depth understanding of visitors' experiences on the summit of Cadillac Mountain and how alternative resource protection interventions might affect those experiences.

A number of studies have employed qualitative research methods to understand visitors' experiences in national parks and protected areas. A predominant theme within the findings from these studies is the importance and centrality to the quality of visitors' experiences of focusing on, enjoying, and being close to nature (Patterson et al. 1998). For example, results of a study by Davenport et al. (2002) suggest that natural scenery and the opportunity to see abundant and diverse wildlife are central to winter visitors' experiences in Yellowstone National Park. Similarly, in a qualitative study of visitors' experiences at the Exit Glacier Fee Area, in Kenai Fjords National Park, the opportunity to get up-close to the glacier was found to be the defining attribute of most visitors' experiences (Vande Kamp et al. 2004).

A second recurring theme within the qualitative literature on outdoor recreation experiences is the importance to visitors of experiencing a novel setting and/or events. For example, within a study of wilderness canoeists in the Juniper Prairie Wilderness in the Ocala National Forest, study participants found having to make decisions not faced in everyday environments to enrich their experiences (Patterson et al. 1998). Further, some respondents talked about the novelty of the experience providing them with good "nature stories" to share with others when they returned home (Patterson et al. 1998). In studies in both Kenai Fjords and Yellowstone National Parks, visitors' experiences were enriched by the opportunity to see and learn about rare natural features—Exit Glacier in the case of Kenai Fjords National Park, and Old

Faithful Geyser and unusually abundant wildlife in the case of Yellowstone National Park (Davenport et al. 2002; Gyllenhaal 2002; Vande Kamp et al. 2004).

Considerable attention within the outdoor recreation literature has been focused on the issues of crowding and solitude, with mixed findings within the qualitative literature on visitors' experiences. For example, among visitors interviewed in Klondike Goldrush National Historical Park, most indicated that encounters with other groups had no effect on their experience (Vande Kamp and Seekamp 2005). Further, some of the visitors interviewed at Old Faithful Geyser in Yellowstone National Park commented that the crowds helped to create a sense of anticipation around the experience of watching the geyser erupt (Gyllenhaal 2002). However, both of these studies were conducted in developed, front-country recreation settings. Results concerning the importance of solitude from qualitative studies of *wilderness* visitors are more mixed. For example, while several wilderness canoeists in the Juniper Prairie Wilderness identified challenge as an important and defining element of their experiences, solitude did not emerge as an important theme within the interviews with visitors (Patterson et al. 1998). However, Hall (2001a) found through interviews with wilderness hikers in Shenandoah National Park that encounters or lack of encounters with other groups while hiking affected visitors' feeling of being in wilderness.

The study presented in this paper builds on the literature reviewed above by using qualitative interviews to develop an in-depth understanding of visitors' experiences at an intensively used national park icon site, the summit of Cadillac Mountain, and how resource protection interventions shape or alter the nature of those experiences. Furthermore, this study demonstrates the potentially complementary nature of qualitative research methods and stated preference techniques for informing the difficult choices managers face in attempting to balance resource protection with public enjoyment in national parks and protected areas.

The use of qualitative research methods to address the questions outlined in the preceding paragraph was coupled in this study with the use of photographs and digitally edited images. In particular, photographs and digitally edited images of alternative site management interventions on the summit of Cadillac Mountain (i.e., fencing, rock borders, and signs) were used to examine the potential effects of resource protection efforts on visitors' experiences. The photographs and digitally edited images were used because of the advantages they possess in helping to 1) standardize the stimuli that study participants respond to; 2) improve communication of concepts and variables that are difficult to describe narratively; and 3) allow for visual simulation of conditions that do not currently exist (Manning and Freimund 2004). While a

number of previous studies have used visual research methods to study visitors' perceptions, preferences, and attitudes, the authors are aware of no other study that has coupled the use of photographs and digitally edited images with qualitative interviews (Manning and Freimund 2004; Manning et al. 1996; Manning et al. 1999). Thus, the study presented in this paper extends the application of visual research methods in natural resource and recreation-related research.

Methods

Interview guide

An interview guide of open-ended questions was developed to direct interviews with visitors to the summit of Cadillac Mountain. Several questions were included in the interview guide to examine the nature of visitors' experiences on the mountain summit. For example, participants were asked to discuss why they chose to visit Cadillac Mountain, their ideal experience on the mountain summit, what they enjoyed most and least about their time on the Cadillac Mountain summit, how their experiences on Cadillac differed from their experiences in other places in Acadia National Park, the importance of Cadillac in their overall park experience, and if they thought there was anything unique or special about the summit of Cadillac Mountain.

The interview script also included questions designed to explore how specific resource protection interventions might affect visitors' experiences on the Cadillac Mountain summit. Study participants were shown pictures of six site and visitor use management interventions that might be used on the summit of Cadillac Mountain to reduce visitor-caused impacts to vegetation and soils (Figure 1). The six management interventions shown to study participants ranged from relatively indirect and unobtrusive interventions to direct and potentially obtrusive site management. The six pictures included two site management structures currently in place on the summit of Cadillac Mountain—wooden barriers placed around selected areas of trampled vegetation and soil, and wooden tripod signs placed along the paved summit loop trail. In addition, a photo of a sign with an educational message and a photo of a sign with a message indicating that visitors are required to stay on the paved summit trail were shown to participants. Finally, two photos were shown to respondents depicting site management structures not currently in place on the mountain summit, but being considered by the National Park Service (NPS) for use along the paved summit trail—a low rock border and a wooden rail fence. Study participants were asked to describe what effects, if any, each of the management interventions would have on their experiences on the summit of Cadillac Mountain.

A third set of questions was included in the interview

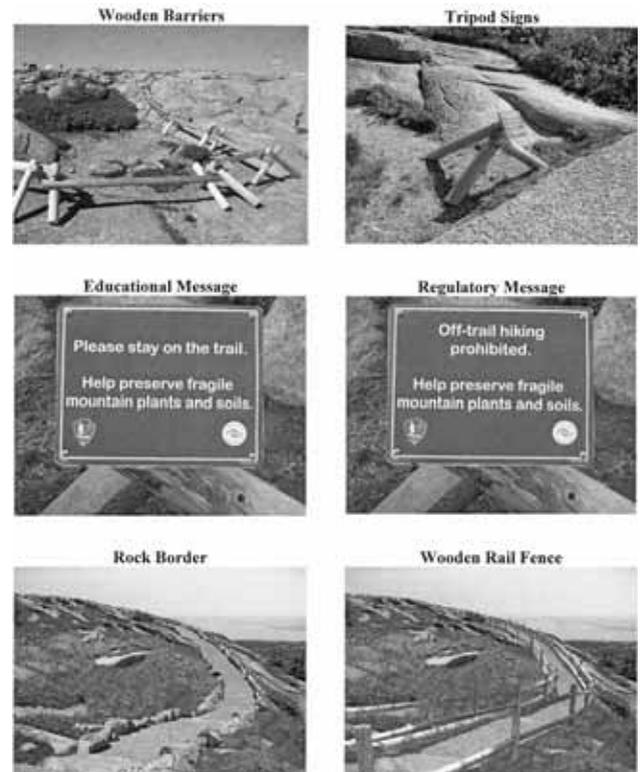


Figure 1. Photos of Potential Management Interventions

guide concerning visitors' perceptions of current resource and management conditions on the summit of Cadillac Mountain. However, given the objectives of the research presented in this paper as outlined at the end of the previous section, responses concerning visitors' perceptions of current resource and management conditions are not presented. While it is reasonable to expect that there may be relationships among visitors' perceptions of current resource and management conditions on the summit of Cadillac Mountain, the nature of visitors' experiences, and visitors' responses to alternative management interventions, it is beyond the scope of this paper to explore these relationships.

Interview Sampling

A total of 33 semi-structured interviews were conducted with Cadillac Mountain visitors at the end of their visit to the mountain summit, during August 2005. However, the first two interviews conducted were not used in the final data analysis because the question format was revised to improve the flow of the interviews, and one interview was not recorded because the tape recorder malfunctioned during the interview. Thus, a total of 30 interviews were used in the final data analysis, with 15 of the interviews completed on weekdays and 15 completed on weekend days.

Visitors to the summit of Cadillac Mountain were selected for participation in the study using purposeful random sampling (Patton 2002). Purposeful random sampling differs from other types of purposeful sampling in that individual cases are selected randomly to enhance the credibility of study findings. That is, within *non-random* purposeful sampling strategies, study participants may be selected because they are known, in advance of the study, to represent perspectives or outcomes that the researcher wishes to explore in-depth. In contrast, random selection of study participants within purposeful random sampling is designed to reduce suspicion about why certain individuals are included within a study. Purposeful random sampling differs from simple random sampling in that purposeful random samples are designed to gather *individualized* information, rather than *standardized* results that can be generalized to a larger study population. Thus, the intent of purposeful random sampling is to enhance the credibility of the sample of cases selected for study, rather than to make statistical generalizations.

At the start of each sampling day, the first group returning from the summit of Cadillac Mountain to the adjacent parking lot was asked to participate in the study. Visitors who declined to participate were thanked for their consideration and allowed to depart. Visitors who agreed to participate in the study were escorted to a shaded table and chairs near the mountain summit. All individuals in each participating visitor group were invited to participate in the interview to encourage a comfortable and conversational atmosphere. It should be noted that study findings may have differed if only one individual from each group was interviewed, as some study participants may have responded differently to the questions individually. Participants were asked several open-ended questions related to the topics outlined in the previous section and probed with follow-up questions when initial responses suggested a need for further explanation or detail. A tape recorder was used to record the interviews verbatim. In addition, the interviewer recorded hand-written notes during the interviews to identify, summarize and organize major points that emerged during the interviews. After completing each interview, the researcher reviewed, corrected, and added to the hand-written notes as needed to ensure that major points and themes that emerged from the interview had been adequately documented. The researcher then asked the next group returning to the Cadillac Mountain summit parking lot to participate in the study. The sampling procedures described above resulted in a 55.4% response rate.

Interviews with visitors ranged from 11 to 35 minutes in length and averaged 22 minutes overall. Based on the researcher's judgment that informational saturation had been reached with respect to understanding visitors' experiences of the summit of Cadillac Mountain and the potential effects of

resource protection interventions on those experiences, interviewing was stopped after the 33rd interview (Henderson 1991; Glaser and Strauss 1967; Lincoln and Guba 1985).

Data Analysis

Recorded interviews were transcribed verbatim and the accuracy of the transcripts was verified by a second person who reviewed the transcripts while listening to the tape recordings and made corrections to the transcripts as necessary. The techniques for analyzing the interviews of Cadillac Mountain summit visitors were adapted from Strauss and Corbin's (1990) grounded theory analysis procedures. Participants' responses within each question were examined using a process referred to as "open coding" to identify, group, and assign codes to responses that portrayed similar ideas, or used similar words or phrases (Strauss and Corbin 1990). The term "open coding" is used for this process because it emphasizes the importance of the researcher being "open" to the data and inductively discovering patterns and themes. For example, several participants answered the question, "Why did you choose to visit the summit of Cadillac Mountain?" with answers such as: "M: In the expectation of getting some fantastic far-reaching views. F: The view, yeah" (Interview 17), "M: Well, we wanted to see the view" (Interview 9), and "F: The view. B: Yeah, the huge view" (Interview 3). Each of these responses portrayed a similar idea or concept and were assigned the code "the view."

"Axial" coding was used to compare and combine similar codes into themes that emerged from responses within and across questions included in the interviews (Strauss and Corbin 1990). For example, codes for responses to the question "Why did you choose to visit the summit of Cadillac Mountain?" included "To take pictures," "Highest point on east coast," "The view," "Lay of the land," "Highest point," and "Oceans, mountains, lakes." Together, these codes are suggestive of and prompted the identification of a theme concerning the importance of natural scenery and the view from the summit of Cadillac Mountain in shaping some visitors' experiences on the mountain summit.

Open and axial coding procedures were facilitated with the use of qualitative research computer software (QSR Nvivo 2.0) to help organize, categorize, and link common responses or codes within and across questions. In particular, the software was used to create tables reporting the frequency of occurrences of researcher-assigned codes in visitors' responses to each question. For example, Table 1 reports the number of interviews containing each of the researcher-assigned codes for responses to the question "Why did you choose to visit the summit of Cadillac Mountain?" Similar tables of codes were produced for each question within the interview script. While the numerical information contained

Table 1. Researcher assigned codes for responses to question “Why did you choose to visit the summit of Cadillac Mountain?”

| Codes | Number of Interviews with Code |
|-----------------------------|--------------------------------|
| The View | 15 |
| Highest point | 4 |
| Ocean, mountains, lakes | 1 |
| Read about it | 4 |
| The views | 1 |
| Volunteers | 1 |
| Must do | 1 |
| Lay of the land | 1 |
| Part of Loop Road | 3 |
| Great weather, visibility | 8 |
| Gift shop | 2 |
| Memories | 1 |
| Introduce Maine to others | 2 |
| Must visit Cadillac | 3 |
| Goal to hike to the summit | 1 |
| Never been before | 2 |
| Nice drive | 2 |
| Peaceful | 1 |
| To pass time | 1 |
| Highest point on east coast | 3 |
| Sunrise | 4 |
| Only a hill | 1 |
| Recommended by others | 4 |
| Crowded | 1 |
| To take pictures | 1 |
| Saw a sign | 1 |
| Tradition | 1 |

within these tables helped to identify the most common and more unique codes within the data, it is not intended to serve as a basis for statistical generalizations due to the nature of the sampling procedures used in the study.

The qualitative research software was also used to generate model diagrams of researcher-assigned codes for each question that helped the authors to visualize relationships between researcher-assigned codes and to group common codes into themes. For example, Figure 2 illustrates a model diagram of codes for responses to the question “Why did you choose to visit the summit of Cadillac Mountain?” The researcher organized what he considered to be like codes into clusters. Thus, the distance among codes within the diagram represents the researcher’s judgement about relationships between coded responses to the question. For example, the researcher clustered the codes “Lay of the land,” “Highest point,” and “Ocean, mountains, lakes” close to each other because he judged these to be similar ideas or concepts. Similar model diagrams of codes were produced for each question within the interview script. While the software was used to help organize the transcript data, it was not used to search the

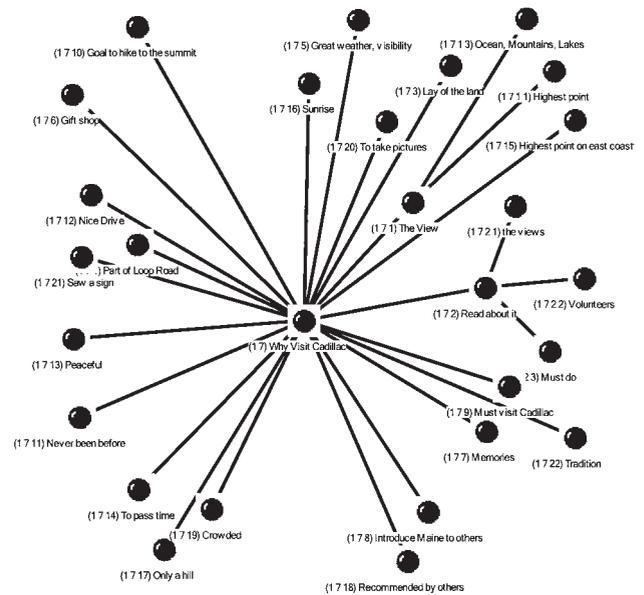


Figure 2. Model diagram for research assigned codes to the question, “Why did you choose to visit the summit of Cadillac Mountain?”

transcripts for words or phrases and assign codes. Rather the codes and themes were discovered and developed inductively by the researcher.

Study Findings

The results of the qualitative interviews with visitors to the summit of Cadillac Mountain are presented below and are organized according to the two primary and related topics examined in this study. In particular, results regarding visitors’ experiences on the summit of Cadillac Mountain are presented first, followed by a presentation of results concerning the potential effects of resource protection interventions on visitors’ experiences on the summit of Cadillac Mountain. Excerpts of visitors’ comments are presented throughout the results to demonstrate, characterize, and support the primary themes that emerged during analysis of the interview transcripts.

Visitor Experiences on the Summit of Cadillac Mountain

Visitors’ comments regarding their experiences on the summit of Cadillac Mountain centered around two topics. First, several visitors described the central role of Cadillac Mountain in their overall experience of Acadia National Park. Second, visitors described and discussed the defining elements of their experience on the summit of Cadillac Mountain. The following subsections present study results related to each of these two topics.

The Summit of Cadillac Mountain's Central Role in the Park Experience

Visitors' comments suggest that they think of the summit of Cadillac Mountain as a symbol or icon of Acadia National Park and that their visit to Cadillac Mountain plays an important role in shaping their overall experience of the park. For example, respondents described the summit of Cadillac Mountain as a "must see" feature in Acadia National Park. Two women explained: "Oh, it's a must. Like I say every time we come down, that's what we do, we come up here. We never get tired of it. Would you ever get tired of it?" (Interview 14). One man stated: "If you're going, you gotta go to Cadillac. If you're going anywhere near Acadia" (Interview 10). Another woman commented: "Well, we're staying in Bar Harbor, so if you're near Acadia you have to see Cadillac Mountain. You can't come all this way and not see it" (Interview 24). Yet another respondent expressed the idea that Cadillac Mountain is a must see park site: "I think that you can't come to Acadia National Park without coming to the summit of Cadillac Mountain. It really, you get to view the entire island and area, and just take in how beautiful and vast the area is" (Interview 11). Similarly, several interview participants described the summit of Cadillac Mountain as a centerpiece of Acadia National Park. For example, one couple described the summit of Cadillac Mountain this way: "M: It plays a big part. F: It's like the biggest, it's the most important thing. I don't know, I think Cadillac Mountain is like the center point of, M: One of the sights you have to see, F: Acadia National Park, it's something that you have to see the top of before you leave Bar Harbor" (Interview 15). Another couple noted: "M: I'd say it's the center point. F: Yeah. M: The centerpiece of the park. It's you know, it's probably the most accessible, F: Then all the little things are kind of like extras, you know . . . like Bubble Rock. This would be the center" (Interview 5).

Defining Elements of Visitors' Experiences on the Summit of Cadillac Mountain

Visitors' comments suggest they come to Cadillac Mountain to experience the far reaching, panoramic views of the ocean and island landscape. Other defining elements of visitors' experiences on the Cadillac Mountain summit include being on a mountain top, the calming and peaceful effect of the beauty of nature on the mountain summit, and the presence of other people on Cadillac Mountain.

Views/scenery. As the highest point in Acadia National Park, visitors come to the Cadillac Mountain summit to experience the views. One woman commented: "Just the panoramic view is just incredible. I mean that amazed me, really" (Interview 16). Another offered her thoughts about the experience: "I think the view is the main thing, you really can

see just a beautiful kind of surrounding view of the ocean and the island" (Interview 6). Another visitor said, "The nicest thing in a way maybe about Cadillac Mountain is that it's a 360 degree thing, you know. You can, you feel like you're literally on top of the world" (Interview 7).

Height/mountain top. The feeling of being "on top of the world" and experiencing the height of Cadillac Mountain was discussed by several visitors as they described their experience on the summit of Cadillac Mountain. One man said: "Yeah. I like being up, I like being on top of mountains. But probably I'd say I enjoy being up here better than Thunder Hole, and those are all right, but just, I don't know, being up on top of a mountain's not something you get to do every day" (Interview 23). One couple compared and contrasted their experience on the summit of Cadillac Mountain with other places they have visited:

M: Heights and view.

F: Well, we have been to the Colorado Rockies and we've been to the Canadian Rockies, so this is a little mountain in height compared to that,

M: But the view is great.

F: But it's here, I wanted to come and see it, and I just said to him, this really feels like I'm in Colorado. Because it's up there. It looks a lot higher than it's, but I tell you in the book, when you compare it to Colorado at 17,000 feet. It doesn't sound like it's very big, but when you come here it's really, it's spectacular. It's a whole different thing, it's, you see all this water (Interview 13).

Beauty of nature is calming and peaceful. Within the interviews, some visitors described how the beauty of the Cadillac Mountain summit gives them a sense of being close to nature, and others explained that the natural beauty creates a relaxing, calming and peaceful experience. One woman described how the beauty she experienced from the summit of Cadillac Mountain affected her relationship with nature, she said: "It's a good place to bond with nature. It is. It's just so beautiful it makes you realize how small you are" (Interview 28). Another couple said: "M: It's peaceful, F: It's beautiful, and it makes you appreciate things, M: Yeah, the environment" (Interview 15). Several participants described the summit of Cadillac Mountain as: "Relaxing. Calm and peaceful" (Interview 5), as "Just sort of relaxation and reinvigoration, I'd say, for me" (Interview 16), and "I liked it up here. It was like easy, relaxed atmosphere" (Interview 30). One woman who hiked a trail to the top of Cadillac Mountain described her experience on the summit: "To me, it's a very, spiritual for me to be outdoors, especially hiking, and it's just very peaceful to me, even though you have a lot of people up here,

it's just, I don't know, it's nature. It's a very calming effect for me, and it, you know, I can do a lot of thinking" (Interview 12).

People as part of the experience. As stated earlier, as many as 4,000 to 6,000 people visit the summit of Cadillac Mountain each day during the peak summer use season. Thus, it is not surprising that the presence of other people on the summit of Cadillac Mountain emerged from the interviews as an important element of visitors' experiences. For some of the visitors interviewed, the number of other people on Cadillac Mountain made them feel crowded. One man stated: "Jordan Pond was calm, there were not so many people. I think there are too many people here" (Interview 33). Most visitors interviewed, however, indicated that while they would prefer there to be fewer people, the large number of people on the summit of Cadillac Mountain was okay. One man said:

Well, the ideal for me would be just me. Or my wife and I. Or just my party, let's put it that way. But I mean, that's sort of unrealistic. There's always gonna be more people here. But actually today was pretty good, because I didn't feel crowded or, you know, like we were, it was, you know, it can handle or accommodate a fair number of people without, you know, making it imposing (Interview 16).

One visitor described the crowds as part of what Cadillac is: "Well, it's obviously just more of a tourist-type area, whereas over on the trails it's more peaceful cause there's not as many people, you don't run into as many people on the trails. So this is, we knew we'd run into crowds, but it was like, it's OK, it's part of what Cadillac is" (Interview 28).

Some visitors' comments suggested they enjoyed the presence of other visitors on Cadillac Mountain. For example, one frequent visitor who typically chooses to visit the summit of Cadillac Mountain at other times of the year to avoid crowds said the following:

F: I always prefer in the spring when there aren't so many people up here, but it's colder then of course too.

M: But like, now, it just didn't bother that there was so many people on here.

F: Yeah, it didn't. And it's also nice when the other people ask you to take their picture, it's kind of charming (Interview 30).

Potential Effects of Management Interventions on Visitors' Experiences

Several themes emerged as important in characterizing and describing visitors' responses to the alternative resource

protection interventions they were asked to consider for the summit of Cadillac Mountain. The following subsections provide a summary of these themes with excerpts from the interviews to support the themes.

Aesthetics

Given the significance of the views, scenery, and natural beauty in defining visitors' experiences on the summit of Cadillac Mountain, it is not surprising that aesthetic considerations were central in shaping many visitors' reactions, both positive and negative, concerning the appropriateness of alternative management interventions and their potential effects on their experiences. For example, visitors' reactions to the wooden barriers, tripod signs, and rock borders were generally positive because they were perceived as being natural looking. One man visiting with his family stated: "I think they're [wooden barriers] kind of natural, with the aged and bleached look, I don't know what they call it. And I don't think it distracts from the landscape at all" (Interview 9). Similarly, one couple described the wooden tripod signs: "F: Yeah. I think it looks natural, yeah, it's nice. M: Its not bad. F: It's better than a metal sign, post" (Interview 6). Responding to the photo of a rock border along the paved summit trail, one group said: "M2: Looks pretty nice to me. Actually that does look sort of appealing. M1: What's nice about it is that you use the natural rocks" (Interview 16). Another couple commented: "M: Yeah, the rocks are by far the best. F: Yeah, it's much more natural" (Interview 20).

Further evidence of the importance of aesthetics in judging the management interventions considered in this study has to do with the ability of natural appearing structures to blend well with the surrounding landscape. For example, two brothers' comments about the rock borders were as follows:

M1: Well, the rocks really blend in even more than the tripods and all the rest. M2: Yeah, if the rocks could replace the wooden barriers then that would be ideal. Cause I personally found the wooden barriers, although they blend in, they're still kind of imposing, right, and this just kind of blends in even more (Interview 27).

One woman stated: "I like the, the rocks in my mind because it . . . it doesn't take away from the beauty of the terrain" (Interview 25). One couple commented positively on the wooden barriers, stating: "F: They [wooden barriers] fit in with the setting, and it's not like, M: A chicken wire fence, F: Right, or like some kind of plastic that doesn't look like it goes with the scenery, it blends right in, it's not something un-nature-ly" (Interview 5).

Other evidence for the importance of aesthetic considerations comes from visitors' comments suggesting that their

experiences are not negatively affected by management structures if they are perceived to be visually unobtrusive. For example, one family described the wooden barriers as follows:

M: They're visually neutral.

F: Yeah. They're natural.

B: They're not intrusive.

F: Right. They're low, they're natural materials.

B: They're not painted fluorescent yellow or anything.

M: Or some garish orange probably wouldn't work so well, but you know, they're just a pretty unobtrusive structure (Interview 22).

While most visitors had a neutral or positive response to the wooden barriers, tripod signs, and rock border, a few of the visitors interviewed felt they were inappropriate for the summit of Cadillac Mountain and that they would have a negative effect on their experiences. These negative evaluations were based largely on aesthetic considerations. One couple found the wooden barriers out of place: "F: I don't think it, M: It's not natural. F: It's not natural. M: Takes away from the view" (Interview 19). Other respondents indicated that the rock border "makes it look more like a landscaper's got hold of it" (Interview 10), "is going to ruin the natural feel of it" (Interview 26), and makes the summit "more commercial" (Interview 31). One family stated: "F: It looks like it's landscaped. B: Doesn't look natural. M: Follow the yellow brick road" (Interview 3). Similarly, several visitors reacted negatively to the use of fencing along the trail, and many of the negative comments about the fence centered around its impact on the aesthetics of the mountain summit. For example, one visitor stated: "It [wooden rail fence] would have a negative impact on the experience, it just doesn't because it doesn't give the beauty of the vista, you know, having fences up all around the place" (Interview 26). One man who described the wooden rail fence as artificial said:

I don't think I like that as much, though. Cause that seems to me like it's artificial, I just don't, it seems like a farm, something you might walk animals through to get to the barn or out to the field or something, I just don't like it, I think it obstructs the view, it's not as nice, it's not as natural (Interview 5).

Visitor Freedom

While most comments regarding the wooden barriers, tripod signs, and rock borders centered on aesthetic consider-

ations, several visitors' reactions to the wooden rail fence could be characterized as more affective or emotional. That is, the effects of the wooden rail fence on visitors' experiences were frequently expressed in terms of how the fence made visitors feel, rather than in terms of how it looked. For example, the wooden rail fence elicited affective responses from a number of visitors, such as: "it just feels restrictive" (Interview 16), "you'd feel like cattle" (Interview 6), "this feels a little maybe confining" (Interview 7), "it feels like a barrier" (Interview 16), "it just feels less . . . open" (Interview 22), and "people might feel that they're being shuttled" (Interview 25).

Several respondents commented that the fence would alter the nature of their experience by making them feel confined or diminishing their sense of freedom on the mountain summit. One visitor described the effect of the fence on her Cadillac Mountain experience as follows: "This changes the whole sensation of being up here, it corrals you in" (Interview 31). Similarly, one man stated: "Yes. I think it's, it looks a lot more constraining and, it's less natural, it looks kind of you're more penned in" (Interview 4). Another group commented: "F2: It [fence] doesn't look good at all. F1: Yeah. The other one [rock border] looks more free. F1&2: More free, yeah, more open" (Interview 21). One man described how the fence would make visitors feel apart from, rather than a part of the mountain summit setting: "M: They want to feel in the scenery, not divided from the scenery. And this is a division" (Interview 32).

One couple's comments suggest that it is not the policy of trying to keep visitors on the paved summit trail that would make them feel constrained, but the use of fencing as the means to achieve the objective:

F: Well, they're [wooden barriers] kind of off, they're not right next to you, those low wooden ones. This [fence] is higher and more

M: This one [fence] feels more like you got off a tour bus and you've gotta stay, even though they [the six management interventions] all want to keep you on the path, this one feels like you're being corralled through because of course it looks like corral fencing (Interview 22).

The wooden rail fence prompted most of the comments visitors had about the effects of management interventions on visitors' sense of freedom, however, one couple talked about any management actions, including the sign with the educational message, limiting their freedom to explore the mountain summit:

M: That [sign encouraging visitors to stay on the paved summit trail] would be unfortunate,

F: Yeah, I would probably, then we would,

M: That's kind of what I'm talking about back in Hawaii where it's already got to the extreme of completely stay out of certain areas.

F: Cause the trail doesn't go very far, yeah? . . .

M: Actually we were just, I was telling [her] when we were walking down there, I wonder what happens if we came back in 10 years and if there will be signs everywhere saying, 'Stay off of here'.

F: Yeah, we were just talking about that. We were talking about the park police, were the park police going to come and tell us we're not supposed to be on the rocks (Interview 6).

While several visitors expressed concerns about management interventions making them feel constrained and diminishing their sense of freedom on the summit of Cadillac Mountain, a few visitors stated that even the wooden rail fence would not diminish their primary experience of looking at the views. One visitor explained that exploring the summit with their feet was secondary to exploring the summit with their eyes, stating: "I think for me the most important thing is not to like climb around here on top but to enjoy the view and as long as I can do that I wouldn't mind it" (Interview 30). Another visitor said: "And as long as there's lots of opportunity in that walkway for me to look out and take pictures or to enjoy the view, cause you know, what I'm walking on, as long as it's safe for the environment I'm happy" (Interview 25). Another man said:

No. I don't think so, because in essence if you stay on the trail there's a subliminal message that says, this is the area you're supposed to explore with your feet. The rest of it is with your eyes and your imagination. So this just defines to a greater level where your feet are supposed to go, but your eyes and your mind can still go anyplace it wants to go (Interview 16).

Some of those visitors who described the fence as confining or restricting their sense of freedom indicated that they would consider the use of a wooden rail fence along the paved summit trail to be appropriate as a last resort. For example, one man stated: "The only way any, I would support something like that is if you're not having any luck with the other signs and people were still walking . . . I think I would go to this only if everything else failed" (Interview 31). Another supported the fence as a temporary solution to restore vegetation conditions on the summit of Cadillac Mountain:

"If you put a sign here that said, these fences are up temporarily so that we can grow back the vegetation, that type of thing" (Interview 20).

Promoting a Sense of Ownership/Stewardship Enhances Experiences

Visitors' comments suggest that management actions that are perceived to promote a sense of ownership and being a partner with the NPS in resource stewardship are likely to enhance visitors' experiences on the summit of Cadillac Mountain. For example, one man talked about the sign with the educational message encouraging visitors to stay on the paved summit trail this way: "That's more in the spirit of hey, join us in trying to preserve this . . . it's more pleasant, more, you know, this belongs to all of us, let's take care of it" (Interview 10). Another group stated: "F: It's good marketing. Like, it makes you part of the team. Help us. F2: You're a hero" (Interview 30). A few respondents indicated that the educational message would enhance their experience because: "It would probably make me feel good. Shows that you're caring about the park" (Interview 31). Similarly, in reacting to the photograph of a low rock border, one man stated: "At a, you know, this [rock border] allows a person to respect the area." (Interview 25).

In contrast to the positive reactions to the education sign and rock border described above, several visitors indicated that the wooden rail fence would detract from their experience on the summit of Cadillac Mountain because the fence symbolizes a lack of trust in visitors' ability to behave in a manner conducive with resource protection. For example, one woman stated:

It's just too . . . I mean, this is more like a suggestion, the rocks. The rocks are more like a suggestion that you can choose to follow and this one [fence] is, you know, we don't trust you . . . I want to believe that people are essentially good and have this desire to preserve the [vegetation] . . . (Interview 30).

Management Interventions as means to Communicate with Visitors

Comments from several visitors suggest that management interventions that are perceived to effectively, politely, and unobtrusively communicate and explain management policies and appropriate visitor behaviors can enhance visitors' experiences on the summit of Cadillac Mountain. For example, a number of visitors responded favorably to the educational message asking visitors to stay on the paved summit trail because it explained why the NPS wanted people to stay on the trail. One couple stated: "F: It's telling you the way it is. M: I mean, the point is, you're actually telling peo-

ple why they need to stay on the trail, F: Yeah. M: You use the words ‘preserve’ and ‘fragile,’ you’ll get through to most people. If you just said, ‘Please stay on the trail,’ people take less notice of it” (Interview 17). Other visitors reacted positively to the educational message: “Cause it’s short, sweet, and to the point” (Interview 16). The message was characterized as “a friendly reminder” (Interview 32), “courteous” (Interview 3), “pretty low-key” (Interview 20), and “polite” (Interview 5). Similarly, one woman said: “I don’t know. I like ‘please stay on the trail,’ not ‘off-trail hiking prohibited.’ I just think ‘please stay on the trails’ is more, like friendly” (Interview 15).

Several visitors’ comments suggested that the low rock border would enhance their experience on the summit of Cadillac Mountain because it provides a helpful visual cue communicating to visitors where it is okay to walk. For example, one woman stated: “I think that’s a good idea, myself, cause it really gives you a boundary” (Interview 13). Another visitor felt the wooden barriers, tripod signs, and rock border would enhance her experience on the summit of Cadillac Mountain because they would better define the trail, “It makes it much more clear where the trail is and where the trail is not” (Interview 30).

While management actions that provide effective communication to visitors have the potential to enhance visitors’ experiences, some visitors reacted negatively to the sign with a regulatory message, in part because they perceived the message to be ambiguous or confusing. In particular, the use of the phrase “off-trail hiking” in the text of the regulatory sign message was confusing to some respondents. One visitor stated that visitors to the summit of Cadillac Mountain are not hiking: “I just don’t think that people are hiking up here, you know. I mean, they’re not hiking, they’re just sort of like trying to get a good picture or something” (Interview 30). Another woman explained:

No, no. When you’re talking hiking, a lot of people don’t consider themselves hiking, because they’re just kind of moseying along, you know what I mean? And when you think of a hiker you think of someone with the L.L. Bean boots on, and, you know, that you’re actually gonna climb Mt. Katahdin, you know, that type of thing. . . . Yeah. I think that terminology, I don’t think people would think they were actually hiking (Interview 3).

Discussion

The crux of the challenge of meeting the “dual mandate” set forth for the management of national parks is deciding how to prevent and mitigate impacts of recreational use in a

manner that is effective, yet doesn’t unduly inhibit visitors’ enjoyment of the area. The challenge is greater in instances where relatively indirect and unobtrusive measures prove ineffective at addressing recreational impacts, as in the case on the summit of Cadillac Mountain, where educational messages and relatively unobtrusive site management structures are proving to be ineffective at keeping visitors from walking off the paved summit trail and trampling fragile mountain plants and soils. The findings from this study demonstrate how qualitative research methods can be used to help inform managers in the process of making difficult decisions about how to balance resource protection and visitor enjoyment on the summit of Cadillac Mountain in particular, and protected natural areas in general. In particular, the results of this study help to identify defining elements of visitors’ experiences on the summit of Cadillac Mountain and the potential effects, both positive and negative, of resource protection interventions on those experiences.

Results of our study suggest that the summit of Cadillac Mountain has a central role in visitors’ overall experience of Acadia National Park, and that visitors’ experiences on the mountain summit are centered on the aesthetics of the setting and enjoyment of the surrounding scenery. Furthermore, for several visitors interviewed, the relaxing, calming, and spiritually uplifting effects of being in nature were defining elements of their experiences on the mountain summit. This is consistent with findings from previous studies of outdoor recreationists’ experiences, which suggest that focusing on, enjoying, and being close to nature is a central element of visitors’ experiences (Davenport et al. 2002; Patterson et al. 1998; Vande Kamp et al. 2004).

A number of visitors’ comments within the interviews suggest they accept the crowds on the summit of Cadillac Mountain as part of the experience, and that the presence of large numbers of people did not significantly influence their experience either positively or negatively. Exceptions to this finding in our study included one visitor who described her interactions with other visitors’ as “charming,” and another visitor who stated that the number of people on the summit made him feel crowded. While findings from previous studies of wilderness visitors are mixed with respect to the importance of crowding and solitude or privacy to visitors’ experiences (Hall 2001a; Patterson et al. 1998), our findings concerning the relative lack of sensitivity among a number of visitors interviewed to large crowds on the mountain summit is consistent with other qualitative studies conducted in developed, frontcountry areas (Gyllenhaal 2002; Vande Kamp and Seekamp 2005).

The nature of visitors’ experiences on the summit of Cadillac Mountain, as characterized by the themes outlined above, may provide managers with more latitude to use direct

management approaches than they have in managing wilderness and backcountry settings. For example, the placement of tripod signs or rock borders along trails in wilderness areas to keep people from traveling off-trail would generally be considered at odds with defining characteristics of wilderness experiences, such as unconfined recreation, primitiveness, and challenge (Landes 2004; Patterson et al. 1998). In contrast, findings from our study suggest that these types of management structures are of little consequence to the experiences of several visitors interviewed on the summit of Cadillac Mountain because they are perceived by these visitors to be made of natural materials and blend in with the surroundings. Further, it was common for visitors who were interviewed to respond to the management interventions considered in this study in terms of their potential impacts on the aesthetics of the mountain summit, and to appear supportive of resource protection interventions to the extent that they are perceived to fit aesthetically with the setting. The noted exception to this was in how visitors reacted to the installation of fencing along the trail on the summit of Cadillac Mountain. Specifically, it was more common for visitors to judge the fencing in more affective terms, with several visitors' comments suggesting that the fence would inhibit their sense of freedom and cause them to feel confined. Thus, from the perspective of these visitors, the results of the interviews suggest that there is a threshold beyond which management interventions can significantly and negatively alter the nature of their experiences, but that the threshold for this is substantially "higher" than that which has been found in wilderness and backcountry settings.

The significance of the natural setting to visitors' experiences described in several interviews appeared to influence several study participants' reactions to the resource protection interventions considered in this study. In particular, several visitors' comments in the interviews suggested that they are generally inclined to support efforts on the part of the NPS to protect the natural resources of the mountain summit. Some visitors went so far as to suggest that while the fencing would diminish their sense of freedom, they would accept that circumstance if the fencing was necessary to protect the vegetation and soils on the summit of Cadillac Mountain. This finding stands in contrast to results from Davenport et al. (2002), which suggest that winter visitors to Yellowstone National Park are unlikely to support management actions aimed at protecting the park's bison herd, despite the importance visitors place on seeing wildlife in the park. However, our results are consistent with findings from several stated choice studies of recreationists' management preferences, which suggest visitors are willing to tolerate management actions that restrict their freedom in order to achieve resource protection objectives (Lawson and Manning 2002; Newman et al. 2005).

There are several aspects of the study results that are worth noting from a methodological perspective. Of particular note are the implications of our decision to use qualitative, rather than quantitative research methods to address the objectives of this study. As noted earlier, we chose to use qualitative research methods, in part, because of our interest in gathering *individualized* rather than *standardized* information from visitors, and to avoid designing a research instrument that would be inadvertently biased by our preconceived notions about the nature of visitors' experiences on the summit of Cadillac Mountain and potential effects of resource protection and visitor use management on those experiences. While we ultimately used a qualitative research approach in this study, our original intention was to design a psychometric scale to measure in quantitative terms the effects of the alternative management interventions considered in this study on Cadillac Mountain visitors' experiences. The scale and associated question were designed to instruct respondents to indicate the extent to which each of the management interventions would negatively affect a set of factors we presumed to be important to visitors' experiences on the summit of Cadillac Mountain, including freedom to explore, privacy, enjoyment of the scenery, and being in a natural-appearing setting. However, we concluded that we could not adequately anticipate and characterize all of the most important characteristics of Cadillac Mountain visitors' experiences within our set of scale items, and that responses to the quantitative scale would not provide us with a sufficiently rich, in-depth understanding of the potential effects of management interventions on visitors' experiences. Consequently, we concluded that in-depth interviews with visitors would be better suited to our research objectives.

As a result of our decision to use a qualitative research approach, the results of this study revealed information about visitors' experiences and their reactions to resource protection efforts that we did not anticipate and would not have captured with our original research design. For example, within the design of the psychometric scale that we originally intended to use, it was anticipated that the freedom to roam the summit of Cadillac Mountain and the ability to seek privacy from the large crowds on the mountain summit were two of the more important dimensions of visitors' experiences. Furthermore, we presumed that these factors would be particularly threatened by the use of resource protection interventions designed to inhibit visitors' ability to walk off the trail to explore and find privacy from other visitors. Within the interviews, however, no visitors mentioned wandering off-trail to seek privacy as an important aspect of their experiences on the mountain summit. Rather, as noted above, it was common for visitors to express that they accepted the presence of other visitors as part of the experience of Cadillac Mountain,

and no visitors reported trying to avoid other groups or feeling like the management interventions would inhibit their ability to do so. Furthermore, while several visitors did express concern that the installation of fencing along the paved summit trail would make them feel confined, only one group expressed concern that the general strategy of trying to keep people on the paved summit trail would inhibit their freedom to explore the mountain summit and diminish the quality of their experience.

As the design of the psychometric scale we originally intended to use in this study suggests, we presumed that, to the extent that management interventions designed to keep people on the paved summit trail influence the quality of visitors' experiences on the summit of Cadillac Mountain, the influence would inherently be negative. On the contrary, several of the comments from visitors interviewed on the summit of Cadillac Mountain suggest that at least some management interventions designed to keep people on the paved summit trail can potentially *enhance* visitors' experiences. In particular, as noted earlier, several visitors indicated that signs with an educational message and site management structures that encourage visitors to choose to "do the right thing," have the potential to enhance their experience by promoting within them a sense of ownership and a sense that they are partners with the NPS in resource stewardship. The unanticipated findings described in this and the preceding paragraph suggest that there may be less tension than we anticipated between protecting fragile vegetation and soils on the mountain summit by keeping people on the paved trail and allowing visitors to enjoy the summit as they wish.

The strengths of using qualitative research methods in this study, as outlined above, are enhanced by the fact that they were administered in conjunction with a quantitative, choice modeling study of Cadillac Mountain visitors' management preferences (Bullock and Lawson in press). Thus, the qualitative research findings from this study serve as a basis for triangulation with results from the companion stated preference study, enhancing the validity of congruent findings from the two studies (Vande Kamp et al. 2005). For example, the results of the stated preference study suggest that visitors generally accept the use of site management structures such as tripod signs, rock borders, and wooden barriers on the summit of Cadillac Mountain to assist in keeping people from hiking off the paved summit trail and trampling soil and vegetation, and a similar perspective was common among visitors interviewed in this study. Furthermore, results of both studies suggest that while visitors might prefer that fencing not be placed along the summit trail, at least some visitors would accept it as a last resort to protect vegetation and soils on the mountain summit. In addition, findings from the stated preference study suggest that crowding on the sum-

mit of Cadillac Mountain is generally not an issue for most visitors, but that visitor behavior that causes resource impacts is of concern to them. Similarly, within this study it was more common for visitors to express concerns about the behaviors of other visitors that contribute to resource impacts on the mountain summit than to express concerns about crowding. More generally, a primary conclusion from the stated choice study is that visitors to the summit of Cadillac Mountain place a high priority on resource protection on the mountain summit, and therefore prefer that the NPS implement management interventions to protect natural resources on the summit of Cadillac Mountain, rather than take a "hands-off" approach in the interest of enhancing visitors' freedom to roam the mountain summit. Likewise, it was common for visitors interviewed within this study to express the importance of the natural environment to their experiences on the mountain summit, to respond positively to efforts on the part of the NPS to protect the natural resources on the mountain summit, and very few visitors expressed concern that the management actions considered in the study would detract from their experiences by unduly inhibiting their sense of freedom.

While there are areas of congruence between the results of the companion studies of Cadillac Mountain visitors, the findings from this study support conclusions that may not have been reached based on the findings of the stated preference study alone. For example, while results of this and the stated preference study suggest that at least some visitors would support the use of fencing as a last resort to protect vegetation and soils on the summit of Cadillac Mountain, installing fencing along the paved summit trail has the potential to dramatically alter the nature of some visitors' experiences. In particular, visitors' most passionate and negative reactions to the management interventions considered in this study were those concerning the use of fencing along the paved summit trail. Comments from visitors in this study about the use of fencing included statements suggesting that the fencing was out of place on a mountain summit, appeared as an artificial contrast to the natural setting, and would make them feel confined, constrained and divided from the natural scenery. These comments suggest that to the extent that it is possible, the NPS should avoid using fencing like that depicted in the study photograph to achieve resource protection objectives. A more suitable alternative might be to use a low, "symbolic" fence (i.e., a fence that is not physically constraining, but provides a cue to visitors not to enter the fenced area) constructed from less visually obtrusive materials perceived to blend better with the setting of the mountain summit. While visitors were not asked to react to such an intervention in this study, it seems reasonable to expect their reactions to be similarly positive to those related to the use of a low rock border. Furthermore, the symbolic fencing might

be expected to be more effective than a rock border given that its intended purpose is unequivocally that of a barrier from leaving the trail, while the intent of the rock border may be more ambiguous to some visitors.

Findings from this study concerning the use of an educational versus a regulatory approach to keeping people on the paved summit trail also support conclusions that may not have been reached based on the findings from the companion stated preference study of Cadillac Mountain visitors. Specifically, results of the stated preference study suggest visitors would prefer the NPS to adopt a policy *requiring* visitors to stay on the paved trail, rather than simply *encouraging* them to stay on the trail. In contrast, it was common for visitors interviewed in this study to be more receptive to the educational message asking visitors to stay on the paved summit trail than to the regulatory message informing visitors that they were required to stay on the trail. In fact, our findings suggest that while the regulatory message has the potential to detract from some visitors' experiences by making them feel as though the NPS does not trust visitors to be able to act appropriately, the educational message can enhance visitors' experiences by involving them in the effort to protect the park's natural resources. This would suggest that, to the extent that resource protection objectives can be accomplished with an educational rather than regulatory approach, at least some visitors may be more likely to develop a sense of ownership and stewardship toward the park.

While the preceding paragraphs illustrate the potential utility of comparing the qualitative results of this study with the results of the companion stated preference research, such comparisons should be made with caution. For example, while participants in both the qualitative interviews and stated preference survey were provided with information about the reasons for instituting resource protection and visitor use management interventions on the summit of Cadillac Mountain, the scripts used to communicate this information were not identical. Thus, differences noted above in findings from the two studies may be due, in part, to differences in the information visitors received. However, while the exact wording of the scripts used in the two studies was not identical, the scripts conveyed similar messages about visitor-caused trampling impacts on the mountain summit. The primary distinction between the two scripts was that while the scripts used in both studies explained that visitors are causing trampling impacts on the mountain summit, only the stated preference survey script stated that the NPS could address these impacts with different site management practices such as placing signs, barriers, or fences along the paved summit trail. Furthermore, while similar photographs were used in both the qualitative interviews and in the stated preference survey, the photos were not identical. For example, the photographs stat-

ed preference respondents evaluated did not include the wooden barriers as one of the management interventions and the photographs of tripod signs within the stated preference survey did not distinguish between signs with a regulatory versus an educational message. However, narrative information describing the policy communicated by the tripod sign (i.e., visitors being required to stay on the trail or visitors being encouraged to stay on the trail) was included with the photographs in the stated preference survey instrument.

The nature of the data from this and the companion stated preference study should also be considered in making comparisons between the findings from the two studies. That is, the results of the stated preference survey are meant to be generalized, while the qualitative results are not generalizable. Thus, while it is possible to identify common themes within the qualitative data, it is not possible to make general conclusions about the study population that are directly comparable to general findings from the stated preference study.

Statistical and substantive comparisons of the participants in this study and the stated choice survey sample on group and trip characteristics measured in both studies also suggest some caution may be warranted in comparing the results of the two studies. In particular, while participants were drawn randomly from the same population of visitors for both studies, the average group size of qualitative interview participants was found to differ significantly from that of stated preference respondents ($t = 2.18$, $p = 0.03$). However, the average group sizes of the qualitative (mean = 2.6) and stated preference (mean = 3.4) samples is arguably not substantively different. Furthermore, results of a chi-square test of proportions suggest that visitors within the two studies did not differ statistically or substantively in terms of their length of stay on the summit of Cadillac Mountain. In particular, the proportion of visitors who stayed on the summit of Cadillac Mountain for an hour or less (86.7% and 85.1% of qualitative and stated preference respondents, respectively) versus more than an hour (13.3% and 14.9% of qualitative and stated preference respondents, respectively) does not differ significantly between the two samples of respondents (chi-square = 0.06, $p \leq 1.00$).

In addition to the cautions noted above regarding the comparability of the findings from this study and the results of the stated preference study, there are some more general limitations of this study worth noting. For example, while the decision to use qualitative research methods in this study was grounded in the concept of situated freedom, we feel that our specific approach could be improved to more completely explore the individual, contextual nature of visitors' experiences on the summit of Cadillac Mountain. Specifically, our use of an interview guide was helpful to provide some structure to the interview process, however, the nature and number

of questions included within the interview guide may have served to constrain the depth with which some study participants described their experiences and reactions to the management interventions. Future studies of this kind should consider using fewer, more open-ended questions to prompt visitors to engage in a more narrative approach to discussing their experiences (Patterson et al. 1998).

An additional limitation of this study is the fact that all of the interviews were conducted with visitors during peak times of the peak period of the visitor use season. It is reasonable to expect that the nature of visitors' experiences on the summit of Cadillac Mountain, and visitors' reactions to potential resource protection measures may be different during low use periods of the day and season. For example, results of this study suggest that few of the visitors interviewed were concerned with experiencing privacy on the summit of Cadillac Mountain. However, this may be due, in part, to having conducted the interviews during a time of year when visitors expect there to be a large number of other people on the mountain summit. Similarly, there may be important differences regarding our research questions among people who visit other areas of the park and purposefully choose not to visit Cadillac Mountain because of the natural and social conditions on the mountain summit, and/or the way the NPS manages the summit.

As noted earlier, the number of interviews completed in this study was guided by the decision that theoretical saturation had been reached with the completion of the 33rd interview. This was determined based on the interviewer's observation that a recurring set of themes tended to predominate throughout many of the interviews. For example, most visitors talked about the central importance of the view and natural scenery to the experience of Cadillac Mountain, and comments related to aesthetics-based evaluations of the management interventions were recurrent within the interviews. However, there are several instances within the qualitative interview data of comments, concepts and ideas that were expressed by only one or a small number of groups. For example, in response to the question "Why did you choose to visit the summit of Cadillac Mountain?" only one group mentioned "memories" as a reason for visiting the mountain summit. This suggests that it is possible we prematurely concluded that theoretical saturation had been reached. However, the combination of recurring themes coupled with instances of more unique concepts and ideas within our data suggests the interviews captured a diversity of perspectives, ranging from commonly expressed ideas to rather unique perspectives.

There are some limitations associated with the methods used to examine the effects of alternative management interventions on visitors' experiences on the summit of Cadillac Mountain. For example, due to the hypothetical nature of the

management interventions visitors' were asked to consider in the interviews, respondents may have speculated differently from one another about the effectiveness or outcomes of the interventions. Thus, while each respondent evaluated the same set of interventions (i.e., photographs), there responses may reflect different assumptions about the outcomes of those interventions. Furthermore, it should be noted that the set of management interventions visitors were asked to evaluate was not exhaustive. For example, visitors were not asked how their experiences on Cadillac Mountain might be affected if there were no apparent management interventions on the summit of Cadillac Mountain. However, responses from some of the visitors interviewed suggest that they are encouraged by the presence of some forms of management interventions as an indication that the NPS is actively attempting to protect park resources. Thus, it might be reasonable to conclude that at least some visitors might not respond favorably to a complete lack of apparent management on the summit of Cadillac Mountain.

Conclusion

Results of this study suggest that the summit of Cadillac Mountain is a centerpiece of Acadia National Park, and visitors' experiences of the mountain summit are centered on the aesthetics and naturalness of Cadillac Mountain. Site management structures (e.g., tripod signs, rock borders) that were perceived to blend in with the surroundings, be constructed of natural materials and protect vegetation were considered appropriate and of little consequence to the experiences of several visitors interviewed. Some study participants also suggested that management interventions that provide visitors with the opportunity to freely demonstrate their choice to help protect the park's natural resources, and those that effectively communicate management policies and appropriate visitor behaviors can enhance visitors' experiences. In contrast, it was more common for visitors to consider site management structures and actions perceived as being confining or limiting visitors' sense of freedom as less appropriate and more likely to negatively affect their experiences. The results of this study provide new insights into the nature of visitors' experiences at a national park "icon" attraction. Furthermore, the study findings provide managers with an in-depth understanding of some of the influences, both positive and negative, that resource protection efforts can have on visitors' experiences.

Endnote

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References

- Bullock, S.D., and Lawson, S.R. In press. Managing the "commons" on Cadillac Mountain: A stated choice analysis of Acadia National Park visitors' preferences. *Leisure Sciences*.
- Cahill, K.L., J.L. Marion, and S.R. Lawson. In press. Enhancing the interpretation of stated choice tradeoff analysis through the application of a verbal protocol assessment. *Journal of Park and Recreation Administration*.
- Cole, D.N. 1993. Wilderness recreation management. *Journal of Forestry* 91, 22-24.
- Davenport, M.A., W.T. Borrie, W.A. Freimund, and R.E. Manning. 2002. Assessing the relationship between desired experiences and support for management actions at Yellowstone National Park using multiple methods. *Journal of Park and Recreation Administration* 20, 3, 51-64.
- Davenport, M.A., and D.H. Anderson. 2005. Getting from sense of place to place-based management: An interpretive investigation of place meanings and perceptions of landscape change. *Society and Natural Resources* 18, 625-641.
- Glaser, B.G., and A.L. Strauss. 1967. *The Discovery of Grounded Theory: Strategies for Qualitative Research*. Chicago, IL: Aldine Publishing, Co.
- Gyllenhaal, E.D. 2002. *Old Faithful Visitor Center Yellowstone National Park Front-end Evaluation Final Report*. Chicago, IL: Selinda Research Associates.
- Hall, T.E. 2001a. Hikers' perspectives on solitude and wilderness. *International Journal of Wilderness* 7, 2, 20-24.
- Hall, T.E. 2001b. Use limits in wilderness: Assumptions and gaps in knowledge. In *Visitor Use Density and Wilderness Experience: Proceedings*; (RMRS-P-20, 39-48). Ogden, UT: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station.
- Henderson, K.A. 1991. *Dimensions of Choice: A Qualitative Approach to Recreation, Parks, and Leisure Research*. State College, PS: Venture Publishing, Inc.
- Jacobi, C. 2001. *A Census of Vehicles and Visitors to Cadillac Mountain, Acadia National Park, August 14, 2001*. Bar Harbor, ME: Acadia National Park Natural Resources Report 2001-11).
- Jacobi, C. 2003. *A Census of Vehicles and Visitors to Cadillac Mountain, Acadia National Park, August 1, 2002*. Bar Harbor, ME: Acadia National Park Natural Resources Report 2002-05).
- Landes, P. 2004. Developing indicators to monitor the "outstanding opportunities" quality of wilderness character. *International Journal of Wilderness* 10, 3), 8-11, and 20.
- Lawson, S.R., and R.E. Manning. 2002. Tradeoffs among social, resource, and management attributes of the Denali Wilderness experience: A contextual approach to normative research. *Leisure Sciences* 24, 297-312.
- Lawson, S.R., and R.E. Manning. 2003. Research to guide management of backcountry camping at Isle Royale National Park: Part II- prescriptive research. *Journal of Park and Recreation Administration* 21, 3, 43-56.
- Lawson, S.R., J.W. Roggenbuck, T.E. Hall, and A. Moldovanyi. 2006. A conjoint analysis of preference heterogeneity among day and overnight visitors to the Okefenokee Wilderness. *Journal of Leisure Research* 38, 4, 575-600.
- Lincoln, Y., and E. Guba. 1985. *Naturalistic Inquiry*. Beverly Hills, CA: Sage Publications.
- Littlejohn, M. 1999. *Acadia National Park Visitor Study: Summer 1998*. Moscow: University of Idaho, Cooperative Park Studies Unit.
- Lucas, R.C. 1983. The role of regulations in recreation management. *Western Wildlands* 9, 6-10.
- Manning, R. and W. Freimund. 2004. Use of visual research methods to measure standards of quality for parks and outdoor recreation. *Journal of Leisure Research* 36, 4, 557-579.
- Manning, R.E. 1999. *Studies in Outdoor Recreation: Search and Research for Satisfaction*. Corvallis, OR: Oregon State University Press.
- Manning, R.E., D. Lime, W.A. Freimund, and D. Pitt. 1996. Crowding norms at frontcountry sites: A visual approach to setting standards of quality. *Leisure Sciences* 18, 39-59.
- Manning, R.E., W.A. Valliere, B. Wang, and C. Jacobi. 1999. Crowding norms: Alternative measurement approaches. *Leisure Sciences* 21, 2, 97-115.
- McAvoy, L.H., and D.L. Dustin. 1983. Indirect versus direct regulation of recreation behavior. *Journal of Park and Recreation Administration* 1, 4, 12-17.
- McCool, S.F., and N. Christensen. 1996. *Alleviating Congestion in Parks and Recreation Areas through Direct Management of Visitor Behavior*. (Publication 86-1996). St. Paul, MN: University of Minnesota Agriculture Experiment Station.
- Newman, P., R.E. Manning, D.F. Dennis, and W. McKonly. 2005. Informing carrying capacity decision making in Yosemite National Park, USA using stated choice modeling. *Journal of Park and Recreation Administration* 23, 1, 75-89.
- Patterson, M.E., A.E. Watson, D.R. Williams, and J.R. Roggenbuck. 1998. An hermeneutic approach to studying the nature of wilderness experiences. *Journal of Leisure Research* 30, 4, 423-452.
- Patton, M.Q. 2002. *Qualitative Research and Evaluation Methods* (3rd ed.). Thousand Oaks, CA: Sage.
- Peterson, G.L., and D.W. Lime. 1979. People and their behavior: A challenge for recreation management. *Journal of Forestry* 77, 343-46.
- Strauss, A.L., and J. Corbin. 1990. *Basics of Qualitative Research: Grounded Theory Procedures and Techniques*. Newbury Park, CA: Sage Publications, Inc.
- United States Congress. 1916. *National Park Service Organic Act*. (16 United States Code 1).

- Vande Kamp, M.E., D.R. Johnson, and R.E. Manning. 2005. Managing Exit Glacier's popularity: Social science looks at visitor experiences. *Alaska Park Science* 3, 2, 28-33.
- Vande Kamp, M.E., and E. Seekamp. 2005. *Visitor Experiences and Visitor Use Levels at the Dyea Area of Klondike Gold Rush National Historical Park*. (Technical Report NPS/PWR/UW/NRTR-2006-01 NPS D-119). Seattle, WA: University of Washington, College of Forest Resources, Protected Area Social Research Unit.

- Vande Kamp, M.E., J.E. Swanson, and D.R. Johnson. 2004. *Social Science Research for Managing the Exit Glacier Fee Area of Kenai Fjords National Park*. (Technical Report NPS/CCSOUW/NRTR-2003-05 NPS D-3). Seattle, WA: University of Washington, College of Forest Resources, Protected Area Social Research Unit.