

Managing Recreational Experiences in Arctic National Parks: A Process for Identifying Indicators

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Abstract—Despite low use densities and a largely absent development footprint, parks in arctic environments are confronted with questions similar to more heavily used protected areas. Many of these questions concern the character of experiences visitors seek and for which agencies attempt to provide opportunities. These experiences, like others, have a variety of dimensions, such as solitude, adventure, naturalness, scenery, and so on. Understanding these experiences and ensuring that visitors have an opportunity to experience them are major challenges for stewardship organizations, given the character and remoteness of the setting. This paper describes a three-phase project to discover the dimensionality of experiences among visitors to Canada's Auyuittuq National Park and develop indicators that managers could use to assess if such desired experiences were being achieved. In Phase I, the project used qualitative interviews to identify the dimensionality of experiences and in Phase II quantitative methods to assess their importance to visitors as well as to link experiences to various setting attributes. Phase III involved a workshop involving managers, scientists, and tourism officials to identify potential indicators of each desired dimension of the visitor experience. The process used here ensured that research was policy relevant and may serve as a model for other park and protected area stewards faced with similar challenges.

Introduction

Arctic recreational experiences are like no other: remote, wild and untrammled landscapes, isolated from the conveniences of towns and emergency services, unusual and unforgiving environments with few visitors or inhabitants, wildlife that exists nowhere else, and an indigenous population that

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retains its long-standing and passionate connections to the land and sea. The opportunities for challenge, adventure, reflection, solitude, and appreciating nature in spectacular settings are of the highest quality. While the circumpolar north is largely composed of nature-dominated landscapes, it is confronted with a variety of significant, complex and potentially contentious management issues not the least of which is preservation of the unique experience opportunities found there.

Many protected areas in these arctic environments are large in scale and receive few visitors. Typical of those protected areas are Canadian national parks located in the eastern Arctic territory of Nunavut (Sirmilik, Quttinirpaaq, Auyuittuq, and Ukkusiksalik) (fig. 1). These parks are very large (encompassing in total about 100,000 km²/38,610 mi²), remote, and receive only a total of several hundred recreational visits per year. Recreationists experiencing these Arctic parks are confronted with logistical challenges (expensive and time consuming travel) and risk and safety issues (remoteness dictates a high level of self-rescue capability) in the pursuit of wildland opportunities provided by the parks. Despite the low use densities and visitation, park managers are confronted with questions similar to those in more highly visited settings located in less remote environments:

- What experiences do visitors seek?
- What experiences do visitors actually construct on site?
- What experiences should be provided and managed?
- How is success judged in terms of providing opportunities for certain experiences?
- How do seemingly necessary, but sometimes incremental changes in facilities, regulations and enforcement policy, and information adversely impact or enhance these opportunities?
- How would managers know if visitors are attaining desired experiences?

Such questions are at the heart of stewardship issues in national parks; understanding experiences and if visitors are attaining them represents a continuing challenge in situations where little information about these questions exists.

The purpose of this paper is to describe a collaborative three-phase research project, using Auyuittuq National Park (ANP) as an exemplar, initiated to identify indicators



Figure 1—Location of Auyuittuq and Quttinirpaaq National Parks in Nunavut, Canada.

of (managerially) desired dimensions of recreational experiences occurring in an Arctic national park. The paper provides an overview of the three phases and describes the rationale and processes linking each of the phases designed to build a foundation for identification of the indicators needed for stewardship. The paper first briefly reviews some of the previous research that informed this project. We then turn to consecutive discussions of each of the three phases with the goal of providing the reader with a summary of the logic flow, methods, and results used in each phase of the research. Since our emphasis in this paper is on the process used to identify indicators, methods and results are only briefly explained and presented. The reader is referred to Lachapelle and others (2004, 2005) and McCool and Lachapelle (2005) for detailed information.

Previous Research

A long line of research has attempted to identify the character and dimensionality of recreational experiences occurring in wilderness and similar backcountry settings (for example, Brown and Haas 1980; Roggenbuck and Driver 2000). In many settings, researchers find that solitude, escape, freedom, adventure, challenge, learning about and appreciating nature and scenery, and strengthening intergroup ties are important dimensions of wilderness experiences (see for example, Dear and others 2005).

Borrie and Birzell (2001) have summarized this research as involving four distinctive but evolving themes that include satisfaction-based approaches, benefits-based approaches, experience-based approaches, and meaning-based approaches. While each theme makes several assumptions

about cause-effect relationships, each uses somewhat differing theoretical constructs, and employs varying methodologies, the results have strongly indicated that (1) wilderness recreation experiences are multi-dimensional yet difficult to precisely measure; (2) a variety of biophysical, social and managerial setting attributes are important in facilitating or hindering attainment of experiences, but this relationship is probabilistic rather than deterministic; (3) distinct tradeoffs occur when making managerial choices between providing opportunities for experiences and managing for natural conditions, although these tradeoffs often may be unclear in the short run; (4) experiences are subjective and to some extent unpredictable, but may be identified and accounted for in decision-making; and (5) monitoring of visitor experiences (in some way) is essential when cause-effect relationships (between setting attributes and experience dimensions) are unclear, but selecting necessary indicators for monitoring is necessary for situation specific management.

This latter point is particularly important in arctic environments, where little is known about the dimensionality of wilderness recreation experiences. Because of the fragile nature of the biological setting, openness of the landscape, and low use densities of visitors, even incremental changes in facilities, regulations/policies or use density may lead to more dramatic impacts to the experiences visitors undergo. These experiences also occur within a context of various uses and values, including the presence of indigenous people who engage in subsistence activities inside park boundaries, scientific research, business activity (for example, aircraft overflights), and occasionally military defense operations. Such a diversity of uses means that arctic environments contain a variety of meanings and values socially constructed by each of the significant groups who are using, visiting or valuing them (Williams 2002). Given the fragile nature of these experiences, developing management indicators and protocols is essential to protect them from irreversible harm.

Understanding these meanings (which is fundamental to developing indicators useful to management), including the dimensionality of wilderness landscape interactions (or stated otherwise, experiences), requires that scientists not begin with a predetermined model of these dimensions, but rather with creating an understanding of the meanings that form the basis for these interactions (Patterson and others 1998). Thus, to start with the question “What is the character of the wilderness recreation experience in the Arctic?” assumes that (1) all user groups are having a wilderness experience, and that (2) the dimensionality of the experience has been previously defined. The first assumption is highly questionable in that certain visitors or local indigenous people may or may not define their interactions with the landscape as occurring in “wilderness.” Similarly, many recreationists may be visiting arctic environments for reasons other than enjoying a “wilderness” experience. The second assumption presumes that recreational experiences in wilderness settings can be completely, and universally, specified, and that all visitors to wilderness are seeking a “wilderness” experience. Patterson and others (1998) argue that research on park visitor experiences should not be based on such *a priori* assumptions. Such an approach has important implications for management, in that *a priori* assumptions

about the dimensionality of an experience is biased and may lead decision-makers to focus on insignificant dimensions.

Rather, such research should conduct exploratory interviews into the meanings people construct around their landscape interactions, recognizing that such meanings are deeply personal, vary from one group to another and from one context to another. However, empirical data collection has little practical utility if not coupled with methods of implementing the findings. Identifying indicators of experiences and incorporating those indicators into a formal management regime is one such way of enhancing the benefits of research.

Previous work by Glaspell (2002, unpublished Ph.D. dissertation, The University of Montana, entitled, “Minding the meaning of wilderness: investigating the tensions and complexities inherent in wilderness visitors’ experience narratives”) and Glaspell and others (2003) in Gates of the Arctic National Park in Alaska followed this generalized approach to understanding experiences and how those experiences are affected by various setting attributes. They first identified the dimensionality of recreational experiences through in-depth, semi-structured interviews with visitors, following their Gates experience. That phase identified a number of potential dimensions of the experience as well as factors—or setting attributes—that may have hindered or facilitated those dimensions. This information was then used in the second phase to develop a quantitative mail-return survey (Glaspell and others 2003) methodology of other visitors. The purpose of that survey was to further refine the dimensionality of Gates experiences and to quantify the relationship between elements of the experience and factors affecting those experiences. This resulted in five dimensions, which they labeled as follows: (1) A Taste of the Gates, (2) Freedom from Rules and Regulations, (3) Challenge of Access, (4) Untrammelled Wildlife, and (5) Risk and Uncertainty. Their analysis showed that a variety of setting attributes influenced achievement of these dimensions. For example, the Taste of the Gates dimension was influenced by management interaction—a general factor comprised of a variety of items measuring who and what visitors interacted about with park personnel. This particular study, with objectives of understanding the dimensionality of arctic experiences and how various setting attributes or factors influence those dimensions, informed the current study. The Gates of the Arctic methodology was particularly important, as this was the first study of visitor experiences to be conducted in a protected area in the Canadian Arctic.

Methods

Three phases were involved in this research: Phase I, a qualitative-interpretive research method to identify dimensions of how visitors interact with the park landscape; Phase II, a survey of visitors to assess the importance of the dimensions identified in Phase I and to establish what setting attributes might facilitate or hinder those experiences; and Phase III, development of indicators to assist management in monitoring and sustaining desired recreational experiences and settings.

Phase I data collection involved both telephone and in-person interviews in the field. In 2003, visitors were sampled by

telephone or in person. All interviews were tape-recorded and transcribed verbatim. Analysis of each interview was guided by an interpretive perspective. That is, rather than using a “content analysis” approach where occurrences of words or phrases were counted, an attempt was made to understand the meaning and significance of words, sentences and ideas from the participant’s point of view. The software program QSR NVivo Ver. 1.2 was used to facilitate the analysis of the interviews. Multiple stages of coding led to a final coding scheme that was used as a framework to summarize and represent the data. Results are summarized by Lachapelle and others (2004).

A major focus of Phase II of the research was to identify the importance of the various dimensions of a recreational experience in the park. While Phase I had identified the potential dimensionality of visitor experiences, the relative importance of these could only be determined by a quantitative approach. Phase II involved visitors to ANP completing a questionnaire during the deregistration component of their visit, which occurred shortly after their exit from the park. This phase sampled visitors during the summer 2004 season (July 1 to September 30). Respondents were asked to complete an onsite questionnaire along with their deregistration forms.

The methodology in Phases I and II involved six major steps:

Step 1 (Phase I) involved identifying (“mapping”) the dimensions of how people interact with arctic landscapes. This step, presented in depth in our previous report (Lachapelle and others 2004), identified 11 experience dimensions and is shown in table 1 with representative “themes” or comments made by respondents.

In *Step 2*, we initially developed 45 individual statements designed to measure the importance of each of the 11 dimensions. We developed several statements for each dimension in order to eventually compile a scale measuring the importance of each of the dimensions. The statements were placed within the questionnaire.

In *Step 3*, similar to Glaspell and others (2003), respondents scored the importance of each of the statements on a 4-point scale from “Strongly Agree” to “Strongly Disagree.” Respondents could also indicate that the item was “Not Applicable.”

In *Step 4*, we conducted a principal components analysis followed by an orthogonal Varimax rotation to identify the underlying dimensionality of the experience statements included in the survey. In statistical terminology, we reduced the data to a set of underlying components, not all of which were the same as we identified in *Step 1*. Each of the components represents an empirically refined dimension of experiences achieved by the sampled population.

Step 5 then involved creating scales, comprised of the appropriate statements from the questionnaire, for each of the dimensions identified from the principal components analysis. The resulting scale scores then demonstrate the importance of each of the experience dimensions.

In *Step 6*, we examined the relationship between individual experience dimensions and preferences for setting attributes.

Phase III of the project involved a workshop to develop a framework to identify indicators for future monitoring of visitor experiences. The workshop was approximately 2

Table 1—Major dimensions of the visitor experience at Auyuittuq National Park (source: Lachapelle and others 2004). The experience dimensions are listed in alphabetical order and are not intended to imply relationships or significance.

Experience dimension	Examples of this dimension
Adventure/challenge	<ul style="list-style-type: none"> · Personal growth/physical capability · Negotiating river crossings/existing with polar bears
Arctic setting	<ul style="list-style-type: none"> · Scale and quality of landscape · Uniqueness of location · Isolation · Unusual light
Culture	<ul style="list-style-type: none"> · Interaction in communities · Local control over management
Freedom	<ul style="list-style-type: none"> · Number of rules and regulations · Hiking or camping restrictions · Flexibility to change plans
Humility/spirituality	<ul style="list-style-type: none"> · Connection to nature/reflection · Recognizing forces of nature
Learning	<ul style="list-style-type: none"> · About local culture · About personal abilities · About nature · About backpacking/outdoor skills
Naturalness	<ul style="list-style-type: none"> · Concerns of ecological impacts · Lack of infrastructure
Remoteness	<ul style="list-style-type: none"> · Need for self-reliance · Hazards of inaccessibility · Expectation of rescue
Risk/Safety	<ul style="list-style-type: none"> · Issues of polar bears and river crossings · Use of facilities/technology (sat. phones, SSB)
Scenery	<ul style="list-style-type: none"> · Extensive landscape · Wildlife viewing · Scale of mountains
Wildness	<ul style="list-style-type: none"> · Hostile/extreme environment · No human presence

days in length and involved 22 park managers, scientists, and others working interactively to identify appropriate indicators and tentative monitoring protocols. The data from Phases I and II were used to inform the selection of several potential indicators by workshop participants (see McCool and Lachapelle 2005 for description of the workshop).

Results

In Phase I, a total of 33 interviews representing 76 visitors were conducted during the 2003 field season. While the majority of visitors interviewed were Canadian, other nationalities were also represented.

The data shows great diversity among visitors to ANP regarding their expectations, experiences, and meanings (table 1). Adventure, challenge, freedom, humility/spirituality, and learning emerged as dimensions of their experience. Whenever possible, the words of respondents were used to describe the dimensions of the experience (including the excerpted text below in quotation marks). Cultural issues and interacting with Inuit were described by some visitors as a major dimension of the trip. Visitors described the sense

of remoteness as part of the “allure” of coming to the park with the related dimension of risk and safety. While the degree of risk and safety described by visitors was variable, in general, individuals wanted to experience some aspect of risk while knowing that certain safety options (for example, radios, shelters) were available. Issues associated with polar bear encounters were a significant part of the experience for many visitors. Many visitors felt it “kept me on the edge” or felt “scared” of the “unknown” because hiking in polar bear country was a new experience. River crossings were described by many visitors as an experience involving great risk. Yet, the river crossings were also portrayed as an integral part of the experience leading to challenge and personal growth. There was great difference in the perception of encountering other parties by visitors with some feeling “reassured” by meeting other people, and others stating it was their “greatest fear.” Visitors also viewed the infrastructure in the park both positively and negatively. Most of the visitors felt that traditional Inuit activities should be able to occur both outside and within the park since the area “is their land.” In particular, many visitors felt that either knowing about or seeing hunting taking place in and around the park enhanced their experience and most felt that hunting was an integral part of life for Inuit and should therefore continue to be permitted.

Phase II involved visitors completing a questionnaire during the “deregistration” process, a requirement that all visitors return to the park visitor center to report at the end of their visit. More details on the methods and procedures are provided by Lachapelle and others (2005). A total of 121 visitors entered ANP during the summer; 84 (61.8 percent) were sampled. The vast majority of respondents in this phase were Canadian (88 percent); there were a few Americans (8.4 percent). The average age was 42 years. However, about 26 percent were 29 and younger. Males accounted for a slightly higher (57 percent) proportion than females (43 percent). Respondents were relatively well educated, with a substantial proportion (over 20 percent) holding advanced degrees. Most respondents had relatively little backpacking experience. About half of the respondents reported 10 or fewer previous backpacking trips in their lifetime. Finally, the vast majority (91.5 percent) of respondents were on their first visit to the park.

The average length of stay in the park was about 7 nights, but with substantial variation. Examining this figure suggests three groupings of lengths-of-stay: short, averaging about 2 nights; medium, averaging around 6 nights; and long, averaging about 14 nights. The average group size was 4.9 people, but there was substantial variability. Average group size varied significantly depending on length of stay and between commercial and independent groups, with commercial groups being larger. People on commercially guided trips averaged 9.8 nights, while private groups averaged 6.1 nights. Respondents participating in commercial groups tended to be older. People on longer trips generally saw more people, which is a natural consequence of being in the park longer. However, very few people encountered larger groups (eight or more members), although those that did were on shorter trips. This simply may be an artifact of the small sample size and a small, highly variable population.

To identify the importance of the experience dimensions, the 45 items measuring the 11 dimensions uncovered in

Phase I were subjected to a principal components analysis followed by an orthogonal (Varimax) rotation. An orthogonal rotation was selected over an oblique rotation because the dimensions were considered independent (for example, orthogonal rotations lead to easier interpretation of their content and meaning). The analysis identifies the components based on their contribution to the proportion of variance explained—thus the first few components explain a larger proportion of the variance than the latter components. The latter components are also more difficult to interpret. Twelve components were initially identified, but for simplification, we included only six as the basis for further analysis. We have also labeled each of the components with a name that is descriptive of the statements that load the highest on each component. The six components identified were named (1) freedom/serenity, (2) challenge/adventure, (3) arctic experience, (4) naturalness, (5) learning/appreciation, and (6) humility/spirituality. These components and relevant statistical data are shown in table 2.

For each of these six dimensions, a simple additive scale that identified the importance of the dimensions was constructed. Each scale was comprised of the questionnaire statements loading most heavily on the component and was computed by summing the questionnaire scores of the items and dividing by the number of statements on the scale. Thus, the resulting scale scores are shown on the original scale of “Strongly Agree” to “Strongly Disagree.” Table 2 shows the mean scores of respondents for each of the dimensions. More detailed descriptions of the statistical procedures are shown in Lachapelle and others (2005).

Overall, freedom/serenity received the highest total score, with four other dimensions only slightly lower. Spirituality was rated somewhat below these five and also had a significantly higher variability suggesting that respondents disagree on the importance of this dimension. The scores shown in this table then represent, on an overall basis, the importance of the six dimensions, and provide a basis for developing indicators to monitor. We note that the ratio of visitor sample size to number of items on the questionnaire was small, suggesting that additional data collection would be helpful to confirm these results; such collection was conducted in 2005 and 2006, but no results were available for this paper. Monitoring would help management assess whether visitors in the future are achieving these dimensions of an experience.

One question we addressed was: How might the importance of experiential dimensions vary, according to two variables (commercial-independent and length of stay) that are relevant to managers, in terms of specific management

Table 2—Importance of first six components (dimensions) of the experience (on a score of 1 to 4, with 4 being the highest), Auyuittuq National Park.

Dimension	Mean	Standard deviation
Serenity/freedom	3.38	0.56
Challenge/adventure	3.22	.83
Arctic experience	3.16	.69
Naturalness	3.16	.65
Learning/appreciation	3.14	.63
Spirituality	2.49	1.05

strategies? In tables 3 and 4, we report the mean scores for the experience dimensions by group type and length of stay. Visitors in different group types demonstrated similar average scores except for learning/appreciating nature and humility/spirituality. Visitors in commercial groups averaged slightly higher scores on the former and lower scores on the latter. Visitors staying longer averaged higher scores on most of the dimensions. Much of this difference occurred between visitors with very short visits and visitors with medium to longer visits. This data demonstrated relevancy to park managers, as it suggests that there are some dimensions that are important to all visitors, and others that are important to specific types of visitors.

Phase III of the project involved a 2-day workshop, which included managers, scientists, and local tourism officials. The workshop objective was to identify indicators using the data collected from Phases I and II, the manager’s experience, and Parks Canada directives and policy.

Data from Phases I and II of the project, including that linking site attributes and attitudes toward management policy were presented to inform participants of the scientifically based data that would help inform the selection of indicators. In addition, recent Parks Canada initiatives (for example, Third Minister’s Roundtable on Parks Canada, held February 20–23, 2005, Ottawa, Canada) for managing for “memorable experiences,” social science research in other parks, and the conceptual background on indicators and their function, was presented. Following these presentations, Parks Canada managers made a decision that the six experiential dimensions presented in this paper would become

the dimensions for which they would manage recreational opportunities in the park.

The workshop then considered indicators for three aspects of managing recreation for the six dimensions: (1) attributes that facilitate or hinder attainment of experiences (for example, encounters at campsites); (2) outcomes or the experience itself (for example, attainment of solitude); and (3) threats (trends and driving forces that may influence on-site conditions, for example, aircraft overflights). Small group exercises were designed to interpret the data, identify potential indicators and draft monitoring protocols.

The workshop process first involved identifying a large range of potential indicators, then evaluating them using such criteria as quantifiability, reliability, feasibility, efficiency, relevancy, and appropriate scale (see, for example, Merigliano [1990] and National Park Service [1997] for criteria for judging potential indicators). This process reduced the range of potential indicators, resulting in a much smaller set, as shown in table 5. As a result of these discussions, the humility/spirituality dimension was recast as a humility/connection with nature dimension.

Conclusions

The research reported here clearly demonstrates the multi-dimensionality of landscape interactions and meanings for those who visit Auyuittuq National Park. For recreationists, the experience is one that is triggered by the unique, spectacular and remote landscapes of the park, and is also characterized by adventure, freedom, naturalness, and

Table 3—Mean importance of different experience dimensions by type of group, Auyuittuq National Park, 2004^a.

Experience dimension	Independent (n = 56)	Commercial (n = 21)	T-Test significance ^b
Serenity/freedom	3.38	3.37	>0.05
Arctic experience	3.15	3.16	>.05
Challenge/adventure	3.14	3.45	<.05
Naturalness	3.09	3.30	<.05
Learning/appreciation	3.05	3.33	<.05
Spirituality	2.63	2.14	<.05

^aMeasured on a 4-point scale, where 4 is the highest score.

^bSignificance is computed using a two-independent sample T-Test, corrected for finite population.

Table 4—Mean importance of different experience dimensions by length of stay, Auyuittuq National Park, 2004^a.

Experience dimension	Short (n = 25)	Medium (n = 35)	Long (n = 17)	Significance ^b
Serenity/freedom	3.25	3.48	3.32	0.282
Arctic experience	2.80	3.31	3.27	.009
Challenge/adventure	2.85	3.35	3.43	.030
Naturalness	3.30	3.03	3.19	.279
Learning/appreciation	2.84	3.29	3.30	.012
Spirituality	2.18	2.75	2.39	.109

^aMeasured on a 4 point scale, where 4 is the highest score.

^bSignificance is computed using Analysis of Variance. Column shows the significance level of the computed F statistics.

Table 5—Examples of indicators of various dimensions of arctic recreational experiences identified at workshop.

Experience dimensions	Example indicators/measures
Arctic experience	Encounters with others, physical developments, quality of pre-trip information, visitor perceptions of experience—including interacting with Inuit, sighting Arctic-specific wildlife, sense of isolation and others
Challenge/adventure	Encounters with others, self-report of amount of physical and emotional challenge experienced
Freedom/serenity	Self-report on how much freedom was experienced and feelings of constraints by park rules and regulations
Naturalness	Quality of pre-trip information, physical developments, evidence of visitor impacts along trails
Learning/appreciation	Opportunities to learn about Inuit cultural ties to the park, opportunities to learn about the natural history of the park, length of stay in neighboring communities
Humility/connection with nature	Summative scale of survey items dealing with realization of place in nature/humility, visitor responses to specific items on a questionnaire dealing with this dimension

wildness—dimensions often identified by visitors studied in other wilderness research. It is clear from the results that the park serves as a setting for recreational experiences not found in many other environments in the world. In that sense, these experiences may themselves be somewhat fragile and thus onsite factors, such as the presence of developed infrastructure, particularly park warden cabins, bridges, and emergency shelters and caches, must be carefully considered. The level of visitation, while not a major concern at this time, is also a factor that must be continually monitored.

While Phase II of the research confirmed in part the dimensions identified in Phase I, several slightly different dimensions were uncovered. The research shows that visitors to Auyuittuq National Park value it for its ability to facilitate learning and appreciating nature, adventure and challenge, freedom and serenity, spirituality and naturalness. Also important is the notion of an “arctic experience,” a dimension that was uncovered in previous research in the Gates of the Arctic National Park in Alaska (Glaspell and others 2003). While many of the dimensions uncovered here are similar to recreationists’ experiences in other wildernesses and backcountry settings, this particular dimension is unique to arctic environments. Parks Canada has now committed to an ongoing visitor experience research and monitoring program, in a sense a Phase IV of the research. This research and monitoring is designed to identify any changes in experiences sought and to assess whether the opportunities afforded for these experiences are changing.

A strong point of this project was the logic flow (mapping the dimensions, measuring them, developing indicators) of the three-phase approach and consequent linkage directly to the information needs and managerial regime of the administering agency. The output of the research—indicators—was identified at the beginning of this three-phased project, and all research and activity was designed to achieve that goal. We found that this logic flow provided for a comprehensive and holistic approach toward understanding the various dimensions of recreational experiences, focused research and management effort on salient dimensions of wilderness, and was efficient in terms of providing needed information to park management personnel.

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