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Interpreting the Meaning of Recreation Impacts

by

Robert G. Dvorak

B.S., University of North Dakota, 2001

B.A., University of North Dakota, 2001

Presented in partial fulfillment of the requirements

for the degree of

**Master of Science
in
Recreation Management**

The University of Montana

April 2004

Approved by:


Chairperson


Dean, Graduate School

5-11-04

Date

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ABSTRACT

Dvorak, Robert G., M.S., Recreation Management, April 2004

Interpreting the Meaning of Recreation Impacts

Committee Chair: Norma P. Nickerson *nm*

Recreation impacts have been defined as any undesirable visitor-related change of a wilderness resource. Past research has demonstrated that visitor use leads to impacts on both resource and social conditions. Because impacts have become important indicators of quality, research has been conducted to understand how visitors perceive and evaluate impacts. This research has shown that visitors and managers perceive impacts very differently from one another, raising the central question of this study: how do visitors and managers perceive recreation settings differently?

The purpose of this study has been to explore how visitors and managers perceive recreation impacts in a wilderness setting, how their constructs of impacts compare, and to what extent these impacts are important to each group. To achieve this, three research questions were addressed: 1) How do backcountry visitors and managers define recreation impacts and how do these definitions compare? 2) What variations in resource and social conditions are most sensitive in triggering impact recognition? 3) What type of importance do individuals place in their construct of impacts and what effects do impact recognition have on behavior?

Forty visitors and 11 managers were interviewed in Zion National Park. Through the hermeneutic theoretical framework, three dimensions of impacts emerged: perception, definition, and importance. The results of this study show that most visitor impact definitions focus on conditions most directly related to inappropriate visitor behaviors, while managers are focused on resource conditions related to ecological conditions. These differences appear related to an individual's expectations, their awareness, and the given natural context. This study also suggests that future impact research needs to consider how visitors define impacts in order to develop meaningful measures of impacts that can be utilized by resource managers.

Finally, this study recommends that a new educational program, "View The Resource" be designed so as to show visitors how to understand the resource through viewing it critically and bridge the gap between visitor and manager perceptions of wilderness settings.

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CHAPTER ONE: INTRODUCTION

The 1960s saw a rapid increase in visitation to public recreation areas. With the number of user days increasing across the nation, public land managers became more concerned with the occurring changes in resource and social conditions. These changes, caused by increased use, were considered to have a negative effect on biophysical conditions and visitor experiences.

The central topic of this thesis is the concept of recreation impacts. In their state-of-knowledge review of recreation impacts, Leung and Marion (2000) define the term *impact* as any undesirable visitor-related biophysical change of a wilderness resource. Another recent study has defined impacts as any condition perceived as noteworthy that has an effect and is evaluated as somehow detrimental or unacceptable (Farrell, Hall, and White 2001). This author defines impacts as “any perceivable visitor-related change in the quality of a resource or social condition in a backcountry setting.”

Impact definitions encompass both social and biophysical conditions, but why do managers pay attention to recreation impacts? The passage of the Wilderness Act in 1964 created a dual mandate for resource managers. This legislation outlines the responsibility of managers to not only protect the integrity of biophysical conditions in the environment, but also to protect the quality of visitor experiences (Leung and Marion 2000). Individual agencies were faced with the dual mandate of managing for biological integrity and visitors' experience. The National Park Service's Organic Act of 1919 called for a dual mandate of preservation and recreation. Managers were required to preserve the condition of resources while providing opportunities for recreation.

Research has demonstrated that visitor use can cause impacts to biophysical conditions (Cole 1985; Cole 1986a) and these impacts have an effect on visitor experiences (Roggenbuck, Williams, and Watson 1993; Cole, Watson, Hall, and Spildie 1997). More specifically, recreation impacts can affect attributes of ecological, social, and managerial settings in public recreational areas. Managers utilize these setting attributes as indicators to define the quality of recreation experiences, specifically in a wilderness setting (Newman, Marion, and Cahill 2001).

These indicators of quality have been utilized by resource managers in planning frameworks like the Recreation Opportunity Spectrum (ROS) and Limits of Acceptable Change (LAC) developed for the Forest Service, and the Visitor Experience Resource Protection framework (VERP) developed by the National Park Service. Managers select which indicators of quality will be monitored and establish standards for these indicators that define acceptable conditions in specific recreational settings. By being able to monitor indicators, managers are able to recognize impacts exceeding designated standards of quality and in turn prioritize management actions.

With systems developed to monitor recreation impacts, researchers turned their focus to visitors. Managers were unclear of visitor's knowledge of impacts and how they evaluated acceptable conditions. Over the past 20 years, research has demonstrated that the way users and managers perceive recreation impacts can be very different from one another (Knudson and Curry 1981; Martin, McCool, and Lucas 1989; Farrell et al. 2001). One explanation of these findings is that the scope from which recreation impacts are framed is different between managers and recreation users. While managers are site-

specific and micro-scale focused (Cole 1981), users appear to focus on the broader settings and the macro-scale in terms of impacts (Farrell et al. 2001).

Managers are mandated with the responsibility to protect ecosystems and biodiversity (Marion and Lime 1986). Because of this responsibility, managers have received professional training that teaches them to evaluate ecological processes and be sensitive to small changes in recreational settings. Managers often operate on a very small scale, observing measurable changes and addressing settings as specific as a wilderness campsite, the integrity of a backcountry trail, or the environmental impacts of a parking lot. They become familiar with sites and monitor changes over time.

In contrast, the scope of the recreation visitor is much broader. The user's focus encompasses an entire recreation area and the opportunities for certain experiences that the user desires. Any knowledge an individual user has on recreation impacts is based on their individual education as well as information provided by the land managers at interpretive centers and access areas. In general, users do not return frequently enough to specific sites to notice changes over time (Marion and Lime 1986).

These differences may be acknowledged, but how these differences relate to both users and managers is not completely understood. Because the scope users and managers are operating in may be different, it is difficult to determine what is most important to users. What do users care about in relationship to recreation impacts? Do recreation users place limits on specific impacts and how important are these limits to an individual?

Research on acceptability of wilderness impacts has tended to focus on identifying what those impact limits might be (Roggenbuck et al. 1993) rather than how those judgments are developed (Hoss and Brunson 2000). White, Hall, and Farrell (2001)

have criticized these research designs for using wording that is inherently leading and primes visitors to notice and evaluate impacts negatively. They argue that there have been very few on-site, open-ended surveys or observational studies regarding visitor perceptions of impacts. Results of these studies have tended to contradict survey research conclusions that visitors are even sensitive to impacts (Farrell et al. 2001).

Why then should we be interested in visitors' perception of impacts? First, we still know very little about people's perceptions of resource conditions in wilderness settings. More research is necessary to adequately assess the actual importance visitors place on impacts and how impacts affect visitor experiences. Also, this information is important for ensuring managerial effectiveness, selecting management indicators and standards, and understanding visitor behaviors (White, Hall, and Farrell 2001).

Having a clear understanding of how visitor and manager perceptions correlate is important. Are managers focusing on what is important to recreation users? If they are not, changes may be needed so impact management efforts can be more effective. This researcher argues that before we can understand how impacts affect visitor experiences, we must first understand how managers and visitors individually define impacts. Studies have addressed the issue of defining what is nature (Kaplan and Kaplan 1989) and what is wilderness (Cronon 1996). This study will address the following general questions: What is an impact? Are social or environmental factors recognized first? Will visitors' attention focus on the positive or negative aspects of impacts? What connections do these perceptions have with importance and relevance of recreation impacts to users? With greater insight into user perceptions and how they operationalize impacts, managers can have a better understanding of what the user population cares about and on what users

focus. Managers can then maximize efforts and resources in the pursuit of protecting natural environments and visitor experiences.

Purpose

The central issue that forms the foundation of this study is how do managers and users perceive recreation settings differently? A difference in perceptions of recreation settings leads to opportunities for confusion between users and managers. Users can misunderstand management actions and managers may not understand user behavior. It is important to understand the differences between these two groups so managers can know what latitude they have to work with when developing and implementing actions for recreation settings.

An investigation of results from previous impact research generates many propositions. Why are the impacts that users perceive in the greatest amount not always the least acceptable to them? Why are users unable to recognize a particular site's specific impacts, especially after being prompted by questionnaire measures that are sensitive to that site's impacts?

To address these propositions it must be clear what assumptions and dimensions they are grounded in and how these assumptions will drive this study. One significant assumption of this study is the concept of wilderness being socially constructed (Cronon 1996). It has been debated whether wilderness stands apart from society or whether it is a human creation. This study accepts wilderness as a product of the human culture in which it is located. The culture provides an operationalization for wilderness and the context for which wilderness is applicable. Each individual within the culture then develops their own construction of wilderness based on their education and experience.

A second assumption of this study is that impact perception occurs when the condition of a social or biophysical resource is recognized as not meeting the expectations an individual holds for that specific setting. This triggers the perception of an impact. An individual's personal definition of recreation impacts defines the threshold for impact perception and is based on their personal standards and expectations for both a specific and generalized wilderness setting.

The purpose of this study is to explore how backcountry visitors and park staff/managers of Zion National Park perceive recreation impacts in a wilderness setting, how their constructs of impacts compare, and to what extent these impacts are important to each group. Past research has demonstrated that changes in environmental and social conditions can affect visitor experiences (Roggenbuck et al. 1993; Marion and Lime 1986; Leung and Marion 2000). However, before the relationship between impact and experience can be understood, we need to understand the differences in how users and managers construct impacts.

Research Questions

The research questions that will address the purpose of this study are as follows:

- R1: How do backcountry visitors and managers of Zion National Park individually operationalize their construct of a recreation impact and how do these constructs differ between groups?
- R2: From an individual's perspective, what variations in resource and social conditions are most sensitive in triggering impact recognition?
- R3: What type of importance do individuals place in their construct of impacts and what effects do impact recognition have on behavior?

The first research question forms the foundation of this study and is the most important. The data collection process will provide information to answer this question

and give insights and deeper meaning to the topic of impacts. With this insight, managers will be able to better understand visitor perceptions and devise management strategies that more successfully maintain resource integrity and visitor experiences.

The second research question investigates the concept of impact thresholds or “limits of acceptable change.” Answering this question will provide insight into which specific setting attributes require the most direct manager attention. Defining setting attributes that are most sensitive to visitor perceptions will aid planners in refining indicators and standards of quality.

The third research question investigates the saliency of impact perceptions for visitors. This question investigates if behavioral changes or actions can be documented based on perceptions of impacts. Understanding how much importance visitors place on impact perceptions and if they alter their recreational behaviors based on these perceptions is very important. Managers would be able to better evaluate current educational strategies and site-specific standards with this information.

Thesis Organization

These questions will be answered by using qualitative methods consisting of in-depth interviews of managers and backcountry park users. Data from the interview process will provide an explanation of the perceptions held by both users and managers and allow for comparisons between both groups. The interpretation of these groups’ perceptions will be rendered into the meaning of recreation impacts specific to Zion National Park. In chapter 2, a literature review is presented that addresses the topics of impact research, visitor perceptions, and viewing nature. Chapter 3 outlines the major tenets of the hermeneutic philosophy, the theoretical framework that grounded this study.

This chapter also describes the methods and locations utilized to perform this study. Chapter 4 presents the results from the idiographic and nomothetic analysis performed on the data and discusses the relevant themes that were discovered. Finally, chapter 5 provides the conclusions from the study and provides suggestions for further research and future management implications.

CHAPTER TWO: LITERATURE REVIEW

The goal of this study is to investigate how backcountry visitors and managers perceive recreation impacts in a wilderness setting. Understanding how impacts have been historically investigated and their consequent development into indicators and standards of quality for planning frameworks is central to addressing how impacts are perceived. It is also important to address how visitors have been thought to perceive recreation impacts and how we as humans view natural settings. The purpose of this literature review is to investigate how impacts have been defined and evaluated by professionals and visitors in the relevant literature. This investigation provides a foundation that grounds this study's research questions and situates the reader within the larger concepts of impact research. First, a history of how impacts have been described for recreation settings will be presented. Second, the role impacts play as indicators and standards of quality in planning frameworks will be addressed. This will demonstrate how recreation impacts have become an intrinsic part of recreation planning and the evaluation of wilderness settings. Third, a review of the research into visitor impact perceptions and how these perceptions compare to that of professionals will be presented. Finally, literature pertaining to how natural settings are viewed and experienced by individuals will be presented to address the possible factors affecting impact definition and recognition.

History of Impact Research

An impact has been defined as any condition perceived as noteworthy that has an effect and is evaluated as somehow detrimental or unacceptable (Farrell et al. 2001). If

not monitored and controlled, impacts can compromise the inherent value of wilderness and reduce the quality of recreational experiences (Marion and Lime 1986).

Research on recreation impacts began as early as the 1930s with trampling experiments in the United Kingdom (Leung and Marion 2000), but it was not until the 1970s when the period of active research began. The 1960s had brought a time of rapid increased use of wilderness and backcountry areas and managers became aware of the effects this increased use could have on biophysical and social attributes.

Another reason managers began focusing on impacts was the passage of the Wilderness Act in 1964. The Wilderness Act provided two legal mandates with concerns relative to recreation impacts: the protection of the integrity of wilderness environments, and the protection of the quality of recreational experiences (Leung and Marion 2000). Managers therefore have the responsibility of maintaining the environmental quality of wilderness and natural areas (Marion and Lime 1986), while providing for quality recreational opportunities.

As recreational activities take place in natural areas, they can impact all resources in a wilderness ecosystem. Soil, vegetation, wildlife, and water are four primary components affected by recreational use (Leung and Marion 2000). Of these components, Leung and Marion state that soil and vegetation attributes have been the focus of many studies. These attributes have been examined in the context of four different types of studies: trampling experiments, trail impacts, campsite impacts, and impact indicators.

Trampling studies are directed at the relationship between amount of use and intensity of impact and the different susceptibilities of plant species or vegetation types (Leung and Marion 2000). Trail impact studies focus on factors affecting trail

degradation. These studies look at factors such as trail widening, trail erosion, and soil compaction in relation to use. Campsite impact studies have focused on how sites change with variable amounts of use and visitation. Amounts of bare ground, soil compaction, loss of vegetation, and surrounding vegetation damage have been investigated as factors contributing to campsite impact. Impact indicator studies have increased in emphasis as a direct result of the adoption of management frameworks such as LAC and VERP (Leung and Marion 2000). These studies have worked to develop indicators and indices that monitor resource change due to recreation use. Of these four types of research, studies focusing on trail impacts and campsite impacts have dominated the literature because they are described as the most pronounced and obvious impacts occurring from recreational use (Cole 1985).

Cole's Contributions

In the field of impact research, it is important to note that David Cole has been a leader in the field for the past 25 years. Many of his studies have formed the foundation of how ecological change and recreation impact are viewed in a wilderness setting. From his contributions to the LAC planning framework (Stankey, Cole, Lucas, Peterson, and Frissell 1985) to his development of a wilderness campsite monitoring handbook (Cole 1989), Cole's body of work is crucial in any examination of recreation impacts.

With well over 40 publications, Cole's research is too extensive to be fully examined in the scope of this literature review. The review that follows addresses a few of the key studies performed by Cole and others that have become the backbone of other recreation impact research.

In a study of backcountry campsites in the Eagle Cap Wilderness, Cole (1986a) found the major ecological changes that occurred over time were the expanding zones of disturbance. These zones incorporated changes in the soil, vegetation, and trees found at the campsite. Cole found that the most consistent and statistically significant change was the increase in campsite area, especially the increase in size of the devegetated central core of the site. Over the course of the study, Cole also found that high use sites were less likely to show further loss of vegetation or an increase in mineral soil exposure because they were already highly impacted. Low use sites were found to have more potential for deterioration because impact had not yet reached equilibrium. This demonstrates that the amount of use in a recreation area also determines the amount of impact. High use areas usually produce a noticeably larger area of impact than low use areas with impacts leveling off only after extensive use.

According to Cole (1981; 1985), research has shown that impacts to wilderness campsites follow a curvilinear relationship. Impacts to vegetation and soil compaction can reach a stable maximum after only two years of use (Cole 1981). The resilience of low-use sites is initially high, but seasonal recovery declines with successive years of trampling (Marion and Cole 1996). Unless all visitation to a site is curtailed, there is little chance for recovery.

Cole (1986a) was the first to document this concept of greater deterioration and recovery on more lightly used and impacted sites. This led to the practice of using "sacrifice" sites in wilderness areas, a small number of high use sites opposed to a large number of low use sites. Utilizing sacrifice sites is preferred to a rest-rotation model of management. Rest-rotation models increase visitor dispersal and increase the number of

sites. Cole (1981) argues that rest and rotation systems are unlikely to work due to deterioration occurring more rapidly than recovery for sites. Managers need to minimize both the number of visitors and the degree of impacts.

Vegetation has been found to be tolerant of trampling on the perimeter of sites, but unable to survive the level of trampling occurring at the site's core (Cole 1986b). By utilizing sacrifice sites, the severe impacts found at campsite cores are confined to relatively small areas. Managers have the ability to influence the spatial distribution of use by designating whether camping occurs on sites that have been frequently or infrequently used (Cole 1985).

Managers can also influence the vegetation types on which people camp. Most habitat types follow a curvilinear relationship between trampling intensity and vegetation loss (Cole 1985), but some habitat types have shown more resilience than others. Grasslands and open canopy plains habitats have shown more resistance than closed canopy forbs and forested habitats (Cole 1985; Cole 1986b; Marion and Cole 1996). Desert habitat types have shown to be relatively resistant to impacts. They show low levels of vegetation cover loss and little change in species composition. The highest impacts found in desert habitats are soil compaction, resistance to moisture penetration, and a decrease in soil moisture (Cole 1986b).

With the knowledge of how ecological impacts occur in wilderness settings, impact assessment systems have been created to monitor and evaluate conditions at wilderness sites. Cole (1989) has defined individual campsite impacts into different types of parameters to act as indicators of quality. Examples of these parameters include campsite area, cleanliness, vegetation damage, erosion, and soil compaction. Using

Cole's approach, the state of each parameter is given a class estimate. Managers assess the condition of the sites using the values of these estimates. They must choose which parameters apply to the specific setting and which rating classes apply. These rating classes are adapted to match the range of conditions present in the area, creating a standard managers try to maintain.

Impacts and Experience

As mandated by the Wilderness Act, managers are responsible for more than the biological integrity of wilderness areas. Managers are also required to protect the quality of the recreation experiences found in wilderness settings (Merigliano 1989).

Recognizing the presence of impacts in wilderness settings is important because research has shown that visitors do possess opinions about ecological impacts and are willing to express them (Shelby, Vaske, and Harris 1988).

When visitors notice ecological impacts, it has a negative effect on their experience (Roggenbuck et al. 1993; Marion and Lime 1986; Lynn and Brown 2003; Cole et al. 1997). In a study of six high-use destinations within wilderness areas, Cole et al. (1997) found that visitors who noticed physical impacts were bothered by them. These impacts included worn trail systems, social trailing, and vegetation loss at campgrounds.

Roggenbuck et al. (1993) surveyed visitors of four different wilderness areas. Using a 6-point Likert-type scale, the authors found that visitors had a high shared agreement that littering and tree damage at campsites had a very important influence on wilderness experiences. At a study of the Starkey Hill Interpretive Trail, Lynn and Brown (2003) used solitude, remoteness, naturalness, and artifactualism as four indicators of experience. Respondents examined photographs of impacts and rated each photo on a 5-

point Likert-type scale regarding their effect on the four experience indicators. The authors found litter, tree and plant damage, and fire rings to have the greatest negative effect on visitors' perception of solitude, remoteness, naturalness, and artificialism. Trail extension, erosion, and widening were also found to have a modest negative effect on these four experience indicators.

Ecological impacts are not the only types of impact. Social conditions in wilderness may be part of our impact definition and how they affect experience needs to be considered (Cole 2001). Social conditions such as use density and crowding can affect visitors' experiences. Managers typically measure social conditions based on the parameter of the number of encounters visitors have in a given time frame.

Some researchers have argued that visitors possess normative standards for the number of encounters that are acceptable in a wilderness setting (Vaske, Shelby, Graefe, and Heberlein 1986). They feel encounter norms exist for particular types of contacts with certain types of visitors at particular places for certain types of experiences. Whether norms do exist has been a contested issue (Roggenbuck, Williams, Bange, and Dean 1991). More important, what effect violating one's preferred encounter number has on experience has not been empirically understood. Cole (2001) argues that most studies report little or no relationship between crowding and encounters and the effect they have on experience quality.

Inevitably, managers must determine which experiences are most appropriate and which conditions or impact levels are appropriate for those experiences (Cole 2001). Decisions about use limits and what types of experiences wilderness areas provide are informed, value-based decisions for which managers are responsible. They must consider

the context for any given wilderness and any legal mandates that dictate what types of use and ecological change are appropriate.

Research has established what impacts are and how they change over time.

Impacts are a concern for managers and techniques have been developed to monitor the changes associated with impacts. These techniques have been incorporated into planning frameworks to determine when indicators of quality have exceeded acceptable levels for a given area.

Developing Indicators and Standards of Quality

Impacts are first and foremost a change in an ecological or social condition. These changes can be evaluated and monitored to determine if conditions in wilderness settings are no longer acceptable based on management standards. Therefore knowing how impacts are incorporated in protected area planning frameworks and the role they play as indicators of quality is important in understanding the perceptions of managers for this study.

Carrying Capacity Frameworks

Early planning frameworks for wilderness and protected areas were based on a recreational carrying capacity concept. Because recreation impacts can affect visitor experiences, concern about protecting the values and experiences of wilderness areas have always formed the foundation for establishing recreational carrying capacities (McCool and Cole 1997). The carrying capacity approach seeks to minimize ecological and social impacts by establishing the maximum level of use any given area can sustain.

Based on this concept, limiting group size has become a common management approach with the goal of limiting ecological and visitor experience impacts. In a survey

of 624 managers of the National Wilderness Preservation System, Monz, Roggenbuck, Cole, Brame, and Yoder (2000) found that 81 percent of managers listed minimizing ecological impacts as the main reason for establishing use limits. However, Monz et al. argue that other than eliminating the very large groups, use limits have not been successful in minimizing impacts.

McCool and Cole (1997) argue that by focusing concern on conditions, not use limits, more informed discussion about protecting wilderness values can take place. As a response to legislative and policy requirements, as well as to increasing recreation demands, impacts, and conflict, protected area planning frameworks, such as the Limits of Acceptable Change (LAC) framework, were developed (Nilsen and Tayler 1997). The LAC process requires deciding what kinds of wilderness conditions are acceptable, then prescribing management actions to protect and achieve these conditions (Stankey et al. 1985). The framework is designed for consensus building and bringing together various interests and constituencies to negotiation standards based on differing conceptions of acceptable levels and types of change (Hoss and Brunson 2000).

Because the LAC framework brings various interests together, it is useful in situations where management goals are in conflict, where there is the possibility to compromise all goals somewhat, and where planners are willing to establish a hierarchy of these goals (Cole and McCool 1997b). Both the Wilderness Act and the National Parks Service's Organic Act of 1917 establish situations where LAC frameworks are preferable. Both pieces of legislation mandate conflicting goals of preserving biological integrity while providing opportunities for visitor use and experience.

The recognition and measurement of impacts are central to any LAC planning process. Manning and Lime (2000) describe environmental impacts, primarily on trails and campsites, as the dominant recreation-related problem perceived by managers throughout many recreation research studies. In the LAC process, managers make statements regarding acceptable resource conditions for the opportunity classes found for the wilderness. These resource conditions typically include the types, severity, prevalence, and apparentness of recreational visitor impacts (Stankey et al. 1985).

Indicators and Standards

Resource conditions, also referred to as setting attributes, can be classified as physical, social, or managerial attributes (Merigliano 1989; Newman et al. 2001). These attributes contribute to the quality of the wilderness experience and prove to be sources for indicators of quality within the LAC planning process (Merigliano 1989). Physical setting attributes include campsite impacts, soil impacts, and the presence of wildlife. Social setting attributes include amount of use, encounter types, and group behavior. Managerial setting attributes consist of restriction on group size, resource restoration, and camping information dissemination.

Setting attributes are defined in terms of indicators and standards of quality (Newman et al. 2001). Indicators of quality are specific variables that, singly or in combination, are taken as indicative of the condition of setting attributes (Stankey et al. 1985; Nilsen and Tayler 1997). Some researchers have described the criteria necessary for a good indicator of quality (Merigliano 1989; Manning and Lime 2000). Indicators of quality need to be quantitative, measurable, reliable, sensitive, and responsive to management actions. It is recommended that managers avoid indicators that incorporate

visitor perceptions, such as perceived crowding and visitor satisfaction, because they do not reflect an objective view of the experience or wilderness context (Merigliano 1989). Good indicators of quality include: size of campsite devegetated cores, number of tree scars, number of encounters with other groups on the trail, and availability of permits (Newman et al. 2001). Cole and McCool (1997a) argue that indicators should be developed for outputs, such as environmental conditions or impacts, rather than inputs, such as use levels, if possible.

Standards of quality are defined as the minimum acceptable condition of indicator of quality variables or “the limits of acceptable change.” (Newman et al. 2001; Cole and McCool 1997a; National Park Service 1997). Minimum acceptable conditions are the best possible conditions given the need to compromise several goals. Standards are the measurable aspects of indicators that provide a base to judge whether conditions are acceptable or not (Stankey et al. 1985).

Standards are subjective judgments of the appropriate compromise between conflicting goals (Stankey et al. 1985; Cole and McCool 1997a). They are the optimal conditions defined by the compromise between opposing objectives (Cole and Stankey 1997). Standards do not represent the conditions that would be desired in the absence of conflict, nor do they define unacceptable conditions (Cole and McCool 1997a; Stankey and Cole 1997).

Managers make these judgments based on the characteristics that make a good standard of quality. These characteristics are quantitative, time or space-bound, expressed as a probability, impact-orientated, and realistic (National Park Service 1997; Manning and Lime 2000). Since indicators of quality are specific and measurable variables,

standards can be expressed in a quantifiable way. A time- and space- bound element in a standard expresses how much of an impact is acceptable and how often and where such impacts can occur (Manning and Lime 2000). It is important standards are expressed as a probability to allow tolerance for some percentage of the time when a particular condition is unavoidably unacceptable. Standards should focus directly on the impacts that affect the quality of the visitor experience, not the management action used to keep impacts from violating standards (Manning and Lime 2000). Finally, standards need to be realistic and reflect conditions that are realistically attainable. A good example of standard of quality for social attributes would be “no more than three encounters with other groups per day along trails for 80 percent of days in the summer use season.” (Manning and Lime 2000).

VERP and the National Park Service

The concepts of indicators and standards of quality have been utilized in other planning frameworks by different federal agencies. Another type of carrying capacity management process is the Visitor Experience and Resource Protection (VERP) planning framework. VERP is conceptually the same as the LAC process. The VERP framework was conceived and designed based off the LAC planning processes to be part of the National Park Service’s general management planning process (Nilsen and Tayler 1997). VERP was developed to be responsive to needs more specific to the national parks and grounded in scientific literature. It is expanded from the LAC process to address a wide variety of resource settings and front country as well as backcountry experiences (National Park Service 1997).

Both VERP and LAC address questions of carrying capacity, appropriate visitor use, and biophysical impacts caused by recreation use (Hof and Lime 1997). Setting attributes, indicators of quality, and standards of quality are utilized in the same way to determine the minimally acceptable conditions for variables within the park setting. VERP and other LAC processes provide frameworks for dealing with growing visitation and potentially unacceptable impacts to biophysical resources and visitor experiences (Hof and Lime 1997).

Other Frameworks

Protected area planning frameworks are not limited to LAC and VERP. Other frameworks have been developed to address the use of carrying capacity and appropriate levels and conditions of use. These frameworks all work to define acceptable use and conditions for given zones within a protected area. The Recreation Opportunity Spectrum (ROS) was developed for the U.S. Forest Service and Bureau of Land Management in response to a series of legislative directives calling for integrated and comprehensive natural resource planning (Nilsen and Tayler 1997). The National Parks and Conservation Association created the Process for Visitor Impact Management (VIM) for use by the National Park Service. Parks Canada created the Management Process for Visitor Activities (VAMP) as a companion to their Natural Resource Management Process (Nilsen and Tayler 1997).

A recent new model has been created to address tourism in natural areas. Created by an Australian consulting firm in the early 1990s, the Tourism Optimisation Management Model (TOMM) strives to consider the political, socio-cultural, and economic context for a plan (Newsome, Moore, and Dowling 2002). The TOMM model

utilizes LAC principles, but applies these concepts across the diversity of stakeholders involved in natural areas. This model examines market trends and growth factors to determine how the plan will relate and affect tourism for the area.

Policy and legislation have mandated the use of planning frameworks for the federal agencies. These frameworks have incorporated a solid foundation for monitoring ecological changes that occur in protected areas. Unfortunately, managers still are unclear about visitors' knowledge of impacts and how impact recognition affects experience. Therefore, it has been necessary for research to examine the ways visitors perceive impacts in a wilderness setting.

Visitor Impact Perception Research

Because the purpose of this study is to explore how visitors and park staff/managers perceive impacts, it is important to investigate how managers and researchers have explored visitor perceptions of impacts in the past. Managers have always been responsible for making value judgments regarding standards for wilderness settings. Historically, these judgments have lacked information about how visitors perceive impacts (Shelby and Harris 1985). With the creation of the National Environmental Policy Act (NEPA) in 1968, the public's opinion about wilderness settings and conditions has gained value. Over the last forty years, increased public involvement has been encouraged during the early stages of decision-making and development of management alternatives (Newman et al. 2001). Public input is important because it helps managers identify which resource conditions are important and what levels of impacts are acceptable to visitors (White et al. 2001).

Before visitor perceptions of impacts can be described, it is important to acknowledge that visitors have opinions about impacts and are willing to express them (Shelby and Harris 1985; Shelby et al. 1988). In a study by Shelby and Harris (1985) of campsites in the Mt. Jefferson Wilderness, respondents were given a card with a five-point Likert-type scale regarding the acceptability of an impact, such as fire ring diameter. The study found that virtually all respondents avoided the neutral response category of their questionnaire and took a position in evaluating the impact. Visitors were willing and able to evaluate these conditions in terms of acceptability (Shelby et al. 1988).

Martin (1987) argues that perceptions of acceptability are personal judgments by visitors. He states that judgments are evaluations for attributes based on internalized standards. Evaluative terms, such as crowding, impact, and damage, are the expressions of these internalized standards and the range of acceptability for the specific attributes. Martin argues that the presence of evaluative standards for attributes is the primary reason why recreationists respond and evaluate conditions differently from one another.

Research Approaches

To access these internalized standards that visitors possess, researchers have utilized several different approaches. Most of these research designs have relied upon quantitative approaches as the method of data collection. One of the common methods implemented by researchers is the use of photographs and artistic drawings to represent the range of conditions possible for a given site. In one study, Martin, McCool, and Lucas (1989) presented artistic representations of bare ground, tree damage, and fire ring

impacts to wilderness users. Respondents evaluated each image on a 3-point Likert scale from unacceptable to desirable.

In their Mt. Jefferson Wilderness study, Shelby and Harris (1985) presented photographs displaying different areas of bare ground (in square feet) and different diameters of fire rings (in inches). Respondents rated these impacts on a 5-point Likert-type scale from totally acceptable to totally unacceptable.

Lynn and Brown (2003) presented visitors to the Starkey Hill Interpretive Trail with a self-administered questionnaire. Respondents were asked to rate how six impacts (trail widening, erosion, tree and plant damage, fire rings, litter, and muddiness) affected the quality of four specific hiking experience elements. These impacts were rated using a 5-point Likert-type scale that ranged from “decreased greatly” to “increased greatly”.

Another common method for data collection has been the use of a battery of indicator items. These items refer to social and ecological conditions that are believed to be influential in defining the quality of the wilderness experience and resource conditions (Roggenbuck et al. 1993). In multiple studies of river recreationists, Marion and Lime (1986) mailed questionnaires containing a list of 50 possible problems existing on the river. Respondents then rated which of these problems were the more serious for a given river.

Roggenbuck et al. (1993) also used a mailed questionnaire, which contained 19 potential indicators of social and resource conditions. These indicators addressed conditions such as the amount of litter seen and the number of large groups seen along the trail. Respondents were asked to rate the degree of influence these indicators had on their experience on a 6-point Likert-type scale ranging from “not at all” to “extremely”.

The survey instruments for these studies have been administered in a variety of manners. Some research projects have intercepted visitors on site with the survey instrument administered by the researchers (Knudson and Curry 1981; White et al. 2001). Other researchers have chosen to intercept visitors upon exiting a wilderness area. Visitors in these studies were interviewed by researchers and given mail-back questionnaires to be completed (Marion and Lime 1986; Roggenbuck et al. 1993). It is therefore important to note that no standard research design has been developed for investigating visitor perceptions of impacts. Research designs are still chosen based on the theoretical grounding and context-specific limitations of the study.

Impacts Studied

While a standard research design or methodology has not been implemented in impacts studies, there has been some consistency in the types of impacts that are selected for evaluation. The amount of bare ground present, amount of tree or vegetation damage, and the presence of fire rings have been the most frequently tested indicators of impact. These impacts have been selected based on what managers and wilderness rangers judge to be the most obvious impact problems for wilderness sites (Shelby et al. 1988). They have also been the most frequently used indicators because researchers feel these are the most prevalent impacts occurring at wilderness sites and contribute to both the visual impact and ecological integrity of an area (Martin 1987; Martin et al. 1989).

Despite a consistency in the types of impacts selected for evaluation, studies on user perceptions of recreation impacts have yielded a variety of results. In their evaluation of Mt. Jefferson Wilderness visitor's acceptability of fire ring diameter and bare ground area, Shelby et al. (1988) concluded that users have different evaluative

standards for impacts for different locations. They argue that standards for impacts differ by location because different locations offer different experiences. Their study also found that small amounts of impact were more acceptable than none at all. Small fire rings were more acceptable than no fire ring, and small amounts of bare ground were more acceptable than sites without bare ground. The authors suggest that this response is attributed to visitors' belief that camping should be done on pre-existing sites instead of previously undisturbed areas.

Knudson and Curry (1981) interviewed 405 visitors in two Indiana state parks and compared their impact evaluations to those of local managers. Visitors rated the amount of tree damage, amount of ground cover, and spacing between sites on a 5-point Likert acceptability scale. Visitors rated conditions of ground cover and tree damage as satisfactory to good when managers felt these two indicators were highly disturbed and impacted. Specifically, two-thirds of respondents reported they saw no weak or unhealthy trees at sites even after being directly asked if they noticed tree damage. The authors found that even when respondents described conditions as poor, most did not feel the conditions negatively affected their enjoyment. Visitors appeared to accept campsite conditions and the presence of other people around them.

Martin (1987) and Martin et al. (1989) used artistic photographs of bare ground, tree damage, and fire rings to determine the relationship between users perceptions and acceptability of impacts. The sample consisted of University of Montana recreation management students and wilderness horseman user groups. They were asked to assess the amount of impacts they perceived in each picture and explain the level of acceptability for each given impact. Of the three impacts, visitors perceived fire rings and

tree damage the most, while managers perceived bare ground the most. Even though tree damage and fire rings were perceived the most by visitors, these two were not rated as the least acceptable impact. Visitors rated bare ground, even at low levels of change, the least acceptable. Overall, these results showed that visitors held restrictive standards of acceptability for all three impacts.

Roggenbuck et al. (1993) surveyed visitors to five wilderness areas to determine their preferred level of impact and their range of acceptable and unacceptable levels. Respondents were mailed a questionnaire with 19 potential indicators of social and resource conditions and asked to rate their level of influence on a 6-point Likert-type scale ranging from "not at all" to "extremely". The study showed high shared agreement between visitors that litter, tree damage, noise, and seeing wildlife were important influences on the wilderness experience. Of these indicators of experience, the importance of site impacts was striking. Site impacts, such as litter and tree damage, were rated far more influential than group encounters on the trail. Despite recognizing these impacts, the study showed that visitor standards regarding acceptable social conditions were not as restrictive or "pure" as managers expected. Camping within sight of other groups, for example, was more acceptable to visitors than had been previously thought by managers.

Christensen and Davis (1985) compared the perceptions of 36 managers in the Mount Rainer area to visitors of the region. Litter, vandalism, and conflict between users were some of the variables selected for comparison between the groups. Results showed that 86 percent of managers perceived litter as a problem while only 31 percent of visitors agreed litter was a problem. The data also showed that 77 percent of managers felt

conflict between users was a major issue while only 22 percent of visitors agreed with managers. The authors concluded that for a variety of reasons, such as status, ideology, and function, major differences between visitor and manager perceptions regarding impacts do exist.

Cole et al. (1997) studied six high use destinations within wilderness located in western Oregon and Washington. Respondents filled out a questionnaire reporting the number of encounters they had on the trail and their perceptions of a number of different types of visitor impacts. These impacts included litter left by visitors, social trails, human waste, and vegetation damage. Visitors also reported whether these impacts detracted from their enjoyment on a 3-point scale. Responses showed that most visitors reported less encounters than recorded by trained researchers, and that the number of people they encountered did not detract from their enjoyment. In contrast, most visitors did notice the physical impacts and were bothered by them. Vegetation loss and social trails were perceived by two-thirds of visitors. Litter was noticed by one-half of visitors with tree damage and human waste perceived by less than one-half. The authors also found that a sizeable number of people did not even notice these impacts. Of the impacts perceived by visitors, the only ones found that significantly bothered most visitors were social trails, vegetation loss, and campsite impacts.

Criticism and Problems

Although these studies have demonstrated visitors' ability to evaluate impacts and their acceptability, a critical problem must be addressed concerning the research design of these studies. The problem is in asking someone to rate campsite impacts without "forcing" them to perceive what they may not otherwise perceive as needing

consideration (Martin 1987). In a recent study of two lakes in the Mt. Jefferson Wilderness, White et al. (2001) suggest that questions using leading wording such as “vegetation damage” and “destruction” may prime visitors to notice and negatively evaluate impacts. They argue that studies that rely on abstract or hypothetical survey questions may discount the importance of specific contexts and make it difficult to determine whether a respondent’s genuine perception of impacts is being expressed. Visitors may be reacting to the idea of damage rather than a genuine perception of damage encountered during a visit. It is also suggested that even if most visitors do notice impacts, it is still not entirely clear whether impacts negatively affect experience quality or influence behavior (White et al. 2001; Cole 2001).

These studies demonstrate that visitors’ perceptions of impacts can differ from the views of managers (Martin et al. 1989; Marion and Lime 1986; Manning and Lime 1996). There is little agreement about whether visitors even evaluate impacts with the same parameters that managers use (Farrell et al. 2001). Because of these differences management has developed an unshared definition of the problems concerning impacts. Christensen and Davis (1985) argue that because of management’s exclusive definition of the problem undue pressure is placed upon visitors to accept rules implemented by managers. Managers need to acknowledge the findings of these studies to ensure managerial effectiveness, improve selection of indicators and standards, and to understand visitor behavior (White et al. 2001).

Differences Explained

Research has provided many possible explanations for the differences in impact perception that are apparent between visitors and managers. One argument is that

managers have a professional responsibility to protect the quality of resource conditions and wilderness experiences (Martin 1987). This responsibility creates a relationship different from that of visitors whose relationship is based on more aesthetic values. Another argument regards to the amount of education and experiences individuals have with impacts and wilderness settings. Managers are trained in the biological and social sciences, which makes them very familiar with ecological processes and social conditions (Shelby et al 1988). Managers also spend a great deal of time interacting with wilderness settings and gain a substantial level of experience. Visitors, on the other hand, have a more limited experience with natural environments because they do not typically return to the same sites often enough to notice changes (Marion and Lime 1986). Many, if not most, visitors have little or no awareness of natural resource legislation like the Wilderness Act and the provisions mandated by these laws (Farrell et al. 2001). This lack of experience and knowledge leads to visitors evaluating settings differently than managers.

Another compelling argument by some researchers suggests that visitors rate certain impacts positively because they are preferred conditions or amenities for a site (White et al. 2001; Farrell et al. 2001; Shelby and Harris 1985). In their study of Mt. Jefferson Wilderness visitors, White et al. (2001) conducted qualitative interviews to determine what conditions were preferred in wilderness campsite selection. The topics raised during these interviews addressed many of the impacts present at campsites, such as bare ground, nails in trees, and the loss of vegetation. However, most respondents did not rate these conditions as unacceptable. Conditions were considered amenities that added to a site's desirability. Impacts like bare ground and fire rings are typical features

of pre-existing sites that are desired by visitors when selecting a site (Shelby and Harris 1985).

These arguments demonstrate that many factors can influence how individuals interact with and evaluate natural settings. To better understand the effect these factors have on impact perceptions and evaluations, it helps to investigate how individuals view nature and construct the natural world around them.

Viewing Nature

People view and experience nature in many different ways. Nature can include city parks, open spaces, greenways, and backyard gardens. Understanding how nature is viewed provides the foundation for determining what is acceptable and preferred in wilderness settings. This foundation allows for a broader interpretation of how individuals associate meaning with impacts and what factors influence their perception of wilderness settings.

Review of Kaplan and Kaplan

Kaplan and Kaplan (1989) have accumulated an extensive amount of research in the effort to understand what nature does, for whom, and under what circumstances. They have conducted numerous studies where participants evaluate photographic settings in both rural and urban settings in order to determine individual preferences. The authors consider the nature of preference to be very frivolous. Preference is what is favored instead of necessary, decorative instead of essential. They argue that preferences are made by a degree of inference, a judgment that is needed to evaluate a setting's visual

information and spatial perspective. This judgment is based on four factors: complexity, coherence, legibility, and mystery.

Of the four factors, coherence and legibility relate to understanding. Coherence refers to an individual's immediate understanding. It is what they comprehend upon initially viewing a scene. Legibility is inferred understanding, relating to the ease of understanding and one's ability to remember. Complexity and mystery, the other two factors, relate to exploration. Complexity refers to the immediate content of a scene. A complex scene gives an individual something to think about. Mystery is the inferred promise of further information. This factor is coupled with a need to explore. Together these four factors influence what preferences individuals hold for particular settings. Kaplan and Kaplan (1989) have found that settings containing mystery and legibility are highly preferred, demonstrating that inferred factors are very important. They argue that preference is greatly enhanced when the scene suggests that more could be learned from entering deeper into the setting.

Kaplan and Kaplan (1989) also argue that people react to what they experience in terms of commonalities or categories. Content and spatial configurations are two examples of types of categories. These categorizations are based on multiple sets of criteria and are the underlying distinctions that form perception, even though we generally do not realize these categorizations. Along with these categories, our perceptions are also influenced by experience. As individuals have more experience with a setting, they become more familiar with it and can be aware of the kinds of habitat and ecosystems through which they travel. Kaplan and Kaplan (1989) propose that this familiarity with a setting is a major factor accounting for differences in perception. As

managers and research professionals become more familiar with a setting, their perceptions change. They begin to see salient categories and learn to see the environment in a particular way without recognizing a change in perception from the non-professionals.

Aesthetics

Gobster (1992) presents another point of view concerning how individuals view nature and why manager perspectives differ from that of visitors. He argues that people form their perceptions of a place based on what they see and experience from an aesthetic point of view. This aesthetic view and natural landscape preference has grown from a tradition of landscape painters in 17th and 18th century Europe, whose idealized, naturalistic scenery helped define how city parks were designed and what parcels of land were preserved for national parks. Gobster (1993) states that this "scenic aesthetic" has been narrowly defined and is largely visual in form. For a setting to be aesthetically pleasing to individuals, it must possess a pristine and picturesque quality. Gobster also argues that a scenic aesthetic encourages a homocentric world view and has remained the culturally dominant mode of appreciation and has led to any process of change to be perceived negatively.

Gobster (1992) suggests that a scenic aesthetic mode of landscape appreciation functions well in parks and some other types of open spaces, but a deeper understanding and appreciation of nature is required for landscapes where ecological values are the primary consideration. He proposes adopting an "ecological aesthetic" where pleasure is a secondary outcome that derives from knowing that a landscape is ecologically "fit." To have an ecological aesthetic then requires that individuals experience the landscape as

active participants, not passively as is typical of a scenic aesthetic. Appreciation comes from both subtle and dramatic changes exhibited in the cycles of life and death. From an “ecological aesthetic”, settings can be messy with form following function. It encourages a biocentric worldview that appreciates dynamic, changing environments.

Perceptions of natural settings differ between visitors and managers because of the presence of opposing aesthetic views. The responsibilities of managers encourage the adoption of an ecological aesthetic that is sensitive to ecological changes and processes. Visitors, on the other hand, still have a current orientation to an idealized, picturesque nature. This difference has made it difficult to merge objectives relating to the management of sustainable ecosystems (Gobster 1993).

Gobster (1992) argues that researchers have tended to focus on scenic aesthetics, asking visitors what they perceive to be “scenic beauty” or the “visual quality” of a landscape. Also, methods to assess aesthetic perception most often require only a few seconds for a visitor to view and rate a landscape scene, reducing the “experience” to a momentary judgment. He states that by maintaining a limited standard of aesthetic value by focusing on scenic quality, researchers are negating the attributes of biologically diverse ecosystems, which can contribute to a richer understanding of the aesthetics of nature.

Wilderness

The way individuals view nature and the aesthetics they associate with are both part of an individual’s perception of natural settings. As discussed earlier, perceptions of nature, and their impacts, are personal judgments by visitors. These judgments are based on internalized evaluative standards that individuals possess for natural settings (Martin

1987). In regards to this study, visitors were required to make judgments based on their evaluative standards for changes in conditions for a wilderness setting. It is therefore important to address the concept of wilderness and how it is defined.

While it is not within the scope of this review to address the question “what is wilderness?” it is important to address the issue of wilderness being a social construction. Cronon (1996) argues that the meaning of wilderness has historically changed, becoming a profoundly human creation. Prior to the 19th century, to be wilderness meant to be “desolate” or “barren.” A wilderness was a wasteland that seemed worthless to many people. He argues that it wasn’t until the romantic writings of Wordsworth, Thoreau, and Muir that wilderness became a sacred American icon. They encouraged the belief that the best antidote to the social ills of modern civilization was a return to a simpler, more primitive living.

Cronon argues that values associated with a primitive, uninhabited wilderness are entirely the creation of our culture. The removal of Native Americans from the landscape is a prime example. The author proposes that Native Americans were removed from the landscape to create a wilderness “uninhabited as never before in human history of the place.” This act reminds us just how invented and constructed the American Wilderness really is. He believes we leave ourselves little hope in discovering what an ethical and sustainable human place in nature might actually look like.

Cronon’s view of wilderness as a social construct has been met with much criticism. Willers (2001) views Cronon’s argument as a postmodern attack on wilderness and environmentalism. He argues that viewing wilderness as a social construct ignores that wilderness is a physical reality of evolutionary consequences with definable

biological traits. Willers also argues that the social construction approach of Cronon has no appreciation for the biological and evolutionary significance of wilderness areas independent of human management. He states that Cronon does not see the forest as an ecosystem containing microorganisms, plants, and animals.

In response, Cronon (1996) emphasizes that his point is not to trivialize our current problems or to say that our devastating effects on ecosystems should be accepted as inevitable or “natural”. Instead, he believes progress in solving these problems is unlikely if we continue to describe wilderness as a place we ourselves cannot inhabit. By accepting wilderness as a construction, we as managers and researchers can better address issues and implement plans for rehabilitation and conservation. Acknowledging Cronon’s point is important because this study makes the assumption that wilderness and the evaluative standards associated with it are a product of the human culture it is located in. Individuals within a culture each develop their own construction of wilderness based on their education and experience. This construction is then expressed in the perceptions and standards visitors express for impacts in wilderness settings.

Norms

When individuals evaluate a wilderness area, they are expressing standards they hold for that setting. In the early 1980’s, the development of normative standards for acceptable levels of ecological and social impacts had become a pressing concern for natural resource managers (Vaske et al. 1986). Since this study addresses the evaluative standards visitors and managers hold for recreation impacts, it is important to acknowledge the concepts of personal and social norms. Norms have been defined as personal beliefs or standards that individuals hold about appropriate behavior and

conditions (Manning and Lime 1996). These standards or rules state what individuals should or should not think, say, or do under a given circumstance (Vaske et al. 1986). Social norms are standards shared by members of a social group. The social group influences how an individual evaluates certain situations. Because individuals wish to be accepted by the group, they adhere to the norm (Vaske et al. 1986). Personal norms are an individual's own expectations, learned from shared expectations and modified by interactions (Vaske et al. 1986).

It has been argued that if visitors have normative standards concerning relevant aspects of recreation experiences, then such norms can be studied, measured, and used as a basis for formulating standards of quality (Manning and Lime 1996; Manning 2001). Crowding is one concept that has been considered best understood as a normative concept. If visitors have a belief or standard about appropriate use levels in a park or wilderness area, then crowding will occur when standards have been violated (Manning and Lime 1996). Vaske et al. (1986) tested this theory in a study of Brule River canoeists. Respondents related the number of fishermen, tubers, and canoeists they actually saw and how crowded they felt. From this data, the authors concluded that a number of specific types of encounter norms could be identified, individuals were able to willingly express their norms when asked, and that there was some consistency in the norms for certain types of experiences.

This concept of personal and social normative standards for social and ecological indicators has been contested. Roggenbuck et al. (1991) found in a study of New River whitewater rafters that fewer than half of the respondents expressed norms about appropriate encounter levels for most types of experiences. Even more revealing, they

found that a sizable percentage of river recreationists acknowledged that encounters with others made a difference, but they were unable to give an acceptable number.

Roggenbuck et al. conclude that the evidence justifying the presence of norms thus far is incomplete on some issues and not compelling on others. They feel that if norms are to be useful, a large percentage of recreationists must have shared agreement or consensus in what a norm should be.

Shelby and Vaske (1991) have replied to challenges by asking if norms are more likely to be reported under specific circumstances. They argue that users are more likely to specify a norm when the impact in question is important for the experience the user is pursuing. This response is difficult to evaluate without considering tradeoffs by visitors. Manning (2001) argues that norms may underestimate preferred levels of impact because normative studies have failed to introduce tradeoffs between the desire to avoid impacts and the desire to maintain public access. Actions like coping behaviors are cognitive actions visitors adopt to deal with impacts. Because recreation activities are voluntary, visitors invest substantial amounts of time, money, and efforts in these activities. Therefore, visitors may be likely to still report high levels of satisfaction regardless of the conditions experienced (Manning and Lime 1996).

The purpose of this study is not to conclude whether impact perceptions are normative judgments. Despite this, it is important to acknowledge that individuals can base impact perceptions on shared agreements by social groups. How visitors and managers operationalize impacts may have many shared components in their definitions, but this is not to suggest that either group is reporting a norm for recreation impacts.

Further conclusive studies regarding the existence of norms are necessary before that concept could be applied within the context of this study.

Relationship to Experience

There has always been a link between recreation impacts and experience. Visitor experiences are important because legislation mandates that managers provide for high quality wilderness experiences. Studies have established a relationship between impacts and visitor experiences. When visitors notice impacts, it has a negative effect on their experience (Roggenbuck et al. 1993; Marion and Lime 1986; Cole et al. 1997).

Acknowledging this relationship is important for this study, but it is likewise important to define the limited role experience plays in this study. The purpose of this study is to understand how individuals define impacts and the meaning they place in these definitions. This study specifically addresses the meanings of impacts and the conditions related to these meanings in which individuals are sensitive. How an individual perceives impacts will have related effects on their experience, but that is not the scope of this study.

Summary

In summary, changes in ecological and social conditions in wilderness have been classified as impacts. Extensive research has been performed by David Cole and others to quantify these changes and describe their relationship to the condition of wilderness sites. Managers have utilized recreation impacts in planning frameworks, such as LAC and VERP, as indicators of quality that are sensitive to change. By monitoring change, they are able to determine when and if impacts exceed acceptable conditions.

Studies have shown that visitors and managers view impacts very differently. Some of these studies have been criticized for using methods that influence or prime respondents to negatively evaluate site conditions. This study aims to utilize a qualitative approach to investigate how visitors and managers each operationalize impacts. By better understanding the conditions individuals recognize as impacts and the importance they place on these perceptions, managers may better create educational strategies and management programs to address the most critical changes in ecological and social conditions that are occurring.

CHAPTER THREE: METHODOLOGY

To achieve the purpose of understanding how visitors and managers perceive recreation impacts, it is necessary to outline the qualitative research approach that was adopted for this study and the context where this study takes place. An interpretive approach grounded in the theoretical framework of hermeneutics was used in this study to investigate the topic of recreation impacts. This chapter will describe the normative commitments of the hermeneutics framework, the research design implemented by the author, and a description of sites located in Zion National Park, the context where this study was performed.

Research Approach

This study utilizes a qualitative research approach to investigate the perceptions of recreation impacts by managers and visitors of Zion National Park. Patterson and Williams (2002) define qualitative research as “those approaches in which empirical systems are represented by nonnumerical measures.” This form of representation was selected for two reasons. First, the phenomenon under consideration for this study is inherently qualitative. The rich meanings and perceptions associated with recreation impacts are not easily quantifiable. It is therefore necessary to employ a qualitative approach to achieve a more holistic understanding of impacts, rather than a multivariate understanding (Patterson and Williams 2002).

The second reason for a qualitative research approach is based on a review of past research. White et al. (2001) have challenged previous impact research for relying on abstract or hypothetical survey questions that fail to capture important contextual

influences. They argue that survey questions have used inherently leading words such as “vegetation loss” and “damage” that prime visitors to notice and negatively evaluate impacts. Based on this argument, this study purposefully selected a qualitative research approach. This approach allows for a better description and understanding of the meaning visitors and managers place in the study’s central theme of recreation impacts.

Theoretical Framework

This project was guided by the major tenets of the hermeneutic philosophy. Kvale (1983) defines hermeneutics as the study of “objectifications of human cultural activity as texts with a view to interpreting them, to find out the intended or expressed meaning, in order to establish co-understanding, or even consent.” The primary concern of hermeneutics is with systems of meaning. These systems of meaning reflect how individuals experience and construct the world. Reality is therefore understood in terms of meaning, which is co-constituted through transactions between the intentional consciousness of the individual and the world (Patterson and Williams 2002; Glaspell 2002).

Hermeneutics assumes that the nature of human beings is one of always trying to understand the world around them (Arnold and Fischer 1994). To understand this nature of reality, hermeneutics takes the ontological commitment that multiple realities are present that vary across time, culture, and individuals (Patterson and Williams 2002). This commitment however does not go as far as to assume a stance of absolute relativism. Both understanding and meaning are not considered relative because hermeneutics argues that meaning is co-constituted by an individual and the others around them. Hermeneutic research is therefore an interpretive approach guided by an interest in obtaining a possible

consensus of understanding between actors within the frame of reference of self-understanding mediated within the culture. Understanding is achieved through interpretation of meaning rather than the discovery of truth (Glaspell 2002).

Interpretations of meaning are characterized by the concept of a hermeneutic circle (Kvale 1983). Arnold and Fischer (1994) describe that a hermeneutic circle represents the idea that the meaning of a whole text is determined from the individual elements while at the same time these individual elements are understood by referring to the whole. This idea of an iterative spiral of understanding is central to the hermeneutic philosophy. The hermeneutic circle therefore creates a continuous back and forth process between parts and the whole to achieve an interpretation. Gradually, the interpretation of specific elements and the text as a whole emerge as an integrated comprehensive account (Arnold and Fischer 1994).

One of the major tenets of the hermeneutic philosophy is that interpretations are nonobjectivist. Since hermeneutics assumes multiple realities exist, it therefore argues that multiple interpretations are possible from the same data (Arnold and Fischer 1994). No single interpretation ever claims to be final or correct. All of our understanding is from a given perspective. Proponents of quantitative approaches may be uncomfortable with this assumption, but Patterson and Williams (2002) argue that interpretation is present in both quantitative and qualitative studies. Respondents to questionnaires still must interpret items of the survey instrument and decide how they are “supposed” to answer them. To address this concern and maintain a rigorous approach, hermeneutics chooses to shift the burden of interpretation from the respondent to the interviewer through the use of methods like open ended, in-depth interviews. With these methods, the

researcher not only provides an interpretation of the results, but can also clarify questions for respondents if necessary. This argument regarding the burden of interpretation is supported by a second tenet of hermeneutics that acknowledges the pre-understanding and prejudice that any researcher brings to a study.

The tenet of pre-understanding accepts that background a researcher brings to any project. It is not assumed that the investigator brings a clean slate to a project, absent of any prior knowledge or opinion. All investigators have a prejudice towards the topics they study. Each researcher brings their past experience, prior knowledge, professional background, culture, and expectations to their interpretation (Patterson and Williams 2002). Although the concept of prejudice or pre-understanding can be criticized, the hermeneutic philosophy argues that pre-understanding is necessary to be able to make sense of the findings in research (Arnold and Fischer 1994). To find the meaning in the words and actions of others a researcher requires an extensive knowledge of the themes addressed in order to be sensitive to the different nuances and connections of meaning present.

A researcher's finite horizon of knowledge constitutes their pre-understanding. This horizon of meaning forms the forestructure of understanding an individual brings to any given situation. This forestructure of understanding consists of an individual's collection of personal meanings. It reflects a person's current situation and understanding of the world (Glaspell 2002). This structure acts as a boundary to understanding, enabling the researcher to interpret meanings rather than limiting them (Patterson and Williams 2002). Through the hermeneutic circle and progressive iterations, the interpretation for a given topic creates another horizon of meaning. Arnold and Fischer (1994) argue that for

understanding to occur there must be some shift, change, or expansion of the horizon of meaning for the researcher. This shift or change is called the fusion of horizons in the hermeneutic philosophy. This fusion then creates a new horizon of meaning for the researcher, which becomes his or her new pre-understanding and forestructure of understanding.

These concepts and tenets of the hermeneutic philosophy form the theoretical framework for this study. The most important of these assumptions is that of the pre-understanding that the researcher brings to the study. In regards to this study, the pre-understanding that constitutes the forestructure of understanding of this researcher was created through a thorough literature review and past experience in natural resource management. This past experience includes personal expectations for a wilderness setting and work experience in environmental education.

This researcher's personal expectations for a wilderness setting were developed at a young age. A wilderness is expected to be a pristine setting that is undeveloped and lacks people. Conditions in a wilderness are expected to be "natural" and lacking evidence of artificial disturbance. Work experience for this researcher has included time as a youth environmental educator in Leave No Trace camping and conservation ethics. These experiences have shaped what conditions and behaviors are appropriate in a wilderness setting and contribute to this researcher's forestructure of understanding in regards to impacts. This forestructure of understanding guided the methodology further discussed in this chapter.

Study location

The context for a study is very important in grounding the research. The hermeneutic philosophy emphasizes that interpretations are co-constituted by the researcher and the individuals around them (Kvale 1983). Grounding the research within a specific context provides a boundary for these interpretations. A specific site allows for a deeper understanding of the individuals of that location and a better understanding of the different interpretations between individuals for that context.

By the hermeneutic philosophy, any context may be utilized for research given the limitation that the interpretations are unique and most applicable only to that site. The location selected for this study was Zion National Park, located in southwest Utah. Zion is part of the Southwest's "Grand Circle" of national parks, monuments, and historical areas (National Park Service 2001). Established by Congress in 1919, Zion was one of the earliest additions to the National Park Service. Including the Kolob Canyons area, the current boundaries of the park encompass over 148,000 acres.

The park is renowned for its striking rock towers and maze of narrow, sandstone canyons. The spectacular Zion Canyon, cut by the North Fork of the Virgin River, is the largest and most visited of these canyons in the park. Attractions like Zion Canyon and the Virgin River Narrows makes Zion a highly visited park. In the front-country and backcountry areas, over 2.5 million visitors visit Zion National Park annually (National Park Service 2001).

Zion National Park was selected as a study area for three reasons. First, Zion National Park is largely managed as wilderness. Over 132,00 acres or 90 percent of the park is managed as proposed wilderness. A wilderness setting was preferred for this study

because past research on impacts has primarily focused on backcountry and wilderness areas. Zion National Park therefore provides a setting where assumptions based on past findings are most applicable. Second, the backcountry areas in the park are high use areas. Over 27,000 individuals visited the backcountry in 2002 (National Park Service 2003). This level of visitation provides the opportunity of achieving a diverse sample of backcountry visitors. Third, Zion National Park was chosen for this study based on convenience. During the course of the study, Zion National Park was in the process of conducting a visitor survey for the park's backcountry management plan. This provided the opportunity and resources for this study to be conducted concurrently with the park's visitor survey.

Sampling Frame

Patterson and Williams (2002) explain that the purpose of sampling is to represent the phenomenon being studied using some subset of its elements because the phenomenon is too large to be characterized in its entirety. Therefore, a central concern of any sampling frame is representativeness. Patterson and Williams (2002) argue that representativeness can be conceived in different ways and different scales. It may be a question of obtaining results that are statistically generalizable or obtaining an unbiased estimator of the population. In regards to this study, representativeness is conceived as the question of whether the data has provided for a rich or thorough representation and understanding of the individuals and phenomenon being studied.

Adopting a hermeneutic approach to research does not specify a particular sampling approach (Patterson and Williams 2002). The hermeneutic philosophy requires that the researcher recognize that a sampling approach must consider the multiple

competing goals in respect to representativeness. For this study, the goal is to provide a deeper, thorough understanding of how visitors and managers operationalize impacts. To accomplish this goal, it was necessary to conduct separate sampling strategies for the two respondent groups. A purposive or substantive sampling strategy was chosen for park managers and a convenience or pass-by sampling strategy was chosen for park visitors.

Managers were approached to participate in the interview process based on a substantive sampling process. For this study, a manager was defined as any full-time park staff with reasonable influence in park decisions regarding recreation impacts, visitor use, and resource conditions. This definition excluded part-time workers, interns, and maintenance employees within the park.

Patterson and Williams (2002) suggest a substantive sampling principle for studies where the topic is less concrete and tangible. This criterion is applicable for this study where the purpose of the study is to more clearly define and describe impact definitions. In substantive sampling, the objective is to generate sound accounts of how individuals perceive, experience, and interpret the topic of study (Gold 1997). To accomplish this, initial respondents are selected based on demonstrating a good overview of the study's topic. In this case, these respondents were the staff most directly involved in making managerial decisions regarding recreation impacts in the park. These respondents were then asked to identify those who would be representative of park staff and provide a unique perspective to the study.

Visitors were approached to participate in this study based on a convenience or pass-by sampling strategy. Using this approach, visitors were contacted at trailheads or attraction points within the park. Attempts were made to interview all individuals

qualified for the study except those who arrived while another interview was underway (Hoss and Brunson 2000). A backcountry visitor was defined for this study as any user who received a permit from the backcountry office. This included overnight backpackers, overnight canyon hikers, and canyon day hikers. These groups were selected because of their opportunities to encounter impacts within the park during the course of their visit. They were also selected because each group had the same opportunity to receive an orientation from park backcountry staff when acquiring a permit. This orientation included written information on waste management, personal communication from park staff, and the viewing of an 8-minute video addressing Leave No Trace ethics. Day hikers and canyoneers were specifically included in this sample along with conventional backpackers because both represented a substantial proportion of the park's visitation during the sample period.

It is important to acknowledge that the results yielded from this sampling approach were not statistically generalizable, but that is not the aim of this type of hermeneutic approach (Patterson et al. 1998). Utilizing a substantive and convenience sampling approach was consistent with the goal of this study to provide a rich, deeper meaning and understanding of the concept of recreation impact. Therefore, these two sampling approaches were sufficient in providing a representative sample of the populations selected for this study.

Intercept Site Descriptions

Managers were not intercepted for interviews. A meeting place and time was scheduled with each individual prior to conducting the interview. The location for these interviews was typically in the individual's office or in employee common areas located

at park headquarters. These interviews were conducted in a one-on-one format without distractions from other individuals.

Visitors were intercepted at three locations within the park: Scout's Lookout on the West Rim Trail, the Grotto shuttle bus stop, and observation deck at the end of the riverside walk located at the Temple of Sinawava shuttle stop. These locations are illustrated in Figure 1.

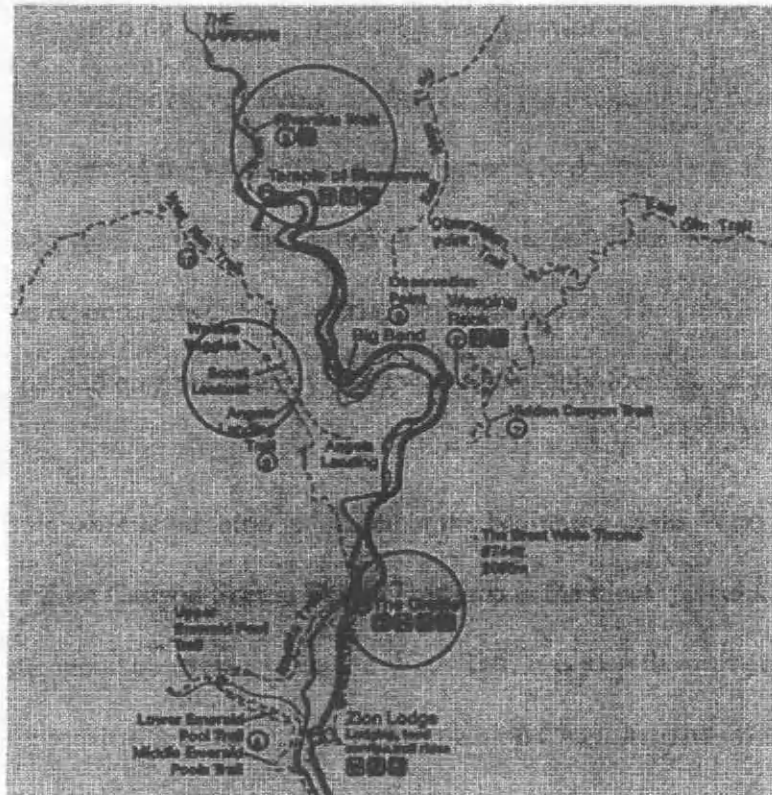


Figure 1: Location of three intercept sites within Zion Canyon.

Source: Zion National Park Maps Website: www.nps.gov/zion/Maps.htm

These locations were selected for two reasons. First, these intercept locations are located at the two main backcountry access points located in Zion Canyon. All day and overnight use of the Virgin River Narrows and its connected day-use canyons must exit

via the riverside walk at the Temple of Sinawava. Likewise, the majority of overnight backpackers on the West Rim Trail enter and exit via Scout's Lookout and the Grotto shuttle bus stop. These sites also allowed for comparisons between the number of interview responses and backcountry permit numbers issued for specific trails because backcountry staff document and monitor permit use and numbers for these access points. This provided a check of representativeness in the sample achieved for the researcher.

A second reason for selecting these sites was the relationship of this study to the park's backcountry visitor survey being conducted for the backcountry management plan. This relationship allowed the researcher to simultaneously conduct both studies without omitting sampling dates or times that could be beneficial for either study. This was possible because respondents did not overlap between studies. The park's backcountry visitor survey focused on front country users while this study focused on permitted backcountry users.

The Grotto shuttle bus stop is located at the beginning of the West Rim Trail along the park's Zion Canyon Scenic Drive. This area is the most typical access point for users planning to spend an overnight on the West Rim. It is also the exit point for all visitors traveling south along the West Rim from Kolob Canyons. The Grotto consists of a picnic area with access to drinking water and public restrooms. During the summer months, this area is only accessible via the Zion Canyon shuttle bus system. This transportation limitation provided the opportunity to intercept visitors while waiting for the arrival of a shuttle to return them to their vehicles down canyon.

Scout's Lookout is located on the West Rim Trail at the transition area where the trail connects to the popular, day-use Angel's Landing Trail. This open, sandy area is the

location where overnight users from the West Rim typically stopped for lunch or a break. This location was selected when a decision was made to conduct a wildlife feeding study for the park. This provided an additional opportunity to intercept visitors on the West Rim Trail.

The observation deck of the riverside walk is located one mile up canyon from the Temple of Sinawava bus stop. The deck is a concrete landing located alongside the Virgin River with Zion Canyon. Many users utilize this site as access to the river and for an opportunity to rest or eat. This area is where day hikers begin their hike up canyon in the Virgin River to the Narrows and Orderville Canyon, but more importantly, this location is where all Virgin River Narrows day-hikers and overnight hikers must pass to exit to the shuttle bus stop. It also is the exit location for multiple slot canyon hikes that connect with the Virgin River. This provides a “bottleneck” where many visitors could be intercepted in a very efficient manner. Needless to say, it was also a preferable location due to the high volume of use passing through the site.

Interviews with visitors were conducted in the summer of 2004 between June 24th and August 9th. Sites were sampled concurrently with the park’s backcountry visitor survey on rotating morning and afternoon shifts. The morning shift was conducted from 9 a.m. to 3 p.m. and the afternoon shift from 1 p.m. to 7 p.m. Sites were not sampled an equal number of days due to the sampling framework developed for the park study. This created a situation where the Temple location was sampled slightly more often than the Grotto or Scout’s Lookout. Fortunately, this strategy was preferable for this study due to the substantially large amount of traffic at the Temple location compared to the Grotto and Scout’s Lookout.

Interview Guide

Data was collected for this study using in-depth personal interviews. As described earlier, the researcher brings a pre-understanding or prejudice to the study. In this case, that prejudice consists of the researcher's own operationalization of recreation impacts. It is therefore necessary to define the researcher's personal definition of impact. For this study, impact is being defined as "any perceivable, visitor-related change in the quality of a resource or social conditions in a backcountry setting."

In the hermeneutic philosophy, the researcher adopts the role of "self as instrument", participating in an emergent discourse with the respondent (Patterson et al. 1998). The interviewer is to an extent a co-creator of the texts along with the respondent as he or she interprets and negotiates interpretations with the interviewee (Kvale 1983). The role of the interviewer is therefore to lead respondents to certain themes and to clarify ambiguities in responses without directing them to express specific meanings (Kvale 1983; Patterson et al. 1998). This process occurs through the creation of an interview guide.

The interview guide is semi-structured. It is neither a free conversation nor a highly structured questionnaire (Kvale 1983). In crafting an interview guide, the researcher seeks a balance between one single, pre-planned question and a standard set of questions that are asked with no additional probing. This balance focuses on certain themes, which the researcher tries to have the interviewee describe and explain. Kvale (1983) describes the interview process as presuppositionless, where the interview is open to new and unexpected phenomenon. It is an emergent process where it is acceptable that

insights from earlier interviews will be used to guide and improve subsequent interviews (Patterson and Williams 2002).

Two different interview guides were design for this study, one for the managers and one for visitors. The visitor interview guide consisted of 10 questions and the manager interview guide consisted of 13 questions. Because managers have a greater familiarity with impacts in Zion National Park, additional questions were necessary for their interview guide and some questions required different wording. Distinctly different questions for managers were also necessary to allow the same themes as in the visitor interview guide to be addressed. These interview guides are found in Appendix A and B.

White et al. (2001) criticized other studies for using verbal cues or wording that possibly primed respondents to notice and negatively evaluate impacts. Specific attention was therefore paid to the language used for each question in both interviews guides. The term “impact” was not used in initial questions to avoid eliciting responses that may only be based on an understanding of management perceptions and not the individual’s personal perception. Wording that characterizes impacts in a strictly negative sense was also omitted. This was done to allow the respondents to address impacts in either a positive or negative connotation.

Additional probing questions were asked to allow the researcher to clarify interviewee responses. Many of these probes were pre-planned within the interview guide to address possible responses that needed specific clarification. Also, the interview process is an emergent process so additional probes were also established during interviews to improve subsequent interviews.

Demographic data was collected from both managers and visitors at the beginning of each interview. For visitors, demographic data included gender, approximate age, place of residence, group size, and whether the respondent was a first time or repeat visitor. Place of residence was asked to determine if geographic variability was present in the sample. Respondents were asked if they were repeat or first time visitors because this response could demonstrate in the analysis any obvious differences in impact perception based on experience. White et al. (2001) have argued that visitors with prior experience at a specific site may have more accurate expectations and therefore be less likely to feel negatively about conditions they encounter. Weather conditions were also recorded during visitor interviews to document the current conditions. This information would then be available to possibly explain any discrepancies or variations that occurred during data collection.

For managers, demographic data included gender, previous positions and locations worked, years of employment by the National Park Service, years of employment by Zion National Park, and whether they had visited Zion prior to their employment by the park. This data was collected to determine if a range of experience and positions were sampled. Prior visitation to Zion was inquired about to determine what changes the manager has witnessed since their first visit to the park.

Demographic data for visitors can be found in Appendix C. Demographic information regarding managers has been omitted to protect the anonymity of each respondent as promised to them during the interview process. Managers have also been given non-gender specific pseudonyms to protect their anonymity.

Response Rate

The overall response rate for visitor interviews was very good. During the data collection period, 40 interviews were conducted with park visitors with only four individuals refusing to participate. Three of these four refusals were from day hiking canyoneers who stated time as the primary reason for refusing to participate. Interviews lasted typically eight to ten minutes and consisted of groups of two or three individuals. Of the 40 interviews, 24 of the groups were overnight Narrows hikers, 10 West Rim backpackers, 4 Narrows day hikers, and 2 canyoneers. Twenty-three of the respondent groups were first time visitors to the park.

Eleven managers were interviewed for this study with no rejects. One interview was conducted and not analyzed due to tape recorder malfunction. Interviews lasted on the average from 30 to 35 minutes in length. It is notable of this sample that eight respondents were female and three male. This variation correlates very strongly with the gender diversity found in manager positions in the park. On average, respondents had over four years experience in Zion National Park and over eight years experience with the National Park Service.

It is important to note that the number of interviews collected for this study was not predetermined. As argued by Gold (1997), obtaining data is the key factor in documenting a phenomenon, not the number of interviews conducted or responses obtained. Data collection concluded when the researcher felt that the meaning of the topic had been sufficiently addressed. This determination was made when it appeared that new topics and issues were not being raised or addressed in respondent interviews.

Analysis

Interviews collected for this study were tape-recorded. Upon completion of data collection, the tapes of the interviews were sent to a professional and transcribed verbatim. The interview transcriptions were read by the researcher while listening to the original interviews in order to clean up any mistakes made in the transcription process and provide for first impressions of the data. This process was also necessary because windy conditions and background noise during interviews caused some errors to occur during transcription.

A hermeneutic data analysis is centered on the development of an organizing system. The purpose of an organizing system is to identify predominant themes through which interviews can be meaningfully organized and interpreted (Patterson and Williams 2002; Patterson et al. 1998). Developing the organizing system is the analysis, while the final organizing system created becomes the product of the research (Patterson and Williams 2002). The organizing system is successful when the analysis provides a holistic interpretation of the data, unlike content analysis that tends to be reductionist and multivariate in nature. The aim is not to provide a poor imitation of quantitative approaches, but to show the inter-relationships among the themes and categories the data tends towards (Patterson and Williams 2002).

Transcribed interviews were entered into the QSR Nvivo program for organization and coding. QSR Nvivo is a qualitative analysis software package that provides the researcher with an opportunity to structure and interpret their analysis. Sentences and phrases within interviews are given unique code names that can be structured into categories. Codes may be associated with multiple sentences and can be

organized in multiple relationships within the project. It is important to note the QSR Nvivo does not perform the analysis itself, but merely acts as a tool to assist the researcher in their analysis. The researcher makes decisions about coding and relationships.

Analysis began with an in-depth exploration of individual interviews. This individual or idiographic analysis began by identifying and marking meaning units within the text (Patterson and Williams 2002). Meaning units are segments of the interview that are comprehensible on their own and typically are groups of sentences. The researcher focuses on the meaning units that provide the greatest insight into the phenomenon being studied (Patterson and Williams 2002).

Once the researcher felt the nature of the meaning units was understood, thematic labels were developed under which meaning units were grouped (Patterson and Williams 2002). The meaning unit themselves constitute the hard data of project. The thematic labels or themes are the researcher's analysis and interpretation of the phenomenon being studied.

After the idiographic analysis of individuals was completed, the researcher continued with a nomothetic analysis. A nomothetic analysis is performed to identify themes that are relevant beyond the experience of separate individuals (Patterson et al. 1998). In the nomothetic analysis, the researcher interpreted the themes created for individuals to make comparisons among them. This analysis took place in two analysis phases. The first phase was to examine inter-relationships among all visitors interviewed in the study. Likewise, a comparison was made between all managers interviewed to determine relationships and correlations. This analysis provided the researcher with

overlying themes that could be directly associated to managers and visitors separately. The second phase of nomothetic analysis consisted of comparing these overlying themes between managers and visitors in an attempt to answer the purpose and research questions driving this study.

The product of this analysis is an organizing system that explains the differences of impact perception between visitors and managers in Zion National Park. This organizing system is the unique interpretation of the researcher and can be justified by the meaning units and themes later described in chapters 4 and 5. The presentation of these meaning units and themes provides for the opportunity of peer review and for other professionals to come to the same conclusions as the researcher.

Limitations

There are a few notable limitations of data collection in this study that need to be addressed. First, weather had a noticeable effect on visitation patterns and visitor activity. Temperatures in Zion Canyon were typically in the high 90's with 100-plus temperatures not uncommon during the sampling period. Because the weather was hot and dry, permitted visitors who utilized the backcountry did alter their destination choices. Visitation numbers on the West Rim Trail decreased drastically during the month of July due to high temperatures and scarcity of available water. Visitors of all areas also changed activity patterns, choosing to travel more often in the early mornings or early evenings when temperatures were cooler.

The timing of when sampling and data collection occurred was also a limitation. As noted earlier, sampling occurred concurrently with the park's backcountry visitor use survey. These periods were shifts from 9 a.m. to 3 p.m. and 1 p.m. to 7 p.m. respectively.

As mentioned, weather affected visitors' travel times, therefore allowing some prospective respondents to be missed when the researcher was not on site. In addition, a portion of permitted visitors consisted of Narrows day hikers and day use canyoneers. Both these activities required a minimum amount of time to complete and it was not uncommon for visitors to complete these activities after the day's sampling period was completed.

When visitors were intercepted, many had completed moderate to strenuous hikes. It was necessary to interview respondents on site and in context while their memories of their experience and resource conditions were relatively fresh. The tradeoff to this approach was respondents were not as relaxed and often times did not have a lot of time for a lengthy interview. If visitors were intercepted off site without weather, fatigue, and other factors, interviews may have lasted longer.

Finally, it is important to recognize that the data and interpretations of this study are not generalizable to other areas or across all wilderness visitors and managers. The hermeneutics philosophy seeks representativeness in the sample by eliciting deeper, richer meanings from respondents. The results and conclusion of this study provide insight into the perceptions of visitors and managers in Zion National Park. These insights could prove applicable to other settings, but this suggestion is not warranted without further study.

CHAPTER FOUR: RESULTS/DISCUSSION

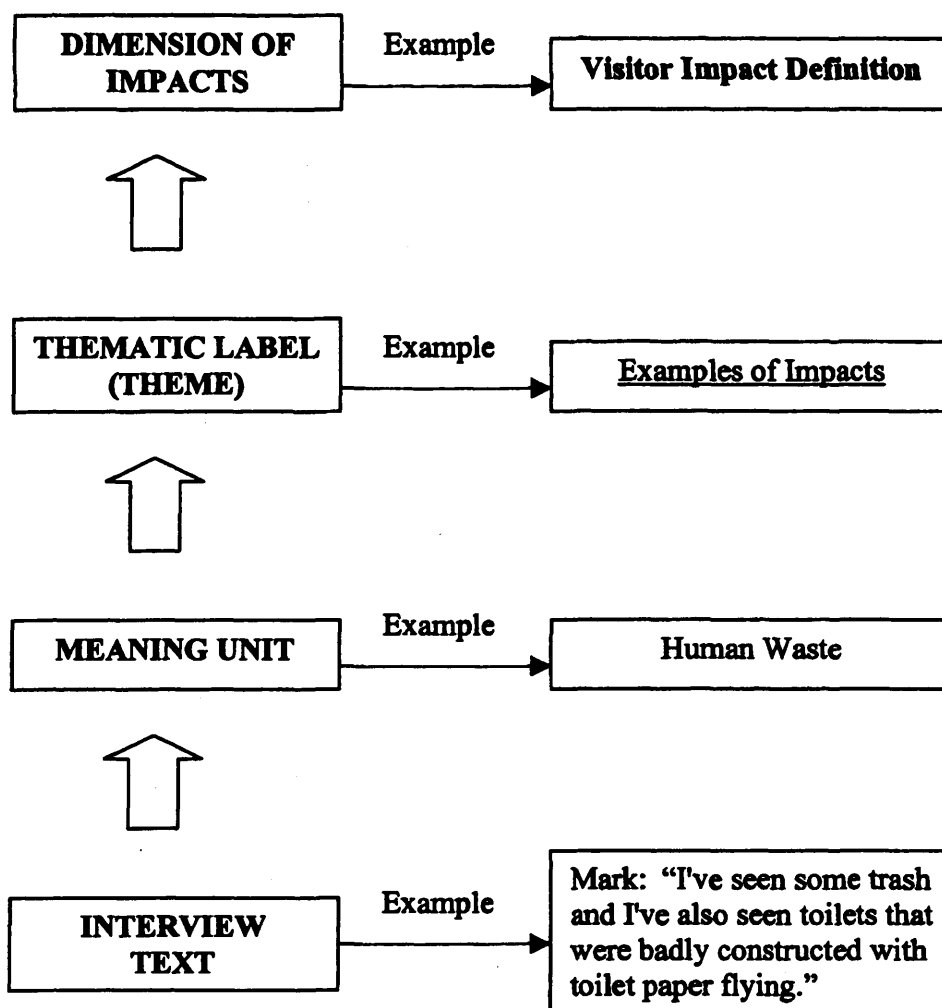
This chapter presents the results from the idiographic and nomothetic analysis of the interviews. This analysis is focused on interpreting the meanings of impacts represented by respondents through the creation of an organizing system. Through this process, the emergent themes of the study are arranged into a structure that expresses the richness and detail of each theme conveyed by the interview respondents. The steps involved in the development of the organizing system are illustrated in Figure 2.

Development of the organizing system began at the idiographic level when meaning units were assigned to each interview. Meaning units were assigned with passages of text using labels such as “changing conditions”, “inappropriate behavior”, and “management focus.” These labels were then placed on text with similar meanings to organize the topics raised by both visitors and managers.

Once meaning units had been assigned to each interview, the nomothetic (across individuals) was conducted. This analysis was framed by utilizing the project’s interview guide. Chapter 3 described how the interview guide for data collection was developed around the three research questions that drove this study. Because the interview guide was grounded by the research questions, these questions were utilized to form the dimensions that would shape the nomothetic analysis. The three dimensions of impacts based on the research questions for both managers and visitors are: perception, definition, and importance.

With these three dimensions framing the analysis, meaning units were then associated under each dimension as applicable. Thematic labels were derived from these meaning units to provide an organization of the topics raised during the interviews. These

Figure 2: Flow chart for development of organizing system



overlying themes are presented to interpret the meaning conveyed by visitors and managers for each dimension of recreation impacts.

The following sections present the overlying themes associated with each of the three dimensions of impact. First, the themes that emerged across visitor interviews are described. For each theme, quotations were placed in the results to demonstrate the interpretation of the researcher. The variations in visitor responses are presented to address any arguments of selectivity by the researcher. Second, themes emerging across manager interviews are described. For both visitors and managers, themes are not presented based on importance, but in the order that provides a logical flow of concepts.

This chapter concludes with a comparison of the emergent themes between managers and visitors. This is possible because the three dimensions of impacts framed the development of thematic labels for both groups and therefore allows for direct comparisons based on these dimensions.

VISITOR RESULTS

Visitor Dimension #1: Impact Perception

The perceptions visitors have of the backcountry are an important dimension in understanding impacts. It was an important part of this study to learn what conditions visitors are most perceptive of and if they can evaluate conditions as recreation impacts prior to being directed to through the interview.

Visitors seemed to focus largely on the aesthetics of the park. Witnessing the topography and unique aspects of the backcountry occupied a large part of their attention. They were capable of describing conditions, but some visitors' perceptions were compared to conditions they had experienced in other parks. Visitors not only described

the conditions they observed, but also the conditions they expected to see that were absent. The awareness of management issues was also an important part of visitor perceptions. They commented on the issues they felt park management was focusing on and evaluated the actions management was taking in the backcountry.

Aesthetics

The scenery and aesthetics of Zion National Park were a key element of most visitor perceptions. When asked to describe Zion National Park to someone who had never been there before, many visitors focused on the beautiful aesthetics of the park. They focused on the geological features and topography of the backcountry as central elements of their descriptions.

At times, visitors even struggled to put their experience into words. They searched for words that could adequately describe their impressions. In essence, the scenery of the park was something that could not be described, but needed to be experienced.

Kelly: How do you describe a color? You have to see it to understand it. It's sheer cliffs, the abundance of growth in the canyon. I don't think you can describe it in words.

Nick: Well it's not just that there's red rocks and canyons. The way that they're cut is breathtaking, it's spectacular. Some of the rock walls that they have here in the park I've never seen just a sheer rock cliff as big as that. And to somebody who's never been here before, I'd just say come up and see it for yourself. You can see it in the pictures but it doesn't really give you an idea of the magnitude of what's going on.

Aaron: I think it's ethereal, other worldly. It definitely, I would say it's an experience outside of normal life.

Bjorn: You asked earlier what is neat about the experience, and that is every time there's a curve in the river you have an entirely new spectacle to see so it changes all the time. You get a lot of inputs so you really don't get a lot of time to get tired or to get bored of what you're seeing.

Visitors commonly used adjectives like “beautiful” and “spectacular” to describe and express their impression of the scenery in Zion National Park. They paid particular attention to the coloration of the rocks and the surprising amount of green vegetation interspersed throughout the canyons.

Wendy: It's like nature without a bunch of people in it.

Betsy: Beautiful, quiet, spectacular.

Lauren: Well I knew it was gorgeous just from the drive that we took through the park. But it's [Orderville Canyon] so much more spectacular. We only had three pictures in the camera. It was like you wanted to take three rolls because everywhere you turned there'd be a crevice, something that was just incredible.

Paul: Red, it's very red. How do you describe a place like this? It's beautiful. It's much greener than I imagined. There's a lot of life down in the canyon that I didn't expect to see. Sheer drops. Everywhere you look there's a sheer wall of rock and it's stunning. It's really a stunning place.

Jeff: Spectacular. You're at the bottom of a canyon looking straight up at walls that are just straight up. Looks like something out of Lord of the Rings, where they're entering Mordor, except it's pretty and no smoke.

Comparisons

Visitor perceptions and awareness of conditions in the park were often expressed in relationship to other national parks or recreation areas. Variations in social and resource conditions in Zion were expressed by comparing the conditions to the visitor's past experiences. Of the variations described, social conditions were a key topic addressed by visitors in their comparisons. Many respondents commented on how Zion is much less crowded than other areas they have visited.

Comparisons were often made in relationship to other areas in the Southwest. The Grand Canyon, Yosemite, and Arches were the parks most frequently addressed in visitor responses. These parks were the most often described because visitors in this study had

past experiences in these parks and found resource and social conditions comparable to Zion.

Richard: In Arches, we were in Arches in March and there are probably fewer people there. But it just seemed in Arches it sort of, the way parking is designed it spreads people out whereas the way this is, it's a canyon, it concentrates everybody so if there's a lot of people around, you notice it, at least I do.

Mike: Last time we came out here we went to Grand Canyon first. You know, it's always really crowded and we couldn't get backcountry passes and stuff so we came here and it was great.

Jeff: For example, I tend not to visit Yosemite even though I lived fairly close to it. I went to Yosemite once just so I could say, okay, I've been there. And then I decided never to go back because it is fairly impacted. You know, the population of people using that took a lot away from the experience.

Doug: After 35 years, I've done the bottom of the Grand Canyon, I've done many of the peaks in the Sierras, Trinities, been all over like Glacier, Yellowstone, all those. This hike is it. I can see why National Geographic rated this number two in the world for a scenic destination.

Lauren: It was clean. It looked well taken care of. It didn't look worn. The Sierras up in California, you can see people's effect and I didn't get that feeling here.

Another comparison some visitors made was the differences between the front country and backcountry. These respondents became aware of the transition areas or boundaries between the front country and backcountry when they began encountering more people. Most visitors were not negatively affected by these encounters because they were enthusiastic about completing their trip. A few respondents did however describe that encounters detracted from their experience and that they lost their sense of solitude after encountering groups.

Lauren: [We] ran into a few groups and then since we've hit this main river its been crowded since then but boy it was great. Well, we were glad. We knew we were getting closer to the main river, which was good because we were ready for that. But it was, you lost some of your sense of solitude when, that serenity that you have.

I: How does that dynamic change when you starting hearing the front country users coming up traffic?

Nathan: Well, we're back. The tourists are here. You know? I don't judge them. I don't, we're all here to, everyone's America. But, I don't know. I've never really had a negative experience. But it does take away somewhat.

Paul: It's kind of neat actually. I like seeing people coming up. For one thing it tells us we're close to the end and that was nice because we were ready to be done. But guys were repelling. You have families with little kids. It's kind of neat. Yeah, it didn't detract from the experience at all.

Observed Conditions

Respondents were aware of a variety of conditions during the course of their trip.

One of the more common conditions they described was the cleanliness of the backcountry. The strength of this visitor perception emphasizes the fact that visitors in this study are very aware of the amount of trash and litter that they encounter in a backcountry setting. It becomes a condition of which these visitors are very conscious.

Dean: That's the first piece of trash I've seen in two days, I mean, with the exception of just very random little pieces that fell off of somebody's backpack.

Aaron: Well I haven't seen a lot of trash. In fact I've seen almost none. There's been a couple of empty water bottles lying around, but mostly people follow the guidelines.

Most visitors were also able to describe their impressions of the campsites they stay at or passed by during their trip. The conditions of these sites were very acceptable to these respondents. They described them as clean, well maintained, and having flat spots suitable for setting up their tents and making themselves comfortable.

Eric: They were pretty clean for the most part. I saw a little bit of toilet paper around a corner. But otherwise it was pretty clean for the most part.

Nathan: To me it seemed like the campsites were well taken care of. Everything was well maintained.

Dan: The campsite itself was in good shape. Didn't find trash.

Carrie: It just seemed like a nice flat place you could spread out and your own, it's kind of private. It was just a really great place.

Doug: So I looked at them from the standpoint of, one is it a good tent site. Is there a place to set up your stove? Does it have a good rock to set up your stove?

Another common condition visitors were aware of was weather conditions. With flash flooding and high temperatures constantly an issue in the park, respondents noted they were very focused on monitoring the changing weather conditions and taking appropriate actions.

Mark: Certainly aware of the cloud cover. It was in and out yesterday so it was good and when the cloud cover would go away and the sun came out we'd sort of hide. When it came out again we'd start walking.

Carrie: Paying attention in The Narrows, they said pay attention to the sky, that's your safety, with flash floods. We paid a lot of attention to that, kind of always checking.

Social conditions in the park were also seemed to be an important factor perceived by visitors. Respondents were capable of describing the number and types of encounters they had while on their trip. They also seemed cognizant of how encounter levels could increase or decrease during the course of their trip.

Richard: We didn't run into very many people really, but yeah, they're all very friendly, the people we did run into.

Mark: It's fun to see some people. It's not so fun when it's like a mall. This is a little bit like a mall.

Randy: This morning there was only a few people. But we got up pretty early. Now it's probably just packed. So there's a lot more people there.

An important part of this study was to determine what impacts and conditions visitors were aware of prior to being directly asked questions using the word "impact." In general, impacts showing evidence of people, such as litter, human waste, and trails, were the types of which visitors mentioned. Of the conditions discussed, trail conditions and

trash were the most frequently addressed impacts prior to direct impact questioning.

Trash was addressed in regards to the lack thereof of litter in the park. Visitors recognized trash, but most felt levels were below their expectations. Trail conditions were described as being adequate and their conditions acceptable throughout the backcountry.

Tom: Unfortunately there was a lot of trash left behind. That's about all.

Dave: There was a little bit of evidence of people that didn't follow the rules, you know, as far as human waste and tissue, toilet tissue and stuff. We carried everything out that we took in.

Joe: Definitely a broader trail. It doesn't bother me too much, as long as I don't see garbage or cigarette butts and stuff like that. Then it doesn't bother me at all.

Paul: Oh, the trails were fine. They were easy to follow. Really, there were a lot of really muddy parts, especially as you got down toward the water, really muddy. But that obviously can't be helped.

Paul: Somebody had made a fire there so there's a nice thing of ash in the middle and black on the ceiling.

Jason: There's a lot of invasive plants in this canyon. So they're products of people not paying attention or caring.

Visitors also took note when conditions in the backcountry surprised them. Some respondents commented on being surprised when conditions exceeded the level of impact they expected. The condition of the trail and the amount of litter were again the most common conditions that respondents addressed. Despite these conditions being acceptable to many others, a few respondents were surprised when the trail was highly developed and litter was more prevalent than they expected.

Mike: Well I guess I was surprised there'd be so much of it that was paved, not paved, but there was actually cement laid or something, which was kind of nice. But, so other than that, since I'd been here before it was kind of what I expected.

Nick: I was surprised at some places how well defined the trails were from point to point. Not just, of course getting back here closer to the end of the trail where there's more people using it, the trails were really well defined. But even up

higher it was real easy to follow some really well-defined trails. You know, I mean, we knew for sure that we weren't the first people coming down the canyon.

Kelly: I think the wear and tear on the canyon, the amount of garbage. We saw quite a bit of garbage today. It really surprised me. I think most people that come into the canyon do try to carry their garbage out. But I saw a lot of garbage today. Did you?

Absent Conditions

Respondents were perceptive of when the level of resource and social impacts were less than they expected or absent entirely. Given the level of use present in the park, visitors typically were surprised by how little they encountered evidence of people. Most also expected more signs of human use, such as litter.

Some visitors associated the lack of impacts to their observation of a lack of people. Many individuals expected to encounter more people while in the backcountry than they actually did. The fact that encounters and impacts were less than expected motivated these visitors to take note of these conditions and to discuss among themselves the lack of resource and social impacts in the backcountry.

Richard: I guess one of the things I noticed definitely was the lack of people or lack of impacts. There's definitely a trail down the Virgin River, but it's not so where there's people everywhere. So obviously it gets used but you don't really notice the use so much.

Lauren: You don't see the heavily cut in two trails. You realize, we talked about there being a 50 person max on that trail and I think it shows that it's been, that there's been an effort to have a minimal impact on the environment.

Nathan: I don't know what usage levels are, but honestly, I'm an ecologist and they're just, along the trails there's somewhat impacts and there's a little bit of trash, but it's not too bad. Like it's not that bad.

James: There was a, it's not, you don't notice the effects of human passage as much as I thought you might. Given the extreme use the area gets, I expected more, more trash, more carvings in trees, that type of thing. But it's in pretty good shape.

Paul: One of the great things about the backcountry is there's very little sign of, it's untouched. It just has an untouched feel about it. There's not a lot of signs of, you know, besides the trail itself, there's very few signs that humans have been, you know, messing around there.

Herb: We didn't see very many people at all. We did remark on how few people we saw.

Matt: We were impressed that there was nobody up there. I made the comment last night that I can't believe this is a national park and we haven't seen anybody at all, almost all day.

Management Impressions

Visitors' perceptions of management was an important theme addressed by respondents. Visitors were capable of expressing what they believed to be the most important issues on which managers were focused. Of these issues, limiting use and human waste were the most frequently mentioned issues. The level of use is an important topic because the backcountry has designated camping and all slot canyons have use limits. Human waste has become a focus of management education efforts and therefore has become a topic of which most backcountry users are aware.

Another important issue visitors in this study were aware of was safety. With the potential for flash flooding in canyons and the risks associated with canyoneering, managers have focused on communicating the necessity for safety to all backcountry users. Visitors appeared aware of management's efforts since many commented on the importance of safety instilled by park staff.

Richard: They seem to be concentrating a lot on reducing the numbers of people in any given area. Like the new subway permitting and the Slot Canyon permitting, which they hadn't had before because it was just getting overused.

Ben: From everything I've seen and read it seems like they're trying to keep the numbers down and trying to, it really looks like they're pushing education, you know, taking out what you take in. So I think they're doing a good job.

Randy: I know impact is one of their focuses because we got these bags for our human waste, you know. So that's different than the last couple times I've been here. So I know the priority is becoming higher.

Jared: From what I understand, not much biodegrades here so just like human waste, they've tried to key on, and you have to watch a video on it to make sure you don't leave trash around.

Mark: We saw a ranger early on. I think they're focusing on safety. I know they're focusing on waste management and that kind of thing.

James: Safety is probably one of the biggest concerns. They made, they tell you their whole spiel then they leave it up to the individual, which is the way it has to be or the way it needs to be. But they make sure you understand the risks. That's really, that was really our only experience with managers or rangers.

Along with being aware of management actions, visitors also appeared aware of the results of management efforts. The majority of respondents felt that management is doing a good job mitigating use and impacts. Some respondents specifically acknowledged that managers are successfully controlling the amount of use while still keeping areas accessible to the public.

Randy: But I think people are doing a fairly good job. It's clean. There's been other trails that we've been on, you know, back home and stuff that are dirty compared to this.

Adam: Like I think it's cool how Zion will only allow so many people to go up through there and you have to check in with the rangers before you do it and they make you sign out a safety checklist so you know everything that you need to adhere to and just kind of familiarize us with what they expect from us.

Kelly: I think they're doing a good job. I think they're allowing people to come in at a pretty high level.

Brian: I'm pretty happy with how they manage everything. Like the rangers never bother us. They just check our permits. I'm pretty much, I like how they run everything. It's a clean park. It's nice. Come down and get permits when I want.

John: I think they've done a real good job taking care of the parks, but allowing the numbers of people that come through.

Claire: The backcountry staff could be nicer.

Visitor Dimension #2: Impact Definition

A key objective of this study was to understand how visitors define recreation impacts. Interpreting the themes related to visitor's definitions was therefore an important dimension of this project. Visitors define impacts in multiple ways. Some were able to give a concrete, textbook definition, while others needed to give examples of impacts to express their definition. Still others defined the word "impact" in a completely different context. These individuals focused on the word's emotional meaning, associating their definition with the experiences and feelings the backcountry setting can invoke.

The dimension of visitor impact definitions also consists of the examples of impacts respondents gave. They described different types of resource impacts and how social conditions can be an impact. Visitors evaluated these examples based on whether they were acceptable or negative conditions. These evaluations appear based on the expectations respondent had for certain resource conditions and for the amount of people they will encounter on their trip.

What types of impacts visitors recognize first was also an important theme related to impact definitions. Respondents explained that the types of impacts they are prone to see first are those that are the most obvious and out of place in the backcountry.

Defining Impacts

Many visitors gave a very descriptive definition when asked to define a recreation impact. These definitions contained elements that were comparable to the generic definition of impacts presented earlier by this author. These visitors responded that impacts were directly caused by human actions in the backcountry. In their opinion, an

impact was a change in a condition from its natural state to one that typically carried a negative connotation.

Brittany: The trail left by humans and how you can tell when people have been there and what they're exactly doing to the environment around them.

Adam: The first thing that would come to my mind would just be like the human's impact on the wilderness.

Eric: Well I guess the simplest way would be just the toll, human actions and interactions are going to take on the landscape around you. Whether they're visible or not visible or whether they're destructive or not.

Aaron: Oh, impact by my definition is changing the environment from what it would be otherwise naturally in any way. If it looks, sounds, smells or feel different than it would be if you weren't there, then you've impacted on it.

Jason: Changes incurred by humans being in contact with the environment.

Herb: Well to me when you say it, there's a negative connotation or something. You can tell somebody's been there. They've changed .. that will always happen I think. I get a negative feeling from it.

Matt: Well a deterioration of the natural resource in the environment due to impacted people and association.

When asked to "define the word impact" some respondents answered by giving examples of conditions they categorized as impacts. Litter, human waste, erosion, and vegetation loss were some of the examples visitors gave when defining impacts. These respondents could not give a textbook definition to the word, but they evaluated impacts very similar to individuals who could express a more concrete definition. Impacts were again considered human-caused changes that have a negative connotation.

Richard: Well there was, for example, there was a, we've got the poop pouches now that, to cart out your own waste. But I guess either previous to that or something, there's one of the sites, we were up at the site and it looked very nice and came down around this rock there was a sandbar by the river and there's all this toilet paper coming up and shit. So that's definite impact and it was remarkably unpleasant. Just seeing people leave trash about. I mean, there was obviously a path down most of the creek, and that's impact.

Dean: I would start with litter, excess erosion, graffiti on the rocks. The river makes an impact.

Rob: Human waste.

Nathan: Trail erosion. How much damage to the vegetative growth, trash. I'm not saying there's a decrease in, I would say a decrease in biodiversity.

John: Trash and the numbers of trails that people hike on. The amount of vegetation that's impacted and eventually killed off.

Paul: That was the single most, biggest impact I saw would have had to have been footprints. Footprints, because, especially in the muddy conditions, there's footprints everywhere.

A few visitors initially defined impacts in regards to the emotional impact the experience had on them. These visitors described the word impact to mean the effect the natural surroundings had on their experience in the park. In this context, impact was defined as a positive emotional effect the natural setting had on a visitor's experience.

Mark: It's a huge impact. Just the wonder of it all, the natural beauty of it all. The fact that it's so wild. I guess that would be my definition.

Raymond: Impact? Impact on what? Impact on me? It just impacted me so greatly that I'm planning to come back here again next year, but be in a lot better shape then.

Lauren: Impact, it's stunning. I mean, you have to simply take a moment, stand still, breathe in and take it all, the view in. Feel it. It's like your whole body. You're seeing it, you feel it, you smell it.

Tom: I guess it's the impression that you get when, I don't know. I guess this is going to sound, like, corny, but I think of it as, like, getting a feeling for the texture of the landscape.

Examples of Impacts

When visitors were asked to give examples of impacts, the examples given were strictly resource conditions. Very few responses related to social conditions they were experiencing in the park. The examples respondents gave most often addressed types of

human impacts that were caused by inappropriate behavior by visitors. These impacts were conditions such as litter and graffiti.

Of the types of impacts mentioned during interviews, trash and litter were the most common examples given by respondents as impacts they witnessed while in the backcountry. Human waste, social trails, and graffiti were other examples of impacts that were also regularly mentioned by visitors.

Patrick: Probably the main thing is trash, like if I see trash, that's what I don't like.

Adam: As we were coming down you could start to see litter a little bit, water bottles, Arrowhead water bottles or little things.

Kelly: I think the wear and tear on the canyon, the amount of garbage. We saw quite a bit of garbage today. It really surprised me.

Betsy: [Human waste] Right in the middle of the trail. That's impact. We saw that. I mean, they didn't even go off.

Matt: Well I saw the improper disposal of human waste and toilet paper in Orderville Canyon, right on a sandbar, about three feet from the water. That was pretty gross.

Sharmen: Saw some writing on one of the canyon walls. You know where we stopped for lunch?

Brittany: Somebody drew Becky all over the rock and that was totally horrible.

Dave: Carvings can be pretty distracting too, in rock. I think that jumps out real easily when you see that too.

Karen: Heavily worn down trails, trash for sure, trampled, like where the trail, you can't really tell where the trail is. It almost looks like there's too many trails or people going off the trail.

Carrie: We just saw the trails really, just where people had tried to find higher ground and worn paths in the natural grass or trees or something there.

Additional impacts were mentioned but not as frequently as trash, human, waste, and trails. Impacts that were mentioned less regularly by visitors were typically indirect

changes related to human use. These impacts included erosion, vegetation loss, and invasive plants.

John: The amount of vegetation that's impacted and eventually killed off.

Patrick: Vegetation being walked on, walked through, trees being, limbs and things of that sort..

Jeff: My definition of impact would be something causing erosion.

Doug: When you get out of the river you see some definite erosion impacts,

Jason: There's a lot of invasive plants in this canyon. So they're products of people not paying attention or caring.

Impact of People

Most respondents addressed the social conditions in the backcountry separate from resource conditions. They acknowledged that people were the cause of certain types of impacts. People caused impacts to resource conditions by littering, leaving footprints, and creating trails. People also could have an impact on other visitor's experiences. Some respondents explained the reason they visited the backcountry was to get away from crowded conditions. When these visitors encountered crowds, the sense of solitude and quiet they were seeking deteriorated.

Adam: Just because of the mass, like the human impact. If too many people went through in a day it would get crowded. People might get ornery towards each other. Campsites would fill up and people would just be everywhere and the situation would obviously get worse.

Lauren: Our solitude was down a little bit. Preferred, kind of liked it better when it was just us.

Katerine: You can see the impact of people much more because you will find like orange peels, stuff that they just threw out. Which is not very good.

Boy: The smaller group has less impact on the terrain too. You get closer here and then every square inch of the shore there's footprints and mud all over the place whereas up in there it's just the trail and the rest of it's natural.

Mike: Probably the number of people back there. If it got too crowded in the backcountry I probably would lose my desire to go all the way back there because it's kind of part of the desire to do it is to get away from all the people. The quiet.

Patrick: I mean, you can see like clearly in places that people, like a lot of people have been walking all the time, like the trails and everything.

Impact Evaluations

An important part of respondent's definition of impacts was their evaluation of the acceptability of a given impact. Certain impacts always had a negative connotation associated with them when their presence was acknowledged. Respondents classified other impacts as being acceptable given the circumstances in which they encountered the impacts. It is important to note that impacts considered acceptable did not necessarily mean they had a positive effect on their experience. An acceptable impact was considered something that was appropriate given the setting in which visitors encountered them.

Impacts associated with inappropriate visitor behaviors were the most common types referred to as having a negative connotation. This included trash, fires, human waste, and social trails. Litter and human waste were two types of impacts that had a negative connotation whenever mentioned, while social trails and fires were not always considered to be negative when mentioned.

I: What kind of goes through your head when you see litter and trash and things like that?

Adam: Disgust. I guess you just think somebody is being careless.

Paul: And you're trying to get away from the city atmosphere, but nobody wants to pack out trash up here.

Aaron: I don't mean forest fire by lightning, I mean people that have made fires. I don't mean here necessarily, but in general, people make fires and they don't usually follow leave no trace. They'll make a fire ring and leave the stones sitting there maybe. You'll see the ashes.

Matt: Well we would have loved to have a campfire last night. It would have been great but when you come in a place and you see campfire rings everywhere and aluminum foil in it does kind of detract so not allowing campfires kind of keeps it more natural I think.

Sharmen: There was one campsite that somebody had obviously had a campfire in. And that was the same one where somebody with charcoal had written some graffiti on the wall. Why would you want to destroy something so beautiful? I don't know.

Dave: Carvings can be pretty distracting too, in rock. I think that jumps out real easily when you see that too.

Jon: Well human waste, obviously, is not pleasant to see when you're out hiking. And I guess having to pick it up is obviously not a good experience.

Boy: One thing we did see was somebody, you were supposed to go to the bathroom in like a silver bag.

Dan: Yeah. That was crap.

Boy: Bullock's cabin there's like this toilet paper just spread out.

Dan: Yeah. All over the place. That was weak.

Paul: Impact. There are a lot of trails cut through there along the river. Sometimes you can see two, three, four trails running through and that has an impact I'm sure. It cuts down the vegetation along the river. I have no way of knowing the extent of the impact, but footprints.

Nick: just like a bunch of little trails off the main trail. You know, maybe it's not needed. You know, you're just trampling all the vegetation.

The impacts considered acceptable often related to conditions that were considered appropriate given the type of activity in the backcountry. Bolting and gear for canyoneering were acceptable to some respondents because of their necessity in safety and their ability to be camouflaged. The majority of trails were evaluated as an impact by definition, but considered an inevitability if visitors were to access the backcountry. Along with trails was the concept of footprints. Some visitors remarked about seeing footprints, but they considered them a given for a recreational setting. Also, since canyon

areas had the potential to be washed up by flash floods, these respondents felt footprints would not have a lasting effect.

Brian: I think it'd be nice to like wrench out the old ones, rusted out ones, take those out instead of leaving them there, but the bolts are pretty small so you really don't see them.

Lauren: It was like at three points that somebody had drilled a hole and they had a permanent, and it seemed a little odd to see a permanent piece of climbing equipment and the ropes hanging from it, but we saw that three times. And it wasn't cluttered and there wasn't trash hanging around like the old ropes had been left there. Everybody was sharing it. You know, if they hadn't done that everybody that passed would be drilling so it was a good thing.

Richard: I mean, there was obviously a path down most of the creek, and that's impact. But, I don't know, it was, I guess I'm used to walking on trails so it wasn't that bad.

Mike: The trail was well kept. It wasn't overworn. Hadn't been widened in spots or, in addition to no manure or things like that, the trail was in good condition.

Mike: The actual trail is technically an impact. But other than that I didn't see a whole lot.

Karen: We noticed the concrete trail was obviously there for a really long time and we were wondering if it was naturally that way because it kind of blended in. It was cool the way the trail like blended into the terrain, although we knew it was cement.

Bjorn: The trail, obviously, is an impact, but it's nice to see that mostly it's one trail, it's not five trails that are going parallel. There are certainly places where there is a trail on both sides of the river, but it really wasn't as much impact as I expected it to be based on my experience of having seen the lower part twice before where there are hordes of people that are going up and down.

Paul: That was the single most, biggest impact I saw would have had to have been footprints. Footprints, because, especially in the muddy conditions, there's footprints everywhere. Which is kind of helpful because it kind of lets you know, okay, this is the right path. But it's a pretty major impact I think.

Dave: But, I mean, even footprints could be looked at as impact, but I wouldn't think of that as an impact. I guess because there's, one, they don't do damage to this kind of environment. Two, there's no way to avoid it. I mean, there's nothing we can do. We leave footprints.

Expectations

The way visitors define impacts can be related to the expectations they have for the conditions of the backcountry. These expectations relate to the types and amounts of impacts they will see in a backcountry setting. Some visitors expect a certain level of use in a national park. With use comes evidence of people such as trash and trails. Most respondents expected some litter would be present in the backcountry. They also expected a lack of people and a lack of development. Respondents explained that the backcountry should have a primitive feel, without man-made disturbances or intrusions.

Eric: Just lack of people, lack of evidence that people are around. And in the backcountry in a lot of places you might have primitive campsites, but some places you don't have campsites at all. You just look for a good place to camp.

Jared: It's kind of supposed to be like undisturbed nature, which is what I came out here to see. That's why we're doing the backcountry in all the national parks.

Mark: That it would be marked and that it would be, there would be flat places to sleep. But we knew we couldn't have fires so there wouldn't be a pit or anything like that. It was very undeveloped but it was nice.

Dean: I don't want a picnic table. I don't want trash cans. I don't want pit toilets. That's all I want is a place to throw a pad and a sleeping bag and a camp stove down. But my expectations were, I wanted something a little more natural. Without the domestication of trash cans and conveniences and stuff.

Eric: Well, considering probably how well used the trail is I would say that was about what I expected. I realize in national parks that's quite a bit different than in a national forest. You get in a forest and other than a trail you don't see a whole lot of evidence of people unless you do see some trash from time to time.

Amy: We didn't see that much trash. I mean, there was some, which, you know, is to be expected. I've seen a lot of people throw trash out wherever I've gone.

Jessica: I expected more, more trash, more carvings in trees, that type of thing.

Betsy: I kind of expected to see more people. There really wasn't that much, until you got down here.

Nathan: I'm expecting to run into more, have a higher encounter rate here than I am on trails I know where I go in the Adirondacks.

Tom: More people than I would want, but that's to be expected in a place like this I suppose. That, and the trash at the campsite, those were the only negative things. Yeah. I mean, I didn't actually anticipate the trash at the campsite, but I kind of thought that it would be, somebody had left a whole mess kit up there.

Most visitors mentioned that their expectations were met or exceeded in regards to the conditions of the backcountry. Most found conditions to be cleaner or less crowded than they expected them to be. When visitors did describe conditions to be different from their expectations, they most often referred to water levels in the canyon.

Ben: I thought we'd be in the water more actually.

Karen: The conditions? Yeah, we thought there would be more water, like the springs would have been fuller.

Dave: I think we expected it to be a little deeper at points. We expected to have to almost get in a little deeper than we did. I guess I've heard it's a drought this year so it's not as deep as last year.

Understanding when and where expectations for backcountry conditions were developed was a concept that emerged during the interview process. Some visitors described learning about appropriate behaviors and conditions at an early age. They grew up with a definition of what conditions are appropriate for a backcountry setting. This situation, however, was not the norm for visitors to Zion. Most respondents described learning about impacts and appropriate conditions in college or when they began to explore the outdoors more on their own. Their college education and their personal experiences developed the expectations that they now hold for backcountry conditions.

Matt: I'm a lot older than these guys, but I've always been, ever since I was a kid I used to pick up trash. Recycling and everything. Hiking with your parents do for you, you know, Teach you what to do.

Kelly: I think it's always been that way. I know Miles' family very well and they have a lot of reverence for the land too. We feel very close to our God when we're in this. We feel very prayerful and reverent and humble. And then the majesty of this country. And when we see people who are acting foolishly, like up here at the slide rock, somebody's going to break their neck there today probably. That makes us sad. There's no need to do that.

Ben: I was probably about, I don't know, 18 or so, younger kids that really didn't tend to care. Then when you're older and you see more of the effect that it has, you know, then it really rings home, what you need to, that you do need to take it out, especially when you see it build up in certain places.

Jason: Before college, I just wasn't aware that there was a huge problem. So just, you know, I did a lot of studies on ecosystems and the health, so it's just, it comes out and I work at a park that has the same problems as everywhere else.

Jon: That really didn't hit me [invasive plants] until I started working here and I had to go out and remove, on these weeding trips. I didn't even know that national parks did weeding or invasive plant removal. But now, I know just walking down the trail if I saw one I'd yank it out just because I know what a pain it can be and that it's bad.

Matt: I don't know. Like I was saying, I mean, certainly I don't want to see trash in this natural surroundings. When did it become important to me? Probably, I'm 26 now. I would say when I became conscious of it, maybe 18, 19, 20 years old. Something like that.

Recognition

Certain types of impacts appear more easily recognizable by visitors. In this study, impacts associated with inappropriate behaviors were the more frequently recognized. Overwhelmingly, visitors in this study stated that trash and litter were the impacts they recognized first. They explained that these impacts stood out because they are the easiest to see and often the most abundant impact. Impacts to the aesthetics like graffiti and toilet paper were also mentioned because their unnatural appearance made them glaringly obvious.

I: which one will you recognize right away if it's there?

Tesshi: I think trash. I think so. And, yeah, trash I think.

I: Why is it you recognize toilet paper and bottles? Like why do those things kind of stand out?

Amy: Because we know you're supposed to take everything with you.

Ben: It's bright white.

Amy: It shouldn't be back there.

Ben: Plus when you see a big bright white, you know, it just stands out.

Jon: Trash, maybe graffiti, people scratching on the rocks, sometimes social trails. That's what you see the most I would say.

Herb: Yeah, and there are, in places where, the trash and stuff, you watch where you're walking so you're going to see it.

James: Anything that is glaringly obvious, like things that don't belong there. There were a bunch of orange peels at our site. That's, you know, there's no orange trees around. Things like that. Things where something was imported into the backcountry and left.

Karen: When you see things that are too manicured or is trampled or destroyed, because nature doesn't, well trees fall, but nature doesn't stamp itself down. Nature doesn't move things. It doesn't have rocks in circles. It has, it's more disorganized.

Dave: Probably on the trail itself, you know, where water has sat and people have walked through it and you see footprints in the mud. A second trail getting formed through a meadow where there's tall grass and you can see another trail of grass trod down, you know, rocks getting kicked up and stuff.

I: When do you recognize that a trail widening is becoming an impact trail compared to say what would be a normal trail that you think would be acceptable?

Jeff: When I see a little bit of erosion or water, I guess when I see washouts starting to occur or when I see what looks like the border of the trail and then I see, where people have laid rocks that are supposed to be the border of the trail and I see it beyond that border.

Visitor Dimension #3: Impact Importance

The importance visitors place in their impact definitions is an important dimension in understanding recreation impacts. Respondents addressed the dimension of impact importance by explaining how they react to encountering impacts in the backcountry. Impacts can displace visitors to other parks or the lack thereof can encourage visitors to return.

Visitors in this study did not want to see impacts for many reasons. They described coming to Zion to experience a natural environment that is undeveloped and pristine. Some avoid places with signs of human use because they want to feel like the first person to visit the area and get away from their urban lifestyles. Because avoiding impacts was important to some visitors, they often change their behavior in the backcountry by picking up litter or planning their trips for less crowded days or times.

It was also important to some respondents that current conditions in the backcountry remain the same. They believe the backcountry should remain undeveloped and that current use levels should not increase.

Reaction

The type of reaction visitors had when they encountered impacts relates to the importance they place in their impact definitions. If respondents encountered less impact than expected, they typically were encouraged to return. When visitors experienced substantial negative impacts like trash or human waste, some reacted very strongly with both sadness and anger. These respondents tended to criticize other visitors for their inappropriate behavior and question the reasoning for “destroying” or “desecrating” the landscape.

I: Having it be clean, what kind of effect does that have on your trip overall?

Ben: It makes you want to come back.

I: How do you feel when you see stuff like graffiti and things like that? What goes through your mind?

Nick: It makes me sad. It really does.

Sharmen: Why would you want to destroy something so beautiful? I don't know.

Katerine: If you're a day hiker it's absolutely not difficult to just make a pack and pack all your stuff out of it. I mean, it's not a big deal. So it just makes me angry that people are so careless, especially here in the U.S., I mean, you have such a great landscape and you have a lot of it. Like in Europe everything is totally crowded and if something like that would happen people would get really angry.

Kelly: Bottles and candy wrappers and things like that. And that makes me sad. If they don't have a respect for it like we do, you know, we love it. It's, we grew our gardens with the water that comes out of this stream and to us it's sacred. We reverence it. We appreciate it at a very deep level and when others desecrate it willfully. We can understand them wanting to come and enjoy it just like us. But when they desecrate it intentionally, that's injurious to the way we feel about them.

I: What kind of goes through your head when you see litter and trash and things like that?

Adam: Disgust. I guess. Somebody being careless.

Devon: Ruins the whole effect. You know, we come from, some of us California, we're tired of seeing trash and filth everywhere and people so. Come outdoors to get away from all that. For wilderness.

The reaction visitors had to some impacts, like footprints, social trails, and erosion, appeared much weaker than their response to trash and litter. Respondents described trail and soil impacts as having a weaker effect because they are perceived as more temporary impact to the landscape. They believed that flash flooding and other natural processes periodically "clean" the canyons and remove any signs of human use. Because of this assumption, these visitors reacted less to encountering trail and soil impacts, placing less importance in them.

I: Is there a point where seeing tracks or trails would be too much and you guys would want to go somewhere else?

Dan: I wouldn't necessarily say that. It would detract from the overall experience but not so much that I would want to just leave in disgust or anything like that.

Dean: And realistically, I'm sure as far as foot erosion up there goes, every wintertime the volume of water probably scrubbed it clean and it starts all over again. So maybe foot erosion really isn't that big. I think that we do very little damage to the canyon that nature doesn't do itself.

Kelly: You can get a flood, I don't know if you've ever seen a flood in this canyon. But it can do thousands of times of impact above what man can do in a single day because the water comes down here at such a rate that can eliminate every sign of man in one day and then we go back in and, as if nothing had ever happened and then we make our impact again, make our little trails.

Doug: When you get out of the river you see some definite erosion impacts, but you've got to remember you're in a slot canyon subject to flash floods so that all goes, it isn't a big impact on the natural surroundings.

Jason: You know, if you had big floods coming through all the time it's going to wash that away anyway, so over the course of time you won't have those things there.

Reasoning

The reasoning behind the importance visitors place on impacts appears to relate to their motivation for their trip. Visitors enter the backcountry seeking a certain type of experience that they hope to realize. Most do not want to see evidence of human use because they want to feel like they are the first people ever to enter this landscape. These visitors seek a landscape they define as "natural" and "untampered."

Visitors in this study also explained that they don't want to encounter resource or social impacts because they are seeking an escape from the conditions of their everyday lives. Many come from urban areas where crowding and trash are common sights. For these people, the backcountry is supposed to be a place where they can leave these signs of modern life behind.

Dan: It looked like we were the first people to go there in a while, and that really helped make the whole thing look better, just feel better as a general experience, that fact that it was, you know, the whole, like, pioneering spirit. It's like, I'm here first kind of thing. It's kind of hard to put it in words. But yeah, the lack of a notable human impact on the place made the whole experience prettier, more fun, more enjoyable, more relaxing as a whole

Dean: No, I don't mean, I like to see the people, but I was here for, to see something without a lot of people around. You know, I'm not saying they shouldn't be here. I think they should. But my expectations were, I wanted something a little more natural. Part of the reason for coming out here is to kind of give yourself a reminder of what is still untouched by nature.

Robert: It's nice to have the illusion that, even the people through there every day, the illusion that you're the only one out there.

Richard: That's a very important thing to me too.

Karen: You want to see nature the way it is on its own, you want to feel like you're the first human to ever be there even though it's not true.

Rob: Experiencing nature in nature. Experience nature in its primary essence I guess.

Larry: Untampered with.

Nathan: Because, we obviously come here to come closer, to connect, we try and escape consumerism and all the crap in daily life.

Jared: Because I don't like looking at it. You see trash laying in the gutter when you're walking down the street in the city. You shouldn't have to look at it when you're out in nature.

Doug: If you're out there for a wilderness experience and you come across somebody's garbage dump, it's a turnoff. You kind of want to think of yourself as being the first white person there. You know? And that's always in the back of your mind when I go backpacking is am I someplace that other people haven't been?

Behavior

The importance visitors place in impacts appears to lead to direct effects on their behavior. The most specific behavioral action visitors described taking was picking up litter and trash. Because a clean landscape was important to these visitors, many carried out trash they find on their trip. Others became more aware of the impacts they can leave behind and made efforts to camouflage any traces of their visits to a site. The opportunity they have to visit the backcountry was important to them and when they recognized negative impacts visitors tried to alter their behavior to avoid causing more damage.

Tesshi: Yeah, if I see some trash or something, yeah, I will try to pick them up and then bring it back here as much as possible

Matt: I'm a lot older than these guys, but I've always been, ever since I was a kid I used to pick up trash. Recycling and everything.

I: How does that affect your overall trip when you start seeing things like [litter]?

Adam: That kind of bums you out, but for, I mean, that didn't happen until the last few miles or so.

Joe: If anything it makes me more aware of my own litter. It makes me want to pick it up more.

Eric: I don't throw garbage around and I try to pick up other people's garbage myself. When I camp I try and leave the camp better than what it was when I got there.

Brian: We, yeah, and when we were down camping, we camouflaged everything. Don't want to ruin it.

Josh: Yeah, don't want to be seen.

Brian: It's a beautiful place. You don't want to spoil that.

Randy: Two people walking down on the soft sand probably took, I don't know, 15 pounds of sand down because it was so steep and I'm sure more and more people will do that and this area of the river will get a lot of sand into it. I mean, I thought about it and, you know, if we can avoid it next time we will.

Another direct behavioral changes visitors make due to impacts are changes in their trip plans or sites they visit. Most respondents express that social conditions were the only types of impacts that caused them to change their plans, not impacts to resource conditions. The social conditions addressed by visitors in this study were crowding and limited access. Visitors alter the time of day and days of the week that they visit the backcountry to avoid crowds and gain better access to permits. They chose backcountry settings that were perceived to be less crowded, often being displaced from other places based on the number of people they encounter.

Randy: We would have done the hike in a day, but that would have put us going through The Narrows late in the afternoon and I decided, let's stay overnight and get up early and then finish before a lot of people get in The Narrows. So yeah, we changed it because of that.

Patrick: I can, maybe like a couple places, not here but a couple places maybe not come back in the future and gone somewhere else because like remembering, yeah, there's a ton of people there or like it was really crowded or something

I: Now have you ever had to change your guys' activities based on impacts or other people or things like that?

Brittany: We just automatically do that anyway. We'd rather be where there wasn't a lot of people.

Nick: No, we don't usually change our plans according to whether there's a crowd or not. That doesn't affect what we do really.

Changes to the Backcountry

The perception of what changes in conditions are acceptable relates to the importance visitors place on certain impacts. When asked if any conditions could possibly change in the backcountry, respondents typically could not offer any suggestions. They were more focused on the conditions they felt could not change if they were to continue visiting the park. Most respondents expressed a strong desire for conditions to stay the same as they encountered during their trip. They prefer that the backcountry remained undeveloped and without many signs of human use. Visitors appeared to approve of the level of trail maintenance and the use limits that have been set on the backcountry. They seem to feel that the level of use should remain the same as it currently is set for the backcountry.

Betsy: Having a limit on the amount of people they allow back there in the backcountry. If you're going to hike 16 miles you don't want to be running into as many as we do here (referring to bus)

Herb: It doesn't look like they've done trail maintenance. It looks like it's just what people wore down. I think it should stay that way.

Paul: One of the great things about the backcountry is there's very little sign of, it's untouched. It just has an untouched feel about it. And, you know, you kind of want it to stay that way. There's not a lot of signs besides the trail itself, there's very few signs that humans have been messing around there.

Mike: Probably the number of people back there. If it got too crowded in the backcountry I probably would lose my desire to go all the way back there because it's kind of part of the desire to do it is to get away from all the people.

Patrick: I would say no more access. Limiting the numbers.

Tom: I think that you probably wouldn't want to develop it any further. I think it's in a good state as it is. The trail is about as nice a trail as I could imagine for going up to the rim.

Claire: I mean, they shouldn't do any more. They shouldn't develop any more, like perfect right now.

Joe: I like the conditions the way they are right now.

Paul: I would say I wouldn't change anything about it.

Another key topic in regards to changes in the backcountry was the issue of the number of campsites. A few respondents believed there was room for more sites if visitors were responsible and left no traces of use. However, most visitors disagreed with this thought, arguing that the number of sites was sufficient. These respondents argued that there were areas where sites could be added, but that they were happy with the current level of use.

Nathan: The number of sites are good. I mean, you can't have any more people back there than there are.

Dave: Yeah, I wouldn't want more campsites. A limit to the number of campsites they have back there that's a good idea.

Eli: Don't put in more campsites.

Wendy: I think keeping 12 sites is perfect. I don't think they should have any more campsites. There are areas where they probably could add a couple more, but I think 12 is perfect.

Katerine: Well I hope that they don't open more campsites, that it just stays as low as this. There's some sites where you potentially could camp but, I mean, they haven't done that yet and I hope they don't do it.

Dave: But there's certain areas where it'd be nice if people were responsible and knew how to camp without a trace, that you could go and have it be less restricted, you know, as to where you went.

Carrie: Yeah. I mean, maybe just a couple more sites.

Despite most respondents not mentioning any conditions that could change in the backcountry, some visitors did suggest that managers take certain actions. The most common response of visitors who did offer suggestions was for more signage in the

backcountry. These visitors felt that signs showing distance and better markers for campsites would be helpful in their trip. This suggestion appear to show that the possible artificial effects of signs are not important enough to these visitors to warrant the exclusion of signs in the backcountry.

I: Okay. Are there any suggestions you would make to them of things that need to be focused on more?

Mike: I think signs.

Paul: There's ten camps back in there I believe. I suppose if they could have put a mile marker or something on a sign or two, that may have, I don't know, given us an idea, anyway, where we were at, to gauge where we were at.

Dan: A lot of the signs kind of seemed like they were falling down.

Brian: Yeah. I think the markings could be a little better.

Doug: Signing and for campsite 1 I think is critical because your instructions start from, people start looking for their campsite after you get to the first one, and the first one we found was 2. So that didn't, and there's a big difference between where 1 is and where 2 is.

MANAGER RESULTS

Manager Dimension #1: Impact Perception

Manager's perception of the current state of conditions and issues in Zion was a very large dimension of this study. This dimension encompassed the holistic view of managers of what is going on in the backcountry of Zion. Part of this entailed each individual's definition of what the park purpose is and what role the park fills in the National Park Service. To them, Zion is a place for refuge and solitude where visitors can get away from urban life. The park is a sanctuary for wildlife and plants with a large range of life zones and ecotypes.

Managers commented on the characteristics they monitor in the backcountry and on which ones they personally focused. They addressed the changes they perceive to be

occurring in the backcountry, some positive and some negative. Their perceptions of conditions and changes led to a discussion of issues that the park now faces. Managers focused on recreational activities and how, along with increased use, these activities affect social and resource conditions in the park.

Another facet of management perceptions was their impression of visitors. Managers addressed what conditions they believe are important to visitors and which impacts they recognize first. They also judged how perceptive they believe visitors to be of the conditions around them when they travel through the backcountry. Not only did managers evaluate visitors, but also they evaluated themselves. Each individual commented on which actions appear to be working and the positive steps the park staff has made. They suggested how the park's focus should possibly change and addressed user groups that need to be better understood by management.

Park's Purpose and Description

Managers described Zion National Park foremost as a park with spectacular geology and topography. They emphasized the color and shape of the rock formations and the uniqueness of the canyon environments. Managers also pointed out the variation of ecosystems within the park. They described the changes in vegetation and temperatures across elevations and life zones.

Nancy: The topography. I call it vertically challenged. It's certainly straight up and down land and the variation in the landscape from way up high to the down below parts is what makes Zion so dramatic, because there's obviously, I mean, just the sheer drops in elevation, the Navajo sandstone, the cliffs. I don't know. It's beautiful. It's kind of hard to put all of that into words.

Mary: I'd say this park is very majestic and vertical. It kind of hits you right away in the face. I consider it very lush, full of extremes. Elevation extremes, temperature extremes, vegetation change, differences, kind of a nut shell.

Lynn: It's a desert park with tall sandstone cliffs and a lot of beautiful canyons, pretty rugged terrain in the backcountry. It's pretty difficult to get into some of those rugged backcountry areas. As far as desert parks go, I think it's pretty lush in comparison to other parks.

Mike: Kind of a geologic wonder in terms of incredible scenery, I guess. And that's the most obvious thing that hits you right off the bat. But a fairly moist environment in the desert landscape, so rivers and canyons and that sort of thing. So while the overall scenario for the park environmentally is that of a fairly dry environment, it's modified by this great change in elevation, five life zones, all the way up to the almost subalpine conditions. And then the lower canyons with the water, it's just kind of a really unique riparian situation, again, in this bigger desert landscape.

Chris: Probably I would describe its geological or geography. That's the most obvious and the most awe-inspiring part of the park I think. And probably just an incredible place as far as visually, what you see. The geology speaks for itself. Probably one-of-a-kind type of a place. You can't see this Navajo sandstone and these cliffs, the color, the layers anywhere else.

Some managers emphasize that the park is suppose to be for the use and recreation of people. They believe Zion offers a place to challenge your skills and body in a variety of recreational activities. The park also offers the public a destination where they can go and have a nearly "wilderness" outdoor experience.

Bob: I think that in a general sense, and by being here and seeing the kind of visitors we get, this place is just supposed to be a pretty place to look at. I mean, for the majority of the people, I think that's what they do. It's a pretty place to look at, but it also offers a place to challenge your body. Everything is what I call a full body experience. You know, the canyoneering takes the upper body and the lower body to navigate through. It takes some knowledge of survival skills, especially in the heat of the summer. And so providing a challenge and a way to get away from it all kind of thing. That sort of feeling of being out there. That's all, that's what it's supposed to be as well.

Nancy: I think a national park should be available to the public. That's what the public pays for, and especially as fees go higher and higher and higher. So this park with its openness, and the places that aren't open in this park, necessarily to the public, are a lot of places that you couldn't get to anyway. What I see as one of the primary purposes of Zion is a place where people can go and have an outdoor experience. I wouldn't necessarily call it wilderness because I don't know that there's much wilderness left in the West anywhere anymore, but as close to that as you can get.

According to the biblical description, the word Zion is a place of peace and solitude. Many managers agree that the purpose of the park is to provide a restful, quiet place where visitors can have many opportunities for solitude. They feel the park should provide visitors with a place of "refuge" from the outside world and secluded from other people. Many managers also feel that that park is supposed to be a sanctuary for wildlife and plants to exist, providing a rugged landscape that is primitive and without signs of an urban environment.

Nicole: Supposed to be more primitive. Supposed to be more rugged, not a theme park. But it's turning into a theme park. It should be more, less used.

Julie: My vision of Zion is a quiet, you know, restful place where you can find solitude and that's not every place in Zion but that's my vision of what Zion is and what Zion should be. I think a lot of people, that's why they come to national parks. It's sometimes the only way that they can get, you know, a natural experience and, you know, peace and quiet and seeing ecological processes, you know, just happening is something that I think every human strives to have in a part, in their lives.

Mike: But Zion is, according to the Bible, the description is a heavenly city of God and a place of peace and solitude. And I think that that's probably why the pioneers kind of dubbed it Zion, because it was a pretty remote place at the time, probably a little bit lonely. But there was this great opportunity for solitude and I think that we need to keep that in mind when we're managing this.

Steve: I think of it as I think of all national parks, that it should be a refuge from the outside world.

Jane: I guess on one part it's a recreation area for visitors. But on the other hand it's also kind of almost a sanctuary I guess for wildlife and plants that may not be able to exist in other places because there's so much development going on.

Bob: There's a sense of it being out there by itself. I don't want to see that this campsite is within, too close to this other campsite because I don't want it to feel like it's an urban environment. I want it to feel like when you're camping there you feel like you have the place and you're secluded. I don't really want to feel like we can hear noise from other people.

Characteristics

Direct evidence of people and human use are the types of characteristics that managers focus on when evaluating and monitoring conditions in the backcountry. Litter, human waste, toilet paper, and footprints are examples of the characteristics that managers notice first when in the backcountry. These types are often the easiest to detect and represent how visitors are behaving in the backcountry.

Lynn: Usually trash. Trash and toilet paper, any kind of garbage that's been left behind is one of the first things I notice. And then also I'll notice social trails. Like usually they seem to be going to wherever the person is using it as a bathroom in the backcountry, so that coincides with the trash and the toilet paper. That's what I notice first.

Nancy: Footprints, how many people have been there before me. But I'm also thinking of it from a historical perspective because, and when I say footprints I don't mean necessarily an actual footprint so much as I mean indications of people, whether it's an actual footprint, a piece of garbage or a piece of historic trash or historic artifact. All of those to me are indications of people.

Bob: I see more human waste and improper disposal. I see microtrash and social trails. I mean, in this desert environment once you get off the trail and two or three people go the same route you now have a trail that's going to be there several years, maybe forever. And I see that as well.

Lee: I guess some of the things that first catch you were the bigger things that you're looking for would be trash. Those are the easiest ones to detect, of course. And then once you really start looking in at the site you look at how much human impact is taking place on the trail or in the campsite, if it's spreading and if they're expanding, those kinds of things. But I think human waste and just trash are some of the bigger, you know, visual things that you see.

Evidence of visitors' behavior is not limited to trash, waste, and footprints. Most managers are very focused on the condition of soils, vegetation and trails. They are concerned with the amount of visible social trails and the trampling of vegetation. Managers responded that they notice these characteristics because they are prominent and often the easiest to monitor. Social trails and trampling lead to soil compaction, campsite

spreading, loss of vegetation, and the destruction of cryptobiotic soils, which are important issues in resource management.

Nicole: Trash and vegetation getting trampled and social trails. Violations that are becoming more and more predominant, besides the beautiful views.

Julie: The soils here and the vegetation here is very vulnerable to human impact. So one of the first things that I notice is bare soil, lack of vegetation or trampling of biological soil crusts. Those things are really easy to see. They're immediate kind of things. And that's one of the things I think is one of the easiest things to monitor, what people do just because when people trample vegetation here it doesn't come back or it comes back as something that, you know, is exotic and that's easy to see too.

Steve: I really key in on soil compaction and loss of vegetation. Really that seems to be the main impact to me. The whole thing of soil compaction and loss of vegetation really appears to be, well I can't say park wide, but you can find evidence of it in a lot of places in the park today.

Mike: I think the thing I note first when we're looking at kind of backcountry facilities and trail or campsite is vegetation and soil. How much erosion's going on. How much of the vegetative cover has been removed. And then how extensive that is. Is it confined just to a trail tread or to campsite pads itself or are these effects bleeding off, you know, such as a trail braiding or the campsites are just kind of expanding without any real control. You know, I look at the extent of the soil and vegetation impacts first.

When asked what characteristics they notice first, most managers did not mention social conditions. Managers focused on resource conditions and characteristics in the backcountry. However, it is important to note that managers are very aware of the level of use and their concerns about visitation will be more extensively addressed in the next sections.

Steve: Well certainly more people. You know, less opportunities for solitude. You know, our backcountry use has continually gone up. There are areas today that really don't have a backcountry, you know, I think the West Rim is a good example. There you very much expect to see people, you know. You don't have the sense that you are the only person out there anymore, and you see very well-defined trails. Lots and lots and lots of foot traffic.

Changes

Managers describe the increase in visitation and the level of use as one of the most distinct changes occurring in the park. Adventure sports like canyoneering and climbing have dramatically increased over the past few seasons. These types of recreational activities are becoming more popular and Zion is becoming an attraction for these sports.

Increased visitation has not only brought changes in social conditions, but changes in resource conditions as well. Many managers recognize more social trails, erosion, and loss of vegetation.

Bob: I see what we would call impacts just from visitor use. I see that we're having a big change in type of use, and this is a small population of people that come and use the backcountry. Out of those people I see the changes toward canyoneering as a major shift. It's a new venture sport. It's a different way you can kill yourself. It's exciting.

Nicole: More use. Canyoneering exploding out so routes not becoming, or are not routes really more, they're more trails. They're just so obvious. And so that experience of living on the edge and going out and finding your route and that is kind of like minimal now because it's so obvious. So canyoneering and, again, and with that comes more impact, and definitely higher numbers, more impact.

Jane: There's a lot more social trails. Another thing that's interesting is that there's a lot more bolts that are being put in for climbing and sometimes he's really shocked at the number of, how much things have changed and also he's mentioned the amount of erosion that he's seen, where he's just completely shocked because for the first three or four years that he traveled down a certain canyon it wasn't that erosive and now because there's so many people going through it's incredibly so.

Mike: In a lot, and on the main trails, the established trails I'd say conditions are pretty much stable. There are some places that have had erosional problems and continue to have erosional problems and need to be fixed. All the trails need work in terms of are they staying the same or getting worse in some spots or staying the same? Off trail, I think that's where the impacts are. Again, it's often these entrance areas to the heads of some of the slot canyons. Most of it is soil impact, vegetation resources seem to be doing pretty well.

Lynn: There's definitely increased backcountry use as far as people, there's more people canyoneering, for sure. In my opinion I don't think the canyons have changed that much within the actual canyon. I think the biggest impacts are the trails that access some of the canyons. There's just more of a defined trail now.

When asked if any positive changes are occurring in the backcountry most managers addressed how management actions have improved visitor awareness of impacts. They mentioned how revegetation is occurring because of the designation of backcountry campsites and how visitors are now educated on Leave No Trace ethics and proper waste disposal.

Managers did feel that the staff has become more responsive and has a better understanding of conditions in the park. This has led to their ability to educate visitors and increased their understanding of how to behave in the backcountry.

Jane: Well the bolts are kind of mixed bag because I would say that most likely the canyons are safer because of the bolts, and we have talked about that. That some of the bolts, not all of them, that they've been placed in a better place or it's easier to repel off of them or something. So I guess in that sense that's more positive.

Nicole: The positive would be that people are getting out there, they're getting out of their homes, they're hiking, they're seeing nature, they're appreciating it and that'll help protect it. I don't want to be totally negative, so I'm really trying to think of the positives.

Julie: I think a lot of the positive changes are that the park's taking more of an interest in backcountry management. We have more people with more knowledge about restoration and also more people, more physical people in the backcountry, more rangers in the backcountry helping people understand what they need to be doing and educating people. We have a better education program, I think, at the visitor's center than we've had in the past, having a backcountry desk specifically.

Steve: Positive changes. I'm sure there must be ... Well actually I do think it's a positive change where you can see that we have intervened in that we have taken steps to designate campsite perimeters so that they don't continue to expand. I think that you can see the reaction from the vegetation from that where it's coming back. You know, areas that were denuded are now vegetated so I'd say that's about it.

Lee: Well just since being here in the mid 90's, some of the things I can say that we have actively done to change correlated to changes in the field is like using our Leave No Trace video, our Rest Stop 2 waste bags. The staff has been here quite a long time so we really know the backcountry, can tell people more of the hazards and things to be aware of out there.

Issues

A part of managers' perceptions of the backcountry are the issues that Zion is facing. Managers described many different issues that have been the topics of debate among the staff including canyoneering, climbing, human waste, use limits, and front country/backcountry interactions.

Canyoneering is described as one of the biggest issues emerging in the park. The level of use in slot canyons and the Narrows has increased dramatically in the park. This increase in use has led to the establishment of use limits on many areas within the park. Managers feel that the access issues related to canyoneering and the associated resource and social impacts are important issues to address in the near future.

Lynn: The canyoneering issues and the issues of limits in the canyons, permit issues, getting permits, the General Management Plan (GMP), the zones, the pristine, primitive, transitional. Basically all of the GMP stuff that pertains to obtaining permits and relates to limiting uses in the technical canyons.

Jane: And so I guess for me it's more just the recognition that canyoneering is increasing and it's going to increase and it's not going to go back because more and more people seem to be doing it and it seems like the number of search and rescues keeps increasing because we have people that are doing it that don't necessarily know what they're doing and I guess that's, it just makes me realize that this is a huge issue and it's just going to get larger.

Julie: I think one of the biggest issues is sort of the emerging use of narrow canyons. The narrow canyons visitation has risen exponentially in the past ten years. The first time I went down The Subway in the '70s it was a true route-finding experience. There was no path and it was difficult to get into the canyon, and there certainly wasn't a way out of the canyon like there is now.

Mike: I think it's canyoneering primarily, off trail use basically. We have some established trails. They certainly need better maintenance. But where we're

seeing the biggest effects are where people are entering canyons where we haven't been prepared for that use and in some cases where the level of use is very high.

Chris: The one that I hear about or am in contact a lot with are the ones where visitors will come to the front desk or the museum desk when I'm working out there and have concerns, sometimes gripes and sometimes problems with the limit use. How can you limit just 12 people to this particular trail or area? You know? I've got my, you know, the family is all up for vacation and we've got 16 of us and you won't let us go into a particular area or something like that. So those are the things that I personally hear of more often than not. Just the limitations to a particular area out there.

Climbing is another activity with a connection to canyoneering. Climbers use bolts and other equipment that leave a direct and obvious impact on the canyons and walls. Some managers feel that the issue of gear being placed and left on climbs in the park needs to be addressed.

Mike: My way of looking at that is we probably need to have routes designated where bolting should be managed and we have some climbing rangers here that are capable of determining whether or not those are safe. And then that's it. You know we replace them as necessary. We may allow somebody to place a bolt if they're out on a climb and feel there's something unsafe, well yeah do what you need to do, but we have to watch that carefully and manage it.

Steve: I think all of those have some unique impacts with them and you can, personally, you can really get me going on rock climbers. I have major problems with them, on the gear that they leave on cliff faces and for some reason it appears to be okay to deface these areas when they hammer in their pitons and leave them.

Human waste is another issue managers feel needs continual attention. They feel it is a big issue because visitors and managers alike are encountering it more and more in the backcountry.

Nicole: Because we're seeing it more and more. We're experiencing it. We're picking it up. We're dealing with it in places like The Narrows, The Subway. It seems like every other time I go in there's toilet paper or human waste piles. I go down The Narrows, at least once, at least one, maybe more, dealing with the human waste piles.

Steve: Human waste is a big one. Here again, depending on what area of the park you're in, obviously The Narrows comes first and foremost with human waste.

A very specific issue that emerged during the course of this study was the dynamic of the interaction between front country and backcountry visitors when they encounter one another at the Orderville Canyon junction in the Narrows. This location is where the backcountry zone transitions into the front country zone of the Zion Canyon. Managers are aware this interaction may have an effect on visitor experiences and that there are problems associated with enforcing or limiting upstream travel into the Narrows.

Bob: It's unenforceable. You know, we have Orderville Canyon, which is a primitive canyon. And then we have the area of The Narrows that goes down to the high use area, at the end, the Riverside Walk. And it's very accessible. And it was, in my opinion, personally, it was a bad decision to make that line hit right there because there's no natural barrier. There's nothing that tells the people, okay, now you have to stop.

Nicole: Well, when I come Orderville and I know I'm coming into the North Fork, it's like, okay, take a deep breath. Here we go. We're going on the freeway. And then you smell. You can smell the urine. You can see the graffiti, the new graffiti every week on the walls. And it's like, there goes the wilderness experience. There goes that solitude, that beauty. I mean, it's a beautiful, that intersection is incredible. Well in the new management plan they are talking about ways of dealing with that. And I don't know how you can limit people going from the bottom up. It should have been thought about before the transportation system came and they were dumping off hundreds and hundreds and hundreds of people at that trailhead.

Mike: It's dramatic. I mean, you know, from personal experience, coming down from and doing the whole Narrows hike and you get down to Orderville Canyon, you know, you hit Big Spring before you hit Orderville and there's usually a few people around and you say okay, I'm getting close to the end here. Then you hit Orderville and it's just like gobs of people. It's kind of a shock after coming out of the situation where you may have not seen anyone except the people that you're hiking with. Upstream. I don't think there's a whole lot that we can do with it, other than we need to decide specifically where we think that wilderness experience ends.

Steve: There are no easy answers on that one. But I think that it continues to point itself towards the need to regulate the number of people who are going in from the bottom. And, you know, really, you kind of ask yourself the question,

what does it do to that visitor experience of a person who has the permit who has experienced the night before or earlier that day this incredible solitude that you can experience in the upper reaches of The Narrows, and how it changes as you get to the lower.

Impression of Visitors

Managers have the sentiment that most visitors to Zion are very unaware or ignorant of the impacts around them. Some believe that visitors' awareness is based on their background, education, and experience in natural settings. Visitors with educations in natural resources and a lot of experience in the backcountry are perceived to have a greater respect and understanding of conditions. Those who are new to the park or come from a background with little exposure to wilderness or backcountry areas are not able to recognize impacts caused by use.

Bob: I know that our visitors are very educated people. Because they come from such a variety of backgrounds that you could have a Ph.D. and you could be a very smart person and you're designing new computer programs and all this, but then when it comes to an environmental sense or what's supposed to be out here, they're brand new to this area of experience, perhaps. What I might see as an overused campsite that has been totally hardened by just use and the ground is solid and nothing will ever grow there again, I see that as an impact. They might see that as just a fine place to camp.

Nancy: Out of the two and a half million people that come through this park I think they're brain dead. Those people that actually do get out in the backcountry, that get it, but I think they are a very small percentage out of that two and a half million that hike, that bike, that use the backcountry. Those are the people that notice the impacts because they're the ones that have some kind of reference to, when I was here last year this didn't look this way. But, you know, most people are in their cars driving up and down the canyon or they're in the roads or they're on the shuttle or they might walk the Emerald Pools path or something or they see deer up at the lodge and they think that they've had a wilderness experience or something.

Jane: It's pretty amazing, the differences, I think, in perceptions. Some people are amazed when they see a deer. I can't tell you how many times I've walked through this campground or walked up to the lodge and people are like, oh my gosh, look at those deer! It's so amazing! Then I've got other people that are like, oh, I see

deer all the time and they're like in my back yard, no big deal and so because of those different perceptions I think it's, visitors are really different.

Mike: Part of the problem is that those of us who deal with these kinds of issues read the landscape in a different way than your average person. They do not notice social trailing. They don't notice loss of vegetation and soil compaction and human, well, you know, I think there's some things that they will key in on. Obviously human waste, cigarette butts I think they pick up on. But they're just not looking at social trailing the way we are.

Chris: You draw your bell curve and over there are the groups that have a background in environmental ethics and they wouldn't dare step on a little cryptobiotic crust anywhere and they'd pick up not only their own trash but everybody else's. Then the other side of the bell curve are the folks that don't have a clue and may be having the greatest time of their life but because they lack the education or the background, they may leave their initials etched into the rock or they may be creating, cutting the switchback and creating a new social path.

Mary: I think a lot of it is unawareness of our park user. I think people don't realize, they think it's biodegradable. They throw down toilet paper. Or they use the bathroom in places where someone else might see it again. And I think people aren't thinking that, okay, we have 2.5 million people coming through here. So they throw their biodegradable waste out there thinking, well, that's fine. But it really isn't.

Managers believe that of types of impacts visitors recognize more often than others are trash and encountering other groups. Managers feel that these conditions are the most obvious to visitors. They believe that other conditions, such as soils and vegetation, are impacts that visitors are not in tune with or do not fully understand, therefore, these types of conditions are not easily recognizable.

Bob: Yeah. I'd say they would certainly recognize whether this trail is awfully crowded or if this trail has a lot of trash on it. Human waste. You know, the visible, the obvious. You know, they would recognize that right away. They may have to be a little bit more in tune to the kind of impacts that involve the soils or the vegetation. They don't know what these plants are, if they're exotic or not.

Nicole: They'll see garbage. Because it's the most obvious. You know, it's the most obvious. I don't think they notice, because if you see a social trail they might think it's just an animal trail. So I'm thinking trash is probably the most obvious.

Julie: Well this seems stupid, but they recognize litter the most. I think it's harder for them to recognize soil compaction and biological soil crusts and exotic species. I think those things are more difficult for people to recognize, although some people do.

Lee: Trash and probably, I don't know if they fully understand why we do the limits, but I think they're fully aware of a lot of visitation in places.

Steve: Well I guess I would say number of people encountered. I think that to look at really hammered campsites it's very obvious that these areas receive a lot of use.

Mike: I think if they run into a situation where they're camping and they hear a lot of noise from another campsite, those types of things.

Some managers feel that visitors' awareness of crowds is based on their expectations and location in the park. They believe visitors who want solitude and a wilderness experience are more aware of crowds. These visitors avoid front country areas and times when the backcountry is more crowded. Other visitors that expect to have crowded, social experiences, like Boy Scout groups, are less aware of crowded conditions. These groups expect to hear noise and encounter a larger amount of people.

Bob: I don't think they're really being affected. I think there's an expectation that they're going to, depending on where they're traveling in the park, I think if they're in a super busy area or it was really hard for them to get their permit I think they have an idea up front that they're going to a heavily used area and therefore they expect to see other people and they're pleased if they don't. They don't mind if they do.

Jane: I'm sure that people that really want wilderness and prefer solitude, I'm sure they're not going up to Angel's Landing.

Mike: I think a lot depends on their expectations. I mean, it's amazing, you know. There'll be Boy Scout troops, a whole troop of them and their expectation is we're going to camp in a natural type of situation, but it's going to be very social. Noise doesn't seem to bother them because they're used to everybody in the troop and everything else. But boy, a group like them have an incredible impact on the two person group that's coming in because they want a wilderness experience.

Lynn: I think people definitely probably choose, well, I think people are starting to learn more that, at least backcountry users to come during the week instead of

the weekend. And I definitely think that has an impact on their decision when to come. Some people don't have much of a choice when they come. But as far as canyoneering goes, I think people are starting to realize that during the week it's a lot easier to get a permit. There's a lot less people here.

Evaluating Management

Overall, managers have mixed impressions of the management actions taking place in the park. Some are very happy with management being proactive with use limits and trying to educate the public before problems are out of control. They feel that current actions are working and that staff is remaining proactive with their planning process. Others feel that certain aspects of management need to change. Some individuals argue for better science behind use limit numbers and better interpretation efforts on the part of managers. Still others feel that the park needs to return its focus to preservation and not make recreation as great a priority.

Bob: Well I think that looking at the way we're managing or we're trying to manage is, you know, we did our general management plan which had in mind that we want to preserve an experience for somebody, you know, like so that no matter how busy it gets in this canyon, for example, or on this trail or in this backcountry area, that these people can still get out and get what they need out of visiting this park. You know, recharge their batteries, enjoy the place, you know, as they feel fit, or as they see fit, you know, what they're looking for, they get it. So I think that our moving in that, like laying it out and making a plan is a positive beginning.

Nicole: Education is key. Messages getting out there is the key. And I think we're really trying to work on that right now. I think that resource management has really, is stellar in that. That they're really trying and they're working really hard to get that going and backcountry is on board with that.

Jane: I think we're ahead of most parks because a lot of the restrictions that we've actually put in we've put in for resource management reasons and we've put in because we're trying to save the resource and continue. We want to be able to have people recreate it through perpetuity and unless we put these restrictions in it's not going to happen. And so I think in that sense it's good that this park actually initiated counting and some limitations before we were forced to do it, before the resources got so bad that we got sued over it.

Julie: I think, you know, I don't interrelate with the public much, but from what I understand [use limits] is being fairly well accepted by much of the public. I think for the most part it is helping, and hopefully once we start working on the wilderness management plan we can holistically look at some of the issues because limiting use in one canyon pushes use somewhere else. So you have to look at all the canyon system to make sure that you're not just moving the problem.

Steve: The Narrows is a really good one I'm going to have to ding park management on that in that I see impacts in The Narrows today that were there 15 years ago. Unfortunately sometimes I think we start stomping our feet up and down saying we've got to restrict visitation because we've got all these impacts, but we have never, as a park, aggressively attacked and try mitigate those impacts. We never have. The trails that you see that go up and over the benches have been there many years. Because of the numbers, and we've known all along that The Narrows, it has too many people in it and politically we're reluctant to do anything about it because it is such a popular hike. We've taken some measures, you know, where we now have designated campsites. We've restricted the number of people who can camp there. But I think the main impact that we continue to overlook is day traffic from the bottom up. You know, everyone knows there are way too many people in there. And we haven't addressed it. We have major impacts in the lower reach of The Narrows and have for the last 15 years. So I ding us for that.

Steve: I think the National Park Service caters way too much to recreation. You know, we kind of bring that on that this is, in fact, your playground. And I don't believe that is our true mission. It's only a part of our mission. I think of the need to protect the natural environment should be paramount and should be right up front and first.

Mike: We haven't had the tradition of what I would call management. The Forest Service, the BLM, the Fish & Wildlife Service on their lands, because of the nature of multiple use type activities, manage those lands. They manage them carefully, the timber, the wildlife, all that kind of stuff. In parks we say, well, you know, it's all here being conserved and we don't do the same level of management because we're not overly worried about how much timber we produce or we're not worried about how many deer are produced for the hunting season or whatever. So there's been a tradition of hands off. We need to do more active management. It is an issue and it does matter what you're talking about.

Chris: We have a very good interpretive division here in the park, but it's all point and yak type of programs. Look at the geology, look at the birds. Not translating what the human impact does to a particular area. So there's lots of potential where education and interpretation can still play a big role in managing park issues, but that's an area that isn't punched out a lot here.

Lee: I think I'd like to see better balance of limits instead of just pulling numbers, like from a hat. That's kind of how it feels what we've done. Have some real good evidence and ways that I can articulate to people this is why we're closing this canyon. This is why we have this limit in this canyon and not just some random numbers that people decided upon. I'd really like to see more studies in the park, you know, more surveys going on, which we're kind of doing.

During the course of the interview process, one individual suggested asking if certain groups were more difficult than others for managers to relate to. In Zion, many managers feel they have difficulty relating to larger groups, such as Boy Scouts, church groups, and family reunions. Others have difficulty relating to climbers or people that purposefully feed wildlife. These managers describe that this disconnect is associated with the fact that these groups tend to ignore regulations and can cause obvious resource impacts, such as in the case of bolting by climbers.

Bob: Boy Scouts. Utah Boy Scouts. I don't relate to Boy Scout leaders. The young adults. I don't relate to them as well because I don't know how to reach them and have them understand what I understand. What I want them to get out of it is have a good time, but take care of where you are.

Nicole: Because Boy Scout leaders tend to be the ones that disobey the rules the most. They do the, oh, group limit size 12. What is that, a baker's dozen? Thirteen. You know? So I'd say Boy Scout leaders.

Lee: I think the biggest ones that I don't understand and why they want to go out there is the large groups. And that could be Boy Scouts, which is quite often. The church groups. Utah just has, I mean, they have large families so family reunions, things like that.

Julie: Large groups. Zion gets a lot of the organized church groups and the organized church groups, especially when they're from Utah, have a feeling of, that they own the place, this is theirs. And they don't want to have any kind of restriction. They don't want to deal with any rules. They just want to do what they want to do and that's what they want to do.

Mike: For me I would say it's probably the climbing community. For the most part they're not extremely damaging except that, again, the use has just blossomed and so there's more and more bolting going on and all that kind of stuff and it's a safety issue on the one hand but it's an impact to the resource.

Jane: People that feed wildlife. As a manager I don't understand that at all because I have a hard time understanding the motivation, for one. I realize they want to take pictures, but I don't understand how these people could possibly think that these animals are pets. It just completely perplexes me.

Manager Dimension #2: Impact Definition

How impacts are specifically defined and evaluated by managers was another important dimension of the study. Managers provided concrete definitions of what consists of a resource impact and what effects social impacts can have on experience. Examples given by managers focused heavily on resource conditions such as soils, vegetation, and erosion. Impacts caused by inappropriate visitor behaviors, such as littering, human waste, and graffiti, were also important examples given.

Managers addressed how social conditions relate to their definition of impact. They described how encountering people while in the backcountry could affect an individual's experience. Managers also described the correlation between social conditions and the resulting resource conditions.

A part of the impact definition dimension was how managers evaluate conditions. Few conditions were considered to enhance the backcountry setting. Most conditions that were considered impacts detracted not only from the resource, but the experience visitors could possibly have. Managers described the origins of their definitions and evaluation. Some learned their values at an early age while others become aware only after college and working for a federal agency.

Defining Impacts

During the course of interviews, managers were very capable of describing examples and types of impacts prior to being asked the direct question, "how do you define an impact?" After being asked to define impacts directly, managers were able to

give a specific definition. Most managers did not rely on using examples. They defined an impact as a noticeable, human-caused change in a condition. Most managers referred to resource conditions, but some described social conditions as being impacts in their initial definition. These changes were considered to be unnatural and carrying with them a negative connotation.

Nancy: An effect that, impact, it is a change, really, what we're looking at. A change caused by, it could be either natural or unnatural. And obviously I think our biggest concern is those changes that occur from unnatural forces, which would be people. So a change is really what an impact is.

Jane: I guess it's a negative resource damage that has been caused by either the park staff or by visitors, so it has a human connotation. And it has to be negative, otherwise it wouldn't be an impact, in my mind.

Julie: Impact. I would define the word impact in a backcountry setting as a noticeable change from the natural. So if I went into a campsite and I couldn't tell that any person had been there, I think an impact has to be in the backcountry is caused by, I'm looking at human impacts, not natural impacts. If it's noticeable that a human had been there, like they'd left garbage or had moved rocks around and left them or made a fire ring or dug out a tent site or something like that I would say that's an impact. And I would say equate impact with negative in that sense.

Chris: Impacts can be great or small. They can be accumulative. And when you look at the Park Service philosophy on things, we impact everything in a park environment. It's when those impacts become so accumulative that they cause impairment. And that's where we need to avoid.

Mike: Well yeah, it's hard. I mean, it depends on the resource that you're talking about. You know, if we're looking at visitor experience and we say that, let's say solitude or natural quiet is a resource to us, to me it's a deviation from what I would expect in terms of natural sounds.

Lee: It does definitely have, like you said, a negative aspect to the word. And I think it's more ways that we change or alter the face of the land. If you leave something behind, if you, or even on a social issue, like other people's experience in that canyon or on that trail. You know, people are being loud and noisy, that's going to change your whole perspective of that trail because you won't be able to hear the birds or just enjoy being there.

Examples of Impacts

When managers were asked to give examples of impacts based on their definition, they were able to describe many different types of impacts. Of the types described, most managers referred to resource conditions. Bare ground, impacts to cryptobiotic soils, vegetation loss, and social trailing were frequently mentioned. Also mentioned were impacts from inappropriate behaviors by visitors, such as feeding wildlife, littering, and human waste.

Nicole: Vegetation being destroyed, animals changing their behavior, footprints, smashing cryptos, garbage left behind, unnatural things being left behind.

Steve: Here again, lots of social trailing and lots of vegetation, soil compaction, campsites that they're not only more obvious, they're much larger in size and they are much more of an obvious site to me today than I remember in the past. You know, they're definitely a designated site.

Jane: I think for us the cryptobiotic soil is probably an issue, but I'm sure the vegetation person is better at describing those than me, just because they are a long-term effect.

Julie: Well like I said earlier, bare soils. That's probably one of the biggest because things just don't come back. So it's just back to bare soil and exotic vegetation coming in.

Jane: I think there's a huge impact on wildlife community here that we've caused. And I think when we change their behavior that much, I mean, to me an impact, of course, is that the animal gets more habituated and attracted to people. But then the ultimate impact is usually that animal dies. And I think that there's no doubt that's an impact.

Chris: Well, again, a few of those that I mentioned. Social trails, fire suppression and its effects on the fuel loads, and the change of habitat. Probably particular examples in a specific spot would include The Narrows area, or I should say the Temple to The Narrows, that stretch of the river environment seems to have a lot of impact, verging on impairments. Everything from litter to human waste to, again, trampling of the vegetation.

Bob: That would be improper waste disposal, trash, carving your initials on the rock, lasting impressions of, we don't need that. I see that as an impact. Social trails that are worn or even just poor trails.

Lynn: No, besides human waste and just garbage, and maybe some of the social trailing. Well there's, our park seems to have a problem with graffiti, but that can usually be erased. But other than that I can't think of anything.

A few managers addressed an impact that is not a resource impact. They described noise and sound as a type of social impact. They felt noise from overflights and other disturbances of the natural quiet could have a negative effect on visitor experiences.

Steve: I think you've got those things that are kind of gradual creepers that are very much a part of park experiences and I think for me it's the quality of night sky and soundscape.

Mike: You know, if we're looking at visitor experience and we say that, let's say solitude or natural quiet is a resource to us, to me it's a deviation from what I would expect in terms of natural sounds. And right now we're trying to define that in a soundscape management plan relative to human, mechanical noise, but certainly other human noises, voices and things can make a difference.

Chris: Well I think probably overflights would be an impact that a lot of people may perceive.

Social Impacts

Even though most managers did not directly address social conditions in their initial impact definition, many place social impacts as part of their definition. Social conditions have a direct effect on the type of experience visitors have while in the backcountry. High numbers of encounters can decrease a visitor's feeling of solitude. Noise from large groups disturbs the natural quiet. In addition, high levels of use lead to resource impacts such as erosion, social trails, and soil compaction. Managers, for these reasons, feel that social impacts and resource impacts are connected within their definitions.

Bob: I think under what I already mentioned about noise, crowding, those are the social conditions that come out in my mind. So, because we're in a narrow canyon and noise travels I find that to be an impact because it kind of grates on

me if I was a user of the area and I want it to be quiet and yet I'm hearing these screaming, yelling people. So it's an impact.

Steve: Oh definitely. Socially how people act and interact with the natural environment is definitely an impact.

Nicole: Takes away from my solitude. You're in a canyon and somebody's yelling and screaming, scaring away the animals. The feeling that maybe you got there by yourself and you're in there and all of a sudden you hear people and I think mostly, I don't mind other people. It's just if I see them disrespecting then I'm taken away from the beauty and the positive and it's like, ugh, I've got to deal with these people and the scaring of the animals.

Lynn: I think it is an impact. Nobody likes to hear a group of 12 screaming and yelling. I mean, there's definitely the impact of people screaming and the noise level, but I don't think it's that big of a problem.

Julie: Well my impact definition was these areas were trampled or whatever, they had affects of humans. And I think that ties right into the social aspect because if there are fewer people or if they're directed to certain areas you're less apt to have contact with them, which will increase your experience as a backcountry visitor. So I think the two are tied because why put on a backpack and walk for a long way if you don't want to get away from people.

Lee: Several ways. One, visual. Two, noise. And three, I mean, usually if you have more people you're going to have more junk that goes along with those people.

When describing how social impacts relate to their impact definition, managers gave examples of the resource impacts that result from social conditions. Increased use in Zion has led to increased graffiti, vegetation loss, and human waste within the park. Managers have experienced a sense of crowding when in the backcountry and experienced a loss of solitude because of high use levels.

Bob: The use that is left behind, the impacts that are left behind involve mostly manmade things, like bolts in the rock or webbing around a tree or a rock, which are the anchors. I think the biggest impact could be just crowding.

Nicole: You can smell the urine. You can see the graffiti, the new graffiti every week on the walls. And it's like, there goes the wilderness experience. There goes that solitude, that beauty. I mean, it's a beautiful, that intersection is incredible.

Julie: Just exponential increase of use which heavily impacts soils and vegetation and also has an influence on visitor experience.

Steve: Group size can drastically change an experience. The Subway is a great example. I got stuck behind three groups and each group had 20 plus people in it. I mean, we literally could not get around these groups no matter how fast we hiked. And it was just this loud chatter all the way out, that whole hike out. So group size makes a huge difference.

Lee: If you leave something behind or even on a social issue, like other people's experience in that canyon or on that trail. You know, people are being loud and noisy, that's going to change your whole perspective of that trail because you won't be able to hear the birds or just enjoy being there.

Lynn: I don't find it to be that big of a problem. I mean, in my opinion, I recognize the fact that I am going to see some people out in the backcountry. I've been in canyons where there have been a lot of other groups and it didn't bother me. I guess maybe the one thing that bothered me is some of the noise levels, like singing and yelling. But in my opinion, having to wait at a rappel station for half and hour, 45 minutes was never that big of a deal to me.

Evaluating Impacts

In defining impacts, managers evaluate which conditions enhance the backcountry setting and which ones detract from it. Most of the examples of impacts given by the managers were considered to detract from the backcountry settings. Only one individual disagreed with management, expressing that impacts in the canyons had not changed over the years and were not unacceptable.

Lynn: I think the biggest impacts are the trails that access some of the canyons. There's just more of a defined trail now. But as far as human impact within the canyons, I don't think it's changed much over the years, at least as long as I've been here, and I've been going through the canyons ever since I've gotten here and I just don't see the impact in the canyon. I mean, it's kind of a natural process of events. I mean, canyoneering becomes more popular, more people are going to do it and there's going to be trails. I don't like to see a lot of grading and social trailing, but there's got to be at least one trail to get into the canyon, and I don't see that as a problem.

Managers struggled to describe conditions that enhance the backcountry setting.

The management action of designating campsites was the only consistent condition that was described to be acceptable. Managers felt that site designation minimized other resource impacts, such as vegetation loss and erosion, therefore enhancing the overall site.

Julie: So I think in some areas where we have designated campsites and we've done something to try to keep people in a place to concentrate their use, I'm not as bothered by that as I am by kind of willy-nilly heavily used areas. So in a designated sense I'm more willing to accept more human intrusion than I am in a nondesignated sense.

Steve: Because of the numbers, and we've known all along that The Narrows, it has too many people in it and politically we're reluctant to do anything about it because it is such a popular hike. We've taken some measures, you know, where we now have designated campsites. We've restricted the number of people who can camp there.

Steve: Positive changes. I'm sure there must be ... Well actually I do think it's a positive change where you can see that we have intervened in that we have taken steps to designate campsite perimeters so that they don't continue to expand. I think that you can see the reaction from the vegetation from that where it's coming back. You know, areas that were denuded are now vegetated so I'd say that's about it.

When describing which impacts detracted from the backcountry setting, managers were not very specific. Since managers referred to most impacts as negative in their definition, all the examples they gave can be considered as detracting from the backcountry setting. It is important to note that while managers acknowledge the resource damage associated with impacts, they focused more on how impacts can detract from an individual's experience. Encountering litter and human waste takes away from a wilderness experience and high use levels detract from a person's solitude.

Nancy: Our concern is with those that detract from the setting, from the experience, the setting, the resource. And maybe that's something that we should be concerned about is understanding what changes happen that are beneficial. I think we're very much concerned with those changes that happen that have a negative affect, that detract from the resource.

Jane: Well the social trailing is obvious. I mean, it's definitely damaging vegetation, substrate and ... I think it also, and this is, I guess it is a resource in some sense. I do think it's changing our perception of wilderness because obviously there's a different experience when you're going through the canyon when you know thousands of people have come before you and you can see a distinct trail, versus going into an area that really doesn't look like it's been disturbed and feeling like you're the first person going through it, or maybe the tenth.

Lynn: Oh, I think it detracts, for sure. Nobody wants to see toilet paper, dirty toilet paper on the ground or even garbage in the backcountry.

Lee: Nobody wants to camp in a site where it smells and it's like you can see toilet paper or you walk along and you see somebody's lunch bag that they just decided they didn't want to carry out because they're done with it. You know, it just takes away, and it also brings back, a lot of times, at least for myself, going out, I want to get away from people. I want to be back in the solitude, just experience nature kind of on my own. I don't mind seeing people, but if I see their stuff it kind of ruins it.

Nicole: It's overwhelming [the Narrows], the people, the impact to where I don't notice the beauty as much as all the people and the negative. I'm seeing more the negative than the positive.

Origins of Impact Definition

Managers feel that other people see impacts differently based on their background and experience. Individuals with a background and education in natural resource management can have a different perspective on impacts than a person who has a background in say law enforcement. The individual's experiences also can shape their expectations for conditions. If a person has experience in the backcountry and is familiar with setting conditions, they may be more tolerant of certain types of impacts.

Bob: That's why I see impacts the way I do because I have a different background. And from one ranger to the next you're going to have a different background. You're going to have a law enforcement ranger that has always been in law enforcement, maybe always been more on the police end of things and maybe done urban enforcement. You sit around that table and you have totally different perceptions within the park. And every park is different. But those perceptions are the result of if I was in resources and I have a background in that I

would be thinking of it scientifically. You know? And if I was a schoolteacher part of the year and part of the year I was a ranger I would think of it sort of maybe practically, you know, like on the ground, what's happening. If I was a manager that had a background in management or administration I'm going to have a whole different perspective.

Julie: Because of their base of experience, depending on where they come from, depending on where they've camped in the past. You know, when you camp in a campground there are bare spots and you expect to see impacts of humans in those areas. And if that's where your experience has been you won't be surprised to see that. You wouldn't necessarily be surprised to see that in the backcountry, but you should.

Managers were asked where the origins of their impact definition came from and when their definition for conditions became important to them. One manager responded that current impacts issues like erosion and social trailing have not become important to them yet. These conditions were assumed to be inevitable with human use. Others described the definition becoming important at an early age. Parents and education played a role in shaping their expectations for conditions in the backcountry.

Most managers indicated that their expectations were not formed until college or working for a federal agency. The focus of their higher education and the experience they had working have shaped how impacts should be defined and the expectations they have for the backcountry.

I: Erosion and social trailing, Can you remember what point in your life those things started becoming an issue for you that it mattered to you?

Nancy: They haven't really yet. They are issues that are important to the park and they're issues that, some of which I have to be concerned with for my job, but personally they're not issues to me. I don't see them as a problem. I think it's what people do. And it's what people expect when they come to a national park, to be able to go wherever they want.

Nicole: I went to the youth camps and all of that. I grew up hiking and being in the Uinta Mountains and I was probably a teenager. Teenager I started to notice things and when my friends and I would go camping or something, somebody'd like break a glass, you know, a broken bottle or something, you know, and it

would really bother me. But probably high school, my first year of college it really hit me.

Lee: I think it's always been there on some level because I know my parents were always like, don't litter, pick up your trash, that kind of thing. So I know I've always been aware of it. But I think more recently, just being a ranger that it's really keyed in. You know, maybe because I have to pick up the trash, that kind of thing.

Julie: When I found out what they were [cryptobiotic soils]. So that's, and my degree is in botany so I found out what they were in college a long time ago and learned that it took a long time for them to get to be any kind of size to make them noticeable and as my career's furthered I have learned more about their and what they're really made of and that they do, that they really are important.

Steve: Well to be honest with you, when I started working for the Park Service.

Mike: That's a good question. Well I think probably back when I was in college as a seasonal for the Forest Service and stuff. We did a fair amount of trail maintenance and it obviously mattered to the Forest Service employees that were there, you know, permanent employees. I mean, it was kind of passed on to us.

Lynn: Probably just since working here really. Yeah. I haven't worked at many other places and been in many other backcountry areas as far as my job goes, other than Zion. So yeah, I guess here.

Manager Dimension #3: Impact Importance

The importance managers place on impacts relates to their mission and responsibilities. They feel that natural processes need to be predominant in Zion. The park should remain a place of solitude where resources are maintained for future generations. From this responsibility, managers have described the impacts that are the greatest priority for the backcountry. They believe that canyoneering, campsite conditions, human waste, and wildlife feeding are all issues that need immediate attention. Directly related to these issues is the amount of use occurring in the backcountry. Managers feel that visitation numbers and their increase over time can proliferate the issues already occurring in the park.

Because resource and social conditions are important, managers focused on two strategies to address recreation impacts: education and limiting use. They believe that educating the public is crucial if impacts are to be reduced. They feel visitors need to understand what is appropriate behavior in the backcountry and how to minimize their effects on the land and other visitor's experiences. Limiting use is another technique that managers can use to reduce impacts. They believe that a balance needs to be found between allowing access to the backcountry and maintaining acceptable conditions. With more research and time, they feel use levels can be controlled and maintained at acceptable levels.

Responsibility of Management

Preventing recreation impacts from occurring and restoring the landscape is very important to managers. They feel that it is the responsibility of management to address issues relating to impacts. Part of this responsibility is to maintain areas that have a pristine or primitive quality to them. Managers feel that visitors should also be able to achieve a sense of wilderness when they are in the backcountry.

Managers feel a responsibility to ensure that natural, not man made, processes are occurring in the park. Unnatural changes occurring from the effects of visitor use should not overshadow the natural processes occurring in the park. In addition, the mission of the Park Service also dictates the responsibility of managers to preserve the park for future generations. Some individuals believe this mandate is the core of their responsibilities and that preserving conditions in the park should go above recreational use and needs.

Bob: Well [impacts] it's sort of a sign. I take it as a sign that there's no real care. Like there's no real ownership from the visitor. And that bothers me because my

whole goal has always been in the Park Service is that I feel like we need to educate because if we're supposed to keep this piece of ground as pristine as possible or as preserved as possible for every generation, then I feel for it to make it to the next generation and the next generation there has to be this sense of caring, of ownership.

Nicole: I guess that feeling of being out there, being part of nature and just wanting to be in nature and not reminded that we've got so many humans on the earth. Just the solitude. The excitements, the experience.

Julie: Because one of the things that, it goes back to the natural process. You know, Zion is a small island in this humongous ecosystem and we can't control what happens outside the park boundaries, although we do try to coordinate with other agencies and private property owners to make sure that our management actions, particularly the ones at the boundaries, mesh some. But, you know, I think we do have to strive to have some kind of, to keep the processes within the park itself as natural as possible.

Mike: Well it's damage to the resource, it's damage to the plant life. Plant life is habitat for the critters and on and on. When we get a lot of social trailing and that sort of thing, one propagates another and propagates another and propagates another. We want the natural processes to be predominant and the people's affect, visitors affect, the staff affect on the resource should be just a small overlay on the condition of the resource.

Steve: Well, because I think that we have a duty to maintain a sense of wilderness. You know, I think that the experience that you have in the canyon should be different from that experience that you have in the backcountry. And I don't think the backcountry should be, is meant for just everybody and anybody. I think that it should be an area that should test your skills and should be very much a different experience.

Bob: The biggest one that comes to mind is how to maintain or how to achieve that pristine versus primitive kind of environment that we've outlined in our general management plan. I mean, the idea was in the pristine you want to feel like you're about the only one out there. And in the primitive you aren't necessarily the only one out there but there's very few of you and there's a sense of solitude or ability to get there.

Mike: Well I think, to me the biggest concern is to protect and restore the resource condition. You know, my way of looking at this is the laws establishing the Park Service said that we were to take care of these areas, to conserve them for future generations. It didn't say anything about the current generation. So our emphasis, and I think Congress was wise in the way they wrote the act, is to be looking for what's going to happen in five years, what's going to happen in 20 years? We should be managing for the future generations as opposed to getting

too fixed on what's happening now. So if we're seeing resource damage now we need to take care of that so that the people in the future have the ability to get to those places as well. It might mean that we have to limit some people now. But it might give people opportunities in the future.

Management Priorities

In regards to impacts, managers listed a number of conditions they believe should be the priorities for management. Managers described canyoneering, campsites, social trails, the amount of human waste, and wildlife feeding as the impact issues that need to be the priority for management and need immediate sanctions.

It is also important to note that these issues were described in the context of the level of use in the backcountry. Managers described trails, waste, and feeding as being an issue because of the number of people visiting the backcountry. Therefore, managers included group size and limiting use as issues that need to be addressed.

Steve: Group size in certain areas and then social trailing is a major problem, at least in the main canyon. I think that needs to be addressed.

Julie: One thing that I haven't mentioned is social trailing. It has the same kind of impacts as on biological soil crusts or increasing erosion or soil compaction or all those other things. I think that's something, particularly here in the main canyon that we need to get a handle on. And I'm not sure how you do that. We've taken some limits on some of the canyoneering areas that I think have been a good step forward, limiting the numbers to 12 people in a day. That's taken care of some of those problems.

Nicole: I think social trails and human waste and feeding wildlife should be the three main things that we start dealing with resource protection.

Bob: I would pick the human waste issue because it becomes, in those very heavily used areas, like The Narrows it becomes a big issue because it's just a lot of people and eventually there's just signs left. Human waste and trash are kind of hand in hand.

Canyoneering has been an activity that is getting a lot of attention from management.

This activity has become a priority for managers because Zion's slot canyons are where

the most use has been taking place in the backcountry. Managers feel understanding the impacts of canyoneering and its increased use will be very important in protecting conditions and experiences.

I: Do you think that canyoneering and that issue is becoming a priority of management efforts or that it should be one of the main priorities?

Julie: I think it's becoming a priority and I think it should be a priority. I think it's tough because we don't have the wilderness management plan yet. We have put some interim limits on some canyons, which I think has helped.

I: Why do you think canyoneering so much should be a priority?

Lee: Partly because that's where most of our visitation is taking place. For one it's so hot here that people are seeking places that they can get into cooler canyons and where water is and get wet and things and that's where a lot of our visitation is taking place. And I think that it's only going to increase in the future and so by us looking at it heavily now it's only going to make our job easier maybe in the future.

Jane: Definitely canyoneering. Definitely wildlife feeding.

Impacts at campsites are an additional issue that some managers feel should be a priority.

Resource damage such as waste and litter at sites has increased due to increased use in the park. These managers feel focusing on designating sites and monitoring impacts will be important if conditions are going to be maintained at acceptable levels.

Bob: The issue, do we want to make designated campsites or do we like the idea that there is this open zone area. The thing is with an open zone you're supposed to be able to camp anywhere but they won't camp anywhere because they need to camp around the spring because there's no water in the backcountry so that becomes a concern. And it doesn't seem to be being addressed. It isn't being addressed as closely as I'd, perhaps, would like it to be.

Lynn: As far as Zion goes, I think The Narrows campsites need a lot of attention for the reason of human waste, garbage, and I think that's because it's getting a lot of use. But also we just haven't had a good flash flood year, in the past five years and it's not getting a good cleaning out. So I think that's a big concern and something that I think we really need to focus our efforts on is the whole educating people about their waste and garbage and trying to get those campsites cleaned up or even giving them a break and maybe even telling people that they can't do an overnight trip in The Narrows because it needs to kind of revamp itself.

Education

Managers feel a very important part of addressing recreation impacts is educating visitors about their presence and effects. Management is very focused on educational strategies as a way to increase visitor awareness and gain visitor assistance in preventing impacts.

Managers feel that education can demonstrate to visitors what behaviors are appropriate or inappropriate in the backcountry. Also, they feel that education about the park and its resources can give visitors an understanding of the experiences that are provided for them. Managers believe visitors are willing to learn and willing to comply with regulations when they understand the justifications. By education visitors about the backcountry and impacts, managers feel they can prevent new impacts from occurring and protect visitor experiences.

Bob: There's probably another one just as big and that is how do we reach these people to teach them how to take care of the park to get a sense of ownership and feel like it's, you know, realize it's not okay to just poop anywhere. To just leave your trash with the idea that somebody else will pick it up. How do we reach these people, because there's a variety of people that come here from every background.

Nancy: The connection has to do with how informed people are and understanding that even though you should have access to being out in the woods, understanding that if you leave a beer can out there the next person that comes along is going to, their views and their experience is going to be impaired by your sloppiness. And I think as a society we have become more in tuned to understanding that we leave impacts, that we make changes on the face of the earth and that we have to be cognizant of understanding that other people that come behind us will have to deal with those changes. One of the things that I hear in the Park Service a lot is educating the public, educating the public. And there seems to be an us and them kind of dichotomy where we're the all-knowing, arrogant Park Service and that we're trying to educate the stupid social mass. And that's something that I think the Park Service needs to work on to make it more of a, we're all in this together kind of thing.

Nicole: Visitors aren't out here to destroy the thing. They just don't know. And so I think education is key. Education is key. Messages getting out there is the key. And I think we're really trying to work on that right now.

Julie: You only have a certain number of opportunities to educate the public. You're not going to get to everybody, and even if you get to everybody everyone isn't going to hear the message. But I still think we have to try. I still think we have to make an attempt to try to educate people on how important it is to maintain these systems, which include not compacting the soil and allowing biological soil crusts to do their thing.

Mike: If we can get the visitors to understand why we do certain things or don't do certain things then we're way ahead of the game, because we can't be out there all the time. And most of the visitors are going to comply if we get a chance to talk to them or put the information in their hands. They're smart enough to understand why we need to do whatever it is we're asking them to do.

Chris: There again, I think we need to do the educational standpoint and paint the picture from all the folks from Brooklyn that what they see is a beautiful veneer, but behind the scenes there's lots of other things taking place that they may not realize that are impacting the park and we're not doing a good job of that.

Limiting Use

Because of the increase in visitation that the backcountry in Zion is experiencing, limiting the level of use has become very important in regards to managing impacts. Managers feel that limiting use can be very successful in minimizing resource impacts and protecting the quality of experience for visitors.

Managers believe that limiting use is a complex issue. Some feel that the numbers selected for backcountry areas need to be based on good scientific evidence. They believe numbers that are not arbitrary are more easily explained and justified to visitors. Managers also must balance access with the protection of resources and experiences. They feel the park is foremost a place for people and its backcountry a place to enjoy, but it is the responsibility of management to preserve conditions and experiences for the enjoyment of future generations.

Jane: We want to be able to have people recreate it through perpetuity and unless we put these restrictions in it's not going to happen. And so I think in that sense it's good that this park actually initiated counting and some limitations before we were forced to do it, before the resources got so bad that we got sued over it. So I feel like we've been more proactive than I've seen other parks be.

Julie: I think we need to limit the number of people that are going up there [the Narrows]. People are unprepared. They're not getting the experience they think they're getting. The area is in proposed wilderness and we're letting these massive numbers of people up there. It's not helping them with their experience and it's impacting park resources. We've taken some limits on some of the canyoneering areas that I think have been a good step forward, limiting the numbers to 12 people in a day. That's taken care of some of those problems.

Steve: I still think the whole idea of reducing numbers will have a ripple affect that not only affects visitor experience but certainly will benefit the resource itself. Water quality, vegetation, soils, everything will benefit from that. But there's no easy answers on how to regulate that.

Mike: So if we're seeing resource damage now we need to take care of that so that the people in the future have the ability to get to those places as well. It might mean that we have to limit some people now. But it might give people opportunities in the future.

Chris: Well I think they [use limits] probably should be one of a multifaceted approach to managing the park area. But also I think there needs, again, to be a strong look at other areas. Decisions based on real sound science and also a lot of preplanning, a lot of public involvement and a lot of interpretive education efforts.

Lee: We're trying to come up with group size limits for the campsites. Reevaluate those. Do some work on the campsites to kind of keep the spread potential moderate. And then some of the other ones, the other main issue is canyoneering and just that use and the limitations of the canyons, just the debate from the visitors. They don't like what we're doing sometimes. Some people do like what we're doing, and just trying to figure out a balance between making the visitor happy and taking care of the canyon resource.

COMPARISON OF MANAGERS AND VISITORS

The final part of the nomothetic analysis was to compare how the emergent themes expressed by visitors relate to those themes described by managers. The purpose of this study was to understand how recreation impacts were perceived in a wilderness

setting, how impacts were defined, and to what extent impacts are important to both visitors and managers. This comparison provides insight into answering these questions by demonstrating the difference in meanings that both visitors and managers described for the themes related to the dimensions of perception, definition, and importance. Table 1 shows these three dimensions of impact and the comparable themes between managers and visitors.

Perception

Park managers perceive Zion foremost as a scenery park. It is a park with spectacular geology, rich colors, unique rock formations, and impressive canyon environments. Ecologically, it has diverse life zones and environments that provide a sanctuary for wildlife and plants.

Zion is also supposed to be a place of refuge. Most managers believe it is a setting where people should have opportunities for solitude and natural quiet, getting away from the pace of their everyday life. It is also considered a place for people. They believe visitors should be able to challenge their body and skills in the backcountry of the park.

Visitors appeared to see the park through the same scenic lens of the managers. Many focused on the impressive rock formations, and dramatic canyons. The landscape was described as beautiful and spectacular, something that needed to be experienced to fully comprehend.

Some visitors struggled to express the experience they had while in the backcountry. To adequately describe the conditions and experience, they resorted to comparing Zion to other national parks and recreation areas. Respondents most typically compared Zion to other Southwest parks, such as Arches, Yosemite, or the Grand

	VISITORS (40 respondents)	MANAGERS (11 respondents)
DIMENSION #1: PERCEPTION	<ul style="list-style-type: none"> • Beautiful park, made comparisons to other parks • Conditions noticed first: litter • Other conditions noticed: campsites, weather, trails • Focused on inappropriate behaviors • Issues: human waste and limiting use • Orderville Canyon: Aware but unconcerned • Management doing a good job limiting use and still keeping access 	<ul style="list-style-type: none"> • Scenery park, place of refuge • Conditions noticed first: litter • Other conditions noticed: human waste, soils, vegetation, trails • Focused on resource conditions and inappropriate behaviors • Issues: Canyoneering, climbing, human waste, limiting use • Orderville Canyon: Large issue needing attention • Management doing a good job limiting use but needs sound science behind use limit numbers
DIMENSION #2: DEFINITION	<ul style="list-style-type: none"> • Only able to define trash, trails, and waste prior to "impact" question • Definition: Human-caused changes that are negative • 3 definitions: textbook, examples, emotional • Examples: inappropriate behaviors (litter, waste) • Trails evaluated as acceptable • Social impacts: direct connection only to inappropriate behavior impacts • Expectations developed at older age or college • Recognize inappropriate behaviors first and most often 	<ul style="list-style-type: none"> • Fluently described resource and social conditions prior to "impact" question • Definition: Human-caused changes that are negative • One definition: textbook • Examples: Bare ground, soils, erosion • Trails evaluated negatively • Social impacts: direct connection to both behavioral and resource impacts • Expectations developed at older age, college, or after working for an agency • Felt visitors are aware only of inappropriate behaviors: not in tune with resource conditions
DIMENSION #3: IMPORTANCE	<ul style="list-style-type: none"> • Come to get away from urban lifestyle • Want undeveloped backcountry with lack of people • Behavioral changes: pick up trash, plan to visit at times and on days when less crowded • Keep backcountry undeveloped, no more campsites, keep use levels down 	<ul style="list-style-type: none"> • Feel responsible for preserving conditions for future generations • Priorities: canyoneering, campsites, human waste, use limits • Interim use limits a key strategy for maintaining social and resource conditions • Education key to increasing visitor understanding

Table 1: Visitor/Manager Comparisons

Canyon. In these comparisons, they noted that Zion was much less crowded than other areas they had visited.

When asked what conditions they perceived first in the backcountry, both managers and visitor respondents frequently mentioned trash. Visitors in this study appeared to focus on these impacts because they felt it was direct evidence of human use. Managers felt they focused on litter because it is a very obvious sign of inappropriate behavior. It stands out to them when monitoring characteristics of a site.

After litter, the similarities in the perception of conditions between visitors and managers varied greatly. Some visitors focused on their campsite, whether it was clean and well maintained. Others paid attention to the weather conditions, the amount of people they encountered, and the condition of the trail. Managers focused more directly on signs of human use. They looked for human waste, footprints, or other remnants of visitors. They also focused on conditions of vegetation, soils, and trails. Managers notice evidence of soil compaction, erosion, and trail braiding because they described these conditions as prominent in the backcountry and easily monitored. In contrast, these conditions were something most visitors in this study were not initially aware of when describing backcountry conditions.

Slightly over half of the visitors interviewed were first time visitors to the park. Because their perceptions appeared to be based on comparisons with other areas, most visitors described the conditions that seemed absent from Zion's backcountry. Many perceived a lack of impacts and a lack of people. Most encountered few signs of human use and few groups while on the trail or at camp. On the other hand, managers were very aware of the changes occurring in the park. The past few years have seen canyoneering

becoming a preferred activity in Zion's backcountry. This increased popularity has brought increased visitation and its associated impacts. Managers described seeing more social trails occurring with the high levels of use.

Both groups were asked to describe the issues they perceive that the backcountry is now facing. Visitors respondents were very aware of management issues, describing human waste and limiting use as what appeared to be the current focus of management. Managers did describe these two issues as well, but placed equal emphasis on the backcountry activities of canyoneering and climbing. These two activities have contributed to high levels of use and increased resource impacts such as more human waste. High use has also led to the instituting of use limits in the backcountry as a way to manage the number of people in the canyons.

Another issue that was raised during this study was the phenomenon of front country visitors encountering backcountry visitors at the transition zone of Orderville Canyon. Visitors in this study appeared just as aware of this situation as managers were. They acknowledged that the experience changed and the sense of solitude and wilderness was lost when encountering large amounts of people. Visitor respondents, however, were not nearly as concerned about the issue as managers. Most were happy to realize their trip was almost over and excited to have completed the hike. Managers, on the other hand, were very concerned with the situation. They expressed the need to find a successful way of maintaining the experience and enforcing a boundary between the backcountry and front country.

Managers of Zion were very aware of the impacts visitors most frequently notice. They believed that visitors would notice inappropriate behaviors, such as trash and waste,

most frequently, which visitors did. Management has this impression because they believe visitors are not as focused or in tune with other conditions related to soil and vegetation.

Both groups were positive about the amount of management occurring in the park. Overall, most visitors felt that managers were doing a good job limiting use while still providing access to areas of the park. Managers agreed that current use limits were successful and that management was remaining proactive in minimizing impacts. However, some managers were much more critical of themselves. They felt management needed to strive for better education and sounder science behind management decisions.

Definition

The assessments of impacts that visitors were capable of making prior to being asked to “define recreation impacts” were very limited. Trash, trails, and waste were the only examples of impacts described (based on this researcher’s definition) by visitors in this study without being asked directly to address impacts. Managers, on the other hand, were very fluent in describing conditions that were unacceptable and had an impact on the backcountry. Their descriptions included changes in both social and resource conditions that were witnessed in the backcountry.

When asked to define impacts, managers gave what could be considered a textbook definition. In their view, impacts were human-caused changes that left a condition different from its natural state. This change typically had a negative connotation and managers most frequently referred to changes in regards to resource conditions. Likewise, visitors typically defined impacts as a human-caused change with a negative context. They also focused on resource conditions, addressing social conditions out of the context of their impact definition.

Visitor respondents, however, were not always able to give a textbook definition. Some individuals could only define impacts by relaying examples of conditions they considered to be impacts. These individuals were unable to provide a descriptive definition of what an impact was. Other visitors were unable to define the word impact at all without being prompted to resource conditions. They initially interpreted the questions as asking what impact or effect the park had on them. These individuals provided an emotional response regarding how the park was a great experience and had a deep affect on them personally.

The examples managers and visitors gave were very different from one another. Most visitors focused on evidence of inappropriate human behavior, describing trash, waste, and graffiti. Conditions like soils and vegetation, invasive plants, and erosion were mentioned much less frequently. Conversely, managers most often described bare ground, loss of vegetation, and soil compaction as examples of impact. Human waste, litter, and graffiti were also mentioned frequently as important examples of impacts. Managers also provided the examples of noise and sound as types of impacts. They described how loud groups and plane overflights could have an impact on visitors seeking solitude and quiet as part of their experience.

One example of impact frequently mentioned by both managers and visitors in this study was trails. Whether it was social trails or the main trail, both managers and visitors were clear to point out that by definition, the trail is an impact. Both groups however evaluated trails very differently. Trails and other signs of travel like footprints were some of the few types of impacts visitors typically evaluated as acceptable. These visitors considered footprints and trails as inevitable signs of human use and expected to

see them in the backcountry. They also felt that these conditions can be washed away by flash floods in the canyon and therefore do not leave any lasting effect on the landscape. Managers evaluated them negatively, citing erosion and social trailing as resource damages associated with trails.

When evaluating all types of impacts in the park, managers described which conditions enhanced the backcountry and which detracted from it. Designated campsites were the only impact example given by managers that was considered to enhance the backcountry. They felt designated sites placed boundaries for camping and allowed other locations to rehabilitate and be restored. It appeared that all other impacts mentioned by managers were considered to detract from the backcountry setting. Managers particularly focused on how they detracted from visitor experiences.. They saw negative impacts as changing the setting from its natural state and losing its sense of solitude and primitiveness.

Visitor evaluations predominantly focused on inappropriate behavior by others. Litter and human waste were considered very negative acts that ruined the setting and experience. Respondents questioned why individuals could destroy the beauty of the backcountry. Visitors also typically evaluated impacts that were described as necessary for backcountry activities and use, such as trails and footprints, as acceptable.

Both groups addressed the social impacts of people. Managers connected social conditions directly to their definitions of impact. They explained how social conditions affect the sounds in the backcountry and how encounters can have an effect on visitor experiences. Managers feel that social conditions such as increased use levels lead

directly to other resource issues. More people utilizing the backcountry cause more soil compaction, erosion, trampling of vegetation, and leave more trash and waste.

Some visitors in this study were also able to describe how social conditions have an impact on the backcountry. They acknowledged that crowds and encounters could detract from their experiences and sense of solitude. They agreed with managers that social conditions can lead to resource damage, but only those impacts related directly to inappropriate visitor behaviors, such as litter, graffiti, and human waste. These respondents did not acknowledge that social conditions led to more vegetation loss, erosion, or soil damage.

In this sample, visitors apparently brought expectations with them that Zion would have a high level of use and that evidence of people would be prevalent. Most were surprised when they found the park to be clean and encountered less people than they expected. This study tried to understand where these expectations came from and why they were important. Most visitors described their concept of impacts and the importance they placed on their definitions developing from college and personal experiences. As they grew older and spent more time as adults in the backcountry, they learned what conditions should be expected and what experiences they preferred. Higher education described to them ecological concepts and the effects human use can have on the landscape.

Very few individuals described developing their values or expectations at an early age. These few individuals described being raised to value the landscape and learned very young what behaviors were inappropriate when in the backcountry.

Managers apparently developed their definitions in the same way as visitors. Most did not become aware of issues like cryptobiotic soils and invasive plants until in college or gaining experience working for a federal land agency. By receiving an education in natural resource and biology, they became more aware of how resource damage occurred and its effects on the environment. Many only became aware of more specific backcountry issues after having worked in Zion.

As part of their impact definition, visitor respondents described which impacts they recognized most frequently in the backcountry. Comparable to their awareness of conditions and the examples they gave as impacts, these visitors described inappropriate visitor behaviors like trash, trails, and graffiti as the types of impacts they recognized first. They appeared to not recognize vegetation and soil damage nearly as often. Managers predicted this response when they were asked about visitor awareness. Managers believed that visitors would only be able to notice trash and graffiti because they were less in tune with the condition of soils and vegetation.

Importance

The importance that visitors from this study place in their impact definition appears related to the reasons they visit the backcountry. They seemed to come to Zion to get away from their urban lifestyles where crowds and litter are commonplace. Respondents wanted a natural setting that was undeveloped and where they could feel like they were the first person to visit the area. Seeing a clean backcountry without people was important to them and encourages them to return to Zion. Encountering human waste or litter can ruin their experience because it was important not to see those things while in the backcountry.

The value of visitors' impact definition relates directly to the responsibility managers feel they have for the park. Managers believe it is important to preserve the conditions of Zion so that they are available for the enjoyment of future generations. They strive to retain solitude and quiet in the backcountry by maintaining use limits. It is also important to managers to minimize impacts because they believe it is their responsibility to ensure that natural processes are occurring without showing the signs of human effects.

Managers have made priorities based on what issues they feel are most important in regards to impacts. Most believe canyoneering needs more attention because of its rapid increase in the past few years. Campsite conditions need to be monitored to maintain the quality of resources. Inappropriate visitor behaviors like wildlife feeding and improper disposal of human waste need to be minimized. More importantly, group size and use limits need to be evaluated because they are directly related to the reasons canyoneering, campsites, and visitor behavior are issues in the first place.

The seriousness of these issues and others related to recreation impacts appear not to have reached the same level of importance in visitors. The behaviors and plans of visitors in this study seem to not have been significantly altered due to encountering impacts. This appears related to the importance visitors place in their impact definition and experience. The most common behavior performed by visitor respondents in regards to impacts was picking up litter. Another common action taken by visitors was to visit the backcountry on days or seasons when the park is less crowded. They have been displaced from other areas where social encounters and crowding have exceeded their impact threshold and tolerance.

Because resource and social conditions are the responsibility of managers, they have suggested keys to minimizing impacts and maintaining the quality of the backcountry. Managers feel limiting use is an important way to manage recreation impacts and preserve visitor experiences. Less people means less damage to the resource and fewer encounters in the backcountry.

To minimize impacts, managers consider education the other key. They believe that educating visitors will give them a better understanding of what conditions are supposed to be like in the backcountry. With a greater understanding and awareness, managers believe visitors will be more willing to comply with regulations and pay attention to their impacts on resources and experiences.

Because the condition of the backcountry and their experience is important to them, visitors in this study appeared open to these management strategies. They expressed a desire for conditions not to change in the backcountry. Most want facilities to remain undeveloped and stay the same as they were during their trip. Respondents did not want to see an increase in use or encounters.

CHAPTER 5: CONCLUSIONS AND IMPLICATIONS

This study focused on the concept of recreation impacts. Its purpose was to explore how backcountry visitors and managers of Zion National Park perceive impacts, how their constructs of impacts compare, and to what extent these impacts are important. This was achieved by addressing three research topics. First, the way visitors and managers define recreational impacts was investigated. Second, the study looked at what conditions were sensitive to triggering recognition of an impact. Lastly, visitors and managers were questioned to determine the importance of their impact definitions and how they reacted to encountering impacts.

Through an idiographic and nomothetic analysis of 40 visitor and 11 manager interviews, responses were thoroughly examined in relationship to these research topics. From this investigation, three dimensions of impacts emerged that provided the interpretation for answering this study's research questions.

This chapter provides the summary of these three dimensions of impacts and the conclusions reached for this study's research questions based on these dimensions. It also addresses the implications of this study for the management of Zion National Park and the implications this study has for the field of impact research. Finally, the chapter concludes by suggesting some important issues to be considered by future research.

Dimensions of Impacts

The research questions and their subsequent development into an interview guide framed the topics that would be addressed in this study. However, until the responses to these topics were interpreted, an understanding of the concept of recreation impacts was

not fully reached. Through the development of an organizing system, three dimensions of impacts emerged that form the structure of one's concept of impact: perception, definition, and importance (see Table 1).

The dimension of perception relates the contextual component of a respondent's concept of impacts. It is their awareness of their surroundings and the conditions they encounter in the backcountry. This contextual component includes their impressions of management and their aesthetic view of what this place is supposed to be. It also includes how their evaluations and recognition connect to their perceptions of the context.

The dimension of definition relates to what could be called the concrete component of impacts. Individuals are more specific and address the concept of impact in a more tangible way. They provided definitions and examples of an impact. Respondents described their understanding, or lack thereof, of the relationship social conditions have to resource conditions. Also, by describing their education and expectations, individuals demonstrated how their definitions of impact were formed and how they have been influenced.

The dimension of importance is the emotional component of impacts. Respondents expressed their feelings and values associated with social and resource conditions in a backcountry setting. By describing why these conditions are important, respondents provided insight into their previous responses and allowed for a better understanding of their concept of impacts. This importance offers insight into visitor behaviors, management priorities, and what conditions are preferred in a backcountry setting.

Based on these three dimensions, the following important interpretations were derived from the previous chapter:

Perception (Contextual)

- Litter was the condition most commonly recognized first by both managers and visitors in this sample.
- Most visitors appeared to focus primarily on conditions that could be considered inappropriate behaviors, while managers focused on resource conditions.
- Human waste and use limits are important issues for both managers and visitors, but managers also see canyoneering and climbing as important issues.

Definition (Concrete)

- In this study, both managers and visitors defined impacts as negative, human-caused changes.
- Visitors tended to describe inappropriate behaviors as impacts, while managers describe resource conditions related to soils, vegetation, erosion, and inappropriate behaviors.
- Managers connect social conditions to resource impact while it seemed visitor respondents did not.
- Both groups in the study described their definition and understanding as most often developing in college or at an older age.

Importance (Emotional)

- Most visitor respondents wanted conditions to remain the same and did not want current use levels to increase.
- In relation to impacts, visitors altered their behavior in two ways: picking up litter and planning their visits around crowds.
- Managers feel establishing use limits will be an important strategy for addressing impacts.
- Managers feel education is key to increasing visitor understanding.

By interpreting this study's research questions within the context of perception, definition, and importance, we are able to address how individuals define impacts, what conditions are sensitive in triggering impact recognition, and what importance they place in their impact definitions.

One assumption addressed earlier in this study was the concept of wilderness as a social construction. This study has also assumed that each individual within the culture then develops their own construction of wilderness based on their education and experience. These assumptions are important to revisit because they influence how the meaning individuals place in their concept of recreation impacts will be interpreted.

The meaning individuals place in the reality around them is affected by the culture they live in. This culture contains social norms and practices that construct the meaning and reality each individual accepts. A hermeneutic approach accepts these constructs and attempts to interpret how individuals associate meaning with them. In the case of this study, it is important to recognize the past experience and knowledge respondents have with impacts, such as litter, human waste, and graffiti. Inappropriate behaviors, such as litter and graffiti, have been exposed to individuals from a very early age. Our culture has socially constructed these items as inappropriate in a wilderness context. Individuals have also had other experiences with conditions in different wilderness settings. These experiences have influenced how they perceive, recognize, and evaluate conditions and have no doubt affected how individuals responded to this study.

It is also important to acknowledge how past experience and understanding has influenced individual perspectives because it grounds our interpretation. By accepting our culture's social constructions, we are better able to interpret the meaning of this study and address the questions that have been raised.

How Recreation Impacts are Defined

R1: "How do backcountry visitors and managers of Zion National Park individually operationalize their construct of a recreation impact and how do these constructs differ between groups?"

Both visitors and managers in this study provide a definition for impacts that are similar to the ones provided by Leung and Marion (2000), Farrell et al. (2001), and this author. They define impacts as a human-related change in a resource that carries a negative connotation. Noticeably absent from both manager and visitor definitions was the concept of social conditions as they relate to issues such as experience and encounters. Managers later clarified in interviews that social issues are directly linked to their definition of recreation impacts, but most individuals in either group did not bring up social conditions while defining impacts.

This conclusion supports the claim by Hoss and Brunson (2000) that environmental or resource impacts are more likely to be judged unacceptable than social impacts. This study appeared to demonstrate that most visitors in the sample are not evaluating social conditions in relationship with their impact definitions. They see the connection of social issues to impacts caused by inappropriate behavior, but they do not see social conditions leading to resource damage in the same way as managers. Visitors in this study therefore seem to be evaluating resource and social conditions separate from one another.

Another part of interpreting how impacts are defined is to address how this study has affected this researcher's definition of impact. As described earlier, a hermeneutic approach believes an individual's horizon of meaning changes when they interpret a phenomenon. When a researcher interacts with the subject, a fusion of horizons occurs to create a new horizon of meaning for each respective individual. At the beginning of this study, this researcher defined impacts as "any perceivable, visitor-related change in the quality of a resource or social conditions in a backcountry setting." Through the course of

this study, that definition has changed in two ways. First, this study has demonstrated to this researcher that impacts are not specifically visitor-related. Any human influence, manager and visitor alike, can be considered an impact. Second, our culture's construction of impacts predominantly evaluated them negatively. While this researcher still accepts both negative and positive changes, he does acknowledge that changes in quality will typically carry a negative connotation.

Another conclusion of this study is that visitors need some frame of reference to be capable of defining impacts. White et al. (2001) have been critical of past impact research for using leading words in their measures that prime respondents to evaluate conditions negatively. This study supports this criticism based on visitors' inability to address impacts without being directly asked to "define impacts." Prior to the word "impact" being used in the interview, visitor respondents were only able to address trash and trails as conditions having a negative effect on the backcountry. In comparison, managers were very fluent in addressing multiple types of impacts, specifically conditions related to vegetation, soils, and visitor behaviors. When visitors were able to provide examples of impacts, they focused strictly on conditions that could be considered a result of inappropriate visitor behavior. Trash, improper disposal of human waste, trails, and graffiti were the examples most frequently given by visitors. Impacts related to vegetation and soils were typically omitted, unlike managers who focused on trampling of vegetation, soil compaction, and erosion just as much as they did trash, human waste, graffiti and trails.

This result demonstrates that visitors can evaluate impacts when directed to, but typically will not evaluate many conditions as impacts on their own. This can be

explained based on all three of the emergent dimensions of impact. First, resource conditions are not part of a visitor's contextual perceptions. They apparently do not focus on ecological processes or conditions that are not direct evidence of human use. Second, impact definitions are partly based on education and experience of the individual. Most visitors in this study didn't become aware of impact issues until in their early adult years. Many learned concepts about ecology and natural resources only after receiving a college education. Likewise, many managers noted they were not made aware of issues such as invasive plants or cryptobiotic soils until receiving a degree in natural resources or working for a federal agency. This explains why vegetation and soil impacts were frequently omitted from visitor responses. They also do not have the same experience or training as managers with these conditions to consider them part of their impact definition. Third, conditions relating to inappropriate visitor behaviors have become important to visitors. These conditions have social constructions that are addressed by our culture and multiple natural resource education programs. They have become part of our personal values. For these reasons, litter, human waste, and graffiti can violate an individual's expectation for the backcountry and are often the most recognizable as impacts.

It is also important to note the differences in how visitors in this study evaluate impacts compared to managers based on their definitions. While managers generalize that all impacts have some degree of detriment to the setting, visitor respondents seemed to accept some impacts while opposing others. Trails, bolting from canyoneering, and footprints were types of impacts normally encountered while in the backcountry. Some visitors considered these impacts to be acceptable because they were considered

appropriate for the context given the types of use Zion's backcountry receives. This is important to note because these evaluations for conditions are less strict than what most managers would require for a wilderness area. Having a defined path and increased safety in the backcountry is more important to visitors than a completely untouched and primitive setting.

Conditions Sensitive to Recognition

R2: "From an individual's perspective, what variations in resource and social conditions are most sensitive in triggering impact recognition?"

Most managers see the purpose of Zion as a place of refuge and a sanctuary for wildlife and plants. It is where individuals can find solitude in the backcountry and have a rugged, wilderness experience. These contextual groundings make managers very sensitive to any change in condition that could detract from this purpose. When conditions in the backcountry are different from the natural processes of the landscape, managers take notice. They pay particular attention to resource conditions relating to soils, vegetation, and erosion. They have a familiarity with the conditions in the park and base their assessment of conditions on what they believe the park is suppose to look like. Issues regarding use levels, canyoneering, and human waste have become important because management has seen them increase over the past few years.

The conditions visitors are sensitive to seem based on their expectations and perceptions of what a backcountry setting should be like. Visitors have become sensitive to the issues that management faces based on personal experience, education, and information and communication the park is providing them. Respondents in this study probably are aware of human waste issues due to the Zion's regulations requiring them to pack out their waste. They seem aware of use levels in the park because they are

encountering people and are now required to get permits for the backcountry. Multiple information sources in the park, expectation, and social construction have also made them aware of litter and other inappropriate behaviors.

All of this information appears to have made visitors aware of conditions in the park. Visitors seem to recognize litter, human waste, and graffiti in the backcountry because they expect to see these impacts. They evaluate them as negative because of the importance they place on these conditions and their values have been shaped to define these conditions as inappropriate in a national park. However, this study suggests that visitors have only been sensitized to evidence of inappropriate human behavior. Issues dealing with vegetation loss, erosion, invasive plants, campsite spreading, and social trailing apparently have not reached visitors. Even if these issues are part of an individual's definition, most did not encounter them at a level that would trigger a response from them. In some cases, these conditions are non-issues because visitors consider them acceptable. Campsites and trails are part of a backcountry experience and not considered inappropriate conditions. A campsite or trail must exhibit a large amount of abuse before visitors evaluate them negatively. Others like exotics and cryptobiotic soils are not even present in their definition and therefore cannot even be evaluated.

These conclusions also address the earlier assumption that individuals possess thresholds that must be exceeded before impact recognition occurs. Understanding that visitors have become sensitive to inappropriate behaviors and use levels directs one to examine if individuals have thresholds for these conditions and question whether they have been exceeded. In the case of this study, conditions such as litter, human waste, and graffiti apparently have thresholds and because respondents mentioned them, they must

currently be at levels that exceeded thresholds. However, it is unclear what thresholds exist for resource conditions because of individual definitions and evaluations as stated above.

Importance

R3: "What type of importance do individuals place in their construct of impacts and what effects do impact recognition have on behavior?"

If an example of impact can be defined as having a negative effect on the resource or experience, it is typically expressed as important to both managers and visitors. The importance visitors place on impacts seems to relate to their reasons for coming to the backcountry. They want to get away from the pace of an urban lifestyle, free from crowds and trash. Visitors in this study were seeking a natural environment that was undeveloped and gave them the feeling of being the first people to ever visit the place. For these reasons, visitors place a large amount of importance on impacts relating to inappropriate human behaviors. Seeing litter, human waste, and graffiti can ruin a visitor's experience. On the other hand, if they visit a setting that is very clean and lacking evidence of people, then they will want to return.

The importance managers place on impacts comes from more than just personal values on an individual level. As explained by Marion and Lime (1986), managers have a responsibility to protect the resources of the park and the experiences of the visitors. This mandate drives managers to maintain the naturally occurring processes in the park.

Another mode for expressing the importance of impact definitions and perceptions is through changes in behavior. The effects of impact importance on behavior were seen in some visitors in this study. The most common behavioral response visitors had to impacts was to pick up litter. This action has become a very socially acceptable

behavior based on educational efforts in natural resource management and our dominant social constructions. People now understand that it is inappropriate to litter and that cleaning up after others makes the landscape better. Visitors also have changed their behaviors in regards to social impacts. Some individuals explained they chose not to visit popular areas on holidays or when they believe the areas will be crowded. They select different times of the day and week when it is easier to gain access.

Beyond these examples, visitors did not relay any other behaviors related to impacts. Possible other behavioral changes could have been to stay on maintained trails, camping at established sites, and avoiding eroded trails. These responses may not have been given because these behaviors could be considered to have become socially proper behaviors in the backcountry. Because individuals are becoming better orientated to the backcountry and have personal experiences, they may neglect to mention these behaviors because they are accepted practices.

Another element of impact importance relates to social conditions and issues in the backcountry. With canyoneering and other backcountry activities increasing, managers are very focused on how visitor experiences are being affected and the resulting damage to resource conditions. The importance managers place on social impacts is obvious from the management actions taken to minimize them. The park has instituted use limits on all backcountry slot canyons and designated campsites in most backcountry areas. They are focusing efforts on educating the public and maintaining the quality of the resource and experience.

Visitors also place a lot of importance on social issues. When asked what could not change in the park, most respondents addressed the level of use in the park. Because

the amount of encounters they had did not exceed their expectation, visitors appeared satisfied with their experience. They therefore may see any increase in use as a possible impediment to the experiences and conditions they desire when traveling in the backcountry.

Management Implications

One of the questions asked at the beginning of this study was whether managers are focusing on what is important to recreation users. By understanding the importance visitors place on impacts, management efforts can be more effective and managers can have a better understanding of visitor behaviors.

This study demonstrated that managers in Zion are very aware of visitors' impact perceptions, recognition, and which impacts are important to them. Managers described trash, human waste, and graffiti as the types of impacts visitors were most aware of, the conditions visitors recognized first, and the impacts that were the most important to them. The results of this study showed that this was in fact the case, confirming the assumptions of managers. Overall, the management staff of Zion National Park deserves recognition for their insight and awareness. By having an alert staff that is responsive to visitor concerns and perceptions, Zion is remaining ahead of the curve in many areas of park administration.

Results from this study also show that management in Zion is focusing on the issues that are important to visitors. When asked what issues need attention or what conditions should not change, many visitors responded that the current level of use should remain the same. Therefore, the amount of concern managers have expressed regarding the level of use is very appropriate. Managers explained that limiting use in the

backcountry is an important way to preserve resource conditions and visitor experiences. Based on the comments by visitors, this management action needs to continue, but some managers feel limits will be more strongly supported if they are based on scientific data and part of a larger management plan to control use levels. Managers will need to continue to keep a balance of access for visitors and resource protection because of the dual mandates of the Park Service.

Management also needs to remain aware of visitor's request for use levels to remain constant. This request conflicts with planning frameworks like VERP, where management expressed what future desired conditions will be, which may not maintain the status quo. Even if conditions are to remain the same, visitors must be willing to accept certain limits and restrictions. Management, therefore, must communicate to the public the implications of their preferences and maintain a dialogue as the debate on desired future conditions continues.

It is no surprise that trash, human waste, and graffiti are the most important impacts for visitors. Education addressing low impact backcountry use has been present since the mid 1970's (Polovitz 1982). Larger organized programs, like the Leave No Trace (LNT) ethics, have been a part of natural resource education strategies since 1991 (Marion and Reid 2001). These efforts along with others have instilled the social norm in visitors that littering and damaging resources is inappropriate. Park education strategies have focused on these impacts and have increased public awareness in minimizing evidence of inappropriate behavior. These impacts, however, are not the most important conditions to managers. Many managers responded that soil and vegetation issues are typically the conditions they recognize first when in the backcountry. Educational efforts

therefore need to be directed to these resource impacts if management desires the public to be equally aware of them.

Canyoneering is another issue that will be important for management in the future. As use levels in slot canyons have increased, the impact of social and resource conditions have also increased. The design of this study was not adequate to sufficiently interview canyoneers. Data collection occurred at times when most canyoneers were not exiting the backcountry. When the opportunity to interview canyoneers did arise, most rejected participation based on time constraints. As the park continues to find ways to address the resource and social impacts of canyoneering, it must also find ways to adequately survey and document the opinions and perceptions of canyoneers.

Another important issue will be the evaluation of social trails and main trails in the backcountry. Visitors in this study described trails most frequently as an acceptable impact. They acknowledged that the trail itself was an impact, but considered it appropriate given the context and type of use occurring in the backcountry. If management wants to decrease social trailing and other impacts leading to vegetation loss, it must direct specific attention to the evaluation of trails. Visitors need to understand which trail conditions are acceptable and which are not. Management must communicate more effectively how going off trail affects soil and vegetations conditions. They need to express the damage that is created when social trailing occurs and the overall effect this has on resources and natural conditions. However, if management determines that social trailing is causing minimal damage to resources and should not be a major priority, then management should put less attention towards trailing. The final decision in addressing trails must be based on the desired future conditions of the

backcountry. If it is to be a priority, strong efforts must be made through education and interpretation to communicate to visitors the importance of this issue. If this does not occur, visitors may continue to overlook and disregard trails as an impact or problem.

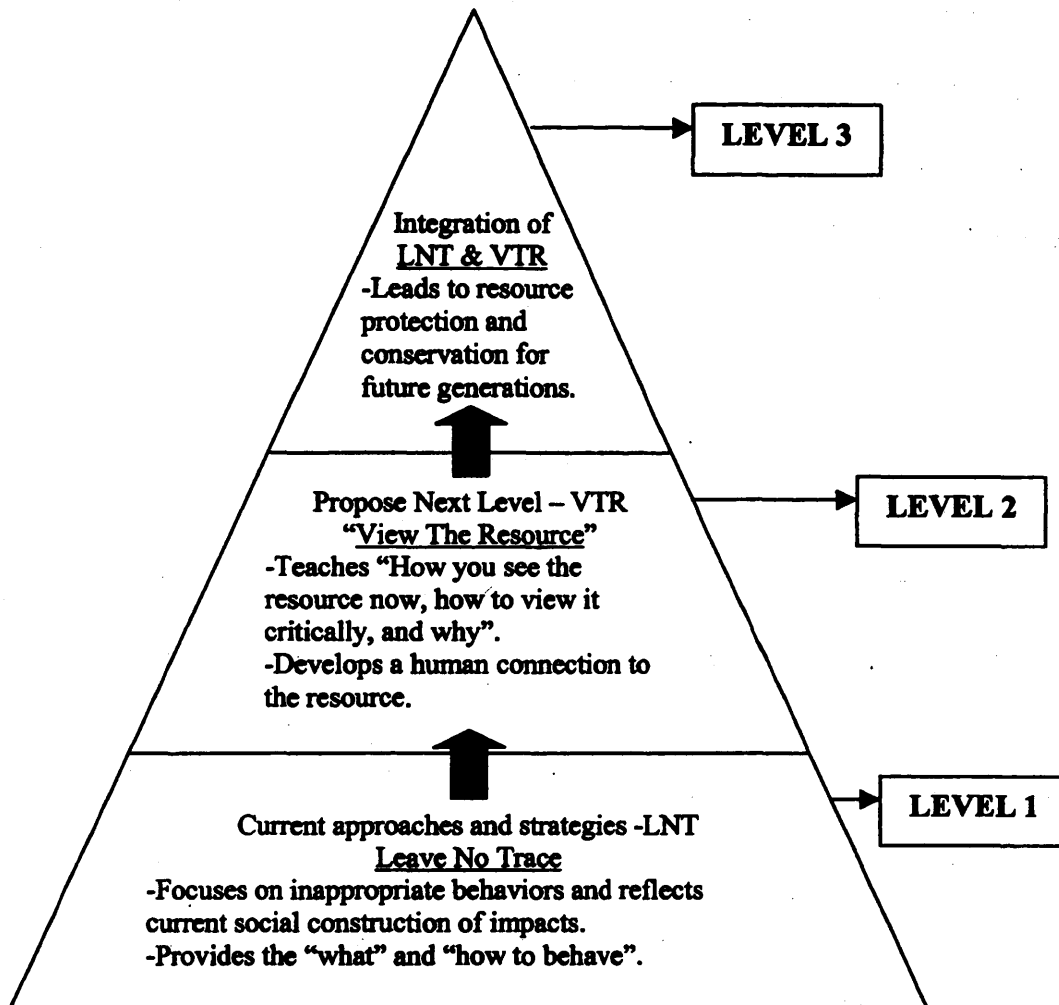
During the course of the interview process, managers were asked which groups they had difficulty relating with. Larger groups, such as Boy Scouts, church groups, and family groups, were most frequently cited as the type of group managers had the most difficult time understanding. Considering these types of groups are prevalent in southwestern Utah national parks, this result should be a great concern to park managers. By acknowledging the problems, such as group size enforcement and behavioral issues, that staff have with these groups, the park can devise ways to improve communication and increase understanding. Efforts should be made to educate park managers in how to work with these groups to improve public relations and resource protection.

For all of these issues, education has presented itself as a method to address each of them. Managers described that education and messaging efforts will be crucial in minimizing impacts in the future. With this in mind, managers need to be aware of how to more efficiently communicate their message to the public. This study's analysis of expectations showed that visitors do not learn about impacts and unacceptable conditions until they are early adults. For this reason, educational efforts need to focus attention on the youth visiting the park. By broadening the scope of the Junior Ranger Program and adding more message campaigns like "Don't Bust the Crust" for cryptobiotic soils, management can target a younger audience and reach a larger portion of visitors. Instilling the value of natural conditions at an early age will help increase impact awareness throughout the park.

This study has also shown that many visitors are not aware of vegetation and soil impacts unless they have been trained in college or encounter them in their work environment. Because of this, education needs to focus on types of impacts other than inappropriate behaviors if visitors are to be aware of the same conditions as managers. Current interpretive information in Zion's visitor center gives a great deal of attention to littering and properly disposing of human waste. While these issues are obviously important, more attention needs to be directed to invasive plants, social trails, and soil compaction if management wishes these impacts to be recognized. Managers in this study have expressed how important they feel resource conditions are to the integrity of the resource and the quality of Zion's backcountry. Without educational efforts, visitors to the park will not gain the understanding necessary to value these conditions at the level management does.

To address these issues of resource impacts and others related to human use, this study proposes a new direction for research and education in Zion. The proposed direction is illustrated in Figure 3. This recommendation is based on three levels of education and research that need to be addressed. The first level of education reflects our current understanding and social construction of recreation impacts. This includes current educational strategies used in Zion National Park and other national educational programs like LNT that have directed our understanding towards inappropriate human behaviors in recreational settings. These programs have described to visitors "what" is appropriate in a recreation setting and "how" they should be behaving. Principles included in these programs have encouraged visitors to dispose of waste properly,

Figure 3: Proposed levels of education and understanding for recreation settings



and to leave sites the way they found them.

Results from this study have shown that these principles have been working. Visitors in this sample were very aware of human waste, packing out their trash, and keeping sites clean. Despite these results, it is important to note that not all visitors have reached this same level of understanding. Current efforts still must continue to inform visitors of the principles associated with LNT and the other educational objectives of managers.

The next level of education that needs to be achieved beyond level one is associated with resource conditions. This study has demonstrated that the visitors interviewed were not aware and did not perceive these types of conditions consistently. Because these conditions are important to managers both in Zion and other recreational settings, this next level of understanding and education would be beneficial for resource protection.

A proposed name for this strategy is "View The Resource" or VTR. At this next level, efforts would be directed at providing information regarding the effects of human use on resource conditions. This would include, but not be limited to, the influence of exotics on ecosystem health, the effects of soil compaction and erosion on campsites, and many other effects related to resource conditions. This level would teach visitors how they currently view conditions and how to view conditions more critically. It would provide individuals the information to understand why resource conditions are important to managers and what effect these conditions can have on their experience. Ultimately, this level of education would strive to develop a stronger connection to the resource among visitors.

The third and final level recommended by this researcher is one of integration. If awareness of both behavioral and resource conditions have been achieved separately, they must then be brought together into a comprehensive perception and awareness of natural settings. This integration would teach individuals the value of protecting natural settings for the enjoyment of future generations and the responsibility of stewardship for our public lands. This approach could also possibly bridge the gap that exists between perceptions and priorities of management and visitors. With this achieved, the goals of resource protection may be better understood and common ground will be found between the public and management in regards to conservation efforts. Ideally, level three will emerge as a result of the visitors' understanding within levels one and two. In other words, a thorough grasp of the concepts in LNT and VTR will establish a public who naturally looks after the resource for future generations.

While most directly applicable to the context in Zion National Park, this proposed direction for educational efforts could be adapted to other settings. For success to be achieved, it requires addressing individuals' social construction of wilderness and the meaning they place in their concept of impacts. While this might sound difficult to achieve, we have past examples of success in this direction. As previously stated, low impact use messaging and Leave No Trace ethics have been incorporated into our social construction of wilderness over the past 30 years. Similar results can be achieved in regards to resource conditions and integration of these concepts if a multi-agency approach is taken to provide educational efforts and understanding to the public.

Managers and researchers may face difficulties in informing the public about resource conditions, such as damage to soils and vegetation. Even if visitors are capable

of perceiving these conditions as impacts, current impact levels in many areas may have not exceeded the threshold necessary for visitors to recognize them. This means that management either needs to strive to bring visitor expectations to a level equivalent to management, or these conditions may have room to vary if impacts are not causing a serious threat to ecosystem health and biodiversity. Deciding to emphasize soils and vegetation in education programs also then means informing the public of what acceptable levels of impacts for these conditions should be. Issues relating to soil compaction and erosion may be difficult, but if these conditions continue to be utilized as indicators of quality by management, then the public must be informed of their importance.

Finally, education efforts have to provide sound reasoning for the issues being described. Leave No Trace ethics explain the appropriate behaviors and actions in the backcountry, but they do not sufficiently tell the visitors why they are appropriate. Simply informing backcountry visitors of LNT principles does not provide enough information to explain the reasoning behind why LNT principles were created and what will happen if they are not followed. For integration of these concepts to occur, educational efforts must be explicit in the reasoning of these principles and the consequences to natural settings when these principles are not understood and applied by individuals. If visitors can gain an understanding of why certain actions need to be taken and regulations followed, they may place a greater importance in their impact definitions and appropriately alter their behavior. A deeper ecological understanding of soil conditions and vegetation issues provides visitors with the ability to comprehend conditions and take action when appropriate.

Research implications

The findings of this study have some implications for impact research and how impacts are evaluated in the future. Past research has investigated how visitors perceive impacts in an attempt to understand how visitors evaluate resource and social conditions in a wilderness setting. This understanding has become important because of the increased public involvement in natural resource decision-making and the development of management strategies (Newman et al. 2001).

This study has reaffirmed many of the conclusions presented in past research. As proposed by Gobster (1992), visitors in this study did appear to experience the “scenic aesthetic” of the park while managers viewed the park with an “ecological aesthetic”. Perception and awareness appeared linked to past experiences and education as argued by Kaplan and Kaplan (1989). Visitors to Zion National Park focused on impacts related to inappropriate behaviors such as litter, graffiti, and human waste. They were less aware of conditions related to soils and vegetation such as bare ground, vegetation loss, and cryptobiotic soils. Past studies in visitor perceptions have yielded similar results. Knudson and Curry (1981) found visitors unable to evaluate tree damage in Indiana state parks. Martin et al. (1987) found respondents perceived bare ground the least when evaluating artistic representations of impacts. This suggests that impacts not related to inappropriate behaviors need additional attention in research designs and management plans.

This study also suggests that the methods utilized in collecting visitor impact perceptions need to be carefully considered. It questions the utility of results from past research when respondents have been presented with bare ground and vegetation damage

as examples of impacts to evaluate (Knudson and Curry 1981; Martin et al. 1989; Lynn and Brown 2003). This study has demonstrated that these types of impacts are not the kind visitors recognize most, are most aware of, or place the most importance in.

This study also addressed the issue raised by White et al. (2001) of “priming” visitors to evaluate conditions negatively. The important point to consider is not the issue of priming, but the issue of importance and evaluation. All researcher methods “prime” respondents in some way or another. As described earlier, visitors must have a frame of reference to interpret the questions being asked of them. Without doing this, visitors are unable to relate to the concepts and topics addressed by the study. This study framed visitor responses by utilizing an interview guide with a pre-planned order for the questions and specific topics being addressed. It did not, however, direct the respondent to place importance on certain issues or evaluate them in a certain way if they did not choose to do so. This is the main point emphasize by White et al. (2001) and this study. Past research by Knudson and Curry (1981), Martin et al. (1989), and others have framed certain types of recreation impacts as being important to the visitors and biased them into evaluating them negatively. The results from these studies need to be reconsidered because the recreation impacts evaluated in them appear to be of types that visitors are unaware of and have little importance to them.

For these reasons, researchers need to evaluate the legitimacy of using these types of impacts as measures in research designs. Because visitors can only evaluate these conditions when prompted, how insightful are these results? If these examples are to be utilized, then the objectives of the study must be explicit in acknowledging the limitations of using these impacts and clear in the assumptions that are being made. If managers and

researchers are willing to accept these limitations, these impacts can still be useful if new strategies to more effectively measure perceptions of soil and vegetation conditions are developed. If they cannot, results will over estimate the importance visitors are placing in their evaluations.

Results from this study also demonstrated that visitors based their evaluations on comparisons to other locations. This study does acknowledge that comparisons are part of an individual's way of interpreting the reality around them. As described by the hermeneutic framework, an individual will interpret the meaning of the reality around them by drawing on their education and past experiences in different context. However, the issue of comparison-based evaluations in this study is the question of whether evaluations are truly based on a respondent's personal standards for a wilderness setting. If management standards are set based on these types of evaluations, backcountry settings may only be acceptable relative to another highly impacted location. While this conclusion may not be new, it is valuable to reinforce the importance of the concept that visitor impact evaluations are not necessarily applicable outside of their given context. Direct management actions still need to be based upon what the desired future conditions have been determined to be for that setting.

Finally, this study also reinforces some issues regarding the nature of impacts. Farrell et al. (2001) emphasized that recreation caused changes can be considered amenities to a site. They described nails in trees and bare ground at campsites as conditions visitors preferred. This study found that trail conditions are often considered acceptable and appropriate in Zion's backcountry. Visitors seemed to place less importance in trails because they believed evidence of trails would be removed by flash

flooding through the canyon. A few visitors also expressed the need for increased signage in the backcountry. Our understanding of the backcountry experience could benefit from research addressing these examples and other conditions that could be considered amenities in the backcountry. In the case of canyon settings, research should investigate impacts that have a temporal component to them. Determining if an impact is temporary or permanent could affect how visitors evaluate them and how much attention they should receive from management given the context.

Future Research

This study has proposed a new direction for educational efforts in both Zion National Park and other contexts. If a program is to be developed for “View The Resource”, future research and testing needs to be conducted to create a VTR program that meets the objectives outlined in this study. This would include determining which audiences this program would be formatted for and what educational strategies would be utilized. Previous programs have focused on organizations like the Boy Scouts or Outward Bound. A new VTR program would have to determine if a similar approach would be effective in communicating the concepts associated with resource conditions. Further study is therefore necessary for this recommendation to materialize into an educational strategy that can be effective for Zion National Park and in other land management agencies.

One issue raised by managers in this study is the need to address canyoneering and other “extreme” sports in the backcountry. This issue is not specific to Zion National Park. Extreme sports and other alternative means of recreation are consistently increasing in the national parks. A new generation of visitors are experiencing wilderness settings

that may have different values and expectations from other types of visitors. Elements of challenge and pushing one's self to new limits seem like they are becoming increasingly important to these visitors.

Future research needs to investigate the values and perceptions associated with canyoneering. Research designs need to be developed that can adequately sample canyon users in the backcountry. A more in depth understanding is needed to address the unique ways that canyoneers and other "extreme" sports users relate with the backcountry. Understanding how canyoneers differ from other backcountry visitors will aid managers in selecting standards of quality and implementing use limits specific to these activities.

Additional research is also needed to understand the expectations and perceptions of foreign visitors. This study was insufficient in interpreting the meaning foreign visitors place on impacts. Two foreign groups were interviewed about their impact perceptions and in both cases, individuals were unable to define or describe impacts because they were not familiar with the term. Understanding what barriers exist in communicating impact concepts will be important to effectively survey and interview foreign visitors. Questions and measures must be developed that are easily accessible to a diverse group of visitors. Foreign visitors are an important part of the backcountry population. Understanding how these diverse groups are experiencing and interpreting backcountry settings can give insight into future management needs. Education strategies also need to be revised and focused to address cultural differences associated with foreign visitors.

Another concept needing future attention is the influence of signage in the backcountry. It is important to note that despite wanting the backcountry to be undeveloped and lacking evidence of humans, a few visitors did suggest that increased

signage would be appropriate. This suggestion demonstrated that signs might not have been an intrusion to these respondents when in the backcountry. Future study into the perception of signage in the backcountry could be very useful in providing managers with an idea of how appropriate signs are in a wilderness setting.

Lastly, studies similar to this one also need to be conducted in different settings where different impacts are the dominant issues. Each backcountry setting has impacts and issues specific to that context. Zion's backcountry must deal with canyoneering, cryptobiotic soils, and climbing. Other regions deal more with urban issues, pack animals, and variety of other resource issues. By asking holistic questions regarding resource impacts in other contexts, managers could gain a better understanding of the perceptions of impacts unique to that area.

Concluding Remarks

In this study, I have strived to provide an interpretation for the meaning individuals associated with impacts. It has relied heavily on a commitment to hermeneutics and the belief that a holistic approach can provide a unique understanding of themes associated with recreation impacts. Interpreting how an individual evaluates a recreation setting will always be very complex, but the rewards from this interpretation can be great. As visitors express their values and perceptions to management, they are painting a picture of what conditions and types of experience they desire in a backcountry setting. By utilizing their input, managers can increase the quality of experiences and maintain the resource integrity of wilderness settings.

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APPENDIX A: Visitor Interview Guide

Hi, my name is Bob. I am a graduate student from the University of Montana, and I am working on a study about conditions in the backcountry of Zion National Park. I am interested in your thoughts on the condition of the backcountry. I was wondering if we could talk for a while? It will probably take about twenty to thirty minutes and your responses will be anonymous.

Also, I would like to tape record our conversation. This will make the interview go faster and won't keep you too long. Is that okay?

Ice Breaker Questions

The purpose of these questions is to develop conversation with the respondent and relax them. Answers will characterize the visitor as a repeat or first time visitor and their familiarity with Zion NP. Answers will also provide the interviewer with specific settings, locations, and activities participated in that will be utilized in later questions

1. How would you describe Zion NP to someone who has never been here before? Why? Tell me more.
2. Have you visited the backcountry before?
Probe: If so, how often do you visit the backcountry of Zion NP? Trips/year?
3. How many nights have you spent in the backcountry on this trip?
4. Tell me what backcountry locations you have visited and the activities you've participated in while on this trip?

Questions addressing Purpose & Research Questions

5. What sort of things have you been paying attention to or made you take notice?
(R2)
Probe: Have these things had an effect on how your trip/day has been going?
(R2)
6. If I closed my eyes and opened them at (location said in #5), tell me what I would see, smell, or hear? (R2)
Probe: Can you tell me any more detail? (R2)
7. What has your group been talking about in relationship to this backcountry setting? (R1, R2)
Probe: Are there any positive/negative features that you have discussed?
(R1, R2)
- 8a. Have conditions in the backcountry been the way you expected them to be? For campsites & trails?(R2)

Probe: Where did expectations come from? (R2)
Probe: If yes, what were these conditions? (R2)
Probe: If no, what didn't meet your expectations? (R2)
Probe: Why is the condition of (said item in #8a) important to you? (R2, R3)
Probe: What changes in these conditions would cause you to change the areas you visit or activities you participate in? (R2, R3)
If encounters mentioned,
Probe: What have the encounters been like? (R1)
Probe: What was going through your mind when you saw other groups? (R1)
Probe: Have you changed your plans because of other people? (R1, R3)
Probe: How does the dynamic change at Orderville Canyon? (R3)

8b. *If first time visitor*, What things would you not want to change in backcountry? (R3)
Probe: In the future, how should the conditions in the backcountry change? (R3)

8c. *If repeat visitor*, Have you noticed any changes in the backcountry since your last time here or over the years? (R2)
Probe: If yes, how do you feel about these changes? (R2)
Probe: Do certain setting characteristics keep you coming back to the park? (R3)
Probe: Would any conditions make you not want to return? (R3)

9. What is your definition of impact when you think about backcountry settings in Zion NP? (R1)
Probe: What are some examples of impacts in the backcountry of Zion NP? (R1)
Probe: Why is the condition of (said item in #5-8) important to you? (R2, R3)
Probe: How do you recognize these impacts? (R2)
Probe: Have you changed your plans because of these impacts? (R1, R3)

10. What issues do Zion managers focus on in backcountry settings? (R1)
Probe: What should managers do about these issues? (R1)
Probe: What if management efforts affect you? (R3)
Probe: What do you suggest managers should focus on for backcountry issues? (R1)

APPENDIX B: Manager Interview Guide

Hi, my name is Bob. I am a graduate student from the University of Montana, and I am working on a study about changes and conditions in the backcountry of Zion National Park. I am interested in your thoughts on the condition of the backcountry. I was wondering if we could talk for a while? It will probably take about twenty to thirty minutes and your responses will be anonymous and kept confidential.

Also, I would like to tape record our conversation. This will make the interview go faster and won't keep you too long. Is that okay?

Ice Breaker Questions

The purpose of these questions is to develop conversation with the respondent and relax them. Answers will describe the manager's experiences in the park and the length of their employment. Answers will also provide the interviewer with specific settings, locations, and activities with which the manager is familiar. These answers will be utilized in later questions.

1. How long have you been an employee of the NPS? Of Zion NP?
Probe: How often did you visit Zion NP before becoming an employee?
Times/year?
2. How would you describe Zion NP to someone who has never been here before?
3. What is this place suppose to be like? What is its niche?
Probe: Is it like how you've just described it?

Questions addressing Purpose & Research Questions

4. What characteristics do you think are most important when monitoring or evaluating a (trail, campsite, etc.)? (R3)
5. What backcountry issues have recently been topics of debate? (R1, R2)
Probe: Should these conditions be a priority for management efforts? (R3)
Probe: Talk about the Narrows and the Orderville interface.
6. What kinds of changes do you see occurring in the backcountry? (R2)
Probe: If yes, what were these conditions? (R2)
Probe: Are these positive or negative changes? (R1, R2)
Probe: How do you feel about these changes? (R2)
Probe: Why is the condition of (said item in #6) important to you? (R2, R3)
7. What is your definition of impacts in regards to backcountry settings in Zion NP? (R1)
Probe: What are some examples of impacts in the backcountry of Zion NP? (R1)
Probe: Do these impacts enhance or detract from the backcountry setting? (R3)
Probe: Do any of these conditions require sanctions or management actions? (R3)

8. **What is your view of the social conditions in the backcountry? (R1)**
Probe: How does this relate to your definition of impact? (R1)
Probe: How do these conditions affect visitor behavior? (R3)
Probe: When did that issue start to matter to you, where did expectation come from? (R1)
9. **What other or additional backcountry setting characteristics could be addressed in the management plan? (R3)**
10. **How aware do you feel backcountry visitors are of impacts? (R1)**
Probe: What types of impacts do you feel backcountry visitors recognize the most? (R1)
Probe: What types of impacts do you think are most important to backcountry visitors? (R1)
11. **Can you think of any other questions I may ask that would get at this topic of impacts?**
12. **Who else would have a different view or be good to talk to?**
13. **Are there certain group types that you feel you don't relate to well?**

APPENDIX C: Visitor Front End Data Sheets

Date/Time	Location/Site	Conditions	Name	Gender	Age	Place of Residence	Group Size	Visit (First, Repeat)	Nights in Backcountry	Tape
6-24 2:15	Narrows	Sunny, windy Temp: around 90	Richard, Leslie, & Robert	2 M, F	Late 30's	NM	4	First	1	0-372
6-24 4:00	Shuttle from Temple	Sunny, windy Temp: around 90	Betsy & Wendy	2 F	Early 40's	NM, ID	3	First	1	372- 533
6-26 11:00	Narrows	Cool Temp: mid 70's	John & boyscout group	M	Late 40's	NE	7	Repeat	1	533- 761
6-26 11:10	Narrows	Cool Temp: mid 70's	Jared & Carrie	M,F	Early 20's	NY	2	First	1	761- 969
6-26 3:00	Grotto	Sunny, warm Temp: mid 80's	Dan & Brian	2 M	Early 20's	WV, TN	2	First	2	0-389
6-27 1:30	Grotto	Hot, Sunny Temp: low 90's	Jeff and kids Ryan & Megan	2 M, F	Late 40's,	MI	3	Repeat 3x	1	397- 777
6-27 3:30	Narrows Trail	Hot, Sunny Temp: mid 90's	Bjorn & Mario	2 M	Late 40's	Non- USA	2	Repeat Few X	1	784- 946
6-27 4:05	Temple Shuttle Stop	Hot, Sunny Temp: mid 90's	Dan & son Greg	2 M	Early 40's	CA	3	First	1	0-354
6-28 10:30	Temple Shuttle Stop	Cool, Sunny Temp: mid 90's	Doug	M	Late 50's	CA	3	First	1	360- 666
6-28 11:00	Temple Shuttle Stop	Cool, Sunny Temp: mid 90's	Randy & Wendy	M,F	Late 20's	MI	2	Repeat 3x, first	1	669- 885
6-28 12:55	Narrows Trail	Hot, Sunny Temp: mid 90's	Mark	M	Late 40's	UT	7	First	1	0-266
6-28 1:40	Narrows	Hot, Sunny Temp: mid 90's	Dean, Rob, Larry, & Jon	M	Mid 40's, 50's	CA	4	3 First, repeat	1	266- 636

6-29 1:15	Narrows	Very Hot, Sunny Temp: low 100's	Brittney & Joe	M,F	Late 20's	UT	2	Repeat (local)	0 (canyon)	645- 822
6-29 3:20	Narrows	Very Hot, Sunny Temp: low 100's	Adam, Joe, & Ben	3 M, 2 F	Early 20's	UT	5	First	1	0-275
6-29 3:30	Narrows	Very Hot, Sunny Temp: low 100's	Paul, Ryan, & Devon	6 M, 3 F	Early 20's	CA, WA, OR	9	First	1	276- 486
7-12 11:30	Narrows	Cool, Breezy Temp: mid 80's	Tesshi	M	mid 20's	Japan	1	First	1	486- 746
7-12 11:50	Narrows	Cool, Breezy Temp: mid 80's	Eric & Raymond	M	Late 40's	NM, FL	2	Repeat, First	1	746- 950
7-12 2:00	Narrows	Hot, Sunny Temp: high 90's	Kelly & Mike	2 M	Mid 50's, 20's	NV, UT	6	Repeat 2	0	0-403
7-12 3:05	Narrows	Hot, Sunny Temp: low 100's	Jacob & Marcus	2 M	Mid 20's	Brazil	12	First	1	403- 552
7-12 3:30	Narrows	Hot, Sunny Temp: low 100's	Lauren & Karen	2 F, 2 M	Mid 40's	CA, OK	4	First	0	552- 746
7-16 11:45	Scout Lookout	Hot, Sunny Temp: low 100's	Aaron & Mark	2 M	Mid40's ,	PA, UT	2	Repeat First	3	0-310
7-20 1:20	Narrows	Hot, Sunny Temp: low 90's	Ben & Amy	M, F	Early 30's	TN, VA	2	First	1	0-252
7-20 1:30	Narrows	Hot, Sunny Temp: low 90's	Jason, Tim, Katerine	2 M, F	Early 30's	German y, WA, UT	3	Repeat many	1	252- 604
7-20 5:45	Narrows	Cool, Shaded Temp: mid 80's	Herb & Jon	2 M	Late 40's, early 20's	VA	2	Repeat First	0	604- 904

7-21 11:30	Narrows	Cool, Shaded Temp: mid 80's	Brian & Josh	2 M	Mid 20's	NV	2	Repeat	3	0-446
7-21 1:30	Narrows	Cool, Rainy Temp: high 70's	Nathan & Matt	2 M	Late 20's	NY, PA	2	Repeat First	1	446- 808
7-21 2:15	Narrows	Hot, Sunny Temp: low 90's	Jessica, James, Mike & James	3 M, F	Mid 30's, 40's	UT, IL, NM	4	First	1	0-394
7-24 4:00	Narrows	Cool, Sunny Temp: high 80's	David & Group	3M,3 F	Late 40's, teens	CA	6	Repeat 4 First	1	410- 628
7-24 5:20	Narrows	Cool, Sunny Temp: high 80's	Nick, Jared, Dan, & Sharmen	5 M, F	Early 20's	UT	6	Repeat 3 first	0	628- 924
7-24 6:30	Narrows	Cool, Sunny Temp: high 80's	Paul	M,F	Late 20's	MO	2	First	0	030- 436
7-26 10:20	Grotto	Sunny Temp: low 80's	Mike	2 M, F	mid 30's	MO	3	2 Repeat	2	436- 662
7-26 1:00	Grotto	Hot, Sunny Temp: mid 90's	Karen	2 M, F	Late 30's	GA, Spain	3	First	2	662- 984
7-27 1:45	Narrows	Cool, Shady Temp: low 100's	Patrick, Dan, AJ, Corey	4 M	early 20's, late 40's	CA	4	First	1	0-438
7-27 2:20	Narrows	Cool, Shady Temp: low 100's	Matt	5 M	mid 20's, late 40's	AZ	5	First	1	438- 715
7-27 3:40	Narrows	Cool, Shady Temp: low 100's	Dave & Neil	2 M	early 30's	OH	2	First	1	715- 1000

8-2 1:35	Grotto	Sunny Temp: low 90's	Tom	M	Late 20's	TX	1	First	1	0-375
8-2 2:35	Grotto	Sunny Temp: low 90's	Josh, Keith, Jeremy eagle scouts	6 M	Late teens	PA	6	First	1	375- 600
8-4 10:00	Scout Lookout	Sunny Temp: low 90's	Claire, Robin, Ericka	3 F	mid 20's	CO, CA	3	First	1	0-480
8-9 11:30	Grotto	Sunny Temp: high 90's	Dan, Derek, Eli	3 M	Late 20's	Washington D.C	3	First	1	480- 840
8-9 12:30	Grotto	Sunny Temp: high 90's	Dave, Debbie, 2 kids	2 M, 2 F	Early 40's	UT	4	Repeat, 3 First	1	0-490