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BENEFICIAL OUTCOMES OF RECREATION AT THE EASTERN HUACHUCA MOUNTAINS, CORONADO NATIONAL FOREST.

by

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A Thesis Submitted to the Faculty of the

SCHOOL OF RENEWABLE NATURAL RESOURCES

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In the Graduate College

THE UNIVERSITY OF ARIZONA

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STATEMENT BY AUTHOR

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ABSTRACT

Leisure opportunities seem necessary for individual well-being, as they provide satisfaction to many levels and types of needs and wants. This research deals with identifying and assessing the beneficial outcomes of those leisure opportunities acquired from various recreational experiences.

The study used Brown, Miller, and Carr Canyon in Eastern Huachuca Mountains of the Coronado National Forest in Southern Arizona as study sites for assessing the relationship between experiences and benefits. The findings suggest that there was a 100% congruence between the recreational experiences sought and the ability of these sites to provide them.

The correlation between perceived beneficial outcomes of recreational experiences and the visitors abilities to acquire such outcomes in these settings were significantly positive. The most significant benefit documented in this study was to improve one's physical fitness. It seemed to be positively correlated with each of the four experiences stated in this study, i.e., to learn more about nature, to get away from the usual demands of life, of being in the wilderness area and experiencing a sense of adventure, and spend time with family and/or friends.

CHAPTER 1

1.0 INTRODUCTION

Recreation means many things to many people. Some like to spend time with their family, others hope to get away from the hubbub of day-to-day life. Recreationists increasingly deal with considerations of people, as well as with aspects of the physical environment, built and natural, in conjunction with their own needs and wants.

In the United States, the National Forests are one of the primary providers of outdoor recreational places and activities. The Forest Service has responded to public needs and wants by providing various outdoor recreational opportunities. Because public needs and values have been evolving during the last few years, recreation provisions which were suitable for the 60s may not be adequate for the present. The Forest Service is changing how it operates in order to meet what it perceives the public now wants.

The Forest Service developed the Recreation Opportunity Spectrum (ROS) as a framework for recreation in the National Forests. It intends to offer recreators alternative settings in which they could derive a variety of experiences (Driver, Brown, Stankey, Gregoire, 1987). But the Recreation Opportunity Spectrum framework was so vast and had so many settings that it seemed difficult to manage at a large scale. Beneficial outcomes for individuals that visited recreation resources were assumed but not actually measured. There was need to acquire an

understanding of recreational uses, behaviors, and associated perceived benefits. The need to make more informed management decisions led to new management planning which would incorporate knowledge of the beneficial outcomes of recreational activities and settings.

Since various settings differ, management planning must be flexible and adaptable. To create an adaptable planning system a comparative study of the human interaction with these various recreational spaces would provide a clearer understanding of beneficial experiences gained by individuals in those settings.

To properly approach the understanding of leisure opportunities in those settings it is important to understand the term used and applied in the recreation movement. Recreational opportunities seem necessary for individual well-being, since they satisfy many levels and types of needs including the important needs of self-actualization and psychological growth. However, all recreational activities are not necessarily leisure, for an individual may seek recreation in order to work better or simply to improve physical fitness (Bammel, 1982). While leisure activities may achieve these same results, leisure is more noble than recreation for leisure has the connotation of attitude, time, and activities which enable personal growth and development engaged in for their own sake. Leisure activities seem to be also recreational as they re-create the person so engaged.

One of the examples of the Forest Service providing various recreational facilities is in the Eastern Huachuca Mountains in Southern Arizona, approximately 70 miles southeast of Tucson. The Eastern Huachuca Mountains and the surrounding Coronado National Forest offer mild temperatures and breathtaking scenery which combine to support recreation at its finest.

1.1 The Study

The primary purpose of this study is to identify and assess the beneficial outcomes from recreational experiences in designated recreational settings in the Eastern Huachuca Mountains of the Coronado National Forest in Southern Arizona. These beneficial outcomes are tallied using five factors from forest management: *Health, Safety, Setting, Responsibility to the Visitors, and Condition of the Facility* (Standards for Operation and Maintenance). These factors play a fundamental role in the planning and management process of the National Forest. The study intends to provide guidelines for improvement and future development of recreational spaces.

Along with this primary purpose, referring to leisure in general rather than to particular activities, there are two basic measures of the beneficial consequences of leisure: 1) measures of beneficial changes in behavior, and 2) introspective measures (Driver, Brown, and Peterson, 1991). Measures based on behavioral change include improvements in physical health and

increased productivity of people and comprise two classes: 1) those that focus directly upon benefits as improved physical conditions, such as perceived increased productivity at a certain activity and 2) indirect introspective measures. The indirect measures do not focus on improved conditions but on activities such as exercising, experiencing challenge, or exploring, from which inferences can be made about probable beneficial consequences such as health, skill development, and learning. These measures can be assessed through understanding the recreators and their needs which may be satisfied from these recreational settings. Their needs may be classified into six categories: **psychological**: providing a sense of freedom, enjoyment, involvement, and challenge; **educational**: securing intellectual challenge and knowledge gains; **social**: obtaining rewarding relationships with other people; **relaxation**: acquiring relief from stress and strain; **physiological**: gaining fitness, health and well being; **aesthetic**: obtaining responses to pleasing settings and beauty of environments(Beard and Mounir, 1980). These categories shall be utilized as a secondary approach to provide an understanding of the needs, wishes and wants of visitors.

These various approaches, that is understanding the five factors from forest management and the introspective measures, provide the basis for addressing the research questions and objectives.

1.2 Purpose, Objectives, and Research Questions

The purpose of this research is to develop a methodology for identifying and relating recreational experiences to associated beneficial outcomes in designated recreation areas in the Eastern Huachuca Mountains, Coronado National Forest, in Southern Arizona. The research questions are:

1. Is there a relationship between the desirability of experience and the desirability of benefit? Which benefits are most desirable?

2. Is there congruence between what people said they sought and their actual activity? If so, how much use is there of each site for each activity listed? How suitable is each site perceived to be by users for each activity listed?

3. In which settings do they prefer specific recreational activities? What is the availability of such settings in these USFS areas?

From the questions above the following objectives of this research have been determined:

- To identify the visitors' recreational experience preferences for activities, facilities, and services.

- To assess visitor's perceived beneficial outcomes of recreational experiences and their ability to acquire such outcomes.

CHAPTER 2

2.0 LITERATURE REVIEW

2.1 Human Dimension in Ecosystem Management

In a June 4, 1992 letter the Chief of the USDA Forest Service wrote that "An ecological approach will be used to achieve the multiple-use management of the National Forests and Grasslands. It means we must blend the needs of people and environment values in such a way that the National Forests and Grasslands represent diverse, healthy, productive and sustainable ecosystems." (Super and Elsner, 1993).

For the better part of a century, the notions of multiple use and sustained yield have framed the basic approach to forestry in this country (Report of Forest Ecosystem Management Assessment Team, 1993). This notion of multiple use and sustained yield suggest that a variety of forests and wilderness areas can be defined and managed in such a way as to minimize user impacts while maximizing user satisfaction (Kliskey, 1994). Along with changing conceptions of appropriate management come changing perceptions of forests.

As early as 1963, Geertz proposed using the ecosystem model to study society-environment relationships (Bonnicksen, 1991). That the environment ought to be managed in an ecological way having three interrelated dimensions, the physical, the biological, and the human

dimension, is not a new argument (cf. Caldwell, 1970, McIntosh, 1985). To sustain the ecosystem means balancing these dimensions. However, if one includes people in ecosystem management, one has to consider their experiences as part of the ecosystem. Therefore, to incorporate the concerns of humans into ecosystem management means giving equal weight to societal expectations, perceptions, and wants along with the physical and biological dimensions (Super and Elsner, 1993).

The human dimension of ecosystem management must include information about people's traditional and changing perceptions, beliefs, attitudes, behaviors, needs, and wants, as well as past, present and possible future influences of humans on ecosystems. It is people and their needs, values, and aspirations that define not only what ecosystem management is but what it is for and how it will be pursued (Super and Elsner, 1993). It is their opinions and perceptions of forests and wilderness conditions that represent an important input to the management process (Kliskey, 1994).

The Forest Service has considerable expertise in all three dimensions of ecosystem management. However, while there are thousands of people working on the physical and biological dimensions, considerably fewer are working on the human dimension, resulting in a continuing lack of knowledge about human needs. Human demands and needs from ecosystems vary from survival to personal well-being. The Forest Service influences the

human experience at several levels. ***Survival:*** clean air, clean water, subsistence; ***Security:*** employ many people in the extraction and amenity resource areas associated with National Forests; ***Belonging:*** family recreation—community; ***Self esteem:*** personal challenges—test skills; ***Self-Actualization:*** self in relation to nature. These are all part of the human dimension of ecosystem management (Super and Elsner, 1993).

Planning for the human dimensions requires good information on how people use the forests and what benefits they strive to achieve. Growing public concerns, along with public involvement, have greatly increased the difficulty of management. A particular problem is knowing how to accommodate conflicting public demands. Another is how to respond to poor public information (Super and Elsner, 1993).

Society has become concerned about the human condition and its relationship with ecosystems. As many have learned through various mistakes, a wise relationship with the environment is not achieved by looking at it piecemeal or by ignoring the long-term effects of various actions. Even the Forest Service seems to be moving towards a more holistic form of managing ecosystems for long-term sustainability and a thorough understanding of the various consequences of human activity (Kaufmann, Graham, Boyce, et al., 1993).

Ecosystem management is a logical step in the evolution of society's thinking and understanding about natural resource management. Thus ecosystem management will be

successful only when management decisions reflect understanding and awareness of ecological principles related to sustainability. It is important to recognize that the human interest is served if long-term ecosystem sustainability is assured (Kaufmann, Graham, Boyce, et al., 1993).

Ecosystem-based management, or an ecosystem approach to planning and management, is partly a matter of redefining management units and partly a matter of building on the best ecosystem science. The goal is to provide a framework and a research agenda that will facilitate the joint achievement of economic development and environmental protection through modified planning, management, policy, and decision-making activities. Two kinds of obstacles limit an ecosystem approach: 1) those related to the ends intended by those using an ecosystem approach, and 2) those related to the theory and implementation of ecosystem-based management. Ecosystem based management requires not only the greater ecosystem concept, it also requires a new interdisciplinary framework to integrate research, planning, and management to facilitate an appropriate process (Slocombe, 1993).

If one would look for guidance as to the fundamental objectives for ecosystem management, one could do no better than to start with Aldo Leopold's famous dictum in "The Land Ethic": "A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise." (Flader, 1993).

2.2 Recreation Opportunity Spectrum (ROS)

The Recreation Opportunity Spectrum (ROS), developed in late 1970s is an organizing framework for setting recreation management objectives (Wenger, 1984). The Recreation Opportunity Spectrum model (Driver and Brown, 1978) provides a conceptual framework for the inventory and analysis of recreation opportunities on forest lands.

Increased demands and pressures on the forest resources for recreation, a limitation of recreational resources, and protection of the forests are some of the numerous obstacles faced by the Forest Service. Clark and Stankey (1979) and Brown, Driver, and associates (1978-79) simultaneously, yet independently, developed a Recreation Opportunity Spectrum conceptual model for recreational uses of forest lands in the late 1970s to assess forest resources and integrate recreation opportunities into multiple-use land management. This was in response to the Renewable Resources Planning Act (1974), the National Forest Management Act (1976), and the Federal Land Policy and Management Act (1976) which required new studies of recreation planning. The Recreation Opportunity Spectrum was the stepping stone for the Forest Service in the provision of recreational facilities, providing a gradual change from timber management to people management.

The Recreation Opportunity Spectrum was an outcome of the planning pressures and the behavioral research of that period, thus developing a recreation planning and management

framework that was quite different from its predecessors. To develop this framework, a behavioral definition of recreation was adopted that defined recreation as a type of human experience based on intrinsically rewarding activities during non-obligated time (Driver and Tocher, 1970). The aspects of planning were posited as opportunities for activities in particular settings to realize desired experiences (Driver and Brown, 1978). The idea underlying the Recreation Opportunity Spectrum system was that the recreator can realize desired experiences by participating in recreation activities in chosen settings. The main factor for determining Recreation Opportunity Spectrum classes are remoteness (access), size, and evidence of human activity (naturalness) which provide opportunities for activities, settings, and experiences that range from primitive to urban (Ravenscroft, 1992).

The fundamental structure of the Recreation Opportunity Spectrum framework is simple. "It involves specifying recreational goals in terms of broad classes of recreation opportunity, identifying specific indicators of these opportunities that permit their operational definition and defining specific standards for each indicator that make distinctions among the opportunities as both the products of management and the services desired by recreationists" (Driver, Brown, Stankey and Gregoire, 1987).

Although the basic concept underlying the Recreation Opportunity Spectrum is not new, the need for a range of opportunities that efficiently serve multifarious public tastes for recreation is

new. The basic feature underlying the Recreation Opportunity Spectrum model is capturing the wide range of tastes and preferences among the public and providing an array of opportunities along a primitive-urban continuum.

Recreation is indeed a phenomenon in which quality is in the eye of the beholder. "Quality is not judged by the presence or absence of some factor (facilities, naturalness, or other visitors), but as the extent to which a given setting satisfies the desires of a particular recreator"(Clark and Stankey, 1979). The Recreation Opportunity Spectrum aids in clarifying this quality issue by providing a framework that systematically provides diverse settings for recreation and providing specific information to potential visitors about what a place is like.

One tenet of the Recreation Opportunity Spectrum is that relationships exist between outdoor recreation activity styles, desired psychological experiences, and preferred environmental settings. A study was conducted of a diverse group of outdoor recreators drawn from the population of 1985 summer visitors to America Flats Management Area in Southwestern Colorado. The study examined the nature and complexity of relationships in light of the Recreation Opportunity Spectrum conceptual model. Psychometric measures assessed four activity preference groups: Angling, Camping, Hiking, and Four-wheel driving (Virden and Knopf, 1989). The results indicated that significant relationships do exist between the activities, experiences, and settings, though some desired experiences are more activity-dependent, while

others are more setting-dependent. However, the study identified the inability to clearly affirm or disaffirm the three relational hypotheses: 1) Activity and Setting, 2) Activity and Desired experiences, 3) Desired experiences and Setting. The results of this inquiry attests to the complex character of relations among activity preference, desired experience, and environmental setting preference.

A primary objective of outdoor recreation resource management is to provide an environment in which visitors can achieve a satisfying recreation experience. Ideally, this environment should meet the visitors' physical, social, and psychological needs while providing a variety of opportunities across different outdoor settings (Foster, 1981). During the summer of 1984 a study was undertaken to survey 560 campers in three Recreation Opportunity Spectrum classes in the Land between the Lakes region of Western Kentucky to investigate whether visitor's experience preferences are heterogeneous or homogeneous across different campgrounds. Results showed that visitor's experience preferences differed less between Recreation Opportunity Spectrum classes than might have been expected, though campground settings do not necessarily follow Recreation Opportunity Spectrum guidelines limiting this study. An advantage of the Recreation Opportunity system was the provision of more detailed descriptions of the physical, social, and managerial setting attributes to provide the opportunity for a particular experience (Yuan and McEwen, 1989).

The developers of the Recreation Opportunity Spectrum used a behavioral definition of recreation that focused on experiences and benefits received from recreation engagement (Brown et al., 1978). Thus the choice of a setting and recreation activity is based on the value placed upon certain experiences, as well as how likely they are seen as being produced from that setting (Brown and Ross, 1982). Using this basic principle, the Recreation Opportunity Spectrum states that particular types of settings facilitate certain classes of recreational settings along the recreation opportunity spectrum (Driver and Brown, 1978; Clark and Stankey, 1979).

The Recreation Opportunity Spectrum has evolved into a major planning concept used by recreation resource managers (Brown and Ross, 1982) and it has a quite intuitive and practical appeal. However, several researchers have questioned the validity of the Recreation Opportunity Spectrum concept. The system was adopted by two major federal recreation agencies, the Forest Service and the Bureau of Land Management. The Recreation Opportunity Spectrum appears to have been developed simultaneously, but independently, by two groups of researchers: Clark and Stankey (1979) and Brown, Driver, and associates (1978-79). Brown, Driver, and associates seem to take a more empirical approach to the Recreation Opportunity Spectrum, seeking to link settings as closely as possible to the psychological outcomes they produce, while Clark and Stankey took a more applied approach. They note that as knowledge of linkages between recreation settings and psychological

outcomes improves, so will efficiency of meeting visitor demands. Both approaches defined three broad categories of factors: environmental, social, and managerial. Manning (1985), concluded that the Recreation Opportunity Spectrum fostered an inflexible interpretation, thus limiting instead of increasing recreation opportunity and diversity.

Recreation research seems relatively young, hence assumptions and tenets based on the Recreation Opportunity Spectrum are borrowed from other lines of research. Even with limitations of knowledge, the Recreation Opportunity Spectrum seems to have uncovered certain recreation planning questions. First, there was a need to settle on a definition of recreation. Second, the objectives of planning and management needed clarification. Third, objectives demanded by recreators needed characterization. Fourth, it was necessary to resolve whether a framework could be developed to account for the array of recreation demands among the nation's recreators (Driver, Brown, Stankey and Gregoire, 1987).

2.3 Benefits Based Management (BBM)

Benefits Based Management (BBM) focuses on all the management benefits that can be produced from recreation (Stein and Lee, 1993). It is an extension of the experience-based approach to recreation management. It states that the land managers do not directly produce recreation outputs but indirectly assist in their production by manipulating the natural settings (Lee and Driver, 1992).

What is a benefit? It is a change that is viewed to be advantageous or an improvement in condition (a gain) to an individual, to a group of individuals (e.g., a family, a community or society at large) or to another entity (e.g., the environment), or the prevention of a worse condition (Driver and Bruns, 1993).

What is a recreation benefit? Most simply, a recreation benefit may also be defined as an improved condition or desired change in state, or the prevention of a worse condition (Driver, & Peterson, 1987). In this sense, the improved condition would be an outcome of the recreation participation itself. Further, recreational opportunities seem more facilitators of benefits than just providers of benefits. It is also important to distinguish a benefit from the value of the benefit. The benefit is the improved condition. The value lies in the extent of desirability for that condition (Schreyer, and Driver, 1988).

Benefits are the products of recreation engagement and not directly provided by managers. The concept of "Benefits" was recognized as an important fourth dimension of the Recreation Opportunity Spectrum demand hierarchy for later operational development (Driver and Bruns, 1993).

Benefits Based Management (BBM) applies not only to recreation and leisure but to the broader context of amenity resources such as cultural resources, urban forestry, wilderness, and scenic values. It includes the physical, social, and psychological benefits realized from leisure and recreation. Also, it includes the spiritual benefits people might gain from exposure to cultural resources or wilderness, the pollution-reducing and scenic benefits of trees in an urban environment, and the feelings of stewardship in protecting and preserving wildlife. Benefits Based Management is based on the premise that before managing agencies can truly serve and meet the needs of people, they must first understand what people need and want. Then, they articulate those needs and wants so that they can develop on these needs and wants, to deliver benefit related outputs. Since the early 1980s the body of scientifically documented evidence about the benefits of leisure and amenity resources has grown rapidly. A wider variety of benefits are being identified and specified more clearly, their scope and magnitude are being quantified, and their values to individuals are being established more accurately (Lee and Driver, 1992).

In the late 1980s, the Forest Service Rocky Mountain Station in Colorado began a program of research on the benefits of amenity goods and services, including those associated with forest land recreation (USFS Contract No. 53-82FT-2-33). In May of 1989, B. L. Driver and George Peterson of the Rocky Mountain Forest and Range Experiment Station (RMS) and Perry Brown of Oregon State University organized a workshop held at Snowbird, Utah. Fifty-seven experts met to assess the state of knowledge about the benefits of leisure and amenity resources and to give direction to research. The outcome of this conference was a book, ***Benefits of Leisure***, published by Venture Publishing in 1991. The Snowbird state-of-knowledge workshop and the resulting text created considerable demand to translate how information about the benefits of amenity goods and services could be used by public natural resource policy makers, planners, and managers. In response to the demand Driver, Peterson, and Brown organized a follow-up applications workshop, held in Estes Park, Colorado in May of 1991. The result was the preliminary development of the concept of Benefits Based Management (BBM) of amenity resources (Lee and Driver, 1992).

Recreation resources produce opportunities for visitors to participate in desired activities within preferred settings, in order to realize desired and expected experiences and benefits. More simply, the recreation settings produce activity opportunities, experience opportunities, and benefit opportunities. The visitor uses the settings and these opportunities to produce desired experiences and benefits for themselves (Driver and Bruns, 1993).

Benefits Based Management builds upon and is an extension of, the activity and experience-based approaches to recreation resource management. Activity-based management views recreation opportunity as an option for people to participate in a specified activity such as camping, fishing, or hiking. This approach was primarily supply-oriented, with attention given to attributes of the recreation setting required to produce different types of activities. There was little attention given by managers to what recreators obtained from use of the opportunity. Experience-based management built on and supplemented (not replaced) activity-based management. This approach broadened activity-based management to offer a more behaviorally-oriented definition of a recreation opportunity as a chance to engage in a preferred activity within desired settings to realize desired experiences. This approach facilitated a more systematic understanding of the role of recreation setting attributes in creating not only activity opportunities but also experience opportunities. Even though experiences were not defined as beneficial, this was a significant advancement. Managers could now explicitly include the concept of experience opportunity in management objectives. They could specify types of experience opportunities, such as solitude, learning, physical fitness, family togetherness, or escape from city life to be targeted as a product of management.

Benefits Based Management is the logical extension of experience-based management and is based on two primary ideas: 1) the reason public recreation opportunities are provided is because people benefit from them; and 2) management will be most responsive, efficient, and

effective when it explicitly targets specific types of benefit opportunities that will be provided at designated locations. This is done by providing activity and associated setting opportunities defined in terms of the beneficial experiences and other responses that can be realized from using those locations. Benefits Based Management focuses on what is obtained from amenity resource opportunities in terms of consequences that maintain or improve the lives of individuals and groups of individuals. Then, designs can provide opportunities to facilitate realization of those benefits. The basis purpose is to provide an array of benefit opportunities among which users can choose (Lee and Driver, 1992).

Benefits Based Management provides managers with a clear understanding of the outputs enabling them to identify specific objectives for provision of higher quality benefit opportunities (Schreyer and Driver, 1988). One of the most crucial elements in assessing the value of recreational uses of natural resources is an understanding of the benefits derived by participants (Schreyer, & Driver, 1988).

More recently, research and pilot testing on the benefits of recreation have begun to extend the Recreation Opportunity Spectrum concept of experience based management to one of Benefits Based Management. This exploratory study approach is to be conducted on parts of three national forests, the Coconino and Kaibab National Forests in Arizona, and the Dixie National Forest in Utah. It targets beneficial outcomes from specific Recreation Opportunity Spectrum

settings. The purpose of the study is to explore the feasibility of developing a pragmatic model of the relationship of forest recreation experiences/benefits to specific attributes of forest settings. This study will be conducted over a three year period. The establishment date is July 1, 1994, and the termination date is September 1, 1997. The information acquired about the benefits associated with specific combinations of physical, social, and managerial settings' attributes from visitors that recreate in those settings will guide effective land allocation decisions (USFS Contract No. 53-82FT-2-33).

Another pilot study was conducted on Ruby Canyon-Black Ridge (RCBR), an area of the USDI Bureau of Land Management land in Western Colorado. The purpose was to determine if recreators who desire certain benefits participate in specific, associated recreation activities, and do they recognize specific setting characteristics in helping them achieve desired benefits. Stein and Lee conducted interviews at random times throughout the summer and fall of 1992 and spring of 1993. Of the 1,025 participants initially contacted and sent questionnaires, a total of 692 returned completed questionnaires for a response rate of 68%. Clear distinctions between the benefit types' attitudes toward activities and settings were not apparent. Therefore, it is difficult to make clear links between desired benefits, most satisfying activities, and desired Recreation Opportunities Spectrum setting classes. It was observed that most visitors looked towards undeveloped settings to receive their desired benefits. Thus, further

research needs to be conducted to establish how recreation resource management can help produce all of the different types of recreation benefits (Stein and Lee, 1993).

An on-site survey was developed by Gimblett and Kaufmann with the Forest Service to obtain the necessary data to redesign the planning process for Pine Valley Recreation Area, Utah. Recreators were interviewed at several targeted locations from May through August of 1994. Through the sampling period, ninety respondents were interviewed. This study focused that it is possible to obtain knowledge of the relationship between benefits and desires. They not only articulate the types of beneficial outcomes desired during their stay, but also expect to acquire and maintain such benefits. Also, results revealed that because of the current condition of the recreational facilities and settings, certain desirable benefits could not be obtained, or were not desired to be obtained. Hence it is not only important to understand what benefits people want, but what benefits a particular site can offer while maintaining a sustainable ecosystem (Kaufmann and Gimblett, 1994).

A few of the differences highlighted between the Recreation Opportunity Spectrum management and the Benefits Based Management theory are: 1) the outcomes that visitors experience are not only psychological (as defined in Recreation Opportunity Spectrum) but they also undergo physiological changes, both with and without awareness. 2) the Recreation Opportunity Spectrum looks at these psychological experiences only as on-site phenomena,

whereas Benefits Based Management traces benefits over time. 3) the Recreation Opportunity Spectrum considers only experiences of individuals, but Benefits Based Management considers benefits received by individuals as well as by groups of individuals (Driver and Bruns, 1993).

Benefits Based Management is in the evolutionary and developmental stages; it will continue to progress as a process for researcher's learning and exploring with managers. The applied focus in the development and management application of Benefits Based Management offers great potential for managers trying to cope with today's changing resource management issues. The ultimate beneficiaries of Benefits Based Management will be society as agencies learn to identify and manage for those opportunities that deliver the greatest benefits (Lee and Driver, 1992).

2.4 Other factors influencing the beneficial outcomes of leisure

Research suggests that people obtain unique benefits from exposure to nature and natural environments. John Muir attributed aesthetic and religious qualities to natural environment (Petulla, 1977). Frederick L. Olmsted felt nature in the urban setting brought rest and tranquillity (Olmsted, 1870, p.23, cited in Ulrich, 1979, p.17). The fundamental problem associated with the concept of benefit as improved condition is determining who decides whether a particular change is beneficial or not (Driver, Brown, and Peterson, 1991).

Often, studies for benefits of natural environments have been tested to associate the aesthetic, psychological, and cognitive dimensions of well-being with wilderness use. Shafer and Mietz (1969) found that hikers in two wilderness areas rated their aesthetic and emotional experiences the highest in importance and social experiences the lowest. Rossman and Ulehla (1977) administered questionnaires to persons with varying degrees of wilderness experience to determine what values obtained in wilderness may also be expected in other natural environments. They concluded that people see natural environments as necessary to obtain certain reward values and expect to find them only in natural environments, particularly in remote areas. The results suggest there are no substitutes for experiences in natural environments, and that a lack of such environments may result in social and psychological costs to society (Driver, Nash, Haas, 1985).

Until recently, the majority of outdoor recreation research has addressed on-site participation, using primarily sociological and psychological approaches. Relatively few studies have examined off-site behaviors such as anticipation, planning, and recollection (exceptions include, Ellis, Williams & Harwell, 1989; Hammit, 1980) or have used psychophysiological methods to investigate outdoor recreation behavior(exceptions include, Bunting, Little, Tolson, & Jessup, 1986; Little, Bunting, & Gibbons, 1986). The purpose of the study conducted by Tarrant, Manfredo, and Driver was to compare recollections of subject-selected preferred active and passive outdoor recreation experiences with recollections of a distressful exam condition using psychophysiological measures. Outdoor recreation experiences prevail well beyond initial participation through the recollection of past events (Knudson, 1984). The recollection phase involves the mental and conscious processing of information that was previously stored in memory (Marks, 1984). Recollections are probably the most extended and common type of recreation behavior, since they may arise days, weeks, months, or even years after on-site participation. Benefits, defined as improvements in condition (Driver, Brown, & Peterson, 1991), include outcomes such as enhanced mental and physical health, increased positive mood, development of self-actualization, and reduction of negative stress (Tarrant, Manfredo, and Driver, 1994).

Clawson (1963) and Clawson and Knetsch (1966) defined a recreational experience as a multiphase experience, consisting of five major phases: anticipation, travel-to, on-site, travel-

back, and recollection. It is commonly supposed that a variety of benefits result from participation in the various phases of the total recreational experience. Recreation is an experience, a state of mind stemming from participation in an activity, rather than the activity itself (Driver and Tocher, 1970). To determine the dynamics of visitor response to all five phases, a study was carried out on 51 students in a University of Michigan Field Botany class. The study was in conjunction with a field trip to Mud Lake Bog, Washtenaw County, Michigan during May, 1977. The study showed that the students were attracted to outdoor environments and the experiences in those environments as well as the pre-planning and travel-to phase to that site. Thus, the study concluded that outdoor recreation experience could be considered a package deal: all parts have a potential role, and the sum of satisfactions and dissatisfactions must be considered when evaluating benefits of recreation. The study involved only one of the many forms of recreation people engage in, as each phase of a recreation experience may vary with different forms of recreation (Hammitt, 1980).

Knopf (1983) also studied recreational needs in natural settings and concluded that social groups serve an important purpose in the determination of behavior in outdoor recreation areas. Because people attribute different values to it, functions of the natural environment vary among individuals. Although some of the primary reasons for visiting natural environments may be to relieve stress, raise one's feelings of competency, and enjoy nature's diversity, the individual reasons people seek natural settings are diverse (Knopf, 1983).

The setting seems essential in outdoor recreation research. It is almost obvious that outdoor recreation research cannot advance without an understanding of the setting of recreational engagement (Schreyer, Knopf, and Williams, 1985). The setting is the context within which recreation takes place and it can facilitate or hinder not only the activities that occur but also the quality of the recreational experience (McCool, Stankey, and Clark, 1985). A study was undertaken at four wilderness areas: Caney Creek, Arkansas; Cohutta Wilderness, Georgia; Upland Island, Texas; and Rattlesnake Wilderness, Montana. The premise of the study was that people often develop strong emotional relationships to recreation places that are not easily captured by multiattribute concepts of recreational settings. The results represented an explanatory step as much needs to be done to understand and measure the meaning of various places (Salwasser, 1990).

The significance of a 'place' approach is that it captures the connections between people and geographic areas directly rather than establishing such connections indirectly in the form of use and user characteristics. It demonstrates that places are not just the sum of interchangeable attributes, but whole entities, valued in their entirety. It recognizes that resources are not only raw materials to be inventoried and molded into a recreation opportunity, but also, and more important, places with histories, places that people care about, places that for many people embody a sense of belonging and purpose that give meaning to life (Williams, Patterson, Roggenbuck, and Watson, 1992).

No single theory and no clear consensus exists relating to people's needs, in theories of motivation, need is seen as a force within the individual to gain satisfactions and completeness. There appear to be many levels and types of need, including the important needs of self-actualization and psychological growth. 'Leisure needs', as such, may not exist. Rather, there are human needs which might find satisfaction through leisure opportunity. Two very important factors have emerged which argue against current recreation planning policies of standards of provision. First, people have diverse needs. Second, these needs change or take on greater or lesser degrees of importance according to one's stage in the life cycle. The individual chooses on the basis of certain personal and social elements current in his or her life. In terms of need, an individual is a three-dimensional person. He or she is like everybody else, requiring the basic needs of security, belonging and shelter; he or she is like some other people sharing the same wants, the same groups, the same interests. In another sense, he or she is like no other person -- a unique individual, the only one. Leisure opportunity may enable a person to become all one thinks he or she is capable of becoming (Torkidsen, 1986).

This study explores the beneficial effects of leisure congruence on well-being. Leisure congruence was defined as the degree of correspondence between an individual's personality type [using Holland's typology (1985)] and the type of leisure activities he or she selects. The study was conducted among 160 professionals (engineers, technicians, physicians and lawyers). Leisure congruence correlated positively with work satisfaction and self-esteem, and

negatively with burnout, complaint and anxiety. It is widely recognized that leisure participation has a beneficial effect on satisfaction, psychological well-being, and health (Coleman, 1993; Coleman & Iso-Ahola, 1993; Schreyer & Driver, 1989; Tinsley & Tinsley, 1986).

The tendency in recent years has moved from studying the beneficial effects of various leisure pursuits, such as tourism or mountaineering, toward identifying the forms of leisure participation that contribute more than others to well-being and health (Caldwell, Smith, & Weissinger, 1992; Ragheb, 1993). This study was based on the assumption that leisure activity choices, like vocational choices, are an expression of the individual's personality.

Central to Holland's theory was the assumption, similar to the theorized psychological aspects of leisure participation, that 'people search for environments that will allow them to exercise their skills and abilities, express their attitudes and values, and take on agreeable problems and roles (Holland, 1985, p. 4). Using Holland's typology classifies persons and their leisure activities into one of six occupational personality types [Realistic (R), Investigative (I) , Artistic (A), Social (S), Enterprising (E), or Conventional (C)]. This supported the hypothesis that people tend to select leisure activities congruent with their personality type. This study was designed to explore the generalization of the beneficial effect of congruent leisure activities to several well-being indicators: work satisfaction, self-esteem, burnout, and anxiety. The

beneficial effect of leisure congruence was manifested in a wide range of important well-being measures -- work satisfaction, self-esteem, burnout, and anxiety -- which have implications on mental health and quality of life (Melamed and Meir, 1995).

Leisure and its enjoyment might prove to be a prerequisite for individual's perceived wellness. A study was conducted through 1984, on 219 men and women employed in local firms at Tallahassee, Florida. The purpose was to test whether leisure participation and satisfaction, as well as a set of social variables, would be related to perceived wellness. Data were collected from employees of four randomly selected private firms. 486 employees received the questionnaire, of which 219 were returned. It was found that leisure participation and leisure satisfaction were positively associated with perceived wellness. Wellness is dependent on many variables, including family and friends, leisure, health, finances, work, and various other variables were not accounted for in this study (Ragheb, 1993).

Leisure activities have been linked to people's identity and personal satisfaction, making opportunities for leisure important determinants of people's perceptions of the quality of life. A person's assessment of the quality of life and leisure opportunities both depend on the individual's immediate environment and awareness of the opportunities that exist. People learn about those opportunities and develop perceptions from personal observation and experience as well as the mass media and interpersonal communication (Jeffres and Dobos, 1993).

No single approach for the provision of leisure services to the public is universally accepted. Current debate on services delivery can be divided broadly into two camps: 1) a leisure service delivery model that is based on the 'professional' knowledge of the recreator, and 2) a 'marketing' model where the marketplace dictates the type of service offered. One objective of this paper was to uncover and compare the basic assumptions and principles that guide the professional and marketing models for service delivery. The analysis showed that neither the marketing approach nor the professional approach to recreation provision are able to singularly satisfy those persons who demand high-quality public recreation services in today's pluralistic society (McLean and Johnson, 1993). As Twardzik (1991) notes, if the point of recreation is to provide high-demand programs that satisfy the recreation needs and wants of individuals, then such services could probably be provided more efficiently by the private sector.

Another aspect is that the economic quantification of the benefits of leisure is but one method of measuring the benefits that society derives from leisure. Economics provides a means of determining how many of which kinds of leisure activities are preferred by the current generation to the alternative uses of society's limited resources. There can be no economic benefits from leisure if there are no effects or changes that can be attributed to leisure. It is only when the changes affect the willingness of individuals to pay that they become economic effects.

The main motivation behind the interest in valuing programs that affect human health is the importance placed on it by Congress and the American people. For example, all regulations to protect the environment are based upon achieving certain health standards, and not, for example, preserving ecosystems for the ecosystem's sake. Outdoor recreation became a major focus of attention by environmental economists because it was, and still is, believed that the outdoors provides significant national economic benefits that are nonetheless external to the market place. Almost 90% of the American population over the age of 12 engages in some form of outdoor recreation at least once a year (US DOI 1986). In addition, the average American participates in seven different outdoor recreation activities for a total of 37 activity-days per year (US DOI 1986) (Kealy, 1991).

The "Environment-Recreation Interaction Model" (ERIM), an hypothetical model that has not yet been applied empirically. It was developed by a research team for the Recreation Policy Branch, Recreation Division, Ontario Ministry of Tourism and Recreation. This model was designed to identify required information and provide a process for analyzing the relationships among recreation, environment, and public attitudes and perceptions. These relationships are reflexive; that is, recreation affects the environment, just as the environment affects recreation. The ERIM consists of four phases: the changing context, emerging problems, environmental analysis, and policy options. The mandate of this research was to take an environmental

perspective on recreation. The environment is viewed as a filter that intervenes between recreational activities and the desired outcomes (Wilkinson, 1992).

The limited studies addressing recreation and leisure services, opportunities, and areas do suggest that a recreation dimension does play a substantive role in community life. It appears the lack of conceptual and methodological consistency has impeded the development of a clear understanding of the role recreation and leisure attributes play in determining satisfaction with community life (Allen, 1990).

CHAPTER 3

3.0 STUDY AREA

The study area is located in Southern Arizona near the city of Sierra Vista. It is situated along Route 90, thirty miles south of Interstate 10. Sierra Vista enjoys a central location for activity: it is seventy miles southeast of Tucson, seventeen miles north of the Mexican border, and is in close proximity to historic "old" towns such as Tombstone and Bisbee. With an elevation of approximately 4,600 feet the City captures great views of the Dragoon, Whetstone, and Huachuca Mountains. There exists a wide range of natural biodiversity exists in the surrounding area. The name Sierra Vista is Spanish for "Mountain View."

The town of Sierra Vista was incorporated in 1956. Before that, there were several smaller towns in its place to help support Fort Huachuca. In 1915, Sierra Vista was known as Buena, and was only a collection of a few buildings. Eventually the name was changed to Overton, and still later to Garden City. In 1927, a Post Office was established under the name of Fry, and that name remained until Sierra Vista's incorporation.

In 1957, the population of Sierra Vista was approximately 1,500. Today, the city has grown to over 37,000 people (Arizona Department of Economic Security and CACI Marketing

Systems). In less than forty years the sleepy town, which basically only supported Fort Huachuca, has grown into a booming tourist and retirement community.

Tourism appears to be one of the important reasons people are moving to Sierra Vista. It is located in a position which can draw tourists from other nearby communities lacking the facilities needed to support tourism. Ecotourism has become big business to the local economy. The surrounding area contains unique natural resources such as The Coronado National Forest (U.S. Forest Service), Ramsey Canyon, and Mile High Preserve (The Nature Conservancy). Of these unique natural resources, the primary area for this study is in the Coronado National Forest.

3.1 Study Subject Area: Coronado National Forest

The Spanish explorer Don Francisco Vasques de Coronado and his expedition entered southern Arizona from Mexico in 1540 in search of gold. But instead of the Seven Golden Cities of Cibola, which legend said existed somewhere to the north, the trail blazers found nothing but a vast country of grassy hills, cactus, lizards, and scattered, rugged mountain ranges. The twelve mountain range units of the Coronado National Forest total 1.7 million acres of public land, and offer an unusual range of vegetation and climate (United States Department of Agriculture).

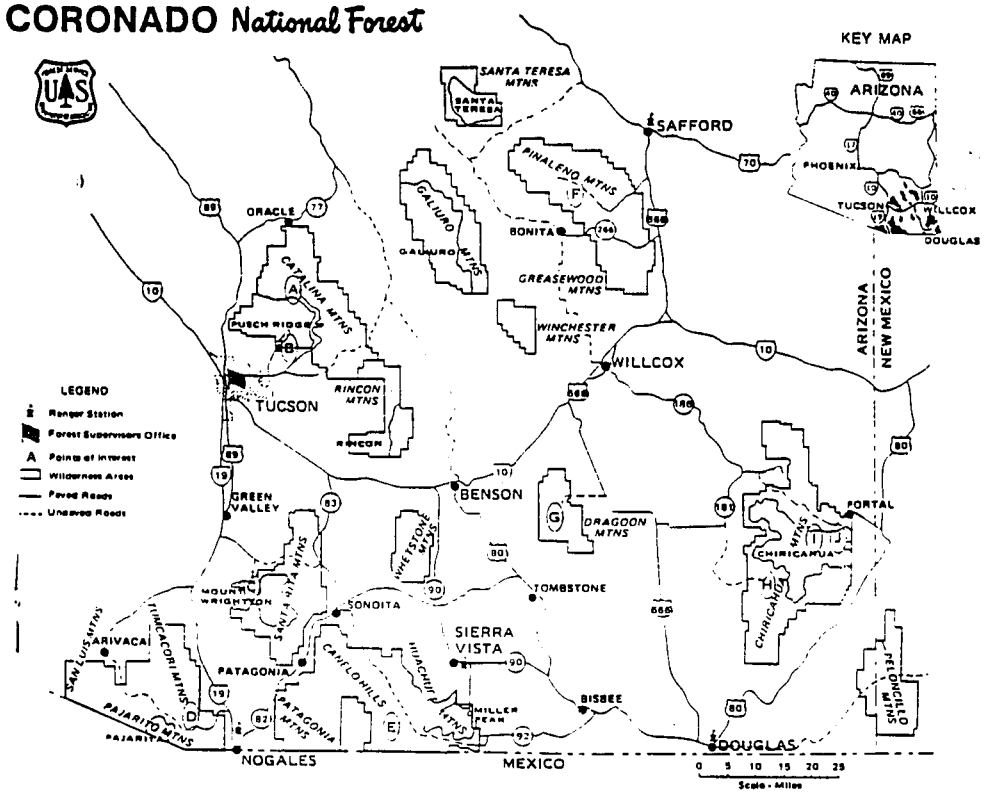

Fig. 1. Map of the Coronado National Forest.

Brown Canyon, Carr Canyon, and Miller Canyon, recreational areas of the Eastern Huachuca Mountains, Coronado National Forest, twelve miles south of Sierra Vista, Arizona, are the areas of principal focus for this study. The Brown Canyon trailhead is located slightly off the Ramsey Canyon road, and provides trails for hiking as well as mountain biking. These trails have dramatic views with an amazing variety of wildlife including over 170 species of birds (14 species of hummingbirds).

As one looks up at the Huachuca mountains from the town of Sierra Vista, he or she can see a barely visible set of switch backs climbing the slope. That is the Carr Canyon Road, which is about seven miles long, and is the only road into the upper reaches of the Huachuca Range. This narrow, winding road was built at the turn of the century to open up the Carr Reef to gold and silver mining. The mines have come and gone, but the road persists with little change. The people who travel it, however, have changed considerably as they enjoy the splendid scenery while seeking the flavor of the past. The Carr Canyon Road provides the reward of extraordinary views of Sierra Vista, the San Pedro Valley, and a number of surrounding mountain ranges as it winds its way up the mountain. Along the road, a forest recreation area stands in an area once occupied by the mining outpost of Reef. From Reef, there are trails which connect to an extensive network of trails leading throughout the Huachuca Range and to two scenic campgrounds.

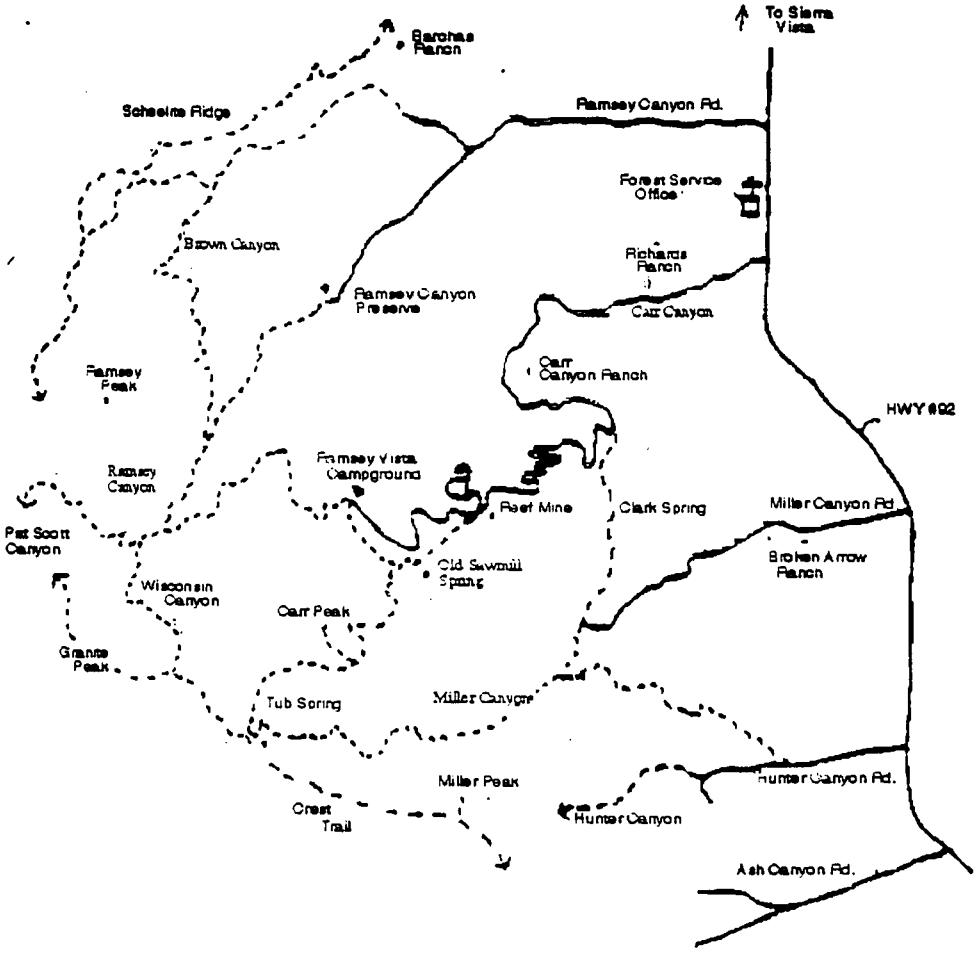

Fig. 2. Sketch map of the Huachuca Mountains showing the various survey sites.

Miller Canyon road leads to a trailhead that is the major access point for the Miller Peak trail. The trail climbs from 5,200 feet to as high as 9,466 feet at the apex of Miller Peak, and offers some of the most dramatic views in the Southwest. The slopes crisscrossed by this trail include habitats that range from desert grassland to mixed conifer and aspen forest. There are also several other minor trails from the trailhead which, though short have breathtaking views.

CHAPTER 4

4.0 METHODOLOGY

The principal focus areas for the case study were Brown Canyon, Carr Canyon, and Miller Canyon, recreational areas of the Eastern Huachuca Mountains, Coronado National Forest. The methods employed in this research consisted of literature review, site visits, and questionnaires.

The intention of the method selected was to determine the various beneficial outcomes desired from the three recreational settings and if those benefits were achieved. Since one goal was to determine the beneficial outcomes, a survey was taken of the various experiences and benefits desired and attained in those areas. The survey was designed keeping in consideration the specific aspects of the research settings and various experiences and benefits the author perceived would be acquired. Additionally, a description of the activities and settings was required to understand the beneficial outcomes. The survey allowed the respondents to indicate their preferred activities, as well as their desire for other opportunities not yet offered. (See Appendix A)

This research commenced with an on-site visitor's questionnaire that helped bring solutions to the various research questions. Altogether, 57 people were personally interviewed. There were six categories of general questions to measure visitor's needs

during the period they spent in the various recreational areas. The final section of the questionnaire primarily dealt with the visitor's experiences and beneficial outcomes.

Six site visits were conducted to determine the intensity of use as well as diversity. These visits consisted of eight hours per day on the 18th, 24th, and 25th of November, 1995 and 2nd, 3rd, 8th, and 9th of December, 1995. Data collected from the questionnaire will aid in developing guidelines for planning and design decisions within the forest management plan to balance human experiences with available natural resources.

In order to classify the problems, existing primary and secondary sources such as University and USDA Forest Service documents were reviewed. Some of the sources were "General Technical Reports of the Rocky Mountain Forest Range Experiment Station, General Technical reports of the Pacific Northwest Forest Experiment Station, and the Forestry Handbook".

CHAPTER 5

5.0 SURVEY RESULTS

5.1 Contents of the Survey

The intent of the interview survey was to determine the beneficial outcomes of recreation. Each respondent had the opportunity to express views about the availability of opportunities for recreation, the suitability of various settings for them, and perceived benefits.

In preparing for this interview the surveys referred to are: Red Rock area visitor study by School of Forestry, Northern Arizona University; Broken Arrow recreation study by School of Renewable Natural Resources, University of Arizona; and Kaibab/Grand Canyon partner survey by School of Forestry, Northern University of Arizona. From the above surveys the most notable and outstanding experiences and benefits were selected and they were further correlated with the research sites.

A copy of the survey document is included as Appendix A. The first question inquired about the reason for their visit. The question was open-ended, thus not restricting respondents to specific responses. Next, a series of items asked basic demographic questions of age and sex, and inquired about the type of group the respondents were traveling among.

Following the demographics and personal items, the next question was to determine the amount of time spent and perceived suitability of the place for the respondent's participation in eight selected activities. Input for other activities was also permitted. The time spent was subdivided into four categories: less than an hour, more than an hour, a day, and more than a day. Suitability was rated 1 (unsuitable) to 5 (most suitable).

The next question inquired as to the importance of a certain type of recreation setting was accorded by the respondent and if those types of settings were available in these study areas. They were rated between 1 (unavailable) to 5 (available).

The last two questions inquired about the desirability of acquiring certain general selected experiences and their benefits from the activities the respondents had participated in and if they were able to attain those experiences and benefits. Rating were from 1 (undesirable) to 5 (desirable); and 1 (unattainable) to 5 (attainable). There were four experiences and four related benefits selected by the author that seemed to be most suitable for these recreational areas.

Data were gathered on age, location, activities, gender, and associative group. Tables 1 through 7 displays the relations among these variables.

5.2 General Demographics

Locations/Age	0-29	30-59	60-Over	Total	Percent
Miller Canyon (18)	3	15	0	18	32%
Carr Canyon (24)	5	19	0	24	42%
Brown Canyon (15)	6	8	1	15	26%
Total	14	42	1	57	100%
Percent	25%	74%	2%	100%	

Table 1. Selection of recreation areas by age group. Most of the respondents were in the 30-59 age group. Just 2% of respondents were 60 and over.

Activities/Age	0-29	30-59	60 & over	Total	Percent
Hiking, Walking Outdoors & Horseback Riding	3	15	1	19	27%
See fall color, Sightseeing & Visiting from out of town	3	10	0	13	19%
Personal Quality Time away from City life	0	6	0	6	9%
Picnicking, Family Time & Enjoying nature	3	8	0	11	16%
Prospecting, Hunting & Archaeological Hunt	1	4	1	6	9%
Camping	0	3	0	3	4%
Hang gliding	4	2	0	6	9%
Biking	3	3	0	6	9%
Total	17	51	2	70	100%
Percent	24%	73%	3%	100%	

Table 2. Relationship between age group and activity preference selected. The total reflects that some of the fifty-seven interviewees participated in more than one activity.

Locations/Gender	Male	Female	Total	Percent
Miller (18)	8	10	18	32%
Carr (24)	13	11	24	42%
Brown (15)	9	6	15	26%
Total	30	27	57	100%
Percent	53%	47%	100%	

Table 3. Relationship between location and gender. The percentages of male and female respondents are almost equal.

Activities/Gender	Male (34)	Female (23)	Total	Percent
Hiking, Walking Outdoors & Horseback Riding	13	6	19	27%
See fall color, Sightseeing & Visiting from out of town	3	10	13	19%
Personal Quality Time away from City life	3	3	6	9%
Picnicking, Family Time & Enjoying nature	10	1	11	16%
Prospecting, Hunting & Archaeological Hunt	5	1	6	9%
Camping	2	1	3	4%
Hang gliding	3	3	6	9%
Biking	3	3	6	9%
Total	42	28	70	100%
Percent	60%	40%	100%	

Table 4. Relationship between gender and activity preference. The activities do not add to fifty-seven because some interviewees participated in more than one activity.

5.3 Outdoor Recreation Questions

Activities/Group	Alone (6)	Couple (4)	Family (19)	Extended Family(2)	Friends (27)	Total	Percent
Hiking, Walking Outdoors & Horseback Riding	2	3	5	0	9	19	27%
See fall color, Sightseeing & Visiting from out of town	0	0	4	1	8	13	19%
Personal Quality Time away from City life	3	0	0	0	3	6	9%
Picnicking, Family Time & Enjoying nature	0	0	7	1	3	11	16%
Prospecting, Hunting & Archaeological Hunt	1	1	3	0	1	6	9%
Camping	0	0	0	2	1	3	4%
Hang gliding	2	0	0	0	4	6	9%
Biking	0	0	2	0	4	6	9%
Total	8	4	21	4	33	70	100%
Percent	11%	6%	30%	6%	47%	100%	

Table 5. Relationship between associative groups and activities, all sites.

Groups/Locations	Miller	Carr	Brown	Total	Percent
Alone	1	4	1	6	10%
Couple	1	1	2	4	7%
Family	7	10	2	19	33%
Extended Family *	2	0	0	2	3%
Friends *	8	9	10	27	47%
Total	19	24	15	58	100%
Percent	33%	41%	26%	100%	

Table 6. Relationship between associative group and recreational area visited.

* One group consisted of both friends and extended family.

Activities/Locations	Miller	Carr	Brown	Total	Percent
Hiking, Walking Outdoors & Horseback Riding	6	6	7	19	27%
See fall color, Sightseeing & Visiting from out of town	7	4	2	13	19%
Personal Quality Time away from City life	4	2	0	6	9%
Picnicking, Family Time & Enjoying nature	3	5	3	11	16%
Prospecting, Hunting & Archaeological Hunt	3	2	1	6	9%
Camping	0	3	0	3	4%
Hang gliding	0	6	0	6	9%
Biking	1	1	4	6	9%
Total	24	29	17	70	100%
Percent	34%	41%	24%	100%	

Table 7. Activities sought in the three recreational areas.

Tables 8 through 13 relate to the following experiences and benefits to other types of information gathered in the survey:

Experience A: learn more about nature

Benefit A: increase your understanding and awareness of the natural environment.

Experience B: get away from the usual demands of life.

Benefit B: reduce feelings of tension and stress.

Experience C: being in the wilderness area and experience a sense of adventure.

Benefit C: improve your physical fitness.

Experience D: spend time with family and/or friends.

Benefit D: bring family/friends together.

Desired Experiences/Groups	Alone	Couple	Family	Extended Family	Friends	Total	Percent
Experience A1	0	1	1	0	0	2	1%
Experience A2	1	0	1	0	0	2	1%
Experience A3	1	0	2	1	6	10	4%
Experience A4	2	2	7	0	9	20	9%
Experience A5	2	1	7	1	12	23	10%
Experience B1	0	0	0	0	0	0	0%
Experience B2	0	0	0	0	0	0	0%
Experience B3	0	0	1	0	0	1	0%
Experience B4	2	1	3	0	3	9	4%
Experience B5	4	3	14	2	24	47	21%
Experience C1	0	0	1	0	0	1	0%
Experience C2	0	0	0	0	0	0	0%
Experience C3	0	0	4	1	2	7	3%
Experience C4	4	2	7	1	5	19	8%
Experience C5	2	2	6	0	20	30	13%
Experience D1	0	0	0	0	0	0	0%
Experience D2	0	0	0	0	0	0	0%
Experience D3	1	0	0	0	2	3	1%
Experience D4	4	3	3	0	5	15	7%
Experience D5	1	1	15	2	20	39	17%
Total						228	100%

Table 8. Relationship between associative group and experiences desired. A1 to A5 represents a range of desirability from A1 (undesirable) to A5 (desirable), as do B, C, and D.

Desired Benefits/Groups	Alone	Couple	Family	Extended Family	Friends	Total	Percent
Benefit A1	0	0	0	0	0	0	0%
Benefit A2	0	0	0	0	0	0	0%
Benefit A3	2	0	3	1	2	8	3%
Benefit A4	2	2	5	1	8	18	8%
Benefit A5	2	2	11	0	17	32	14%
Benefit. B1	0	0	0	0	0	0	0%
Benefit B2	0	0	0	0	0	0	0%
Benefit B3	1	1	1	1	2	6	3%
Benefit B4	3	3	5	0	3	14	6%
Benefit B5	2	2	13	1	22	40	17%
Benefit C1	0	0	0	0	0	0	0%
Benefit C2	0	0	1	0	0	1	0%
Benefit C3	1	0	3	1	0	5	2%
Benefit C4	1	3	5	1	6	16	7%
Benefit C5	4	1	10	0	21	36	15%
Benefit D1	0	0	0	0	2	2	1%
Benefit D2	0	0	0	0	1	1	0%
Benefit D3	2	0	0	0	2	4	2%
Benefit D4	4	2	4	0	2	12	5%
Benefit D5	0	2	15	2	20	39	17%
Total						234	100%

Table 9. Relationship between associative group and benefits desired. A1 to A5 represents a range of desirability from A1 (undesirable) to A5 (desirable), as do B, C, and D.

Desired Experiences/Gender	Male	Female	Total	Percent
Experience A1	1	1	2	1%
Experience A2	2	0	2	1%
Experience A3	4	5	9	4%
Experience A4	11	8	19	9%
Experience A5	12	12	24	11%
Experience B1	0	0	0	0%
Experience B2	0	0	0	0%
Experience B3	1	0	1	0%
Experience B4	6	2	8	4%
Experience B5	23	24	47	21%
Experience C1	1	0	1	0%
Experience C2	0	0	0	0%
Experience C3	4	2	6	3%
Experience C4	11	7	18	8%
Experience C5	14	17	31	14%
Experience D1	0	0	0	0%
Experience D2	0	0	0	0%
Experience D3	2	1	3	1%
Experience D4	8	7	15	7%
Experience D5	19	18	37	17%
Total			223	100%

Table 10. Relationship between gender and experiences desired. A1 to A5 represents a range of desirability from A1 (undesirable) to A5 (desirable), as do B, C, and D.

Desired Benefits/Gender	Male	Female	Total	Percent
Benefit A1	0	0	0	0%
Benefit A2	0	0	0	0%
Benefit A3	4	4	8	4%
Benefit A4	13	5	18	8%
Benefit A5	13	18	31	14%
Benefit B1	0	0	0	0%
Benefit B2	0	0	0	0%
Benefit B3	3	2	5	2%
Benefit B4	6	8	14	6%
Benefit B5	20	17	37	16%
Benefit C1	0	0	0	0%
Benefit C2	1	0	1	0%
Benefit C3	4	1	5	2%
Benefit C4	9	7	16	7%
Benefit C5	25	10	35	15%
Benefit D1	1	1	2	1%
Benefit D2	1	0	1	0%
Benefit D3	4	1	5	2%
Benefit D4	7	6	13	6%
Benefit D5	26	10	36	16%
Total			227	100%

Table 11. Relationship between gender and benefits desired. A1 to A5 represents a range of desirability from A1 (undesirable) to A5 (desirable), as do B, C, and D.

Desired Experiences/Age	0-29	30-59	60-over	Total	Percent
Experience A1	0	2	0	2	1%
Experience A2	0	2	0	2	1%
Experience A3	4	6	0	10	4%
ExperienceA4	5	14	1	20	9%
Experience A5	5	19	0	24	10%
Experience B1	0	0	0	0	0%
Experience B2	0	0	0	0	0%
Experience B3	0	1	0	1	0%
Experience B4	2	7	0	9	4%
Experience B5	12	35	1	48	21%
Experience C1	0	1	0	1	0%
Experience C2	0	0	0	0	0%
Experience C3	2	5	0	7	3%
Experience C4	4	14	1	19	8%
Experience C5	8	23	0	31	13%
Experience D1	0	0	0	0	0%
Experience D2	0	0	0	0	0%
Experience D3	1	2	0	3	1%
Experience D4	3	11	1	15	6%
Experience D5	10	30	0	40	17%
Total				232	100%

Table 12. Relationship between age group and experiences desired. A1 to A5 represents a range of desirability from A1 (undesirable) to A5 (desirable), as do B, C, and D.

Desired Benefits/Age	0-29	30-59	60-over	Total	Percent
Benefit A1	0	0	0	0	0%
Benefit A2	0	0	0	0	0%
Benefit A3	1	7	0	8	4%
Benefit A4	10	6	0	16	7%
Benefit A5	4	21	1	26	12%
Benefit B1	0	0	0	0	0%
Benefit B2	0	0	0	0	0%
Benefit B3	2	2	0	4	2%
Benefit B4	1	11	1	13	6%
Benefit B5	11	27	0	38	18%
Benefit C1	0	0	0	0	0%
Benefit C2	0	1	0	1	0%
Benefit C3	0	5	0	5	2%
Benefit C4	6	9	1	16	7%
Benefit C5	8	25	0	33	15%
Benefit D1	0	2	0	2	1%
Benefit D2	1	0	0	1	0%
Benefit D3	0	4	1	5	2%
Benefit D4	3	10	0	13	6%
Benefit D5	10	24	0	34	16%
Total				215	100%

Table 13. Relationship between age group and benefits desired. A1 to A5 represents a range of desirability from A1 (undesirable) to A5 (desirable), as do B, C, and D.

Figures 3 through 5 present average perceived suitability and the amount of time spent by the respondents for the activities sought in the three recreational areas.

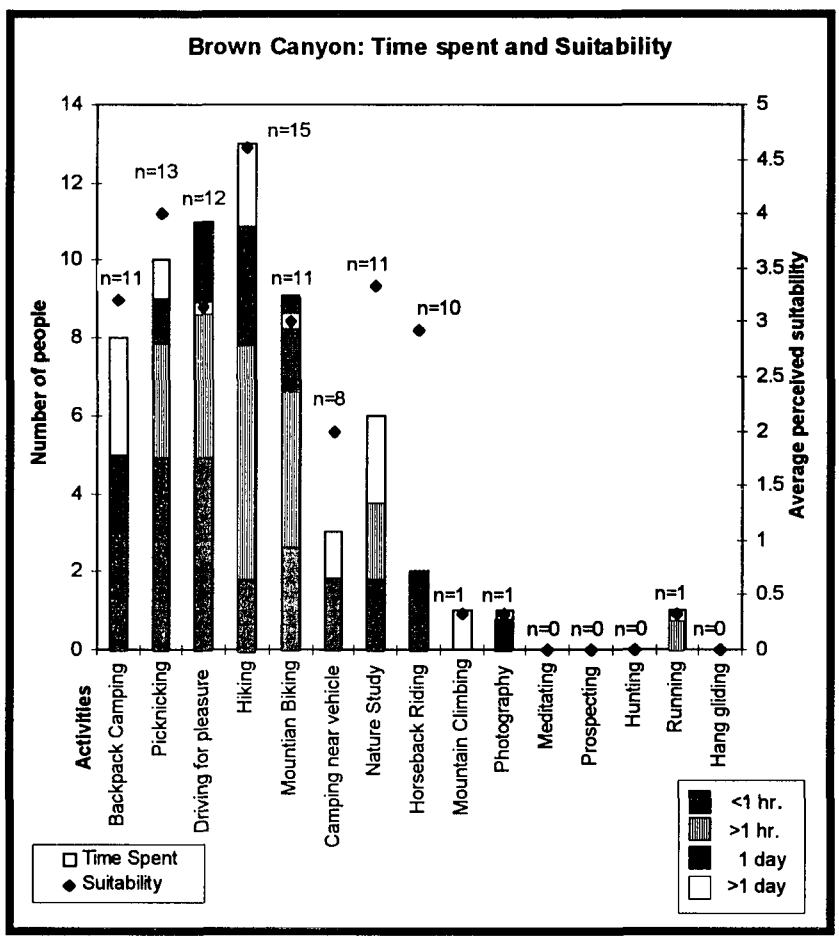

Fig. 3. Relationship between time spent and perceived suitability at Brown Canyon.

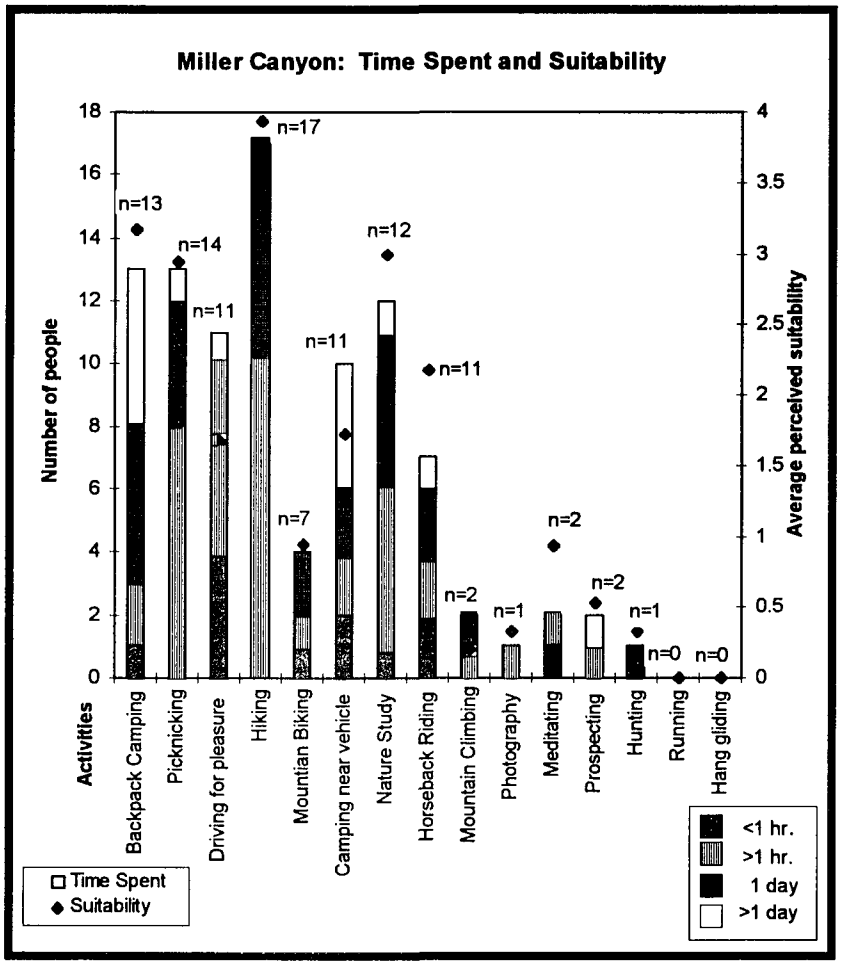

Fig. 4. Relationship between time spent and perceived suitability at Miller Canyon.

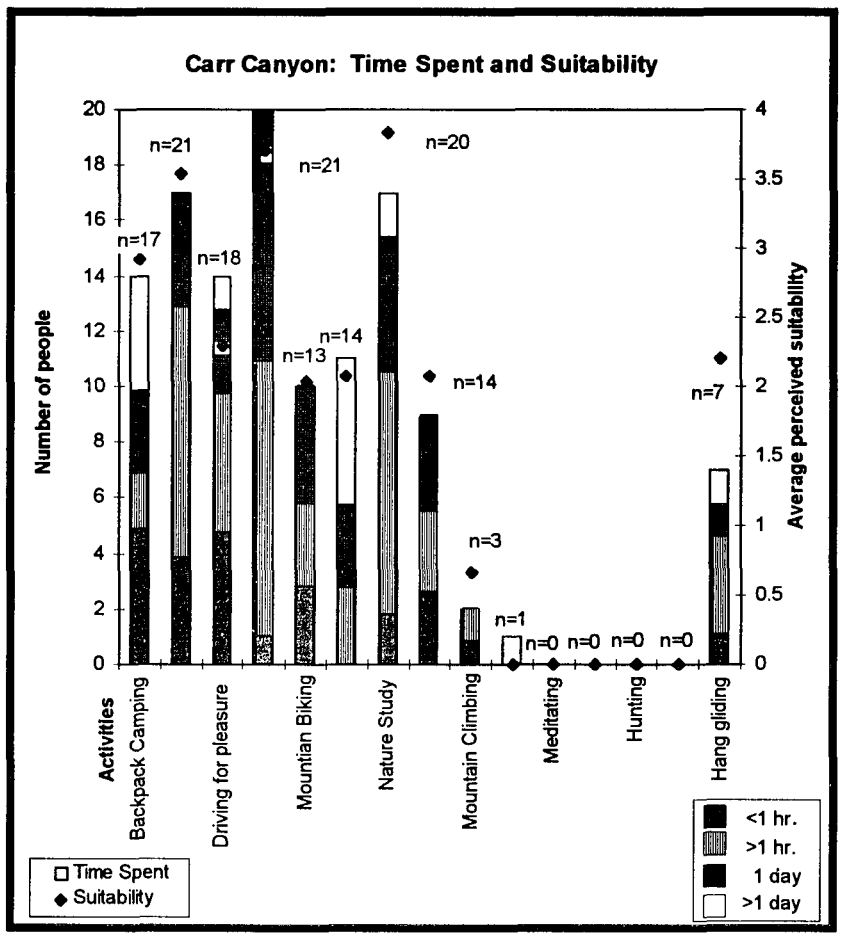

Fig. 5. Relationship between time spent and perceived suitability at Carr Canyon.

Figures 6 through 8 represent the relative preference for types of Forest Service settings and availability in the three recreational areas.

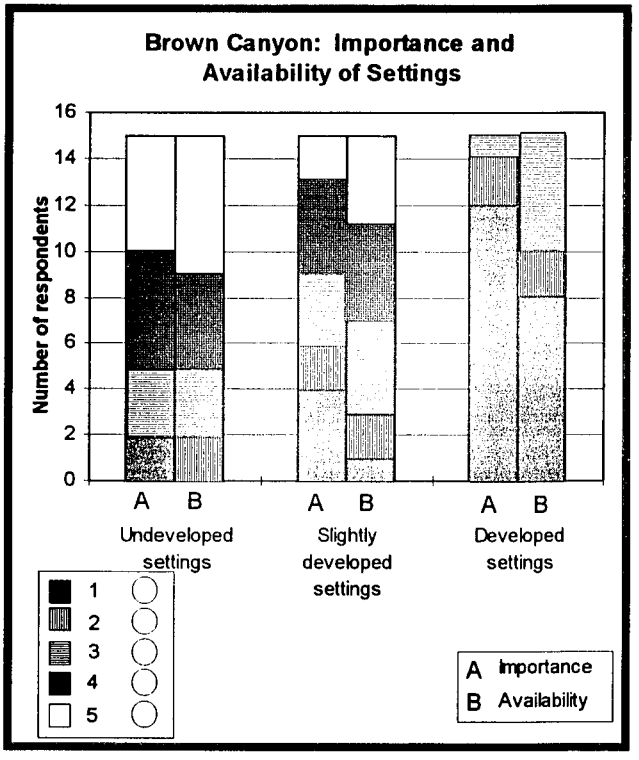

Fig. 6. Relative preference for types of Forest Service settings and availability at Brown Canyon.

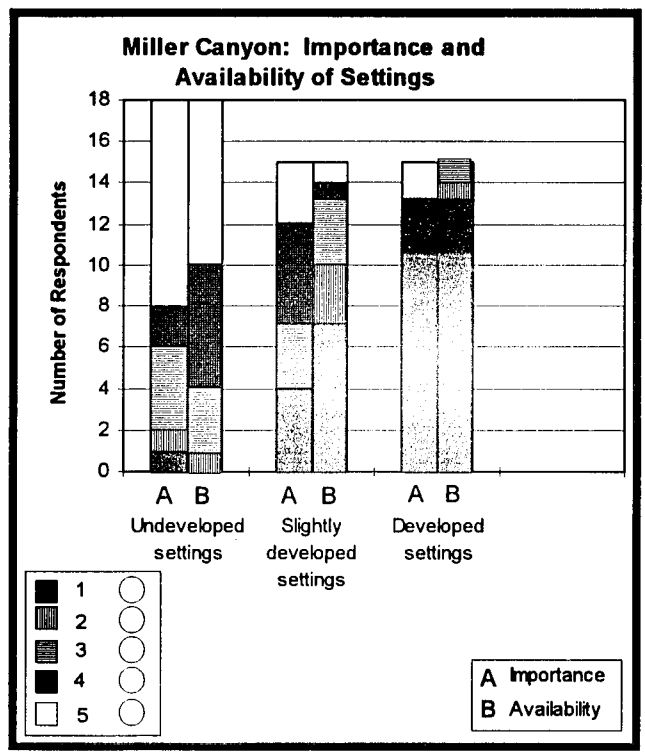

Fig. 7. Relative preference for types of Forest Service settings and availability at Miller Canyon.

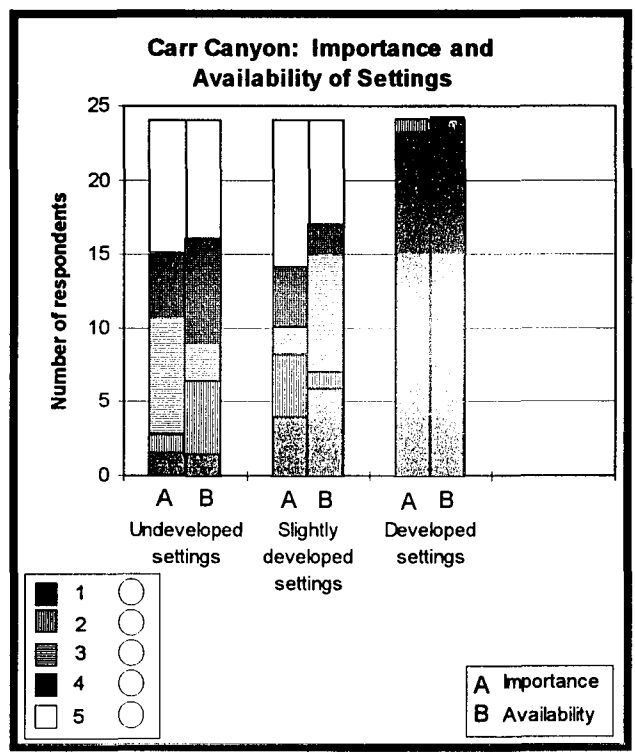

Fig. 8. Relative preference for types of Forest Service settings and availability at Carr Canyon.

CHAPTER 6

6.0 RELATIONSHIPS, DISCUSSION, AND LIMITATIONS

A total of 57 respondents was surveyed in Brown Canyon (15 respondents), Miller Canyon (18 respondents), and Carr Canyon (24 respondents). This research primarily assessed four beneficial outcomes from four experiences that the recreators had while they participated in various activities. The following research questions were answered from the survey results:

1. Is there a relationship between the desirability of experience and the desirability of benefits? Which benefits are most desirable?

	Exp. A	Exp. B	Exp. C	Exp. D
Ben. A	0.38	0.08	0.16	0.08
Ben. B	-0.05	0.21	0.16	0.12
Ben. C	0.37	0.46	0.45	0.54
Ben. D	-0.04	0.15	-0.03	0.14

Table 14. Pearson's Product-Moment Correlation Coefficients among four experiences and four benefits in all three recreation settings. The author assumed that experience A would have benefit A as an outcome, and correspondingly for experiences B, C, and D.

There was a significantly positive correlation between experience A and benefit A, having a probability error value (p value) of <0.01 but >0.001 (Young, 1962). The recreators experience of learning more about nature led to the benefit of increased understanding and awareness of the natural environment. Similarly, experience C and benefit C had a significantly positive correlation with a p value of <0.001 resulting in a benefit of improved physical fitness while experiencing the sense of adventure and being in the wilderness. Experience B and benefit B had a low correlation with a p value >0.10 showing a uncertain link between the experience of getting away from the usual demands of life and the beneficial outcome of reduced feelings of stress and tension. However, the lowest correlation was with experience D and benefit D, suggesting in a low relationship between the benefit of bringing friends and/or family together and experiencing quality time with friends and/or family.

The benefit (C) of improving one's physical fitness was highly correlated with all four experiences having a p value lying between < 0.01 and >0.001, suggesting physical fitness as a

main benefit associated with all four chosen experiences. This indicated that the activities participated in by the recreators in order to acquire the various experiences correlate with the beneficial outcome of physical fitness. Most of the activities participated in were more active than passive.

Tables 15 through 17 shows correlation coefficients among benefits and experiences for each of the three recreational areas.

Brown	Exp. A	Exp. B	Exp. C	Exp. D
Ben. A	0.53	0.13	-0.06	0.18
Ben. B	0	0	0.76	0.46
Ben. C	-0.05	0.08	0.46	0.59
Ben. D	-0.21	0.03	-0.08	0.24

Table 15. Pearson's Product-Moment Correlation Coefficients among four experiences and four benefits at Brown Canyon. These suggest similar relations as in table 14.

Brown Canyon seems to have a significantly positive correlation was with experience C and benefit B suggesting that a relationship between the experience of being in the wilderness area and experiencing a sense of adventure seems to have a soothing effect on the recreators reducing ones feelings of tension and stress.

Miller	Exp. A	Exp. B	Exp. C	Exp. D
Ben. A	0.15	-0.05	0.33	-0.05
Ben. B	-0.13	0.46	0.08	0.14
Ben. C	0.20	0.46	0.53	0.23
Ben. D	0.056	0.28	-0.14	0.44

Table 16. Pearson's Product-Moment Correlation Coefficients among four experiences and four benefits at Miller Canyon.

In Miller Canyon along with the similar suggestion from table 14, other evident correlation is between experience B and benefit B having a p value of <0.05, and between experience D and benefit D having a p value of 0.05. This justifies the assumption made by the author that experience A would have benefit A as an outcome, and correspondingly for experiences B, C, and D.

Carr	Exp. A	Exp. B	Exp. C	Exp. D
Ben. A	0.51	0.12	0.12	0.09
Ben. B	-0.05	0.16	0.16	-0.05
Ben. C	0.56	0.60	0.60	0.69
Ben. D	-0.05	0.18	0.18	0.05

Table 17. Pearson's Product-Moment Correlation Coefficients among four experiences and four benefits at Carr Canyon. These suggest similar relations as in table 14.

The most significant benefit documented in this study was to improve one's physical fitness. It was strongly related to each of the four experiences. Another substantial benefit was to increase understanding and awareness of the natural environment which was acquired from the experience of learning more about nature. This shows that there is significant relationship

between experience and benefit but the sometimes these beneficial outcomes are also acquired from other experiences, settings, activities, and the type of group one are with.

2. Is there congruence between what people said they sought and their actual activity? If so, how much use is there of each site for each activity listed? How suitable is each site perceived to be by users for each activity listed?

Yes, 100%. They could identify the recreational activities they were seeking. From the charts in figures 3, 4, and 5, the time spent and suitability for all three recreational settings shows that the recreation settings are suitable for the activities in which visitors wanted to participate. There seems to be a high suitability for hiking and picnicking in Brown Canyon. The highest suitability for Miller Canyon seems to be in hiking, nature study, picnicking, and backpack camping. Carr Canyon seems to have a high suitability for hiking, nature study, picnicking, and hang gliding. The most suitable activity in all three settings seems to have been hiking and picnicking.

3. In which settings do they prefer specific recreational activities? What is the availability of such settings in these USFS areas?

From figures 6, 7, and 8, the highest importance seems to be accorded to an undeveloped to slightly developed setting for these three study areas. The figure shows that such settings seem to be available in these locations.

All the research questions were answered by means of surveys obtained from visitors to these three recreational areas. Most of the respondents were interested, and responded favorably once they discovered the topic of the survey. Most of the respondents verbally indicated their love for outdoor activities and the various experiences they acquired from these recreational areas. The ultimate goal of the survey was to gain insight into the experiences and benefits recreators achieved from various activities in these recreational areas.

Nowadays, Brown, Carr, and Miller Canyons are becoming more accessible because of the growth of the City of Sierra Vista. This study shows a few of the types of experiences and beneficial outcomes that can be achieved from participation in various activities in these canyons. However, these results are just a nominal part of the total body of research in the field of benefit-driven recreation.

These canyons seem to provide the undeveloped to slightly developed settings desired by the visitors, as well as having appropriate locations for participation in various activities, each of which can provide different experiences leading to varied beneficial outcomes. But the awareness of these canyons seems limited to very few visitors. The local community might be

made more aware of various types of activities in which they can participate in these settings, and the resulting beneficial outcomes they can acquire from those experiences.

The limiting factor in this survey was that respondents were those who visited the recreational areas for specific recreational activities. Other recreators, who may prefer some other type of settings or activities, may not visit these recreational areas.

CHAPTER 7

7.0 CONCLUSION, RECOMMENDATION, AND FUTURE RESEARCH

7.1 Conclusion and Recommendations

The Benefit Based Management theory consists of a variety of paradigms. Driver and Bruns (1993) emphasized that Benefit Based Management should provide desirable and satisfying activities, settings, and experiences for individual users but also to provide and promote use which yields both on-site and off-site benefits to individual users. Driver (1990) suggested that Benefit Based Management should enhance leisure choices by improving understanding of the consequences of alternative leisure behaviors. In that work, he also suggested it should target to the provision of opportunities for specified types of benefits.

The second paradigm consists of the presumed relations between experience and benefit. This study was an attempt to look at this relationship. The survey has been able to investigate only a few of the possible beneficial outcomes. From those outcomes the author feels that the experiences and benefits have a significant relation, but there are other factors such as settings, activities, and type of group one is with that can also aid to the beneficial outcomes.

From a managerial point of view, visitors generally achieve the experience which they are looking for in their visit to these locations. Thus, management seems to be providing adequate facilities for the visitors. However, the survey did not look at persons who do not visit these locations. Perhaps an off site survey needs to be conducted to obtain the views of those individuals who might like to visit these locations but do not or have not.

7.2 Future Research

The field of benefit-driven recreation is new and very limited. There is a great need for studies which will assist in understanding the varied benefits achieved from visitors' experiences as related to their participation in recreation activities. Are the benefits only temporary, or do they last for a period of time? Are these benefits a product of the participation in these activities, or of the whole process, that is, traveling, type of group, location, etc.? By understanding the primary impetus for the benefits, more research may be placed on those aspects with potential to increase beneficial outcomes.

What is not clear at the present time is the potential for relating benefits to the planning and design of recreation facilities. To what extent do planning and design options exist among the various experiences which recreators seek? Are the experiences uniquely linked to certain designed and planned settings or activities?

As we learn more about beneficial outcomes, those who follow may be better able to acquire beneficial outcomes from their varied experiences. Thus, this is an issue that will become more important in the future for the field of recreation.

APPENDIX A

On-site Assessment Survey

No. _____ Date _____ Location _____

Reason for your visit _____

_____

_____

What is your age? _____ Gender (circle): M F

What type of group are you traveling with?

1. Alone
2. A couple
3. Family
4. Extended Family
5. Friends
6. Organized groups (Tour group, Boy Scouts, etc.)

Name (Please Print): _____

Current Mailing Address: _____

City: _____ **State:** _____ **Zip:** _____

1 2 3 4 5

What types of outdoor recreational activities do you intend on doing here and approximately how long will you spend doing these activities. Also rate how suitable this place is to perform the activities you engaged in:

Activities:	**Time spent**				**Suitability**				
	<1hr.	>1 hr.	1 day	>1 day					
Backpack camping	1	2	3	4	1	2	3	4	5
Picnicking	1	2	3	4	1	2	3	4	5
Driving for pleasure	1	2	3	4	1	2	3	4	5
Hiking (day use)	1	2	3	4	1	2	3	4	5
Mountain biking	1	2	3	4	1	2	3	4	5
Camping near vehicle	1	2	3	4	1	2	3	4	5
Nature Study	1	2	3	4	1	2	3	4	5
Horseback riding	1	2	3	4	1	2	3	4	5
Others:	1	2	3	4	1	2	3	4	5

RECREATION SETTINGS

Type Of Area	**Importance**					**Availability**				
A totally undeveloped area with no facilities	1	2	3	4	5	1	2	3	4	5
A slightly developed recreation area featuring campgrounds, scenic rest stops.	1	2	3	4	5	1	2	3	4	5
A highly developed recreation area featuring RV hook-ups, paved road systems, and visitor centers.	1	2	3	4	5	1	2	3	4	5

1 2 3 4 5

EXPERIENCES AND BENEFITS

From the activity(ies) identified above we would like to know about the experiences and benefits you had while you participated in them:

EXPERIENCES	**DESIRABILITY**					**ABLE TO ATTAIN**				
Learn more about nature.	1	2	3	4	5	1	2	3	4	5
Get away from the usual demands of life.	1	2	3	4	5	1	2	3	4	5
Being in the wilderness area and experience a sense of adventure.	1	2	3	4	5	1	2	3	4	5
Spend time with family and/or friends.	1	2	3	4	5	1	2	3	4	5
BENEFITS	**DESIRABILITY**					**ABLE TO ATTAIN**				
Increase your understanding and awareness of the natural environment.	1	2	3	4	5	1	2	3	4	5
Reduce feelings of tension and stress.	1	2	3	4	5	1	2	3	4	5
Improve your physical fitness.	1	2	3	4	5	1	2	3	4	5
Bring family/friends together.	1	2	3	4	5	1	2	3	4	5

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