Effect of encounter levels on overall trip satisfaction of wilderness visitors in the Beartrap Canyon Wilderness Montana

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The Effect of Encounter Levels on Overall Trip Satisfaction of Wilderness Visitors in the Beartrap Canyon Wilderness, Montana

by

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Abstract

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The relationship between visitor satisfaction and frequency of encounters has been frequently studied, but remains poorly understood. Studies have shown conflicting results regarding this relationship. The research problem investigated in this thesis, was the relative importance of encounter levels to overall trip satisfaction in the Beartrap Canyon Wilderness (BTCW). The expectancy disconfirmation model of consumer satisfaction was presented as a way to determine satisfaction with encounters. The strength of the correlation between satisfaction with encounters and overall trip satisfaction determined the relative importance of encounters to overall trip satisfaction.

The primary user groups in the in the BTCW were identified as hikers, private floaters and outfitted floaters. Weak, statistically insignificant correlations between satisfaction with encounters and overall trip satisfaction were found for hikers and outfitted floaters. A weak to moderately strong, statistically significant correlation was discovered for private floaters, indicating that encounters may affect private floaters to a greater extent than hikers or outfitted floaters.
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Chapter 1

Introduction

As populations increase and urban areas grow, federally designated wilderness becomes a valuable place to experience solitude; a release from the fast pace of everyday living. Maintaining acceptable levels of solitude is an important wilderness management objective, since wilderness is a place where opportunities to experience solitude should be available to the greatest extent (Hendee, Stankey and Lucas, 1990). However, with large numbers of visitors using wilderness areas, solitude may be a difficult objective to achieve in many places.

For many wilderness visitors, solitude is an important factor in determining their overall level of satisfaction (Hendee, Stankey and Lucas, 1990). Solitude in wilderness commonly refers to a group of visitors meeting relatively few other groups of visitors (Hendee, Stankey and Lucas, 1990). Solitude has been defined by the Bureau of Land Management (BLM) as "the state of being alone or remote from habitation; isolation; or in a lonely, unfrequented, or secluded place (Hendee, Stankey and Lucas, 1990)." Dictionary definitions of solitude include: alone, seclusion, isolated, state of being alone, and shut off from others (Watson, in publication).

Wilderness managers, in an effort to ensure the opportunity for solitude experiences in wilderness areas have focused on the concept of crowding and the acceptable number of visual and social encounters with other wilderness users (Patterson...
and Hammitt, 1990). Most wilderness recreation research has used encounters between groups of wilderness visitors as the dominant operational measure of user contacts, crowding and solitude (Patterson and Hammitt, 1990). Although visual encounters are only one measure of solitude, encounters have been used as the surrogate measure of solitude in most studies concerned with ensuring solitude in wilderness settings.

Wilderness users have expectations that their visits will provide a rewarding or satisfying experience (Schreyer and Roggenbuck, 1978). They actively search for areas that will most likely provide the experiences they are seeking. If solitude is a prime consideration, they will try to find remote backcountry areas or wilderness areas where the probability of seeing others is low. However, when wilderness visitors hike ten miles to a remote lake expecting solitude, but instead find a large, noisy group, there is a discrepancy between expectation (i.e. solitude) and reality (i.e. a large noisy group). Not only are the number of people affecting the visitor's perception of solitude, but also the behavior of the group. Wilderness visitors are more likely to perceive the area as crowded, when the size and behavior of the group does not meet previous expectations or preferences (Stankey, 1973). In some instances, solitude may be diminished when encounters or visitor densities are low, because expectations for solitude are high. Alternatively, when visitors have accurate expectations about visitor density, high use levels may be acceptable (Watson, in publication).

However, not all wilderness visitors enter wilderness areas to find solitude. Visitors have numerous motivations for visiting an area (Absher and Lee, 1981; Ditton, Fedler and Graefe, 1983). The motivations of the group of noisy campers (i.e. social contact, adventure) likely differ from the individuals seeking solitude. If solitude is a strong factor motivating people to enter a wilderness area, then satisfaction with the level of solitude is likely to affect their overall level of satisfaction with the wilderness experience (Absher and Lee, 1981). If solitude is not a strong motivation for wilderness recreation, then satisfaction with the level of solitude may not have an effect on overall levels of satisfaction.
Different types of wilderness visitors have different perceptions of crowding (Nielsen and Shelby, 1977). Visitors participating in different activities have diverse motivations, expectations and attitudes (Driver and Bassett, 1975). There are a number of factors which affect a visitors level of satisfaction with the wilderness experience. The following study examines how significant satisfaction with encounter levels are to a wilderness visitors overall level of trip satisfaction.

**Problem Statement**

For some wilderness visitors, encounter levels may be an important factor in determining their overall level of satisfaction. Additionally, they may also perceive other factors to be as important to their level of satisfaction. The purpose of this thesis is to: 1) determine the relationship between expected and realized encounters; and 2) determine the strength of the correlation between satisfaction with encounter levels and overall trip satisfaction.

**Objectives**

Researchers and managers have attempted to use encounter levels as a direct measure of recreation satisfaction. However, research has shown that encounter levels are only one factor affecting overall satisfaction. There are a number of exogenous factors that also have an effect on overall satisfaction. Thus, the objectives of this study are to: 1. Determine the direct level of visitor satisfaction with the frequency of encounters by examining the discrepancy between expected encounter levels and actual encounter levels.
2. Determine the strength of the relationship between satisfaction with encounter levels and overall visitor satisfaction.
3. Examine any differences in the strength of the relationship between encounter levels and overall satisfaction among hikers, private floaters and commercially outfitted floaters.
Overview

Chapter 1 investigates the general concepts related to understanding the relationship between encounter levels and satisfaction. The concepts of satisfaction and solitude will be briefly explored and defined as to how they are related in a wilderness environment. The expectancy disconfirmation model (Oliver, 1980) is the theoretical framework used to determine satisfaction with encounter levels, and will be explained in this chapter.

A brief description of the area to be studied, application of the theoretical framework to the area, and the importance of the study will then be discussed. Finally, the hypothesis statements, limitations and definition of terms for this study will be presented.

Chapter 2 will provide a detailed review of the literature relevant to the research problem. A thorough review of the recreational crowding literature will provide insight on the concepts of solitude, encounter levels between recreationists, and factors which influence perceptions of crowding. A review of recreation, job and consumer satisfaction literature will follow, along with an in depth discussion of the expectancy disconfirmation model of consumer satisfaction.

Chapter 3 details the methodology used in this paper to test the hypotheses. The statistical methods used to test the hypotheses are described in Chapter 3, and the results of the analyses are presented in Chapter 4.

A discussion of the research findings, implications, summary, and recommendations for future research will be presented in Chapter 5. Following Chapter 5 will be the appendices and literature citations.

Background

Solitude

An important component of management frameworks such as the Limits of Acceptable Change (LAC) is the measurement of social conditions. Some suggested measures of social conditions include solitude while traveling, campsite solitude, conflicts
between visitors, conflicts regarding party size, and noise (Hendee, Stankey and Lucas, 1990). All of these factors affect wilderness visitors perceptions of solitude.

Solitude is the measure often used by wilderness managers to determine social conditions within a wilderness area. Solitude is an important measure, because it is a major appeal to most wilderness visitors, and is subject to control by managers (Hendee, Stankey and Lucas, 1990). To determine appropriate levels of solitude, managers have generally developed measurement scales based upon the number of other visitors encountered (i.e. encounter levels) along the trail, and at trailheads or campsites. Encounter levels are the primary method employed by managers for measuring levels of solitude. Determining wilderness visitors levels of satisfaction with encounter levels is a necessary component in determining appropriate social conditions (Hendee, Stankey and Lucas, 1990)

**Satisfaction**

The relationship between visitor satisfaction and frequency of encounters has been frequently studied but remains poorly understood (Cole, 1989). Satisfaction is defined by Bultena and Klessig (1969) as "a function of the degree of congruency between aspirations and the perceived reality of experiences." LaPage (1983) described a quality recreation experience as "one that meets or exceeds each visitors expectations." Definitions of satisfaction commonly describe the extent to which expectations are realized or fulfilled.

Stankey and Schreyer (1985) wrote "wilderness is a resource judged by subjective criteria, and as such, sources of satisfaction and dissatisfaction can provide insights into what desired wilderness conditions may be." Research on crowding and satisfaction is based upon the belief that perceived crowding negatively impacts the wilderness experience. Research by Stankey (1973,1980) reveals a strong preference among wilderness visitors for low levels of encounters with other groups. Lucas (1980,1985) found a strong negative relationship between visitor satisfaction and the
frequency of encounters.

However, studies indicate that use levels are not always directly related to overall trip satisfaction. People judge their level of satisfaction in various ways (Hendee, Catton, Marlow and Brockman, 1968). A wilderness visitor may have several reasons for visiting a wilderness area, and these reasons may be similar or different from other visitors (Hendee, 1974). Solitude may be one of many experiences sought by wilderness visitors. There are a number of exogenous factors that contribute to feelings of satisfaction. When solitude is unimportant, rising levels of encounters may have little impact on visitors levels of satisfaction. Conversely, for those who value solitude, the presence of others can be an important source of dissatisfaction.

Empirical investigations into the complex relationship between visitor satisfaction and encounter levels have in many cases reported no effect between satisfaction and encounter levels (Manning, 1986). In some cases, the effect was opposite than that hypothesized; as use increased, so did satisfaction. It should be noted that many of these investigations involved nonwilderness settings where motives and expectations were not focused on outcomes related to solitude, and therefore may not have the same results as studies conducted in wilderness settings (Stankey and Schreyer, 1985).

**Theoretical Development**

Satisfaction and crowding research have successfully measured satisfaction by addressing the discrepancy between visitor’s expectations and their actual experience (Shelby, 1980; Womble and Studebaker, 1981; Bultena, Albrecht and Womble, 1981; Ditton, Graefe and Fedler, 1979; Peterson, 1974). In this way, the level of satisfaction with encounter levels can be explained by the discrepancy between the number of encounters visitors expect, and the actual number of encounters.

Satisfaction theories based on discrepancy also suggest that overall satisfaction in any situation is influenced by the discrepancies that exist for the different variables experienced during a wilderness visit (Lawler, 1972). For instance, a person’s overall
satisfaction with their wilderness experience would be equal to their satisfaction with solitude, the weather, resource conditions and so on. Lawler (1972) suggests that it is important to determine which facets of overall satisfaction are most important to the individual.

**Expectancy Disconfirmation Model**

The expectancy disconfirmation model of consumer satisfaction will be used to test satisfaction with encounters in this study. This theory proposes that satisfaction or dissatisfaction is dependent upon a comparison of prepurchase or preactivity expectations against actual outcomes (Oliver, 1981). Preactivity expectations are the expectations one has before entering into an activity. For example, prior to their trip, wilderness visitors may have expectations about the type of scenery they will see, the number of people they will meet or the weather they will experience. These preactivity expectations form the baseline around which satisfaction decisions are made.

The expectancy disconfirmation model was developed to determine consumer satisfaction. Although this model is most often applied in consumer satisfaction research, the basic constructs behind the theory are applicable to the study of recreation satisfaction as well (Williams, 1989).

For the purposes of this paper, only the first component of the model which determines satisfaction will be used. The model in Figure 1 is designed to measure
satisfaction through expectations and disconfirmation. The resulting level of satisfaction influences attitude change and purchase intention (Bearden and Teel, 1983). The revised attitude is a function of the initial attitude, and the influence of the level of satisfaction derived from the experience (Oliver, 1980). Intentions are subsequently influenced by the revised attitudes and prior intentions (Oliver, 1980). The Expectancy Disconfirmation Model in its entirety would work well in recreation settings to measure attitude formation and intentions as well as satisfaction. However, since this study is testing levels of satisfaction, the measurement of attitude change and intention are beyond the scope and intent of this paper. Only the component of the model which determines satisfaction will be used in this paper when testing hypotheses.

In the context of the expectancy disconfirmation model, engaging in a recreation activity is similar to purchasing a product. Both engaging in a recreation activity and purchasing a product involve expectations that the experience will be rewarding or satisfying. In recreation, the activity a visitor engages in, and the overall quality of that activity is the same as the purchase a consumer makes. Wilderness visitors expend time and money (i.e. transportation, equipment, permit, etc.) on their activities in much the same way a consumer spends time and money purchasing a product.

For both the recreationist and the consumer, various attributes define an experience or a product. The wilderness recreationist seeks attributes such as solitude, scenery, freedom and self-reliance. The consumer, when buying a product looks for such attributes as quality, price, brand recognition and performance (Bolton and Drew, 1991). In this case, wilderness visitors are the consumers, and their satisfaction with the activity and the resource is the same as a consumers satisfaction with the purchase and the product.

**The Expectancy Disconfirmation Process**

The process in determining satisfaction begins with expectations prior to entering into an activity (Swan and Trawick, 1981). Expectations consist of an anticipation of how well various attributes of an activity will be realized (Swan and Trawick, 1981). According
to Oliver (1981), expectations create a frame of reference against which subsequent performance is judged. Expectations are determined through an individual's prior experience with the resource, prior experience with similar resources, and communications with other people (Oliver, 1980).

When people engage in an activity, they experience how closely it matches expectations. Disconfirmation can be interpreted as the comparison process whereby the perceptions of actual performance are compared with recalled expectations. It is the degree to which the activity performance deviates from the preactivity expectation level (Oliver, 1981). This perceived disconfirmation will determine the level of satisfaction with each attribute of the activity (Swan and Trawick, 1981). Disconfirmation serves as the major force causing a deviation from the preperformance expectation level (Oliver, 1981).

As shown in Figure 2, after experiencing an activity, the individual's expectations will either be exceeded, in which case satisfaction will be high (positive disconfirmation); or they will be matched, which will result in confirmed satisfaction (simple confirmation); or they will not be met, which will cause satisfaction to be low (negative disconfirmation) (Oliver, 1980). According to the expectancy disconfirmation model, satisfaction depends upon how well expectations are confirmed or disconfirmed (Swan and Trawick, 1981).

Using the expectancy disconfirmation model, satisfaction can be determined for various attributes of a recreational or wilderness experience. Solitude is one attribute of a
wilderness experience, which may be very important for some users. Determining the number of encounters during a wilderness trip is one way to measure solitude. Using the expectancy disconfirmation model, satisfaction with solitude can be measured by comparing the expectations an individual has for encounter levels with the actual number of encounters that occur during a given trip. If solitude is important to an individual, and performance is exceeded (i.e. encountering fewer people than expected) then high satisfaction with the individual level of solitude will result. On the other hand, if performance is short of expectations (i.e. encountering more people than expected), then low satisfaction with the individual level of solitude will occur.

Study Area and Application of Theory

The Beartrap Canyon Wilderness (BTCW), a unit of the Lee Metcalf Wilderness Area is the study area for this paper. The BTCW is a small wilderness area in southwestern Montana surrounding the Madison River, and managed by the Bureau of Land Management (BLM). Visitor use in the canyon consists primarily of hiking and floating the river in rafts or kayaks.

The level of solitude within the BTCW has been identified as a significant concern of managers (McCool, Martin and Yuan, 1990). Research conducted in 1989, showed 86% of the visitors to the wilderness felt solitude was important. When asked how important solitude was to their overall experience, 82% felt that it added to their experience. Judging by these results, it appears that visitors to the BTCW value solitude, and it may significantly affect their overall levels of satisfaction.

Because solitude was identified as an important attribute to visitors of the BTCW, and it is known to be an important factor to wilderness visitors in general (Hendee, Stankey and Lucas, 1990), it will be the attribute measured in this paper. Using expectancy disconfirmation, visitor satisfaction with encounters will be measured. In the BTCW, the number of visual and social encounters between groups is the measure used to determine solitude. The discrepancy between the number of encounters visitors
expect to have and the number of encounters visitors actually have in the BTCW is the method used to determine satisfaction with the level of encounters between visitors. Satisfaction with encounter levels will then be tested against overall trip satisfaction to determine the relative importance of solitude to BTCW visitors. A strong relationship between satisfaction with encounter levels and overall satisfaction with the wilderness experience will indicate that solitude is one attribute that is important to BTCW visitors. However, if the relationship between solitude and overall satisfaction is weak, then other attributes of the wilderness experience may be more important to BTCW visitors.

The main user groups in the BTCW are hikers, private floaters and river floaters guided by outfitters. Private floaters are those who organize their own trip, use their own equipment and do so on a non-profit basis. Outfitted floaters are those who float with guides, who lead trips for profit. Satisfaction with encounters will be determined for the three user groups individually in the BTCW to ascertain if there are any differences in the correlation between satisfaction with encounters and overall trip satisfaction. Nielsen and Shelby (1977), found differences in encounter level preferences between oar boaters and motor boaters, and private floaters and outfitted floaters in a study of Grand Canyon National Park river runners. Other studies have also found differences among different types of user groups (Ditton, Fedler and Graefe, 1983; Driver and Bassett, 1975; Graefe, Vaske and Kuss, 1984; Absher and Lee, 1981; Nielsen, Shelby and Hass, 1977; West, 1982). It is hypothesized that there will be significant differences in satisfaction levels among private floaters, outfitted floaters, and hikers in the BTCW.

**Importance of Study**

Recognizing solitude as an important management objective, BTCW managers want to determine the level of visitor satisfaction with encounter levels. If a strong, positive correlation is found between encounter levels and overall satisfaction, perhaps managers should identify actions which will prevent a rise in the number of encounters between visitors. If encounters are not found to significantly effect visitor's overall trip
satisfaction, managers may be able to relax the restrictions placed upon the frequency of
encounters and concentrate on improving other attributes of the wilderness experience
that may be more important to BTCW visitors.

Solitude has been identified as an important aspect to BTCW visitors as noted
previously (McCool, Martin and Yuan, 1990). The relative importance of solitude to
BTCW visitors, makes it an important aspect to study.

It is not known how the three primary user groups (i.e. hikers, private floaters and
outfitted floaters) are affected by the level of solitude in the BTCW. It will be important to
measure each group's level of satisfaction with encounters to determine which groups find
solitude more or less important. Understanding the desires and expectations of each
group for solitude, will allow managers to tailor management actions that affect an
individual group, if the desires are different among the three groups.

Management frameworks like the Recreation Opportunity Spectrum (ROS) are
based on providing diverse recreation experiences. The ROS posits that a quality
recreation experience depends on producing desired satisfactions and benefits for
participants (Clark and Stankey, 1979). According to ROS, managers attempt to provide
diverse settings in which recreationists can find desired satisfactions and benefits.
Managers often try to build management programs around "average" visitors, and
frequently make misguided decisions, because averages do not adequately account for
variations in visitor preferences and desires (Shafer 1969). Examining the three primary
user groups in the BTCW separately when testing the hypotheses, will help reduce the
problem of managing for the "average" visitor. Understanding the degree of importance
solitude has for each group, will allow managers to select management actions which
primarily affect one group or the other, thus reducing the degree managers rely on
managing for the "average" visitor.
**Hypotheses Statements**

H1: There will be a significant positive correlation between hiker's satisfaction with encounters and their overall level of trip satisfaction in the BTCW.

H2: There will be a significant positive correlation between private floater's satisfaction with encounters and their overall level of trip satisfaction in the BTCW.

H3: There will be a significant positive correlation between commercially outfitted floater's satisfaction with encounters and their overall level of trip satisfaction in the BTCW.

H4: The correlation between satisfaction with encounters and overall trip satisfaction will be significantly different among hikers, private floaters and commercially outfitted floaters in the BTCW.

**Limitations**

1. The expectancy disconfirmation model has seen limited use in recreation research.
2. Overspecification may be a problem when using two variables (expectations and outcome) to explain three constructs (expectations, outcome, and disconfirmation).
3. Expectations for encounters are measured in retrospect.
4. The influence of past experience may affect satisfaction decisions.
5. Overall trip satisfaction is not measured using the expectancy disconfirmation model.
6. Encounter levels are used as the primary measure of solitude.
7. Encountering more groups than expected may not affect some visitor’s level of satisfaction as much as the model suggests.

**Definition of Terms**

Attribute - a quality or characteristic of something (Ditton, Fedler and Graefe, 1983).

Crowding - the negative evaluation of encounters between groups, when an individual’s level of satisfaction or enjoyment has been reduced (Manning, 1986).
Disconfirmation - the comparison process whereby the perceptions of actual performance are compared with recalled expectations and provide the major force in determining the level of satisfaction with each attribute of an activity (Oliver, 1980).

Encounters - the number of contacts with other groups during a recreation activity (Shelby, 1981).

Expectations - the anticipation of how well various attributes of an activity will be realized; a frame of reference against which subsequent performance is judged (Oliver, 1980).

Hikers - those visitors to the BTCW entering the wilderness on foot, and exiting in the same manner.

Motivations - reasons for doing something (Williams, 1988).

Outfitted floaters - those visitors to the BTCW employing the use of paid guides to lead them through the wilderness while floating the river.

Overall Trip Satisfaction - the ability of the wilderness trip or experience to fulfill visitor expectations and desires (Williams, 1988).

Private floaters - those visitors to the BTCW entering the wilderness in private watercraft (rafts, kayaks, cataracts, canoes), without a guide or outfitter, and exiting in the same manner.

Satisfaction - the extent to which expectations, needs or desires are fulfilled or not fulfilled (Williams, 1988).

Solitude - meeting relatively few other groups of visitors in the BTCW; the state of being alone or remote from habitation; isolation; or in a lonely unfrequented or secluded place (Hendee, Stankey and Lucas, 1990).

Specialization - a continuum of behavior, from the general to the particular, reflected by the equipment and skills used in the activity, and the activity setting preference (Virden and Schreyer, 1988).

Use Levels - the objective measure of the number of people in a given area or length of trail (Manning, 1986).

User Groups - the primary types of visitors using an area, classified into groups by method of travel.

Wilderness - roadless lands, legally classified and protected as a component of the National Wilderness Preservation System, and managed so as to protect qualities of naturalness, solitude, and the opportunity for primitive types of recreation (Hendee, Stankey and Lucas, 1990).
Chapter 2

Literature Review and Conceptual Framework

Overview

Aldo Leopold forecasted nearly 50 years ago that it would not be mining, logging or roads that would threaten wilderness, but the people who would come to visit these areas. Growth in the recreational use of wilderness areas has threatened the preservation of both naturalness and solitude (Lucas, 1980). A concern over crowding in wilderness areas and its effect on visitor satisfaction and natural resources led to the development of the carrying capacity concept, which is defined by Wagar (1964) as the “level of use an area can withstand while providing a sustained quality of recreation.” Implicit in this definition is the importance of a high quality environment and recreation experience. Wagar also points out the effect of crowding on such values as aesthetics, a healthful environment, freedom of choice, and solitude.

In recent years, the validity and usefulness of the carrying capacity concept has been questioned (Graefe, Vaske and Kuss, 1984). Carrying capacity is difficult to implement, and the crowding component of social carrying capacity difficult to quantify (Burch, 1981). However, carrying capacity research has produced much useful information. Research on crowding in wilderness areas, and its effect on solitude and the recreation experience has received considerable attention due to the number of studies devoted to recreational carrying capacity.

The study of crowding is a result of concerns about backcountry management and the provision of opportunities for solitude as mandated by the 1964 Wilderness Act.
(Westover, 1989). Recreational crowding is defined as the negative evaluation of
encounters between groups, when an individual’s level of satisfaction or enjoyment has
been reduced (Ditton, Fedler and Graefe, 1983). As opposed to density, which simply
refers to the number of people in a specified area, crowding requires an individual,
subjective judgement. Evaluations of crowding for each individual will vary, due to social,
psychological and situational factors (Schreyer and Roggenbuck, 1976).

This chapter’s focus is on the components of recreational crowding and
satisfaction. A review of the literature related to crowding and satisfaction is then
synthesized into the conceptual framework used in this paper

**Crowding in Recreation Settings**

Solitude is a legally mandated characteristic of Wilderness according to the 1964
Wilderness Act. Efforts to ensure that solitude exists in wilderness settings have focused
on the concept of crowding and acceptable numbers of encounters with other groups in
the backcountry (Patterson and Hammitt, 1990). Stankey (1973) found that the amount of
use visitors encounter on a wilderness trip influences their satisfaction, because solitude
is expected by most wilderness visitors. In Stankey’s (1973) study of four wilderness
areas, he found that in three wilderness areas in the west, 77% of the respondents
agreed with the following statement: “It is reasonable to expect that one should be able to
visit a wilderness area and see few, if any, people.” In the remaining area, the Boundary
Waters Canoe Area Wilderness, 67% agreed with this statement. In a study of nine
wilderness areas, Lucas (1980) discovered that 13% to 49% of the respondents reported
seeing too many other wilderness visitors during their trip. Associations were strongest
between satisfaction and perception of crowding, site deterioration, littering, and success
in finding the desired level of solitude at campsites.

Concern over crowding is also shared by managers of wilderness and recreation
areas. Washburne and Cole (1983) found that two-thirds of United States Forest Service
(USFS) and National Park Service (NPS) wilderness managers considered visitor use
beyond capacity in at least some areas and at some times. Fifty-five percent of the United States Forest Service managers considered crowding to be a problem in some areas.

**The Satisfaction Model**

Crowding was thought to be the major factor contributing to satisfaction in wilderness settings. The satisfaction model was developed by theorists in an attempt to quantify the effects of increasing use on the recreation experience (Clawson and Knetsch, 1966). The satisfaction model is based on the economic concept of marginal utility. As visitors are added to a recreation area, the satisfaction of each individual visitor will gradually decline due to crowding, but total satisfaction will increase. However, when the satisfaction of the most recent visitor no longer exceeds the drop in satisfaction of existing visitors, total satisfaction declines. At this point social carrying capacity has been reached (Clawson and Knetsch, 1966). This model is driven by the assumed inverse relationship between use density and satisfaction. For each individual, increased density causes decreased satisfaction.
One of the first empirical tests of the relationship between density and satisfaction was conducted by Stankey (1973). Based on hypothetical questions asking visitors how they felt about encountering increasing numbers of other parties, Stankey constructed satisfaction curves (see figure 3). The curves support the satisfaction model; as encounters increased, satisfaction declined. Stankey also found that the degree of satisfaction is affected by the type of use. Backpackers and horseback riders differed in the three western wilderness areas, while paddling canoeists, motor canoeists and motorboaters differed in the Boundary Waters Canoe Area Wilderness in Minnesota. Different user groups appear to have different levels of satisfaction with encounter levels.

Although hypothetical tests were able to support the satisfaction model, tests under field conditions provide generally low relationships between density and satisfaction (Manning, 1986). Graefe, Vaske and Kuss (1984) reviewed a number of articles on crowding and the relationship between density and satisfaction. Most of the articles reviewed found no relationship between actual density and satisfaction. In Lucas' study of nine western wilderness areas (1980), associations between satisfaction and feelings about the number of others observed and numbers of visitors encountered showed associations that vary from weak to moderately strong. Heberlein (1977), in a study of nearly 3,000 canoeists, tubers and fisherman on the Brule River in Wisconsin, found a correlation between daily use and satisfaction of only .009. These studies indicate that use density has little to do with satisfaction.

Factors Which Influence Perceptions of Crowding

The intensity of use in an area often has very little to do with perceptions of crowding (Shelby, 1980). Crowding is more complex than a simple response to high levels of encounters (Absher and Lee, 1981). A computer simulation model developed by Smith and Krutilla (1974) to determine the effects of use levels on trail and campsite encounters, found that encounters generally increased when use increased. However, other factors, such as trip length, party type, proximity to trailhead and arrival rates also
had an effect on the relationship between use and interaction.

Density is a necessary antecedent to crowding, but does not sufficiently account for perceptions of crowding (Stokols, 1972). While density measures are more readily available, contacts with other groups have a greater influence on perceived crowding and satisfaction. Variables affecting crowding include spatial and situational, and social-psychological factors, as well as visitor characteristics and coping behavior (Westover, 1989).

Spatial and Situational Factors

Spatial and situational factors which affect crowding include the physical environment, the type of area, location within an area, and the environmental quality of the area. Wilderness areas receiving heavy visitor use may not be perceived as crowded by many visitors. Areas vary widely in size, and total use may have little to do with the amount of contact between groups (Stankey, Lucas and Lime, 1976). For example, in 1975 the Great Gulf Wilderness Area in New Hampshire which only encompasses 5,400 acres, received approximately 24,000 visitor days of use. Visitor days per acre were calculated at 4.5 per acre. The Selway-Bitterroot Wilderness Area in Montana received approximately 150,000 visitor days of use in 1975, but use was spread over 1.2 million acres, and there were only 0.1 visitor days per acre. The chances of encountering other visitors in the Great Gulf is much higher than in the Selway-Bitterroot, despite the total number of visitors to each area.

Because most wilderness travel follows existing trails, the number and total mileage of trails within a wilderness area also effects the probability of encountering other visitors (Stankey, Lucas and Lime, 1976). Areas with more trails and entry points will be more likely to disperse visitors better than areas with only a few trails and entry points. The Boundary Waters Canoe Area Wilderness in Minnesota has 70 entry points and numerous canoe and hiking trails, while the Beartrap Canyon Wilderness Area in Montana has only two entry points and two trails. Heavy use in the Boundary Waters can be
dispersed much easier than in the Beartrap Canyon.

However, in the Boundary Waters, about 70% of the visitor groups enter through only seven of the areas 70 entry points. This inconsistent pattern of use also contributes to perceived crowding, because most visitors are using only a few of the available entry points. Watson (in publication), found that canoeists in Boundary Waters Canoe Area Wilderness who entered through the two most heavily used entry points averaged 4.6 paddler group encounters per day, while those entering through the two least used entry points averaged only 2.2 encounters per day.

**Physical Environment**

Perceived crowding may also be dependent on the physical environment (Hammitt, 1983). Twenty groups camping at a remote lake will be more likely to perceive crowding if they are all camping in a flat open meadow within sight and sound of each other. However, if the physical features of the surrounding terrain provide ridges, knolls and heavy timber, keeping the campers from seeing or hearing each other, they may not perceive crowding to be a problem. In this case, Managers can control perceived crowding by locating trails and campsites in areas that provide physical barriers to the sight and sound of other visitors.

**Type of Area**

Perceptions of crowding are also dependent on the type of recreation area. Shelby (1981) found that persons in federally designated wilderness areas tend to be more sensitive to crowding than persons using undesignated, undeveloped, backcountry recreation areas. Different levels of use are appropriate for each type of recreation area. People tend to assume that a designated area is of higher quality which in turn leads to higher expectations (Anderson, 1980).

McConnell (1977) found different relationships between density and crowding for a high density "singles" beach and a beach located in a natural area. For visitors to the "singles" beach, high density was expected and preferred. Low levels of density were preferred for visitors to the beach located in the natural area. The context of the situation
defines the appropriateness of actual density in relation to crowding (Stankey, Lucas and Lime, 1976). 100 people around a remote lake within a wilderness area is a crowd, while 100 people in a large city park is not (Stankey, Lucas and Lime, 1976).

**Location Within an Area**

Wilderness visitors perceive crowding differently in relation to their location within an area. People are more sensitive to encounters deep within a wilderness area than encounters at the periphery (Stankey, 1973). More than two-thirds of the respondents in Stankey’s (1973) study indicated a preference for encounters at the periphery of the area rather than the interior. Also, while respondents in his study do not necessarily enjoy or welcome meeting others on the trail, they do prefer seeing them on the trail than at the campsite.

Wilderness visitors are especially sensitive to encounters at the campsite (Burch and Wegner, 1967). Stankey (1973) found that 75% of the respondents preferred to camp away from other wilderness visitors. 65% of these respondents indicated they would experience a loss of satisfaction if another group arrived on the scene and set up camp. Some indicated they would leave the area and camp elsewhere. Lucas (1980, 1985) also found that a large majority of wilderness visitors preferred to camp alone with their group. Wilderness visitors in the Bob Marshall Wilderness Area, Montana find solitude at campsites more important than solitude while traveling. Eight out of ten respondents preferred not to camp within sight or sound of others.

**Environmental Quality**

Evidence of other wilderness visitors also leads to increased perceptions of crowding. Perceived crowding is influenced not only by the physical presence of others, but also the impacts to the environment caused by previous visitors (Vaske, Donnelly and Heberlein, 1980). In a study of wilderness visitors, Vaske et. al. (1980) found that visitors who considered environmental conditions worse than expected were more likely to perceive the area as crowded.
Social-Psychological Factors

Wilderness visitors have social or personal norms which affect their perception of crowding. Personal norms are an individual’s standards about what is acceptable, and are expectations which are learned and modified through interaction (Vaske, Shelby, Graefe and Heberlein, 1986). Wilderness visitors develop norms about appropriate wilderness conditions. Norms may be developed for appropriate levels of encounters, solitude and resource conditions.

Social norms are standards which are shared by members of a social group (Black and Heberlein, 1979). Wilderness backpackers share norms about appropriate levels of encounters, packing out trash, and proper disposal of human waste. Personal norms are usually similar to the social norms of the group to which they belong (Fishbein, 1967). Density is not perceived as crowding until a person’s objectives or values (norms) are disrupted by the number of people in the area (Gramann, 1982). A visitor’s level of experience, motivations, expectations, attitudes, and preferences have an influence on crowding norms (Manning, 1985).

Experience Level

Previous experience with a particular site or activity will affect how an individual perceives crowding (Schreyer and Lime, 1984). Empirical research has generally found that experienced users are more sensitive to crowding. Ditton et. al. (1983) found that Buffalo National River floaters who felt crowded were also the most experienced group of river floaters. Floaters who felt crowded averaged more years floating and spent more time on the river than any other visitors (Ditton, Fedler and Graefe, 1983). Heberlein and Dunwiddie (1979) discovered that experienced backpackers in the Bridger Wilderness Area of Wyoming were more likely to select campsites farther from other visitors. This suggests that experienced visitors are better able to adjust their trip and find secluded campsites and solitude, both attributes of a wilderness experience which fit within their preconceived norms.

Experienced recreationists also develop emotional or symbolic attachment to an
area over time. When current use levels exceed those of the past, experienced users are more likely to feel crowded (Gramann and Burdge, 1984). However, Knopf (1983) hypothesized that more experienced visitors have more accurate information about site conditions, and are able to mediate their perceptions of crowding. Stankey (1980) found that previous wilderness experience had little to do with preferred levels of contact in both the Spanish Peaks Wilderness in Montana and the Desolation Wilderness in California. Absher and Lee (1981) determined that more backcountry experience leads to a lessened desire for quiet and solitude, and a diminished sensitivity to crowding. Early experiences with backcountry camping leads to more tolerance for high levels of use, and it is the newer visitors who are more likely to desire the solitude experience (Absher and Lee, 1981). Although experience level has not been consistent in its relationship to crowding, it is clear that experience does have an effect.

Visitor Motivations, Expectations, and Preferences

The positive or negative evaluation of crowding is affected by wilderness visitor's motivations for visiting an area, and their expectations and preferences about what are appropriate encounter levels. A wilderness user's motivations for visiting an area have an effect on their perception of encounter levels or crowding (Ditton, Fedler and Graefe, 1983; Absher and Lee, 1981). Ditton et. al. (1983) discovered differences in perceived crowding between visitors with separate motivations for visiting the Buffalo National River. Respondents who felt crowded had a higher rating for the motivation “to get away from other people.” Respondents who reported increased enjoyment due to more encounters with other groups rated “to be a part of a group,” “to have thrills and excitement,” and “to share what I have learned with others” significantly higher than both those who felt crowded and those who were indifferent about the number of encounters. The largest difference between the respondents who felt crowded and those who did not feel crowded occurred in the motivations for the opportunity to get away from people and the opportunity to experience peace and solitude (Ditton, Fedler and Graefe, 1983).

Absher and Lee (1981) found that respondents with high motivations for quiet and
solitude, are more likely to perceive an area as crowded. Conversely, respondents with high motivations for "Nature Involvement" or "Shared Experiences" are less likely to report crowding (Absher and Lee, 1981). When motives are added to social density, the percentage of variance in crowding jumps from 7% to 24%. Motives were by far the strongest set of predictors for perceived crowding (Absher and Lee, 1981). Absher and Lee (1981) go on to say:

...crowding in the absolute sense may be a product of a composite of social expectation and social density processes...the common-sense notion of crowding in recreation settings as phenomenon dependent upon sheer numbers of other people must be reassessed in favor of more complex formulations that incorporate motivation and individual characteristics.

Schreyer and Roggenbuck (1978) also discovered that floaters on the Green and Yampa Rivers who were more sensitive to high use densities also rated the motivations "stress release/solitude" and "self-awareness" higher.

Visitor expectations and preferences also have an effect on perceived crowding. People who feel crowded are more likely to report seeing more people than expected (Ditton, Fedler and Graefe, 1983). Respondents who feel crowded are also more likely to feel they saw more people than they preferred to see (Ditton, Fedler and Graefe, 1983).

The most important variables for discriminating between visitors who feel crowded and those who do not feel crowded in the Ditton et. al. (1983) study of Buffalo National River users, were preferences and motivations to get away from other people. Absher and Lee (1981) show that respondents who expected to experience a quiet, tranquil place were more likely to report higher levels of crowding when their expectations were not met.
In Watson's (in publication) recent study of Boundary Waters Canoe Area Wilderness visitors, 85% of visitors who experienced more encounters than they preferred reported some level of crowding during their trip. Watson (in publication) found that those groups entering the two least heavily used access points preferred to see about half as many groups as those entering the two most heavily used access points. In addition, 92% of the visitors who reported encountering more groups than considered acceptable also reported crowded conditions. Of the visitors that encountered more groups than expected, 84% reported feeling crowded at some time during their trip.

Shelby (1980) developed a new model of crowding which reported perceived crowding as a function of density, encounters, preferences and expectations, where preferences and expectations may have a greater effect on perceived crowding than density and encounters. Grand Canyon river floaters were more likely to feel crowded if they expected to be alone or if they felt the area was overused (Shelby, 1980). The variables of expectation and perception of overuse in the canyon explained 49% of the variance in perceived crowding, while density and interaction explained only 4%.

Shelby et. al. (1983) found that visitors feel crowded when encounters exceed expectations, but not necessarily when encounters exceed preferences. Wilderness visitors who desire solitude prefer low contact levels and are likely to see more groups than they would prefer; however, these people may not feel crowded (Shelby, Heberlein, Vaske and Alfano, 1983). When the more realistic measure of expectations is exceeded, respondents are much more likely to feel crowded. Expectations show a more consistent effect on crowding than preferences.

**Attitude**

The attitudes of visitors towards wilderness have also been shown to have an effect on perceived crowding. Stankey (1973) found that visitors whose attitudes conformed more closely with values implied in the Wilderness Act ("wilderness purism") were more likely to perceive an area as crowded. Satisfaction for strong wilderness purists declined with any type of encounter, and satisfaction curves for encounters
dropped off much faster for strong wilderness purists as encounters rose. Schreyer and Roggenbuck (1978) report similar findings. Those visitors with the most purist attitudes are more likely to perceive crowding as encounter levels rise.

**Visitor Characteristics**

The characteristics of those encountered also affects perceived crowding. The type of group, the size of the group, and the behavior of other groups are characteristics which affect crowding perceptions

**Type of Group**

The type of group is most often defined in terms of mode of travel. Lucas (1964) found differences in reactions to meeting other groups between paddling canoeists and motor boaters in the Boundary Waters Canoe Area Wilderness. Canoeists felt crowded at much lower levels of use than did motor boaters. Stankey (1973) had similar findings in the Boundary Waters Canoe Area. Paddling canoeists preferred to see other paddling canoeists 85% percent of the time. Only 1% of the paddling canoeists preferred to see motor boaters over other users. A large proportion of the motor boaters did not care whether they met other visitors. This discrepancy is due in large part to motor boaters less critical attitude toward appropriate uses of the wilderness.

Stankey (1973) also found that in western wilderness areas, hiking parties were much more concerned about encounters with other groups than horseback parties were. The satisfaction curves in Figure 4 on page 16 show the differences between hiking and horseback parties.

In Nielsen and Shelby's (1977) study of Grand Canyon river runners, differences were found in perceived crowding for private and commercial river runners and oar and motor trips. Private river users are younger, have slightly lower income, are less likely to live in cities, are more likely to belong to outdoor clubs, have more experience running other rivers and the Grand Canyon, and participate in other outdoor activities more often than commercial river users (Nielsen and Shelby, 1977). These same differences are
apparent when looking at oar and motor groups as well. Private river runners have fewer people per party, more boats, fewer people per boat, and spend more time in the canyon. Private river users were more likely to report having met too many people during their trip. They were also more likely to object to motor noise and show preferences for oar travel. Different types of users seek different outcomes and have different expectations and preferences for recreation. Therefore, they exhibit different levels of perceived crowding.

**Group Size**

The size of the group has been shown to affect perceptions of crowding. Wilderness users would rather encounter many small groups in a wilderness setting than one large group, even though the total number of people encountered might be the same (Stankey, 1973). Large groups in wilderness areas represent a behavior outside the accepted norm (Stankey, 1973).

**Group Behavior**

The behavior of other groups also affects perceptions of crowding. On the Au Sable River in Michigan, Driver and Bassett (1975) found that fisherman and stream side residents objected to seeing canoeists primarily because of their behavior. Behavior such as yelling and shouting affected fisherman and residents more than simply sheer numbers of people. Fisherman assigned more importance to experiences where they can be alone than did canoeists.

West (1982) found that 31% of visitors to the Sylvania Recreation Area in northern Michigan were bothered by other users. Of these, 57% were bothered by the behavior of other visitors, and 31% were bothered by the number of users encountered. Noise and noise-related complaints were the most prevalent causes for reduced enjoyment. Littering or polluting lakes, noncompliance with rules, use of radios or tape players, and uncontrolled pets were other behaviors that affected visitors.
Coping Behavior

When the number of other groups encountered and the behavior of these groups begin to affect the wilderness experience of visitors, coping mechanisms may be employed to help manage the anxiety and stress of these encounters. The two most common forms of coping behavior in recreation are displacement and rationalization.

Displacement

Negative evaluations of crowding are thought to lead to avoidance behavior in visitors (Westover, 1989). As areas become crowded, traditional users may alter their patterns of recreation activity to avoid crowding and go to less crowded areas. Visitor satisfaction with use densities remains high because those sensitive to crowding have been displaced by visitors more tolerant of high use densities (Nielsen and Shelby, 1977). Nielsen and Shelby (1977) discovered that rafters in the Grand Canyon changed their trip plans due to high levels of use. In an effort to reduce the number of encounters with other groups, rafters would visit fewer attraction sites along the river, and spend less time at each site when they did stop.

Stankey (1980) found that nearly half of the visitors to the Desolation Wilderness in California felt crowding was enough of a problem to alter their trip. One in four visitors altered their route of travel, while about one out of six visitors altered both their route and length of stay.

Anderson and Brown (1984) found that a vast majority of those sampled in the Boundary Waters Canoe Area Wilderness had changed their patterns of use by selecting lesser-used entry points or campsites, and by entering the wilderness on less crowded days of the week. Use density, noise, litter, and environmental impacts were the most common reasons visitors gave for adjusting their trip. In Great Smoky Mountains National Park, Hammitt (1983) determined that 78% of the winter visitors to the park had altered their visit to avoid heavy summer use. During the summer, these visitors instead visit lesser-used areas to avoid the crowds. Due to the process of displacement, it is often difficult for managers to determine how satisfied visitors truly are with levels of use in the
area, because those visitors with previous experience in the area may have been replaced by more tolerant visitors.

*Rationalization*

The other method of coping behavior visitors are thought to employ is the process of rationalization. Recreation activities are voluntarily selected and sometimes involve a considerable investment of time, money and effort, therefore people may report a satisfying experience regardless of the conditions. Festinger’s (1957) theory of cognitive dissonance which posits that people order their thoughts in a way that reduces inconsistencies and stress, is the basis for this supposition.

Heberlein and Shelby (1977) find support for this hypothesis when studying recreationists in the Grand Canyon. Grand Canyon trips are long, may require high costs, and much effort is put into the process of obtaining a permit. Due to the considerable time, effort and money that goes into a Grand Canyon river trip, people may not be as affected by conditions which do not fit their norms. People will enjoy themselves regardless of the number of groups they encounter or the environmental impacts they discover.

Manning and Ciali (1980) found little support for the theory of cognitive dissonance. In their study of river users in Vermont, they found that most respondents were in-state day users who invested little time or effort in often routine “backyard” activities. Many respondents were not hesitant in expressing their dissatisfaction with use levels.

**Summary**

Research on the concept of crowding has shown that there are a number of factors that affect visitor’s perceptions of crowding. Although it is often difficult to determine the relative importance of perceived crowding to visitors overall levels of trip satisfaction, it remains important for managers concerned with establishing estimated levels of appropriate use.
Measuring Satisfaction in Recreation Settings

The measurement of recreation satisfaction is very closely related to the concept of crowding in recreation settings. The satisfaction model, which was explained earlier in the chapter, attempted to measure satisfaction by examining the number of encounters between recreationists. According to the satisfaction model, satisfaction was simply an effect of increasing levels of use within an area. As the study of satisfaction in recreation settings evolved, researchers realized that there are many factors which affect recreationists feelings of satisfaction, the level of use within an area being just one. Researchers began to look at theories of satisfaction in other disciplines. Theories of job and life satisfaction were used in some recreation studies, while the use of consumer satisfaction models have just recently been examined (Williams, 1988). Much of the information for job, life and consumer satisfaction models comes from prior research in the fields of social and applied psychology (Oliver, 1980).

Recreation Research on Satisfaction

Quality is often the stated goal of outdoor recreation management, and satisfaction is the measure endorsed as the most appropriate surrogate of quality (LaPage, 1983). Sources of satisfaction and dissatisfaction provide managers with feedback indicating how well they are providing desired wilderness conditions (Stankey and Schreyer, 1985). Using satisfaction as the measure for quality is a better measure than simply the quantity of people using the resource, as has been done in the past (Williams, 1988). Quantity simply measures the efficiency, not the effectiveness, of the services provided (Williams, 1988).

Visitors to recreation settings have reported high levels of overall satisfaction on a regular basis (Ditton, Graefe and Fedler, 1981). Researchers hypothesize several reasons for this consistently high level of reported satisfaction. Two reasons have already been discussed in this chapter; rationalization and displacement. Recreationists may shift their perceptions and priorities and change their behavior to achieve preferred
outcomes (Ditton, Graefe and Fedler, 1981). Displacement creates high levels of satisfaction, because there are many new users in a given area with no pre-established norms regarding acceptable levels of use and resource conditions (Nielsen, Shelby and Haas, 1977). New users establish the conditions they find on their first visit as their norm against which satisfaction decisions are made. Therefore, if old users are being displaced by new visitors, levels of satisfaction should remain high. Ditton et. al. (1981) also suggest that the single item measure of satisfaction (i.e., Did you enjoy your experience?) most often used to measure satisfaction provides no reliability or validity. A single item measure of satisfaction provides little clarity on what is actually being measured, and little information about a person's response to the complex aspects of the recreation environment (Ditton, Graefe and Fedler, 1981).

Recreation researchers have begun to look at specific elements which contribute to overall satisfaction. The most common sources of satisfaction or dissatisfaction in recreation settings are crowding or human encounters, the degree of success in obtaining goals, and resource impacts such as litter, heavily impacted campsites, and eroded trails (Williams, 1988).

Motives have also been shown to have an effect on visitor satisfaction. The importance of the motive is critical to satisfaction, because motives represent reasons why people visit wilderness areas (Stankey and Schreyer, 1985). Motives which are the most important to visitors will have a higher correlation with satisfaction than motives that are not as important (Stankey and McCool, 1984).

Different types of user groups also have differing perceptions of satisfaction (Shelby, 1977). Lucas (1980) found that campers were less satisfied than day-users. Lucas hypothesized that campers have different levels of experience, expectations, and possibly more demanding standards than day users. He also suggested that visitors who stay longer go further into the wilderness and see more problems, and encounter more disappointments. Stankey (1973) found that satisfaction declined more rapidly for respondents who encountered horseback parties as opposed to hiking parties. The
same differences were apparent in the Boundary Waters Canoe Area, where satisfaction declined more rapidly when encountering motorboaters than paddling canoeists.

Various aspects of the wilderness experience affect satisfaction levels. Lucas (1980), identified scenic beauty and the wild natural quality of the land as the most common reasons for visitors' satisfaction. Solitude was the next most common positive influence on satisfaction.

Dorfman (1979) also looked at aspects of the recreation experience to measure overall satisfaction. Satisfaction was measured for each individual aspect of the recreation experience. A single item measure was used to determine overall satisfaction, and then each aspect was run in a factor analysis to determine which aspects were most important to overall satisfaction. Relaxation, naturalism, social-interpersonal relationships, and absence of negative conditions were found to be most important to a satisfying experience. Crowding and annoying and inconsiderate neighbors were the two most important aspects leading to dissatisfaction.

Peterson (1974) measured satisfaction through the congruency between perceptions and aspirations of various conditions of the wilderness experience. Aspects of the experience which were major sources of satisfaction were being able to drink directly from the lake, crystal clear lakes and streams, and natural noises. Aspects which were major sources of dissatisfaction included litter, biting insects, and damaged trees.

**Common Theories of Recreation Satisfaction**

In attempts to better quantify satisfaction in recreation settings, researchers have looked beyond the simplistic satisfaction model to motivations and norms as the basis for understanding recreation satisfaction. The most common models used in recreation settings have been multiple satisfactions and norm based models (Williams, 1988).

**Multiple Satisfactions**

The idea behind the multiple satisfactions paradigm is that recreation resources offer people the opportunity for a range of experiences which in turn lead to various levels
of satisfaction (Hendee, 1974). Satisfaction is determined by how well a recreation experience fulfills basic needs or motives. Multiple satisfactions does not measure individual satisfaction, but instead measures the elements of the experience that are valued (Williams, 1988).

Williams (1988) suggests that using expectancy theory (Lawler, 1973) along with multiple satisfactions would be an appropriate method for determining overall satisfaction. According to expectancy theory, people engage in activities expecting that certain outcomes, satisfactions or rewards will occur (Lawler, 1973). Satisfaction can be derived for each attribute of the experience by measuring the incongruence between expected and actual outcomes (Peterson, 1974). Overall satisfaction for an experience can be determined by summing across the list of experience attributes. The positive and negative discrepancies for each attribute will determine overall satisfaction (Dorfman, 1979). In this way, the multiple satisfactions paradigm is used for determining overall satisfaction by looking at the discrepancies for each attribute of the experience.

**Norm-Based Measures of Satisfaction**

Norm-based models of satisfaction are a result of recreation researchers' attempts to show that crowding negatively effects backcountry experiences. Normative standards govern behavior and specify what is acceptable (Shelby, 1981). Contact preference norms are based upon shared beliefs about the appropriate number and type of encounters (Shelby and Heberlein, 1986). Encounter preference curves are used to show the range of acceptable encounters (Shelby and Heberlein, 1986). Norms are determined by respondents' reactions to increasing numbers of encounters in different settings ranging from developed to wilderness. Respondents would indicate the highest level of encounters they would accept before their desired experience was no longer available (Shelby and Heberlein, 1986). According to norm-based measures, satisfaction is determined by individual norms for what is appropriate in a given area. When the desired norms are no longer present, satisfaction will decline.
Theories of Job Satisfaction

Theories of job satisfaction have provided recreation researchers with models for determining recreation satisfaction. Job satisfaction refers to the level of satisfaction in the workplace. Several recreation studies have used models based on job satisfaction theories for their studies (Becker, Niemann and Gates, 1981; Ditton, Graefe and Fedler, 1981; Schreyer and Roggenbuck, 1978; Dorfman, 1979; McCool and Peterson, 1982). The discrepancy and two-factor theories have been used in past recreation research. Two other theories, the fulfillment and equity theories have not been used in recreation research, but will be explained.

Fulfillment Theory

Fulfillment theory was the first approach developed for determining job satisfaction (Lawler, 1973). According to fulfillment theory, job satisfaction will vary directly with the extent to which the needs of the individual are satisfied (Schaffer, 1953). Satisfaction is dependent on how much of a given outcome or group of outcomes a person receives (Lawler, 1973). Fulfillment theorists attempt to combine individual facets of satisfaction to determine overall job satisfaction. Facets of job satisfaction would include the working conditions, relations with co-workers/supervisor, level of responsibility, salary, recognition, and advancement. Lawler (1973) suggests that fulfillment theory is not valid because it fails to account for differences in people's feelings about what outcomes they should receive.

Discrepancy Theory

Discrepancy theory differs from the fulfillment theory by taking into account the fact that people have different desires (Lawler, 1973). The discrepancy theory contends that satisfaction is determined by differences between the actual outcomes a person receives and some other outcome level (Lawler, 1973). The other outcome level is either the level the person expects they should receive, or the level the person feels they should receive. Like fulfillment theory, total job satisfaction is influenced by the sum of discrepancies for each factor of the job (Lawler, 1973).
When there is a difference between the actual outcome and the expected or preferred outcome, dissatisfaction will result. According to discrepancy theory, a person who expects to see ten groups in the wilderness and actually sees twenty will be dissatisfied. If the person expects to see ten groups and actually sees ten groups, satisfaction will follow. However, discrepancy theory also states that a person will be dissatisfied if they actually see five groups when they expected to see ten, although the dissatisfaction will be lessened in this case. Discrepancy theory is not clear on dissatisfaction due to over-reward and under-reward as illustrated in the previous example. Because of the unclear relationship between over-reward, under-reward, and satisfaction, discrepancy theory is not entirely appropriate for use in recreation satisfaction research.

Peterson (1974) used a model similar to the discrepancy theory when he determined satisfaction, by looking at the congruence between perceptions and aspirations. Peterson (1974) determined satisfaction by measuring:

The desired degree of presence [for each element of the recreation experience] is the aspiration of the recreationist. It is the degree of presence that he desires to experience because it will, in his estimation, produce the greatest level of satisfaction. The coefficient of marginal satisfaction is the amount of satisfaction that is generated by the perceived degree of presence [for each element of the recreation experience]... total satisfaction is maximized when there is perfect agreement or congruence between perception [of the actual experience] and aspiration.

In Peterson's (1974) model, the congruence between aspirations and perceptions will determine satisfaction. According to discrepancy theory, satisfaction will occur when there
is congruence between expected or preferred outcomes and actual outcomes, and dissatisfaction is the result of a discrepancy between aspirations or preferences and outcomes.

**Equity Theory**

Equity theory determines satisfaction by looking at the perceived ratio of what people receive from a job relative to what they put into it (Adams, 1963). Satisfaction exists when there is perceived equity, while dissatisfaction is a result of perceived inequity (Lawler, 1973). People will judge their own input-outcome balance, and in turn their equity, by comparing it with others’ input-outcome balances. Equity theory clearly states how people assess their inputs and outcomes in developing feelings of satisfaction or dissatisfaction (Lawler, 1973).

**Two-Factor Theory**

Two-factor theory states that satisfaction and dissatisfaction exist on two separate continuums, ranging from satisfaction to neutral and dissatisfaction to neutral (Herzberg, Mausner, Peterson and Capwell, 1957). Separate facets of the job influence feelings of satisfaction and dissatisfaction. According to two-factor theory, people can be very satisfied and very dissatisfied at the same time (Lawler, 1973). The only way satisfaction can be increased is by making changes in those factors which are important to creating job satisfaction. Likewise, the only way dissatisfaction can be altered is by changing the factors which are significant to job dissatisfaction.

Critics of the two-factor theory ask whether satisfaction and dissatisfaction are really two separate dimensions (Lawler, 1973). The same job factors can cause both satisfaction and dissatisfaction, and the same factor can cause satisfaction in one group and dissatisfaction in the other. The two-factor theory is fundamentally concerned with explaining the determinants of job satisfaction and dissatisfaction (Lawler, 1973).

McCool and Peterson (1982), applying the two-factor theory in a recreation setting, asserted that the absence of a condition that leads to satisfaction might not result in dissatisfaction, and conditions that result in dissatisfaction might not lead to satisfaction if
absent. They discovered that some aspects of the environment act as satisfiers which
enhance the experience, and some aspects serve as dissatisfiers which detract from the
experience. The most important sources of dissatisfaction in their study were encounters
with others. Other sources of dissatisfaction related to impacts resulting from human use,
litter, insects and dogs.

**Theories of Consumer Satisfaction**

Like the discrepancy theory of job satisfaction, nearly all satisfaction research in
consumer behavior results from a comparative process which depends upon the
discrepancy between preconsumptive and postconsumptive product attitudes and
perceptions (Williams, 1988). Williams (1988) believes that consumer satisfaction bears
most directly on recreation. Consumer satisfaction is similar to recreation satisfaction in
that both have been conceptualized as cognitive evaluations of the degree to which a
product or service performs relative to an arbitrary standard (Williams, 1988).

Recreation and consumer behavior literature address many of the same issues
(Williams, 1988). Both involve prepurchase or preactivity and postpurchase or
postactivity evaluations based on a comparative standard such as expectations.
Recreationists are consumers who require many of the same services that are demanded
in the retail environment. Recreationists pay for the services they receive and the
resources they use in a recreation setting through time, money, effort, and commitment,
and expect certain rewards and satisfactions. In many respects, recreationists are indeed
consumers.

There are many approaches to consumer satisfaction. The approach to consumer
satisfaction that has gained the widest acceptance in recent years, and has been the
focus of the greatest number of modifications has been the *expectancy disconfirmation
model* (Woodruff, Cadotte and Jenkins, 1983). Other theories that have been considered
include the equity and attribution theories. The direct role of product performance has also
been considered as a factor affecting consumer satisfaction decisions (Oliver and
Oliver and DeSarbo (1988) tested the effects of expectations, disconfirmation, equity, attribution, and product performance on satisfaction in a study of simulated stock market scenarios. The stock market scenario was chosen because it satisfied all of the requirements for the study: that expectations be an integral part of the purchase; controlled measures of performance; the ability to disconfirm expectations subjectively; the likelihood that another agent could make the product selection; and the ability of the buyer to determine the outcomes of the parties to the transaction (Oliver and DeSarbo, 1988). The first three conditions measure expectancy, performance and disconfirmation, while the fourth condition measures attributions and the fifth allows for equity mechanisms (Oliver and DeSarbo, 1988).

The results of the study show that disconfirmation has the greatest influence on satisfaction. Expectations and performance have the next most important influence on satisfaction, followed by equity and attribution. Expectancy disconfirmation and performance were the primary means by which the subjects evaluated satisfaction (Oliver and DeSarbo, 1988).

**Expectancy Disconfirmation Model**

Oliver (1980) states that, "Almost without exception, reviewers and early researchers in the areas of job, life, self, and patient satisfaction agree that satisfaction is a function of an initial standard and some perceived discrepancy from the initial reference point." The expectancy disconfirmation model is based upon expectations and disconfirmation. According to expectancy disconfirmation, expectations provide the initial standard or reference point, while disconfirmation is the discrepancy between expectations and the actual experience. The expectancy disconfirmation model is the conceptual framework for this paper.

The expectancy disconfirmation model is similar to Helson's (1964) adaptation level theory (Oliver and DeSarbo, 1988). Adaptation level theory contends that:
one perceives stimuli only in relation to an adapted standard. The standard is a function of perceptions of the stimulus itself, the context, and psychological and physiological characteristics of the organism. Once created, the “adaptation level” serves to sustain subsequent evaluations in that positive and negative deviations will remain in the general vicinity of one’s original position. Only large impacts on the adaptation level will change the final tone of the subject’s evaluation (Helson, 1964).

Expectations can be considered the adaptation level, because they define the baseline or standard against which subsequent performance is judged (Oliver, 1980). Disconfirmation serves as the major force causing deviation from the adaptation level (Oliver, 1981). Oliver (1979) contends that expectations are the appropriate comparative standard for determining satisfaction. Other measures that have been used as the comparative standard in satisfaction decisions include desired or preferred outcomes and what is equitable or deserved (Williams, 1988). Oliver (1979) feels that consumers can express what they would like or prefer, but often these ideal products or services are not available in real markets or resources. Oliver (1979) also does not perceive equity or “should be” as an appropriate comparative standard, because the marketplace does not respond to what a product should do (i.e. equity), but expectations of what a product will do. Expectations involve an anticipation of how well a product will perform on some attributes of importance, and they provide the most accurate baseline for determining disconfirmation (Swan and Trawick, 1981).

Expectations are influenced by the same factors that Helson (1964) suggests in discussing adaptation levels. In a consumer behavior context, expectations are formed through 1) the product itself including one’s prior experience with the same or similar products, brand connotations and symbolic elements; 2) the context, including the content
of communications with salespeople or friends, and 3) individual characteristics including persuasability and perceptual distortion (Oliver, 1980).

Recreationists form expectations in a similar way. For example, recreationists intending to visit the Bob Marshall Wilderness Area in Montana will form expectations about the quality of their wilderness experience through prior experience traveling in the Bob Marshall Wilderness, prior experience traveling in other similar wilderness areas in Montana, the symbolic meaning wilderness holds for them, the type of experience that they feel is generally associated with wilderness (i.e. solitude, freedom, scenic beauty, adventure), and information gained through discussions with friends or management personnel, guidebooks and the media. Recreationists, like consumers, develop a multiplicity of expectations when deciding to partake in an activity. Expectations create a frame of reference within which people make comparative judgements (Oliver, 1980).

Disconfirmation is essentially a mental comparison of an actual occurrence with its anticipated probability (Oliver, 1981). In consumer settings, purchase and usage reveal the actual performance of a product. Actual performance levels are then compared to expectation levels; and either expectations will be exceeded, in which case, satisfaction will be high; or they will be matched, with resulting satisfaction; or they will fall short of expectations, which will result in low satisfaction (Swan and Trawick, 1981). The discrepancy between the actual experience and the expected experience is called disconfirmation. If the product is better than expected, it is labeled positive disconfirmation; if worse than expected, it is negative disconfirmation; and it is called simple confirmation if as expected (see figure 2). For example, wilderness visitors would be pleasantly surprised if they find exactly the campsite they are looking for and it is near a hot spring, or if they visit during a busy weekend and no one is camping within sight or sound of their campsite. Conversely, they should be disappointed if they climb a mountain peak within a designated wilderness area and discover recent clearcuts right up to the wilderness boundary, or if they visit during the off-season and find a huge group of people camping at their favorite campsite. However, visitors may be neither surprised
nor dissatisfied if they visit the Alpine Lakes Wilderness Area near Seattle, Washington on Fourth of July weekend and see hundreds of people, since this was probably expected.

Expectation and disconfirmation have been shown to have complementary effects on satisfaction (Swan and Trawick, 1981). Oliver and DeSarbo (1988) postulate that, "The expectation level appears to provide a baseline around which disconfirmation judgements are made; the higher (lower) one's expectations, the higher (lower) the subsequent satisfaction judgement, ceteris paribus." They go on to say, "The delight of a positive disconfirmation enhances a satisfaction judgement, while the disappointment of a negative disconfirmation decreases it." Swan and Trawick (1981) found support for the hypothesis that satisfaction increases as positive disconfirmation increases, or as performance exceeds expectations. The more that performance exceeds expectations, the higher satisfaction will be.

Research has shown that the expectation effect has less impact on satisfaction than has disconfirmation. Independence between expectations and disconfirmation is necessary to assure the integrity of the adaptation-level model (Oliver, 1981). Oliver and DeSarbo (1988) hypothesize that disconfirmation may be a stronger factor because the expectation effect has time to decay during the purchase interval or activity. The perceived discrepancy between the actual experience and the expected experience (disconfirmation) is a major factor in satisfaction decisions.

**Expectancy Disconfirmation in Wilderness Settings**

Visitors to wilderness areas form expectations based on past experiences in the same wilderness, past experiences in other, similar wilderness areas, talking to friends and management personnel, and reading guidebooks. This study will examine one element of the wilderness experience in which visitors form expectations about; the number of encounters with other groups.

Visitor expectations about the number of encounters they will have with other visitors in a wilderness area provides a baseline for determining disconfirmation and
subsequent feelings of satisfaction with encounters. After the trip, and after encountering other groups, visitors experience a level of disconfirmation surrounding the discrepancy between the expected and actual numbers of groups encountered. The resulting level of disconfirmation regarding the number of groups encountered will then affect each visitor's level of satisfaction (figure 4). If the number of encounters expected is equal to the actual number of encounters experienced, simple confirmation will lead to feelings of satisfaction. If visitors actually see fewer groups than they expected, positive disconfirmation will provoke higher levels of satisfaction. Visitors who actually encounter more groups than expected will experience negative disconfirmation and feelings of lower satisfaction. In this same manner, satisfaction can be determined for each attribute of the wilderness experience.

**Limitations of Expectancy Disconfirmation**

The expectancy disconfirmation model is a relatively straightforward method for determining satisfaction. It has worked well in consumer behavior settings, but its use in recreation settings has been limited. Peterson's (1974) study which determined the quality of the wilderness environment through the congruency between perception and aspiration may be the closest approximation of expectancy disconfirmation in a recreation setting.

Williams (1988) presents the expectancy disconfirmation model (which he calls "contrast theory") as an appropriate method for determining satisfaction in recreation...
settings. He states that, "The recreation and consumer behavior literatures, despite little if any cross referencing, seem to address many of the same issues."

The expectancy disconfirmation model appears to be an appropriate method for determining satisfaction in recreation settings, although there are limitations to its use. In recreation settings, when two variables (expectancy and outcome) are used to define three constructs (expectancy, outcome and disconfirmation), there is an overspecification problem (Weaver and Brickman, 1974). In this paper, satisfaction with encounters will be determined by the disconfirmation between expected and actual outcomes. The difference between two outcome variables, actual and expected, will be calculated to determine subjective levels of disconfirmation. This level of disconfirmation will determine the level of satisfaction with one attribute of the wilderness experience. This method may reduce the overspecification problem cited by Williams (1988).

Oliver (1981) believes that expectations are best measured prior to the experience. Expectations can be measured in retrospect, however this approach introduces interaction between actual outcomes and prior expectancies (Oliver, 1981). Prior expectations for encounter levels were measured in retrospect for this paper, so respondents may have been influenced by the actual number of encounters they experienced.

Past experience with the same product or resource may also influence the satisfaction process (Swan and Trawick, 1981). Recreation research has shown that past experience does affect satisfaction. Experienced visitors are better able to form expectations about use levels. Experienced and inexperienced visitors to the BTCW were compared. Although there were minor differences between the two groups, they were not significant. Both experienced and inexperienced visitors will be used in this study.

Satisfaction depends on how well the expectations for each attribute of importance for a product or service are confirmed or disconfirmed (Swan and Trawick, 1981). In this study, encounter levels are only one attribute of importance for an individuals wilderness...
experience. Simply determining satisfaction with encounter levels will not determine overall satisfaction with the wilderness experience. Overall trip satisfaction in this study is not measured using the expectancy disconfirmation model. In this case, only satisfaction with one attribute of the experience (encounter levels) will be measured using expectancy disconfirmation. The correlation between satisfaction with encounter levels and overall trip satisfaction will determine the relative importance of encounter levels to a visitor's overall level of trip satisfaction.
Chapter 3

Methods

Chapter 3 identifies the study area and source of data used in this thesis. This chapter also describes the methodology and statistical tests necessary for testing the hypotheses statements. The methodology for implementing and carrying out the Beartrap Canyon Visitor Study described in the first section of this chapter, was developed by the Institute for Tourism and Recreation Research at the University of Montana.

Source of Data

This paper will employ secondary data to identify and test the hypotheses. The data used in this study came from the 1989 Beartrap Canyon Visitor Study (McCool, Martin and Yuan, 1990). The study was conducted in the Beartrap Canyon Unit of the Lee Metcalf Wilderness Area by the Institute for Tourism and Recreation Research at the University of Montana. It was conducted during the summer 1989 visitor use season, from May 23 to September 5.

Study Area

The study area for this paper is the Beartrap Canyon Wilderness (BTCW) in southwestern Montana. Managed by the Bureau of Land Management (B.L.M.), the BTCW is 6,000 acres of mostly steep canyon country surrounding the Madison River. The significance of this resource is underscored by the fact that it was the first federally designated wilderness area managed by the B.L.M.
The only developed hiking trail in the canyon follows the river on its east side for eight miles. Due to management and safety concerns, the trail is closed to the public at the south end near the Madison Dam powerhouse, requiring hikers to enter and exit at the same trailhead. Another trail that is neither developed nor maintained, follows the river on the west side for about three miles. Hikers enter the wilderness at the trailhead on the north end of the canyon and return along the same route. Floaters put in near the powerhouse at the south end of the canyon, and take out about nine miles downstream on the opposite side of the river, approximately one mile north of the trailhead. Because of the linear nature of the BTCW and its small size, encounters with other visitors during the peak summer season are often difficult to avoid.

**Population**

The population for the study, consists of all BTCW visitors, 18 years or older using the area between May 23 and September 5, 1989. Both land based and water based visitors were contacted, and the total visitor population during the sampling period was estimated at 5000.

**Sampling Plan and Response Form**

Visitors were sampled at the two trailheads in the BTCW. Both trailheads are at the north end of the canyon, located on either side of the river. Hikers were sampled at both trailheads, and floaters were sampled at the west side trailhead, which also serves as the floater take-out. Since the trailhead is inaccessible at the south end of the canyon hikers enter and exit at the north trailheads.

Bureau of Land Management employees conducted the on-site sampling. Groups of hikers and floaters were contacted as they exited area. People were asked to give their name and address so a questionnaire could be mailed to them.

A registration card (see Appendix A) was administered to visitors when they were initially contacted. The questions on this form included type of group, method of travel,
number of floater and hiker groups expected, number of groups actually seen, and
feelings about the number of groups seen. The registration card was used to identify
non-response bias.

A mail-return questionnaire (see Appendix B) was chosen as the survey
instrument for the Beartrap Canyon Visitor Study. The questionnaire was based on the
Dillman sampling technique, which provided the framework for developing the sampling
plan. Respondents would complete the questionnaire and mail it back using self-
addressed stamped envelopes which were provided.

Questions for the questionnaire were designed by the Institute for Tourism and
Recreation Research to obtain information on prior experience in the study area, length of
stay, group and individual characteristics, reasons for visiting, encounters with others,
satisfaction, the effect of particular components of the trip on the experience, feelings
about potential management actions, opinions about visitor use levels, and perceptions of
resource conditions. Questions also pertained to actual, expected and preferred levels of
solitude, attitudes toward management policies, and social-demographics.

The final version of the visitor response form required only minor revisions after the
pre-test sample of 50 visitors. The only significant changes from the original form were to
provide categories of responses for encounters with other groups, instead of having
respondents fill in the blanks in an open-ended format.

Following the pretest and the first mailings of the questionnaire, names and
addresses were entered into a database as the registration cards were returned. Once
each month (July, August and September), questionnaires were mailed out to those
visitors contacted. One week after each mailing, reminder postcards were sent to those
people who had not yet returned their forms. Ten days after the reminder postcard was
sent, a replacement questionnaire and cover letter was sent to those who had not
responded after the postcard. A second replacement questionnaire and cover letter was
sent to the July mailing group and the September mailing group two weeks after they
received the first replacement. A second replacement form was not needed for the August
mailing group, since response rates had already reached 80%.

Of 509 questionnaires administered, 411 were completed and used in the analyses, for a response rate of 80.7%. No check for potential nonresponse bias was necessary, because the response rate exceeded 80% (Dillman, 1978).

Initial analyses were conducted by the Institute for Tourism and Recreation Research to determine basic visitor and trip characteristics, perceptions of wilderness conditions, visitor perceptions of encounters and solitude, and attitudes toward management policies. For the purposes of this paper, specific variables from the Beartrap Canyon Visitor Study were selected and used to test the hypotheses.

**Hypothesis Testing**

In determining the level of significance for testing the hypotheses in this paper, two types of errors were considered; Type I and Type II errors. A Type I error occurs when the null hypothesis is rejected when in fact it is true (Hamilton, 1990). A Type II error occurs if the null hypothesis is not rejected when it is actually false, and the research hypothesis is true (Hamilton, 1990). The amount of concern for Type I and Type II errors determines the level of alpha (\(\alpha\)), which is the level used to decide whether or not to reject or fail to reject a null hypothesis. A lower alpha of .01 or .001 is preferable if Type I errors are thought to be costlier, and a higher alpha of .10 or .20 is preferable if the research problem makes Type II errors more costly (Hamilton, 1990).

The research problem in this paper determined how strong the correlation was between satisfaction with encounters and overall trip satisfaction. Finding no correlation when in fact there is a correlation between encounter levels and overall trip satisfaction (Type II error) may be more costly than finding a correlation when there actually is not one (Type I error). The number of encounters between groups of visitors in the BTCW is an important management issue, and therefore determining how encounters affect overall trip satisfaction is important. If the research hypothesis were rejected when it was actually true (Type II error), we would not be able to validate the concern over the effect of
encounters on trip satisfaction. An alpha level of significance of .05 will be used in this study to test the hypotheses. A somewhat higher alpha of .10 would reduce the possibility of Type II errors, but because similar research commonly uses .05 as the level of significance, a higher alpha would diminish the credibility of the findings.

**Variable Scaling**

Satisfaction with encounter levels were measured based on the expectancy disconfirmation model. The expectancy disconfirmation model posits that the difference between expected outcomes and actual outcomes produces satisfaction. The difference between expected and actual outcomes is called *disconfirmation*.

Two variables were used to measure satisfaction with encounters. Question 10 which asked respondents how many other floater and land-based groups they expected to see during their BTCW visit, and question 11 which asked respondents how many other groups they actually saw during their BTCW visit, were the variables used to determine the level of disconfirmation and associated satisfaction with encounters in this paper (see Appendix C for complete list of variables used in the analyses).

The first step necessary to determine satisfaction with encounters, was to take the midpoint for each range of numbers in each variable. It was necessary to determine the midpoint for the range of numbers in questions 10 and 11, because only one number can be used when determining disconfirmation by subtracting actual encounters from expected encounters. Three to five cannot easily be subtracted from one to two.

In Question 10, respondents are asked to determine how many other land groups and floater groups they expected to see in the form of a close ended question (Figure 5). The midpoint of the ranges for both floater groups and land-based groups, shown in figure 5, were calculated to make the variable more representative of the actual number of groups respondents expected to see. The same was done in Question 11 for both the number of floater groups and land groups respondents actually saw. Again, it was necessary to determine the midpoint, because a range of numbers like eleven to twenty,
cannot be subtracted from another range of numbers like six to ten.

Figure 5.

Q-10. About how many other groups did you expect to see during your BTCW visit once you got away from the trailhead area or floater put-in? (circle one number in each column)

<table>
<thead>
<tr>
<th>Floater Groups</th>
<th>Land-Based Groups</th>
<th>Midpoint</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 NONE</td>
<td>NONE</td>
<td>0</td>
</tr>
<tr>
<td>2 ONE TO TWO</td>
<td>ONE TO TWO</td>
<td>1.5</td>
</tr>
<tr>
<td>3 THREE TO FIVE</td>
<td>THREE TO FIVE</td>
<td>4</td>
</tr>
<tr>
<td>4 SIX TO TEN</td>
<td>SIX TO TEN</td>
<td>8</td>
</tr>
<tr>
<td>5 ELEVEN TO TWENTY</td>
<td>ELEVEN TO TWENTY</td>
<td>15.5</td>
</tr>
<tr>
<td>6 MORE THAN TWENTY</td>
<td>MORE THAN TWENTY</td>
<td>20</td>
</tr>
<tr>
<td>7 NO EXPECTATION</td>
<td>NO EXPECTATION</td>
<td>-</td>
</tr>
</tbody>
</table>

The next step was to determine whether or not hiker's, floater's, and outfitted floater's answers to how many floater and land-based groups they expected to see and actually saw were significantly different. It is possible that one group expects to see more floaters than land-based groups or vice-versa. For instance, floaters may expect to see and actually see more floaters than land-based groups since they are paying more attention to the river while floating on it. Therefore, if the three groups perceive encounters with land-based or floater groups differently, before collapsing the variables that separately measure floater and land-based expectations and actual numbers, a weight was given to either land-based or floater groups to make them equal before adding and dividing.

After initial analysis of the variables, hikers expected to see and actually saw more visitors both floating and on land. However, the differences among the three groups were significant only for the two variables which asked how many land-based visitors were expected and how many land-based visitors were actually seen in questions 10 and 11 respectively. As expected, hikers being the only land-based visitors, expect to see more
visitors on land and actually do see more. The variables which determined the number of land-based visitors expected, and the number of land-based visitors actually seen, were weighted for hikers, before collapsing them into one variable. After weighting, the midpoints for the number of floater groups and land-based groups that were seen, were collapsed for both questions 10 and 11, to derive one variable for the number of encounters expected and one for the actual number of encounters seen. Since the research problem determines the total number of groups encountered and does not differentiate between encountering land-based or floater groups, it makes it easier to interpret the results by using only one variable to measure encounters. Tests determining correlations, were conducted on the data with land-based and floater groups separated and with the two types of encounters collapsed. Results were nearly identical, with no

The premise behind the expectancy disconfirmation model is that the discrepancy between expected outcomes and actual outcomes determines disconfirmation. Consequently, disconfirmation serves as the major force affecting satisfaction (Oliver and DeSarbo, 1988). In the next step, the actual number of groups encountered (Question 11) is subtracted from the expected number of groups encountered (Question 10) for each respondent to determine disconfirmation. The process of subtracting actual outcomes from expected outcomes, and the resulting discrepancy between the two, is disconfirmation.

After subtraction, any value of zero is a simple confirmation. Simple confirmation is the result of respondents actually seeing the same number of groups they expected to see. If one expects to see five groups and actually encounters five groups, the result of subtracting these two values is zero. After subtracting, values ranging from +1 to -1 were also considered a simple confirmation, because there was so little differentiation between respondents who saw exactly the number of other groups they expected (0), and those who saw just a few more or a few less. In other words, a disconfirmation of 4-1 or -1 could not be differentiated from a simple confirmation of 0 when tested.

Any positive value is considered a positive disconfirmation. In this case, respondents expected to see more groups than they actually saw. If a respondent
expected to see seven groups and actually saw five, the result of subtracting these two values would be +2, and thus a positive disconfirmation.

On the other hand, if a respondent expected to see five groups and actually saw seven, the result of subtracting these two values would be -2, and hence a negative disconfirmation. All negative values are considered a negative disconfirmation. Simple confirmation is the result of expectations being met. A positive disconfirmation is the result of expected outcomes exceeding actual outcomes, and negative disconfirmation a consequence of expectations not being met.

According to the expectancy disconfirmation model, negative disconfirmation leads to feelings of low satisfaction, while simple confirmation and positive disconfirmation generate feelings of satisfaction. If the model holds true in this case, the process described above will predict levels of satisfaction with encounters. Additionally, encounters were used in the 1989 Beartrap Canyon Visitor Study as a surrogate measure of solitude. Because solitude was identified as an important aspect of a BTCW trip (see Ch.1, page ), it is likely that actually encountering more groups than expected would lead to feelings of low satisfaction with encounter levels. Based on these assumptions, the level of disconfirmation will determine how satisfied respondents are with the number of groups they encounter.

After the disconfirmation step which determined satisfaction with encounters in the BTCW, the level of satisfaction with encounters were determined for each group individually. Private floater's satisfaction with encounters were extracted from the entire sample and tested against their (private floaters) level of overall trip satisfaction. In the same manner, hiker's and outfitted floater's satisfaction with encounters were extracted from the sample and tested against their corresponding level of overall trip satisfaction. Overall trip satisfaction was determined using the method described below.

*Overall Trip Satisfaction*

Principal components analysis was conducted on the four variables used to
measure overall trip satisfaction in the 1989 Beartrap Canyon study. Question 17 in the visitor response form asked respondents to describe their feelings about their most recent BTCW visit (See Appendix B). Four variables were used to determine respondents overall level of trip satisfaction. Because one variable in question 17 did not adequately measure overall trip satisfaction by itself, it was necessary to determine which combination of the four variables best measured overall trip satisfaction.

Principal components analysis was used in this paper to identify which of the four variables best represented overall trip satisfaction. Principal Components analysis generally involves four steps: 1) computation of a correlation matrix for all variables, 2) extraction of factors to represent the data, 3) rotation of the factor matrix to make the factors easier to interpret, and 4) computed scores for each factor (Gorsuch, 1983).

Principal components analysis was the extraction technique used to determine which variables accounted for the largest amount of variance in the matrix. The variables included in the first component or factor, are the variables which best measure overall trip satisfaction. The second factor includes variables that are uncorrelated with the first. The extraction step produces a factor matrix that displays the relationship between the

![Figure 6. Varimax Rotated Factor Matrix of Overall Satisfaction Variables:](attachment:image.png)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Factor 1</th>
<th>Factor 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>BETTEREXPER</td>
<td>.78938</td>
<td></td>
</tr>
<tr>
<td>TAKAGAIN</td>
<td>.81974</td>
<td></td>
</tr>
<tr>
<td>BETTERBTCW</td>
<td></td>
<td>.74197</td>
</tr>
<tr>
<td>MIGHT</td>
<td>.72644</td>
<td></td>
</tr>
<tr>
<td>Cronbach's Alpha:</td>
<td>.6009</td>
<td>.1419</td>
</tr>
</tbody>
</table>

analysis, only the varimax rotation proved to work well when rotating the factor matrix to make the factors interpretable.

The two variables which loaded highest in Factor 1 were used to determine overall satisfaction (Figure 6). These two variables are:
**BETTEREXPER** - This trip was better than any other recreation experience I can remember.

**TAKAGAIN** - This trip was so good I would like to take it again.

BETTEREXPER and TAKAGAIN were then collapsed into one variable which determined overall trip satisfaction, by adding the two together and dividing. To test hypotheses 1, 2 and 3, cross-tabulations and correlation procedures were conducted separately for hikers, private floaters and outfitted floaters. Satisfaction with encounters was determined for each group separately, and then tested against each group's corresponding level of overall trip satisfaction. The results of these tests can be seen in Chapter 4.

**Correlation Procedures**

The primary statistics that were used to test the hypotheses in this paper were measures of correlation. Cross-tabulations were computed to visually determine relationships between variables. Observing the relationships along the diagonal of the cross-tabulation table can show whether or not linear relationships exist between variables. The corresponding measures of correlation were calculated along with each cross-tabulation.

The Pearson correlation coefficient and Spearman Rank correlation were the primary means of determining correlation between variables. Gamma and Kendall's Tau were also examined as measures of association. Symmetric Lambda was used to measure association when nominal variables were tested.

The Pearson correlation coefficient is the most powerful, and the most commonly used measure of correlation (Norusis, 1990). Pearson correlation coefficients measure linear relationships between variables. Values of the coefficient can range from -1 to 1, with a value of 0 indicating no linear relationship. A perfect positive linear relationship equals 1, while a perfect negative linear relationship equals -1. A positive linear relationship indicates that as one variable increases, the other goes up correspondingly, and as one variable decreases, so does the other. A negative linear relationship would
mean that as one variable goes up, the other goes down, and vice versa.

Values closer to 1 or -1 indicate stronger relationships. Correlation coefficients between .8 (-.8) and 1 (-1) are considered strong relationships, coefficients between .5 (-.5) and .8 (-.8) are considered moderately strong relationships, and coefficients between .2 (.2) and .5 (-.5) are considered weak relationships (Hamilton, 1990). However, two variables can have a correlation coefficient close to zero and yet have a strong nonlinear relationship. In order to test hypotheses about the Pearson correlation coefficient, data must be from a random sample from which the distribution of the two variables together is normal, and the data used is at least interval level. If the distribution is not normal, and there is evidence of a nonlinear relationship, nonparametric tests should be used. In this study, the variables used in the correlations were approximately normal, with a few outliers in some cases. In most cases, only one or two high or low outliers were identified, and outlier deletion was employed to make the variable more normal.

The Spearman Rank correlation, a nonparametric test of correlation, was used along with the Pearson correlation. If the two variables were not linearly related, the Spearman Rank correlation procedure could be used to identify nonlinear relationships. The Spearman Rank correlation is less affected by extraordinary values than the Pearson correlation coefficient, but is not as powerful, because it uses ranked values. Spearman Rank can take on values between -1 and 1. If values are near -1 or 1, it can be concluded that there is a strong monotone relationship. A coefficient near zero provides evidence that there is not a monotone relationship. A monotone relationship occurs when the two variables are in the same order, or are in exactly reversed orders relative to each other. Spearman Rank tests can measure variables that are related nonlinearly. Spearman requires only that the data come from a random sample, and that the variables are at least ordinal.

Kendall’s Tau is another nonparametric measure of correlation, and is used in this study to identify nonlinear relationships. Tau also ranges between -1 and 1, and values at or near -1 or 1 again indicate a strong correlation between two variables. Values near
zero indicate that the two variables are not ordered similarly, and are not significantly 
correlated.

When testing hypotheses about correlations, it is important to examine both the 
significance level and the correlation coefficient. The significance level displays the 
likelihood that the correlation coefficient in the sample is zero in the population. A 
correlation coefficient can be 0.1 and still be "statistically" significant. This would simply 
indicate that there is a very small, but nonzero, relationship between the variables. 
Hypothesis tests using correlation, determine the probability that the value of the 
correlation coefficient is zero in the population. For instance, if the observed significance 
level is greater than alpha (α) = .05, you would fail to reject the null hypothesis that there 
is no relationship between the two variables in the population, and conclude that there is 
no significant correlation between the two variables. Cross-tabulations and correlation 
procedures were used to test whether or not there is a significant positive correlation 
between private floater's, hiker's, and outfitted floater's level of satisfaction with 
encounters and overall trip satisfaction in hypothesis 1, hypothesis 2, and hypothesis 3 respectively.

Satisfaction with encounter levels will be determined for each group individually, 
and then tested against the corresponding level of overall satisfaction for that group. 
Cross-tabulations and correlations will be determined for each group; private floaters, 
hikers, and outfitted floaters.

The Fisher r to z transformation was used to test Hypothesis 4. The Fisher r to z 
transformation is a method used to determine whether correlation coefficients are 
significantly different. Fisher showed that tests of hypotheses about population 
correlation coefficients can be made if one uses a particular function of the correlation, 
rather than the correlation coefficient itself (Edwards, 1967). This makes it possible to 
convert a correlation coefficient to a z value, make inferences in terms of z, and then turn 
those inferences back into statements about correlation once again. The Fisher r to z 
transformation requires that the two samples are independent and bivariate normal in form.
(Edwards, 1967).

The first step is to transform the correlation coefficients into a $z$ score using Fisher's $r$ to $z$ table. Determining the standard error of the difference between two independent values of $z$ is the next step. The difference between the two $z$ scores for the correlation coefficients is then divided by the standard error of the difference between the two groups being tested (Edwards, 1967).

The null hypothesis would state that the two correlations are not significantly different. If the null hypothesis is true, then $z$ will have a distribution that is approximately that of a standard normal variable with $\mu = 0$, and can be evaluated in terms of the table of the standard normal curve (Hays, 1973). A confidence interval of 95% (significance level of .05) would have a standard normal of $\pm 1.96$. To determine whether correlations are significantly different, the result ($z$) of the third step, which divided the difference between two $z$ scores by the standard error, is compared with the standard normal. If $z$ is greater than the standard normal in the positive or negative direction, then the two correlation coefficients are significantly different. If $z$ is less than the standard normal, then the correlation coefficients are not significantly different. A significance level of .05 will determine whether the correlations for hypothesis 4 are significantly different. A significance level of .05 corresponds to a standard normal of $\pm 1.96$.

All correlation procedures were conducted using the Windows version 5.0 of Statistical Package for Social Sciences (SPSS). DataDesk student version 4.0 for Macintosh computers, was also used for determining correlations, for exploratory analysis of data, and for looking visually at relationships among the variables.
Chapter 4

Results

Chapter 4 contains two sections. The first section summarizes BTCW visitor and trip characteristics. The three primary user groups in the study (hikers, private floaters and outfitted floaters) were identified in each of the tables, so comparisons could be made among the three groups. The second section presents the analysis of the hypotheses tests, and the results of those tests. The bold numbers in the following tables indicate notable relationships among the three user groups.

Visitor and Trip Characteristics

Visitors to the BTCW during the 1989 sampling season proved to be as diverse as their motivations for visiting the area. Differences among the three primary user groups are apparent when examining the following tables. This section will examine the demographics, background characteristics, trip characteristics, importance of solitude, and visitor expectations for encounters, actual encounters, and subsequent reactions towards those encounters. The summary statistics are examined according to the three primary user groups; hikers, private floaters, and outfitted floaters.

Visitor Characteristics

Visitors to the BTCW are different in many ways. The demographic information presented in this section show the differences among the three groups in age, gender,
level of education completed, occupation, residence, previous experience in the BTCW, length of stay, group size, and the type of group.

The difference in age is notable between private floaters who average 30 years of age and outfitted floaters who average 48 years of age. Hikers fall in the middle of the age category, averaging 38 years of age (Table 1). Fully 75% of the private floaters, and

<table>
<thead>
<tr>
<th>Age Class</th>
<th>Hikers</th>
<th>Private Floaters</th>
<th>Outfitted Floaters</th>
</tr>
</thead>
<tbody>
<tr>
<td>13 - 19</td>
<td>6</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>20 - 29</td>
<td>25</td>
<td>28</td>
<td>13</td>
</tr>
<tr>
<td>30 - 39</td>
<td>31</td>
<td>48</td>
<td>17</td>
</tr>
<tr>
<td>40 - 49</td>
<td>16</td>
<td>17</td>
<td>27</td>
</tr>
<tr>
<td>50 - 59</td>
<td>12</td>
<td>1</td>
<td>22</td>
</tr>
<tr>
<td>60 - 69</td>
<td>7</td>
<td>&lt;1</td>
<td>15</td>
</tr>
<tr>
<td>70+</td>
<td>3</td>
<td>2</td>
<td>5</td>
</tr>
</tbody>
</table>

Table 1
Age of Visitors by User Group (in percent)

55% of the hikers fell between the ages of 20 and 39. Only about 30% of the outfitted floaters were between the ages of 20 and 39, while nearly 50% of them were between the ages of 40 and 59. About 4% of the private floaters were over the age of 50, while 21% of the hikers and 42% of the outfitted floaters were over 50 years of age. Outfitted visitors were older than hikers and private floaters, with private floaters being the youngest of the three groups.

Looking at Table 2, males outnumbered females among the hikers and private floaters, while among the outfitted floaters males and females were split about equally. Hikers had the highest percentage of males at 76%, private floaters were 65% male, while outfitted floaters had a slightly higher percentage of females, than males at 49%.

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Table 2
Gender of Visitors by User Group (in percent)

<table>
<thead>
<tr>
<th>Gender</th>
<th>Hikers</th>
<th>Private Floaters</th>
<th>Outfitted Floaters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>23</td>
<td>33</td>
<td>49</td>
</tr>
<tr>
<td>Male</td>
<td>76</td>
<td>65</td>
<td>47</td>
</tr>
</tbody>
</table>

Again, outfitted floaters were different than both private floaters and hikers. Males outnumber females among the hikers and private floaters, while among outfitted floaters, there were slightly fewer males than females.

Table 3
Highest Level of Education Completed by Visitors by User Group (in percent)

<table>
<thead>
<tr>
<th>Level of Education</th>
<th>Hikers</th>
<th>Private Floaters</th>
<th>Outfitted Floaters</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; High School</td>
<td>4</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>High School Grad.</td>
<td>23</td>
<td>20</td>
<td>8</td>
</tr>
<tr>
<td>Some College</td>
<td>26</td>
<td>26</td>
<td>24</td>
</tr>
<tr>
<td>College Grad.</td>
<td>21</td>
<td>32</td>
<td>28</td>
</tr>
<tr>
<td>Post Graduate</td>
<td>26</td>
<td>18</td>
<td>33</td>
</tr>
<tr>
<td>Average (Mean)</td>
<td>16 years</td>
<td>17 years</td>
<td>19 years</td>
</tr>
</tbody>
</table>

72%, 76% and 86% respectively, completing at least some level of college education (Table 3). Outfitted floaters were the most educated group averaging 19 years of education, with 33% completing some post graduate work. Private floaters averaged 17 years of education, whereas hikers averaged 16 years. However, more hikers (26%) completed postgraduate work than private floaters (18%).

Occupational categories for the three groups were based on standard Bureau of Census definitions. The occupational categories are shown in Table 4. Professionals
Table 4
Visitor Occupation by user group (in percent)

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Hikers</th>
<th>Private Floaters</th>
<th>Outfitted Floaters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professional</td>
<td>33</td>
<td>31</td>
<td>28</td>
</tr>
<tr>
<td>Managerial</td>
<td>7</td>
<td>20</td>
<td>18</td>
</tr>
<tr>
<td>Sales</td>
<td>5</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>Craftsman</td>
<td>11</td>
<td>11</td>
<td>3</td>
</tr>
<tr>
<td>Student</td>
<td>17</td>
<td>13</td>
<td>1</td>
</tr>
<tr>
<td>Laborer</td>
<td>6</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>Service</td>
<td>5</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Homemaker</td>
<td>2</td>
<td>1</td>
<td>18</td>
</tr>
<tr>
<td>Retired</td>
<td>9</td>
<td>&lt;1</td>
<td>9</td>
</tr>
<tr>
<td>Clerical</td>
<td>2</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Farm Managers</td>
<td>&lt;1</td>
<td>&lt;1</td>
<td>3</td>
</tr>
<tr>
<td>Unemployed</td>
<td>2</td>
<td>&lt;1</td>
<td>1</td>
</tr>
</tbody>
</table>

were the most common occupation for all three groups. Both outfitted floaters and private floaters had a large percentage of managerial workers (18% and 20% respectively), while hikers were somewhat lower in this category (7%). Both hikers and private floaters had more craftsman and students than outfitted floaters, while outfitted floaters had more homemakers than either hikers or private floaters. It is also notable that there were no retired respondents among the private floaters, while about 9% of both outfitted floaters and hikers were retired. It should be noted also, that sample size may affect the results. Sample size larger for hikers than outfitted floaters, and therefore it is more likely that hikers would have a greater range of occupations. This is to be expected when looking at Table 1 and noticing that just under 4% of the private floaters are 50 years of age or older.

In Table 5, it is striking to note the high percentage of outfitted floaters from large and medium cities. About 67% of the outfitted floaters were from medium and large cities,
Table 5
Visitor Residence by User Group (in percent)

<table>
<thead>
<tr>
<th>Residence</th>
<th>Hikers</th>
<th>Private Floaters</th>
<th>Outfitted Floaters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large City (over one million)</td>
<td>5</td>
<td>&lt;1</td>
<td>35</td>
</tr>
<tr>
<td>Medium City (50,000 - one million)</td>
<td>15</td>
<td>13</td>
<td>32</td>
</tr>
<tr>
<td>Small City (5,000 - 50,000)</td>
<td>47</td>
<td>59</td>
<td>18</td>
</tr>
<tr>
<td>Town (1,000 - 5,000)</td>
<td>13</td>
<td>9</td>
<td>5</td>
</tr>
<tr>
<td>Rural</td>
<td>16</td>
<td>16</td>
<td>5</td>
</tr>
<tr>
<td>Farm or Ranch</td>
<td>3</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

whereas only about 13% of the private floaters and 20% of the hikers were from medium to large cities. The high percentage of outfitted floaters from medium to large cities would indicate that many of them are from out-of-state, since there are only three cities in the state of Montana with 50,000 or more residents, and none with over one million residents. The largest percentage of both hikers and private floaters were from small cities (5,000 to 50,000), at 47% and 59% respectively. Hikers and private floaters were also more likely to be from rural areas than outfitted floaters.

Table 6
Previous Experience in the BTCW by Number of Times Visited (in percent)

<table>
<thead>
<tr>
<th># of visits to BTCW</th>
<th>Hikers</th>
<th>Private Floaters</th>
<th>Outfitted Floaters</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>32</td>
<td>29</td>
<td>80</td>
</tr>
<tr>
<td>1 - 3</td>
<td>13</td>
<td>15</td>
<td>14</td>
</tr>
<tr>
<td>4 - 7</td>
<td>17</td>
<td>16</td>
<td>18</td>
</tr>
<tr>
<td>8 - 12</td>
<td>6</td>
<td>11</td>
<td>&lt;1</td>
</tr>
<tr>
<td>&gt; 12</td>
<td>32</td>
<td>29</td>
<td>1</td>
</tr>
</tbody>
</table>
Outfitted visitors had the least amount of previous experience in the BTCW (Table 6). About 80% of the outfitted visitors had never visited the BTCW before, and only about 1% had been to the BTCW eight or more times. Hikers and private floaters had more previous experience in the BTCW than outfitted floaters, with 38% and 40% respectively, visiting at least eight or more times. About 71% of the private floaters, and 67% of the hikers had visited the BTCW more than once.

In Table 7, 86% of the outfitted floaters were visiting the BTCW for the first time, while only 33% of the hikers and 28% of the private floaters were visiting the BTCW for the first time. Slightly more private floaters than hikers (72% to 66%) have visited the BTCW before. There were no outfitted floaters who visited the area prior to 1959. About

<table>
<thead>
<tr>
<th>Table 7</th>
<th>First Visit to BTCW and Year of the First Visit by user group (in percent)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n=234</td>
</tr>
<tr>
<td>First Visit</td>
<td>Hikers</td>
</tr>
<tr>
<td>Yes</td>
<td>33</td>
</tr>
<tr>
<td>No</td>
<td>66</td>
</tr>
<tr>
<td>Year</td>
<td></td>
</tr>
<tr>
<td>Prior to 1959</td>
<td>4</td>
</tr>
<tr>
<td>1960 - 1969</td>
<td>6</td>
</tr>
<tr>
<td>1970 - 1979</td>
<td>25</td>
</tr>
<tr>
<td>1980 - 1989</td>
<td>65</td>
</tr>
</tbody>
</table>

3% and 4% of the private floaters and hikers respectively, had visited prior to 1959. Most of the visitors in each group visited the BTCW between 1980 and 1989. A slightly higher percentage of hikers visited the BTCW before 1980 than private floaters, probably due to hikers being older on average than private floaters. In retrospect, it appears that private floaters tended to be slightly more experienced in the BTCW than hikers, and much more experienced than outfitted floaters.
The majority of the three groups spent between four hours and one day in the BTCW (Table 8). Outfitted floaters had the highest percentage (93%) of visitors which

<table>
<thead>
<tr>
<th>Length of Stay</th>
<th>Hikers</th>
<th>Private Floaters</th>
<th>Outfitted Floaters</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 1 hour</td>
<td>&lt;1</td>
<td>&lt;1</td>
<td>&lt;1</td>
</tr>
<tr>
<td>1 - 4 hours</td>
<td>27</td>
<td>20</td>
<td>5</td>
</tr>
<tr>
<td>4 hours to 1 day</td>
<td>53</td>
<td>68</td>
<td>93</td>
</tr>
<tr>
<td>&gt; 1 day</td>
<td>20</td>
<td>9</td>
<td>1</td>
</tr>
</tbody>
</table>

spent four hours to one day in the BTCW. Since most outfitted trips take an entire day (about 6-8 hours) to complete, a high percentage is to be expected in this category.

Hikers had the largest proportion of respondents staying one to four hours in the BTCW. Hikers were also the most likely of the three groups to stay overnight in the BTCW, with 20% staying longer than one day. Private floaters and outfitted floaters stayed longer than one day in the BTCW 9% and 1% of the time respectively. Hikers are the only group allowed to camp overnight in the BTCW, and therefore should have the highest percentage of overnight stays. Floater groups are not permitted to camp overnight in the canyon, and therefore should not have any overnight stays. The percentage of floaters that stayed longer than one day in the BTCW either did so illegally, or stayed outside of the wilderness and mistakenly responded that they stayed overnight within the wilderness boundary.

Outfitted floaters travelled in the largest groups, averaging 7 people per group (Table 9). Private floaters averaged 6 people per group, and hikers had significantly smaller groups than either private or outfitted floaters, averaging only 4 people per group. Hikers had a very high percentage of groups between one and four people (81%), while most outfitted floater groups were between five and nine people (60%). Private floaters had the largest percentage of groups over fifteen people (9%).

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Table 9
Size of Group by User Group (in percent)

<table>
<thead>
<tr>
<th>Group Size</th>
<th>Hikers</th>
<th>Private Floaters</th>
<th>Outfitted Floaters</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - 4</td>
<td>81</td>
<td>46</td>
<td>26</td>
</tr>
<tr>
<td>5 - 9</td>
<td>16</td>
<td>39</td>
<td>61</td>
</tr>
<tr>
<td>10 - 14</td>
<td>3</td>
<td>5</td>
<td>12</td>
</tr>
<tr>
<td>&gt;15</td>
<td>&lt;1</td>
<td>9</td>
<td>3</td>
</tr>
<tr>
<td>Average (Mean)</td>
<td>3</td>
<td>6</td>
<td>7</td>
</tr>
</tbody>
</table>

Hikers were the most likely of the three groups to travel alone. Private floaters were significantly more likely to travel with friends, and less likely to travel with family than the other two groups. All three groups traveled quite often with family and friends. Outfitted floaters were the only group to travel with a club or organized group (15%).

Table 10
Type of Group by User Group (in percent)

<table>
<thead>
<tr>
<th>Group Type</th>
<th>Hikers</th>
<th>Private Floaters</th>
<th>Outfitted Floaters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alone</td>
<td>11</td>
<td>1</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Family</td>
<td>33</td>
<td>2</td>
<td>36</td>
</tr>
<tr>
<td>Friends</td>
<td>39</td>
<td>61</td>
<td>20</td>
</tr>
<tr>
<td>Family &amp; Friends</td>
<td>18</td>
<td>35</td>
<td>28</td>
</tr>
<tr>
<td>Club or Organized Group</td>
<td>&lt;1</td>
<td>&lt;1</td>
<td>15</td>
</tr>
</tbody>
</table>

Trip Characteristics, Motivations, and Expectations

Visitors to the BTCW had numerous motivations for visiting. One of those motivations was to experience solitude. In the 1989 Beartrap Canyon Visitor Study, 23 questions used to determine visitor motivation were collapsed into five "motivational domains" using Driver's motivation scales. Factor analysis was used to determine which variables loaded the highest for each motivational domain. Motivational domains were
identified so researchers could then determine which motivations for visiting the BTCW were most important to visitors. The motivational domains identified in the 1989 Beartrap Canyon Visitor Study were: Nature Appreciation; Affiliation; Physical Fitness; Solitude/Stress Release; and Challenge/Adventure. The following table (from The 1989 Beartrap Canyon Visitor Study) shows the average motivational domain score for each group (see Appendix D).

In table 11, the larger the number, the more important the motivational domain. Visitors indicated the importance of each motivation for visiting the BTCW on a scale from one to six, with one indicating "not at all important" and six indicating "extremely important." For all three groups, the most important motivational domain is Nature Appreciation. Observing the motivational domain scores (around 4), Solitude/stress release and Affiliation have also been identified as important motivations for visiting the BTCW.

It should be noted that many of the attributes important to solitude are used in the Nature Appreciation domain such as tranquility, naturalness, and the sounds and smells of nature (see Appendix D). Tranquility, naturalness, and the sounds and smells of nature are also attributes of solitude, and have been used in some definitions of solitude. These three questions, if added to the solitude/stress release domain, could affect the domain scores for solitude. Because the Solitude/Stress Release domain is made up of variables...
which also measure stress release, it may not measure solitude as accurately as if all the variables in the domain were measures of solitude alone.

Table 11 reveals that Solitude/Stress Release was the second most important motivational domain to hikers (4.1), the third most important domain outfitted floaters (3.6), and the fourth most important domain to private floaters (3.8). From these results, it appears that only hikers found solitude to be one of the more important motivations for their trip. Private floaters and outfitted floaters found other motivations to be relatively more important than solitude. When examining the motivational domain scores, it appears that solitude may not actually be as important as other factors for visiting the BTCW.

Another notable aspect of Table 11, is the high motivational domain scores for private floaters. Private floaters average around 4 for every motivational domain except Physical Fitness. Overall, motivational domain scores are higher for private floaters than the other two groups. This may indicate that the trip is more important to private floaters, since they have somewhat stronger motivations for visiting the BTCW.

Other measures of solitude, which measure solitude independent of other variables, do indicate that solitude is important to most visitors. In Table 12, 58% of the outfitted floaters, and 41% of both the hikers and private floaters found solitude to be very important or extremely important to their trip. Almost 92% of the outfitted floaters found solitude to be at least moderately important, while 71% of the private floaters and 55% of the hikers found solitude to be at least moderately important. Outfitted floaters were most likely to find solitude an important trip motivation. Contrary to Table 11 which found that solitude was more important to hikers than the other two groups, it appears that in Table 12, solitude, when measured alone, without the additional stress release variables, is more important to outfitted and private floaters.

Table 13 shows how the three groups responded to the question which asked how the level of solitude in the BTCW added to their experience. Hikers were the most likely to answer that solitude very strongly added to their experience. Private floaters were most likely to feel that the level of solitude added to their experience, with 89%
Table 12
The Importance of Solitude as a Trip Motivation by User Group (in percent)

<table>
<thead>
<tr>
<th>Solitude</th>
<th>Hikers</th>
<th>Private Floaters</th>
<th>Outfitted Floaters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not Important</td>
<td>12</td>
<td>9</td>
<td>1</td>
</tr>
<tr>
<td>Slightly Important</td>
<td>15</td>
<td>9</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Somewhat Important</td>
<td>15</td>
<td>7</td>
<td>4</td>
</tr>
<tr>
<td>Moderately Important</td>
<td>14</td>
<td>29</td>
<td>34</td>
</tr>
<tr>
<td>Very Important</td>
<td>20</td>
<td>28</td>
<td>29</td>
</tr>
<tr>
<td>Extremely Important</td>
<td>21</td>
<td>13</td>
<td>29</td>
</tr>
</tbody>
</table>

Table 13
The Amount the Level of Solitude in the BTCW added to Visitor Experience by User Group (in percent)

<table>
<thead>
<tr>
<th>Level of Solitude</th>
<th>Hikers</th>
<th>Private Floaters</th>
<th>Outfitted Floaters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Strongly Added To</td>
<td>30</td>
<td>19</td>
<td>3</td>
</tr>
<tr>
<td>Strongly Added To</td>
<td>24</td>
<td>34</td>
<td>35</td>
</tr>
<tr>
<td>Added To</td>
<td>29</td>
<td>36</td>
<td>38</td>
</tr>
<tr>
<td>Neither Added/Detracted</td>
<td>9</td>
<td>5</td>
<td>18</td>
</tr>
<tr>
<td>Detracted From</td>
<td>4</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Strongly Detracted</td>
<td>&lt;1</td>
<td>&lt;1</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Very Strongly Detracted</td>
<td>1</td>
<td>1</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Did Not Experience</td>
<td>2</td>
<td>1</td>
<td>3</td>
</tr>
</tbody>
</table>

answering that solitude at least added to their experience, while 83% and 76% of the hikers and outfitted floaters respectively, felt that the level of solitude at least added to their experience. In Table 13, private floaters were more likely to feel that solitude added to their experience than the other two groups.

In a question related to the number of people using the BTCW, respondents were...
asked to answer whether or not they felt too many people use the area. Table 14 displays the answer to this question. For both hikers and private floaters, about 23% felt that too many people use the BTCW. To the contrary, nearly 90% of the outfitted floaters did not feel that the BTCW was being overused.

<table>
<thead>
<tr>
<th>Do Too Many People Use the BTCW by User Group (in percent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>n=228</td>
</tr>
<tr>
<td>Hikers</td>
</tr>
<tr>
<td>Yes</td>
</tr>
<tr>
<td>No</td>
</tr>
<tr>
<td>No Response</td>
</tr>
</tbody>
</table>

Regardless of visitor motivations for entering the BTCW, an important indicator of a quality wilderness experience, is the measurement of visitor satisfaction. Visitor satisfaction was measured by asking respondents how good their most recent trip was compared to other recreation experiences and other BTCW trips, and whether or not they

<table>
<thead>
<tr>
<th>This Trip Was Better Than Any Other Recreation Experience I can Remember by User Group (in percent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>n=228</td>
</tr>
<tr>
<td>Response</td>
</tr>
<tr>
<td>Very Strongly Agree</td>
</tr>
<tr>
<td>Strongly Agree</td>
</tr>
<tr>
<td>Agree</td>
</tr>
<tr>
<td>Neither Agree/Disagree</td>
</tr>
<tr>
<td>Disagree</td>
</tr>
<tr>
<td>Strongly Disagree</td>
</tr>
<tr>
<td>Very Strongly Disagree</td>
</tr>
</tbody>
</table>
would like to take a similar trip in the BTCW again. Tables 15, 16 and 17 display the relative satisfaction of BTCW visitors. Outfitted floaters were most likely to agree that their recent trip in the BTCW was better than any other recreational experience they can remember. However, the majority of all three groups neither agreed nor disagreed that their trip was better than any other recreation experience.

In Table 16, the majority again neither agreed nor disagreed that their trip was better than any other BTCW trip. More hikers agreed that their trip was better than any other BTCW trip they had taken than either of the other groups. For outfitted floaters, 51% could neither agree nor disagree with this statement, and 48% of the private floaters also could not decide one way or the other. Outfitted floaters likely could not decide,

<table>
<thead>
<tr>
<th>Table 16</th>
<th>This Trip Was Better Than Any Other BTCW Trip I Can Remember by User Group (in percent)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n=233</td>
</tr>
<tr>
<td>Response</td>
<td></td>
</tr>
<tr>
<td>Very Strongly Agree</td>
<td>14</td>
</tr>
<tr>
<td>Strongly Agree</td>
<td>9</td>
</tr>
<tr>
<td>Agree</td>
<td>20</td>
</tr>
<tr>
<td>Neither Agree/Disagree</td>
<td>23</td>
</tr>
<tr>
<td>Disagree</td>
<td>14</td>
</tr>
<tr>
<td>Strongly Disagree</td>
<td>2</td>
</tr>
<tr>
<td>Very Strongly Disagree</td>
<td>3</td>
</tr>
<tr>
<td>No Response</td>
<td>14</td>
</tr>
</tbody>
</table>

because most of them were taking their first trip in the BTCW.

A majority of all three groups felt the trip was so good they would like to take it again. Outfitted floaters were most likely to agree, with 97% feeling that their trip was so good they would like to take it again. A large majority of private floaters and hikers, 90% and 76% respectively, also felt that they would like to take the trip again, because it was
Table 17
This Trip Was so Good I Would Like to Take it Again by User Group (in percent)

<table>
<thead>
<tr>
<th>Response</th>
<th>Hikers</th>
<th>Private Floaters</th>
<th>Outfitted Floaters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Strongly Agree</td>
<td>21</td>
<td>46</td>
<td>44</td>
</tr>
<tr>
<td>Strongly Agree</td>
<td>17</td>
<td>23</td>
<td>25</td>
</tr>
<tr>
<td>Agree</td>
<td>38</td>
<td>21</td>
<td>28</td>
</tr>
<tr>
<td>Neither Agree/Disagree</td>
<td>19</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>Disagree</td>
<td>3</td>
<td>1</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Strongly Disagree</td>
<td>1</td>
<td>&lt;1</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Very Strongly Disagree</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

so good.

Outfitted floaters were the most satisfied, and private floaters were also quite satisfied according to Tables 15 and 17. About 50% of the outfitted floaters agreed that their BTCW trip was better than any other recreation experience they could remember as opposed to 23% of the private floaters and 18% of the hikers. Private floaters and outfitted floaters both agreed over 90% of the time that their trip was so good they would like to take it again, while only 76% of the hikers could agree on this. However, hikers (43%) were more likely to agree that their trip was better than any other BTCW trip they could remember.

Visitor Expectations, Actual Encounters, and Reactions Towards Encounters

Visitors to the BTCW had many expectations before their trip. Some visitors expected to catch a lot of fish, some expected to have fun floating the river, and some expected to see relatively few if any people. This section will examine the number of floater and land-based groups BTCW visitors expected to see and actually saw, and their reactions to these encounters.

Table 18 displays how many floater groups the three user groups expected to see, and Table 19 shows how many land-based groups they expected to see. More
private floaters (76%) expected to see between one and five floater groups than either hikers (61%) or outfitted floaters (59%). The majority of all three groups expected to see between zero and five other groups. A higher percentage of outfitted floaters (15%) and hikers (14%) expected to see more than 6 groups than private floaters (7%). Outfitted floaters were more likely than the other two groups to have no expectation.

Over twice as many hikers (24%) expected to see between six and ten other land-based groups than either private floaters (7%) or outfitted floaters (10%). A majority of the hikers expected to see between three and five other land-based groups, while a

<table>
<thead>
<tr>
<th>Number of Groups</th>
<th>Hikers</th>
<th>Private Floaters</th>
<th>Outfitted Floaters</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>12</td>
<td>11</td>
<td>6</td>
</tr>
<tr>
<td>1 - 2</td>
<td>30</td>
<td>43</td>
<td>35</td>
</tr>
<tr>
<td>3 - 5</td>
<td>31</td>
<td>33</td>
<td>24</td>
</tr>
<tr>
<td>6 - 10</td>
<td>11</td>
<td>7</td>
<td>9</td>
</tr>
<tr>
<td>11 - 20</td>
<td>3</td>
<td>&lt;1</td>
<td>6</td>
</tr>
<tr>
<td>&gt;20</td>
<td>&lt;1</td>
<td>&lt;1</td>
<td>&lt;1</td>
</tr>
<tr>
<td>No Expectation</td>
<td>9</td>
<td>6</td>
<td>13</td>
</tr>
</tbody>
</table>

 majority of the private floaters and outfitted floaters expected to see between 1 and 2 other groups. Outfitted floaters (13%) and hikers (9%) were more likely to have no expectation than private floaters. Hikers expected to see more floating and more land-based groups than both private floaters and outfitted floaters. Tables 20 and 21 show how many other floater and land-based groups BTCW visitors actually saw. Hikers (27%) were more likely than private floaters (16%) and outfitted floaters (15%) to see zero other floater groups. They were also more likely to see six or more other groups than private floaters or outfitted floaters. For both private floaters and outfitted floaters, about 5% saw more than six other floater groups, while 21% of the hikers saw more than six
Table 19
Number of Land-Based Groups Visitors Expected to See by User Group (in percent)

<table>
<thead>
<tr>
<th>Number of Groups</th>
<th>Hikers</th>
<th>Private Floaters</th>
<th>Outfitted Floaters</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>3</td>
<td>6</td>
<td>17</td>
</tr>
<tr>
<td>1 - 2</td>
<td>17</td>
<td>35</td>
<td>24</td>
</tr>
<tr>
<td>3 - 5</td>
<td>35</td>
<td>29</td>
<td>19</td>
</tr>
<tr>
<td>6 - 10</td>
<td>24</td>
<td>7</td>
<td>10</td>
</tr>
<tr>
<td>11 - 20</td>
<td>6</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>&gt; 20</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>No Expectation</td>
<td>10</td>
<td>6</td>
<td>13</td>
</tr>
</tbody>
</table>

other groups. Perhaps the adventure and thrill of running whitewater keeps the floater groups from noticing other floaters. Also, floaters are all going the same direction down the river and are less likely to encounter other floaters than hikers, who are more likely to pass by floaters on the river while hiking upstream.

Table 20
Number of Floater Groups Visitors Actually Saw by User Group (in percent)

<table>
<thead>
<tr>
<th>Number of Groups</th>
<th>Hikers</th>
<th>Private Floaters</th>
<th>Outfitted Floaters</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>27</td>
<td>16</td>
<td>15</td>
</tr>
<tr>
<td>1 - 2</td>
<td>22</td>
<td>40</td>
<td>41</td>
</tr>
<tr>
<td>3 - 5</td>
<td>25</td>
<td>38</td>
<td>30</td>
</tr>
<tr>
<td>6 - 10</td>
<td>14</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>11 - 20</td>
<td>5</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>&gt; 20</td>
<td>2</td>
<td>&lt;1</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Don't Remember</td>
<td>&lt;1</td>
<td>&lt;1</td>
<td>1</td>
</tr>
</tbody>
</table>

Hikers also saw more other land-based groups than private or outfitted floaters. For hikers, about 42% actually saw more than five other land-based groups, while 31% of
Table 21  
Number of Land-Based Groups Visitors Actually Saw by User Group (in percent)

<table>
<thead>
<tr>
<th>Number of Groups</th>
<th>Hikers</th>
<th>Private Floaters</th>
<th>Outfitted Floaters</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>6</td>
<td>10</td>
<td>14</td>
</tr>
<tr>
<td>1 - 2</td>
<td>20</td>
<td>24</td>
<td>36</td>
</tr>
<tr>
<td>3 - 5</td>
<td>30</td>
<td>26</td>
<td>22</td>
</tr>
<tr>
<td>6 - 10</td>
<td>26</td>
<td>18</td>
<td>12</td>
</tr>
<tr>
<td>11 - 20</td>
<td>11</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>&gt; 20</td>
<td>4</td>
<td>2</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Don't Remember</td>
<td>2</td>
<td>&lt;1</td>
<td>3</td>
</tr>
</tbody>
</table>

the private floaters and 17% of the outfitted floaters actually saw six or more other groups. Hikers expected to see and actually saw more floater and land-based groups than either private or outfitted floaters.

A greater percentage of outfitted floaters (73%) felt that the number of other floater groups was about right than hikers (58%) or private floaters (65%) (Table 22). Private floaters felt they saw too many floater groups more often, while hikers were the most likely

Table 22  
Visitor Reaction to Number of Floater Groups Seen (in percent)

<table>
<thead>
<tr>
<th>Reaction</th>
<th>Hikers</th>
<th>Private Floaters</th>
<th>Outfitted Floaters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saw Too Few</td>
<td>3</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>About Right</td>
<td>58</td>
<td>65</td>
<td>73</td>
</tr>
<tr>
<td>Saw Too Many</td>
<td>11</td>
<td>17</td>
<td>5</td>
</tr>
<tr>
<td>Didn't Matter</td>
<td>23</td>
<td>16</td>
<td>13</td>
</tr>
<tr>
<td>Don't Remember</td>
<td>1</td>
<td>&lt;1</td>
<td>3</td>
</tr>
</tbody>
</table>

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Table 23
Visitor Reaction to Number of Land-Based Groups Seen (in percent)

<table>
<thead>
<tr>
<th>Reaction</th>
<th>Hikers</th>
<th>Private Floaters</th>
<th>Outfitted Floaters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saw Too Few</td>
<td>1</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>About Right</td>
<td>61</td>
<td>49</td>
<td>60</td>
</tr>
<tr>
<td>Saw Too Many</td>
<td>19</td>
<td>24</td>
<td>12</td>
</tr>
<tr>
<td>Didn't Matter</td>
<td>18</td>
<td>23</td>
<td>18</td>
</tr>
<tr>
<td>Don't Remember</td>
<td>1</td>
<td>&lt;1</td>
<td>3</td>
</tr>
</tbody>
</table>

Table 23 shows the visitor reaction to the number of land-based groups seen, with data categorized by reaction type and participant group. Hikers (61%) were a bit more likely than outfitted floaters (60%) to say that the number of other land-based groups they saw was about right. Private floaters (49%) were the least likely to say that the number of other land-based groups they saw was about right. Again, private floaters were the most likely to say that they saw too many other groups. However, they also had the largest percentage that felt the number of other land-based groups they saw didn’t matter. Outfitted floaters were the most satisfied with encounters according to their reactions, while private floaters were the least satisfied.

Summary

Visitors to the BTCW were most likely between the ages of 20 and 49 with outfitted floaters being the oldest (48 years) and private floaters the youngest (30 years). Hikers and private floaters were most likely males, while outfitted floaters were split 50/50 between males females. All three groups were highly educated and most likely professional workers. Most outfitted floaters were from medium or large cities, while most hikers and private floaters came from small cities. Hikers tended to travel in small groups primarily with friends, while private and outfitted floaters traveled in somewhat larger groups, most often with family and friends. Private floaters tended to be somewhat more experienced in the BTCW than hikers, while both hikers and private floaters were much
more experienced than outfitted floaters. Nearly 86% of the outfitted floaters were first time visitors, as opposed to only 28% of the private floaters and 33% of the hikers.

Solitude appears to be important to all three groups, but when tested along with stress release against other trip motivations, solitude appears to be more important to hikers relative to other motivations. Nature Appreciation proved to be the most important motivation to BTCW visitors, while Solitude/stress release was also a very important motivation to all three groups. Hikers found solitude somewhat more important than the other three groups in Table 11 when compared to other motivations. In Table 12, solitude appears to be somewhat more important to outfitted floaters, whereas in Table 13, the level of solitude added most to private floaters experiences.

The majority of the visitors to the BTCW felt that their trip was so good they would like to take it again. Outfitted floaters most often felt that their trip was better than any other recreation experience, while hikers most often felt their trip was better than any other BTCW trip they could remember.

Hikers expected to see more groups, and actually did see more groups than either hikers or outfitted floaters. Outfitted floaters were most likely to feel that the number of other groups they saw was about right, while private floaters most often felt they saw too many other groups.

**Hypotheses Tests**

The first three hypotheses test whether or not there is a correlation between visitor satisfaction with encounters and overall trip satisfaction for each of the three groups. In the contingency tables that accompany the first three hypotheses, both the variables measuring overall trip satisfaction and satisfaction with encounters have been condensed into three categories to make the tables easier to interpret and ensure that each cell had adequate values. The correlation coefficients displayed along with the contingency tables are from the original data before the variables were trichotomized.

For the variable measuring satisfaction with encounters, -1 equals a negative
disconfirmation, 0 equals a confirmation, +1 equals a positive disconfirmation. Comparably, the larger the number for the variable measuring overall trip satisfaction, the higher the level of satisfaction. A positive linear relationship would mean that as one variable goes up, so does the other variable.

Satisfaction with encounters is also tested against the variable which determines visitor reaction to the number of encounters in the BTCW (Table 22 and Table 23). A significant positive correlation between these two variables would indicate that the expectancy disconfirmation model accurately measures satisfaction with encounters in the BTCW.

Hypothesis 4 tested whether or not the correlation between satisfaction with encounters and overall trip satisfaction was significantly different among the three groups. The Fisher r to Z transformation was used to test for significant differences among the three group’s correlations.

**Hypothesis 1**

*There will be a significant positive correlation between hiker’s satisfaction with encounters and their overall level of trip satisfaction in the BTCW.*

Hypothesis 1 tested whether or not hiker's satisfaction with encounters was significantly correlated with their overall level of trip satisfaction. In the contingency table (Table 24) it appears that there was no linear relationship. In fact, there was a somewhat negative correlation. The correlation values are all in the -.02 range, indicating a negative correlation. However, the correlation is not significant at the .05 level of significance. A correlation of -.02 is so low and near zero, that realistically there is virtually no correlation at all between the two variables. Looking at the contingency table, it is apparent that there is no linear relationship. The percentage of values in each cell is fairly evenly distributed, with no clear pattern. Satisfaction with encounters for hikers does not appear to have effected overall trip satisfaction. If anything, overall trip satisfaction went up
Table 24
Contingency Table Showing Hiker Satisfaction with Encounters by Hiker Overall Trip Satisfaction (row percentages)

<table>
<thead>
<tr>
<th>Hiker Satisfaction with Encounters</th>
<th>Low</th>
<th>High</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Hiker 1</td>
<td>17</td>
<td>10</td>
<td>17</td>
</tr>
<tr>
<td>Overall Trip Satisfaction</td>
<td>38.6%</td>
<td>22.7</td>
<td>38.6</td>
</tr>
<tr>
<td>2</td>
<td>24</td>
<td>18</td>
<td>40</td>
</tr>
<tr>
<td>3</td>
<td>23</td>
<td>16</td>
<td>21</td>
</tr>
<tr>
<td>High</td>
<td>38.3%</td>
<td>26.7</td>
<td>35.0</td>
</tr>
<tr>
<td>Total</td>
<td>64</td>
<td>44</td>
<td>78</td>
</tr>
<tr>
<td>34.4%</td>
<td>23.7</td>
<td>41.9</td>
<td></td>
</tr>
</tbody>
</table>

*note:* Top value in each cell is frequency, bottom value in each cell is percentage

<table>
<thead>
<tr>
<th>Statistics:</th>
<th>Value:</th>
<th>Significance:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Product-Moment Correlation</td>
<td>-0.023</td>
<td>.810</td>
</tr>
<tr>
<td>Spearman Rank Correlation</td>
<td>-0.024</td>
<td>.767</td>
</tr>
<tr>
<td>Kendall’s Tau</td>
<td>-0.015</td>
<td>.897</td>
</tr>
</tbody>
</table>

Slightly with negative disconfirmation. The research hypothesis that there is a significant positive correlation between hiker's satisfaction with encounters and their overall level of trip satisfaction can be rejected, and the null hypothesis that there is no correlation accepted.

Table 25
Correlation Coefficients and Levels of Significance for Hiker's Satisfaction with Encounters and Reaction to Number of Encounters

<table>
<thead>
<tr>
<th>Statistics:</th>
<th>Value:</th>
<th>Significance:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Product-Moment Correlation</td>
<td>0.330</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Spearman Rank Correlation</td>
<td>0.307</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Kendall’s Tau</td>
<td>0.247</td>
<td>&lt;.0001</td>
</tr>
</tbody>
</table>

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The correlation between satisfaction with encounters and reactions to the number of encounters went up greatly for hikers (Table 25). The correlation between hiker’s satisfaction with encounters and their reactions to the number of encounters was around .30. The level of significance is below .05, and therefore there is a significant correlation. A correlation coefficient of .30 would indicate a weak to moderately strong correlation, thus it appears that the expectancy disconfirmation method does measure hiker’s satisfaction with encounters. A strong positive correlation between satisfaction with encounters and reaction to the number of encounters indicates that hikers who have a positive disconfirmation and are satisfied with the number of encounters, also felt that the number of encounters were “about right.” This test provides support for the expectancy disconfirmation model as a method for testing satisfaction with encounters.

**Hypothesis 2**

*There will be a significant positive correlation between private floater’s satisfaction with encounters and their overall level of trip satisfaction in the BTCW.*

Hypothesis two measured the effect satisfaction with encounters had on floater’s overall level of trip satisfaction. A strong, positive correlation would indicate that the number of groups private floaters encounter in the BTCW effects their overall trip satisfaction. Table 26 indicates that there is some linearity. Looking across the first row, negative disconfirmation correlates with low overall trip satisfaction. However, in rows two and three, the relationship is less clear. There may be a stronger monotone relationship (the variables are in the same order relative to each other), than linear relationship between the two variables. A Pearson Product-Moment Correlation Coefficient of .37 would indicate a weak to moderately strong relationship between the two variables. The correlation was also significant at the .05 level of significance. The Spearman Rank and Kendall’s Tau also indicate a weak to moderately strong significant correlation. In the case of private floaters, it appears that satisfaction with encounters did
have a significant effect on overall trip satisfaction. Although a stronger correlation would be preferred, there was a significant positive correlation between satisfaction with encounters and overall trip satisfaction for private floaters. The research hypothesis that there is a significant positive correlation will be accepted for hypothesis 2.

The correlation between private floater's satisfaction with encounters and their reaction to the number of encounters in the BTCW is also significant (Table 27). Correlation coefficients of around .40 indicate a moderately strong correlation between

| Table 26 |
| Contingency Table Showing Private Floater Satisfaction with Encounters by Private Floater Overall Trip Satisfaction (row percentages) |

<table>
<thead>
<tr>
<th>Private Floater Satisfaction with Encounters</th>
<th>Low</th>
<th>0</th>
<th>High</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>6</td>
<td>2</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>Private Floater</td>
<td>60.0%</td>
<td>20.0</td>
<td>20.0</td>
<td>100</td>
</tr>
<tr>
<td>Overall Trip Satisfaction</td>
<td>52.6</td>
<td>26.3</td>
<td>21.1</td>
<td>100</td>
</tr>
<tr>
<td>High</td>
<td>13</td>
<td>13</td>
<td>12</td>
<td>38</td>
</tr>
<tr>
<td>Total</td>
<td>29</td>
<td>20</td>
<td>18</td>
<td>67</td>
</tr>
<tr>
<td></td>
<td>43.3</td>
<td>29.9</td>
<td>26.9</td>
<td>100</td>
</tr>
</tbody>
</table>

Note: Top value in each cell is frequency
Bottom value in each cell is percentage

Statistics

<table>
<thead>
<tr>
<th>Statistics</th>
<th>Value:</th>
<th>Significance:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Product-Moment Correlation</td>
<td>0.372</td>
<td>.039</td>
</tr>
<tr>
<td>Spearman Rank Correlation</td>
<td>0.327</td>
<td>.033</td>
</tr>
<tr>
<td>Kendall's Tau</td>
<td>0.241</td>
<td>.030</td>
</tr>
</tbody>
</table>

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private floater's level of satisfaction with encounters and their reaction to number of encounters in the BTCW. Private floaters who felt the number of encounters they had in the BTCW was "about right," are positively correlated with those who were satisfied with their number of encounters in the BTCW. Again, this indicates that the expectancy disconfirmation model effectively measures private floater's satisfaction with encounter levels.

Table 27
Correlation Coefficients and Levels of Significance for Private Floater's Satisfaction with Encounters and Reaction to Number of Encounters

<table>
<thead>
<tr>
<th>Statistics</th>
<th>Value</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Product-Moment Correlation</td>
<td>0.430</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Spearman Rank Correlation</td>
<td>0.456</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Kendall's Tau</td>
<td>0.373</td>
<td>&lt;.0001</td>
</tr>
</tbody>
</table>

**Hypothesis 3**

There will be a significant positive correlation between commercially outfitted floater's satisfaction with encounters and their overall level of trip satisfaction in the BTCW.

Hypothesis 3 tests the effect that satisfaction with encounter levels had on outfitted floater's levels of overall trip satisfaction. Again, a strong positive correlation would mean satisfaction with encounters did have a significant effect on outfitted floater's levels of overall trip satisfaction. In Table 28, it appears that there may be some linearity. However, correlation coefficients ranging from -.001 to -.1 indicate that there is virtually no relationship between the variables. Hypothesis 3 also displays the greatest disparity among the three correlation procedures with coefficients from -.001 to -.1. The large difference may be attributable to the smaller sample size, and the difference in the equations used in each correlation procedure.
The Spearman Rank Correlation of -.1 displayed a very weak but not significant negative correlation. The Pearson Product-Moment Correlation coefficient of -.001 was so close to zero and insignificant, that there was no relationship at all between the two variables. All three correlation coefficients were very low, and none were significant, thus there appears to be no significant correlation between satisfaction with encounters and overall trip satisfaction for outfitted floaters. The slight correlations were also in the negative direction which was not expected. The research hypothesis that outfitted floaters' satisfaction with encounters is positively correlated with overall trip satisfaction is rejected, and the null hypothesis that there is no correlation is accepted.

Table 29 shows that there is not a significant correlation between satisfaction with
Table 29
Correlation Coefficients and Levels of Significance for Outfitted Floater’s Satisfaction with Encounters and Reaction to Number of Encounters

<table>
<thead>
<tr>
<th>Statistics:</th>
<th>Value:</th>
<th>Significance:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Product-Moment Correlation</td>
<td>0.063</td>
<td>.642</td>
</tr>
<tr>
<td>Spearman Rank Correlation</td>
<td>0.093</td>
<td>.449</td>
</tr>
<tr>
<td>Kendall’s Tau</td>
<td>0.076</td>
<td>.440</td>
</tr>
</tbody>
</table>

encounters and reaction to number of encounters for outfitted floaters. The correlation Coefficients range from .06 to .09, showing a weak, positive correlation. Significance levels are all above the .05 level of significance, thus the correlations were not significant. It does not appear that outfitted floater’s satisfaction with encounters and their reaction to those encounters were related. There was no significant positive relationship between positive disconfirmation and the number of encounters that outfitted floaters felt were “about right.”

**Hypothesis 4**

The correlation between satisfaction with encounters and overall trip satisfaction will be significantly different among hikers, private floaters and commercially outfitted floaters in the BTCW.

Hypothesis 4 determined whether the correlation between satisfaction with encounters and overall trip satisfaction was significantly different among the three groups. Examining BTCW visitors as a whole would not tell us anything about individual user groups. Hypotheses 1 through 3 tested the correlation for each group individually. Hypothesis 4 was intended to determine if the three groups were significantly different from one another. Managers can then manage for individual groups instead of simply the average BTCW visitor.

Looking at the correlations for the three groups in Table 30, the correlation for private floaters was quite different than the correlation for both hikers and outfitted floaters.
Table 30
Spearman Rank Correlations of Satisfaction with Encounters and Overall Trip Satisfaction for Hikers, Private Floaters, and Outfitted Floaters

<table>
<thead>
<tr>
<th>Group:</th>
<th>Correlation Coefficient:</th>
<th>Significance:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hikers</td>
<td>-0.024</td>
<td>.767</td>
</tr>
<tr>
<td>Private Floaters</td>
<td>0.327</td>
<td>.033</td>
</tr>
<tr>
<td>Outfitted Floaters</td>
<td>-0.101</td>
<td>.358</td>
</tr>
</tbody>
</table>

The correlation between satisfaction with encounters and overall trip satisfaction for private floaters is moderately strong, positive and significant, while the correlations for both hikers and outfitted floaters are very weak, negative and not significant. To test for significant differences among the three groups, the Fisher $r$ to $z$ transformation was employed. As described in Chapter 3, the Fisher $r$ to $z$ transformation is a method that can be used to determine significant differences among correlation coefficients. It should be noted that $r$ equals the sample correlation coefficient and $z$ represents the transformed value of the correlation coefficient for each sample being tested.

Table 31
$z$-Values for each group’s correlation coefficient

<table>
<thead>
<tr>
<th>Group:</th>
<th>Correlation Coefficient:</th>
<th>$z$- Value:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hikers</td>
<td>-0.024</td>
<td>-0.0240</td>
</tr>
<tr>
<td>Private Floaters</td>
<td>0.327</td>
<td>0.3451</td>
</tr>
<tr>
<td>Outfitted Floaters</td>
<td>-0.101</td>
<td>-0.1010</td>
</tr>
</tbody>
</table>

note: Fisher's $r$ to $z$ table can be found in the appendices of Edwards (1967) and other statistics textbooks

The first step requires that the correlation coefficients be converted to a $z$ value, using Fisher's $r$ to $Z$ table (Table 31). The $z$ values are nearly the same as the correlation coefficient in this case, because the coefficients are so low. The next step is to determine the standard error for each set of correlations. The formula used to derive the standard error is displayed below for each group:

(1)Hikers: $n = 238$
(2)Private Floaters: $n = 82$
(3)Outfitted Floaters: $n = 78$
\[
\begin{align*}
\sigma(1) - \sigma(2) &= \sqrt{1/238 + 1/82} = .13 \\
\sigma(2) - \sigma(3) &= \sqrt{1/82 + 1/78} = .16 \\
\sigma(3) - \sigma(1) &= \sqrt{1/78 + 1/238} = .13
\end{align*}
\]

After the standard errors are calculated, the \( z \) values for each correlation coefficient are then subtracted from one another and divided by the corresponding standard error:

\[
\begin{align*}
(-.0240 - .3451) / .13 &= -3.17 \\
(.3451 - .1010) / .16 &= 2.44 \\
(-.1010 - .0240) / .13 &= .083
\end{align*}
\]

A Standard normal value is then identified. The standard normal value depends on the level of significance of the hypothesis test. A significance level of .05 was used in this paper to test hypothesis 4, and would correspond to a standard normal of \( \pm 1.96 \). When determining significant differences using the Fisher \( r \) to \( z \) transformation, the null hypothesis states that the two correlation coefficients being tested are not significantly different. The values derived in the previous step (3.17, 2.44, .083) are then compared to the standard normal. If the values are greater than \( \pm 1.96 \) in the positive or negative direction, the \( z \) values, and thus the correlation coefficients are significantly different. If the values are less than \( \pm 1.96 \), the correlation coefficients are not significantly different. Table 32 displays the results of the Fisher \( r \) to \( z \) tests. The correlation coefficients for hikers and

**Table 32**

Results of Fisher \( r \) to \( z \) Transformation

<table>
<thead>
<tr>
<th>Groups:</th>
<th>( Z )-Value:</th>
<th>Result:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hikers/Private Floaters</td>
<td>3.17</td>
<td>significantly different/Ho:rejected</td>
</tr>
<tr>
<td>Private Floaters/Outfitted</td>
<td>2.44</td>
<td>significantly different/Ho:rejected</td>
</tr>
<tr>
<td>Floaters/Hikers</td>
<td>.083</td>
<td>not significantly different/Ho:accepted</td>
</tr>
</tbody>
</table>

*note: Standard Normal = \( \pm 1.96 \) based upon \( \alpha = .05 \)*

private floaters and private floaters and outfitted floaters were significantly different, while the correlation coefficients for outfitted floaters and hikers were not significantly different.
According to the results of the Fisher r to z test, there is partial support for hypothesis 4.

**Summary of Hypothesis Tests**

Hypotheses one, two and three tested the correlation between satisfaction with encounters and overall trip satisfaction for hikers, private floaters and outfitted floaters respectively. The correlation for hikers in hypothesis one was extremely weak, almost zero, not significant and in the opposite direction than was expected. The hypothesis that there will be a significant positive correlation between satisfaction with encounters and overall trip satisfaction for hikers is not supported. In hypothesis two, private floaters showed a moderately strong, significant correlation between satisfaction with encounters and overall trip satisfaction. The correlation was also positive. There is moderately strong support for the hypothesis that there is a significant positive correlation between satisfaction with encounters and overall trip satisfaction for private floaters. Outfitted floaters, like hikers, had a very weak negative correlation that was not significant. The hypothesis that there is a significant positive correlation is not supported in hypothesis three.

Hypothesis four tested whether the correlation between satisfaction with encounters and overall trip satisfaction was significantly different among the three groups. Observing the correlations, it appears that the correlation for private floaters was different than the correlation for both hikers and outfitted floaters. Private floaters had the only positive correlation that was below the level of significance. They also had the only correlation that was moderately strong. Hikers and outfitted floaters on the other hand had very weak, negative correlations that were not significant. The difference in the correlation between outfitted floaters and hikers was less clear than difference between both groups and private floaters.

Fisher’s r to z test was used to determine whether the correlation coefficients for the three groups were significantly different. The results showed that the correlation coefficients for private floaters were significantly different than the correlation coefficients.
for both hikers and outfitted floaters, but outfitted floaters were not found to have
significantly different correlation coefficients than hikers. Hypothesis four can be partially
supported, because two of the three groupings (hikers/private floaters and private
floaters/outfitted floaters) tested proved to be significantly different, while the third
grouping (hikers/outfitted floaters) was not significantly different.

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypothesis 1</td>
<td>not supported</td>
</tr>
<tr>
<td>Hypothesis 2</td>
<td>moderately strong support</td>
</tr>
<tr>
<td>Hypothesis 3</td>
<td>not supported</td>
</tr>
<tr>
<td>Hypothesis 4</td>
<td>partial support</td>
</tr>
</tbody>
</table>
Chapter 5

Findings, Conclusions, Implications, and Recommendations for Future Research

This study was intended to determine the relative effect of encounters with other groups, on overall trip satisfaction. The three primary user groups in the BTCW were identified as hikers, private floaters and outfitted floaters. It was also germane to the study to determine if there were significant differences among the three primary user groups, in relation to the strength of the correlation between satisfaction with encounters and overall trip satisfaction.

A strong, positive correlation between satisfaction with encounters and overall trip satisfaction would indicate that as satisfaction with encounters went up, so did overall trip satisfaction. This positive relationship would provide evidence that encounters are relatively important to BTCW visitor's overall trip satisfaction. Significant variations in the strength of the correlation between satisfaction with encounters and overall trip satisfaction would indicate that the three groups were affected by encounters differently.

Findings

The following findings are a result of the hypotheses tests conducted in Chapter 4.

1. Satisfaction with encounters and overall trip satisfaction were neither significantly, nor positively correlated for hikers and outfitted floaters. In fact, there was somewhat of a negative, but not significant correlation for hikers and outfitted floaters.
2. There was a significant, positive correlation between satisfaction with encounters and overall trip satisfaction for private floaters.

3. The correlations between satisfaction with encounters and overall trip satisfaction were significantly different between hikers and private floaters, and outfitted floaters and private floaters, but not significantly different between hikers and outfitted floaters.

4. There was a significant positive correlation between satisfaction with encounters and reaction to the number of encounters for both hikers and private floaters. The correlation between those satisfied with encounters and those who felt the number of other groups they saw in the BTCW was "about right" was significant for hikers and private floaters.

5. There was no correlation between satisfaction with encounters and reaction to the number of encounters for outfitted floaters.

Conclusions

The following conclusions are based upon the above findings. In-depth discussion of the hypotheses is also included here.

1. Neither hikers nor outfitted floaters had a significant correlation between satisfaction with encounters and overall trip satisfaction. It is not entirely surprising that outfitted floaters would not have a strong correlation between satisfaction with encounters and overall trip satisfaction, because they are primarily inexperienced, first time visitors. About 86% of the outfitted floaters were visiting the BTCW for the first time, and because they had so little experience, it may have been very difficult for them to form accurate expectations about the number of people they would encounter in the BTCW. Although outfitted floaters were able to form preactivity expectations by talking to other people, visiting other similar areas, and referring to guidebooks, they were less likely than the other two groups to have visited the BTCW, and thus were not able to account for the unique attributes of the Beartrap Canyon. Outfitted floater’s expectations for encounters
may have been reliable, however they were likely not as accurate as the expectations of private floaters and hikers, who had much more actual experience in the Beartrap Canyon.

Studies have shown that experienced visitors are more sensitive to crowding, and develop emotional and symbolic attachment to areas over time (Ditton, Fedler and Graefe, 1983; Gramann and Burdge, 1984). Outfitted floaters may not be as sensitive to crowding, because they are less experienced. Therefore, the number of encounters they have with other groups is less likely to affect their level of satisfaction. The number of other groups encountered is viewed as normal by most outfitted floaters, because it is their first experience in the BTCW.

Additionally, encounters may not have affected outfitted floater's overall trip satisfaction, because they may have been more concerned with the social aspect of their trip. In Table 11, the motivation for affiliation with other group members is more important to outfitted floaters than the motivation for solitude or stress release. Outfitted floaters also travel in somewhat larger groups than either hikers or private floaters, and are the only user group to travel with clubs or organized groups. The larger group size, and likelihood of traveling with a club or organized group would indicate that outfitted floaters may be more concerned with the social aspect of their trip than that of solitude. Although solitude is important to most outfitted floaters, it may not be as important to them as being with other members of their group and socializing. Outfitted floaters are less aware of, and may not mind encountering other groups, because they may be more concerned with the social aspect of their wilderness trip.

Outfitted floaters may also be caught up in the adventure of whitewater rafting, and not be aware of encountering other groups. The motivation for challenge and adventure was about the same as the motivation for solitude and stress release for outfitted floaters in Table 11. Encountering other groups may not have affected overall satisfaction, because other motivations may have been more important to outfitted floaters than the level of solitude in the BTCW.
Cognitive dissonance (Festinger, 1957) may have also been a factor affecting outfitted floater's perceptions of encounters. Since outfitted floaters paid for their experience, they may have been more apt to look only at the positive aspects of their experience, and discount the negative aspects, like encountering more groups than expected. Outfitted floaters may rationalize and find reasons to be satisfied with the overall experience, even though there may have been certain aspects that were not satisfying. This may account for a large discrepancy between satisfaction with encounters and overall trip satisfaction, and thus a weak correlation.

Cognitive dissonance may have also affected outfitted floaters when they were filling out their questionnaires. Since they were only thinking of the positive aspects of their trip, they may have responded in a way that would correspond with their exaggerated sense of satisfaction due to cognitive dissonance.

The reasons for no correlation between satisfaction with encounters and overall trip satisfaction for hikers are less clear. Hikers have nearly the same amount of experience in the BTCW as private floaters, travel in relatively small groups, often alone, and also perceive solitude as one the most important motivations for visiting the BTCW. For these reasons, it would seem that hiker's overall trip satisfaction would be affected by encountering other groups. There are however, indications that solitude may not be a powerful motivating factor for hikers in the BTCW.

Examining the level of experience for the three primary user groups, the opposite argument may be made for hikers. Studies have also shown that more experienced visitors have more accurate information about site conditions, and are able to mediate their perceptions of crowding (Knopf, 1983). Absher and Lee (1981) also show that more years of experience leads to a lessened desire for quiet and solitude, and a diminished sensitivity to crowding. Hikers may value solitude in the BTCW, but because of their experience, they know they will meet other visitors. Knowing this, they may be less affected by the number of other groups met. Experienced hikers may be so used to seeing other groups in the BTCW, that they do not care about how many other groups
they see, or are less likely to notice them.

In addition, the primary motivation for visiting the BTCW for many hikers may be fishing. Because fishing is a somewhat specialized activity, those hikers entering the BTCW to fish may be less likely to notice other groups while engaged in their activity. From data collected during the 1989 Beartrap Canyon Visitor Study, 87% of the hikers were shown to participate in some bank fishing during their trip. Of that percentage, it is unknown how many enter the wilderness primarily to fish. However, because such a large percentage of hikers participate in fishing during their trip, it may be a significant factor in determining why there is no correlation between encounters and overall trip satisfaction. Hikers may not be concerned about the number of other groups they encounter, because for many of them, their primary motivation may be something else, namely fishing.

Specialization may also be a factor affecting hiker’s perceptions of encounters. Bryan (1977), in a study of fishing specialization, found that less specialized fisherman (bait fisherman) may have other motivations like hiking or picnicking for visiting an area, while the primary motivation for visiting an area is fishing for the most specialized fisherman (technique setting fly fisherman). Although an exact proportion of fly fisherman to bait fisherman is not known, from observation, it is apparent that many of the fisherman in the BTCW are more specialized fly fisherman. Again, depending on the proportion of fly fisherman in the BTCW, specialization may be a factor which affects hiker’s perceptions of encounters. If it is true that many hikers are more specialized fly fisherman, then fishing may be their primary motivation for visiting the Beartrap Canyon, and they may be less aware of, or concerned about encounters with other groups of visitors.

It appears that for hikers and outfitted floaters, the number of other groups encountered has little affect on overall trip satisfaction. Solitude does not appear to be the most important factor affecting hiker’s and outfitted floater’s overall satisfaction. Other motivations like fishing and socializing with other group members may be so important to hikers and outfitted floaters, that they are not concerned with the number of other groups
they meet.

2. Private floaters were the only user group in the BTCW to have a significant, positive correlation between satisfaction with encounters and overall trip satisfaction. Unlike outfitted floaters, private floaters are much more experienced in the BTCW (although they are younger), are more likely to travel with friends, do not travel in organized groups or clubs, and may have more commitment to a trip because they expend considerable time, money and effort to plan and organize their own trips.

Private floaters were the most experienced user group in the BTCW, and were more likely to form expectations about how many other groups they might see that matched the number of groups they actually saw. When those expectations are not met, private floaters may be more likely to be dissatisfied. As described earlier, experienced users are generally more sensitive to encounters with other groups (Ditton, Fedler and Graefe, 1983). When current use levels exceed those of the past, experienced users are more likely to feel crowded than inexperienced visitors, who have no idea about past use levels. Private floaters, because of their experience level, may be more affected by encounters with other groups in the BTCW. Private floaters are also more likely to have their level of satisfaction with encounters correlate with overall trip satisfaction, because of their experience in the BTCW.

In addition to experience level, private floaters may be the most specialized group using the BTCW. Specialization refers to a continuum of behavior, from the general to the particular, reflected by the equipment and skills used in the activity, and the activity setting preferences (Virden and Schreyer, 1988). Private floaters plan their own trips which depend on well-maintained rafts and specialized equipment, and must deal with difficult, technical rapids during their trip, which require specialized skills. Satisfaction may be more affected when their activity is interfered with by other groups, because of the specialized nature of the activity. Virden and Schreyer (1988) found that highly specialized users are more likely to prefer rugged terrain, naturalness, party size limits, and fewer encounters. Examining the data, a higher proportion of private floaters than
hikers or outfitted floaters preferred to encounter zero other groups in the Beartrap Canyon. Private floaters may be more sensitive to encounters with other groups, because as highly specialized users, they prefer fewer encounters. A group of private floaters expending time and energy planning a trip, may have stronger feelings when their expectations are not met.

3. The correlation between satisfaction with encounters and overall trip satisfaction was significantly different between hikers and private floaters and outfitted floaters and private floaters, but not significantly different between hikers and outfitted floaters. When examining the correlation coefficients for the three groups, the coefficient for private floaters stands out as being the only correlation coefficient that is positive and relatively strong. Correlation coefficients for hikers and outfitted floaters were both extremely weak and not significant, and were also found not to be significantly different from one another in hypothesis 4.

Hikers and private floaters may find other motivations for visiting the BTCW more important to them. As we discovered examining hypothesis 1, hikers may be motivated to visit the BTCW by the excellent fishing opportunities available in the canyon. A large proportion of hikers take part in fishing during their trip. Of this proportion, it was unknown exactly how many of these hiker's primary motivation for entering the BTCW was to fish. However, it is apparent that encounter levels, and even hiking itself, may be of secondary importance to fishing for many hikers.

Outfitted floaters may have also found other motivations for visiting the BTCW to be more important than solitude. The motivation for affiliation or to be with friends and family was very important to outfitted floaters relative to other motivations, including solitude. Outfitted floaters also tended to travel in larger groups, and were the only user group to travel with clubs or organized groups. Traveling in larger groups with organized groups and clubs is an indication that affiliation may be more important to outfitted floaters. For these reasons, it is possible that outfitted floaters may find spending time with friends and family more important than solitude or encounters with other groups.
In the BTCW, both hikers and outfitted floaters tend to be older than private floaters. In the Beartrap Canyon, hikers average about 38 years of age, outfitted floaters average about 48 years of age, while private floaters average only about 30 years of age. Only 3% of the private floaters are over the age of 50, while 21% of the hikers and 42% of the outfitted floaters are over 50 years of age.

Knopf (1983) found that older visitors are more tolerant of encounters. He hypothesized that older visitors may not mind meeting more groups than expected, and may actually enjoy meeting more people, because they often do not spend as much time with people in their daily lives. Age apparently does affect visitor’s perceptions of encounters with other groups.

Hikers and outfitted floaters are also more likely than private floaters to be from medium to large cities. It is possible, that because hikers and private floaters are from larger cities, they may not be as concerned about encountering other groups of people, since they generally encounter more people in their daily lives. Encountering more groups than expected may not affect people from larger cities, because they are somewhat conditioned to meeting large groups of people on a daily basis, even though they may prefer to meet fewer groups while traveling in the wilderness.

Another similarity between hikers and private floaters, is that both groups tend to travel with family members more often than private floaters. Only 2% of the private floaters traveled with family members, while 33% of the hikers and 36% of the outfitted floaters traveled with members of their family. Since both hikers and outfitted floaters travelled quite often with members of their family, they may have been more concerned about spending time with their family and affiliation, than encounter levels. It is suggested that spending time with family members may encourage more socialization, and less concern for solitude and encounter levels.

Finally, hikers and outfitted floaters were somewhat more likely than private floaters to say they didn’t feel too many people currently use the BTCW. Private floaters were more likely than the other two groups to say that too many people use the BTCW.
This indicates that private floaters may be more sensitive to the number of groups they encounter, since they are more likely than the other two groups to feel too many people currently use the BTCW.

There are conceivably many reasons why the correlation between satisfaction with encounters and overall trip satisfaction was not significantly different for hikers and outfitted floaters. The conclusions listed above provide some basis for the correlations not being significantly different.

4. Both hikers and private floaters had a significant positive correlation between satisfaction with encounters and reaction to the number of encounters they had in the BTCW. This significant, positive correlation was an indication that satisfaction with encounters was accurately measured using the expectancy disconfirmation model.

The "reaction" variable was one measure of visitor satisfaction with encounters. Respondents answered whether or not the number of groups encountered were "about right," "too many," "too few," or it "didn't matter one way or the other." A strong positive correlation would mean that visitors with a positive disconfirmation and high satisfaction would also feel the number of other groups they saw was "about right," and those with a negative disconfirmation and low satisfaction would feel that they saw "too many," or "too few" other groups. Fewer than 1% of the respondents, out of a sample of 411, felt they saw "too few" other groups. The correlations for hikers and private floaters were moderately strong and significant. Again, this is a good indication that satisfaction with encounters was accurately measured using the expectancy disconfirmation method.

5. There was no correlation between satisfaction with encounters and reaction to the number of encounters for outfitted floaters. Most outfitted floaters were first time visitors with very little experience in the BTCW. This relative inexperience would explain why outfitted floaters did not have a significant correlation between satisfaction with encounters and reaction to encounters, because outfitted floaters may not have had as accurate preactivity expectations. Most outfitted floaters were first time visitors and had little indication, other than previous experience with other areas, discussions with friends.
and management personnel, and knowledge gleaned from guidebooks, about the number of other groups they would encounter. Satisfaction with encounters was dependent upon preactivity expectations, and expectations that were "best guesses" by outfitted floaters may have affected the accuracy of the disconfirmation and subsequent level of satisfaction with encounters. The other variable determined outfitted floater's reactions to the number of other groups they saw. The "reaction" variable may not have been correlated with the "satisfaction with encounters" variable, because the relatively inexperienced outfitted floaters had little idea what to expect, and therefore it was difficult to trust the accuracy of the satisfaction with encounters measure. Although outfitted floaters were able to develop preactivity expectations through methods other than previous experience in the BTCW, they may not have been able to expect variations in use that are unique to the BTCW.

Discussion

Although private floaters had a much stronger positive correlation than both hikers and outfitted floaters, none of the user groups had a strong correlation between satisfaction with encounters and overall trip satisfaction. According to Hamilton (1990), .2 is considered a weak correlation, .5 is considered a moderately strong correlation, and .7 is considered a strong correlation. In this case, only private floaters with a correlation coefficient of .33 to .37 had a weak to moderately strong correlation. Hikers and outfitted floaters had correlation coefficients that were well below .2, which is considered a weak correlation.

It is quite possible that BTCW users are not extremely concerned about the number of other groups they encounter. Although most users felt solitude was important, and felt that the level of solitude in the BTCW added to their trip, they may not have been as concerned about encounters as other components of solitude. Solitude is made up of more than just seeing relatively few if any people. Solitude is composed of many things, including naturalness of the physical setting, seclusion, remoteness, primitiveness,
freedom, and peace and quiet (Hendee, Stankey and Lucas, 1990). Some visitors may define solitude as freedom from daily worries, and freedom to travel anywhere in the backcountry, while other visitors may define solitude as seeing few if any other groups. Perhaps, encounters with other groups did not greatly affect overall satisfaction, even though solitude was found to be an important aspect of the trip, because other factors that make up solitude were not identified. Encounters may be an appropriate measure of solitude, but it should be realized that they are not the only measure. When attempting to determine levels of solitude, managers should try to get information on other components that make up solitude as well as encounter levels. Using encounter levels as the only measure of solitude may not be entirely appropriate.

In addition, the expectancy disconfirmation model may be limited for this type of research, because it is difficult to tell with absolute certainty that visitors are dissatisfied when encountering more groups than expected. If it does not matter to some individuals how many other groups they see, then seeing more groups than expected may not be dissatisfying. For those people extremely sensitive to encounters, seeing fewer groups than expected may not be satisfying either, they still may have seen too many people. The expectancy disconfirmation model works well in a consumer setting where tangible products are being compared, but it may not be as accurate in a recreation setting dealing with human attitudes and emotions. If an individual buys a car and the expectation is that it will leave the dealers parking lot, and the engine explodes when it is started, there will likely be some dissatisfaction. However, the distinction is less clear when dealing with people's expectations about, and satisfaction with encounters in the wilderness. It is more difficult to arrive at certain conclusions when dealing with intangible concepts like satisfaction, expectations and encounter levels.

The results of this study apply primarily to BTCW visitors. Caution should be taken when trying to extrapolate the results of this study to the entire population of wilderness users. The Beartrap Canyon is an unusual wilderness for a number of reasons. The BTCW is a very small wilderness area, consisting of only 6,000 acres. It is
a unit of the larger Lee Metcalf Wilderness Area, which is managed in conjunction with the U.S. Forest Service. Hikers must enter and exit from the same trailhead, while floaters put-in just south of the wilderness boundary, and take-out just north of the boundary. There is only one developed and maintained trail in the wilderness area. The BTCW is predominately a day use wilderness area. A camping limit of three days for hikers is enforced within the wilderness, and floaters are not permitted to camp within the wilderness. Few visitors partake in extended trips, except possibly during hunting season in the fall, because of the camping restrictions. It is fairly easy to find solitude when camping in the BTCW, because of the relative lack of overnight stays.

The stretch of the Madison River through the Beartrap Canyon is known regionally and nationally as a blue-ribbon trout stream. Many, if not most of the visitors enter the wilderness area to fish. Of the hikers, 89% take part in bank or float fishing, while 86% of the private floaters and 69% of the outfitted floaters fish while visiting the Beartrap Canyon. BTCW visitors may be somewhat different than visitors to other wilderness areas, because of these factors. Again, these factors should be considered, and care should be taken when attempting to extrapolate the results from this study to other wilderness areas. However, the sample for this study was chosen entirely at random, and the results may provide insight to wilderness areas of similar size and with similar characteristics.

**Recommendations**

In the following section, recommendations are made pertaining to management implications and future research. The first section will discuss some implications of this research for BTCW managers, and the second section will present some ideas for future research, based upon the results of this study.

*Management Implications*

One of the primary concerns of BTCW managers is solitude, as indicated in the
1989 Beartrap Visitor Study. The surrogate measure used for solitude in the 1989 study was the number of encounters between groups in the BTCW. It was also hypothesized that solitude was a primary motivation for visiting the BTCW. In this section two management implications are presented.

1. Although measuring the number of encounters between groups is one method of quantifying solitude, it is not the only method. In future research concerning solitude, other measures should be used, along with the measurement of encounters. The first step would be to survey wilderness visitors to determine what solitude means to them; ask visitors what factors make up solitude for them. It is often unclear in many studies pertaining to solitude, exactly what solitude means to the visitor. Another step would be to review the literature on solitude and examine various definitions. Questions on a survey could determine how respondents felt about the level of solitude in an area by measuring the individual factors that were found to make up solitude. Examining all of the factors that encompass solitude will make its measurement more meaningful and accurate. Managers should be careful not to look exclusively at one aspect of solitude, like encounters with other groups, when managing for solitude. Simply reducing the number of groups using an area will not address the entire issue of solitude. Maintaining naturalness, freedom, and opportunities to travel into remote areas will also help preserve solitude. However, it should be noted that manipulating use levels is possibly the easiest way managers can control the level of solitude in an area.

2. The 1989 Beartrap Canyon Visitor Study stated that, “a primary objective of the current study is to identify the importance of solitude to BTCW visitors.” Solitude is a primary concern to BTCW managers. Although solitude is a significant component for measuring social conditions, there are other motivations that may be just as important to BTCW visitors. Nature appreciation was identified by all three groups as the most important reason for visiting the BTCW (see Table 11). Solitude/stress release proved to be the second most important reason for visiting to hikers, third most important to outfitted floaters and fourth most important to private floaters. Many people also visit the BTCW
for the social aspect, and for the challenge and adventure. The point is, although solitude is an extremely important aspect of wilderness recreation, other important qualities should not be overlooked. For example, nature appreciation is very important to BTCW visitors, and because of its importance, managers should continue emphasizing the maintenance of natural and primitive conditions in the canyon. By maintaining naturalness and primitiveness, managers are also protecting solitude, because both naturalness and primitiveness are important components of solitude as well. In the same way, maintaining opportunities for challenge and adventure, will also have a positive affect on solitude. All motivations are in effect intertwined with one another. Managers can look at maintaining all aspects of solitude along with use levels, and at the same time consider how each action affects other motivational domains.

Currently, rangers simply count the number of encounters with other land-based and floater groups while patrolling the wilderness. The BTCW is split into zones depending on the relative primitiveness of each zone. For the purposes of measuring social conditions, when the number of encounters in each zone exceeds the daily limit a certain percentage of the time throughout the season, management actions will be considered to control the number of groups using the area. This is a very good method for determining the total number of groups traveling within different zones of the wilderness, but it does not measure visitor perceptions of those encounters. Although the number of visitors using the area may exceed management standards, they may not exceed visitor standards. Visitors may not be affected when encounters exceed the management standards, or they may be affected by fewer encounters.

Increasing the amount of visitor contact with management personnel in the BTCW would help determine how encounters affect visitors. Rangers could contact visitors and ask specific questions to determine how many other groups visitors encountered, and how this affected their experience and level of satisfaction. Other questions regarding visitor satisfaction and perceptions of encounters could also be asked. This would provide more in depth information regarding the effect of encounters on visitors. Without
directly asking visitors how many encounters affect their wilderness experience, it would be difficult to know exactly what level of encounters are an appropriate measure of social conditions.

It is also quite possible that visitor perceptions of encounters change over time. Visitor perceptions should be monitored on an annual basis. Direct observation would likely require more rangers or more time spent in the BTCW, and less time working on other projects, and may be quite costly. Unfortunately, these costs may be prohibitive to increasing direct observation and contact with visitors in the BTCW. Perhaps, adding additional questions to the registration card, and asking visitors to keep their card and record their feelings about the number of groups they encountered, then drop the card off at the end of their trip would be less costly and provide more information to managers. Visitors could also be asked to fill out a registration card with questions regarding encounters and satisfaction when leaving the wilderness (at the trailhead or floater takeout), since nearly all visitors enter and exit at the same trailhead. Additional questions regarding the effect of encounters on satisfaction, and the number of encounters at which satisfaction begins to decline could be asked. However, it may prove to be difficult to get visitors to fill out these cards, and remember to drop them off when they leave.

If it was discovered that BTCW visitors are tolerant of higher use levels, concerns about the affect of higher use levels on the resource would then have to be addressed. Current restrictions on camping in the BTCW may be sufficient to deter increased damage to the resource at campsites due to increased usage. However, the primary concern of increased visitor use may be the development of braided trails and social trails accessing the river.

**Recommendations for Future Research**

This study examined satisfaction by examining expected and actual encounter levels. A number of questions have been initiated from this study that could provide interesting future research topics.
1. The expectancy disconfirmation model is a relatively new way of examining recreation satisfaction. It would be useful to see how this model would work when carried to its full extent. If you recall, the expectancy disconfirmation model is intended to measure satisfaction by examining the discrepancy between expected and actual outcomes. The model then goes on to measure the revised postactivity attitude, which is a function of the initial attitude, and the influence of satisfaction or dissatisfaction. Subsequently, the intention to partake in the activity again is influenced by previous intentions, and the level of satisfaction derived from the experience (see Figure 1).

The expectancy disconfirmation model would work well in studies attempting to quantify recreation attitudes and intentions. To measure intentions, the model would have to be completed in its entirety, since intentions are influenced by the level of satisfaction and revised attitudes, and attitudes are based upon the level of satisfaction or dissatisfaction.

The expectancy disconfirmation model may be a good way to evaluate displacement. The model could determine visitors intentions to visit an area again based on their level of satisfaction and revised attitude toward the area. Intentions to visit again would be based upon the overall satisfaction derived from various trip attributes, and the revised attitude originating from the level of satisfaction. This process could determine whether or not visitors intend to come back to the area, or are being displaced to another area. Looking at the various levels of disconfirmation for each attribute of the trip would provide insight into reasons why visitors may come back or be displaced.

2. It would be fitting to design a survey instrument based on the expectancy disconfirmation model. The questionnaire would be designed to measure overall satisfaction by testing various attributes of the trip on an expected and actual scale so disconfirmation could be determined. Attributes of the trip like solitude, resource conditions, encounters, level of challenge and so on could be measured by asking respondents what level of the each attribute they expected, and then asking what level they actually experienced. For example, respondents could be asked how much solitude they
expected on a scale from "very little" to "a lot." They would then be asked how much solitude they actually experienced on the same scale. The discrepancy between the two would then be measured, and the level of disconfirmation determined. This same process would be continued for each attribute of the wilderness experience, and the positive and negative discrepancies would then be added up to determine overall satisfaction. This would provide a different approach for studies which measure overall satisfaction.

Other Research Questions

3. What attributes of solitude are important to wilderness visitors? What attributes make up solitude? What defines solitude? Does solitude mean the same thing to everyone? Are encounters between groups the most appropriate measure of solitude? What is the most appropriate and accurate measure of solitude?

4. What attributes of a wilderness experience most influence trip satisfaction? What determines a satisfying wilderness experience?

5. Can recreation satisfaction be accurately measured using the expectancy disconfirmation model? What factors limit its use?

Summary

Satisfaction, solitude, expectations, encounters. These terms were all used in this study in an attempt to quantify the recreation experience. It is often difficult to quantify human feelings and emotions, because we are all so different. As stated earlier, there are no averages in recreation, the "average camper" does not exist. Williams (1988) feels that resource managers need to insure that opportunities exist for intrinsic enjoyment and self-expression. He states that:

While the quality of the resource is important and we should not back away from our commitment to resource quality...the ultimate arbiter of satisfaction is the participant-happiness lies with the self...in leisure, the value is in the
doing, the being, the activity itself. Intrinsic enjoyment is in
the doing not in the fulfilling...Quality is better understood as
the extent to which a recreation engagement succeeds as
an expression of one's self.

Satisfaction in recreation settings is a very complex and personal experience.
Quantitative measures, no matter how well they work in other settings, are often difficult to
apply in recreation and wilderness settings because of the intrinsic nature of the activities
involved, and the value of recreation, which is often in the process, and not the product.
APPENDIX A

Registration Form
BEAR TRAP CANYON VISITOR REGISTRATION CARD

Date _____________

Name ____________________________ Street Address ____________________________

City ____________________________ State ______ Zip ____________

Group Type: ___ Alone    ___ Family    ___ Friends
               ___ Family & Friends    ___ Club

Travel Method: ___ Hike    ___ Raft    ___ Kayak

How many groups did you expect to see (per day)? ___ floater groups    ___ land-based groups

How many groups did you actually see (per day)? ___ floater groups    ___ land-based groups

How did you feel about the number of other groups you saw?

Other floater groups:                          Other land-based groups:
   1 saw too few                               1 saw too few
   2 about right                                2 about right
   3 saw too many                               3 saw too many
   4 didn't matter to me                         4 didn't matter to me
   5 I don't remember                           5 I don't remember
APPENDIX B

Questionnaire
BEAR TRAP CANYON VISITOR RESPONSE FORM

Bear Trap Canyon Wilderness Visitor Survey

Please answer all questions as they relate to your most recent visit to the Bear Trap Canyon Wilderness (BTCW).

Q-1. What was the date of your most recent visit? ____________

Q-2. Was this your first visit to the BTCW? (circle one number)
   1 YES (go to Q-3)
   2 NO (if no, please answer the following):
      a. What was the year of your first visit? ____________
      b. About how many times have you visited the BTCW? (circle one number)
         1 ONE TO THREE TIMES
         2 FOUR TO SEVEN TIMES
         3 EIGHT TO TWELVE TIMES
         4 MORE THAN TWELVE TIMES

Q-3. About how long was your visit to the BTCW? (circle one number)
   1 UNDER ONE HOUR (go to Q-4)
   2 ONE TO FOUR HOURS (go to Q-4)
   3 FOUR HOURS TO ONE DAY (go to Q-4)
   4 LONGER THAN ONE DAY (please answer the following):
      a. How many nights did you spend backcountry camping in the BTCW? ____________
      b. How many nights did you spend auto camping in the immediate area? ____________

Q-4. During your most recent visit, what type of group were you with? (circle one number)
   1 ALONE
   2 FAMILY
   3 FRIENDS
   4 FAMILY AND FRIENDS
   5 CLUB OR ORGANIZED GROUP

Q-5. Did you travel with an outfitter or guide? (circle one number)
   1 NO
   2 YES

Q-6. How many people were in your group including yourself? ____________

Q-7. What was your primary method of travel in the BTCW? (circle one number)
   1 WATERCRAFT (raft, kayak, etc.)
   2 FOOT

Q-8. What activities did your group participate in during your visit to the BTCW? (circle as many as apply)
   1 BANK FISHING
   2 FLOAT FISHING
   3 RAFTING
   4 KAYAKING
   5 PHOTOGRAPHY
   6 HIKING
   7 CAMPING
   8 VIEWING WILDLIFE
   9 OTHER (____________________)
Q-9. Each person has many individual reasons for visiting the BTCW. Below is a list of reasons given by people for their visits. Try to recall how important EACH of the following reasons was to you on your most recent visit. (Check one box for EACH reason)

I visited the BTCW for the opportunity:

- to observe the scenic beauty
- to be in a natural setting
- for the adventure
- to develop my skills and abilities
- to improve my physical health
- to experience the tranquility
- to be at a place where I can make my own decisions
- to enjoy the sounds and smells of nature
- to get away from other people
- to understand the natural world better
- to have fun
- to get away from my everyday responsibilities for a while
- to learn more about nature
- to help keep me in shape
- to be with others who enjoy the same things I do
- so I could do something creative such as sketch or take photographs
- so I could be with friends
- so I could do things with my companions
- because I thought it would be a challenge
- so my mind could move at a slower pace
- for the solitude
- to help reduce or release some built-up tensions
- to observe wildlife

Q-10. About how many other groups did you expect to see during your BTCW visit once you got away from the trailhead area or floater put-in? (Circle one number in each column)

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>NONE</td>
<td>ONE TO TWO</td>
<td>THREE TO FIVE</td>
<td>SIX TO TEN</td>
<td>ELEVEN TO TWENTY</td>
<td>MORE THAN TWENTY</td>
<td>NO EXPECTATION</td>
</tr>
</tbody>
</table>

Q-11. About how many other groups did you actually see? (Circle one number in each column)

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>NONE</td>
<td>ONE TO TWO</td>
<td>THREE TO FIVE</td>
<td>SIX TO TEN</td>
<td>ELEVEN TO TWENTY</td>
<td>MORE THAN TWENTY</td>
<td>I DON'T REMEMBER</td>
</tr>
</tbody>
</table>

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Q-12. How did you feel about the number of other groups you saw? (circle one number in each column)

<table>
<thead>
<tr>
<th>OTHER FLOATER GROUPS</th>
<th>OTHER LAND-BASED GROUPS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 SAW TOO FEW</td>
<td>1 SAW TOO FEW</td>
</tr>
<tr>
<td>2 ABOUT RIGHT</td>
<td>2 ABOUT RIGHT</td>
</tr>
<tr>
<td>3 SAW TOO MANY</td>
<td>3 SAW TOO MANY</td>
</tr>
<tr>
<td>4 DIDN'T MATTER TO ME</td>
<td>4 DIDN'T MATTER TO ME</td>
</tr>
<tr>
<td>5 I DON'T REMEMBER</td>
<td>5 I DON'T REMEMBER</td>
</tr>
</tbody>
</table>

Q-13. About how many other groups would you prefer to see per day when visiting the BTCW? (circle one number in each column)

<table>
<thead>
<tr>
<th>FLOATER GROUPS</th>
<th>LAND-BASED GROUPS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 NONE</td>
<td>1 NONE</td>
</tr>
<tr>
<td>2 ONE TO TWO</td>
<td>2 ONE TO TWO</td>
</tr>
<tr>
<td>3 THREE TO FIVE</td>
<td>3 THREE TO FIVE</td>
</tr>
<tr>
<td>4 SIX TO TEN</td>
<td>4 SIX TO TEN</td>
</tr>
<tr>
<td>5 ELEVEN TO TWENTY</td>
<td>ELEVEN TO TWENTY</td>
</tr>
<tr>
<td>6 MORE THAN TWENTY</td>
<td>MORE THAN TWENTY</td>
</tr>
<tr>
<td>7 NO PREFERENCE</td>
<td>7 NO PREFERENCE</td>
</tr>
</tbody>
</table>

Q-14. What is the maximum number of other groups you could accept seeing per day before those groups begin to detract from your enjoyment? (circle one number in each column)

<table>
<thead>
<tr>
<th>FLOATER GROUPS</th>
<th>LAND-BASED GROUPS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 NONE</td>
<td>1 NONE</td>
</tr>
<tr>
<td>2 ONE TO TWO</td>
<td>2 ONE TO TWO</td>
</tr>
<tr>
<td>3 THREE TO FIVE</td>
<td>3 THREE TO FIVE</td>
</tr>
<tr>
<td>4 SIX TO TEN</td>
<td>4 SIX TO TEN</td>
</tr>
<tr>
<td>5 ELEVEN TO TWENTY</td>
<td>ELEVEN TO TWENTY</td>
</tr>
<tr>
<td>6 MORE THAN TWENTY</td>
<td>MORE THAN TWENTY</td>
</tr>
<tr>
<td>7 NO PREFERENCE</td>
<td>7 NO PREFERENCE</td>
</tr>
</tbody>
</table>

Q-15. At what size do other groups become too large and begin to detract from your enjoyment? (circle one number in each column)

<table>
<thead>
<tr>
<th># OF PEOPLE PER FLOATER GROUP</th>
<th># OF PEOPLE PER LAND-BASED GROUP</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 TWO TO FOUR</td>
<td>1 TWO TO FOUR</td>
</tr>
<tr>
<td>2 FIVE TO SEVEN</td>
<td>2 FIVE TO SEVEN</td>
</tr>
<tr>
<td>3 EIGHT TO TEN</td>
<td>3 EIGHT TO TEN</td>
</tr>
<tr>
<td>4 ELEVEN TO FIFTEEN</td>
<td>4 ELEVEN TO FIFTEEN</td>
</tr>
<tr>
<td>5 SIXTEEN TO TWENTY</td>
<td>5 SIXTEEN TO TWENTY</td>
</tr>
<tr>
<td>6 MORE THAN TWENTY</td>
<td>6 MORE THAN TWENTY</td>
</tr>
<tr>
<td>7 DOESN'T MATTER</td>
<td>7 DOESN'T MATTER</td>
</tr>
</tbody>
</table>

Q-16. Did you expect to see fewer people in some areas of the BTCW than others? (circle one number in each column)

<table>
<thead>
<tr>
<th>FLOATER GROUPS</th>
<th>LAND-BASED GROUPS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 NONE</td>
<td>1 NONE</td>
</tr>
<tr>
<td>2 ONE TO TWO</td>
<td>2 ONE TO TWO</td>
</tr>
<tr>
<td>3 THREE TO FIVE</td>
<td>3 THREE TO FIVE</td>
</tr>
<tr>
<td>4 SIX TO TEN</td>
<td>4 SIX TO TEN</td>
</tr>
<tr>
<td>5 ELEVEN TO TWENTY</td>
<td>ELEVEN TO TWENTY</td>
</tr>
<tr>
<td>6 MORE THAN TWENTY</td>
<td>MORE THAN TWENTY</td>
</tr>
<tr>
<td>7 NO PREFERENCE</td>
<td>7 NO PREFERENCE</td>
</tr>
</tbody>
</table>

Q-17. How well do each of the following statements describe your feelings about your recent BTCW visit? (check one box for EACH statement)

- This trip was better than any other recreation experience I remember. ( ) ( ) ( ) ( ) ( ) ( )
- This trip was better than any BTCW trip I remember. ( ) ( ) ( ) ( ) ( ) ( )
- This trip was so good I would like to take it again. ( ) ( ) ( ) ( ) ( ) ( )
- This trip was pretty good, I might like to take it again. ( ) ( ) ( ) ( ) ( ) ( )

( ) ( ) ( ) ( ) ( ) ( ) ( )
( ) ( ) ( ) ( ) ( ) ( ) ( )
( ) ( ) ( ) ( ) ( ) ( ) ( )
( ) ( ) ( ) ( ) ( ) ( ) ( )
( ) ( ) ( ) ( ) ( ) ( ) ( )
( ) ( ) ( ) ( ) ( ) ( ) ( )
( ) ( ) ( ) ( ) ( ) ( ) ( )
Q-18. How much did each of the following add to or detract from your experience? (check one box for EACH item)

- Seeing large groups
- Encountering other types of users
- The condition of campsites
- Catching fish
- The level of solitude
- Seeing other people's trash
- Hearing man-made noises
- Amount of regulation on visitors
- Being with members of your own group
- Seeing wildlife
- Meeting people with similar interests

* Q-19. Do you think too many people use the BTCW now?
1. No
2. Yes (If yes, where?) (circle as many as apply)
   a. Along the trails
   b. Floating on the river
   c. Along the riverbank

Q-20. There currently is a three-day limit on overnight camping for land users. Do you feel that this policy? (circle one number)
1. Is too strict and should be relaxed to a period longer than three days
2. Is justified and should be kept
3. Is too lax and should be tightened to a period shorter than three days
4. I don't know; I would need more information to decide

Q-21. Overnight camping by floaters is currently prohibited. Do you feel this policy? (circle one number)
1. Should be kept as is
2. Should be revised (if so, how? circle as many as apply)
   a. Allow unlimited overnight camping by floaters
   b. Allow overnight camping by floaters limited to one night
   c. Allow float camping at designated campsites only
   d. Limit the number of floater groups that can camp at any one time
   e. Other (__________________________)
3. I don't know; I'd need more information to decide

Q-22. Do you think there is a human waste sanitation problem anywhere in the BTCW? (circle one number)
1. No
2. Yes (please answer the following):
   a. Where? (__________________________)
   b. Should primitive pit toilets be installed in the BTCW where human waste sanitation is a problem?
      1. No
      2. Yes

* Q-23. In your opinion, visitor use levels in the BTCW: (circle one number)
1. Should be lowered significantly
2. Should be lowered slightly
3. Should be kept at the present level
4. Should be allowed to increase slightly
5. Should be allowed to increase significantly
6. I don't know enough about the area to say one way or the other
BACKGROUND INFORMATION

Finally, we have a few questions about you personally. Remember, you will not be identified with your answers.

Q-26. What is your age? ________

Q-27. Are you: 1 FEMALE 2 MALE

Q-28. What is the highest level of education you have completed so far? (circle one number)
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17+ ELEMENTARY HIGH SCHOOL COLLEGE POST-GRADUATE

Q-29. What is your occupation? (Please indicate what kind of work you do, not for whom you work. If you are a housemaker, student, or retired, please so indicate.)

Q-30. What best describes the area where you live? (circle one number)
1 LARGE CITY - OVER ONE MILLION PEOPLE
2 MEDIUM CITY - 50,000 TO ONE MILLION PEOPLE
3 SMALL CITY - 5000 TO 50,000 PEOPLE
4 TOWN - 1000 TO 5000 PEOPLE
5 RURAL - BUT NOT A FARM OR RANCH
6 FARM OR RANCH

Q-24. If, in the future, use levels in the BTCW increase to the point where resource values or visitor experience values are threatened, a number of management options could be considered. Please indicate how you would feel about EACH of the following potential management actions. (check the box that shows how much you would support or oppose EACH action)

- allow camping only at designated sites ( ) ( ) ( ) ( ) ( ) ( )
- prohibit overnight camping ( ) ( ) ( ) ( ) ( ) ( )
- restrict the number of people using the area at any one time ( ) ( ) ( ) ( ) ( ) ( )
- limit the number of people per group ( ) ( ) ( ) ( ) ( ) ( )
- limit the number of commercially guided float trips ( ) ( ) ( ) ( ) ( ) ( )
- achieve better spacing among floaters by assigning starting times ( ) ( ) ( ) ( ) ( ) ( )
- limit the number of private (non-outfitted) float trips ( ) ( ) ( ) ( ) ( ) ( )
- begin some type of use-limit policy, such as a permit system ( ) ( ) ( ) ( ) ( ) ( )
- provide more patrols to enforce regulations ( ) ( ) ( ) ( ) ( ) ( )
- limit the number of hikers ( ) ( ) ( ) ( ) ( ) ( )
- educate users more aggressively about minimum-impact use ( ) ( ) ( ) ( ) ( ) ( )
- discourage or prohibit use of overused areas ( ) ( ) ( ) ( ) ( ) ( )

Q-25. How do you feel about the condition of the BTCW in terms of the following factors? (check one box in each row)

<table>
<thead>
<tr>
<th>Factor</th>
<th>not a problem</th>
<th>slight problem</th>
<th>serious problem</th>
</tr>
</thead>
<tbody>
<tr>
<td>number of campfire rings</td>
<td>( )</td>
<td>( )</td>
<td>( )</td>
</tr>
<tr>
<td>tree damage</td>
<td>( )</td>
<td>( )</td>
<td>( )</td>
</tr>
<tr>
<td>bank/shore erosion</td>
<td>( )</td>
<td>( )</td>
<td>( )</td>
</tr>
<tr>
<td>dev-vegetated campsites</td>
<td>( )</td>
<td>( )</td>
<td>( )</td>
</tr>
<tr>
<td>litter</td>
<td>( )</td>
<td>( )</td>
<td>( )</td>
</tr>
<tr>
<td>condition of trails</td>
<td>( )</td>
<td>( )</td>
<td>( )</td>
</tr>
</tbody>
</table>
APPENDIX C

Variables Used in Analysis
The following is a list of variables used in the analyses and hypotheses tests. The variables are listed in the order in which they were encountered in the paper.

The following is a list of variables used in the analyses and hypotheses tests. The variables are listed in the order in which they were encountered in the paper.

AGE - respondents age
GENDER - gender of the respondent, “male” or “female”
EDUCATIO - highest level of education the respondent completed
OCCUPATN - respondents occupation
CITY - best description of the area where the respondent lives
PREVIOUS - number of times respondents have previously visited the BTCW
FVISIT - whether or not the trip was the respondent’s first visit to the BTCW
YEAR - year of the respondent’s first visit to the BTCW
LENGTH - length of time respondents visited the BTCW during their trip
GRPSiZE - number of people in the respondents group
GRPTYPE - type of group the respondent traveled with, “alone,” “family,” “friends,” “family and friends,” or “club or organized group”
SOLITUDE - importance of solitude to respondents during their trip
LEVELSOL - how much the level of solitude added or detracted from respondent’s experience
TOOMANY - whether or not respondents felt too many people use the BTCW now
BETTREXP - respondent's level of agreement to the statement “this trip was better than any other recreation experience I remember”
BETTRBTC - respondent's level of agreement to the statement “this trip was better than any other BTCW trip I remember”
TAKAGAIN - respondent's level of agreement to the statement “this trip was so good I would like to take it again”
FLOATEXP - number of floater groups respondents expected to see
LANDEXP - number of land-based groups respondents expected to see
FLOATSAW - number of floater groups respondents actually saw
LANDSAW - number of land-based groups respondents actually saw
FLOREACT - respondent's reactions towards the number of floater groups they saw
LNDREACT - respondent's reactions towards the number of land-based groups they saw

OVER - measurement of overall satisfaction after factor analysis which determined that BETTREXP and TAKAGAIN best represented overall satisfaction and the two variables were collapsed into one

EXPECT - LANDEXP and FLOATEXP collapsed into one variable measuring the total number of groups respondent's expected to see, after weighting

SAW - LANDSAW and FLOATSAW collapsed into one variable measuring the total number of groups respondent's actually saw, after weighting

DISCON - the variable which measured respondent's levels of disconfirmation and subsequent satisfaction with encounters, determined by subtracting SAW from EXPECT

HIKOVER - hiker's level of overall satisfaction

FLTOVER - private floater's level of overall satisfaction

OUTOVER - outfitted floater's level of overall satisfaction

HIKDISCO - hiker's level of disconfirmation

FLTDISCO - private floater's level of disconfirmation

OUTDISCO - outfitted floater's level of disconfirmation

REACT - LNDREACT and FLOREACT collapsed into one variable measuring overall reaction to encounters

HIKREACT - hiker's overall reaction to encounters

FLTREACT - private floater's overall reaction to encounters

OUTREACT - outfitted floater's overall reaction to encounters

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Appendix D

Factor Loadings for Motivational Domain Items
from the 1989 Beartrap Canyon Visitor Study
Table 3-9. Factor loadings of motivational domain items on indicated factor, rotated factor matrix, 1989.

<table>
<thead>
<tr>
<th>Item</th>
<th>One</th>
<th>Two</th>
<th>Factor</th>
<th>Four</th>
<th>Five</th>
</tr>
</thead>
<tbody>
<tr>
<td>To observe the scenery</td>
<td>.85</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To be in a natural setting</td>
<td>.83</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To experience the tranquility</td>
<td>.71</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To enjoy the sounds and smells of nature</td>
<td>.74</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To understand the natural world better</td>
<td>.63</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To learn more about nature</td>
<td>.62</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To observe wildlife</td>
<td>.66</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To get away from my everyday responsibilities for a while</td>
<td></td>
<td>.75</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To get away from other people</td>
<td>.54</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>So my mind could move at a slower pace</td>
<td>.75</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>For the solitude</td>
<td>.63</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To help reduce or release some built-up tensions</td>
<td>.79</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To help keep me in shape</td>
<td>.77</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To improve my physical health</td>
<td>.82</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 3-9 (Continued). Factor loadings of motivational domain items on indicated factor, rotated factor matrix, 1989.

<table>
<thead>
<tr>
<th>Item*</th>
<th>One</th>
<th>Two</th>
<th>Factor Three</th>
<th>Four</th>
<th>Five</th>
</tr>
</thead>
<tbody>
<tr>
<td>So I could do something creative</td>
<td>.55</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To be at a place where I can make my own decisions</td>
<td></td>
<td>.64</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>So I could be with friends</td>
<td></td>
<td></td>
<td>.84</td>
<td></td>
<td></td>
</tr>
<tr>
<td>To be with others who enjoy the same things I do</td>
<td></td>
<td></td>
<td>.84</td>
<td></td>
<td></td>
</tr>
<tr>
<td>So I could do things with my companions</td>
<td></td>
<td></td>
<td>.83</td>
<td></td>
<td></td>
</tr>
<tr>
<td>To have fun</td>
<td></td>
<td></td>
<td>.45</td>
<td></td>
<td></td>
</tr>
<tr>
<td>To develop my skills and abilities</td>
<td></td>
<td></td>
<td>.57</td>
<td></td>
<td></td>
</tr>
<tr>
<td>For the adventure</td>
<td></td>
<td></td>
<td>.71</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Because I thought it would be a challenge</td>
<td></td>
<td></td>
<td>.81</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cronbach's alpha</td>
<td>.89</td>
<td>.83</td>
<td>.78</td>
<td>.79</td>
<td>.72</td>
</tr>
</tbody>
</table>

*Factor loadings are shown only for the factor on which the item loads the highest, in order to simplify this table. Complete factor loadings for all items and factors are available from the author.
Literature Cited


Watson, Alan E. In publication. Opportunities for Solitude in the Boundary Waters Canoe Area Wilderness. Aldo Leopold Wilderness Research Institute, USDA Forest Service.


