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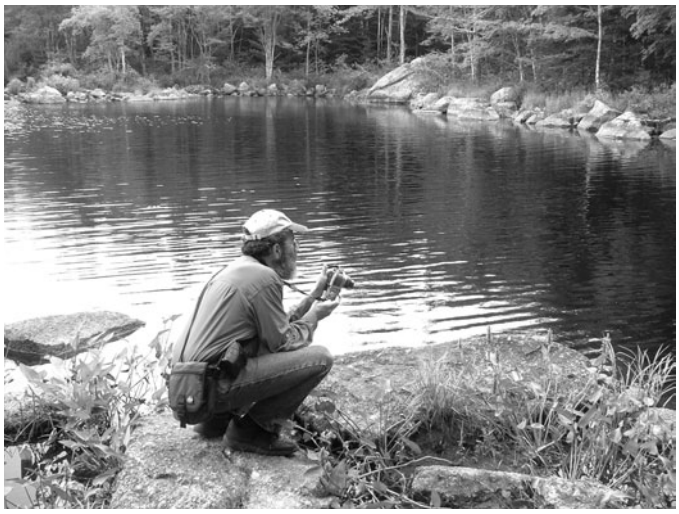

## Northeastern Recreation Research Symposium Policy Statement

The Northeastern Recreation Research Symposium seeks to foster quality information exchange between recreation, tourism, and resource managers and researchers throughout the Northeast. The forum provides opportunities for recreation and tourism research managers from different agencies, state, and government levels, as well as those in the private sector to discuss current issues, problems, and research applications in the field. Students and all those interested in continuing education in recreation and tourism management are particularly welcome.

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# Proceedings of the 2004 Northeastern Recreation Research Symposium

**March 31 – April 2, 2004**

On Lake George in Bolton Landing, New York


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# Contents


## KEYNOTE ADDRESS

**A Restorative Definition for Outdoor Recreation ..... 1**
*William E. Hammitt*

## FOUNDERS FORUM

**Social Change and Post Utilitarian Resource Management: Adaptation or Transformation? ..... 6**
*Walter Kuentzel*

## PLACE ATTACHMENT

**Spatial Variation in Level of Place Attachment ..... 14**
*Gerard Kyle, Alan Graefe, Robert Manning*

**Creating Defensible Space in the Wildland-urban Interface: The Role of Basic Beliefs about Forest and Wildfire Management ..... 20**
*Alan D. Bright, Randall T. Burtz*

**Stress and Coping in the High Peaks Wilderness: An Exploratory Assessment of Visitor Experiences ..... 29**
*John G. Peden, Rudolph M. Schuster*

**Campers Across the Recreation Opportunity Spectrum: A Comparative Examination..... 39**
*Drew A. Cavin, Jenny K. Cavin, Gerard Kyle, James Absher*

**Florida Resident's Familiarity with Korea: Do More Familiar Residents Have More Positive Images?..... 46**
*Jung Eun Kim, Lori Pennington-Grey*

**The Way the World Should Be: Order, Cleanness, and Serenity in the Experience of Special Places ..... 52**
*Herbert W. Schroeder*

**"They All Cared about the Forest": Elementary School Children's Experiences of the Loss of a Wooded Play Space at a Private School in Upstate New York ..... 57**
*Clifford Blizard, Rudolph Schuster, Jr.*

## DIVERSE POPULATIONS

**An Exploration of the Relationship between Puerto Rican Values and the Perception of Benefits and Park Use ..... 66**
*Edwin Gómez*

**Constraints to Recreational Fishing: Concepts and Questions to Understand Underrepresented Angling Groups ..... 70**
*Laura E. Anderson, David K. Loomis, Ronald J. Salz*

**Race, Ethnicity, and Information Use Related to Natural Resource Recreation ..... 75**
*Sungsoo Kim, Lorraine Nicholas, Gloria Sanders, Myron Floyd, Injae Lee*

**American Indian Gathering and Recreation Uses of National Forests ..... 81**
*Leo McAvoy, Paul Shirilla, Joseph Flood*

## TOURISM ECONOMICS

**How to Handle High Proportion of Zero Observations in the Cross-section Studies: Application to Nonresidential Wildlife Watching Expenditures ..... 90**
*Yeong Nain Chi, Guang-Hwa Andy Chang*

**Economic Impact of the Pictured Rocks National Lakeshore and the Estimation Errors .. 98**
*Ya-Yen Sun, Daniel Stynes*

**Variations in Economic Multipliers of the Tourism Sector in New Hampshire .....102**
*Joshua Wiersma, Doug Morris, Robert Robertson*

**Challenges of Using Estimations of Economic Impacts for Cultural Tourism .....109**
*Gail A. Vander Stoep*

## VISITOR MANAGEMENT

**State Park Trail Conflicts and Resolution Strategies .....120**
*Charles M. Nelson, Rebecca Jennings, Jennifer Henschell*

**Factors Affecting Importance Ratings for Private Campground Amenities .....126**
*Andrew Holdnak, Ellen Drogin Rodgers*

**Assessment of Recreation Impacts on Wilderness Campsites, Mark Twain National Forest, Missouri ..... 130**
*Kale Horton, Robert Pavlowsky*

**Recreation Use at Diamond Lake, Oregon: Perceptions of Users' Recreation Experience between 2001 and 2003.....139**
*Robert C. Burns, Alan R. Graefe, Sunny Nam Kil*

**Albany Pine Bush Preserve: A Case Study Using Concepts from the Limits of Acceptable Change Framework .....145**
*Victoria E. Gray, Chad Dawson*

**Leave No Trace and National Park Wilderness Areas .....152**
*Carol Griffin*

**Visitor Perceptions of Intelligent Transportation Systems in a National Park .....158**
*Ginni Dilworth, Scott Shafer*

**Estimating Visitor Use and Distribution in Two Adirondack Wilderness Areas .....164**
*Nathan E. Peters, Chad P. Dawson*

**A Case Study Comparison of Visitor Self-reported Travel Routes and GPS Recorded Travel Routes .....172**
*Jeffrey C. Hallo, Robert E. Manning, William Valliere, Megha Budruk*

## TOURISM DEVELOPMENT

**An Exploratory Study of St. Augustine, FL: Heritage Attraction Types .....180**
*Matt Wagenheim, Lori Pennington-Grey, John Confer*

**Understanding Angler Preference for Harvest Regulations by Level of Species Preference .....185**
*Chi-Ok Oh, Robert B. Ditton*

**Regulations on the Environmental Management of Tourism Development in Yunnan Province, China.....192**
*Erwei Dong*

**Perceptions of Haitians Toward Tourism Development in Rural Haiti** ..... 200
*Alain R. Thermil, Amy L. Sheaffer*

**Examining the Business Tourist** ..... 209
*Brandi Nice, Lori Pennington-Grey*

**Myth vs. Fact: An Exploration of Fright Tourism** ..... 215
*Robert S. Bristow, Mirela Newman*

## PERCEPTIONS, PREFERENCES, AND ATTITUDES

**The Influence of Distance and Visitor Perceptions of Security on Perceived Management Problems Among New England Anglers** ..... 224
*Thomas Wickham, Alan Graefe, Robert C. Burns, Thomas Mueller*

**Comparative Analysis of Visitor Attitudes and Preferences in Three Adirondack Management Areas** ..... 231
*Nancy A. Connelly, Chad P. Dawson, Tommy L. Brown*

## TRENDS

**Northeast's Recreation Trends and Markets – A New Data Source** ..... 242
*Rodney B. Warnick*

**Trends in Participation Rates for Wildlife-Associated Recreation by Race/Ethnicity and Gender: 1980-2001** ..... 251
*Allan Marsinko, John Dwyer*

**New York's Great Lakes Charter Boat Fishing Industry: 1975-2002** ..... 256
*Diane M. Kuehn, Frank R. Lichtkoppler, Charles Pistis*

**Emerging Trends in Park and Protected Area Management: A Critical Analysis of the Eastern James Bay Region of Quebec, Canada** ..... 263
*Daniel Laven*

## VISITOR CHOICE AND RESOURCE ATTRIBUTES

**The Impact of Negative Environmental Factors on Recreation Choice Behavior** ..... 272
*David B. Klenosky*

**Examining the Structure of the Leisure Involvement/Place Bonding Relationship in Three Sumter National Forest Camping Areas** ..... 281
*Jenny K. Cavin, Drew A. Cavin, Gerard Kyle, James Absher*

**Stream Attributes for Selecting Substitutable Fishing Resources** ..... 289
*William E. Hammitt, Erik A. Backlund, Robert D. Bixler*

**Explaining Patterns of Choice Among Outdoor Recreation Sites in Metropolitan Areas** .. 295
*John F. Dwyer, David B. Klenosky, Cherie L. LeBlanc*

## NORMS AND CARRYING CAPACITY

**Determining Acceptable Carrying Capacities for Recreation Use as Identified by Key Stakeholders: A Focus Group Process** ..... 304
*Rob Porter, Michael A. Tarrant*

**An Ipsative Approach to Norm Crystallization** ..... 310
*James D. Absher, Jerry J. Vaske*

## SPECIALIZATION AND PARTICIPANT DEVELOPMENT

**Constraints to Recreational Fishing: Concepts and Questions to Understand Underrepresented Angling Groups** ..... 316
*Laura E. Anderson, David K. Loomis, Ronald J. Salz*

**Understanding Volunteers' Motivations** ..... 321
*Katerina Papadakis, Tonya Griffin, Joel Frater*

**Validating Level of Development through Self-assessments of Adventure Recreationists** .. 327
*Sharon L. Todd, Anderson B. Young, Lynn Anderson, Dale Anderson*

## PLANNING AND ADMINISTRATION

**Using the Case Study Method to Explore the Potentials and Pitfalls of Fast Ferry in Rochester, NY** ..... 336
*Joel Frater, Arthur Graham*

**Anatomy of a Heritage Area Start-up: The Appalachian Forest Heritage Area** ..... 343
*Steven Selin, Susan Martin, Angela Gernert, David McGill*

**Survey Techniques for Assessing Public Preferences for Alternate Silvicultural Treatments in the Adirondacks** ..... 350
*Donald F. Dennis, Mark J. Twery, Michael A. Rechlin, Bruce Hansen*

**The Influence of Water Clarity on Recreation and Home Purchasing Decisions on New Hampshire Lakes** ..... 354
*Kevin Scribner, John Halstead, Ryan McCarthy, Julie Gibbs*

## SUBMITTED PAPERS FROM THE POSTER SESSION

**The Illinois Department of Natural Resources "Becoming An Outdoors-Woman™ (B.O.W.)" Program: Factors Related to Outdoor Recreation Participation** ..... 362
*Katharine A. Pawelko*

**Monitoring the Impacts of Visitors to Shorebird Populations in the NPS Coastal and Barrier Island Network Areas** ..... 373
*Christopher A. Monz, Erica A. Young, Yu-Fai Leung*

**Cognitive Mapping: An Application for Trail Management** ..... 378
*Samuel V. Lankford, Kathy Scholl, Robert Pfister, Jill Lankford, Albert Williams*

**A Comparison of the Perceived Relative Importance of Council on Accreditation Curriculum Standards between Academicians and Public Park and Recreation Administrators** ..... 385
*Eric L. Longsdorf*

**Identifying Issues with Local Recreation Providers for the 2004-2009 Indiana Scorp** ..... 390
*Amy L. Sheaffer, Yi-Ling Sung*

**The Relationships among Leisure Resourcefulness and Recreation Specialization, among a Sample of Senior Adults** ..... 397
*Jerry L. Ricciardo*

**Residents' Attitude Toward Tourist Market Segments and Tourism Development in Valdez, Alaska: A Comparison of Residents' Perceptions of Tourist Impacts on the Economy and Quality of Life** ..... 404
*Christine A. Vogt, Soo Hyun Jun*

**Examining Specialization for a Fishing Subactivity: Is Activity and Place Specialization Better Understood at the Activity or Subactivity Level? ..... 412**
*Aurora Moldovanyi, Chad Pierskalla, Michael Schuett*

## PAPERS PRESENTED AT THE 2003 CONFERENCE

**Who Participates in Fall-color Touring on Pleasure Trips? ..... 418**
*Seunghyun Kim, Chang Huh*

**Author Index ..... 422**

# A RESTORATIVE DEFINITION FOR OUTDOOR RECREATION

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## Abstract

This paper challenges the traditional "re-create" definition of recreation, offering in its place a restorative orientation based on Attention Restoration Theory. It will be argued and demonstrated that we are not in the business of "re-creating" something that has been lost, but rather, in the business of restoring people's mental well-being that has been fatigued. Outdoor recreation researchers and managers should be concerned with restorative environments and experiences, not the "re-creating" of lost human properties and benefits. The paper begins with a demonstration to illustrate the difference between restoration and re-creation, follows with a conceptual presentation of Attention Restoration Theory and the components of restorative environments, and ends with some psychophysiological evidence from natural and outdoor recreation environments that support a restoration approach to recreation resource management. The conclusion proposes that we are restoration recreationists, with a philosophical role not much different from restoration ecologists, restoration architects, and restorative psychologists.

## 1.0 Introduction

The term, Recreation, is an extension of the basic word, Recreate. Recreate, in turn, infers "to create anew" (Guralnik, 1974, p. 1188). Recreation, in its most generic sense, means to re-create something anew in people, something that has been lost during people's non-leisure time. This re-create definition of recreation has never been satisfactory to me. The question arises, recreate what? What is lost during non-leisure time that is recreated during our leisure time? And, how does it occur? Not in the practical sense, but in a theoretical sense. What are the psychological and physiological qualities that underpin the creation anew during recreation? What is the theoretical foundation and/or process by which the recreate of recreation occurs?

The basic purpose and premise of this paper is to challenge you by saying "We (outdoor recreationists) are NOT in the recreation business, but rather, the restoration business." In most situations we are not involved in the process of creating anew something that is lost within humans, but rather, restoring something within them that has been weakened or fatigued. This restorative definition of outdoor recreation will be developed by addressing four major themes entitled: The ARGUMENT, DEMONSTRATION, ART, and EVIDENCE.

## 2.0 The Argument

Kelly, (1996) states that

> "recreation stems from the Latin *recreatio*, which refers to restoration or recovery. The term implies the re-creation of energy or the restoration of ability to function. Recreation contains the concept of restoration of wholeness of mind, spirit, and body. It presupposes some other activity that depletes, tires, or deteriorates that wholeness" (p. 25).

There are several key words in Kelly's statement that support the argument for a RESTORE rather than RECREATE, definition of outdoor recreation. A restorative definition for outdoor recreation argues that *recovery* is involved, where an *ability to function* is restored, involving the *mind* and *body*, and presupposes some other process that leads to *tiring* or *deterioration* within humans that prevents functioning as desired. Unfortunately, Kelly does not elaborate to provide a psychological and theoretical foundation for how the tiring or deterioration occurs, nor how the restorative process occurs involving the mind and body. But fortunately for us, Kaplan (1995) in his elaborations of Attention Restorative Theory (ART) and restorative environments/experiences, does provide a psychological and theoretical explanation for the deterioration and recovery processes involved.

[1]Paper based on keynote address at NERR luncheon, 29 March, 2004. The author greatly acknowledges Rachel and Stephen Kaplan for the psychological and theoretical material, especially Attention Restoration Theory, that serve as the basis of this paper and the presentation delivered at NERR. The ideas are theirs; I have only adapted them to the definition for outdoor recreation. I wish to acknowledge Chun-Yen Chang for the yet to be published information on the psychophysiological response of humans to outdoor-restorative environments.

Attention Restoration Theory will be discussed in theme three, The ART, of this paper but be it suffice to say here that based on Kelly's (1996) definition of recreation and Kaplan's (1995) theory of restoration, that it is the premise in this paper that outdoor recreation does not re-create something that is lost in humans, but rather, it restores people's minds that are fatigued. It is wholeness of the mind in terms of recovery from mental fatigue that restorative recreation is concerned. Outdoor recreation researchers and managers should be (1) concerned with restorative environments and experiences, NOT (2) re-creating of lost human properties and benefits.

## 3.0 The Demonstration

To demonstrate the difference between the processes of restoring and recreating, the function of a pencil will be used. A wooden pencil, when sharpened, fully functions to aid in the writing of words on a piece of paper. But should one write for an extensive period of time, wearing the lead down until it no longer extends from the end of the pencil, the pencil can no longer function as when in its original state. Now, the worn-down pencil can be easily restored to its original functioning condition by simply sharpening the pencil again. In this scenario, the pencil was not recreated, it was simply restored. However, if one were to take a hammer and smash the pencil, both wood and lead, into splinters and dust, the pencil would need to be recreated anew before it could function in its original state as a writing device.

I would argue that in recreation we seldom are involved with the process of creating anew something that has been destroyed and lost, rather we are involved in the recovery and restoration of a worn-out, fatigue condition to a wholesome functioning condition again. Granted, there are exceptions, such as when a person loses their ability to function due to injury or sickness and a recreation therapist is required to help the person learn anew a lost skill or function. But seldom is outdoor recreation most concerned and involved with recreation therapy as a profession.

## 4.0 The ART

The psychological and theoretical basis behind a restorative definition for outdoor recreation is Attention Restoration Theory (Kaplan 1995; Kaplan & Kaplan,1989, 1998). ART provides an explanation for both the fatigue and recovery aspects of the proposed restorative definition of recreation (Kelly,1996; Ulrich et al. 1991).

### 4.1 Attention

The *Attention* component of ART concerns two types of mental focus or attention states utilized by humans while processing information and functioning in various environmental settings. The first type of attention is *Involuntary*, which requires little effort on the part of humans in terms of keeping focused on the environmental information to be processed. It is employed when the stimuli, both in terms of content and process, are interesting, involving, and automatically hold our mental alertness and focus. As a result, involuntary attention is a pleasurable mode of environmental information processing and functioning, and therefore, comes at no cost to humans. Unfortunately, not all environmental stimuli are interesting and involving in terms of information processing and functioning requirements. In fact, the majority of our everyday existence may find us in environmental settings where the stimuli we must deal with are not the most interesting and involving, yet must be processed and acted upon. In these situations humans must call upon *Directed* attention. Directed attention involves a forced and burdensome form of focused attention that requires great effort to remain with the information and task functioning at hand. The stimuli that must be dealt with may be mentally demanding, and of little interest in terms of desired mental involvement.

While humans seem to be quite efficient at using directed attention, it comes at a mental fatiguing cost and can be employed efficiently for only so long of a period. As the mind (and perhaps body) fatigues from the forced attention required, the mind often wanders to more appealing stimuli; thereby decreasing the efficiency of directed attention. When this occurs, a recovery period is necessary, where humans can recover from mental fatigue and restore the ability to once again use directed attention when called upon.

### 4.2 Restoration

The restoration process involves recovery from the cost and pain of directed attention and mental fatigue. Kaplan (1995) has theorized that the restoration process involves the recovery of a worn-out inhibitor control mechanism that is employed by humans during directed attention to ward-off or inhibit more appealing stimuli from dominating our attention. The means by which the inhibitor control mechanism is restored is to not use it; to use no-cost involuntary attention instead of the

costly directed attention. How is this done? By seeking environmental settings where the dominant form of information processing and functioning is involuntary attention. Kaplan identifies such environments and experiences as *restorative*. Restorative environments and experiences provide for states of INVOLUNTARY attention, where the inhibitor control can recover and we restore the ability to again use DIRECTED attention when needed.

### 4.3 The Restorative Environment

A restorative definition for outdoor recreation depends entirely upon the availability of restorative environments, of which it is argued that most outdoor recreation environments qualify. However, this qualification is not automatic and does not lack a theoretical basis of what psychological components are necessary for an environment to have restorative qualities. Kaplan et al. (1998) postulate that four psychological components must all be present for an environment to be restorative: Being Away, Extent, Fascination, and Compatibility. Since the restorative definition of outdoor recreation depends on restorative environments, and restorative environments depend on the four components, the components will be briefly discussed (see Kaplan 1995, and Kaplan et al. 1998 for a detailed discussion).

#### 4.3.1 Being Away

Restorative environments must offer the opportunity and qualities to be in a different geographical and/or physical location that is removed from the everyday routines and purposes-tasks of one's life. It is not restorative to just be away to a different environment if everyday routines (i.e. work) and tasks accompany you. Also, as Kaplan stresses, where one is being away *to* is every bit as important as to where one is being away *from*. The Being Away component is not the same as escape or even temporary escape, for the environment one is going to and its qualities are of utmost importance to the restoration process.

#### 4.3.2 Extent

Being away to another environment is not sufficient for restoration, for the scope of the other environment must be considered. Restorative environments have to offer elements of being away to new *worlds of mental exploration*. The component of extent refers to other worlds of environmental information to process and function within. The everyday environment we commonly function within can become quite familiar and limited in scope of new information to process, or can become quite demanding in terms of uninteresting information to process, thus offering few new worlds to explore. Outdoor environments contain many elements of extent, providing "other" settings and worlds of information that are extensive in scope yet fascinating to explore. And, as pointed out by Kaplan (1995), these environments need not be of wilderness area dimensions, for even small environments (i.e., Japanese gardens or vest-pocket parks) can provide the component of exploration and extent.

#### 4.3.3 Fascination

Environmental stimuli and information that are fascinating, that call forth involuntary attention and hold it, rank high on the qualities of restorativeness. Fascination refers to just not novel content and exciting processes within the environments (i.e., hard fascination), but also to elements of soft fascination, such as water flow, sunsets, snow fall, and the whistling wind. Movement need not always be involved either, for the structure and form of mountain ranges can occupy our attention for intense periods of time.

#### 4.3.4 Compatibility

Compatibility concerns the element of agreement or fit between how one wants to function, both mentally and physically, within an environment and how that environment affords the opportunity to function as desired. It refers to the environmental fit between human intentions and environmental affordances. Environments that demonstrate a great deal of congruity between individual inclinations, environmental patterns, and the actions required by the environment, have restorative properties.

#### 4.3.5 Restorative Experience

Environments then, of which outdoor recreation environments can be an example, are restorative if they contain all four of the psychological components of being away, extent, fascination, and compatibility. They are restorative in the sense that the four components promote the use of involuntary attention, which in turn promotes the recovery from directed attention and mental fatigue, resulting in restorative experiences for humans. Restorative experiences occur when environmental stimuli are fascinating, compatible, and allow being away to another world, where directed

attention does not have to be used. In these situations the pain and fatigue of directed attention can recover.

## 5.0 The Evidence

Is there empirical support for ART and the restorativeness of certain environments and associated experiences? Two recent special issues on "Restorative Environments" in the *Journal of Environmental Psychology* (2003) and *Environment and Behavior* (2001) address this question, to which the interested reader is referred. Many of the 13 articles contain data collected using the Perceived Restorativeness Scale (PRS) developed by Hartig and colleagues (Hartig et al. 1997). The PRS, as well as other data collection methodologies, are supplying an accumulating body of support for the theory of restorative environments. In addition to the psychological evidence produced by the use of the PRS, some authors have produced physiological evidence that suggests certain environments contain recovery and restorative qualities (Ulrich et al. 1991).

Recent work yet to be published, by C.Y. Chang and colleagues in Taiwan, provide psychophysiological support for outdoor recreation and restorative environments. Twelve images of outdoor environments selected to represent the four components of restorative environments, were viewed by 110 laboratory subjects. Psychological response (using the 23 item PRS) and physiological response (recording brain wave activity, muscle tension, and blood volume pulse) were measured for each of the hypothetical restorative environments. Results of the two methodologies lend positive and similar support for the restorativeness of the environmental images.

## 6.0 Summary and Conclusions

The purpose of this paper was to present a restorative definition for outdoor recreation, based on the premise that outdoor recreation is more about the process of restoring people than recreating them. The "re-create" definition of recreation was rejected in favor of the "recovery and restoration" definition of Kelly (1996). Attention Restoration Theory and the concepts of restorative environments/experiences were offered as a psychological and theoretical foundation for the argument of a restorative definition for outdoor recreation. A linkage between the concept of restorative environments/experiences and a restorative definition for outdoor recreation was inferred by posing the question, "can the recovery, restoration, and wholeness of mind, spirit, and body that Kelly defines as recreation be similar to the recovery, restoration, and psychological well-being that Kaplan (1995) defines as restorativeness? You know my answer.

In conclusion, recreation resource managers are about the business of restoration. They are "human dimension restoration managers" and/or "recreation resource restorationists." As such, their role is similar to that of: (1) restoration ecologists, whose mission is to restore worn-out environments to some original, natural condition; (2) restoration architects, who refurbish run-down buildings to their original state, and (3) restorative psychologists, who help mentally fatigued and dysfunctional individuals to again function as they once did.

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# SOCIAL CHANGE AND POST UTILITARIAN RESOURCE MANAGEMENT: ADAPTATION OR TRANSFORMATION?

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## Abstract

The resource management profession has made concerted efforts in recent years to respond to the contingencies of social change at the turn of the 21st Century. Two prominent theoretical traditions characterize the variety of resource management responses: participatory democracy and communicative action, both of which feature the decline of the technical expert and the rise of the public sphere in policy making. But in confronting change, has the profession simply adapted the principles of its utilitarian past, or have its efforts been more transforming? This paper argues that resource management has been only adaptive, clinging to the utilitarian systems-based assumptions of Parsons' structural functionalism. The paper then uses Habermas' notion of the lifeworld and Giddens' Third Way politics to suggest a theoretical and practical outline for the transforming potential of a post-utilitarian resource management.

## 1.0 Contemporary Social Change and Resource Management's Utilitarian Legacy

There is a frequently told story about a Great Lakes freighter that had passed through the Sault St. Marie locks one night and was steaming along the south shore of Lake Superior towards its eventual destination in Duluth. As it passed Munising on the upper peninsula of Michigan, the captain, who was a seasoned veteran of 35 years on the Great Lakes shipping lanes, looked up and spied a light straight ahead. He quickly made radio contact with the object in front and ordered it to move 10 degrees to the south. The radio crackled and the voice on the other end came back and said "you move 10 degrees to the north." The captain was disturbed by the impertinence of the voice at the other end, and forcefully stated, "I am a captain of 35 years on the waters. I demand that you turn 10 degrees to the south!" The radio crackled again and the same voice came back to the captain saying, "I am a seaman second class, but I must insist that you turn 10 degrees to the north." This of course enraged the captain who shouted back, "You turn 10 degrees to the south. Turning this fully loaded Great Lakes freighter on such short notice is far too difficult." The voice on the other end once again came back and said, "You turn 10 degrees to the north. I am a lighthouse!"

This story is typically told as a metaphor of contemporary change. Applied to a resource management context, it illustrates a management system that has been cruising along with its course set on the first half of the 20th century. Resource managers, operating under utilitarian principles founded on the promises of the progressive era conservation movement, strive to use science and technical expertise to maximize public goods in an efficient and inclusive way. The metaphor, however, suggests that if management continues along that same path, it is headed for trouble. And it is easy to recognize signs of trouble in the growing contentiousness of current resource management controversies. So over the last 2 or 3 decades we have seen management agencies scampering around on deck making new efforts to steer a sometimes sluggish bureaucracy into the 21st century.

But, what is the nature of contemporary change in the resource management profession? Has the resource management profession simply tweaked its practices, adapting the assumptions of its utilitarian past to contemporary problems? Or has management implemented more far-reaching transformations that embrace a post-utilitarian style of resource management? In my view, resource management has, for the most part, been adaptive. But is adaptive change enough? Or is society demanding more comprehensive change in the provision of environmental goods? This paper examines some theories of social change to help make sense of the contemporary pressures facing resource management. The paper then draws on Giddens (1998) to make some rough suggestions for what a post utilitarian resource management might look like.

## 2.0 How Has Resource Management Responded to Social Change?

What specifically are the contemporary management responses to social change? They go by a variety of names including discursive democracy, collaborative conservation, public/private partnerships, ecological

modernization, alternative dispute resolution, adaptive management, ecosystem management, ecological economics, integrated resource management, and sustainable development. One could add many other labels and concepts to characterize the variety of ways resource management agencies have attempted to "reinvent" themselves in response to the social pressures and demands of recent years. But there are two prominent theoretical traditions that can characterize this variety of resource management responses: participatory democracy and communicative action.

### 2.1 Participatory Democracy

Daniel Kemmis in his book *Community and the Politics of Place* (1990) describes the contemporary management scene as a transition from an "interest group politics" suggested by James Madison's version of democracy to a "face-to-face" consensus style of democracy suggested by Thomas Jefferson. In Madison's vision, interest groups are in constant tension and conflict over political favor and advantage. State agencies serve as the mediators between these competing interests, making allocation decisions that weigh costs and benefits to society as a whole and its resource conservation goals. In this context, no interest group ever quite wins, because in conflict, the scales of favoritism and advantage naturally tip back and forth in an uneasy balance.

In Jefferson's vision, democracy works best when people engage in reasoned discussion and debate with the goal of compromise and consensus. The engine of good government is collaboration rather than competition, where people who disagree about resource allocation and service provision work together in good faith to settle their differences in productive ways. Mediation occurs within the public collaboration process, and state agencies simply administer the public will. Many believe that this face-to-face style of democracy produces better policy outcomes than the clientelism and cooptation inherent in Madison's interest group politics.

Why has this change occurred? According to Kemmis, it was a response to the gridlock of the 1970s and 1980s. Legislation, such as the National Environmental Policy Act (NEPA) and the Endangered Species Act, has facilitated public litigation. Environmental interest groups typically have lawyers on staff to challenge agency decision-making processes, and to stall or halt programs and policies that run counter to the group's mission. With these heightened levels of public scrutiny, resource management agencies feel they are "caught in the crossfire" (Salwasser 1990), and must spend less time on "pure" science, and more time on strategy and accountability in their policy-making process. For Kemmis, this social climate represents interest group politics run amok, and it calls for management agencies to adopt new inclusive and collaborative ways to make allocation decisions.

### 2.2 Communicative Rationality

A second theory widely applied to emerging approaches to contemporary resource management is Habermas' theory of communicative action (1984). His theory also features enhanced levels of public communication and collaboration. The difference however, is that Habermas built his theory around a pervasive and profound framework of social change in late modernity.

Specifically, his theory was an elaboration of Max Weber's analysis of rationality at the close of the 19th century (Weber 1978). Weber argued that human rationality had evolved historically through four stages. The first form of rationality was what he called "traditional rationality," where human action was determined exclusively by ritual, obligation, or habit. Much of this type of behavior was directed at appeasing the unseen forces of the universe. Second was what Weber calls "affective rationality," where action was driven by emotion, passion, or feeling states. Hedonism provided the standard of appropriate behavior under this form of rationality. Third was "values-based rationality," where duty, morality, normative standards, or religious sentiment determined action. Historically, the role of the Catholic Church in Europe played a major role in articulating this type of rationality. Finally, Weber argued that values-based rationality had given way to "instrumental rationality," where action is goal-directed towards planned and calculated outcomes. It was this type of rationality that was born in the Enlightenment and galvanized the industrial revolution.

Habermas argued that the instrumental rationality that characterized industrial society - and which has characterized much of 20th century resource management - is giving way to a fifth type of rationality, "communicative rationality." In this new form, an increased capacity for individual reflexivity, and a society that engages more frequently in open and inclusive public discourse determine action. Communicative rationality is

embodied in a society that has become reflexively critical of bureaucratic decision making. It is a society that is reasserting its interest in the provision of public goods, and demanding a comprehensive, less insular way of making decisions that more adequately reflect the public will.

Applied in a management context, the transition to communicative rationality has brought about at least five major changes over the last quarter century. First communicative rationality means that agencies are breaking down their culture of expertise, where managers turn to scientists for the final say in contested decisions. An increasingly reflexive public understands that scientific findings are full of contingency, and often the public has reason to distrust the science that informs the decisions. Second, resource management agencies must operate under a new transparency, in which fewer of their decisions are made in a vacuum. Increased public scrutiny and a fading sense of agency legitimacy are all products of an increasingly reflexive society. Third, public engagement and involvement in the decision making process are escalating, and agencies have worked to institutionalize mechanisms of public participation in their standard operating procedures. Fourth, there is a new awareness among management agencies of the human dimension of resource management. Biological science is no longer enough to guide resource allocation decisions. A better understanding of the psychology and sociology of people is necessary to make better management decisions. Finally, there is a new emphasis on collaborative problem solving, where new communicative methods of policy making are forged in a face-to-face setting of partners rather than opponents.

Most would agree these are positive steps. But, I argue in this paper that these steps make selective use of Habermas' theory. Consequently, they are merely adaptive and incremental, and may not be a sufficient response to the demands of contemporary social change.

## 3.0 Adaptive or Transforming?

### 3.1 Stakeholder Analysis

Why are these steps merely adaptive? The stakeholder concept offers a good illustration. Stakeholder analysis draws on the assumptions of Talcott Parsons' theory of structural functionalism (Parsons 1937). Parsons' was perhaps the first social theorist to explicitly use a systems metaphor to describe social life. This metaphor had been widely used in the natural sciences, which assume the world conforms to physical and biological systems, laws of nature, and cause and effect relationships. Parsons' applied the same metaphor to the social world to describe the structural qualities of society that enable and predict coordinated individual action.

Parsons' theory specified the integration of human action as it was influenced by three systems: the personality system, the social system, and the cultural system (Kluckhon 1951; Parsons 1951). Consistent with cognitive psychology of the mid 20th century, Parsons' *personality system* maintained that individuals are oriented toward specific actions through mechanisms of motivation that included physiological drives and socially learned need-dispositions. Action within the context of the personality system was constrained by forces within the social system and the cultural system. Mechanisms of constraint within the *social system* are normative in character. They consist of institutions comprised of status-based roles, ritual activities, and structures designed to sanction actions that do not maintain the social system. These mechanisms are aimed at reproducing the social system by reducing conflict, strain, and deviance in everyday action. Finally, the *cultural system* contains the values, beliefs, language and other symbols of a broader cultural milieu. These elements of the cultural system are internalized into the personality system through socialization and thereby circumscribe the need structure of the individual. They also frame the role structure of the social system, and direct the acquisition of interpersonal skills necessary for playing these roles. Consequently, values are the glue that holds the interface of these three systems together. Values are functional for social order because they coordinate individual action in the context of role appropriate behaviors and culturally relevant symbols that facilitate a sense of belonging to a broader societal whole.

So, dividing the world into stakeholders and analyzing the divergent values expressed by these groups is one way of characterizing structure in society. It is a sort of in-the-field factor analysis or a data reduction tool that helps managers segment the public into manageable units, and explain the behavior of individuals as they act in concert with identifiable value positions or ideologies. With this information, managers can predict behaviors, anticipate information needs, manage conflict, and search for common ground in disputes. In this way, stakeholder

analysis is a pragmatic tool that helps managers link specific tasks or actions with concrete and measurable outcomes.

As managers attempt to embrace the human dimension of resource management, the stakeholder concept has become a prominent tool, particularly as a foundation for public participation initiatives. The currency of the stakeholder concept, however, comes not because it is innovative, but because its roots in structural functionalism make it quite consistent with management's standard utilitarian practices. Wondolleck and Yaffee in their book *Making Collaboration Work* (2000) characterize this management approach as an innovative way to "break the gridlock" of recent decades, and to get on with the business of making good decisions. But, here's the key question: Is "getting on with it" enough, or is society demanding a more wholesale transformation in the way resource managers do business?

In my estimation, there appears to be some urgency for transformation. If there is any common theme that runs across theories of modernity and post modernity, it is the belief that contemporary social change is profound and momentous. Giddens (1998) argues that "there are good, objective reasons to believe we are living through a major period of historical transition." So if social change is particularly momentous, what might this transformation look like?

### 3.2 Decolonizing the Lifeworld

Habermas and his concept of the lifeworld offer one vision of change that can be applied to resource management (Habermas 1970). But, ironically the lifeworld concept has been selectively ignored by many who use his theory as the basis for public participation. Nevertheless, change has been at the heart of Habermas' theory of communicative action. Habermas was a product of the Frankfort School of social research, which offered one of the first systematic critiques of modernity. In the shadow of Nazi Germany, they argued that the promises of the Enlightenment - i.e., human progress through rationality - had failed. Rationality and its tools of science, technology, industry, and markets promised a more stable and ordered world. Yet, the contradictions of the modern age, they argued, had brought about wide spread alienation, and had positioned society on the brink of disaster and impending chaos.

Habermas, however, had a different take on the modern condition. He recognized the contradictions of industrial mass society and the alienation of modern life. However, he rejected the notion that modernism was dying. Instead, he argued that the promise of Enlightenment progress was still a viable orienting principle for "late modern" society, and that the transition from instrumental rationality to communicative rationality provided hope that the principles of reason could direct the course of history in a progressive direction.

In analyzing modern alienation, Habermas used the concept of the lifeworld to energize his theory; a term cast broadly to characterize human action and interaction (Habermas 1970). Habermas built on Weber and his iron cage metaphor. Weber argued that corporations and state bureaucracies would confine public decision making and policy formation into more progressively rigid forms of instrumental rationality. And he argued that most forms of human interaction would be reduced to functionally determined means-ends relationships. Habermas characterizes these outcomes of instrumental rationality as the "colonization of the lifeworld." Individual action in the modern age has become increasingly dominated by bureaucratic control, and decisions are increasingly in the hands of the technical expert.

But Habermas draws a sharp distinction between the instrumental rationality of administrative and market systems and the communicative rationality of the public sphere. Under communicative rationality the public sphere reasserts itself. It is through dialogue in a fair and open setting where people can speak without the fear of intimidation, retribution, and embarrassment. In this context, the lifeworld becomes decolonized from overbearing bureaucratic constraint. Decolonizing the lifeworld describes the process whereby the public becomes free to imagine and invent public policy and action through collaborative and inventive ways that are not constrained by rigid bureaucratic procedure, institutional standing, or status obligations.

## 4.0 Transforming Resource Management?

The problem, of course, is that Habermas does not offer a very clear vision for how this decolonization process is to proceed. Exactly how does society go about reconfiguring the relationship between bureaucracies and the public sphere under communicative rationality?

There may be no definitive answers to this question, but let me offer a two observations.

First, public participation, *by itself*, is not the solution. Legislative mandates to incorporate public involvement in decision-making have become quite common lately. But can bureaucracies really reinvigorate the public sphere by creating more top-down processes and institutional protocol? Of course agencies should not throw out their public involvement initiatives. They have clearly provided positive adaptations to contemporary management challenges. But agency-led processes of public participation don't usually generate the sort of social transformations that contemporary conditions may require.

Second, what else might be needed to transform this relationship between public agencies and the public sphere? I believe Anthony Giddens' widely debated Third Way politics (1998) are suggestive. And I believe the widely cited experience of the Quincy Library Group in Northern California is illustrative (Wondolleck and Yaffee 2000). The Quincy Library Group is a grass-roots coalition of environmentalists, county planners, and members of the timber industry centered in the town of Quincy, California. The three groups formed in response to the spotted owl gridlock in the early 1990s, created a management plan of their own, and then shepherded a law through Congress that required the U.S. Forest Service to implement their plan.

This example exhibits several of the principles that Giddens outlines in his Third Way politics. The first is devolution, or the movement of power from centralized to localized sources. Giddens argues that the pressures of globalization have created a backlash of communitarian groups seeking power and control through assertive localized organizations. Renewing the public sphere means investing one's identity in local initiatives and programs. In Quincy, local groups usurped decision-making power. And it was usurped because of the ineffectiveness of a centralized authority. In the process, the U.S. Forest Service was a minor player. When they did attend meetings, they occupied the chairs against the wall rather than chairs at the table.

A second principle Giddens describes is mechanisms of direct democracy. As bureaucracies grow more complex, they become less responsive to local need and representative politics loses its legitimacy. In response, a "sub-politics" has emerged (Beck 1992) which includes citizen initiative groups and other activist organizations. These single-issue organizations have effectively responded to the crisis of representative politics by mobilizing political action around "lightening rod" types of issues. The Quincy group's experience shows how decisions were removed from the normal bureaucratic systems of command and control, and sequestered by the people most affected by the decisions. And while they did work within the procedures of existing national government, passing legislation to mandate their management plan, they clearly changed the rules of public engagement with government authority.

A third principle is the process of building social capital. Renewing the public sphere means engaging in deliberation that builds the sort of social networks, volunteerism, and sense of place that turn localities into desirable and livable communities. As the public takes a greater interest in resource management policy, the typical way to force management action is through litigation. Opposing groups in California, however, chose a process of community building where opponents worked in good faith to sort through their differences over timber policy and resource allocations. As a result, one environmentalist in the Quincy Library Group perhaps described it best. He said that when people in Quincy greeted him with a wave, they now use all five fingers.

Fourth, Giddens argues that contemporary technologies of the late modern age require managers to become as much risk managers as they are service providers or benefit managers. As bureaucratic devolution proceeds, the role of management agencies shifts from a decision making center of command and control. Agencies become more important as brokers of scientific and technical information. Management agencies use their scientific expertise to help monitor the consequences of locally mandated plans and to prescribe correctives if necessary. The key challenge becomes the effectiveness in which agencies partner policy and decision making in the public sphere. This may be the most challenging and troubling of Giddens' notions about change, because it implies a fairly sweeping transformation of agency functions in late modern society.

In the end, few would deny that resource managers are facing intense public scrutiny. In response, managers today have to be light on their feet and in constant motion to respond effectively to public demand and the speed of social change. And to deal with this reinvigorated public sphere, managers must also be creative, flexible, responsive, collaborative, intuitive, and entrepreneurial. Can these contemporary demands on managers be addressed by adaptations to the profession's utilitarian past? To a point, but these adjectives sound more like a call for transformation - transformation to a post-utilitarian style of resource management.

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# *Place Attachment*

# SPATIAL VARIATION IN LEVEL AND TYPE OF PLACE ATTACHMENT

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## Abstract

Using data collected from hikers along the Appalachian Trail, we examined regional variation in level and type of attachment across the length of the trail. Our conceptualization of place attachment consisted of three dimensions; place identity, pace dependence, and social bonding. After dividing the trail into four sections (i.e., New England, Mid-Atlantic, SW Virginia, and Deep South), levels and types of attachment were examined across the regions. Significant differences between regions were observed. To further examine factors underlying the regional variation, we explored the interactive effect of three variable on region; time spent along the trail, group size, and type of setting. These variables' effect of place attachment was independent of the regions (i.e., only main effects were significant). The results indicate that researchers need to consider the level of regional specificity when examining recreationists' attachment to place.

## 1.0 Introduction and Background

Studies of place attachment have varied considerably in terms of the nature of the place or spatial context being investigated. In Low and Altman's (1992) review of the place bonding literature, they noted that places vary in a number of ways — "scale or size and scope, tangible versus symbolic, known and experienced versus unknown or not experienced" (p. 5). For example, early investigations began with spatially diverse environments such as the community (Kasarda & Janowitz 1974) or neighborhood (Fried 1963). In the years since, in addition to continuing investigations of community, neighborhood, and household attachment across a diverse range of cultures, place investigations have also studied human attachments to retirement villages (Sugihara & Evans, 2000), polar regions (Steel, 2000), college campus coffee shops (Milligan, 1998), and a diverse range of outdoor recreation areas (Bricker & Kerstetter 2000; Kyle et al. 2003; Williams et al. 1992).

This diversity of spatial contexts, however, raises questions concerning the nature of place attachment in different types of places. For example, in outdoor recreation contexts, place investigations have studied individuals' attachment to hiking trails (Kyle et al. 2003; Moore & Graefe 1994), rivers (Bricker & Kerstetter 2000), and wilderness areas (Williams et al. 1992). In each of these investigations, the items used to measure place attachment have referred to the trail, river, or wilderness area in question. Each of these settings, however, may cover hundreds of miles and vary considerably in terms of the conditions encountered (both environmental and social). Most respondents only experience a small section of the larger setting. Thus, the question arises, to what are the respondents attached? When presented with items that reflect the broader setting, are respondents reporting an attachment to this larger environment or is their attachment directed toward the specific setting with which they have had most experience? Researchers have yet to explore variations in respondents' attachment across individual settings. In the context of natural environments where setting conditions vary considerably, this would seem a pertinent issue worthy of further investigation. With this in mind, we examined the variation in hikers' attachment to the Appalachian Trail (AT) that runs almost 2,200 miles along the Atlantic region of the United States.

## 2.0 Methods

### 2.1 Design and Sample

Data were collected over the summer and fall of 1999. Sampling occurred along the entire length of the trial. Two sampling techniques were employed. First, a stratified, systematic sampling technique was used to obtain a representative sample of all AT hikers, with the exception of through hikers (Babbie, 1995). Sampling intensity was stratified (i.e., time and day of the week)

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in accordance with use estimates[3] provided by staff from the National Park Service and the Appalachian Trail Conference[4]. Consequently, most sampling occurred on weekends. Every third trail user over the age of 18[5] was intercepted by volunteers or paid staff and requested to provide their name and address to be sent a survey instrument. Because we were interested in including through hikers who had completed the entire length of the trail in a single season, through hikers intercepted along the trail were initially excluded. Instead, through hikers were purposively sampled at the northern end of the AT[6] to ensure a sufficient number of cases for this group of hikers (Babbie, 1995). To capture these hikers, staff and volunteers in Baxter State Park in Maine asked through hikers to complete the mail-back instrument on-site before they commenced the final assent to the trail's end on Mount Katahdin.

A total of 2,847 AT visitors agreed to participate (approximately 90% response rate) in the study and were mailed a questionnaire within two weeks after their visit. Two weeks after the initial mailing, visitors were mailed a reminder/thank you postcard. Visitors who did not return a completed questionnaire within four weeks of the initial mailing were mailed a second copy of the questionnaire. Finally, non-respondents were sent a third survey reminder. This sampling procedure yielded 1,879 completed questionnaires (66% response rate).

To examine spatial variation in place attachment across the length of the AT we divided our sample into 5 groups based on the location where they were sampled onsite. These groupings were saved as a variable in SPSS titled "region." The initial division of these regions was structured around the not-for-profit agencies chartered to manage sections the trail (e.g., repair and maintenance). Staff working for these agencies assisted with the onsite sampling. Beginning at the southern end of the trail, the first section titled *Deep South* extended 446 miles from Georgia, through South Carolina, and into North Carolina. The second section, titled *Southwest Virginia,* ran approximately 385 miles from North Carolina through western Virginia. The third section, titled *Mid-Atlantic*, ran from Virginia 590 miles north to New York. The fourth section, titled *New England*, ran 732 miles from New York through to the trail's northern end in Baxter State Park, Maine. Lastly, the fifth group was comprised of hikers who had hiked the entire length of the trail in a single season (titled *Thru Hikers*). The distribution of cases across these regions is depicted in Table 1. Most respondents were sampled in New England (36.8%), followed by Southwest Virginia (18.6%), then Thru Hikers (16.9%), the Mid-Atlantic (14.6%), and the Deep South (13.1%).

**Table 1.—Regional Distribution of Respondents**

| Region | N | % |
|---|---|---|
| New England | 691 | 36.8 |
| Mid-Atlantic | 274 | 14.6 |
| Southwest Virginia | 349 | 18.6 |
| Deep South | 247 | 13.1 |
| Thru Hikers | 318 | 16.9 |
| Total | 1879 | 100.0 |

### 2.2 Measures

We used eight items adapted from Williams and Roggenbuck (1989) measuring two dimensions (i.e., place identity and place dependence). Also, on the basis of past research, we included four items measuring an additional dimension of place attachment called social bonding. These items were designed to capture the respondent's socially derived attachment to the AT. The three dimensions of place demonstrated adequate internal consistency with Cronbach alphas ranging between .62 and .87.

## 3.0 Results

The factor structure of place attachment was confirmed using confirmatory factor analysis (provided through LISREL 8.51) and are presented in Table 2. The analysis provided support for the hypothesized structure.

Following the testing of the scale's psychometric properties, we then explored the variation in respondents' type and level of attachment across groups. Scale indexes were created for each dimension of place attachment in SPSS (version 11.0). For each dimension, ONEWAY

[3]Use estimates were estimates based on staff and volunteer heuristics.

[4]The Appalachian Trail Conference is a volunteer-based, not-for-profit organization dedicated to the preservation, management and promotion of the trail.

[5]This was required by the National Park Service.

[6]To complete the trail over a single summer (approx. 2 to 3 months), most hikers start in the south to avoid potentially cold northern weather and finish in the north to avoid the heat extremes of the south. In 1999, 2,625 hikers began the hike from Georgia with only 376 completing the hike (49 hikers completed the north to south route).

**Table 2.—Results of Confirmatory Factor Analysis**

| Place Attachment[1] | | A | λ | t-value[1] |
|---|---|---|---|---|
| | Place Identity | .87 | | |
| $PI_1$ | This trail means a lot to me | | .70 | - |
| $PI_2$ | I am very attached to the Appalachian Trail | | .88 | 33.07 |
| $PI_3$ | I identify strongly with this trail | | .86 | 32.59 |
| $PI_4$ | I feel no commitment to this trail* | | .56-.82 | 15.98-18.07 |
| | Place Dependence | .86 | | |
| $PD_1$ | I enjoy hiking along the Appalachian Trail more than any other trail | | .84 | - |
| $PD_2$ | I get more satisfaction out of visiting this trail than from visiting any other trail | | .92 | 46.19 |
| $PD_3$ | Hiking here is more important than hiking in any other place | | .81 | 39.36 |
| $PD_4$ | I wouldn't substitute any other trail for the type of recreation I do here | | .33-.58 | 6.13-6.20 |
| | Social Bonding | .62 | | |
| $SB_1$ | I have a lot of fond memories about the Appalachian Trail | | .65 | - |
| $SB_2$ | I have a special connection to the Appalachian Trail and the people who hike along it | | .76 | 23.87 |
| $SB_3$ | I don't tell many people about this trail* | | .33 | 11.79 |
| $SB_4$ | I will (do) bring my children to this place | | .34 | 12.32 |

* Reverse coded

analysis of variance (ANOVA) with Scheffe's post hoc tests for multiple group comparisons were conducted to explore regional variation in respondents' place attachment scores. The results presented in Table 3 indicate the following:

a. Thru hiker's scores on the place identity (*M*=4.08) and social bonding (*M*=4.18) dimensions were significantly higher than the other groups;
b. Respondents sampled in New England and Southwest Virginia generally scored lower than the other groups on all dimensions of place attachment; and
c. Of the specific regions, those sampled in the Mid-Atlantic scored highest on place identity (*M*=3.82) and social bonding (*M*=3.86), whereas those sampled in the Deep South scored highest on place dependence (*M*=2.99).

**Table 3.—Mean Place Attachment Scores by Region**

| | Place Attachment | | | | | |
|---|---|---|---|---|---|---|
| | Place Identity[1] | | Place Dependence[2] | | Social Bonding[3] | |
| Region | *M* | *SD* | *M* | *SD* | *M* | *SD* |
| New England | $3.48^{a}$ | .80 | $2.72^{a}$ | .81 | $3.72^{a}$ | .57 |
| Mid-Atlantic | $3.82^{Ab}$ | .81 | $2.94^{A}$ | .91 | $3.86^{Ab}$ | .58 |
| Southwest Virginia | $3.49^{Bc}$ | .81 | 2.86 | .75 | $3.68^{Bc}$ | .57 |
| Deep South | $3.64^{d}$ | .77 | $2.99^{A}$ | .78 | $3.77^{Bd}$ | .58 |
| Thru Hikers | $4.08^{ABCD}$ | .70 | 2.82 | .78 | $4.18^{ABCD}$ | .52 |
| Overall | 3.66 | .81 | 2.83 | .81 | 3.82 | .59 |

*Note.* Reading vertically, superscripts with matching letters but opposing case indicate significant difference at $p \leq .05$. For example, for place identity, the mean for New England was significantly lower than the mean for the Mid-Atlantic region and Thru Hikers, whereas the mean for Deep South hikers only differed from the mean of Thru Hikers.

[1] F=35.72***, df=4, 1736, $\eta^2$=.08
[2] F=6.53***, df=4, 1734, $\eta^2$=.02
[3] F=38.94***, df=4,1735, $\eta^2$=.08
*** $p < .001$

To more fully explore the nature of the variation in levels and type of attachment across the different spatial contexts we further examined the effect of several other variables that could provide a richer understanding of the factors that may have contributed to the differing place meanings. Primarily, we were interested in understanding if and how these variables interacted with "region" (i.e., the variable used to group respondents into the four regions along with Thru Hikers). Our previous analysis indicated that "region" influenced the meanings respondents ascribed to place, consequently, in the analyses reported below, we attempted to understand why this was so by examining variables that may interact with "region" to influence place meanings.

The first variable we examined was "time spent along the AT." Past research has shown that the intensity of setting exposure can influence the development of place attachment (Vorkinn & Riese 2001). This variable was operationalized in the survey instrument using an item requesting respondents to indicate the duration of the trip (i.e., # of days) they were undertaking when they were contacted by one of our surveyors. We recoded this variable into four categories; "1 day," "2-5 days," "6-14 days," and "more than 14 days."

Multiple analysis of variance (MANOVA) procedures were employed to examine "time spent along the AT's" effect on the dimensions of place attachment and its interaction with "region." No significant interaction was observed. The main effect of "time spent along the trail" on Place Identity was statistically significant (F=44.34, df=3,1582, $p$<.001, $\eta^2$=.08). As shown in Table 4, in general, as the time spent along the trail increased, so too did respondents' scores on the Place Identity dimension.

**Table 4.—Main Effect of Time Spent Along the AT on Place Identity**

| | Place Identity | |
|---|---|---|
| Time | *M* | *SD* |
| 1 Day | $3.48^{a}$ | .82 |
| 2-5 Days | $3.57^{b}$ | .82 |
| 6-14 Days | $3.81^{ABc}$ | .73 |
| More than 14 Days | $4.05^{ABC}$ | .71 |

$F_{(3,1582)}$=44.34, $p$<.001, $\eta^2$=.08

The second variable we examined concerned the number of people the respondent was hiking with (i.e., "group size"). Past research has shown place attachment is often the product of shared experiences where the meaning of those experiences with others also becomes embedded within the environment hosting the experience (Low & Altman 1992; Rowles 1983; Sugihara & Evans 2000). Consequently, it could be reasonably expected that those who have strong social bonds would also be hiking with others, possibly with whom they've previously experienced the setting. This variable was operationalized simply by asking respondents to indicate the number of people in their group (including themselves).

We again examined the interaction between "group size" and "region" and accompanying main effects using MANOVA. Again, we observed no statistically significant interactions. Only the main effect of "group size" on Social Bonding was significant (F=10.80, df=4,1694, $p$<.001, $\eta^2$=.02). As shown in Table 5, respondents' scores on the Social Bonding dimension declined with increasing group size.

**Table 5.—Main Effect of Group Size on Social Bonding**

| | Social Bonding | |
|---|---|---|
| Group Size | *M* | *SD* |
| Alone | $3.85^{a}$ | .77 |
| 2 People | $3.64^{b}$ | .83 |
| 3 People | $3.68^{Ac}$ | .79 |
| 4-6 People | $3.40^{ABC}$ | .74 |
| More than 6 | $3.37^{ABC}$ | .86 |

$F_{(4,1694)}$=10.80, $p$<.001, $\eta^2$=.02

Finally, we examined the interaction between a variable measuring respondents' perception of "setting type" and "region" and its influence on place meaning. "Setting type" was operationalized using an item adapted from Shelby and Heberle (1986) in requesting respondents to indicate the type of environmental condition they had encountered for the section of the Appalachian Trail they had hiked. Respondents were instructed to check one of the following categories:

a. Wilderness — a place generally unaffected by the presence of people, providing outstanding opportunities for solitude and self-reliance;
a. Semi-wilderness — the kind of place where complete solitude is not expected, but the environment appears mostly unaffected by people; and
b. Undeveloped recreation area — the kind of place where a natural setting is provided but seeing other people is part of the experience.

The results of the MANOVA procedure illustrated that only the main effect of "setting type" on Place Dependence was statistically significant (F=4.90, df=2,1687, $p<.01$, $\eta^2=.01$). The pattern of results illustrate that respondents' scores on the Place Dependence dimension of place attachment increase in more primitive settings (see Table 6).

**Table 6.—Main Effect of Setting Type on Place Dependence**

| | Place Dependence | |
|---|---|---|
| Setting Type | *M* | *SD* |
| Wilderness | 2.97[a] | .82 |
| Semi-Wilderness | 2.83 | .81 |
| Undeveloped Recreation Area | 2.76[A] | .81 |

$F_{(2,1687)}=4.90$, $p<.01$, $\eta^2=.01$

## 4.0 Conclusion

First, we observed good support for our conceptualization of place attachment. We then examined the regional variation in respondents' level and type of attachment to the AT. While statistically significant differences were observed across regions, there was no consistent pattern to this variation. To further explore the nature of the regional variation, we examined interactive effect of several variables. We were interested in further exploring factors that might be contributing to the regional variation. Three factors were each tested; time spent along the trail (days), the size of each respondent's hiking group, and the perceived type of setting each respondent was hiking. Our findings indicated that these factors were not contributing to the regional variation. They each, however, had significant main effects; (a) time spent along the trail was positively related to the development of place identity, (b) group size was negatively related to social bonding, and (c) respondents scores on the place dependence dimension were highest in pristine settings.

In contrast to previous investigations that have examined issues related to spatial scale, our analysis focused on the scale that respondents had experienced during this visit. That is, we divided respondents into spatial units, *post hoc*. Other studies have explicitly stated the scale (e.g., neighborhood, town, city, continent) in their scale items (Hidalgo & Hernández 2001). A limitation of our approach is that it does not control for the possibility that some respondents may have experienced other regions during this visit (e.g., section or thru hikers) and the confounding effect of previous setting experiences in other regions.

The study of spatial scale and regional variation in levels and type of attachment has implications for both the measurement of place attachment and for understanding the practical utility of place attachment for forest management. Given that many recreationists only experience a fragment of the spatial unit reflected in scale items (e.g., National Forest, National Park, river, etc.), generic place items fail to capture the specificity of recreationists' meaning and attachment. If an understanding of place meaning is to be integrated in forest management plans, efforts to isolate and locate place meaning should be a priority for researchers. It is likely that different units within a forest or recreation area will be interpreted differently by a variety of stakeholders (e.g., ethnic groups, activity groups, interest groups).

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# CREATING DEFENSIBLE SPACE IN THE WILDLAND-URBAN INTERFACE: THE ROLE OF BASIC BELIEFS ABOUT FOREST AND WILDFIRE MANAGEMENT

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## Abstract

We examined the effect that basic beliefs about natural resources and fire management have on an individual's decision to create defensible space around his or her residence in the urban—wildland interface. Using data from a mailback questionnaire, respondents in north central Minnesota were clustered by basic value—laden beliefs toward forest and fire management and compared across a number of perceptions and behaviors related to creating defensible space around residences. Clusters differed in attitudes, subjective norms, and perceived behavioral control as they relate to creating defensible space in the urban—wildland interface. In addition, relative effects of these perceptions on behavior intention and behavior differed across cluster. Implications lie in understanding differences in motivations and reasons for support of strategies for managing fires near the urban—wildland interface which will contribute to an improved integration of land management and public concerns and interests.

## 1.0 Introduction

For several decades, residents of urban areas in America have been moving into rural areas located in or near natural areas such as forests, parks, and other open space. According to the U.S. Census, populations of rural counties around wildland areas increased 23 percent, compared to an 11 percent growth nationwide between 1970 and 1988 (Bailey 1991). This has occurred to such an extent that not only has there been an increase in population and development growth in rural areas near wildlands and other open space, but the growth in primary residences, vacation homes, and commercial development has resulted in many of these areas losing the characteristics of rural America and becoming categorized as urban (Gardner et al. 1985).

With this migration and increased private and commercial development near wildlands, dangers from wildland fire become more complex. The dynamics of forest fire fuels, changing wind conditions, humidity, fuel type, etc. present unique problems to community firefighters trained to deal primarily with structural fires. As a result of the large number of fires around the country recently and fears that such fires will continue, there are concerns regarding the safety of people as well as private and public property located in or near the urban - wildland interface.

While federal agencies and local governments are often viewed as best equipped to conduct fire prevention/ protection activities, there is interest in the role that the general public can play in addressing fire management problems in the wildland - urban interface. According to Cortner (1991; Cortner et al. 1990), it is important to maintain an integrated effort between civic agencies and private citizens to address fire management problems. Well-conducted public involvement activities help keep private citizens informed of the dangers of wildland fire and policies maintained by public agencies. Public involvement efforts also keep public agencies abreast of the public's perceptions of fire policies and strategies.

In addition to public involvement processes that facilitate two-way communication between land management agencies and the public, more direct roles of the public in fire protection are desirable. One fire protection alternative is the creation of "defensible space" around one's residence that may be vulnerable to wildland fire. This approach has been found to be successful in a number of locations (Bailey 1991). Creating "defensible space" involves many activities that property owners or managers may do to provide protection of a property from a fire. Some of these activities are the removal or reduction of plants, trees, and shrubs around vulnerable sites as well as the use of special fire resistant materials in buildings. These activities create transition zones designed to slow or stop fire movement prior to reaching

private homes or other structures (Carree, Schnepf, & Colt 1998).

Homeowners' decisions to create defensible space around their home may be influenced by many factors. Perceptions of the risks of wildfire to homes, the potential outcomes of creating defensible space, and barriers to doing so are among the most apparent of these influential factors. Considering that one household's decision to create defensible space may influence the safety of other households nearby suggests that normative expectations may also influence that decision. Perceived outcomes, norms, and barriers directly address some aspect of behavior. Other factors have indirect effects on behavior by directly impacting those factors that directly impact behavior. These factors include more value-laden basic beliefs that people hold about the issue surrounding the behavior in question. This study examines the role of basic beliefs in influencing more specific perceptions of, and behavior regarding the creation of defensible space around one's residence in the wildland-urban interface.

## 2.0 Theoretical Background

The examination of value-laden basic beliefs as a basis for more specific attitudes and behaviors has been applied to social aspects of natural resources and the environment. Paul Stern and Thomas Dietz have explored the connection between values and more specific cognitions such as attitudes and beliefs regarding environmental concern and behaviors that reflect that concern. Applying Schwartz' (1992) work on the structure and content of human values, these researchers found that environmental concern and associated behavioral indicators were related to certain basic human values (Dietz et al. 1998; Stern & Dietz 1994; Stern et al. 1995). Fulton et al. (1996) developed an extensive scale of basic beliefs toward wildlife management. These researchers showed that the pattern with which people responded to basic belief items on a survey (defined as their value orientation) was predictive of their support of a number of wildlife management strategies as well as participation in hunting and angling.

### 2.1 Conceptual Model

One theoretical framework that addresses the relationship between values and behavior is the Cognitive Hierarchy. The Cognitive Hierarchy (Fulton et al. 1996; Homer & Kahle 1988; Rokeach 1979) suggests that behavior, while directly influenced by specific perceptions related to that behavior, may ultimately be connected with the values people hold.

Forming the foundation of the cognitive hierarchy are first-order cognitions called *fundamental values*. They are not focused on specific objects or behaviors but are more abstract thoughts that represent desirable end-states and modes of conduct (Fulton et al. 1996) such as freedom, responsibility, and trust (Rokeach 1979). *Basic beliefs* are second order cognitions that represent a domain of interest; in this study, natural resource and fire management. To the extent that an individual holds a general pattern of basic beliefs, they serve to orient one's fundamental values toward an individual's specific perceptions about an issue or behavior, creating defensible space around one's residence.

Above the lower order value-laden basic beliefs are higher order cognitions that represent perceptions related directly to creating defensible space. We based this portion of our conceptual framework on a popular model of attitudes and behavior, the Theory of Planned Behavior (TPB) (Ajzen 1991). Our model suggests that three factors from TPB would be directly influenced by one's basic beliefs toward natural resource and fire management. *Attitudes* are made up of one's belief that certain salient outcomes to creating defensible space would occur as well as an evaluation of those outcomes. *Subjective norms* are the strength of beliefs that certain referents would want the individual to conduct defensible space activities around his or her home as well as the individual's motivation to comply with those referents. *Perceived behavioral control* consists of constraints to conducting defensible space activities and their perceived effectiveness. These three factors, in turn, are proposed to directly influence one's intention to create defensible space. At the top of the framework is behavior related to creating defensible space around ones residence in the wildland-urban interface and is directly influenced by one's intention to create defensible space. Consistent with TPB, our model hypothesizes that perceived barriers and constraints would have a direct impact on behavior.

This study examined how basic beliefs related to natural resource and fire management influence how people perceive the behavior of creating defensible space around one's residence and the decision to engage in such behavior. Objectives for the study were as follows.

Objective 1. To identify groups of respondents based on their basic beliefs about natural resource and fire management.

Objective 2. To measure behavior, behavior intention, attitudes, subjective norms, and perceived barriers and constraints related to creating defensible space around one's residence in the wildland-urban interface.

Objective 3. To determine if basic belief-based respondent groups differed on perceptions/behavior related to defensible space.

Objective 4. To determine if the effects of perceptions about creating defensible space on behavior differed across basic belief-based respondent groups.

## 3.0 Methods

### 3.1 Sampling and Data Collection

Two thousand households were selected at random from property tax information for Hubbard, Cass, Itasca and Crow Wing counties in north central Minnesota and stratified by full-time versus seasonal residence. An introductory postcard, two survey mailings, and reminder postcard were used in this study. A response rate of 54% was achieved (897 returned/1,673 deliverable; full-time residents, 47%, 403/857; seasonal residents, 60%, 494/816). To test for non-response bias, a one-page survey containing three questions regarding one's attitude toward defensible space activities was sent to a random sample of 250 non-respondents (127 returned/250, 51%). No non-response bias was identified.

### 3.2 Questionnaire Items Used to Measure Model Components

To develop survey items, 50 residents of the Minnesota counties were contacted by telephone and asked: What are advantages and disadvantages of creating defensible space around one's residence? What individuals or groups would be interested in whether or not you create defensible space around your home? What barriers would prevent you from creating defensible space around your home? Responses to these inquiries were used to develop specific items in the mail survey.

To measure *basic beliefs*, respondents were asked the extent to which they agreed or disagreed with 25 statements about forest and wildland fire management on 7-point Likert type scales. The items were adopted from work on forest and wildland fire management by Bright et al. (2003). From these items, indices of six basic belief dimensions were created biocentricism, anthropocentrism, freedom, government responsibility, personal responsibility, and artificial management.

*Attitudes toward creating defensible space* was measured consistent with the *theory of planned behavior*. The most often mentioned advantages (four of them) and disadvantages (also four) identified in the telephone elicitation study were treated as salient beliefs about outcomes to creating defensible space in the mail survey. Using 7-point Likert-type scales (coded -3 to +3 with a 0 midpoint), respondents (a) indicated the "likelihood" that each outcome would occur as a result of doing defensible space activities, and (b) evaluated how "good or bad" each outcome would be. The likelihood and evaluation scores were multiplied together for each outcome. The resulting eight "likelihood x evaluation" products were then summed, resulting in an overall attitude toward creating defensible space around one's home.

From the telephone elicitation study, the five most often mentioned individuals or groups with an interest in whether an individual would create defensible space around his or her home were included on the survey. Using 7-point Likert-type scales (-3 to +3, with a 0 midpoint), respondents were asked whether each referent would "approve or disapprove" of them creating defensible space around their home and how important it was to the individual to comply with the desires of that referent group. The approval and compliance scores were multiplied together for each referent group. The resulting five "approval x compliance" products were then summed, resulting in an overall *subjective norm regarding creating defensible space* around one's home.

*Perceived behavioral control regarding creating defensible space* was measured in two ways. One operationalization of this factor related to "barriers to creating defensible space", identified in the telephone elicitation study. The eight barriers most often mentioned were included on the mail survey. Using a 7-point unipolar scale (1 to 7), respondents were asked how important each barrier was in influencing their decision to create defensible space around their home. "Perceived behavior control - barriers" was the mean score of these eight items. The second operationalization of behavioral control regarding

defensible space activities related to the perceived effectiveness of engaging in the activities. Through discussions with Forest Service personnel and literature review, we selected 12 common activities that reflected the creation of defensible space. Using a 7-point unipolar scale (1 to 7), respondents indicated how "effective" each of the 12 activities would be in protecting their home from wildland fire. "Perceived behavior control — effectiveness" was the mean score of these 12 items.

Using a 7-point unipolar scale (1 to 7), respondents were asked how likely it was that they would do each of 12 activities around their home in the future. *Behavioral intention* was the mean of these 12 items.

Respondents were asked, in a "yes/no" format, if they currently engage in each of the 12 defensible space activities. The measure of *behavior* was the sum of activities for which respondents answered in the affirmative. Although this measure technically addresses past behavior, it is assumed that engaging in volitional activities is relatively stable over time and that reports of current behavior are reliable indicators of future behavior (Hrubes et al. 2001; Mannell & Kleiber 1997).

### 3.3 Analyses

Confirmatory factor analysis (Amos 4.0) revealed the goodness of fit of the basic beliefs dimensions. Non-hierarchical cluster analysis categorized respondents based on responses to these basic beliefs. The groups were compared on attitudes, subjective norms, perceived behavioral control, and behavior using independent samples t-tests and chi-square procedures. Regression analyses conducted for each group determined if relationships among perceptions and behavior were influenced by the basic beliefs toward natural resource and fire management.

## 4.0 Results

### 4.1 Measurement and Identification of Basic Belief Groups

Confirmatory factor analysis showed that the theoretical structure of the basic belief dimensions was a good fit of the data. Cronbach's alphas ranged from .685 to .914, and were deemed adequate for the creation of study indices. Below is a description of each of the basic belief dimensions measured and used in this study.

- *Biocentric* — The extent to which an individual views nature and its components as being on equal footing, or having similar rights to existence, as humans.
- *Anthropocentric* — The extent to which an individual holds a utilitarian view toward forests and nature. That is, their primary use lies in their value to humans.
- *Freedom* — The extent to which people should be allowed to build homes near the wildland - urban interface with little or no government restrictions.
- *Artificial Management* — The extent to which it is appropriate to take artificial steps to manipulate and manage a forest.
- *Government Responsibility* — The extent to which primary responsibility for protecting homes in the wildland - urban interface lies with the government.
- *Personal Responsibility* — The extent to which primary responsibility for protecting homes in the wildland - urban interface lies with the property owner.

After confirming the fit of the data and creating basic belief dimensions as the mean of items within a dimension, we clustered respondents based on responses to the basic belief dimensions. Following procedures outlined by Beaman & Vaske (1995) and Romesburg (1990), a random sample of 200 respondents were selected from the data file from which hierarchical cluster analysis identified the existence of two clusters. Then, non-hierarchical cluster analysis was used, requesting SPSS to create two clusters from the entire data file (n = 897). This method is appropriate since (a) hierarchical cluster analysis is generally limited to 200 cases, and (b) when variable scales used for clustering have a restricted range of values, the non-hierarchical cluster method results will not differ substantially from the hierarchical method. Ninety-nine percent of the cases were classified and placed in one of two cluster groups for further analyses.

The primary distinction that we identified between the clusters was their orientations toward biocentric and anthropocentric beliefs. Below is a brief description of the two clusters based on the basic belief dimension.

Cluster 1 (hereinafter referred to as the *anthropocentric group*): This group was identified with a high anthropocentric orientation toward forests and nature and a low biocentric orientation. This group agreed with freedom to build private residences near the urban - wildland interface with little or no government intervention. They agreed that the primary responsibility for protecting homes was with the property owner and not the government. They supported artificial means of managing forests where necessary.

Cluster 2 (hereinafter referred to as the *biocentric group)*: This group was identified with a high biocentric orientation toward forests and nature and a low anthropocentric orientation. They disagreed in the notion of freedom to build in the urban - wildland interface with little or no government intervention. They agreed with the notion of government responsibility for protecting private residences from wildland fire and slightly disagreed that responsibility lies primarily with the homeowner. This group supported artificial means of managing forests where necessary.

The groups differed on a several sociodemographic characteristics. The anthropocentric group had a higher proportion of males than the biocentric group (73.8% versus 53.3%), generally lived closer to a forest area (54.9% of anthropocentric group lived within one mile of a forest area versus 41.2% of biocentric group), and was slightly more likely to have a timber-related occupation (14.9% versus 8.6%). Both groups had a median education level of some college (with no college degree), a median household income of $50,000 to $74,999, and a mean age of just over 58 years old, not surprising since a population of property owners that includes seasonal, fulltime, and second home owners are likely to be older than the general population.

### 4.2 Comparison of Anthropocentric and Biocentric Groups on Perceptions and Behavior

We compared the anthropocentric and biocentric groups on the likelihood and evaluation of outcomes to creating defensible space (our measure of attitude), normative beliefs and motivation to comply with those beliefs (our measure of subjective norms), perceived barrier control (both effectiveness of and barriers to creating defensible space), behavior intention, and behavior.

Independent samples t-tests found a number of significant differences between the anthropocentric and biocentric groups on their perceptions of outcomes to creating defensible space around their homes. The biocentric group was more likely to agree that creating defensible space would create a nice looking neighborhood, improve the appearance of their property, reduce damage to a home due to wildland fire, and make firefighters' jobs easier. This group was also more likely to evaluate these as positive outcomes. There were no instances where the perceived likelihood and evaluation of outcomes were a different direction between the two groups. The biocentric group, however, felt stronger about the likelihood and evaluation of outcomes to creating defensible space.

Independent sample t-tests found similar relationships for the subjective norms variables as for the attitude variables. The biocentric group believed more strongly than the anthropocentric group that family, neighbors, the Forest Service, and the local fire department would be more likely to approve of them creating defensible space and was more likely to comply with the wishes of referent individuals and groups. The anthropocentric group was unlikely to create defensible space simply because neighbors, community leaders and the Forest Service wanted them to.

Independent samples t-tests found only two significant differences between the two groups on perceived barriers to creating defensible space. The anthropocentric group was least likely to indicate that they did not have the physical ability to do the work and to feel it is the fire department's responsibility to do the activities. Both groups similarly rated all other barriers as relatively unimportant to creating defensible space. There were significant differences in the perceived effectiveness of defensible space activities between the two groups, although both clusters found all activities potentially effective. The biocentric group found all activities but maintaining irrigated green space and reducing tree density to be potentially more effective than did the anthropocentric group.

Independent samples t-tests found a number of significant differences between the two groups in their intention to engage in defensible space activities. The biocentric group indicated a greater likelihood of removing branches within 10 feet of

their roof, maintaining an irrigated green area, and planning an evacuation route from home than did the anthropocentric group, though both groups indicated some likelihood of doing these activities. The anthropocentric group was less likely to plant fire resistant plants and serve on a committee for fire-related issues. Finally, while the biocentric group was slightly likely to plant trees and shrubs 15 feet apart, the anthropocentric group was unlikely to do so.

Chi square analysis found only one significant difference between the groups on the performance of an activity. A higher proportion of the biocentric group maintains an irrigated green area. It should be noted that about one-half or more of the respondents in both clusters engaged in all the activities except for using nonflammable building materials, planting trees and shrubs at least 15 feet apart, planting fire resistant plants such as ivy, and serving on a committee of residents.

### 4.3 Comparing Groups on the Relationships Among Study Variables

Two regressions sets for each group were conducted. In the first regression set, behavior was regressed on behavior intention, attitude, subjective norms, and the perceived behavioral control. In the second regression set, behavior intention was regressed on attitude, subjective norms, and the perceived behavioral control variables.

For both the anthropocentric and biocentric groups, the strongest predictor of doing defensible space activities was the intention to do them. None of the other factors were significant predictors of behavior. While the high predictive power of behavioral intention was expected, the posited direct effect of perceived behavioral control on behavior was not statistically significant.

For the anthropocentric group, the strongest predictor of intention to create defensible space around one's home was perceived behavioral control - effectiveness. Attitude toward these activities was also a significant predictor of behavior intention. Finally, perceived behavioral control - barriers was a significant but weak predictor of behavioral intention. Subjective norms did not significantly predict behavior intention for the anthropocentric group. Results were different for the biocentric group. The strongest predictor of behavioral intention for this group was perceived behavior control - barriers. Subjective norms and attitude were the next strongest predictors of behavioral intention. Perceived behavioral control - effectiveness did not significantly predict behavior intention for cluster 2.

## 5.0 Discussion

This study examined the role that basic beliefs play in influencing specific perceptions and behaviors related to creating defensible space around one's home in the urban-wildland interface. Prior to discussion of the results, some considerations related to the validity of the results should be addressed. First, while the results are representative of residents of the four counties in Minnesota that were part of the study, care should be taken before assuming the results can be applied to other areas of the country that have different wildland fire problems and histories. Second, social desirability bias may result in over-reported behaviors of creating defensible space. However, the ability to predict specific perceptions and behaviors through a value-based model found in this study was consistent with previous research supporting the predictive validity of value-laden basic beliefs.

### 5.1 Categorization of Respondents on Basic Belief Dimensions

Confirmatory factor analysis on the basic belief dimensions supported the theoretical structure of the items, identifying six basic belief dimensions related to forest and wildland fire management. These were *biocentric*, *anthropocentric*, *freedom*, *artificial management*, *government responsibility*, and *personal responsibility* dimensions. While not exhaustive of the dimensions that might exist regarding values related to forest and wildland fire management, these represent key value - based dimensions that might influence more specific attitudes toward wildland fire issues. This is supportive of other research that suggests that the orientation of value - based beliefs can influence more specific perceptions and behaviors (Dietz et al. 1998; Fulton et al. 1996; Homer & Kahle 1988; McFarlane & Boxall 2000; Stern & Dietz 1994; Stern et al. 1995).

### 5.2 Attitudes, Subjective Norms, and Perceived Behavioral Control toward Defensible Space

While support for conducting defensible space activities around one's home in the urban - wildland interface was high for both clusters, differences were found in the strength of specific perceptions that underlie willingness to engage in those activities. The relative effects of

perceptions on behavior were related to one's basic value - laden beliefs. For example, respondents in the biocentric group had more extreme attitudes toward engaging in defensible space activities as noted by the perceived higher likelihood of positive outcomes such as reducing fire damage to homes, enhanced aesthetic benefits of defensible space, and making firefighters' jobs easier.

In addition to more extreme positive attitudes toward engaging in defensible space activities, the biocentric group placed greater weight on the perceptions of important referents in their decision to engage in defensible space activities than did the anthropocentric group. In fact, while the biocentric group was inclined to indicate compliance with what community leaders, the Forest Service, and the local fire department would want them to do, the anthropocentric group indicated that they would not be inclined to comply with community leaders and the Forest Service and significantly less likely to comply with the local fire department. The biocentric group saw nearly all of the specific defensible space activities as potentially more effective than did the anthropocentric group and were also more likely to actually engage in those activities.

It is also instructive to examine the relative effects of these factors on the intention to created defensible space. While the biocentric group held more extreme attitudes toward engaging in defensible space activities, their attitudes toward the activities were less likely to drive their intention to do the activities than were the wishes of other individuals and groups. In fact, the strongest factor that influenced the biocentric groups' intention to do defensible space activities were the barriers and constraints that the individual might run into and have little control over. If barriers and constraints to creating defensible space can be effectively addressed, the likelihood of this group to creating defensible space is strong, as long as the benefits of such behavior is effectively communicated. While the anthropocentric group saw defensible space activities as less effective than did the biocentric group, the behavioral control - effectiveness factor was the strongest predictor of their intention to engage in the activities. Their perceptions of the outcomes of doing the activities (their attitude) was also a strong predictor of behavior intention and much stronger than for the biocentric group. Barriers, or constraints, were relatively weak predictors of intention to do the activities and the desires of others (subjective norms) had no effect on whether this group created defensible space.

### 5.3 Conclusion

We identified two groups in the north central counties of Minnesota based on value - laden beliefs about forests and wildland fire management. While a generalization about characteristics of these groups is difficult based solely on responses to our survey, the pattern of basic beliefs of one group appeared to reflect more conservative values. These individuals placed more emphasis on an anthropocentric use of nature, greater freedom to build where the individual wanted, less involvement by government and greater personal responsibility. The second group, on the other hand, placed a significantly higher value on a biocentric focus for nature, as well as greater government intervention and responsibility, arguably a more liberal viewpoint. These differences appeared to find their influence in the motivations, or reasons, underlying the decision to create defensible space around private residences. While general support for creating defensible space in north central Minnesota was strong for both groups, this may or may not be the case in other parts of the country with similar, or greater, urban - wildland problems related to forest and wildland fire management. Also, differences in the urban-rural makeup of a region may imply differences in how residents respond to management issues (Howell & Laska 1992; Steel, List, & Shindler 1997). That different motivations appeared to drive the decision to do defensible space activities suggests that managers in areas with a diverse population may need to consider several approaches to encourage desired behaviors on the part of homeowners. Providing information about how the Forest Service, fire department, or community perceived the development of defensible space might be less effective for individuals with an anthropocentric focus toward natural resource and fire management since this group was significantly less motivated to comply with the opinions of other individuals or groups. On the other hand, information about what is considered appropriate normative behavior might be effective for individuals with a biocentric value orientation. Addressing barriers to creating defensible space would also have varying levels of influence across value-based groups, since they systematically differed in their assessment of the effectiveness of the activities. However, where barriers do exist, information about how such barriers may be overcome might be effective.

Implications of this research lie in a greater understanding of the values that individuals hold toward natural resource and fire management. A number of related benefits can be obtained through obtaining this value information. First, gathering such broad based value information can provide an efficient summary of the diversity of values toward natural resource and fire management that exist in this society. Second, understanding the diversity of values that exist can help managers make educated assessments of how different segments of the public may feel about specific issues such as creation of defensible space and other fire management strategies. Third, such value information can help managers develop more efficient communication programs. Messages can be developed that effectively target specific groups of people that hold similar values about a natural resource or fire management issue. Understanding constituent perceptions through research such as this is one component of improved integration between managers and the public called for by Cortner (1991) and associates (Cortner et al. 1990).

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# STRESS AND COPING IN THE HIGH PEAKS WILDERNESS: AN EXPLORATORY ASSESSMENT OF VISITOR EXPERIENCES

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## Abstract

This study is based on the premise that recreation experiences can produce stress, and that an ensuing coping process influences the outcome of the visitor experience. Qualitative interviews ($\eta$=30) were used to identify influencing factors, stressors, and coping responses among visitors in the eastern High Peaks Wilderness Area of upstate New York. Common stress sources included crowding, resource impacts, and managerial regulations. The most prevalent coping mechanisms were rationalization and displacement. Stress appraisal and coping were influenced by a variety of factors including previous experience, place of residence, motivations, and geographic features of the site. Results will be used as the basis for a quantitative investigation that will take place during the summer of 2004.

## 1.0 Introduction

An increasing number of visitors have ventured into the backcountry since the establishment of the National Wilderness Preservation System (NWPS) in 1964. Hendee and Dawson (2003, p. 389) note, "Recreational use in the original 54 USFS wilderness areas increased 86% from about 3 million RVD's in 1965 to 5.5 million RVD's in 1994." The intensity of wilderness visitation has also increased. Excluding expansive Alaskan wilderness areas that were added to the NWPS in 1980, the estimated number of RVD's per acre has risen from .24 in 1965, to .40 in 1994 (Hendee & Dawson, 2003). Furthermore, use is not evenly dispersed throughout the system. Certain areas are more popular than others, and therefore, are more dramatically impacted by the increasing popularity of wilderness recreation. Given the projected increases in wilderness visitation and the lack of additions to the NWPS it is likely that managers will face increasing difficulty as they attempt to balance the conflicting demands of public access and protection of wilderness values.

Numerous studies have investigated the relationship between use densities and the quality of the visitor experience (Kuss et al. 990). Stewart and Cole (2001) emphasize that the results have been mixed and that considerable disagreement exists regarding the managerial implications of such work. They state: "In 24 of the 27 studies reported by Kuss et al. (1990), density or encounters had a stronger effect on perceived crowding than on experience quality" (p.107). Stewart and Cole also note that effect sizes have been marginal: "Where the effect of perceived crowding on experience quality has been assessed, the strength of association is generally weak" (p.106). While there have been numerous explanations for such findings, a particularly prevalent proposition is that visitors respond to wilderness conditions based upon a complex set of influencing characteristics. Stewart and Cole state: "One of the foremost explanations is that individuals vary greatly in their response to use density and encounters. They vary in motivations, expectations and preferences, as well as on their ability to cope with various encounter levels" (p.108.)

The proposition that visitors are able to cope with undesirable conditions has led to a recent interest in stress/coping theory as a means of investigating the quality of wilderness experiences. (Schneider 1995; Miller 1997; Schuster 2000). Stress/coping theory offers a unique approach for assessing the visitor experience in that multiple influencing factors are evaluated in relation to a combination of stressors, coping mechanisms, and outcomes. For example, a person with a high level of experience in a particular wilderness area may develop a sense of attachment that influences the stress coping process. Certain situations, such as crowding and the behavior of other visitors may be appraised as stressful by a visitor who is attached to the area. However, the manner in which the visitor copes (i.e. responds) to these situations ultimately determines the outcome of the wilderness experience.

The purpose of this study is to identify influencing factors, stressors, and coping responses among visitors in the eastern High Peaks Wilderness Area of upstate New York. This study adapts an existing theoretical framework as a means of assessing the visitor experience. It is based

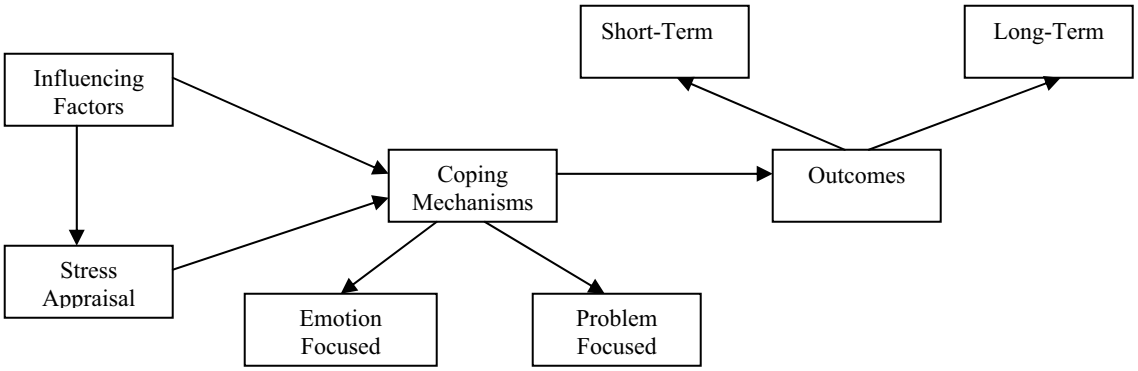


Figure 1.—Theoretical Stress/Coping Model (Adapted from Lazarus and Folkman 1984)

on the premise that recreational experiences can produce stress, and that an ensuing coping process influences the outcome of the visitor experience. It should be noted that the study was exploratory in nature and no attempt was made to specify causal relationships between elements of the stress/coping model. Results will be used as the basis for a quantitative investigation that will take place during the summer of 2004.

### 1.1 Stress/Coping Theory

Lazarus and Folkman (as cited in Schuster 2000) posit that the stress/coping process occurs in a three-stages. First, person and environmental factors influence the perception of stress. Second, an appraisal process mediates individual responses to existing stressors. Third, the appraisal process influences the individual's coping response, and indirectly, the outcome of the experience. Figure 1 illustrates the components of the stress/coping process.

Influencing factors are the personal and situational attributes that influence the perception of stressful conditions and associated coping responses (Lazarus & Folkman 1984). It is proposed that influencing factors have a direct effect upon both the appraisal of stress and the coping responses that follow. Lazarus and Folkman define appraisal as the personal evaluation of particular conditions as stressful (i.e., harmful, threatening, challenging, or benign). Appraisal acts as a mediating variable that is positioned between influencing factors and coping responses. Stressors are the specific person/environmental inputs that are evaluated during the appraisal process. Coping mechanisms are behavioral (i.e., problem-focused) or emotional (i.e., emotion-focused) responses that are enacted to mitigate sources of stress (Folkman & Lazarus 1980). Outcomes are the short-term and long-term effects of the stress/coping process (Lazarus & Folkman 1984). The following section provides an operational definition of stress and places the model within the context of outdoor recreation.

### 1.2 Stress/Coping Within the Context of Outdoor Recreation

We conceptualize stress as daily hassles: "The irritating, frustrating, distressing demands that to some degree characterize everyday transactions with the environment" (Kanner et al. 1981, p.3). Previous research in the field of psychology has demonstrated that increased exposure to daily hassles has resulted in pessimistic attitudes (Stone & Neale 1982), higher levels of psychological distress (Zautra et al. 1986), and physical health complications (Kubitz et al. 1986; Cox et al. 1984). The hassles construct is particularly relevant to outdoor recreation research because it allows for an identification of stressors that are common in wilderness environments. Schuster (2000) found that 87% of visitors experienced at least one hassle while hiking in the Shinning Rock Wilderness. Litter was the most common hassle, followed by noise from other people, damage to the resource, and crowded campsites. In a related study, Schuster and Hammitt (2000) found that 72% of private boaters on the Ocoee River in Tennessee experienced social conflicts with other river users. Miller and McCool's (2003) investigation of the stress/coping process in Glacier National Park revealed that over half (56%) of the visitors experienced a situation that "detracted" from their visit. Crowding was the most common source of stress, followed by access to facilities, the behavior of other visitors, and construction delays. In contrast to the previously mentioned studies, Schneider (2000) found that relatively few visitors (11.8%) experienced conflict when visiting an urban-

proximate wilderness in the southwestern United States. However, this study utilized an open-ended approach to identify stress (e.g. conflict) as opposed to a checklist of possible stressors/hassles. Thus, the latter approach may be more effective for identifying a range of conditions that have the potential to detract from the visitor experience.

A promising aspect of recreation stress/coping research lies in the potential to link hassles to specific emotional and/or behavioral coping mechanisms. Once a visitor experiences a hassle an appraisal process occurs in which the individual assigns meaning to the situation and evaluates potential responses. The appraisal process occurs in two stages (Lazarus & Folkman 1984). First, a primary appraisal allows the visitor to determine if a particular situation is stressful. If so, an evaluation of one's ability to cope with the situation occurs. This secondary appraisal may involve accepting responsibility, evaluating the appropriateness of emotion-focused and problem-focused coping responses, and an assessment of the potential efficacy of one's response (Smith & Lazarus 1990). Once the secondary appraisal is complete, an ensuing coping process is enacted in an attempt to mitigate the impacts of the stressor. Although numerous coping strategies have been identified (Folkman et al. 1986), the various responses can be summarized as being either emotion-focused or problem-focused. Emotion-focused coping is a psychological attempt to maintain congruence between perceived conditions and a desired state. Problem-focused coping is an active attempt to change a situation deemed as threatening (Taylor & Aspinwall 1996). Folkman and others (1986) identified eight specific coping mechanisms that can be classified according to this distinction. Emotion-focused strategies included self-control, distancing, positive reappraisal, accepting responsibility, and escape/avoidance. Problem-focused strategies included confrontive coping, seeking social support, and planful problem solving. These strategies represent domains that can be adapted to include coping strategies employed by wilderness visitors.

Previous recreation coping research has typically focused on three types of coping responses: product shift, rationalization, and displacement (Hoss & Brunson 2000; Johnson & Dawson 2004; Manning & Valliere 2001). Product shift is an emotion-focused response that occurs when the individual redefines their expectations for the experience based on actual on-site events (Shelby and others 1988). Johnson and Dawson (2004) found product shift to be the second most common coping response among hikers in Adirondack Park wilderness areas. Rationalization is an emotion-focused response based on the theory of cognitive dissonance (Festinger 1957). Rationalization occurs when the individual's desire to maintain consistency between expectations and the actual experience leads to justifications for the existence of stressful conditions. In contrast to other studies, Hoss and Brunson (2000) found rationalization to be the most prevalent form of coping among visitors in nine western wilderness areas. Displacement is a problem-focused response that occurs when the individual attempts to avoid stressful situations (Anderson & Brown 1984). Displacement can be either spatial or temporal. Spatial displacement occurs when the individual moves to a different location within the wilderness (e.g. intra-site) or to a different area all together (e.g. inter-site). Temporal displacement occurs when the individual visits the same area at a different time of the day, week, or year (Manning & Valliere, 2001). Temporal displacement was the most common form of coping in Johnson and Dawson's study of hikers in Adirondack wilderness areas.

An emerging approach to recreation coping research has employed a modified Ways of Coping Checklist (Folkman & Lazarus 1980) as a means of expanding the sphere of possible responses to stress/hassles in recreation settings (Schneider 1995; Miller 1997; Schneider 2000; Schuster 2000; Schuster & Hammitt 2000; Miller 2003; Schuster et al. 2003). This approach operationalizes coping as a checklist that includes responses common in both the recreation and psychological literature. Schuster and others (2003) identified five distinct coping domains in their study of visitors to the Shinning Rock Wilderness in North Carolina. Emotion-focused domains included self-control and psychological distancing. Problem-focused domains included behavioral coping, confrontive coping, and planful problem solving. Following established trail etiquette, which was part of the self-control domain, was the most commonly reported coping response. This finding is supported by Schneider (2000), who found that adhering to established trail etiquette was the most common form of coping among visitors in an urban-proximate wilderness. Furthermore, Schuster and Hammitt (2000) found that exercising self-control and adhering to proper river etiquette were the most common coping responses among private boaters on the Ocoee River. The presence of five coping domains was

**Table 1.—Frequencies for influencing factors, stressors, and coping mechanisms**

| Influencing Factors | Frequency[a] (η) | Stressors | Frequency (η) | Coping Responses | Frequency (η) |
|---|---|---|---|---|---|
| **Experiential** | **87%** | **Resource** | **87%** | **Emotion** | **77%** |
| Familiarity w/ HP | 15 | Impacts | 20 | Rationalization | 14 |
| Attachment to HP | 07 | Insects | 12 | Social Support | 06 |
| First Visit to HP | 06 | Bears | 08 | Re-appraisal | 06 |
| Other | 07 | Other | 04 | Humor | 04 |
| Total | 35 | Total | 44 | Product Shift | 04 |
| **Demographic** | **57%** | **Social** | **77%** | Restraint | 02 |
| Residence | 11 | Crowding | 19 | Distancing | 02 |
| Age | 03 | Behavior | 07 | Total | 38 |
| Other | 07 | Group Issue | 03 | | |
| Total | 21 | Total | 29 | | |
| **Motivational** | **30%** | **Managerial** | **63%** | **Problem** | **73%** |
| Challenge | 09 | Regulations | 14 | Displacement | 10 |
| Appreciate Nature | 08 | Communication | 09 | Problem Solve | 09 |
| Other | 01 | Maintenance | 04 | Etiquette | 07 |
| Total | 18 | Total | 27 | Ignore Rules | 05 |
| **Geographic** | **30%** | **Personal** | **50%** | Seek Info | 04 |
| Access/Destination | 04 | Intra-personal | 06 | Confrontation | 02 |
| Displaced | 03 | Inexperience | 06 | Other | 02 |
| Time of year | 02 | Health | 05 | Total | 39 |
| Total | 09 | Total | 17 | | |

[a]Percentages refer to the proportion of groups mentioning at least one item within the respective sub-domain. η = the number of times the item was mentioned by groups that reported at least one item within the respective sub-domain.

also reported by Miller and McCool (2003) in their study of Glacier National Park visitors. Three of the domains represented displacement-like behaviors. The remaining two consisted of cognitive adjustments and behavioral responses.

## 2.0 Research Methods

The High Peaks Wilderness is located in the Adirondack Park of upstate New York. The area consists of 192,685 acres of mountainous terrain that is popular with hikers and backpackers. The state's highest peak, Mt. Marcy, is included within the wilderness boundary. The New York State Department of Environmental Conservation (1999) estimates that use increased from 83,983 visitors days in 1988 to 139,663 visitor days in 1998. The managing agency notes that most visitors are attracted to the eastern portion of the wilderness due to the ease of access, the extensive network of recreational trails, and the outstanding alpine scenery. A majority of visitors access the wilderness through five access points, four of which are located in the eastern portion of the wilderness. The DEC states, "About 72 percent of all visitors access the unit through just five of the units twenty developed trailheads: Adirondack Loj, John's Brook, Cascade, South Meadows, and Ampersand" (1999).

Data were collected through 30 semi-structured group interviews with overnight wilderness visitors during the summer of 2003. A convenience sample was utilized to contact respondents at Marcy Dam, Lake Colden, the John's Brook Tail, and the summits of Mt. Marcy and Mt. Algonquin. A total of 31 groups were contacted with all but one agreeing to participate in the study. Respondents were asked a series of questions that related to four elements of the hypothetical stress/coping model. Responses were recorded in fieldnote form and entered into a database for coding and analysis.

Qualitative analysis of the data took place in five steps. First, a code list was generated by systematically reviewing the answers to each question. Second, the codes were grouped into domains that pertained to the first three elements of the stress/coping model: influencing factors, stressors and coping responses. Each of these domains

was then divided into a number of sub-domains. For example, stressors were divided into personal, resource, social, and managerial sub-domains, each of which consisted of multiple individual items (e.g. trail conditions, bear encounters, etc.). Fourth, each interview was systematically reviewed and coded with a label that allowed the researcher to identify specific items within each of the sub-domains. Fifth, a keyword search was conducted on each item in the data base to determine the number of interviews in which the item occurred. This allowed the researcher to rank the salience of each item with its respective sub-domain. Table 1 displays the frequencies for each sub-domain. The following section provides descriptive results and a detailed analysis of the data.

## 3.0 Results of the Study

Thirty groups were interviewed, accounting for a total of 79 visitors. The average group size was 2.6, which is consistent with New York State Department of Environmental Conservation estimates (NYSDEC 1999). The average trip length was 2.7 days, which is slightly higher than NYSDEC estimates. The 79 visitors accounted for a total of 232 RVD's. High Peaks visitors were primarily from Canada (39%) and New York (33%) with those from Montreal accounting for approximately 35% of the total visitor days. This number is higher than that reported by the NYSDEC, which estimates that approximately 18% of the visitors are Canadian. In terms of gender, there were more males (76%) than females (24%).

### 3.1 Influencing Factors

Influencing factors were divided into four sub-domains: experiential, demographic, motivational, and geographic. Experiential factors related to a hiker's familiarity with the High Peaks and their overall level of hiking experience. The most common experiential factor was familiarity with the site, followed by attachment to the resource. Hikers who were familiar with the area had a better idea of what to expect during their visit and were better prepared to cope with potentially stressful situations. A respondent with several years of hiking experience in the High Peaks stated:

> I came in from the Loj last time. I was hoping that Upper Works would be a less used entry point. Knowing that people would be here wouldn't necessarily deter me from coming though. At Indian Pass there were relatively few people. We saw two groups but no one was on the Cold Brook Trail.

This hiker was able to draw from previous experience to avoid undesirable situations. However, those familiar with the area were also more inclined to notice changes in use levels and related impacts. Another experienced High Peaks hiker stated: "There are more cars this summer - you can see more use in areas with lean-tos. The trails are pretty well maintained but there is erosion from use and water run-off." While this respondent noted increasing levels of use and resource impacts the overall intensity of these stressors was minimal and the individual was able to successfully cope with there presence.

The degree of attachment that visitors had for the resource also appeared to influence the stress/coping process. Visitors that displayed an attachment to the resource tended to be experienced hikers who acknowledged that the area was crowded. Rationalization was a common coping response among this group of users. The following quote is from a hiker that had commented on the number of people and the difficulty that his group had finding a place to camp: "We like this place because it is the closest high quality hiking area. It's only 2.5 hours from Montreal." Having acknowledged that the area was crowded, the visitor rationalized the existence of a potentially stressful situation in order to mitigate its effect.

Demographic influences related to personal characteristics such as age. When compared to other sub-domains, this was the second most common influencing factor. Place of residence was the most salient factor within this sub-domain, and appeared to be related to place attachment. In other words, those respondents that lived close to the High Peaks (e.g. within 2-3 hours.) seemed to be dependent upon the area as a place for hiking. As a result, they were more inclined to rationalize the existence stressful situations. At the same time, these groups visited the area frequently and were able to draw from their experience when attempting to cope with stress. A frequent High Peaks visitor from Montreal stated: "You learn with experience. We try to arrive on Friday instead of Saturday." Other demographic influences, including age, gender, and ethnicity, were less common.

Motivational influences addressed visitors' reasons for visiting the High Peaks. Challenge and nature appreciation were the most common motivational influences. The frequency of these factors was nearly equal and it appears that visitors may be motivated by both simultaneously. Analysis of the data revealed that motives influenced both the appraisal of stress and the manner in which visitors coped with stress. One visitor, a first-time backpacker who had never visited the High Peaks, camped in an undesignated spot when he failed to reach his destination: "I had to camp off the side of the trail because it was getting dark. I realized I wasn't going to make it so I found a flat spot with a view." When asked why he had decided to visit the High Peaks the hiker replied, "I heard it was a beautiful place and I wanted to see it for myself. I was looking for a challenge."

Geographic influences included features of the site and seasonal influences such as time of year. When compared to the other sub-domains, this was the least common influencing factor. Point of access/destination within the wilderness was the most common geographic influence. One group asked, "Is it safe to leave your car at South Meadows? The parking lot at the Loj was full." When asked if they would do anything different on their next visit one group member responded, "We'll arrive earlier - before 8am - so we can park at the Loj. We feel comfortable leaving the car there because you have to pay and you know someone watches it." Inter-site and temporal displacement were also mentioned, as was time of year. These factors appeared to be inter-related, with experienced visitors using different access points, avoiding certain parts of the wilderness, or visiting the High Peaks at specific times of the week.

### 3.2 Stressors

Stressors were sub-divided into four domains: resource, social, managerial, and personal. When compared to other sub-domains, resource stressors were the most common form. Resource stressors included those situations that were related to the natural environment. Multiple resource stressors were mentioned by individual groups, which suggested that visitors experienced a variety of stressors on a given trip. Resource impacts were the most common source of stress within this domain and across all four in general. Other salient resource stressors included insects, trail conditions, and bear encounters. The latter occurred less frequently than the previously mentioned stressors but special attention is warranted. Bear encounters were mentioned by eight out of thirty groups, and often resulted in additional stress such as the loss of food and safety concerns. One group member stated: "Last night some people lost their food to a bear. We had a problem last year too." When asked how the presence of the bear affected their trip another group member replied, "The bear was walking around our camp at night. We stayed in the tent and tried to ignore it but it took a while to go back to sleep." Bear encounters occurred primarily at Lake Colden, which suggests that choosing this area as a destination within the wilderness may increase the likelihood of bear incidents and related hassles.

Social stressors were the second most common form of stress. Social stressors included any situation that resulted from interaction with other visitors, including those within the same group. Crowding was the most common source of stress within this domain and the second most common overall. While crowding was frequently reported, visitors seemed to rationalize its existence as the inevitable result of the High Peak's popularity: "It's a little crowded but that's to be expected on a summer weekend." Less common were complaints about the behavior of other visitors. These complaints tended to be associated with noise and improper food storage: "People are really sloppy at Marcy. They're camping in undesignated spots and there's a lot of trash laying around." Group dynamics were an issue in small number of groups. However, visitors may be unlikely to discuss such issues in a group interview setting. Thus, it is possible that this source of stress is more salient that it appears.

Managerial stressors were the third most common form of stress. This sub-domain included those stressors that were related to the management of recreational use within the High Peaks. Complaints about rules and regulations were the most common form of managerial stress and were the third most common overall. Comments were related to designated camping sites, the prohibition of fires, and parking fees. Complaints about fees were most prevalent among Canad.ians, who mentioned the exchange rate between U.S. and Canadian currency: "$18 for parking is a big deal. If it was a week long trip I don't know what I would do." Communication issues, such as confusing signs and negative interactions with park personnel were another salient form of managerial stress. A group that camped in an undesignated spot

was asked to move by park personnel. While they agreed to move, they seemed to feel that the problem was attributable to poorly marked sites. One group member stated: "It's not clear where you're supposed to camp. We stayed in an illegal site because we got in when it was dark and couldn't figure out where we were supposed to be." Other concerns related to maintenance issues and a lack of infrastructure. These comments were related mostly to the condition of existing food storage facilities. Interestingly, none of the groups mentioned a lack of regulation as a problem despite the high frequency of resource, social, and managerial stressors.

Personal stressors were the least common form of stress. Intra-personal constraints such as fear of bears were the most salient, followed by experience-related stressors (e.g. difficulty hanging food from bears), health concerns, and benign stressors (e.g. not seeing enough people, not making it to an intended destination, etc.). A visitor originally from Rawanda stated: "There was [sic] not enough people. Today I met a lot and it gives me energy. Yesterday we didn't see a lot of people and I felt very alone. It's good to see people but the experienced people don't like it." This respondent was on his first backpacking trip and had a different cultural background than most High Peaks visitors. His comments support the notion that experience levels and cultural backgrounds may influence the appraisal of stress in wilderness settings.

### 3.3 Coping Responses

Coping responses were sub-divided into two domains: emotion-focused and problem focused. The frequency of emotion-focused and problem-focused coping was approximately equal. Analysis of the data revealed that visitors utilized both emotion-focused and problem-focused coping mechanisms simultaneously. Rationalization was the most common, occurring in nearly half of the interviews. This was also the most common coping mechanism across the two sub-domains. Other salient emotion-focused mechanisms included seeking social support, positive re-appraisal, the use of humor, and product shift. The following quote provides an example of product shift as a means of coping with crowding: “It’s Saturday night so I guess its normal.” While this may sound like rationalization, the visitor did not expect that crowding would be as bad as it was. Once on site, the visitor re-defined his expectation for the experience by stating “I guess it’s normal.” Rationalization, on the other hand, does not imply that the condition was unexpected. A visitor who rationalized the presence of blackflies stated: “The bugs were bad. I got bitten everywhere but that’s part of it.”

Displacement, planned decision-making, and practicing established etiquette were the most common problem-focused coping methods. A behavior was only coded as displacement if it occurred on-site. This allowed the researcher to distinguish between influencing factors, coping responses, and potential outcomes of the experience. Intra-site displacement was the most common form, with many visitors indicating that they avoided particular areas within the High Peaks: “We avoid certain areas like Marcy. That’s why we come here. We did Big Slide this time and we only saw five tents and eight people.” Other problem-focused mechanisms included ignoring the rules, information seeking, confronting other visitors, and reporting concerns to park authorities. As mentioned earlier, those who chose to ignore rules/regulations in response to a particular source of stress often rationalized their actions. This finding is further supported by a group of hikers that had complained about the regulation prohibiting fires: “We made a fire to cook on after our stove malfunctioned.” Rather than borrowing a stove from one of the many groups camped around them, they choose to make a fire and rationalized their behavior as a necessary response to the situation.

## 4.0 Discussion

Recreation stress/coping research provides a theoretical foundation for identifying emotional and behavioral responses to situations that have the potential to negatively detract from the visitor experience. This approach is particularly useful because it allows managers to focus their efforts on conditions that visitors are unable to reconcile without placing additional strain on resource, social, and managerial capacities. The purpose of this study was to identify influencing factors, stressors, and coping responses among visitors in the eastern High Peaks Wilderness Area of upstate New York. The results indicated that at least one hassle was experienced by all groups and that most experienced multiple hassles. Reports of stress in previous studies have ranged from 12%-87%. However, it should be pointed out that the presence of stress in this study was based on the researchers’ interpretation of interview notes. In contrast, previous studies have utilized open-ended

response formats or hassles checklists that allow the respondents to specify when stress had occurred. Many of those interviewed in this study initially stated that they had not experienced hassles during their visit. However, additional questioning resulted in the identification of four stress domains: resource, social, managerial, and personal. Many stressors were revealed only after asking the respondents if they would do anything differently on their next visit. Thus, it appears that the efficacy of one's coping efforts may influence responses to open-ended questions. In other words, visitors who have successfully coped with stress/conflict in the field are not likely to report the presence of stress/conflict. Therefore, future quantitative studies should consider the use of scales that present respondents with a range of potential stressors along with corresponding intensity measures. This will allow for a determination of the type/intensity of specific stressors, as well as the overall level of stress/conflict experienced by the individual.

The most common stressors within the High Peaks were resource impacts, crowding, and rules/regulations. Personal hassles such as intra-personal constraints were less common but still a concern for some visitors. The emergence of the latter two have not figured prominently in previous research and deserve further investigation. Interestingly, none of the respondents reported a lack of regulation as a concern despite the prominence of resource impacts and crowding. Future research should attempt to substantiate this finding quantitatively. It may be that visitors find ways to cope with the presence of impacts and crowds rather than pushing for more regulation and potentially facing a tradeoff between access and preservation. The presence of personal factors also deserves further attention. While many of these factors may appear beyond the control of managers (e.g. fear of bears), they may be related to the presence of other stressors that are within management control. By further examining an expanded range of stressors, influencing factors, and coping responses, researchers will be able to provide managers with a more complete perspective on the recreation experience.

This study identified a number of influencing factors that appear to be operational within the High Peaks. Experiential factors, including familiarity with the site and attachment to the resource were most common. Other domains included demographic characteristics, motivational influences, and geographic features of the High Peaks Wilderness. Influencing factors appeared to be associated with both the appraisal of stress and the coping responses of visitors. This was particularly evident among more experienced users, who were more likely to report hassles but better able to cope with potentially detracting situations. Coping strategies included both emotion-focused responses and problem-focused responses. The most common emotion-focused response was rationalization. This finding was consistent with that of Hoss and Brunson (2000). Salient problem-focused responses included displacement, planful problem solving, and adhering to established etiquette. Similar results have been reported in previous research (Schneider 2000; Schuster 2000; Miller & McCool 2003; Schuster et al. 2003).

The results of this study have shed new light on visitor experiences within the eastern High Peaks Wilderness Area. The results are useful not only to managers, but to researchers that are interested in further examining the stress/coping process in outdoor recreation environments. While crowding is often thought to be the primary concern of visitors and managers alike, this study suggests that there are other conditions that have the potential to influence the visitor experience within the High Peaks Wilderness. Particularly relevant were management regulations and bear encounters, both of which are within management control. Of concern to researchers is whether or not the relationships suggested in this exploratory study can be further substantiated through additional studies. Potential research questions include: (1) How do previous experience and attachment to the resource influence the appraisal of stress within wilderness environments? (2) How does previous experience, place attachment, and stress appraisal influence the choice of coping mechanisms within wilderness environments? Answering these questions will expanding upon previous stress/coping research and provide managers with informed knowledge to improve visitor experiences while protecting the integrity of wilderness resources.

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# CAMPERS ACROSS THE RECREATION OPPORTUNITY SPECTRUM: A COMPARATIVE EXAMINATION

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## Abstract

The purpose of this study was to compare the demographic and behavioral profiles of campers across three distinct types of camping opportunities. Comparing these three campsites will help identify the types of users at each and to assist managers' efforts to better serve the users of these sites. Questionnaires were distributed to 507 persons camping in three different campsites in the Sumter National Forest, in South Carolina. A total of 419 were returned for a response rate of 82.6%. Analysis indicated that there was variation across campsites for all attributes that were examined. These findings illustrate that even though the sites are within close proximity to one another, they offer a diverse range of opportunities and attract an equally diverse group of recreationists. These findings have important implications for natural resource recreation management frameworks such as the Recreation Opportunity Spectrum.

## 1.0 Introduction and Literature Review

Diversity among recreationists has been recognized as early as the 1960's (Wagar 1963; King 1966; Shafer 1969). Understanding the different types of recreationists and their preferences is critical to managing recreation resources. The Recreation Opportunity Spectrum (ROS) provides managers with a tool to manage for this diversity. The ROS outlines different recreation settings from which managers can allocate and plan resources (Manning 1999). Each setting is characterized by managerial, social, and environmental factors (Clark & Stankey 1979). Understanding the visitors who prefer each setting is of critical importance to managing their enjoyment. Yuan and McEwen (1989) conducted a study similar to the current one across three different campsite settings. Their campsites, however, were situated towards the middle of the Recreation Opportunity Spectrum (ROS). They suggested that studies should examine camp settings on the extremes of the spectrum. The current study does that in examining wilderness campers, to walk-in campers, to car campers.

Driver et al. (1987) outlined some principles regarding use of the ROS for managers. This article identifies three components that make up a recreational opportunity: activity opportunities, setting opportunities, and experience opportunities. The purpose of this study was to examine similarities and differences of campers at three different sites within the Sumter National Forest in South Carolina.

## 2.0 Methods

### 2.1 Study Area and Study Sites

The study area was near Burrell's Ford on the Chattooga River, which creates the northernmost border between South Carolina and Georgia. Three separate sites were sampled in the study; the Ellicott Rock Wilderness Area (ER), Burrell's Ford (BF) walk-in campground, and Cherry Hill (CH) developed campground. The three study sites are all located within a three-mile radius of each other and are on the Andrew Pickens Ranger District of the Sumter National Forest. Cherry Hill has 27 drive-in campsites with picnic tables, tent pads and has a centrally located bathhouse with running water and electricity. Burrell's Ford is a walk-in area located 350 yards from a parking lot and at the end of a smooth gravel roadbed. Most of the campsites have picnic tables and lantern hangers and there is a centrally located vault toilet with no running water. The campsites are adjacent to the Chattooga River. Ellicott Rock Wilderness Area, part of the National Wilderness Preservation System, is an 8,274-

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acre area that encompasses the tri-state border between Georgia, South Carolina, and North Carolina. The first campsites are just over ¼ mile from a parking lot.

### 2.2 Study Sample

The study population was all overnight campers who visited Ellicott Rock Wilderness Area (ER), Burrell's Ford walk-in campground (BF), and Cherry Hill campground (CH) during the months of May-October, 2003. The study sample was a convenience sample of campers the researchers came into contact with during visits to the sites. Because many campers do not stray too far from the campsite during certain periods (i.e., meals) of their stay, researchers were able to make contact with most campers at CH and BF on any given weekend. Researchers were able to contact a large majority of the total population during the sampling frame. There were a higher proportion of uncontacted campers at ER due to the large area over which campers were distributed.

### 2.3 Sampling Frame

The sampling frame for surveying was late May 2003 through October 2003. The sites were surveyed on weekends (Friday - Saturday) May 24 through August 30 and October 3 through 25. This sampling frame allowed data collection to capture the most frequently used times of the year. The Friday-Saturday site visits allowed researchers to contact almost all visitors for a given weekend. The rationale behind sampling on these days was that any camper coming in on Friday would, by the nature of camping, be present on Saturday and any camper coming in on Saturday would be present on Sunday. Over the course of the sampling frame, visits were made on selected Sundays to check if any new campers were arriving. During these visits, the researchers observed an insignificant number of campers who had come on Sunday and were not there on Saturday. The researchers also observed that many campers who were present during the week were also present on a weekend. Use patterns in ER were identified by Rutlin (1995). The entry points and trails identified as most heavily used were sampled more often, while the less popular entry points were sampled less often.

### 2.4 Sample Size and Response Rate

A non-probability convenience sample was conducted and 506 campers were contacted. Three refused to accept the questionnaire. Three hundred and seven (307) questionnaires were completed on-site, while 196 respondents chose to complete the survey later and return it in the postage paid envelope. Of the 196 respondents who took the questionnaire home, 117 (59.7%) returned them. The total number of surveys returned was 424 with a response rate of 83.7%. The breakdown for each site was as follows: 44.3% (188) of the total sample was from CH, 29.3% (124) were from BF, and 26.4% (112) were from ER.

### 2.5 Analysis

The analysis was performed in two separate phases. The first phase consisted of calculating frequencies for all variables, then cleaning the data for entry error. Once the initial frequencies were checked for data entry errors and were rectified, the frequencies were re-run, and examined. Specifically, the characteristics of the visit and personal information variables were examined. These descriptive statistics gave researchers insight into the characteristics of visitors in the study and of the characteristics of their camping trip. Visitor and visit characteristics were then subjected to either a one way ANOVA procedure using location (ER, BF, CH) as the independent variable or a Chi-square statistics was computed, depending on the type of data (categorical or continuous). The Scheffe's post hoc test was chosen because of its strict criteria for significance (Tibachnick & Fidell 1996). This procedure was utilized throughout the first and second phases of the analysis to determine significant differences among and between the three campsites.

The second phase of the analysis consisted of descriptive and comparative examinations of the theoretical constructs. Items representing a range of services/ amenities provided by the campsites were grouped into conceptual categories based on face validity. Internal consistency was assessed using Cronbach's alpha correlations. The service offering item domains were then analyzed by campsite using the one way ANOVA procedure described above. Cronbach's alpha values were calculated for the *a priori* domains for camper motivations, which were measured using Driver's (1977) REP scales. No factor analysis was undertaken due to the proven reliability of the REP domains (Mandfredo et al. 1996). For each domain of camper motivations, a grand mean score was computed. These domain means were examined for face validity and then compared across the three sites using the one way ANOVA procedure. Experience Use History was measured using the procedure outlined by Hammitt, Backlund, & Bixler

(in press), and compared across the sites using ANOVA procedures.

## 3.0 Results

The respondents were 70.9% male and 29.1% female. The median age was 40, with the youngest person 16 years and the oldest person 79 years. The highest percentages of visitors were from the 20-29 year age range (24.50%). Over 49% of the sample had at least a college degree. An additional 26.7% had either business school, trade school, or some college training. The reported income of the sample was fairly evenly distributed. The largest income group was $40,000 to $59,000, with 22.1% percent of respondents. The smallest income group was $80,000 to $99,000 represented by 9.4% of respondents. The ethnicity of campers was predominantly white (94.4%). The majority of visitors were from Georgia or South Carolina.

The mean length of stay of campers was 3.1 days. The mean number of people in the group was 4.8 people. The majority of groups (89.7%) were made up of family, friends, or both. Other than camping, viewing scenery (67.9%), day hiking/walking (64.9%), and fishing (52.1%) were common activities in which the respondents participated. Camping and fishing (50.9% and 26.7%, respectively) were the two most common primary activities of the sample. For campers in CH, the two most common activities were camping (56.2%) and fishing (27.6%). In BF a similar breakdown (50.4% and 32.5%) occurred. Ellicott Rock was slightly different with 45.0% camping, 19.8% fishing, and an additional 27.9% stating backpacking as the primary activity. "Swimming in river" was the most commonly reported other activity with 3.5% of the sample.

### 3.1 Comparison Across Study Sites

A one-way ANOVA procedure with Scheffe's post hoc significance tests, combined with Pearson's Chi Square tests revealed several significant differences in campers across the campsites. Respondent age varied significantly across the three sites. On average, CH campers were 8.5 years older than BF campers and 4.2 years older than ER campers. The group size at ER (5.8) was significantly higher than at CH (4.1). Respondent's gender, education level, group composition, and primary activity all varied significantly across the sites (p<005). Income, race/ethnicity, and length of stay, however, were not significant across the three sites.

In total, many variables indicated that different types of people were using each of the different campsites in the study. Campers at CH were significantly older that campers at the other two sites. Burrell's Ford and ER require at least a ¼ mile hike to get to the camping sites. When forced to carry camping equipment down, and then back up the trail, many older people seem to stay away. The percentage of men and women at each site was also different. Females had a slightly stronger presence at CH while males dominated at BF and ER. Education level increased from CH to BF to ER. Income however was not significantly different. At CH, more family groups were represented, at ER more friend groups. Burrell's Ford is between the other two sites on most variables. This would be expected since BF is less developed than CH but more developed than ER.

### 3.2 Camper Profiles

Cherry Hill—Campers at CH were primarily family groups, and older than at the other two campsites. A majority of campers at CH participated in some hiking/walking, camping, or fishing. Most CH campers stated that camping was their primary activity. Income was evenly distributed with 25.1% of campers reporting $20,000 to $39,999, 20.4% reporting $40,000 to $59,999, and 19.2% reporting $60,000 to $79,999. The majority of CH campers were male; however, more females were represented than at the other two sites. The highest percentage of campers had business/trade school or some college training (29.70%). Nearly all where white.

Burrell's Ford—Campers at BF were split nearly evenly between family and friend groups. Campers at BF were the youngest of all the study sites. A majority of BF campers participated in some hiking/walking, camping, viewing scenery, and fishing. At least 1/4 of the campers participated in backpacking or picnicking. Income was fairly evenly distributed with 10.9% reporting $20,000 to $39,999, 27.3% reporting $40,000 to $59,999, and 22.7% reporting $60,000 to $79,999. Half the campers at BF had at least a college degree. Almost all were white and 70% were male.

Ellicott Rock—Ellicott Rock campers were mostly groups of friends. The majority participated in hiking/walking (66.9%), backpacking (82.1%), camping (89.3%), and viewing scenery (71.4%). Almost the same number of people stated that they participated in backpacking as did camping. Ellicott Rock campers came as part of larger

groups than at the other campsites. Nearly half of the campers at Ellicott Rock made between $40,000 and $79,000, with over 1/5 making over $100,000. Ellicott Rock campers were predominantly male, more so than the other sites, and almost all white.

### 3.3 Examination of Theoretical Constructs

Nearly all the campground attribute items proved to be significantly different between at least two of the sites. The only service offering desirability scores which were not different were "scenic areas nearby" and "quiet and restful atmosphere." The 22 service offerings, representing facilities, site attributes, and accessibility were categorized *a priori* into four conceptual domains; developed facilities, parking/roads, privacy, scenic views. One item, "Advance campsite reservation system" was removed due to a lack of fit with the groups. The groups were examined for face validity and then subjected to reliability analysis (Cronbach's alpha). The developed facilities domain had an alpha of .88, the parking/roads domain an alpha of .82, the privacy domain an alpha of .80, and the scenic domain an alpha of .79. The overall means for the service offering domains indicate the level of desirability of each domain on a scale of 1-5. These domain means are based on the grand mean of items within each of the four service domains. From the domain ANOVA three of four domains proved to be significantly different between all sites. Developed facilities, parking/roads, and privacy were all significantly different ($p<.001$) between the campsites. The scenic domain was not significantly different between any of the sites at alpha level $p<.05$.

The differing desirability of these service offerings between each site comes as no surprise. The literature would indicate that someone camping in a wilderness area would not want paved roads to the campsites or electric hookups. Numerous items and domains in this section were not different. While most of the privacy/solitude items were significantly different, all the by-site means were above 4.5. This would suggest that all campers value solitude and privacy. Whether a camper goes to a wilderness area, or a developed campground, they desire peace and quiet, solitude, and privacy.

### 3.4 Recreation Experience Preferences

Driver's (1977) scale of motivation items provides domains from which to research camping motivations. Manfredo & al. (1996) provide a meta-analysis of the studies in which the REP items have been used. They found the domains to be reliable. They also state that factor analysis is no longer necessary. Reliability tests of the items in this study proved to be acceptable (<.80).

When the items were examined individually, one way ANOVA procedures indicated three motivations, which varied significantly across the campsites ($p<.05$). Scheffe's Post Hoc tests revealed respondents at CH indicated a higher score for the motivation "to get away from crowded areas" than those at BF. Campers at CH and ER indicated a higher score on the item "to experience the solitude/privacy of camping" than those at BF. Respondents at BF scored lower on the item "to learn about the natural history or ecology of the area" than did those at ER. The five domains used for motivations were "family cohesion," "enjoy nature," "solitude," "social," and "learning." All the domains proved reliable with coefficients of .79 or higher. The overall means for the domains report the average importance each domain had to the respondent as a reason for their current trip on a scale of 1 to 5. For solitude the overall mean was 4.44 (sd=.61); for enjoy nature 4.29 (sd=.65); for family cohesion 4.20 (sd=.73); for learning 3.69 (sd=.74); and for social 3.03 (sd=.86). The one way ANOVA revealed only one domain to be significantly different among campsites, the solitude domain for CH was higher than BF. This difference was significant at $p<.05$, indicating that even though CH is a developed campground, campers go there to seek solitude. This was the only significantly different mean among the five motivation domains. Burrell's Ford was lower than CH or ER in regards to motivation for solitude.

The first major finding of importance was the difference between the domain "social" and the other domains. The grand mean for the social domain was 3.03. When taken literally this indicates that respondents were neutral. An alternative way to interpret this is in light of the other domains, which were all much higher. In light of the other domains, social was a significantly less important motivation for most respondents. The strongest motivational domain score for camping was for "solitude," with an average score between important and highly important. This finding indicates that campers desire solitude much more than they desire to meet new people. Learning was also low on most respondents' importance scale. This suggests that the majority of campers do not value meeting people or learning about

nature as much as they do being away and solitude. Another finding is the difference between CH, ER, and BF on the solitude items. Cherry Hill campers desired to get away from crowded areas more so than BF campers. Cherry Hill campers, along with ER campers desired the experience of solitude and privacy more so than BF campers. This data indicates that campers at BF were less interested in escaping crowds and attaining solitude than were campers at CH and ER. None of the other motivation domains were significantly different among the three sites.

### 3.5 Experience Use History

The respondents showed a large amount of variance in their previous experience camping at the sites. While there was not any significant difference *between* the sites, the number of years and number of times camped at specific sites varied greatly among campers *within* a given site. Very few (4.7%) respondents stated they had been camping at their respective site more than 30 years. The highest response was 50 years. Seven respondents stated that they had camped at their site 100 or more times. These responses lead to the very high standard deviation in the means. When compared across the three sites, none of the EUH variables proved significantly different. There was high variation among the sites, with users ranging from no previous experience to many years of experience, however, there was little variation between the sites. The classification of visitors into the four categories outlined in Hammitt, Backlund, and Bixler (in press) was consistent across all three sites. The overall breakdown was 32.5% beginner, 18.2% visitor, 20.6% local, and 28.7% veteran. Chi-square tests did not reveal any significant differences across the three campsites. The frequency per year variable (total number of times camped/total number of years) was also not different across the sites. The overall mean was 1.56; for CH 1.65, for BF 1.32, and for ER 1.67. The variance for these variables was not extreme, ranging from 1.01 to 1.63.

## 4.0 Discussion

The analysis revealed numerous differences as well as similarities among campers at the three campsites. These relationships provide a profile of the campers in the three different campsites. The assumption, based on the ROS that as one moves towards the primitive end of the spectrum, the desire for solitude and privacy becomes more important, was not wholly supported.

The camping groups identified in this study seem to be consistent with previous literature on campers. Cordell et al. (1999) found campers to be of three types of groups; retirees in motor homes, younger people camping to reduce the cost of lodging, and people camping to gain access to other activities. In this study, the first and last groups were both well represented. From the data gathered the middle group would be hard to detect. In addition, the study sites were quite remote and far away from any main travel routes. The higher proportion of campers contacted at the developed camping area is a reflection of the increased trend towards developed camping (Cordell et al. 1999).

The results from the REP scales are also consistent with previous findings. The low reported importance of meeting other people has been found previously in studies of wilderness users (Driver et al. 1987). Yuan and McEwen (1989) found that users towards the developed end of the ROS (rural, roaded natural, and semi-primitive motorized) tend to have more positive view of meeting people. This finding was not confirmed in the current study.

### 4.1 Managerial Implications

The ROS framework proposes that recreation site use is related to user motivations and derived outcomes (Manning 1999). ROS also proposes that recreationists have site preferences in terms of level of facility development (Driver et al. 1987). Some of the basic assumptions of ROS have not received the empirical support they need. One of the assumptions is that users preferences will fall into one of the categories or combinations of categories outlined in the ROS. Manning (1985) criticized the ROS for having limited and inflexible categories and actually decreasing diversity. The findings of this study indicate that users are not distinctly defined in terms of motivations or experience. However, the desirability of certain services and amenities, did distinguish certain users from others. Thus the ROS, in regards to campers, was supported in terms of preferences toward level of facility/service development.

Managers should be aware of the spectrum of facility development preferred by different types of campers. The provision of services for some campers is highly important. If a resource management decision is made to alter the level of development of a camping area, then managers need to understand that a substantial user

shift might happen, with previous campers becoming displaced.

Since the ROS has been adopted by the U.S. Forest Service and the Bureau of Land Management, questions of its validity and usefulness are certainly warranted (Yuan & McEwan 1989). Managers using this framework should synthesize these findings and incorporate them into the overall understanding of the ROS.

The motivations a forest user has can lead to numerous behaviors and affective states. However, the non-significant differences among the majority of the motivations that campers had in adjacent classes in the ROS means that our campers were motivated by similar things. This lack of variation could be due to the similarities of the campsites in the study, or due to the general nature of the motivation items. This finding should not be interpreted in a way that implies wilderness users are the same as developed campground users. Even at the level of development of CH, campers do not care to meet and socialize in large groups of unfamiliar people. Campers can desire solitude, the situation of being away, while in the company of a small group of selected friends and/or family (Westin 1967). They desire to spend time with their families and experience nature. Mangers of primitive camping as well as rustic areas, should attempt to manage for solitude of intimate groups at their locations.

The little amount of reported substitution, combined with the neutrally reported willingness to substitute between each of the sites should be noted by managers. Mangers of areas where more than one type of camping opportunity exists should not assume that users will switch to another type of camping area. Campers are particular about the amenities they desire (or do not desire). Different settings might not be acceptable to users who have specific preferences for a setting and accompanying amenities.

Integrating data about the characteristics of campground users is important for managers of recreation resources. For managers of diverse areas, knowing the characteristics of the different groups using the resource can provide for more effective management policies. For example, management policy does not need to provide easy access car camping for all campers who desire some level of campground development, some don't mind walking in a ways, i.e., BF. Campers at this walk-in site were younger and participated more heavily in other activities such as fishing. Areas such as this should be managed to accommodate these walk in camping opportunities. At the more developed site, campers were older and family oriented. Managers should orient developed sites towards this user group. In the wilderness area, group sizes were larger and consisted mainly of friends. These users also desire solitude. Managing for group solitude should be provided by encouraging the larger user groups to camp out of site of other campers.

The profile of the users described in this study should serve as a tool for understanding campers in similar areas. The findings, however, should not be assumed to be valid for campers in areas dissimilar to the ones in this study (i.e., private campgrounds, highly developed campgrounds).

### 4.2 Further Research

This study only examined differences across setting. Further study should incorporate an examination of different activity types. Also, camping is a unique activity in that for some it might be the end purpose, while for others it might be the means to some other end, such as fishing or boating. Research across different social or managerial settings might yield profiles of users that differ in social and managerial preferences for specific types of campgrounds. The campsites in this study were also fairly close in terms of the ROS camping opportunities they offered. A look at three highly disparate campsites might lead to more variance in the data.

This study was limited to camper's responses to only the questions and items on the questionnaire. A more in-depth look at the preferences and meaning of the resources and settings might lead to greater understanding of the distinction among them. Any future studies should consider the complexity of camper's preferences and motivations. Managers need to have a thorough understanding of their user in order to successfully manage the resource.

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# FLORIDA RESIDENT'S FAMILIARITY WITH KOREA: DO MORE FAMILIAR RESIDENTS HAVE MORE POSITIVE IMAGES?

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## Abstract

This study examined Floridian non-visitors to South Korea and their image of South Korea as a travel destination. Unlike most previous research, this study focused on non-visitors' images and familiarity. Also unlike previous tourism research, this study measured familiarity using a multidimensional method. The results show there is positive relationship between familiarity and image. The result is supported by previous research (Milman & Pizam 1995; Baloglu 2001). There were significant differences across all image domains with respect to level of familiarity. This result may be important information for managers of destinations. Marketing efforts to promote positive image should incorporate familiarity (knowledge based and experiential) as a factor. Specifically, destination management organizations in South Korea (i.e., Kyonggi Province) would benefit from knowing this information.

## 1.0 Introduction

The tourism industry in Asia has grown at an unprecedented rate, reflecting the rapid growth of the individual economies of the region (Sadi & Bartels 1999). In particular, Korea's tourism industry has grown tremendously over the last three decades. The number of foreign visitors to Korea increased from 173,335 in 1970 to 5.1 million in 2001 (www.ktri.re.kr).

According to Travel Industries (TI), visitors from South Korea represent 2% (almost 500 thousand) of the overall inbound market to the United States (Travel Industries 2000). American visitors to South Korea represented 12% of the tourism market (Korea Tourism Research Institute 1998), which is second only to the number of visitors from Japan. As a segment of the American market, the state of Florida has always represented a primary market for South Korea. The exact number of visitors from Florida to South Korea is not known; however, according to the Florida Department of State, South Korea is Florida's third largest trading partner (after Canada and Mexico). Personal communication with the Secretary of State suggests that outbound travel to South Korea by Floridians is respectable. The reasoning for this may stem from a relationship called the Sister States Act. Kyonggi Province, which houses Seoul the capital of South Korea is a sister state with Florida. As part of economic development, attempts have been made by the Kyonggi government to increase travel by Floridians. Of late, there is a strong desire to promote South Korea to Floridians.

The theoretical framework of this study is the model of brand familiarity, confidence and purchase intention in a choice context (Laroche et al. 1996). This model explained that among those made aware of a destination, a subset will have their image of that destination enhanced by the positive image of destination. Also, it suggests that the combination of familiarity and positive imagery will result in a subset of consumers inquiring about the destination and receiving a fulfillment piece. Familiarity was defined "the extent of a consumer's direct and indirect experiences with a brand (Alba & Hutchinson 1987; Kent & Allen 1994), including consumer's brand knowledge structures, that is the brand association s that exits within a consumer's memory" (Campbell & Keller 2003). Also familiarity goes beyond 'direct experience' and is regarded as a component of the consumer knowledge construct (Cordell 1977).

Destination image is the total perception of the destination that is formed by processing information from various sources over time (Assael 1984; cited in Fakeye & Crompton 1991). Destination image is defined as the people's beliefs, ideas, or impressions about a place (Choi et al. 1999) and as the visual or mental impression of a place, a product, or an experience held by the general public (Milman & Pizam 1995). Destination image is a complex concept that may be analyzed from different perspectives and is composed of a variety of individual perceptions that relate to various product/service attributes (Milman & Pizam 1995). More recently, research has suggested that familiarity of a travel destination is an important element in image formation and behavior to purchase (Milman & Pizam 1995; Baloglu 2001; Kim & Richardson, 2003). Also,

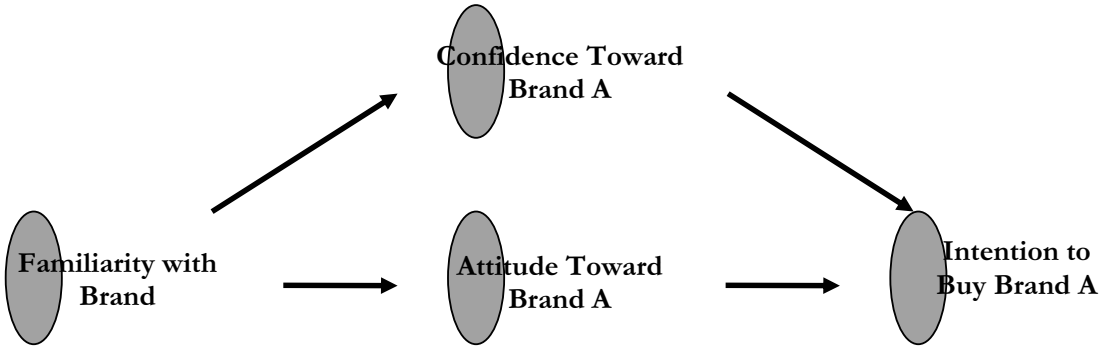


Figure 1.—The Model of Brand Familiarity, Confidence and Purchase Intention
Source: Laroche, Kim, & Zhou (1996)

in marketing research, familiarity has been studied to be an important factor influencing consumers' attitude (Laroche et al. 1996). However, few studies in tourism have actually examined familiarity as a variable in image formation studies. Also, most study in tourism research measured familiarity by the only direct experience such as previous visitation (Pearce 1982; Milman & Pizam 1995), but there is a need for multidimensional measurement (Baloglu 2001). On the other hands, much of the previous research related to image has focused on visitors to a destination. Consequently, fewer studies have examined non-visitors' image of a destination. However, some research suggested that research is also needed on non-visitors (Baloglu 2001).

Therefore, the primary purpose of this study was to examine non-visitors' familiarity and images of South Korea as a travel destination. Further, this study examined whether familiarity had an impact on non-visitors' image of South Korea as a tourism destination. The research questions which guided this study included: (1) "What are Floridian's level of familiarity with South Korea as a travel destination? (2) "What are Floridian's level of images of South Korea as a travel destination? (3) "What is the relationship between image and familiarity with South Korea as a travel destination and awareness?

## 2.0 Methodology

A stratified random sample of residents of Florida who were non-visitors to South Korea was used. For a 99% confidence level with a maximum of 5% margin error, the recommended non-visitors' sample size was 498. A telephone survey was conducted for this study. The survey took approximately 10-20 minutes to complete and participants were called up to three times. A private consulting firm from Orlando, FL completed telephone interviews. The responses were analyzed using SPSS. A total of 498 completed interviews were logged between January 2003 and April 2003. Image of South Korea was measured with 22 Likert statements. Respondents were asked to indicate their level of agreement on a five-point scale, ranging from 'strongly disagree' (1) to 'strongly agree' (5) as labeled, upon each attribute statement. For example, respondents were asked to indicate how they would rate South Korea with statements such as 'a good place for viewing landscape', 'a good place for ancient heritage', and 'a good place for shopping'. Familiarity was measured with fifteen knowledge- related questions about South Korea and two experience-related questions about South Korea. The items were developed by a focus group interview and previous research. Examples of knowledge-related questions included "South Korea is a technology advanced country".

## 3.0 Results

The majority of the respondents to the survey were female (57.1%), lived with their spouses (65.4%), and employed (63.0%). Most of the respondents (78.4%) had some college experience; 50.3 percent had earned college degrees and 13.5 percent had postgraduate degrees. Most respondents (75.0%) had household incomes between $20,000 and $80,000.

Most of all familiarity was recoded to examine Floridian's level of familiarity with South Korea. In this study, familiarity was measured by respondents answer such as yes, no or don't know. Don't know was recoded as missing. If the respondent answered the question correctly they received one point. The total points possible were 17. According to the response rate, three

**Table 1.—Level of Familiarity with South Korea**

| Group | Label | Total Point | N |
|---|---|---|---|
| Group1 | Low Familiarity | 0-6 | 164 |
| Group2 | Moderate Familiarity | 7-10 | 226 |
| Group3 | High Familiarity | Over 11 | 130 |

**Table 2.—Image Attribute Domains, Based on Factor Analysis**

| Image Domains | Factor Loading | % of Variance | Cronbach's alpha | Mean | S.D. |
|---|---|---|---|---|---|
| ***Factor 1: Diverse activities and attractions*** | | 23.22 | .82 | 3.57 | .89 |
| South Korea is a good place for viewing landscapes | .78 | | | 3.79 | 1.09 |
| South Korea is a good place for ancient heritage | .75 | | | 4.11 | 1.07 |
| South Korea is a good place for cultural attractions | .69 | | | 3.85 | 1.15 |
| South Korea is a good place for night life and entertainment | .67 | | | 3.21 | 1.24 |
| South Korea is a good place for social activities | .67 | | | 3.14 | 1.15 |
| South Korea is a good place for diverse activities | .61 | | | 3.32 | 1.17 |
| South Korea is a good place for shopping | .52 | | | 3.49 | 1.21 |
| ***Factor 2: Communication and accommodation*** | | 15.94 | .62 | 3.37 | .97 |
| The residents of South Korea are friendly | .73 | | | 3.66 | 1.06 |
| Many people understand English in South Korea | .70 | | | 3.34 | 1.25 |
| Accommodations are great in South Korea | .60 | | | 3.14 | 1.12 |
| Factor 3: Sports and Events | | 12.02 | .85 | 3.12 | 1.15 |
| South Korea is a good place for participating in sports | .82 | | | 3.13 | 1.21 |
| South Korea is a good place for sporting events | .80 | | | 3.12 | 1.23 |
| ***Factor 4: Accessibility*** | | 10.60 | .79 | 3.11 | 1.24 |
| South Korea is easy to get to as a destination | .86 | | | 3.12 | 1.36 |
| South Korea is easily accessible | .85 | | | 3.09 | 1.35 |

Note: Extraction Method is Principal Component Analysis. Rotation Method is Varimax with Kaiser Normalization. Rotation converged in 9 iterations. Cronbach α for 22 items is .9062. Total variance explained in the data = 61.78%097

familiarity groups were created. Group 1 was labeled "low familiarity" and had total point 0 to 6 (n=164), Group 2 was labeled "moderate familiarity" and had total point 7 to 10 (n=226) and Group 3 was labeled "high familiarity" and had total point 11 to 17 (n=130).

The 22 image statements were analyzed by principal component factor analysis and varimax rotation, which resulted in a four-factor solution. The purpose of the factor analysis was to combine the statements into a smaller set of factors that were deemed to represent the image dimensions of South Korea. The final four image factors were named Diverse activities and attractions (Factor 1, 23.2%), Communication and accommodation (factor 2, 15.9%), Sports and events (factor 3, 12.0%), and Accessibility (factor 4, 10.6 %). To do follow-up analyses, the items that comprise each factor were added together to generate a mean score for each of the four dimensions. Table 2 shows the results of image attributes domains based on factor analysis.

**Table 3.—Differences in Image Domain by the Familiarity Levels**

| Image Domain | | df | SS | MS | F | P |
|---|---|---|---|---|---|---|
| Diverse activities and attractions | Between Groups | 2 | 8.20 | 4.10 | 5.23 | .012 |
| | Within Groups | 466 | 365.59 | .79 | | |
| Communication and accommodation | Between Groups | 2 | 10.26 | 5.13 | 5.49 | .001 |
| | Within Groups | 443 | 414.10 | .94 | | |
| Sports and Events | Between Groups | 2 | 21.09 | 10.55 | 8.16 | .001 |
| | Within Groups | 385 | 497.60 | 1.29 | | |
| Accessibility | Between Groups | 2 | 22.90 | 11.45 | 7.66 | .001 |
| | Within Groups | 420 | 627.93 | 1.49 | | |

**Table 4.—Multiple Comparisons of Image Domain by the Familiarity Levels**

| Image Domain | Familiarity Low (1) | | Moderate (2) | | High (3) | | Post Hoc |
|---|---|---|---|---|---|---|---|
| | M | SD | M | SD | M | SD | |
| Diverse activities and attractions | 3.33 | 1.10 | 3.59 | .91 | 3.71 | .70 | 1 < 2, 3 |
| Communication and accommodation | 3.14 | 1.04 | 3.34 | .99 | 3.58 | .83 | 1 < 3 |
| Sports and Events | 2.66 | 1.25 | 3.17 | 1.14 | 3.34 | 1.02 | 1 < 2, 3 |
| Accessibility | 2.63 | 1.24 | 3.21 | 1.24 | 3.26 | 1.19 | 1 < 2, 3 |

Note: The numbers in parentheses in column heads refer to the numbers used for illustrating, significant differences at the .05 Level in the last column titled "Post Hoc."

To examine the relationship between awareness and the four image dimensions, ANOVA was computed (Table 3). Again, results indicated significant differences on all image dimensions. Post hoc test with Scheffe revealed differences between subgroups on some dimensions (Table 4). The Low awareness group and high awareness group showed differences with all image dimensions. The moderate awareness group and high awareness group did not show significant differences with three of four dimensions, diverse activities and attractions, sports and events, and accessibility. The low awareness group and the moderate awareness group showed differences on all but one-image dimensions (communication and accommodation). However, with all dimensions, groups who were more aware had more positive images than who were less aware.

ANOVA was run to examine the relationship between 22 items and the three familiarity groups. Again, results indicated significant differences on 14 image items among 22 items (Table 5). Post hoc test with Scheffe revealed differences between subgroups on some items. The low familiarity group and high familiarity group showed differences with 9 image items with $p<.05$. The items are "the residents are friendly" "South Korea is a dynamic place" and etc. The moderate familiarity group and high familiarity group showed significant differences with two of fourteen image items, "South Korea is a dynamic place", and "Accommodations are great" with $p<.05$. However, with all image items except one item, Groups who were more familiar had more positive images than who were less familiar. The item is "South Korea is a good place for relaxation".

## 4.0 Conclusion

This study examined Floridian non-visitors to South Korea and their image of South Korea as a travel destination. Unlike Most previous research, this study focused on non-visitors' images and familiarity. Also unlike previous tourism research, this study measured familiarity using a multidimensional method. The results show there is positive relationship between familiarity

**Table 5.—Multiple Comparisons of Image Items by the Familiarity Levels**

| Image Items | Familiarity | | | P | Post Hoc |
|---|---|---|---|---|---|
| | Low (a) | Moderate (b) | High (c) | | |
| The residents are friendly | 3.49 | 3.59 | 3.90 | .013 | a < c |
| A good place for diverse activities | 3.06 | 3.31 | 3.55 | .013 | a < c |
| South Korea is a dynamic place | 2.91 | 3.05 | 3.56 | .001 | a, b < c |
| Accommodations are great | 3.00 | 3.00 | 3.41 | .012 | b < c |
| A good place for social activities | 2.97 | 3.09 | 3.37 | .043 | - |
| Easy to get to as a destination | 2.77 | 3.24 | 3.25 | .011 | a < b, c |
| A good place for sporting events | 2.83 | 3.15 | 3.35 | .011 | a < c |
| South Korea is easily accessible | 2.60 | 3.24 | 3.30 | .000 | a < b, c |
| South Korea is a safe place | 2.12 | 2.39 | 2.71 | .002 | a < c |
| A good place for cultural attractions | 3.60 | 3.90 | 3.98 | .035 | a < c |
| A good place for night life and entertainment | 2.91 | 3.25 | 3.44 | .014 | a < c |
| A good place for participating in sports | 2.81 | 3.15 | 3.37 | .005 | a < c |
| A good place for relaxation | 2.66 | *3.18* | *2.99* | .007 | a < b |
| Lifestyles and customs are similar to ours | 1.87 | 2.03 | 2.32 | .008 | a < c |

and image. The result is supported by previous research (Milman & Pizam 1995; Baloglu 2001).

There were significant differences across all image domains with respect to level of familiarity. On nearly every item, the level of positive image increased with the level of familiarity with South Korea (except on 1 item "South Korea is a good place for relaxation"). Perhaps this is because if you have more knowledge of Korea, you would recognize that South Korea is a developed and crowed place. Especially, people with more knowledge of Korea may have image of Seoul as a metropolitan for South Korea image. This result means that familiarity may not always affect image positively.

This result may be important information for managers of destinations. Marketing efforts to promote positive image should incorporate familiarity (knowledge based and experiential) as a factor. Specifically, destination management organizations in South Korea (i.e., Kyonggi Province) would benefit from knowing this information. If South Korea wants to improve visitation by Floridians the first step is to educate the average public on the benefits and opportunities of traveling to Kyonggi Province (Seoul). Also, Kyonggi Province should budget for marketing, advertising, and public relations strategies to increase familiarity with South Korea among non-visitors.

For future research, comparing non-visitors and visitors would be helpful in understanding a more holistic picture of the relationship between familiarity and image. Examining familiarity and image using a greater number of variables may be more illuminating.

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# THE WAY THE WORLD SHOULD BE: ORDER, CLEANNESS, AND SERENITY IN THE EXPERIENCE OF SPECIAL PLACES

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## Abstract

To understand why people consider certain places to be special, I did surveys asking people to explain what such places mean to them. This paper focuses on five related themes that appeared in the responses: rightness, order, cleanness, serenity, and paradise. Rightness, order, and cleanness all suggest that things are in their right places or in the right relationship with each other. In some of the special place descriptions, a sense of rightness or order gave rise to the experience of serenity. In several of the place descriptions, people likened their special places to paradise or heaven, which can be seen as a place of ultimate rightness, order, and peace. Experiencing a place as paradise may not require the exclusion of human influence. When people interact with a natural place in appropriate ways, the human presence may be experienced as blending into the natural order rather than as an intrusion.

## 1.0 Introduction

The attachments that many people feel toward special places in natural environments are a vital part of their lives. The importance of taking these attachments into account has been increasingly recognized in the field of resource management over the last several years. For example, Williams et al. (1992) challenged the prevailing commodity metaphor for recreation settings, which views settings as if they were mass-produced consumer products, and presented data on the unique emotional and symbolic attachments that people have to wilderness places. Mitchell et al. (1993) discussed several possible ways of incorporating emotional attachments to special places into the planning process for public land management. Williams and Stewart (1998) examined the emerging concept of "sense of place" and offered recommendations for how it can be applied to ecosystem management. By analyzing written public comments on a National Forest's management plans and projects, Vining and Tyler (1999) showed how people's concerns over public land management are motivated by their underlying values and emotions relating to the environment. Bott et al. (2003) recently reviewed the literature on studies of place and found it relevant to issues of mental health, education, communication, and public involvement in ecosystem management.

In order to take people's feelings and place attachments into account, natural resource managers need to understand why people consider certain places to be special. What is it about these places that makes them so important to people? To help answer this question, I have done a series of surveys asking people to explain in their own words what special places mean to them. The locales targeted by the surveys range from the rustic north woods of Wisconsin and Michigan to the industrialized southeast side of Chicago. This paper focuses on a particular set of interrelated themes that emerged from these surveys.

## 2.0 Methods

Participants in the surveys were recruited by a variety of means, including announcements and fliers distributed by mail, at meetings of interest groups and organizations, in local newspapers, and at offices of land management agencies. The participants were a self-selected sample of people who felt strongly enough about at least one special place to take the time to write about it on the survey.

Participants were invited to think of one or more places that were important, special, or memorable to them within a particular geographic area. They were instructed to briefly describe each place and to express whatever thoughts, feelings, memories, and associations came to mind in connection with these places, as well as any general comments they had about the locale covered by the survey and about the survey itself. Participants were provided with forms on which to write their responses and a stamped envelope for mailing back the completed form. Some basic information about the surveys is given in Table 1.

## 3.0 Analysis

Taken together, these surveys span a wide diversity of people and special places located on both public and private land. One hundred fifteen people participated in the surveys, including life-long residents, seasonal vacationers, first-time visitors, recreationists,

**Table 1.—The Special-Places Surveys**

| Location | Date | Respondents | N of Respondents | N of Place Descriptions |
|---|---|---|---|---|
| Morton Arboretum, Lisle, IL | 1986 | Arboretum members and volunteers | 29 | 126 |
| Black River, MI | 1993 | Residents and visitors | 24 | 66 |
| MI Upper Peninsula | 1996 | Commercial woodland managers | 15 | 36 |
| Chequamegon Area, WI | 1996 | Residents and visitors | 11 | 33 |
| Moose Lake, WI | 1997 | Residents | 10 | 20 |
| Lake Calumet Area, Chicago | 2000 | Residents and visitors | 26 | 77 |
| Total | | | 115 | 358 |

environmentalists, and natural resource professionals. Between them, these people wrote 358 separate descriptions of special places, plus numerous additional comments.

I analyzed each survey individually using a method similar to the open coding procedure described by Strauss and Corbin (1990). I read all the responses and identified features of special places and commonly occurring themes in the respondents' experiences of those places. Summaries of these features and themes were presented to natural resource managers and planners to assist them in planning for the areas in which the special places were located. The themes found in the individual surveys have been described in several earlier publications (Schroeder 1991, 1996, 2000, 2002).

After completing the last of the individual surveys, I merged the responses from all of the surveys into a single large data set and revisited the place descriptions to follow up on some of the prominent themes that I found in the individual analyses. I read through the combined data set several times, identifying recurring themes and linkages between themes that helped to explain what made these places special to the survey respondents. This paper is a preliminary report of one interesting subset of the overall results of this combined analysis.

## 4.0 Results

This paper focuses on a cluster of five related themes that emerged from the qualitative analysis of the combined special places survey data. These themes all express, in one way or another, the idea that things in the place being described are the way they ought to be. The five themes are *rightness*, *order*, *cleanness*, *serenity*, and *paradise*. These themes and the connections between them are discussed below, with illustrative quotations from the survey responses.

Some of the descriptions of special places convey the theme of *rightness*, by which I mean the belief that the place is perfect, ideal, or just right in some regard.

> "The perfect place to relax and unwind from the rigors of daily life."

> "This is the ideal creek for walking around, sloshing; sitting down on a hot summer day."

> "A small reminder that this is the way the world should be, or was, as viewed from the edge of a small Illinois Prairie town in early childhood."

The sense of a place being perfect or ideal is sometimes expressed by likening it to a work of art.

> "Rather like a living piece of artwork in its impact."

Some of the descriptions suggest that there is a quality of *order* within these settings. Order implies that the components of the setting are in a right relationship with each other, perhaps with a sense of balance or harmony.

> "[The place] appears orderly, in balance and inviting."

> "The towering pines behind [the building], and slender trees before it harmonize with its architecture."

Another related theme refers to the *cleanness* or neatness of a place. Anthropologist Mary Douglas (1984) has pointed out a conceptual relationship between the ideas of order and cleanness. She defines dirt as matter out of place. If we apply this definition to the natural environment, then litter and pollution (two forms of environmental "dirt") could be seen as disruptions in the natural order of a place. Drawing on Douglas' ideas,

Westphal (1999) has found that the concepts of clean and dirty are important in urban residents' accounts of the physical and social order (or lack thereof) in their neighborhood environment.

Some descriptions from the special places surveys seemed to associate cleanness with the naturalness of the setting. This was especially the case with the cleanness and clarity of the water and air.

> "A small lake in a wilderness area - clean & wild."

> "A beautiful, clean area that people can see nature in all its glory."

In other cases, cleanness implied that the place is well-kept, that people are taking good care of it.

> "To see ... clean grass everywhere is a pleasure to everyone. It's really kept clean and I like that."

Similarly, references to neatness also suggested a human role in keeping places in an orderly condition.

> "The picnic area is always so neat and clean; it is very inviting."

> "I try to pick up 'throw-aways' along Black River Road as I have my daily walk. The area is for everyone to enjoy and I live here, it's my home and homes should be neat, inside and outside, private or public. Black River area is neat!"

In some of the special place descriptions, a sense of rightness and order seemed to give rise to the experience of *serenity*.

> "When I find myself walking in this area I have a sense of well-being and peace. It has the appearance of orderliness. It imparts a sense of quiet and restfulness."

> "A perfect scene to paint. It seems to have everything and all in the right places & scaled correctly. Serene."

The reason for this could be that when everything is as it should be, nothing needs to be done. A person can relax and be at peace because the place does not call on them to take any action to improve or correct things. On the other hand, when litter or some other form of disorder throws things out of their right places and relationships, it may create a sense of unrest. A person might feel that the place calls for some kind of action to restore it to its right condition.

For a few people, the feeling of things being the way they should be seems to have an explicitly spiritual or religious dimension.

> "[The vista] brings such a feeling of serenity. It makes me feel that 'God's in His heaven' and 'all's right with the world'."

In several of the place descriptions, people likened their special places to *paradise* or heaven.

> "Morgan Falls is a small piece of paradise."

> "This area is actually heaven on earth!"

The concept of paradise is related to the preceding ones, because paradise can be seen as a place of ultimate rightness, order, and peace—where things are always exactly as they should be and always in the right relationship to each other. Paradise may also imply an original, pristine order that has not been disrupted by inappropriate human actions.

> "It is so beautiful and unspoiled. How fortunate we are that someone had the forethought to set aside such a paradise."

In some cases, people's descriptions suggested that nature is to be found in separation from humanity. Their special place was a place where they could experience the original, natural order without human interference.

> "This is a rare place, where nature, more than man, is running the show."

> "Some part of this area may resemble areas where man hasn't left his imprint—where forces other than man determine the consequences."

Other passages suggest, however, that experiencing a place as a natural paradise may not always require the exclusion of human influence. That is, it may not be the mere presence of humans that disrupts the sense of

rightness in a natural place, but the particular way in which humans and their artifacts relate to the natural aspects of the setting. When human influence seems contrary to the order or harmony of a natural setting, then the human presence is experienced as an intrusion or a violation of nature.

> "Keep out the ATV's, the joy riders, and those who would cut and spoil the wilderness. Please, no more improvements!"

> "The area is special too, because it is not commercial and is still wild and free. More roads and more buildings would change all that."

But when people live within and relate to a natural place in ways that maintain a sense of harmony and rightness in the place, then the human presence may be experienced as blending into or cooperating with the natural order, rather than as an intrusion.

> "Across the pond the restaurant building seems to blend into the scene giving a feeling of man & nature as one & blended. This building does not offend nature but enhances it."

"Man and nature working together to create beauty."

## 5.0 Conclusions

It seems that for at least some of the people who responded to these surveys, the specialness of a special place involves a sense of everything existing in a harmonious order, in which things are just the way they ought to be. This sense of rightness can give rise to a feeling of peacefulness and a metaphorical identification of the special place with heaven or paradise. This experience of order and rightness is often associated with original, non-human nature, but in some cases human influence is seen as harmonizing with the natural order in such a way that the human presence enhances rather than intrudes on nature. From an experiential perspective, the question of whether or not human beings are a part of the natural order thus does not have a simple yes or no answer. Rather than reducing this question to a simplistic dichotomy of humans being "part of nature" versus "apart from nature", these results suggest that the survey respondents hold a more nuanced view. They see some human activities and actions as disrupting or intruding on nature and others as respecting and cooperating with nature. Thus a sense of order and rightness that includes both natural and human influences can be maintained in the special place, but only if humans behave appropriately with respect to nature.

In the survey responses, people often commented that they love their special places just the way they are and do not want to see them changed by inappropriate human activity. This is not at all surprising. After all, how can you improve on paradise? People were very apprehensive about any changes that would increase the level of use or alter the natural character of the place. At the same time, they were often very appreciative of management actions and facilities that provided services and access to their places, as long as they blended into and did not clash with the natural qualities of the environment. This suggests that the questions of how much and what kind of human alteration of the environment is appropriate in a special place do not have a simple or universal answer.

This presents a challenge for managers and planners who may sometimes see a need to make changes in someone's special place for various reasons. The themes presented here suggest that managers should make a special effort to listen to residents and visitors to learn what characteristics of special places are important to the sense of rightness and order that people may experience there. Any changes that are proposed should as much as possible harmonize with and not detract from these characteristics. If for compelling reasons management actions are necessary that may conflict with people's sense of harmony and rightness in such a place, then managers should be prepared to devote plenty of time and effort to communicating with the public, gaining their trust, involving them in the planning process, and adapting plans as much as possible to protect the qualities that make these places special. A genuine interest in and respect for how people experience their special places is the necessary starting point for this kind of collaboration.

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# "THEY ALL CARED ABOUT THE FOREST": ELEMENTARY SCHOOL CHILDREN'S EXPERIENCES OF THE LOSS OF A WOODED PLAY SPACE AT A PRIVATE SCHOOL IN UPSTATE NEW YORK

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## Abstract

This qualitative investigation explored how children at a private school in upstate New York articulated their sense of loss of a wooded play space that had previously been available to them during recess. Research methods included participant observation, classroom focus groups, and teacher interviews. Results of this study indicate that the woods had afforded opportunities for creative play that other parts of the school grounds did not. Children had developed a sense of attachment to the woods as a home and community, and shared the loss of plants, animals, and access to nature. From an environmental education standpoint, the woods had afforded opportunities for creative play with and in the vegetation, direct contact with nature, and the chance to bond to a natural place, through the construction of forts. Ultimately, the children's greatest benefit may have been the sense of care that had developed in all who had played there.

## 1.0 Introduction and Purpose

Currently, throughout the world, the natural environment is being despoiled by a variety of human practices. Such environmental impacts include pollution by industries and automobiles, the overdrawing of aquifers, and urban and suburban sprawl. Increasing development pressures due to population growth and demographic shifts are leading to extensive habitat loss, and threatening global biodiversity (Kellert 1996). One potential means of enhancing the health of global environments entails expanding the range of opportunities for children to experience nature. According to Pyle's concept of the extinction of experience (1993), children who grow up with limited exposure to diverse natural environments may develop into adults who are unconcerned about the loss of biodiversity. Prevention of the extinction of experience hinges upon providing children with exposure to natural habitats on a regular basis. In addition, Sobel (1998) and Shepard (1982) have argued that middle childhood (between the ages of 6 and 12) may represent a critical period for children's engagement with nature, and the corresponding development of a sense of environmental stewardship. One obvious opportunity for encouraging children's regular engagement with nature is the recess schoolyard (Cooper Marcus 1978; Frost 1987; Malone and Tranter 2003).

Typically in the United States, however, elementary school recess takes place on schoolyards comprised largely of asphalt, augmented by manufactured play equipment (Sobel 2004). Biodiversity is altogether absent, with green spaces usually restricted to monocultures of turf for active sports. These recess grounds, in turn, reflect theories of childhood outdoor play dating back to the 19$^{th}$ century. These theories emphasize children's need to expend excess energy (Spencer 1873), recuperate from academic work (Lazarus 1873), or to practice motor skills necessary in adulthood (Groos 1901). Schoolyard design tends to follow an "outdoor gymnasium" model, first codified in the National Recreation Association Guidelines in 1928. Indeed, all the playground equipment described in those guidelines was still available from manufacturers in the late 1980s (Frost 1987). It is highly uncommon to find American elementary schools that have included natural spaces, available for children's unstructured play, as part of their schoolyards.

This study was intended to explore the outdoor recess opportunities provided to children attending a private Montessori school in the Finger Lakes region of upstate New York. In keeping with the Montessori philosophy of education and child development, children are provided with freedom to explore the natural environment with minimal intervention from adults (Kahn 1999; Montessori 1966). For many years, students have been given the opportunity to play during recess on a blend of both conventional school grounds and an adjacent natural landscape of woods and an overgrown field. The purpose of this qualitative study was to explore

elementary schoolchildren's use of that natural space at recess. In particular, the study was intended to examine what kinds of play were occurring there, and how the natural environment was integrated into their play. In what ways, if any, might the children's play in a natural setting be affecting their outlook on nature? Was their play translating into interest in, and/or concern for, the natural environment? Had the children who played regularly in the woods developed an attachment to that place, and if so, how did that attachment manifest itself?

## 2.0 Setting and Research Methods

Finger Lakes Montessori School (a pseudonym) is located on the outskirts of a small city in the Finger Lakes region of upstate New York. At the time of this study, the school had approximately 160 pupils, from pre-K through 8th grade. Classrooms were multi-age: Lower Elementary classes included 1st through 3rd graders, while Upper Elementary was for 4th through 6th graders. Outdoor recess for both Lower and Upper Elementary students occurred immediately after lunch every day, and lasted from 30 to 45 minutes. Depending upon the weather and time of year, up to 110 children were outside at once during that time.

The school grounds included approximately 1.5 acres of predominantly non-natural playing areas, including a soccer field, an asphalt basketball court, a wooden play structure on gravel, and the school's gravel parking lot. In addition to the developed area, students also had access to approximately three acres of woods and overgrown field; most of this area, however, actually belonged to the adjoining landowner. Although at least one teacher patrolled the area during recess, there were frequently times when children could play relatively unobserved by adults.

This investigation was conducted from October to December, 2003. The first stage of data collection consisted of participant-observation sessions at recess, conducted in accordance with a naturalistic inquiry methodology (Strauss and Corbin 1998). The second stage included classroom focus-group sessions. During the final stage, interviews were conducted with several classroom teachers and the school physical education instructor. Focus group conversations and interviews were tape recorded and transcribed verbatim. Typed participant observation notes and focus group/interview transcripts were coded in order to identify emerging themes (Bogdan and Biklen 1998).

## 3.0 The Loss of the Woods

Evidence of the children's use of the wooded space for extensive creative play was provided by a view of the woods from the edge of the school parking area on the first visit. The wooded area contained more than a dozen constructions the children called "forts", ranging from hollowed areas within the trees and bushes to elaborate constructions of found and natural materials, including tarps, burlap, string, and stone slabs. The woods and field were further honeycombed with trails, many of which had been "improved" by the children through the use of flat stones laid down in particularly wet spots.

Over the course of my first three visits, a detailed picture of the children's use of the natural areas began to emerge. Each recess, approximately 30 to 40 children would occupy the woods, sometimes working on additions/modifications to their "forts" (as they were universally called), at other times engaging in more active play that involved running along the trails through the woods. The forts were typically constructed with a variety of manmade and natural materials, including tarps, pieces of burlap, interwoven sticks, string, and fishing line. Interior furnishings included old shelves and tables/benches made of large stone slabs and cinder blocks, with various containers from old mixing bowls to pottery fragments. Play incorporated a blend of objects brought from home or in the school, found objects (such as a glass bottle), and natural materials. Vegetation was widely integrated into their play: pine cones were considered currency; berries were used to make "dyes"; and sticks had multiple uses, from swords to digging tools. Some groups of children pretended to be robbers; one group imagined that it was living in the distant past; and yet another group re-created parts of the school building in its fort.

Many locations and features in the woods and field had been named, though the same name was not necessarily used by all the children. Named places included The Shady Glade, The Herb Field, The Stream, The Frog Pond, and The Teeter-Totter Tree. Children also shared an extensive knowledge of actual and/or imagined place history. One child explained that one of the paths was called Old Main Street, because it was the first trail. Another child indicated where forts had been in the past. One patch of underbrush, for example, had been

someone's fort the previous year, and for that reason, the area was not available for current use.

Meanwhile the neighbor and owner of the wooded lot, unbeknownst to the school, had decided to clear a swathe of woods and dig a drainage ditch on the land. The trees were cleared on a Friday morning; by recess on the following Monday, a ditch had been dug through the cleared area. The ditch effectively isolated the students from all but a thin band of trees along the edge of the schoolyard. The forest was gone.

The fourth field visit to the school took place on the Friday in which the trees were cut down. An extensive swath of trees had been cleared, and several forts had been obliterated in the process. Children arriving on the scene during recess were visibly affected by this event. Many children wandered around the ruined area, asking adults on recess duty why the trees had been cut down, and who was responsible. Some children burst into tears, while others became angry (one child even declaring that he wanted to "riot"). Still other children, seeing the new downed vegetation available, started collecting branches and logs and hauling them off to their still-standing forts. Like many of the children, the teachers also admitted they were surprised and shocked by what had occurred. In later interviews with some of the teachers, they explained that they had not been aware that the children had been playing on the neighbor's property.

Approximately two weeks later, one of the school teachers allowed several students to cross the ditch, in order to obtain material (such as tarps) from forts that had been isolated on that side. Three groups of children rebuilt their forts, in the patch of trees remaining or else in the overgrown field area. However, in subsequent participant observation sessions, fewer than half the children were observed playing in the cleared area and remaining band of trees than had been seen there before the trees were cleared. By December of 2003, the school had erected a fence running along the near side of the ditch, in order to prevent access to it altogether.

As a result of these events, while the general research purpose remained unchanged, the study shifted its focus to the children's experiences of loss. Focus groups were utilized in order to explore what had been lost when the trees were cut down, from the children's points of view. This method also enabled the researcher to ascertain what opportunities and experiences the woods had offered that were no longer available on the playground. Children also talked about their favorite activities and places in the woods, and about how recess had changed since the forest was cleared. They also voiced their frustrations about how they had not been told that the trees were going to be cut down, and had been entirely unprepared to deal with the loss. Their remarks revealed feelings of loss of a treasured home and of access to nature, while also suggesting a corresponding reduction in opportunities for creative outdoor play.

## 4.0 Emerging Themes

### 4.1 "Nothing to Do"

One complaint commonly shared by elementary school children in focus groups, particularly at the Lower Elementary (1st through 3rd grade) level, was that there recess was more boring since the trees had been cut down. One child remarked, after the ditch had been dug, "There's nothing really to do… Right now I just wander around doing nothing all recess" (Field Notes, 2003, p. 65). Another child asserted, "…there's no place to play" (Field Notes, 2003, p. 77). Still another explained that "Now we, like, don't have much to do but tag games and stuff like that" (Field Notes, 2003, p. 66).

Based upon field observations, together with interviews with teachers who had had recess duty, however, children's complaints did not appear to describe what was happening at recess. Few children were seen wandering aimlessly; instead, adults observed an increase in physical activity on the playground after the trees were cut down. More children were witnessed chasing each other, particularly in the gravel parking area. An increase in physical interactions among the students, such as tussling and wrestling, was also noticed. If the children were still finding things to do, then, why did so many complain of boredom?

These expressions of boredom suggest that the children did not have opportunities to play in the ways that many preferred, and had to settle for conventional tag games. Woodland play had been highly imaginative in nature, incorporating an array of found items (natural and otherwise) as raw material. With the woods gone, access to those materials was considerably reduced. The network of forts and paths in the woods had also offered the children a more challenging setting for chase games, as well as a variety of locations to "hang out" with a small

social group in relative privacy. Many children remarked on their loss of opportunities for privacy once the woods were lost. As one child observed, "…you couldn't see anyone because all the trees were in leaves" (Field Notes, 2003, p. 66). Another child told how "It used to be enclosed, and little secret passageway. Now it's just one big open area that no one wants to play in anymore, and it's ruined" (Field Notes, 2003, p. 76).

### 4.2 The Loss of a Home

While many of the younger children's remarks indicated feelings of attachment toward their forts, the older (Upper Elementary) children expressed this attachment in a more articulate way. One sixth grader reminisced about her time in fourth grade, when she spent her recesses with some sixth grade friends in a fort. "We got these huge sticks, it was like a tipi. We would sit in there. And we had bowls that we had found by the…fence, and we would put, like, sticks and stuff — it was **so** cool. …We found…fence material…. And we would bring our own scissors, and we would cut, like, thatch stuff, and…weave it. You know in the Middle Ages, they had those houses, all thatched roof? That's how it was…. And then, by the end of the year, it was like a house that we had" (Field Notes, 2003, p. 75). A Lower Elementary child expressed a similar feeling when she related how "a lot of people had worked on our fort really, really, really hard, and then it just got destroyed, and we had to turn it…into this bigger fort, that doesn't really belong to us. Now we have no fort" (Field Notes, 2003, p. 92). These children's accounts suggest that the children felt a sense of belonging to their forts, which served as their homes on the school playground.

Children's sense of place attachment extended to other parts of the wooded landscape beyond individual forts. Many children told of their favorite trees or other special places. One commonly mentioned site was the Teeter-Totter tree, a low-branching tree with a long log balanced in its cleft. One Upper Elementary child told how the log had "been there for years — even longer than we've been here" (Field Notes, 2003, p. 69). Another location in the woods that was special to three Lower Elementary schoolchildren was a large flat stone. As one of them explained, "We used to play on this big rock, and they took it away, and they buried it. And now we can't play on it. And that's very sad, because we used to pretend like we had picnics, like we'd do our own mud-cakes, and picking berries, but now we can't do that anymore" (Field Notes, 2003, p. 84). Then another member of the trio added, "We had to make a grave for Rock — that's what the big stone was called" (Field Notes, 2003, p. 84). For those children, the stone was not merely a device or setting for play, but was actually a treasured co-participant in the process.

Based upon children's accounts of their loss of forts and other special places, it is the researcher's interpretation that the children's place attachment had developed as a sense of home and community. While many children shared a personal sense of belonging (to a particular fort, for instance), they also belonged to a community of children who played in the woods. The community was united by certain kinds of play, by a shared currency of pine cones, and by the shared impact of the loss of the forest. One child, talking about rebuilding the largest fort after the loss, remarked, "It's just like…when people are in a place and their village burns up or something, they start rebuilding somewhere else. And that's sort of what happened" (Field Notes, 2003, p. 95). That village included all the children who played in the woods, and, at times (such as the account of Rock, above) even extended to the nonhuman elements of the woods, such as and trees.

### 4.3 The Loss of Nature

Some of the children, describing the aftermath of the trees being cut down, spoke of the loss of access to nature itself. One child explained that, in the deep woods, distant and sheltered from the activity of the playground, "…it was really nice, it was, like, overgrown with nature. It was really cool. It wasn't all trampled down or anything, and like, it was heaven" (Field Notes, 2003, p. 71). Another child explained that she loved her fort because "I didn't make it, it was just a natural thing, like, it was, made out of, like, nature, really. And it was very special to me, and then they cut it down" (Field Notes, 2003, p. 90).

Most children spoke of the obvious loss of the trees, which, as several explained, had provided them with shade, shelter, privacy, and oxygen. A few children also remarked about the harm to animals as a result of the cut. Usually, the children did not indicate particular animals. Instead, they spoke of animals that formerly had homes in the trees or had fed off of the leaves. One child remarked in particular about frogs having been "swept away" (Field Notes, 2003, p. 66). Two children remarked

about a bird whose nest had been situated in one of the trees that had been cut. "There was this hawk or something that flew around the school," one child noted, "…and I saw the hawk's nest on the ground, all scattered" (Field Notes, 2003, p. 85).

In the researcher's interpretation, based upon these children's comments about the loss of plants, animals, and nature itself, many children playing in the woods had developed an awareness of nature, valued it, and expressed a sense of its loss. This loss was evident in the children's emotional responses on the playground to the trees being cut down. It was also demonstrated by the subsequent efforts of one Lower Elementary class (guided by the classroom teacher) to circulate a petition within the school entitled, "Save Our Forest", and to write letters to the landowner. The impact of this loss was vividly captured by one Lower Elementary student, who remarked, "It just goes to show that…this happens around the world every day…. To me, before this happened, it didn't seem like how it destroyed most of the things when people cut down woods and jungles and things, but now I really know what it feels like to have that done."

## 5.0 Discussion: The Forest from a Pedagogical Perspective

During the course of this study, the school children were able to articulate a variety of ways that they had benefited directly from the opportunity to play in the woods. The forest had provided the children with (among other things) raw materials for forts, private places, challenging paths for chasing games, and the chance to connect to nature. When considered from the perspective of environmental education, the children's comments and experiences also suggest ways in which access to the woods had been of benefit to them pedagogically. In particular, as will be discussed below, the woods afforded opportunities for creative play both with and in the forest vegetation, daily direct contact with nature, and the opportunity to bond to a natural place, through the finding, building, and use of forts and other special places.

### 5.1 Play with/in Vegetation

According to the theory of loose parts (Nicholson 1971), the potential for children's discovery and creativity in a landscape is directly proportional to the number and variety of manipulable objects (loose parts) that the landscape contains. Thus, a conventional playground with fixed equipment, asphalt, and grass contains a paucity of loose parts, and therefore does not encourage creative play. On the other hand, a landscape rich in loose parts, such as the woods with all its sticks, leaves, berries, rocks, and other items should foster a range of creative experiences. Vegetation is particularly beneficial in furnishing an array of play opportunities. In an anecdotal study of children's play in a natural setting, Moore (1988, p. 3) noted "the extent to which imaginative play and creative social interaction can be supported by a highly manipulative environment having plants as its primary play material." Through playing with the vegetation, the children also become more familiar with it; for example, they discover how grasses and weed stems can be tied together. Children's foraging for vegetation, from goldenrod "herbs" to berries for making dye, may even lead to the enhancement of personal competence in assessing the biodiversity of local habitats (Chepeniuk 1995). Childhood play with and in vegetation may aid children in discriminating between different plants and plant parts, enabling them to experience local biodiversity firsthand. At the same time, this play helps children to develop their imaginative and creative capacities as well as their skills of social interaction: in short, to have fun (Malone and Tranter 2003; Moore 1989).

### 5.2 Daily Contact with Nature

Childhood manipulation of a vegetated environment, in turn, affords daily direct contact with nature. In addition to foraging for plant parts, many of the children playing in the woods also gathered clay from the streambed, looked for frogs in a pond, used rocks to "pave" a trail, or carried wooly bear caterpillars or crickets in their hands. Pyle (2002) has argued that such direct contact with natural surroundings in childhood may be critical to avoid the extinction of experience, in which children who grow up experiencing the richness of their local natural environments become adults who value global biodiversity. Such direct encounters with nature in childhood may also be critical for healthy human development in the affective, cognitive, and evaluative domains (Kellert 2002). Shepard (1982) proposed that the ongoing human destructiveness toward nature (which he called "madness") is the direct result of arrested development caused in part by our estrangement from the natural world during childhood. The potential developmental benefits of children's direct contact with nature suggest the importance of bringing nature into

schoolyards, particularly in highly developed areas where children may have little other access to it. As Montessori observed more than half a century ago, "In our time and in the civilized environment of our society, children…live very far distant from Nature, and have few opportunities of entering into intimate contact with it or of having direct experience with it" (Montessori 1948, p. 104).

### 5.3 Bonding to Nature through Forts

According to Kylin (2003) who studied children's dens (another term for "forts") in Sweden, the dens served to concretize children's connections to their environment. In building a den, the children were quite literally making a meaningful place for themselves in nature. In a similar manner, Sobel (1990) described how children's forts resulted from a combination of natural raw materials and children's flexible imaginations. Sobel further suggested that adult sense of place and ecological concern may originate in the special places, such as forts, that children create. A feeling of being at home in nature in adulthood may have its beginnings in the homes children build in nature out of brush, sticks, tarps, and string.

## 6.0 Conclusion

Based upon the results of this investigation, the natural wooded area at Finger Lakes Montessori benefited the children who played there in numerous ways. Children had developed a sense of attachment to the woods as a home and community, and shared the loss of plants, animals, and access to nature. From an environmental education standpoint, the woods had afforded opportunities for creative play with and in the vegetation, direct contact with nature, and the chance to bond to a natural place, through the construction of forts. While potentially contributing to children's psychological development, encouraging their creativity, and connecting them to nature, it was also simply a fun place to be. And its destruction was a loss expressed by almost every elementary child who shared his or her thoughts during the several focus groups. As one child asserted, "Recess isn't as much fun as it was, because all I do is walk around and cry" (Field Notes, 2003, p. 66).

During a focus group with a handful of Upper Elementary students, one sixth grader made a plea for the younger children who had been playing in the woods, but could no longer do so. "They all cared about the forest and stuff," she declared, "and I did too, when I was that age…. I mean, all those little kids, they really care, and it's just like, you know, to have someone who cares so much about one little thing, they should at least get it" (Field Notes, 2003, p. 74). Ultimately, the greatest argument for providing children with access to natural spaces on playgrounds, such as these three acres in upstate New York, may lie in the sense of care that could develop, over time, as a result of doing so.

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# *Diverse Populations*

# AN EXPLORATION OF THE RELATIONSHIP BETWEEN PUERTO RICAN VALUES AND THE PERCEPTION OF BENEFITS AND PARK USE

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## Abstract

The purpose of this report is to explore the relationship between values, perceived benefits of recreation, and recreation usage. The report explores this relationship from a sample taken from a Puerto Rican ethnic group in central Massachusetts. Through both descriptive and inferential analyses, it was found that this ethnic group sample hold very tightly to their values, and that there is a significant relationship between these values on perceived benefits. It was found that as Puerto Rican values increase so will their perception of the parks, and consequently, their park usage.

## 1.0 Introduction

Much of the empirical literature on racioethnicity has focused on acculturation issues related to ethnic identity and immigration (Juniu 2000; Manrai & Manrai 1995; Stodalska 2000, Utseyet al. 2002) and their effect on park use (Tinsley et al. 2002). Floyd et al. (1993) defined acculturation as "cultural distance" from mainstream society. Tropp and colleagues (1994) further define acculturation as comprising four factors that together measure the individual variance in acculturation and acculturative levels: cultural competence, cultural behaviors, cultural preferences, and cultural identification. Having competence in one's culture (ability and knowledge) does not necessarily mean that one will use that ability (cultural behavior). Additionally, one's cultural preference (desire for/value given to the maintenance of a culture) and one's cultural identification (recognition of membership and internalized group identity) are two very different matters.

As could be surmised, acculturation is a very complex phenomenon, and measuring acculturation is a challenge. Traditionally, acculturation has been measured along linguistic lines or language variables (reasons for this are beyond the scope of this composition) for various ethnic groups. However, in a study on first and second generation Puerto Ricans, Cortés et al. argued that "there [was] an overemphasis in acculturation scales on language usage," and that the level of involvement in Puerto Rican or American culture as well as other elements of culture should also be examined (1994, p. 711). The point is well taken. The process of acculturation goes beyond language and incorporates values, norms, and beliefs.

As such, this study incorporated values and linguistic variables to ascertain the acculturation dimension. However, after a factor analysis of the 11 items used to measure acculturation, it was determined that there were indeed two subfactors: a factor of acculturation based on language (seven items), and a factor of acculturation based on values (four items). Because relatively little attention has been given to the role of values in the racioethnicity and recreation literature, the relationship between values, the perceived benefits of recreation, and park use are explored in this study. The purpose of this report is to explore the relationship between these three factors.

## 2.0 Sample Size and Representativeness

Data were gathered by a mailed survey (N=382). Snowball sampling techniques were utilized on the Puerto Rican population of Southbridge, Massachusetts. To assess representativeness, the sample was compared to the 2000 Census data. The chi square for age is 9.45 ($\Pi^2_{\text{critical } (\forall = .05,\ df = 9)} = 16.92$), and the chi square for gender is 10.75 ($\Pi^2_{\text{critical } (\forall = .05,\ df = 1)} = 3.84$). The chi square test for homogeneity indicates that the sample is representative with respect to age, but not with respect to gender. The most under-represented age group is the 20-24 age category (10% in sample vs.13% in population), and the most over-represented age groups are the 25-29 age category (14% in sample vs.12% in population) and the 45-49 age category (9% in sample vs.7% in population).

## 3.0 Measurement

The values scale was measured by asking the following questions: (a) How important is it to celebrate holidays in the Puerto Rican way?; (b) How important is it to raise your children with Puerto Rican values?; (c) How important is it to maintain the usage of the Spanish Language?; and (d) How important is it to maintain Puerto Rican values as a part of your life? These items

**Table 1.—Scoring of Park Use for Each Park**

| Season Score | Annual Maximum | Total Range | Scale Score | Annual Use for Park |
|---|---|---|---|---|
| 0 | 4 | 0-4 | 1 | Never — Very Few |
| 3 | 12 | 5-12 | 2 | A Few Times |
| 9 | 36 | 13-36 | 3 | Somewhat Frequent |
| 17 | 68 | 37-68 | 4 | Frequent |
| 25+ | 140 | 69-140 | 5 | Very Frequent |

were borrowed from Cortes, et al. (1994). The values items were scored in the following manner: Very Important (5), Important (4), Somewhat Important (3), A Little Important (2), and Unimportant (1). Items developed for the "values" items reflect raising children with Puerto Rican values, celebrating Puerto Rican holidays, maintaining Spanish language use, and maintaining Puerto Rican values as part of their daily lives.

Although a number of studies have developed scales to assess the cognitive nature of leisure and recreation (Iso-Ahola, 1980; Neulinger, 1981; Witt & Ellis, 1989), items used to measure perceived benefits in this study came from key concepts in the recreation literature. The items for perceived benefits are based on Iso-Ahola's Benefits of Leisure Scale. The wording, however, was altered from "benefit of leisure" to "benefit of going to Southbridge parks." Items reflect the key concepts of relaxation, escape, socialization, family time, and physical fitness. Park usage was obtained by asking questions regarding park usage at five public parks in Southbridge, MA by season (see Table 1 for coding), and responses were coded from 1 to 5.

This study explores two questions: (1) how does this group of Puerto Ricans perceive the benefits of using public parks, and (2) is there a relationship between Puerto Rican values, and perceptions of park benefits, or actual usage? Conceptually, the relationship between values (VALS), perceived recreation benefits (BEN), and actual usage (USE) can be conceived in the following manner:

VALS → → BEN → → USE

## 3.0 Descriptive Results

The Puerto Ricans in this study place a very strong emphasis on maintaining Puerto Rican values. This is evident by assessing the means of the four items used to measure values (range from 1 to 5): celebrate holidays (M=4.43), raise their children with Puerto Rican values (M=4.55), maintain Spanish (M=4.62), and maintain Puerto Rican values (M=4.65). All the means are between the "Important" to "Very Important" range. This indicates that this ethnic group highly appreciates its value system. Additionally, the perceptions of benefits derived from park usage were also very high (range from 1 to 5), where on average Puerto Ricans were in agreement that they derive benefits from public parks via socialization (M=3.95), exercise (M=4.09), spending time with family and friends (M=4.34), and a place that provides open space (M=4.10).

Lastly, park usage (range of 1-5, M=2.13) was deemed as relatively infrequent usage overall. However, as noted in a previous study (Gomez 2002), there is much generational variance in usage, as well as differential usage by specific park. For example, Henry Street Park and Westville Dam Recreation Area were used more frequently because of geographic proximity (close to concentration of Puerto Ricans), and unique qualities (family picnic areas), respectively.

## 4.0 Inferential Statistics

Puerto Rican respondents were initially divided into low, middle, and high Puerto Rican values groups. However, only six were in the low group, and they were combined with the middle group making two groups, a lower values group (19%) and higher values group (81%). Results from t-tests indicate no significant differences between

the two groups with respect to park use ( = .960), however a significant difference was found between the higher/lower values groups and their perception of the benefits derived from parks ( =.008). Those with higher Puerto Rican values perceived more benefits on average than those with lower Puerto Rican values.

To explore the relationship between Puerto Rican values, perceived benefits, and recreation use, a confirmatory factor analysis was performed on the items comprising these factors. The VALS (4 items), BEN (4 items), and USE (3 items) constructs had factor loadings of .87, .81, and .63, respectively. These constructs held well and were submitted to a path analysis ( < .05):

VALS →(.19) → BEN → (.29) → USE

As indicated above by the standardized path coefficients in parentheses, this number indicates the direct impact VALS has on BEN. An assessment of the direct impact indicates that 19% of the relationship between VALS and BEN is accounted for by the direct relationship between these two factors. Additionally, 29% of the relationship between BEN and USE is accounted for by the direct relationship between these two factors. The impact of VALS on USE can be obtained by multiplying .19 by .29 to obtain a .05 correlation coefficient, a relatively minor relationship. Because the path coefficients are standardized, they are equal to correlations. As such, we can see that in both cases, the relationships are positive. This indicates that as Puerto Rican values increase so will their perception of the parks, and consequently, their usage. This indicates, contrary to popular belief, that one can maintain traditional values and increase park visitations.

## 5.0 Discussion

It is odd that those who have a greater affinity towards Puerto Rican values have a higher appreciation of the benefits than those that do not share Puerto Rican values as strongly. This could indicate that those that are less acculturated have greater appreciation for parks, than those that are more acculturated, at least in this ethnic group. If so, we may need to re-think benefits, or re-think the argument about minority under-participation. The benefits questions came from a predominantly mainstreamed perspective. Perhaps more research is needed to explore benefits specific to ethnic groups. From an academic perspective this study is exploratory, and more should be done with values. For example, are values a subset of acculturation, or do values precede acculturation? This study supports the notion that there should be a separation between values and acculturation when measuring them in future studies.

Managers need to be much attuned to the cultural milieu of their constituents, as appreciation for their values will increase both benefits and increased participation. Communicating effectively from a cultural standpoint needs more than lip service or "sensitivity" training. These results indicate that Puerto Ricans hold their values in high regard — as do most of us — and failure to acknowledge these values when dealing with this ethnic group will create detrimental confrontations. The manager of a recreation site needs to incorporate traditions and values of the ethnic users into the training of future professionals, and the day to day interaction in the park with Puerto Rican constituents. Some suggestions include inviting a community leader to speak with staff as part of a training session, signage in multiple languages, the ability to have at least one person fluent in the ethnic group's language, and more importantly, not seeing these so-called "new" users as under-represented, and therefore not worthy of attention.

Although as a group, they tend to participate in moderate amounts of recreation, this study did not explore the pattern of recreation. As a member of the community under study, the researcher knows that however infrequent, Puerto Ricans tend to recreate in larger numbers, and do so in more concentrated areas (such as Henry Street Park), and in more built up areas (i.e., picnicking amenities at Westville Dam Recreation Area) — a pattern supported by Chavez (1992) in her findings on other Latino groups.

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# CONSTRAINTS TO RECREATIONAL FISHING: CONCEPTS AND QUESTIONS TO UNDERSTAND UNDERREPRESENTED ANGLING GROUPS

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## Abstract

Fishing opportunities are often catered to the predominant angler group: male Anglos. However, in coming years, the U.S. population is predicted to become more ethnically diverse. These changes are likely to have an impact on the recreational angler population. If new angler groups are not catered to by fisheries managers, there may be fewer anglers in the future, and consequently a reduction in public funding and support for fisheries management. However, little is known about the motives and preferences of non-Anglo anglers. Additionally, there is more to be learned about what constraints these underrepresented groups face. Ethnic minority groups may be differently affected by constraints due to income, place of residence, and social structure. Women may face constraints related to family commitments and perceptions of traditional gender roles. Combining knowledge about minority groups and women with leisure constraints research may help to inform future research efforts on underrepresented angling groups.

## 1.0 Introduction

Until recently, research into the human dimensions of fisheries management has focused primarily on white males. This research is reflective of the homogenous demographic composition of anglers in the United States. In 2001, over 93% of recreational anglers were white. In the same year, seventy-four percent of anglers were men (DOI 2002, pages 15 and 17). Lower percentages of women, African Americans, and Hispanics participate in recreational fishing than their white, male counterparts (FWS 2000).

Because white males have been the predominant participant group, fishing opportunities in the U.S. have been largely catered to the needs and preferences of this demographic group. However, ethnic minority groups could account for a substantial increase in recreational fishing participants in coming years (Murdock et al. 1996; Hunt and Ditton 2002). The demographic composition of the United States is predicted to change considerably in coming decades (Table 1). Between 2004 and 2050, the white population is predicted to grow by just 7.1%, while Asian, Hispanic, and African American populations are predicted to increase by 195%, 165%, and 52%, respectively (U.S. Census 2000). Immigrants and their descendents are expected to account for a substantial amount of U.S. population growth—and possibly recreational fishing participant growth—in coming years (Murdock et al. 1996).

However, if new angler groups, including minority ethnic groups, older anglers, and women, are not catered to by fisheries managers, there may be fewer anglers in the future, and consequently a reduction in public funding and support for fisheries management. While it has been shown that there may be an interest in greater fishing participation among minority groups, we know little about their preferences and behaviors (Hunt and Ditton, 2002). Understanding the needs of underrepresented groups is important to encouraging their participation in the activity.

One area of research that may be helpful in explaining the current lack of participation of minority groups in recreational fishing is that of leisure constraints. If fisheries agencies intend to attract more minorities and women into fishing, research scientists and practitioners need to do more to understand not only the preferences of these groups, but also the factors that keep these groups from fishing in the first place.

## 2.0 Leisure Constraints Research

Barriers to leisure—or leisure constraints—were first measured formally as early as the 1960s, when the first Outdoor Recreation Resources Review Commission reports were published. Most formal research in the field occurred from the 1980s through today (Crawford et al. 1991). Early constraints research focused primarily on participation vs. non-participation. That is, lists of items were tested as "barriers" that prevented a person from

**Table 1.—U.S. Population Composition and Projected Change**

| | 2004 | | 2050 | | 2004 to 2050 |
|---|---|---|---|---|---|
| | Population | Percent Composition | Population | Percent Composition | Percent Increase |
| White | 198,895 | 69.7% | 212,990 | 52.8% | 7.1% |
| Hispanic | 37,059 | 13.0% | 98,228 | 24.3% | 165.1% |
| Black | 35,049 | 12.3% | 53,466 | 13.2% | 52.5% |
| Asian/Pacific Islander | 12,116 | 4.2% | 35,759 | 8.9% | 195.1% |
| Native American | 2,145 | 0.8% | 3,241 | 0.8% | 51.1% |
| Total | 285,264 | 100.0% | 403,684 | 100.0% | 41.5% |

Source: 2000 U.S. Census

participating in a desired activity. While this approach would later be criticized for not adequately explaining nonparticipation, two general items have emerged that are considered constraints by a wide variety of people: time and money (Jackson 2000; Kay and Jackson 1991). Other patterns that have emerged in reported constraints include the availability of facilities, and personal skills and abilities (Jackson 2000).

While reported barriers provided a very applied approach to understanding leisure constraints, later research found that these lists of barriers did not adequately explain participation. For example, Kay and Jackson (1991) found that people reported recreation constraints even though their participation was not greatly affected. In some cases, people participated less than they wanted because of a reported constraint, but they did not cease participation altogether. Kay and Jackson termed this as "participation despite constraint." In 2000, Jackson referred to the phenomenon as "constraints negotiation," meaning that people will find ways around constraints if they are motivated and perceive that the benefits of the activity are important.

To help explain the varying influences that constraints have on different groups of people, Crawford and Godbey (1987) posited that people really experience three different types of constraints: structural, intrapersonal, and interpersonal. Structural constraints are the barriers between a desired activity and participation (e.g., time, money, skill) that was the focus of much early constraints research. Intrapersonal constraints are related to individual characteristics that influence leisure preference. Some examples of intrapersonal constraints include: stress, anxiety, and perception of ability. Finally, interpersonal barriers involve the interactions between people. For example, an individual may not have a partner to recreate with or someone's preferences may change when he or she is with a partner (Crawford and Godbey 1987). Crawford et al. (1991) take the 1987 model a step further, saying that the three constraint types are hierarchical in nature. That is, a person will first encounter intrapersonal constraints, then interpersonal constraints, and finally structural constraints.

Jackson and Dunn (1991) shed further light on the complexities involved in defining "leisure constraints." The authors found that the aspect of leisure being constrained may affect the perception of whether an item is a barrier to participation. That is, an individual could face constraints to starting a new activity. Alternatively, there could be constraints that cause individuals to cease participation in a former activity. In this case, leisure constraints are not "internally homogenous" (Jackson and Rucks 1993). In other words, constraints can not be equally applied to different aspects of leisure participation.

## 3.0 Leisure Constraints and Underrepresented Groups

Understanding lack of participation in recreational fisheries by underrepresented groups involves gaining an understanding of the constraints that may be especially present among these groups. In this section, three issues will be considered that could involve greater constraints

among ethnic minority groups: income level, place of residence, and social structure. Also, some constraints that may be experienced by women will be considered.

Money has frequently been identified as a constraint to leisure (Jackson 2000). In Crawford et al.'s (1991) model, money could function as a structural constraint. That is, once a person has formed a preference for an activity, the costs of that activity could constrain his or her participation. The burden of the cost constraint could vary as a person becomes more specialized in an activity. As one becomes more specialized, he or she is more likely to invest more money into equipment and materials related to the activity (Ditton et al. 1992). In this case, money could be a constraint to participating "more often" in an activity.

With the understanding of how money could act as a general leisure constraint, one could consider how the money constraint could especially impact underrepresented fishing groups. In general, it is known that minority groups in the U.S. have lower income levels than Anglos. For example, a 2002 study found that only 29% of whites reported earning an annual household income of less than $30,000, compared to 50% of Hispanics and 44% of African Americans. Forty-two percent of whites reported earning $50,000 or more, while only 17% of Hispanics and 22% of African Americans fell into this category (Brodie et al. 2002, page 12). Furthermore, there does appear to be a connection between income level and fishing participation. In 2001, individuals with an annual income of $35,000 had the highest fishing participant rates. Fishing participation rates steadily declined with income (DOI 2002, page 16).

A second constraint to recreational fishing that could be of special significance to minority groups is place of residence. Location could act as a structural or intrapersonal constraint. For example, people who desire to fish may not have adequate access to fishing resources or to quality resources. On the other hand, if opportunities to go fishing are not readily available, the preference to fish may not even be formed. Today, many ethnic minority groups live in the central cores of large cities, as a consequence of government policies that encouraged urban "white flight" (Bullard et al. 2000). Conversely, minorities comprise just 17% of the population in rural areas (USDA 2004). Minorities in cities may not be close to good fishing locations, may not know where to go fishing, and may face issues of water pollution (RBFF 2002). These constraints may, in part, help to explain the connection between urban and rural residence and fishing participation. The highest fishing participation rates in 2001 (24%) occurred among those living in rural areas. The lowest fishing participation (12%) occurred among those living in large metropolitan statistical areas (DOI 2002, page 16).

A third area to consider when examining minority participation in fishing is social structure. Ethnic minority groups may have a social structure that is different from the majority white population. Social structure may relate to intrapersonal and interpersonal constraints. That is, characteristics of culture may relate to the formation of preference for an activity. For example, extended family and family ties may be more central to the lives of African Americans and Hispanics than whites. This is reflected in what Hunt and Ditton (2002) term a more "collectivistic culture" of some minority groups compared to the more "individualistic" culture of Anglos. Some of these differences are apparent in a 2002 Recreational Boating and Fishing Foundation study, in which African American and Hispanic anglers reported that relaxation, being outdoors, and spending time with friends and family were more important aspects of fishing than competitions or skill development (RBFF 2002).

Lastly, there is evidence to suggest that women may be affected by leisure constraints differently than men. A Pew research study revealed that one-half of women with children were working full time (Pew 1997). For these women, the constraint of time may be especially significant. Some evidence suggests that women may be more affected by constraints of social isolation and skill than men (Jackson and Henderson 1995). Isolation and skill could be considered intrapersonal and interpersonal constraints, which relate to the formation of fishing preference. Another issue to consider is how perceptions of traditional gender roles relate to women and fishing. Thrane (2000) suggests that leisure constraints faced by women relate more to cultural gender roles than biological sex.

## 4.0 Generating Questions

Using leisure constraints research as a framework, future research efforts may lead to a better understanding of the lack of participation among underrepresented groups in

recreational fishing. Leisure constraints research offers a model for understanding the types of constraints that reduce leisure participation: these may be defined as intrapersonal, interpersonal, and structural. Furthermore, research revealing that leisure constraints could be experienced differently depending upon the type of participation points to the need to examine whether individuals from underrepresented groups have stopped fishing, never started fishing, or are fishing less than they would like.

Moving beyond the different types of constraints and leisure behaviors, some characteristics of ethnic minority groups and women can be examined to consider how these groups may be differently affected by constraints. Some minority groups may have lower disposable incomes and live in more urban residences. Ethnic minorities may also have a different social structure than the white majority, which involves less of a focus on competition and greater importance of extended family. Furthermore, some ethnic minority groups may use languages that are not catered to in fisheries management. For women, commitments to children and family and perceptions of traditional gender roles may be additional factors to consider as constraints to recreational fishing.

Leisure constraints research could be combined with information about ethnic minority groups and women in future research endeavors. For example, researchers may consider asking questions relating to both structural and antecedent constraints. Structural variables that may be of special significance to ethnic minority groups could include: equipment costs, availability of activities for families, the proximity of good fishing locations to underrepresented groups, and the availability managers who can communicate in different languages. Antecedent variables that could be considered include: perceptions of cost, who "should" participate, activity difficulty, and discrimination. Exploring these questions may bring human dimensions researchers a step closer to understanding the needs and preferences of underrepresented groups. This understanding, in turn, may help to insure the future healthy participation of a diverse group of U.S. citizens in recreational fishing.

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# RACE, ETHNICITY, AND INFORMATION USE RELATED TO NATURAL RESOURCE RECREATION

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## Abstract

As the demand for natural resource recreation increases, the need to understand how recreationists access information about recreation opportunities is heightened. Information used by recreationists is a critical variable in understanding decision-making. Further, given the increasing racial and ethnic diversification in the U.S., natural resource managers need a better understanding of racial and ethnic patterns in the use of natural resource communications. This study examined the relationship between race, ethnicity and information use related to natural resource recreation. Data for this study were originally collected as part of a statewide study of Texas outdoor recreation sponsored by the Texas Park and Wildlife Department (TPWD). Results indicated that race was the most consistent predictor across the various media, with White, non-Hispanic showing greater likelihood of utilizing the information sources. This suggests that the current TPWD media vehicles are not being significantly used by Hispanics and African Americans when compared to White, non-Hispanics.

## 1.0 Introduction

Of late, an overriding trend of increasing racial and ethnic diversification pervades the U.S. populace. This dynamism is evidently playing out in Texas. In fact, it is predicted that over the next forty years, there will be a marked upsurge in the minority populace in Texas, particularly in the Hispanic population, while the Anglo population is projected to decline in share of the entire population (Murdock et al. 2003). As such, the need for concomitant changes in the management of natural resource recreation to address the needs of these new stakeholders cannot be over emphasized. As the competitiveness of the management and administrative milieu for natural resource recreation intensifies, attention to strategic marketing efforts becomes of utmost importance (Lee et al. 2002). Manfredo (1989) identified information sources as a pivotal variable in understanding decision-making and choice behavior. The effective use of communication channels is a key factor in fostering increased participation in natural resource recreation. Moreover, the extent to which persons of diverse racial and ethnic backgrounds are being reached through various marketing and communicating strategies should be a prime concern of natural resource recreation managers.

## 2.0 Background to Study

Research in the realm of information use in natural resource recreation as it relates to race and ethnicity is relatively sparse. Previous research on race, ethnicity and leisure, has tended to be oriented towards examining participation as a dependent variable (e.g. Floyd et al. 1994; Gobster & Delgado 1992; Klobus-Edwards 1981; Washburne 1978), while few studies have focused on information use as the dependent variable (Thapa et al. 2002). Scholars have identified several factors that influence leisure participation among racial and ethnic minorities. For example, Washburne identified marginality and ethnicity as alternative explanations for underparticipation of African Americans in leisure. Additionally, Gobster and Delgado (1992) and West (1989) found that recreation participation among African Americans, Asian Americans and Hispanics was inhibited due to perceived discrimination. Notwithstanding, information use has been overlooked in recreation

research as a dependent variable that may be influenced by race and ethnicity. Little attention has been paid to racial/ethnic differences information use. Thapa et al. (2002) reported that white, non-Hispanic forest recreationists make greater use of available information sources than Hispanics. They also reported that whites also tended to seek information for orientation and educational purposes, while Hispanic information search was oriented toward instrumental purposes (e.g., information about parking, permits and other site/service attributes).

## 3.0 Purpose of Study

This study sought to determine the extent to which race/ethnicity affects the use of information sources. This preliminary examination studied information sources used by the TPWD. The objective of this study was threefold. First, the study examined the extent to which media sources of the TPWD are being utilized. Second, the extent and nature of information use among various racial and ethnic groups was explored. Third, the effect of race on information use, when controlling for other variables including age, gender, education, income and population size, was investigated.

## 4.0 Methods

### 4.1 Sample

Data for this study were drawn from a statewide telephone survey of the Texas population. A regional stratified random sample comprising Texas residents aged 16 and older was obtained. The sample was stratified based on the ten State Comptroller's economic regions. The rationale for this stratification was based on the notion that the ten State Comptroller's economic regions provide geographically-specific data for various ecological and socioeconomic areas in Texas (see Thomas and Adams 1998 for further details on study methods). Further, the sample reflected the ethnic diversity of the state. A total of 3,000 completed interviews were conducted from March 1 to April 30, 1998. The sample was apportioned such that each region would have 300 respondents. The survey included a series of questions addressing the extent to which the Texas Parks and Wildlife Department (TPWD) sponsored media were used. The media included a television program, a magazine, radio program, and the TPWD Internet site. Use of the particular media vehicle was measured in a yes/no format.

### 4.2 Measures

Information use was the dependent variable. This variable was operationalized as responses to four questions about TPWD sponsored media sources. Respondents were asked about their use of the TPWD information sources using the questions: Have you ever subscribed to the TPWD magazine; watched the Texas Park and Wildlife television program; listened to the Texas Passport Journal radio program; obtained information from outdoors on the Internet. If respondents answered "yes" to the last question, they were asked: did you access the TPWD web page (yes/no). Responses were measured using a YES/NO format coded as 1 and 0 respectively. Logistic regression was employed for primary data analysis.

The following socio-economic and demographic variables were used as independent variables: age, gender, income, education, population of community and race/ethnicity. Respondents' age ranged from 16 to 96 years. The mean age was 44.38, with a standard deviation of 17.82. Women constituted a slight majority of respondents (53.4%). Regarding education, the majority of the respondents had acquired a high school degree or their GEDs. In terms of racial/ethnic background, White/non-Hispanics comprised the largest segment (64.5%) of respondents. Hispanics followed with 24.0%. African American constituted 8.1% with other minorities comprising 3.3%. This trend tends to mirror the composition of the Texas population in 2000 according to statistics from the U.S. Census Bureau.

### 4.3 Overall Media Use

To address the first objective of studying the extent to which media sources were being used, frequencies were observed on the five media sources. Sixty-three percent of respondents reported having watched the TPWD television. About 23% of respondents reported subscribing to the magazine at some time in the past. The Internet (13.6%) and the radio program (5.2%) were the next most used information sources. Of the 384 respondents who used the Internet to obtain information about the outdoors, 41.7% visited the TPWD website.

### 4.4 Media Use by Race/Ethnicity

Addressing the second objective to examine how information use varies among persons from different racial/ethnic backgrounds, chi-square tests were used to determine whether or not an association exists between information source and race/ethnicity. There

**Table 1.—Logistic Regression Analysis for TPWD Magazine Subscription.**

| Independent Variables | B | Wald | *P* | Exp (B) | 95% CI Lower | 95% CI Upper |
|---|---|---|---|---|---|---|
| Gender | .142 | .1865 | .172 | 1.152 | .940 | 1.412 |
| Race | -.670 | 27.797 | .000 | ,512 | .399 | .656 |
| Age | .025 | 62.229 | .000 | 1.025 | 1.019 | 1.031 |
| Education | .108 | 5.536 | .019 | 1.114 | 1.018 | 1.219 |
| Income | .144 | 24.649 | .000 | 1.154 | 1.091 | 1.222 |
| Population Size | -.055 | 2.901 | .089 | .946 | .888 | 1.008 |
| Percent Correctly Classified | 76.9% | | | | | |
| Nagelkerke R-Sqaure | 12.5% | | | | | |
| Goodness of Fit | $\chi 2$ = 17.749 *p* = .023 | | | | | |

was a significant association between race/ethnicity and magazine subscription ($\chi 2$ = 124.86, p = .000), television program ($\chi 2$ = 7.98, p = .046) and Internet search ($\chi 2$ = 62.32, p= .000). Eighty-two percent of Anglos reported having subscribed to the TPWD magazine. Just 11.2% and 3.9% of Hispanics and African Americans, respectively reported subscribing to the magazine. On the other hand, 60.2% of Hispanics and 70% of African Americans indicated they had watched the TPWD television program. Sixty-three percent of Anglo respondents gave this indication. For the Internet, among Anglos about 17% percent (16.8) reporting using the Internet for information on the outdoors. About 8% (7.7) of Hispanics and 3% (3.3) of African American reporting using the Internet. There was no evidence of an association between race/ethnicity and the use of the Website ($\chi 2$= 7.0, p = .071) and the radio program ($\chi 2$ = 5.25, p = .155).

Addressing the third objective to determine the effects of race when controlling for other variables, the three information sources showing statistical significance (magazine, television and internet search) were regressed on the six independent variables specified previously. While the model analyzing magazine subscription does not fit the data very well, four variables were found to be significant (Table 1). As age increased respondents were 2.5% more likely to subscribe to the magazine. As their education increased their likelihood for magazine subscription increased by 11%; while as income increased, respondents were 15% more likely to subscribe to the magazine. Race appeared to be more significant, as the odds ratio revealed that non-Whites were approximately 49% less likely to subscribe to the magazine than Anglos.

Given that race was found to be a significant predictor of magazine subscription, the model was expanded to examine differences among racial/ethnic minorities in magazine subscription when compared to Anglos. Results for Hispanics and African Americans were relatively significant (Table 2). Hispanics and African Americans were found to be approximately 49% and 53% less likely to subscribe to the magazine respectively than Anglos.

Logistic regression analyses revealed that for television only two (age and race) of the six independent variables were found to be significant (Table 3). The odds ratios indicated that non-whites were approximately 23% more likely to watch the television program than Anglos.

The model was expanded using logistic regression to analyze the use of the television program within racial/ethnic groups. Results indicated that African Americans were almost twice as likely to watch the TPWD television program as Whites (Table 4).

A logistic regression model was run to analyze the likelihood of using the Internet for information on outdoor recreation opportunities. Of the six independent variables used to predict Internet search, only gender was not found to be significant (Table 5). Race and education were found to be particularly meaningful when controlling for other variables. As education increased, the likelihood of searching the Internet increased by 49%. Also, Hispanics and African Americans were found to be 68% less likely than Anglo Americans to search for outdoor recreation on the Internet.

To determine the nature and extent of differences among racial/ethnic groups in Internet use logistic regression

**Table 2.—Logistic Regression Analysis for TPWD Magazine Subscription with Expanded Racial and Ethnic Categories.**

| Independent Variables | B | Wald | P | Exp (B) | 95% CI | |
|---|---|---|---|---|---|---|
| | | | | | Lower | Upper |
| Gender | .142 | .1865 | .172 | 1.152 | .940 | 1.412 |
| Race | | | | | | |
| Hispanic | -.691 | 20.621 | .000 | .501 | .372 | .675 |
| African American | -.764 | 10.829 | .001 | .466 | .295 | .734 |
| Other | -.370 | 1.467 | .226 | .691 | .380 | 1.257 |
| Age | .025 | 62.229 | .000 | 1.025 | 1.019 | 1.031 |
| Education | .108 | 5.536 | .019 | 1.114 | 1.018 | 1.219 |
| Income | .144 | 24.649 | .000 | 1.154 | 1.091 | 1.222 |
| Population Size | -.05 | 2.901 | .089 | .946 | .888 | 1.008 |

Percent Correctly Classified 64.2 %
Nagelkerke R-Sqaure 1.8 %
Goodness of Fit $\chi 2 = 13.316$ $p = .101$

**Table 3.—Logistic Regression Analysis for TPWD Sponsored Television Program.**

| Independent Variables | B | Wald | P | Exp (B) | 95% CI | |
|---|---|---|---|---|---|---|
| | | | | | Lower | Upper |
| Gender | -.059 | .433 | .511 | .943 | .792 | 1.123 |
| Race | .204 | 4.191 | .041 | 1.226 | 1.009 | 1.491 |
| Age | .014 | 25.181 | .000 | 1.014 | 1.008 | 1.019 |
| Education | -.037 | .826 | .363 | .963 | .889 | 1.044 |
| Income | .009 | .119 | .731 | 1.009 | .960 | 1.061 |
| Population Size | .003 | .011 | .918 | 1.003 | .950 | 1.058 |

Percent Correctly Classified 64.2%
Nagelkerke R-Sqaure 1.8 %
Goodness of Fit $\chi 2 = 13.316$ $p = .101$

**Table 4.—Logistic Regression Analysis for TPWD Television Program with Expanded Racial and Ethnic Categories.**

| Independent Variables | B | Wald | P | Exp (B) | 95% CI | |
|---|---|---|---|---|---|---|
| | | | | | Lower | Upper |
| Gender | -.059 | .433 | .511 | .943 | .792 | 1.123 |
| Race | | | | | | |
| Hispanic | .128 | 1.284 | .257 | 1.136 | .911 | 1.418 |
| African American | .359 | 4.278 | .039 | 1.432 | 1.019 | 2.012 |
| Other | .379 | 2.003 | .157 | 1.462 | .864 | 2.472 |
| Age | .014 | 25.181 | .000 | 1.014 | 1.008 | 1.019 |
| Education | -.037 | .826 | .363 | .963 | .889 | 1.044 |
| Income | .009 | .119 | .731 | 1.009 | .960 | 1.061 |
| Population Size | .003 | .011 | .918 | 1.003 | .950 | 1.058 |

Percent Correctly Classified 64.2 %
Nagelkerke R-Sqaure 1.9 %
Goodness of Fit $\chi 2 = 5.818$ $p = .668$

**Table 5.—Logistic Regression Analysis of Using the Internet for Information on Outdoor Recreation.**

| Independent Variables | B | Wald | P | Exp (B) | 95% CI Lower | 95% CI Upper |
|---|---|---|---|---|---|---|
| Gender | .144 | 1.316 | .251 | 1.155 | .903 | 1.477 |
| Race | -1.150 | 52.691 | .000 | .317 | .232 | .432 |
| Age | -.044 | 83.589 | .000 | .957 | .948 | .966 |
| Education | .402 | 51.922 | .000 | 1.494 | 1.340 | 1.667 |
| Income | .095 | 6.974 | .008 | 1.099 | 1.025 | 1.179 |
| Population Size | .093 | 5.493 | .019 | 1.098 | 1.015 | 1.186 |
| Percent Correctly Classified | 85.3 % | | | | | |
| Nagelkerke R-Sqaure | 17.0 % | | | | | |
| Goodness of Fit | $\chi 2 = 3.383$ $p = .908$ | | | | | |

**Table 6.—Logistic Regression Analysis for Internet Search with Expanded Racial and Ethnic Categories.**

| Independent Variables | B | Wald | P | Exp (B) | 95% CI Lower | 95% CI Upper |
|---|---|---|---|---|---|---|
| Gender | .144 | 1.316 | .251 | 1.155 | .903 | 1.477 |
| Race | | | | | | |
| Hispanic | -1.235 | 42.955 | .000 | .291 | .201 | .421 |
| African American | -1.766 | 22.078 | .000 | .171 | .082 | .357 |
| Other | -.047 | .022 | .881 | .954 | .512 | 1.775 |
| Age | -.044 | 83.589 | .000 | .957 | .948 | .966 |
| Education | .402 | 51.922 | .000 | 1.494 | 1.340 | 1.667 |
| Income | .095 | 6.974 | .008 | 1.099 | 1.025 | 1.179 |
| Population Size | .093 | 5.493 | .019 | 1.098 | 1.015 | 1.186 |
| Percent Correctly Classified | 85.3 % | | | | | |
| Nagelkerke R-Sqaure | 18.1 % | | | | | |
| Goodness of Fit | $\chi 2 = 5.881$ $p = .661$ | | | | | |

analysis was conducted. Results indicated that when compared to Anglos, Hispanics and African Americans were less likely to obtain information from the Internet (Table 6). It should be noted that of the three models, this model revealed the largest difference among racial/ethnic groups in media use.

## 5.0 Discussion

This study examined the relationship between the independent variables of age, gender, education, income, population size and race/ethnicity and information use related to natural resource management. Logistic regression results confirmed that race/ethnicity was the most consistent predictor across the various forms. Generally, Anglos reported greater use of the TPWD sponsored media as information sources. However, members of minority groups, particularly African Americans, were more likely to watch the television program. In addition to race/ethnicity, age was also found to be a statistically significant predictor of information use across the various media forms. Older respondents reported greater inclination to utilize the various TPWD sponsored media as their age increased. Basically, results indicated that the tendency of older adults to utilize the various media forms exceeded that of the younger age groups.

## 6.0 Implications and Future Research

As the management of natural resource recreation becomes more challenging in an increasingly competitive arena due to factors such as sparse funding, it is critically pivotal that managers devise effective marketing and management strategies (Lee et al. 2002). The notion that race/ethnicity was identified as the most significant

predictor various media forms suggests that it is inappropriate for managers to develop an undifferentiated marketing and communication strategy to target persons of diverse ethnic backgrounds. Participants in natural resource recreation are becoming increasingly ethnically diverse and as such it is imperative that such differences be taken into consideration when dealing with diversified markets. Since results of the study indicate that the TPWD sponsored media are not effectively reaching non Anglo-American audiences, further research is required to delve into the factors inhibiting minorities' access to information sources. Thereafter, research on appropriate alternative communication strategies such as informal information networks for non-Anglos should be conducted. Additional research is needed to furnish an understanding of the role of information use on recreation decision-making among racial/ethnic groups. Also, given that older persons tended to utilize media forms more than younger individuals, research should be conducted to develop strategies for captivating the attention of the youth via various media forms. Results from this study, coupled with that of future suggestions for research can furnish invaluable insight to managers to enable them to develop effective marketing programs, thereby resulting in more efficient use of management resources.

## 7.0 Limitations

Measurement of the dependent variable, information use, was a limitation of the study. A limited number of options of information sources were utilized. More options including informal sources could have been used. Also, asking more open-ended questions such as: "how do you obtain information about the Texas Parks and Wildlife?" could have been more appropriate and could elicit more information about possible alternative information uses. Additionally, respondents were not asked about the frequency of their usage of the various media forms. Neither were they asked about the specific purposes for the seeking information. Future studies should also seek to overcome such limitations. Regarding the sample composition, a segmentation of respondents based on their level of participation in natural resource recreation could furnish more valid information about their information usage patterns. Future research should examine the effect of behavioral involvement (i.e., level of participation) on the relationship between race/ethnicity and information use.

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# AMERICAN INDIAN GATHERING AND RECREATION USES OF NATIONAL FORESTS

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## Abstract

This paper identifies and describes the patterns of use of the Chippewa National Forest (Minnesota) by Leech Lake Band of Ojibwe members; and, the use patterns of six national forests in northwest Montana by the Confederated Salish and Kootenai Tribes. The paper also identifies conflicts tribal members encounter while using the forests and makes recommendations regarding the management of national forests in light of tribal members' use of these lands. The implications from both study areas indicate that Forest Service managers should pay more attention to cooperative approaches, and potential co-management of forest resources that are near American Indian reservations. Managers need to be more sensitive to American Indians' uses and values associated with national forests and other protected lands that are close to reservations. They also need to be aware of the history of government and tribal relations, as well as tribal member traditional and historic uses of forests.

## 1.0 Introduction and Background

Although many Indian reservations are significant in size (often surrounded by public lands), little is known about the values American Indians place on public lands near reservations (Keller & Turek 1998; McAvoy 2002; Wilkinson 1997). The emerging USDA Forest Service policy and management approach of ecosystem management requires a holistic look at resource utilization and protection while including stakeholders in the planning and decision making process. American Indians have often been under-represented in these deliberations. Although a number of scholars have explored Indian views regarding the land (Jostad, McAvoy & McDonald 1996; McAvoy, McDonald & Carlson 2003; Redmond 1996; Tyler 1993) and forests (Kimmerer 2000; Morishima 1997), Forest Service managers and tribal resource managers often have little information on how Forest Service management practices such as timber harvests, road building or closure, or changing water levels on lakes-reservoirs-streams will impact Indian people trying to use these forests.

The purpose of this study was to identify and understand the American Indian gathering and outdoor recreation uses of national forests near a reservation. In addition, the study sought to understand: the significance of these activities and their locations to tribal members; how these activities relate to place meanings; and the conflicts encountered by tribal members. The theoretical framework of the study was based on the concept that traditional uses and leisure connect people to places while also adding functional and symbolic meaning to places (Williams & Patterson 1996; Williams & Stewart 1998). The meanings people ascribe to these places are the emotional, cultural and value laden connections people have with specific land areas.

Few studies have been conducted regarding American Indian gathering or outdoor recreation activities, and even fewer studies focusing on national forests. Cordell (1999) provides some information on American Indian outdoor recreation activities in general. He finds that American Indians participate in typical activities found in other populations. However, McDonald and McAvoy (1997) in their literature review of American Indians and leisure found that among American Indians there seems to be little division between work and leisure. There does not seem to be much fragmentation of the human experience into distinct categories such as work, leisure, family, and spiritual. Instead, many of the activities, especially those that may be called leisure activities like hunting, fishing, and berry picking, seem to be wrapped up in a close association with sustenance, gathering activities, leisure, family, culture and tradition. Many of the activities American Indians participate in are closely related to traditional activities Indian people have done for centuries. These include hunting, fishing, trapping, gathering berries, gathering wild rice, and others. These activities have more than a leisure context. They are also important means used to carry on family and tribal traditions, provide sustenance for families, and continue

a spiritual connection to the land and to the animal and plant resources. Outdoor recreation in this context has a distinct cultural expression. For American Indians, these activities are much more than a leisure experience.

Gathering is the harvesting or picking of natural resources, both plants and animals, and can be seen as a multi-dimensional activity. At certain times it may be done for livelihood purposes such as food necessary for survival, or as a means to collect added income for an individual or household. While at other times gathering may take on a leisure and cultural role; gathering as a means to be out in nature or to pass on family traditions. Emery (1998) identified two main taxonomies in which the gathering of forest products may be categorized- functional uses and livelihood uses. She identified functional uses as "ceremonial/cultural, edible, flora/nursery/craft, and medicinal" (p. 58). While these functional uses may not be necessary for survival, they are no doubt important for the individual or group as a benefit of their gathering activity. Emery identified livelihood uses of forest products as "barter/gift, personal consumption, sale in raw form, and sale in processed form" (p. 58). These uses indicate a benefit of gathering associated with subsistence and income. In her results, Emery makes several striking characterizations regarding the unique nature of gathering in the lifestyles of the American Indian population. First, Emery reports that as a group, American Indians tend to have a more diverse use of gathered resources to include both medicinal and ceremonial purposes. In addition, Emery noted that while Anglo American gatherers tend to use gathered edible resources as a resource for additional income, American Indian respondents overwhelmingly used these resources for the immediate needs of their families and communities. These findings show the great importance that these native gathering activities have to American Indians.

Any attempt by managers or researchers to understand how American Indians relate to national forests and other protected lands must consider the history of how Indian people used those forests in the past, and how some of the forests came to be designated as public lands. Before being confined to reservations, most Indian tribal groups extensively used lands now designated as national forests. They lived on these lands, traditionally used these lands for sustenance, and buried their ancestors there. Most tribes signed treaties with the federal government by the mid 1800s, giving up vast tracts of land, and agreeing to move to designated reservations. By 1880 Indian people owned 136 million acres of land on reservations. However, the Dawes Act of 1887 caused significant amounts of land on some reservations to revert back to government ownership. Portions of that land were opened for homesteading by Anglo Americans. Some of the land remained in federal ownership. Some of the land that was originally part of reservations was designated as national forests and national parks (Keller & Turek 1998). By 1930 the amount of land owned by Indians had fallen to 46 million acres, a reduction of 2/3. Some tribes lost 95% of their reservation lands because of the Dawes Act. Tribal members today remember this. This history influences how tribal members regard national forest lands that in many instances were once part of their reservations. This history also influences how Indian people view the Anglo American managers of these lands.

## 2.0 Methods

### 2.1 Study Sites

This study focused on two tribal groups on two reservations, the Leech Lake Band of Ojibwe on the Leech Lake Reservation in Minnesota, and the Confederated Salish-Kootenai Tribes on the Flathead Reservation in Montana. The Leech Lake Reservation is located at the headwaters of the Mississippi River in north/central Minnesota, and is home for 4,500 tribal members. The boundaries of the reservation contain 677,000 acres. But, as a result of the Dawes Act, the Leech Lake Band of Ojibwe now only owns a mere 34,000 acres. In this case, this tribe lost 95% of their reservation lands due to the implementation of the Dawes Act. Of the remaining land area, Chippewa National Forest controls 500,000 acres, with the remainder owned by Anglo Americans or the State of Minnesota. The portion of Chippewa National Forest on the reservation is managed for timber production and recreation. The Leech Lake Band members have a long history of using these lands for gathering and other traditional activities (Leech Lake Band of Ojibwe 1999; Mason 1958; Warren 1984).

The Flathead Reservation, located in northwestern Montana, is home to 6,000 persons of Indian descent, including 3,500 enrolled tribal members. The Confederated Salish-Kootenai Tribes actually include people from the Salish, Kootenai, and Pend D'Oreilles tribes. The reservation contains 1.2 million acres, of

which the Tribes own 722,000. On this reservation the Indians lost 42% of their lands due to the Dawes Act. Much of the remaining land on the reservation is now owned by Anglo Americans, with 19,000 acres controlled by the U.S. Fish and Wildlife Service (National Bison Range). The reservation borders the Flathead and Lolo National Forests. The Tribes have traditional use histories with those two forests as well as with four additional nearby national forests: Kootenai, Bitterroot, Deer Lodge, and Helena National Forests (Bigart & Woodcook 1996; Teit & Boas 1927-28).

### 2.2 Data Collection and Analysis

Semi-structured interviews were completed in 2001-2003 with a purposive sample of 59 Leech Lake Ojibwe tribal members in Minnesota and 60 Confederated Salish-Kootenai tribal members in Montana. The study in Minnesota focused on gathering activities on the Chippewa National Forest. The study in Montana focused on outdoor recreation activities on the six national forests near the Flathead Reservation. Participants in the study were identified by respective staff of Tribal Departments of Natural Resources as having indicated they use national forests for either outdoor recreation or gathering activities. Interviews were conducted by tribal members who were trained in interview techniques. Questions focused on gathering, recreation and other traditional activities in nearby national forests, reasons why specific places and activities were important, personal and family history of forest use, conflicts encountered, and recommendations for Forest Service managers. Interviews were audio taped and transcribed for analysis. Quantitative data were displayed in frequency tables. Qualitative analysis included reading all interviews to generate major themes and categories, placing narrative data in categories, and generating conclusions. An independent analysis of 25% of the data was done by 3 researchers to accomplish consistency of analysis. Constant comparisons and member checks were utilized to increase validity of conclusions.

## 3.0 Results and Discussion

All of the 119 subjects interviewed for this study lived on their respective reservations. There were 87 males and 32 females in the sample, and they ranged in age from 20-77 (mean age 49). Because the participants in this study were selected because of their known use of the forest, participants are not a random sample of all tribal members. It is not surprising then that these participants would have a relatively high frequency of visits to the national forest. But what is surprising is the high number of times per year they visit the national forests for either gathering or recreation. On the Leech Lake Reservation, tribal members interviewed used the Chippewa National Forest for gathering activities a great deal. Of those interviewed, 80% use the forest more than 6 times per year, and 53% more than 20 times per year. One respondent even listed his occupation as "native gatherer." On the Flathead Reservation 57% of tribal members interviewed used national forests for recreation 2-5 times per year, and 12% used the forests 6-20 times per year. The Flathead Reservation tribal members used all six national forests in the region (Flathead, Lolo, Kootenai, Bitterroot, Deerlodge and Helena. Tribal members from both study sites indicted that their gathering and outdoor recreation activities typically occur in undeveloped areas within the national forests with immediate and extended family members. They also indicated they learned of these specific gathering and recreation places through family ties. Both study groups use the forests year-round for their gathering and recreation activities.

**Table 1.—Gathering Activities of Leech Lake Ojibwe**

| | |
|---|---|
| Wild Rice (88%) | Sugar Maple Sap (54%) |
| Fishing/Netting (86%) | Birch Bark (53%) |
| Berry Picking (81%) | Wild Grapes (49%) |
| Hunting (80%) | Cranberries (47%) |
| Fuel wood (69%) | Trapping (46%) |
| Pine Cones (66%) | Red willow (42%) |
| Swamp Tea (66%) | Eagle Feathers (42%) |
| Bough Cutting (61%) | Fruit/Nut (41%) |
| Cedar (59%) | Sage (39%) |
| Medicinal Plants (58%) | Basswood (37%) |

Additional gathering activities identified: princess pine, sweet grass, porcupine quills, spruce, black/green ash, minnows, leeches, mushrooms, cedar root, red osier, clay, wintergreen, worms, twigs, June berry brush, diamond willow, crab apples, plums, and ginger root.
Note. Values enclosed in parentheses represent percentage of sample indicating participation.

Respondents in the Leech Lake interviews were asked to name the gathering activities they participate in within Chippewa National Forest. They were shown a list of 31 activities developed by the Leech Lake Band Department of Resource Management. Many of these activities were identified in Emery's study in northern Michigan. Respondents identified 39 total gathering activities they participate in on the national forest. Table 1 lists the

top 20 activities, and the percentage of the respondents listing that activity. Gathering wild rice, fishing/netting, berry picking, hunting, gathering fuelwood, pine cones, swamp tea and bough cutting had participation rates of over 60%. Those interviewed were asked to explain why they participate in gathering activities. The major reasons for gathering were: food source (93%), income (60%), family tradition (50%), personal enjoyment (43%), cultural tradition (43%), ceremonial purposes (23%), medicinal purposes (23%), and a spiritual connection (17%). Even though utilitarian reasons are the most often identified reasons, most of those interviewed also indicated either family tradition, cultural tradition, ceremonial or spiritual reasons were important as well.

When asked if they encounter conflicts when trying to participate in gathering activities, respondents in the Leech Lake study identified timber harvesting and road closures as the major sources of conflicts. Fifty-three percent of Leech Lake respondents identified timber harvests as disrupting and/or destroying their gathering opportunities in the forest. They especially noted that clear cutting practices often totally destroy plants and game habitat. Some tribal members had been gathering specific plants in an area for years, before a clear cut completely destroyed the area for gathering. Forestry management practices that allow clear cut areas to grow back into a single species stand (usually aspen) often result in a loss of plants and animals that rely on a more diverse ecosystem. Tribal members often indicated in interviews that the forests seem to be managed solely for the benefit of timber corporations, production that offers no value for tribal members. The other major cause of conflict, identified by 51% of those interviewed, is the closing (gating) of forest roads. These roads are often closed during the summer, which is the time of the year when the forest is used most often by tribal members for gathering. This means tribal members, especially older people, cannot gain adequate access to forest areas traditionally used for gathering. It is particularly galling to tribal members to see these same roads opened in the fall during hunting season so Anglo American tourists can have access to forest areas for hunting. Tribal members also indicated conflicts with commercial picking of resources and off road vehicle use.

In the Montana part of the study, Salish-Kootenai tribal members were asked to name the outdoor recreation activities they participate in on six national forests in the region. They were shown a list of 12 activities that are typical of other outdoor recreation studies. Respondents indicated a total 25 outdoor recreation activities they do in the national forests. Table 2 lists the top 20 of these activities, and the percentage of respondents listing that activity. Hunting, camping, and berry picking had participation rates of over 50% of respondents, and fishing, sightseeing, hiking, and gathering foods had rates over 20%. Even though these respondents were asked to indicate "outdoor recreation" activities, four of the top seven activities identified were "gathering" activities.

**Table 2.—Outdoor Recreation Activities of Salish-Kootenai**

| | |
|---|---|
| Hunting (57%) | Relaxation (7%) |
| Camping (50%) | Photography (7%) |
| Berry Picking (50%) | Reflection (5%) |
| Fishing (38%) | Driving (5%) |
| Sightseeing (27%) | Horseback Riding (5%) |
| Hiking (27%) | View Wildlife (5%) |
| Gathering Foods (22%) | Boating (5%) |
| Picnic (17%) | Cut Firewood (5%) |
| Family Tradition (10%) | Walking (3%) |
| Visit Historic Sites (9%) | Snowmobiling (3%) |

Additional outdoor recreation activities identified: adventure, motor biking, and religious activities.
Note. Values enclosed in parentheses represent percentage of sample indicating participation.

The Montana respondents were asked to identify any conflicts they encounter when they try to participate in outdoor recreation activities in national forests. The three most identified conflicts were overcrowding (37%), lack of respect and racist behavior by Anglo American visitors (33%), and harassment and racism on the part of Forest Service and other agency managers and rangers (17%). The overcrowding issue comes up when Indian people try to use traditional areas in the national forest and encounter crowded conditions, mainly with too many Anglo Americans. As national forest use increases, many American Indians are feeling pushed out of their traditional use areas by other recreation visitors. Some of this discontent comes from the second major conflict cause, which is Anglo Americans showing a lack of respect for Indians and their uses of the forests. Those interviewed recounted a number of situations where Anglos showed a lack of respect for Indians and for Indian treaty rights. This lack of respect took the form of harassing language, and verbal and physical

threats. Respondents also experienced harassment and racist behavior on the part of law enforcement officers encountered while in the national forests, and from Forest Service staff. Many of those interviewed perceived racial profiling being practiced by enforcement staff of numerous county, state and federal management agencies. This often resulted in Indian people being stopped and checked numerously by enforcement staff while trying to use the national forests for recreation activities. As stated by one respondent, "Non-Indians lack respect for us Indians and our long-time uses of the forest, especially our treaty rights." Salish-Kootenai tribal members also indicated conflicts with commercial pickers of resources and with off road vehicle use.

The tribal members in this study have a deep and long attachment to places in national forests that are near their reservations. Williams and Patterson (1996) have posited that place meanings usually fall into a taxonomy of four categories: aesthetic/inherent, individual/expressive, instrumental/goal directed, or cultural/symbolic. They hold that the aesthetic/inherent category is quite independent of cultural influences, but the priority of the other place meaning categories may differ according to culture. Most literature and studies indicate that the priorities of Anglo Americans regarding place meanings are usually in the order listed above. But, the results of this study indicate that the priority for American Indians interviewed in this study has cultural/symbolic on top, then instrumental/goal directed, and then individual/expressive. Their main priority of place meaning is based on a cultural/symbolic perspective, but also with some instrumental/goal directed (utilitarian) perspective. An example of this combination of cultural/symbolic and instrumental/goal directed perspective is found in the following quote from one of those interviewed in the study: "When I go to the forest, I think about the spirituality that's connected there. I think about the bones of my ancestors looking at me, and helping me to teach my kids how to respect the forest and all that it has to offer us, and providing us a place to camp, to share our meal with the ancestors, to pick berries, to swim, to partake in the traditional materials, bark, the willow, whatever it is that we're going to the woods to get. And that's what we always pay tribute to, our ancestors and all the people that made tracks for us."

Two other quotes from those interviewed illustrate the importance of these forest gathering and recreation activities to American Indians who live on reservations near national forests. They also illustrate the combination of cultural/symbolic and instrumental/goal directed meanings. A person in the Flathead Reservation study said, "I want this on the record, it shows a different perspective on the use of forests between Indians and non-Indians. We Indians today, I will admit I go to the forest sometimes to recreate. But, most often when we go to the forest it's more than recreation, we go there for a spiritual and cultural purpose. So, it's not purely recreation." And, a person from the Leech Lake Reservation said, "Traditionally it's very important to maintain the tradition of doing that activity (gathering sugar maple sap). It has sustained us for all these times, it was part of our natural diet. For our Ojibwe people it's just been so important for their livelihood, and keeping that tradition alive to me is of the utmost importance so our future generations can continue to do that activity. It also helps our identity and who we are as native people."

## 4.0 Conclusions and Recommendations

The American Indians interviewed in this study indicated they participate extensively in a wide range of gathering and outdoor recreation activities on national forests on and near reservations. Further, these activities and places are very important to the continued connection to the land enjoyed by these respondents and their families. Moreover, American Indians view these gathering and recreation activities on the land as traditional ways of subsistence use of the natural world, a way to stay connected to nature and to their culture. This suggests that they see multiple functions for activities termed "gathering" and "recreation." These activities, and the places connected to them, have cultural/symbolic and spiritual meanings as well as functional meanings. Their view of places in the forest is a result of cultural connections to the land through symbols, myths and memories. Major constraints for American Indian use of national forests are manager decisions on timber harvesting, road closures and decisions concerning commercial picking and off road vehicle use. Another major constraint for some respondents is the lack of respect and understanding by visitors and managers toward Indian values and traditions, as well as visitor and manager racist behavior. Furthermore, a final constraint is when managers and visitors lack understanding of Indian treaty rights, rights that in some cases give Indians unique use rights on national forest lands.

American Indians have a deep sense of place meaning and attachment to areas in national forests, areas that have been traditional use areas for their people. Gathering and recreation activities continue to tie them to these special places. American Indians also desire a larger role in management decisions on national forests near reservations, decisions on timber harvests, road building and closures, water level changes, off road vehicle use and commercial picking.

The results of this study, and the specific comments of respondents, generate a number of recommendations for national forest managers. First, managers need to understand that history influences how Indian people now relate to management agencies and managers. Managers need to be aware of how lands that are now national forests were obtained and designated. It is unrealistic to believe that American Indian people are not aware of the history of these areas, and how some national forests were created out of lands that were formerly Indian lands, lands that had been used by tribes for generations. Managers need to be sensitive to the long history of Indian traditional use of national forests lands, and of the deep cultural/symbolic and spiritual meaning these lands hold for Indian people. Traditional practices should be allowed, accommodated and honored when possible. Managers also need to consider the effects of management decisions on all "community " members, including tribal members on and off the reservation, elders, ancestors and elements of the natural world. Managers need to create among staff and other visitors a better understanding of treaty rights, and the history of Indians relating to areas within national forests. Methods to accomplish this can include interpretive signs describing Indian traditional uses of the forest, assigning Indian place names, and signs and other interpretive materials explaining Indian treaty rights.

The Indian people in this study are calling for more local, shared decision making. This research indicates that Forest Service managers should pay more attention to cooperative approaches, and potential co-management of national forest lands that are near American Indian reservations. Simply consulting with tribes, where the Forest Service retains all the power, is not going to work. Managers must be willing to share power as well as information. This means managers must be willing to work with tribal resource managers on a more equal basis. Many tribes now have natural resources departments staffed with well trained managers who are eager to work with national forest staff to work out arrangements for co-management of lands that are of importance to Indian people. The following are some specific recommendations for working with tribes. Allow for increased consultation and reflection time in the planning process. Indian people seem to be very deliberate in land use decisions, and it will take more time than Anglo Americans typically allow. Face to face contact is very important. Do not just send a "scoping letter" or notice of a meeting through the mail. Meet with Indian people in person, go to their office, take a small gift, spend the day together to get to know each other. Trust is an important issue, and it takes time and personal contact to develop trust and respect. Understand how tribal councils and Indian governments function. Realize that Indian governmental decisions are influenced by traditional values and often guided by input from elders and culture committees. And lastly, managers in these cooperative management efforts need to focus on where, what and how to meet the needs of American Indians on national forests, in addition to the needs of other stakeholders.

If management agencies had a deeper understanding of how American Indians attach meanings to places in national forests and other protected areas, managers may have an opportunity to avoid some of the conflicts currently present regarding American Indians and national forest areas. One participant in this study summed up the recommendations many American Indians have for Forest Service managers: "I would suggest they (Forest Service) look at a lot of these areas in a different way. Treat them as a blessing, a gift, and not a business. And once they realize how much we depend on a lot of these areas, and still are actively using them, hopefully they can see how important they are to us. My family has been gathering and using that area for years, for generations. And it was passed on to me, and I am passing it on to my grandchildren now."

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# *Tourism Economics*

# HOW TO HANDLE HIGH PROPORTION OF ZERO OBSERVATIONS IN THE CROSS-SECTION STUDIES: APPLICATION TO NONRESIDENTIAL WILDLIFE WATCHING EXPENDITURES

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## Abstract

This study used data extracted from the 2001 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation to analyze individuals' trip related expenditures associated with nonresidential wildlife watching activities based on utility maximization framework in a double hurdle model. Empirical results of this study indicated that income, age, gender, education level, fishing or hunting, use of private or public lands, wildlife category (i.e., mammals) and ecosystem category (including oceans, lakes, wetlands, open fields and man-made environments) had significant effects on nonresidential wildlife watching expenditures. The results provide insight into determinants of nonresidential wildlife watching expenditures, which all observations can be used in the estimation for participation decision, but only positive observations that pass participation and consumption decisions simultaneously can be used in the estimation based on a censored and truncated sample, allowing for richer interpretation of consumer behavior.

## 1.0 Introduction

Wildlife-based recreation plays an increasingly important role in outdoor recreation in the United States. It is evident that wildlife watching has grown in popularity in the U.S. This increasing trend in wildlife watching also shows that public interest in wildlife watching activities (such as observing, photographing, or feeding wildlife) extends well beyond consumptive wildlife recreation activities (i.e., fishing and hunting) (U.S. Fish and Wildlife Service 1993, 1997, 2002).

According to the 2001 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation, 82 million U.S. residents 16 years old and older participated in wildlife-based recreation activities. More than 34 million Americans fished, 13 million Americans hunted, and 66 million Americans participated in observing, photographing, or feeding wildlife in 2001 (U.S. Fish and Wildlife Service 2002).

Among wildlife watching participants, about 22 million Americans took trips of at least 1 mile away from home to participate in these activities. More than 20 million participants observed wildlife, while 7 million fed birds and other wildlife, and 9 million photographed wildlife at least 1 mile away from home in 2001 (U.S. Fish and Wildlife Service 2002).

In addition to the popularity of participation in wildlife watching, expenditures on these activities are large enough to rival consumptive wildlife recreation activities. For example, total wildlife-based recreation expenditures were $70 billion in 2001, with $28.1 billion spent on trip-related costs, $64.5 billion spent on equipment, and $15.8 billion spent on other related items. Anglers spent a total of $35.6 billion, hunters spent a total of $20.6 billion, and wildlife watching participants spent a total of $38.4 billion in 2001 (U.S. Fish and Wildlife Service 2002).

According to the 1991, 1996, and 2001 National Surveys of Fishing, Hunting, and Wildlife-Associated Recreation, participation in wildlife watching decreased from 76.1 million in 1991 to 62.9 million in 1996, but it increased to 66.1 million from 1996 to 2001. Expenditures for trip-related costs and equipment increased by 21 percent from 1991 to 1996, and 10 percent from 1996 to 2001 (U.S. Fish and Wildlife Service 1993, 1997, 2002).

In spite of its growing popularity, wildlife watching has received only cursory attention in the literatures of natural resource economics and related fields. Most research conducted on wildlife watching has been on the participation aspects (Hay and McConnell 1979; Hay and McConnell 1984; Shaw and Mangun 1984; Rockel and Kealy 1991; Smith and Luzar 1995; Chi et al. 2000). There have been only a few studies on wildlife watching activities (Shaw and Mangun 1984) and fewer on valuation of wildlife watching sites (Clayton

and Mendelsohn 1993). In addition, there also have been only a few studies on wildlife watching and leisure expenditures (Thompson and Tinsley 1978; Dardis et al. 1981; Dardis et al. 1994; Chi and Luzar 1997; Chi and Luzar 1998; Chi and Luzar 1999).

However, wildlife managers are often faced not only with increasing participation in wildlife watching activities relative to consumptive wildlife recreation activities, but also with the problems of where and how to obtain revenues to support public policies for wildlife watching uses. In particular, expenditure analyses provide information about how different socio-economic groups allocate their resources toward this wildlife watching activity. In the absence of this information, it is assumed that no difference exists between wildlife watching and consumptive recreation participants in their demand for wildlife-based recreation. Also, recognition of sample and data related issues (censored, truncated samples) common to expenditure models could improve measurement reliability.

The purpose of this study is to analyze the socio-economic characteristics associated with individual consumption behavior of primary nonresidential wildlife watching expenditures. It may contribute to a better understanding of current and future individual consumption behavior on primary nonresidential wildlife watching activities, which is defined as any trip or outing that is taken at least one mile from home for the primary purpose of observing, photographing, or feeding wildlife.

## 2.0 Conceptual Model

An analysis of wildlife watching expenditures can benefits from the use of more appropriate economic analysis and measurement to comprehend the full value of this type of wildlife-based recreation activity within the framework of wildlife management. In particular, analyzing wildlife watching expenditures in the framework of an individual who must allocate a constrained budget to maximize utility improves our understanding of the tradeoffs made in this process.

A conceptual model of wildlife watching activities was developed by integrating three components: wildlife watching participants, wildlife resources, and wildlife habitats. This conceptual model demonstrates the context of the human-wildlife interaction and provides a framework that identifies utility maximization as the ultimate objective for the participants in wildlife watching in terms of their consumption decisions. Wildlife watching can be viewed as an intermediate interface between the wildlife watching participants and wildlife and its habitat. Wildlife watching participants can be treated as the demand sector and wildlife resources and habitats can be treated as the supply sector in the conceptual model. Without adequate wildlife resources and habitats, there would be far fewer or no participants in wildlife-based recreation activities.

Based on the consumer demand theory, the primary nonresidential wildlife watching expenditure equation evaluates the relationship between individuals' trip-related expenditures and his or her socio-economic characteristics and wildlife-attribute variables, which can be specified as:

$$\text{Expenditure} = f(\text{High Income, Mid Income, Age, Male, Married, College, Minority, Cross-Over, Private Land, Public Land, Bird, Mammal, Ocean, Lake, Marsh, Forest, Brush, Open Field, Manmade}, \mu) \quad (1)$$

where

| | |
|---|---|
| Expenditure | = Trip-related expenditures on nonresidential wildlife watching activities; |
| High Income | = 1 if respondent's household income greater than $50,000; 0 otherwise; |
| Mid Income | = 1 if respondent's household income between $30,000 and $50,000; 0 otherwise; |
| Age | = Respondent's age (in year; 16 years old and older); |
| Male | = Respondent's gender; 1 if male; 0 otherwise; |
| Married | = Respondent's marital status; 1 if married; 0 otherwise; |
| College | = Respondent's education level; 1 if at least attended college; 0 otherwise; |
| Minority | = Respondent's ethnicity; 1 if minority; 0 otherwise; |
| Cross-Over | = 1 if respondent fished or hunted; 0 otherwise; |
| Private Land | = 1 if respondent visited any areas on private land at least a mile from home; 0 otherwise; |
| Public Land | = 1 if respondent visited any areas on public land at least a mile from home; 0 otherwise; |

| | |
|---|---|
| Bird | = 1 if respondent observed, photographed, or fed birds at least a mile from home; 0 otherwise; |
| Mammal | = 1 if respondent observed, photographed, or fed mammals at least a mile from home; 0 otherwise; |
| Ocean | = 1 if respondent observed, photographed, or fed wildlife on an ocean side at least a mile from home; 0 otherwise; |
| Lake | = 1 if respondent observed, photographed, or fed wildlife on a lake or stream side at least a mile from home; 0 otherwise; |
| Marsh | = 1 if respondent observed, photographed, or fed wildlife on a marsh, wetland, or swamp at least a mile from home; 0 otherwise; |
| Forest | = 1 if respondent observed, photographed, or fed wildlife at a woodland at least a mile from home; 0 otherwise; |
| Brush | = 1 if respondent observed, photographed, or fed wildlife at a brush-covered area at least a mile from home; 0 otherwise; |
| Open Field | = 1 if respondent observed, photographed, or fed wildlife at an open field at least a mile from home; 0 otherwise; |
| Manmade | = 1 if respondent observed, photographed, or fed wildlife at a man-made area (golf course, cemetery, urban park, etc.) at least a mile from home; 0 otherwise; |
| μ | = Error term. |

Trip-related expenditures on nonresidential wildlife watching activities include: (1) food, drink, and refreshments; (2) lodging of motels, cabins, lodges, campgrounds, etc.; (3) public transportation, including airplanes, trains, buses, and car rentals; (4) the round trip cost for transportation by private vehicle; (5) guide fees, pack trip or package fees; (6) public land use or access fees; (7) private land use or access fees (not including leases); (8) equipment rental as boats, camping equipment, etc.; (9) boat fuel; (10) other boat costs (such as launching, mooring, storing, maintenance, pump out fees, insurance); and (11) heating and cooking fuel (U.S. Fish and Wildlife Service 2002).

## 3.0 Econometric Model

According to consumer demand theory, wildlife watching participant attempts to maximize his/her utility from wildlife watching subject to his/her budget constraint. Thus, the maximization of the utility function for individual consumption behavior associated with wildlife watching can be stated as follows:

$$\begin{aligned} &\text{Maximize} && u = u(q, x, w) \\ &\text{Subject to} && pq = I \end{aligned} \qquad (2)$$

where $u(.)$ represents the utility function which is assumed to be continuous, increasing, and quasi-concave, $q$ is a vector of market goods the individual purchased for wildlife watching, $p$ is a vector of corresponding market prices for market goods, $x$ denotes a vector of individuals' socio-economic characteristics, $w$ denotes a vector of wildlife-attribute variables, and $I$ is individuals' household income. The demand function can be derived from the analysis of utility maximization problem in terms of market prices, socio-economic characteristics, wildlife-attribute variables and monetary budget. In practice, prices are typically assumed constant with the cross-sectional data.

A better understanding of the nature of the data helps in selecting an appropriate econometric model for this research. In practice, the sample containing observations with reported zero expenditure present a unique problem with cross-sectional survey data. Using standard econometric techniques, the parameter estimates are biased and inconsistent (Maddala 1983; Judge et al. 1988; Greene 1997). For example, regression analysis based on nonzero observations of the dependent variable can lead to biased parameter estimates.

In general, researchers have often used the Tobit model to estimate demand relationships with limited dependent variables. However, the Tobit model is very restrictive in its parameterization, which implies that the probability of consumption and the level of consumption are determined by the same sets of variables and parameters. Hence, drawing inferences from the Tobit model would lead to erroneous conclusions, especially the sample containing a high proportion of zero observations in the cross-sectional survey data.

The double hurdle model, originally proposed by Cragg (1971), is established as a useful extension of the univariate Tobit model because it allows two separate stochastic processes for participation and consumption

(Cragg 1971; Jones 1989). According to the double hurdle model, individuals have to pass two separate hurdles before they are observed with a positive level of consumption. The double hurdle model may provide a better interpretation of consumer behavior, which takes into account the probability of consumption and the level of consumption. The double hurdle model can be written as, for $i = 1, \ldots, n$:

$$\begin{aligned} y_i = y_i^*, &\quad \text{if} \quad w_i = z_i'a + u_i = 1, \quad y_i^* = x_i'\beta + e_i > 0, \\ y_i = 0, &\quad \text{if} \quad w_i = z_i'a + u_i = 1, \quad y_i^* = x_i'\beta + e_i \leq 0, \\ &\quad \text{or} \quad w_i = z_i'a + u_i = 0, \quad y_i^* = x_i'\beta + e_i > 0, \\ &\quad \text{or} \quad w_i = z_i'a + u_i = 0, \quad y_i^* = x_i'\beta + e_i \leq 0 \end{aligned} \tag{3}$$

where $w_i$ characterizes the decision of whether to participate in primary nonresidential wildlife watching activity; $z_i$ is a vector of explanatory variables that influence participation; $y_i$ is the individual observed expenditure, $y_i^*$ is the corresponding desired expenditure, $x_i$ is a vector of explanatory variables that influence expenditures; $\alpha$ and $\beta$ are the vectors of unknown parameters for the participation and expenditures, respectively; and $u_i$ and $e_i$ are independently and normally distributed error terms with distribution $N(0, 1)$ and $N(0, \sigma^2)$, respectively. Meanwhile, $\phi(.)$ and $\Phi(.)$ denote the standard normal density and distribution functions, respectively.

For the observations $y_i$'s that are zero,

$$Prob\ (y_i = 0) = 1 - Prob\ (w_i > 0)\ Prob\ (y_i > 0) = 1 - \Phi(z_i'\sigma)\ \Phi(x_i'\beta/\sigma) \tag{4}$$

For the observations $y_i$s that are greater than zero,

$$Prob\ (y_i > 0)\ f(y_i \mid y_i > 0) = \Phi(z_i'\sigma)\ (1/\sigma)\ \phi[(y_i - x_i'\beta)/\sigma] \tag{5}$$

Using 0 to denote zero observations and + denote positive observations, the likelihood function for the double hurdle model can be specified as:

$$L = \Pi_0[1 - \Phi(z_i'a)\ \Phi(x_i'\beta/\sigma)]\ \Pi_+\{\Phi(z_i'a)\ (1/\sigma)\ \phi[(y_i - x_i'\beta)/\sigma]\} \tag{6}$$

The maximum likelihood estimation technique can be used to estimate the unknown parameters for the primary nonresidential wildlife watching expenditure analysis (Cragg 1971; Blundell and Meghir 1987; Jones 1989; Jones 1992).

## 4.0 Data

Data used in this study were extracted from the 2001 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation (U.S. Fish and Wildlife Service 2002). The survey is conducted every five years by the U.S. Census Bureau for the U.S. Fish and Wildlife Service (USFWS) and gathers extensive information on fishing, hunting, and wildlife watching participation, expenditures, and socioeconomic characteristics of respondents.

This study uses the wildlife watching data set, which is one of the three data sets generated from the survey results by USFWS. The U.S. Census Bureau interviewed 80,000 households in the United States to determine participants in wildlife-related activities. From this initial phase, 15,300 wildlife watchers were selected for detailed interviews about their participation and expenditures in 2001.

## 5.0 Empirical Results

Descriptive statistics for all variables used in estimation are presented in Table 1. Average trip-related expenditure is $203 for the total sample, but average trip-related expenditure is $868 for the sample with positive expenditures. More than 76 percent of zero expenditure reported in the data used in this study. The double hurdle model for the primary nonresidential wildlife watching expenditure analysis was estimated by maximizing the logarithm of the likelihood function, equation (6), using the censored and truncated regression procedures in LIMDEP (Greene 1995).

In socio-economic data, there often exists a problem with multicollinearity between variables, resulting in estimates that are unstable and have high standard errors. In order to test which variables are collinear with other variables, collinearity diagnostic tests based on condition indexes were performed. The value of the largest condition index resulting from the principal component analysis performed was 14.84 in this analysis. As Belsley et al. (1980) suggested, the explanatory variables selected to

**Table 1.—Descriptive Statistics for Variables in Nonresidential Wildlife Watching Expenditure Analysis**

| Variables | TotalSample (N=15300) | | Sample of Expenditure>0 (N=3577) | | Sample of Expenditure=0 (N=11723) | |
|---|---|---|---|---|---|---|
| | Mean | Standard Deviation | Mean | Standard Deviation | Mean | Standard Deviation |
| Expenditure | 203.00 | 919.16 | 868.33 | 1742.59 | ------ | ------ |
| Age | 48.21 | 16.51 | 44.60 | 14.21 | 49.31 | 16.99 |
| High Income | 0.35 | | 0.46 | | 0.32 | |
| Mid Income | 0.23 | | 0.26 | | 0.22 | |
| Male | 0.47 | | 0.50 | | 0.46 | |
| Married | 0.70 | | 0.72 | | 0.70 | |
| College | 0.58 | | 0.68 | | 0.55 | |
| Minority | 0.10 | | 0.08 | | 0.11 | |
| Cross-Over | 0.10 | | 0.15 | | 0.08 | |
| Private Land | 0.11 | | 0.43 | | 0.03 | |
| Public Land | 0.21 | | 0.85 | | 0.02 | |
| Bird | 0.24 | | 0.90 | | 0.01 | |
| Mammal | 0.21 | | 0.82 | | 0.02 | |
| Ocean | 0.07 | | 0.27 | | 0.01 | |
| Lake | 0.18 | | 0.70 | | 0.02 | |
| Marsh | 0.12 | | 0.48 | | 0.01 | |
| Forest | 0.19 | | 0.76 | | 0.02 | |
| Brush | 0.16 | | 0.65 | | 0.02 | |
| Open Field | 0.16 | | 0.65 | | 0.02 | |
| Manmade | 0.08 | | 0.31 | | 0.01 | |

explain wildlife watching expenditure associated with nonresidential activities were not correlated in this case.

Empirical results of the double hurdle model for the primary nonresidential wildlife watching expenditure analysis are presented in Table 2. All observations can be used in the estimation for participation decision, but only positive observations which pass participation and consumption decisions simultaneously can be used in the estimation based on a censored and truncated sample.

The variables *High Income, Private Land, Public Land, Mammal, Ocean, Lake,* and *Open Field* are all positively and significantly related to nonresidential wildlife watching expenditures for both participation and consumption decisions.

Empirically, wildlife watching participants with high household income level have positive and significant effects on nonresidential wildlife watching participation and expenditures. It revealed that nonresidential wildlife watching is a normal good for which demand increases with high household income level. Use of public or private lands appeared to affect nonresidential wildlife watching participation and expenditures significantly, implying that demand increases with use of public or private lands.

As we expected, mammal has positive and significant impacts on nonresidential wildlife watching participation and expenditures, indicating that demand increases significantly with the presence of mammals, which is the primary purpose of wildlife watching activities. We

**Table 2.—Empirical Results of Double Hurdle Model for Nonresidential Wildlife Watching Expenditure Analysis**

| Variable | Participation (N=15300) | | | Consumption (N=3577) | | |
|---|---|---|---|---|---|---|
| | Parameter Estimate | Standard Error | T-Ratio | Parameter Estimate | Standard Error | T-Ratio |
| Constant | -1.8513 | 0.0741 | -24.979* | -8142.60 | 468.33 | -17.387* |
| High Income | 0.1067 | 0.0465 | 2.296* | 583.05 | 171.22 | 3.405* |
| Mid Income | 0.0850 | 0.0489 | 1.738* | -283.83 | 194.98 | -1.456 |
| Age | -0.0023 | 0.0012 | -1.927* | 27.94 | 4.92 | 5.675* |
| Male | 0.0148 | 0.0379 | 0.390 | 327.36 | 133.36 | 2.455* |
| Married | 0.0476 | 0.0435 | 1.092 | 58.77 | 156.83 | 0.375 |
| College | 0.0082 | 0.0400 | 0.205 | 468.86 | 160.51 | 2.921* |
| Minority | 0.0163 | 0.0635 | 0.257 | -222.77 | 256.76 | -0.868 |
| Cross-Over | 0.0450 | 0.0612 | 0.734 | 816.55 | 170.73 | 4.783* |
| Private Land | 0.3674 | 0.0657 | 5.593* | 1022.20 | 143.03 | 7.146* |
| Public Land | 1.1532 | 0.0621 | 18.557* | 1060.20 | 237.36 | 4.466* |
| Bird | 0.9752 | 0.0624 | 15.620* | 389.94 | 291.85 | 1.336 |
| Mammal | 0.8482 | 0.0604 | 14.047* | 798.94 | 216.49 | 3.690* |
| Ocean | 0.1254 | 0.0716 | 1.752* | 2142.60 | 143.25 | 14.957* |
| Lake | 0.2882 | 0.0602 | 4.785* | 740.43 | 180.39 | 4.105* |
| Marsh | -0.0128 | 0.0644 | -0.199 | 496.25 | 151.72 | 3.271* |
| Forest | 0.1654 | 0.0700 | 2.364* | 179.66 | 204.45 | 0.879 |
| Brush | 0.0985 | 0.0703 | 1.402 | 200.14 | 178.94 | 1.118 |
| Open Field | 0.2367 | 0.0661 | 3.582* | 556.23 | 177.58 | 3.132* |
| Manmade | -0.0536 | 0.0709 | -0.756 | 453.65 | 142.25 | 3.189* |
| σ | -------- | -------- | -------- | 2002.60 | 30.80 | 65.013* |
| Log-Likelihood | | -1806.844 | | | -28199.94 | |

* denotes statistical significance at the 5% level.

also found that the ecosystem categories such as oceans, lakes, and open fields to be positively and significantly related to nonresidential wildlife watching participation and expenditures, appearing that demand increases with oceans, lakes, and open fields.

Although having the positive sign, the variables *Male, College,* and *Cross-Over* are significant in the consumption decision but not significant in the participation decision, whereas the variables Bird and Forest are significant in the participation decision but not significant in the consumption decision. Empirically, wildlife watching participants are more likely to participate in nonresidential wildlife watching with the presence of birds, but insignificantly tend to consume more associated with bird watching. Similarly, wildlife watching participants are more likely to participate in forest environments, but insignificantly tend to consume more for nonresidential wildlife watching associated with forestlands.

On the other hand, we found that well-educated male individuals are insignificantly more likely to participate in, but tend to spend more when they consume for this particular wildlife-based recreation significantly. Meanwhile, sportsmen, i.e., anglers or hunters, are insignificantly more likely to participate in, but willing to spend more when they consume for this type of wildlife watching activities significantly.

The double hurdle estimates indicate that the explanatory variables might have different impacts on participation and consumption in sign or magnitude. There is no strong economic theoretical basis to suggest what explanatory variables should be in each hurdle or for predicting the signs of estimated coefficients in each hurdle (Jones, 1989).

The variables *Mid Income, Age, Marsh,* and *Manmade* all have different signs in the participation and consumption decisions. Even having different signs, the variable Age is significant for both participation and consumption decisions, the variable Mid Income is significant in the participation decision but not significant in the consumption decision, and the variables Marsh and Manmade are significant in the consumption decision but not significant in the participation decision.

Empirically, participants are less likely to participate with age, but tend to consume more related to nonresidential wildlife watching activities. Wildlife watching participants with middle household income level are more likely to participate in, but not willing to spend more for this type of wildlife-based recreation activities. We also found that participants are less to participate in marsh and manmade environments, but tend to consume more for nonresidential wildlife watching associated with marsh and manmade environments.

In summary, empirical results of the primary nonresidential wildlife watching expenditure analysis indicate that well-educated male sportsmen who are anglers or hunters with high household income and age level would observe, photograph, or feed mammals on oceans, lakes, marshes, open fields, or manmade environments, either in public or private lands at least one mile away from their home.

## 6.0 Conclusions

This study has provided an empirical analysis of individual consumption behavior for observing, photographing, and feeding wildlife more than one mile away from their home nationally using data extracted from the 2001 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation. The primary nonresidential wildlife watching expenditure analysis in this case is a necessary step in understanding relationship between individual consumption behavior and his/her socioeconomic characteristics and the attributes of wildlife and its encounter.

Empirical results of this study indicated that income, age, gender, education level, fishing or hunting, use of private or public lands, wildlife category (i.e., mammals) and ecosystem category (including oceans, lakes, marshes, open fields and manmade environments) had significant effects on nonresidential wildlife watching expenditures. Wildlife watching is a form of nature-based tourism that draws our attention to the animal kingdom, which rely on environmental attributes to attract participants to an area, and use its wildlife resources and their habitats as the focal point of the activities. In order to continue high quality of wildlife watching experiences for the participants, a healthy environment for wildlife must be properly provided through well-defined planning and management strategies and decision-making processes.

To compare the Tobit model and the double hurdle model, all observations can be used in the estimation for the Tobit model based on a censored sample, but only positive observations that pass participation and consumption decisions simultaneously can be used in the estimation for the double hurdle model based on a censored and truncated sample. The results in this study provide insight into determinants of nonresidential wildlife watching expenditures, which also can be interpreted in terms of two stochastic processes, participation and consumption, allowing for richer interpretation of consumer behavior.

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# ECONOMIC IMPACT OF THE PICTURED ROCKS NATIONAL LAKESHORE AND THE ESTIMATION ERRORS

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## Abstract

This study used an Input-Output model to estimate the economic impacts of visitors spending to the Pictured Rocks National Lakeshore, Michigan, in 2001. Inputs were estimated from the 2001 Picture Rocks National Lakeshore Visitor Study, the National Park Public Use Statistics, and IMPLAN input-output modeling software. Pictured Rocks National Lakeshore hosted 421 thousand recreation visits in 2001, and park visitors spent $14.8 million in the local area (within 60 miles to the park, mainly the Alger County), which generated $4.6 million in direct personal income and supported 426 jobs. Secondary effects generated an additional $979 thousand dollars in personal income and $1.8 million in value added and 44 jobs as visitor spending circulated through the local economy. The sources of estimation errors were discussed. The estimation of segment shares was subject to the largest bias and error among all. Without adjustments, campers who stayed inside the park, calculated from the sample statistics, was 2.5 times of the official park record of campers. Backcountry campers, on the other hand, were underestimated in the survey by 40%. Recommendations for survey implications to improve the accuracy were provided at the end.

## 1.0 Introduction

Measuring and evaluating economic impacts of the tourism industry has become an important aspect in policy evaluation and decision-making processes. The U. S. federal nature-resource management agencies, such as National Park Service, Forest Service, and Army Corps of Engineers, all began the endeavor to measure the economic impact of uses' spending on the regional economy. Currently, National Park Service (NPS) is using the Money Generation Model version 2 (MGM2) to estimate yearly national-wide and site-specific economic impact (Styneset al. 2000). This paper discusses the economic impacts of visitor spending to the Pictured Rocks National Lakeshore in Michigan using the MGM2 model. Besides providing the quantitative estimates, errors and biases encountered in the estimation process will be discussed and recommendations for further survey implementation are provided at the end.

## 2.0 Methods

Tourism economic impact is estimated based on the following formula, determining by four factors, average spending, total visitation, visitor segment share and regional multipliers (Equation 1).

$$\text{Total economic impact} = \left(\sum_{i=1}^{n} \text{average spending}_i * \text{total visitation}_i\right) * \text{multipliers} \quad \text{(Equation 1)}$$

Where i = visitor segments

This approach helps to improve estimation accuracy as individual visitor segment may have distinct spending averages. Segmentation was formed based on visitors' lodging types, which included day visitors from the local region (Alger county), day visitors from outside the region, campers staying inside the park, backcountry campers inside the park, visitors staying at hotels outside the park, and campers staying outside the park. Distinct re-entry rates, party sizes, length of stay, and average spending factors were estimated for each segment using the 2001 Picture Rocks National Lakeshore Visitor Study (Visitor Services Project 2001).

The sample statistic was expanded to the total park visitors by using the National Park Public Use Statistics, which provided the annual park visitation figures and overnight use statistics for campers and backcountry users inside the park. Regional multipliers for Alger County were derived from the IMPLAN input-output modeling software.

**Table 1.—Visitor spending[a] by lodging segment in local area ($ per party day/night)**

| Spending Category | Local day visitor | Non-local day visitor | Camper inside the park | Back-country campers[b] | Motel users outside the park | Camper outside the park | Total |
|---|---|---|---|---|---|---|---|
| Motel, hotel cabin or B&B | 0.00 | 0.00 | 0.00 | 0.00 | 86.58 | 0.00 | 31.37 |
| Camping fees | 0.00 | 0.00 | 10.42 | 0.00 | 0.00 | 15.56 | 3.65 |
| Restaurants & bars | 9.28 | 12.55 | 6.76 | 5.58 | 30.23 | 9.04 | 17.49 |
| Groceries, take-out food/drinks | 5.31 | 2.93 | 10.50 | 1.30 | 10.43 | 10.39 | 7.68 |
| Gas & oil | 5.16 | 8.25 | 8.83 | 3.67 | 11.27 | 9.32 | 9.20 |
| Local transportation | 0.00 | 0.09 | 0.24 | 0.04 | 1.16 | 1.28 | 0.71 |
| Admissions & fees | 5.21 | 4.27 | 5.06 | 1.90 | 12.66 | 7.11 | 7.93 |
| Souvenirs and other expenses | 1.29 | 9.41 | 5.13 | 4.18 | 16.64 | 11.70 | 11.44 |
| Total | 26.25 | 37.50 | 46.94 | 16.67 | 168.96 | 64.40 | 89.50 |

[a] Spending averages are computed by weighting cases inversely to the number of days the visitor spent inside the park. Off -season spending was assumed to be 5% below the summer values on a per day basis.
[b] Backcountry spending profile is constructed as there were only 4 cases in the backcountry sample.

## 3.0 Results

### 3.1 Visits and Average Spending

Pictured Rocks National Lakeshore hosted 421 thousand recreation visits (person entry to the park) in 2001. Recreation visits were first converted to night basis as the unit for the average spending was based on expenditure per party per night. By using average length of stay, re-entry rate to the park, and party size, 421 thousand recreation visits were converted to 153,000 vehicle entries and 155,000 party-nights to the local area. Local residents accounted for 7% of the 421,000 recreation visits; day trips from outside the region (including stays with friends and relatives or seasonal homes in the area, 8%) accounted for 28%. Area motels accounted for 39% of total party nights, campgrounds 33% (5% inside the park) and backcountry stays represented 4% of party nights. We estimated that park visitors accounted for about 60,200 room nights in area motels and about 43,800 campsite nights outside the park in 2001.

On average, local day visitors spent $26 per party per day, while day visitors from outside the local area spent $38 per day. Campers staying outside the park spent $64 dollars per day, about $17 dollars more than those camping inside the park. Visitors staying at hotel, cabin and B&B spent around $169 per day and a corresponding nightly room rate of $87. Backcountry campers spent around $17 dollars per party day, or about $38 for a 2.3- night stay. Spending averages per party per night by segment are shown in Table 1.

### 3.2 Total Spending and Total Economic Impacts

Visitors to Pictured Rocks NL in 2001 spent $14.8 million in the local area. Visitors spent $5.2 million on motel/hotel rooms, $2.7 million on restaurant meals, and $1.9 million on souvenirs. Groups staying in area motels contributed about 69 percent ($10 million) of the total spending in the region followed by groups staying outside the park at campgrounds (19%), and non-local day visitors (7%).

Multiplied with Alger County multipliers, the $14.8 million spent by Pictured Rocks NL visitors had a direct economic impact on the region of $12.0 million in direct sales, $4.6 million in personal income (wages and salaries), $7.4 million in value added, and supported 426 jobs in the region (Table 2). The lodging sector received the largest amount of direct sales ($5.2 million), followed by restaurants ($2.7 million) and the retail trade sector ($1.9 million). Secondary effects generated an additional $979 thousand dollars in personal income and $1.8 million in value added 44 jobs. In total, visitors to the Pictured Rocks National Lakeshore supported $15 million of direct sales, $5.6 million of personal income, $9.3 million of value added, and 470 jobs in Alger County, MI, in 2001.

**Table 2.—Economic Impacts of Pictured Rocks NL visitor spending, 2001**

| Sector/Spending category | Direct Sales (thousand $) | Jobs | Personal Income (thousand $) | Value Added (thousand $) |
|---|---|---|---|---|
| Direct Effects | | | | |
| Motel, hotel cabin or B&B | 5,213 | 203 | 1,954 | 3,209 |
| Camping fees | 763 | 30 | 286 | 470 |
| Restaurants & bars | 2,738 | 92 | 911 | 1,320 |
| Admissions & fees | 1,291 | 39 | 552 | 904 |
| Local transportation | 131 | 4 | 55 | 67 |
| Retail Trade | 1,583 | 55 | 776 | 1,308 |
| Wholesale Trade | 233 | 4 | 96 | 165 |
| Local Production of goods | 91 | 0 | 0 | 0 |
| Total Direct Effects | 12,042 | 426 | 4,631 | 7,442 |
| Secondary Effects | 2,927 | 44 | 979 | 1,825 |
| Total Effects | 14,968 | 470 | 5,611 | 9,268 |
| Multiplier | 1.24 | 1.10 | 1.21 | 1.25 |

**Table 3.—Total Visitor Spending by Different Analytical Procedures**

| Analytical Procedures | Total visitor spending (million $) | Ratio to the final estimates |
|---|---|---|
| Includes all cases | 14.86 | 1.01 |
| Excludes cases with spending outliers and missing values | 15.48 | 1.05 |
| No adjustments to the segment shares | 16.04 | 1.09 |
| Excludes outliers and adjust for segment shares (final estimates) | 14.75 | 1.00 |

The sales multiplier for the region was 1.24, and the local region surrounding Pictured Rocks NL captures 81% of visitor spending. Nineteen percent of visitor spending leaks out of the local economy to cover the costs of imported goods bought by visitors.

## 4.0 Estimation Bias and Errors

It is more challenging to estimate the economic impact of a year-round recreation service site than for a short-term festival or event. In general, park visitors are composed of diverse groups in terms of their activity types and lodging categories. Further, the volume and use of park resources are subject to strong seasonal variation, especially in Michigan (Warzecha et al. 2000; Stynes and Sun 2003). These two factors lead to variation in park visitation, user travel patterns, and average spending. Subsequently, they create complexity in parameter estimation and possible errors in the overall economic impacts.

Two major sources of errors in estimation are demonstrated here. First, procedures to analyze inconsistent responses from the visitor survey, such as the treatment for outliers, missing values and contradictory responses on key parameters, influence the final output estimates. Key parameters included party size, length of stay, and re-entry rate to the park, which are subject to the biases of seasonality, sampling and responses errors. These factors influence the estimation of overall visitation by individual segment as well as the total visitor spending. In general, the decision to analyze these parameters may lead to a 5% variation in overall spending. For example, total visitor spending would be $14.86 million if all cases were included versus total spending as $15.48 million if cases that skipped the spending questions were excluded.

Second, the Pictured Rocks Visitor Survey was conducted from July 24 to August 4, 2001. The sample data was assumed to reflect the high season use patterns and spending only. The representation of snowmobiles or cross-country skies was not accounted for, who may have distinct use patterns and spending profiles. One indication of possible survey bias due to short-term summer visitor survey can be made by comparing the visits estimation from the survey to the official park overnight statistics. Without adjustments, campers who stayed inside the park, calculated from the sample statistics, was 2.5 times of the official park record of campers. Backcountry campers, on the other hand, were underestimated in the survey by 40%. Without adjustments, total visitor spending for Pictured Rocks NL was $16.04 million, a 10% over-estimation when compared with the adjusted figure, $14.75 million.

The accuracy of the MGM2 estimates rests on the three inputs: visits, spending averages, and multipliers. Multipliers and economic ratios are based on an IMPLAN model for Alger County and should be reasonably reliable for this application (Stynes and Sun, 2003). The sampling errors on the spending averages were 5% overall and ranged from 6- 28% for individual segments. Spending averages also vary by about 5% depending on how missing spending data and outliers are treated. The treatment of segment shares, however, has introduced approximate 10% or higher variation on the total visitor spending, the largest source of error. This is in part can be explained by the data collection scheme as 1) the visitor survey was conducted during a 10 period in the summer and 2) visitors were interviewed inside the park. The first factor induced biases by ignoring the visitor characteristics of off-season users, who tend to have shorter stays, spend less and may have more local day trips to the park. The second factor over sampled visitors with longer stays than day users as the probability to be sampled is in direct proportional to their length of stay inside the park. Subsequently, the sample statistics indicated an over-representation of visitors who stayed overnight inside the park.

Recommendation for future economic impact studies are, first, visitor survey would be conducted throughout the year to better profile both high and low season user patterns. Second, visitors should be interviewed at the park entries as sampling visitors inside the park may bias certain user groups. For example, campers and hotel users may be over represented if sampling was conducted near campgrounds or park lodging facilities. Third, determining the relative visitor composition by lodging types has been the most challenging and critical step in the estimation process. A separate visitors survey is suggested collect just this information. Additional postcard surveys, for example, at the park entry to inquire visitors' lodging choices inside the park or the local communities would help to address the accuracy of visitor segment shares.

## 5.0 Conclusion

The economic contribution of the Pictured Rocks National Lakeshore to the regional community is documented through an economic impact analysis. However, the accuracy in estimation is subject to errors and biases, mainly from the treatment of segment shares and seasonality. Therefore, to aid to the accuracy in impact estimation, we recommend 1) a long-term monitoring system to understand visitor spending and travel patterns under different seasons, and 2) additional short survey (such as using postcards) at park entries to understand the relative composition of park visitors by lodging segments.

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# VARIATIONS IN ECONOMIC MULTIPLIERS OF THE TOURISM SECTOR IN NEW HAMPSHIRE

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## Abstract

The New Hampshire Fiscal Year 2002 Tourism Satellite Account, prepared for the Division of Travel and Tourism by the INHS, reports a state tourism output multiplier of 2.61. Tourism output multipliers for other New England states are generally around 1.60. The state-level output multiplier estimated in this study was 1.51 (using the economic modeling software IMPLAN and 1999 New Hampshire County Data). The variations in this multiplier across the seven regions in New Hampshire varied from 1.32 to 1.48. Further, output multipliers have a positive relationship to the natural log of population, and job multipliers have an inverse relationship to the natural log of population.

## 1.0 Introduction

The state of New Hampshire keeps data on tourism statistics through the Department of Resource & Economic Development. The Tourism Satellite Account for New Hampshire (INHS 2002) highlights tourist data on spending in seven regions of the state and across the four seasons of the year. Along with this data, the report also includes state level multipliers for the tourism sector on total value, income, and jobs.

Few tourism analysts and recreation managers have formal training in regional economic methods and most are not familiar with input-output models or multipliers. One of the most common errors in tourism impact studies is the application of state level multipliers to sub-state regions. Multipliers indicate the interdependence of industry sectors within a regions economy and are influenced by the size of the region and population (Tooman 1997; Baaijens et. al. 1998; Propst and Gavrillis 1987; Chang et al. 1999).

The purpose of this study is to determine regional tourism multipliers for the state of New Hampshire, and to explain why these multipliers vary across different regions of the state. Above all, this study will serve as an extension to the state's data on regional tourist spending and provide a tool for New Hampshire's regional planners and policy makers. Regional tourism multipliers should be used to refine procedures for estimating the economic impact of recreation and tourism demand within the state.

## 2.0 Literature Review

Chang (2000) established that variations in tourism multipliers do exist, and that these variations have a significant relationship to the natural log of population. Chang found that employment multipliers have an inverse relationship to population size, and output (sales) multipliers have a positive correlation with population size. His study compared 114 different size regions throughout the United States, and the Type II sales multiplier varied from 1.32 for Modoc County in California to 1.67 for the State of Florida. Baaijens et al. took income multipliers from 11 studies and estimated regression models by using population, area, number of tourist arrivals, and other regional characteristics to predict income multipliers (Baaijens et. al., 1998).

Fletcher compiled income multipliers estimated from I-O models for 30 countries, cities, and regions around the world. The ranges of these multipliers varied from 1.19 for the City of Winchester, UK to 1.96 for Turkey. When he ranked these multipliers in order he found that the multipliers are larger for regions with larger and more developed economies (Fletcher 1989).

Based on a review of previous recreation and tourism studies, the type II sales multiplier is the most frequently reported multiplier and IMPLAN is the most widely used system. Studies that have used IMPLAN generally report a state tourism multiplier between 1.5 and 1.8, and an employment multiplier around 30. Some studies used borrowed multipliers or professional judgment, and

others tried to adjust state level RIMS II multipliers to regional levels (Mak 1989).

Tyrell (1999) looked at tourism multipliers in Rhode Island. His study compared tourism multipliers from each season, and separated visitors into day-trippers and overnight visitors. The tourism output multiplier for overnight visitors and day-visitors was almost identical at 1.53 and 1.54, respectively. Further, seasonal residents had a lower multiplier of 1.30 because large portions of their overall purchases are out of state. Wood & Liang (2001) used IMPLAN to estimate the economic impact of tourism to the Vermont economy. They reported a tourism multiplier of 1.61, and an employment multiplier of 29.

## 3.0 Methodology

### 3.1 The Tourism Sector

Recreation and tourism involves a number of different industries. There is no single "tourism" sector in the Standard Industrial Classification (SIC) system (Johnson et al. 1989). The U.S. Travel and Tourism Satellite Accounts have identified 15 tourism-related industries for the U.S. economy. Sales to tourists account for more than 20 percent of the total sales for eight of these 15 industries (Okubo and Planting 1998).

IMPLAN does not define a specific "tourism sector", and it is therefore necessary to decide which individual sectors to aggregate in order to build this new sector. Chang (2001) defined the tourism sector as a weighted average of the top four tourism-related sectors, which included hotels & lodging, eating & drinking, recreation & amusement, and retail trade (retail trade is an aggregate of seven retail trade sectors). These four sectors account for almost 80 percent of the sales to a typical visitor (Chang 2001). Tyrell (1999) identified 38 different economic sectors that cater to tourists. However, he calculated the tourism multiplier as a weighted average of only the top five tourism related sectors. These sectors were the same four sectors as in Chang's study, with the addition of the "auto dealers & service station" sector.

For this study, the tourism sector is an aggregation of the seven "sectors" of the economy that the INHS maintains sales data. The Tourism Satellite Account highlights sales information to seven economic "sectors". These sectors are shown in the left-hand column in Table 1. These seven sectors aggregate to five major tourism sectors in IMPLAN, where two of these five sectors are a compilation of seven or more different IMPLAN equivalent sectors. The five IMPLAN tourism sectors are on the right hand column in Table 1 along with the complete list of aggregated sectors.

Travel surveys (administered by the Institute for New Hampshire Studies in 1994 and 2001) were modified by state sales and employment data for FY2002 to estimate total purchases by tourists and travelers. The distribution of these purchases across the seven economic sectors and seven regions of the state were also estimated (Goss 2003). Table 2 shows the state-level distribution of traveler spending across the different economic sectors.

### 3.2 Defining Regions

It is necessary to define the regions in IMPLAN as close as possible to the regions used to report data in the INHS study. There are ten counties and seven travel regions in New Hampshire. Economic information published by the state and federal governments is available only at county and statewide levels. However, each travel region contains a portion of at least one county. The 2000 report from the New Hampshire Department of Employment Security gave covered employment for the lodging and travel establishments for the seven travel regions (Goss 2003).

Since IMPLAN can only segregate data to the county level, any regional economic zone that is larger than one particular county must be aggregated to include two or more counties. Table 3 shows the "regional economic zones" used by the INHS as well as the IMPLAN equivalent regions.

A separate IMPLAN model is built for each one of these regions to analyze the relationship between the new "tourism sector" and the local regional economies. Impact analysis used the data collected by the INHS to account for changes in final demand of tourism sales and to assign regional budget shares. Table 4 shows the regional budget shares of the seven tourism related sectors across the different regions of the state.

Output and employment multipliers were estimated for each region in New Hampshire using IMPLAN, and tourism multipliers were calculated based on a region's tourist budget distribution.

**Table 1.—The seven sectors of INHS tourism sector**

| INHS Tourism Sectors | IMPLAN Equivalent Tourism Sectors |
|---|---|
| 1. Eating & Drinking | 1. Eating & Drinking (454) |
| 2. Retail Stores | 2. Retail Stores - (Retail Stores and Food Stores) |
| | a. Building Materials & Gardening 448 |
| | b. General Merchandise Stores 449 |
| | c. Food Stores 450 |
| | d. Auto Dealers & Services 451 |
| | e. Apparel & Accessory Stores 452 |
| | f. Furniture & Home Furnishings 453 |
| | g. Misc. Retail 455 |
| 3. Food Stores | 3. Hotel & Accommodations (463) |
| 4. Lodging Accommodations | 4. Transportation & Services - (Ground Transportation and Services & Other Transportation) |
| | a. Local Inter-urban transportation 434 |
| | b. Water Transportation 436 |
| | c. Air Transportation 437 |
| | d. Arrangement of Passenger Transportation 439 |
| | e. Transportation Services 440 |
| | f. Gas Production & Distribution 444 |
| | g.Automobile Rental & Leasing 477 |
| | h. Automobile Repair & Services 479 |
| 5. Services & Other Transportation | 5. Recreation & Amusement (488) |
| 6. Ground Transportation | |
| 7. Recreation | |

*Source-New Hampshire Fiscal Year 2002 Tourism Satellite Account; IMPLAN 1999

**Table 2.—The state-level distribution of traveler spending across the different economic sectors**

| Tourism Sectors | FY2002 | Budget Weight |
|---|---|---|
| Eating & Drinking | $1,063 | 0.28 |
| Accommodations | $520 | 0.15 |
| Recreation | $665 | 0.18 |
| Retail | $932 | 0.25 |
| Transportation Services | $554 | 0.14 |
| Total | $3,733 | 1 |

*Dollar amounts in millions. Source -New Hampshire Fiscal Year 2002 Tourism Satellite Account

### 3.3 Regional Purchase Coefficients & Margins

Application of IMPLAN models to impact prediction requires appropriate allocation of direct impacts and customization of the way impacts are calculated. In particular, the percent of local demand met by local purchasers might need to be adjusted. Regional Purchase Coefficients (RPCs) estimate these percentages, and IMPLAN has built-in RPCs that attempt to estimate reasonable local values. However, for predicting the impact of tourist visits we should use RPCs of 1.00. This ensures that the local demand for goods and services is completely met by local businesses.

Another important specification is whether the purchase will be accounted for at the production level with relevant margins assigned to other industries. Since tourist purchases are made at the retail level, and specific commodities are not usually identified in tourist expenditure surveys, we will generally make

**Table 3.—The regional economic zones**

| INHS Economic Regions | IMPLAN County Regions |
|---|---|
| 1. Merrimack Valley | 1. Merrimack, Hillsborough |
| 2. Seacoast | 2. Strafford, Rockingham |
| 3. Lakes | 3. Belknap, Carol |
| 4. White Mountains | 4. Grafton, Carol |
| 5. Monadnock | 5. Cheschire |
| 6. Dartmouth-Lake Sunapee | 6. Grafton, Sullivan |
| 7. Great North Woods | 7. Coos |

**Table 4.—Regional budget shares of the seven tourism related sectors**

| Region | Lodging | Eating & Drinking | Recreation | Retail | Transportation & Services | Total |
|---|---|---|---|---|---|---|
| New Hampshire | 0.15 | 0.28 | 0.18 | 0.25 | 0.14 | 1.0 |
| Grt. North Woods | 0.26 | 0.22 | 0.22 | 0.15 | 0.15 | 1.0 |
| Seacoast | 0.1 | 0.3 | 0.2 | 0.25 | 0.15 | 1.0 |
| Monadnock | 0.12 | 0.29 | 0.22 | 0.22 | 0.15 | 1.0 |
| Merrimack | 0.12 | 0.3 | 0.18 | 0.25 | 0.15 | 1.0 |
| Lakes | 0.15 | 0.28 | 0.2 | 0.22 | 0.15 | 1.0 |
| Dartmouth | 0.13 | 0.28 | 0.22 | 0.22 | 0.15 | 1.0 |
| White Mountains | 0.19 | 0.26 | 0.22 | 0.18 | 0.15 | 1.0 |

*Source-New Hampshire Fiscal Year 2002 Tourism Satellite Account

impact predictions at the retail and service industry level through sectors such as those listed in Table 1. If specific commodities are identified in expenditure surveys, we have the option of identifying a producing sector and indicating that a retail margin needs to be allocated to the appropriate storage, transportation and retail sectors (Tyrell 1999). This study only used the five aggregated sectors listed in Table 1 to characterize tourists because expenditure survey data did not permit detailed industry identification. We have not tried to identify individual commodities associated with these expenditures, so margins are included in direct effects.

## 4.0 Results & Analysis

### 4.1 Tourism Multipliers

The regional budget shares in Table 4 were used to estimate tourism multipliers for each region of the state. Tourism multipliers were computed as weighted averages of the multipliers for the five primary tourism sectors (Chang 2001; Tyrell 1999). For example, the state-level tourism multiplier is defined as:

Tourism Multiplier = .15 * Lodging Multiplier +
.28 * Eating & Drinking +
.18 * Recreation & Amusement +
.25 * Retail Trade +
.14 * Transportation & Services

A separate IMPLAN model was built for each region of the state to illustrate how tourism multipliers vary across the different regions. The results show that output multipliers are higher for regions of the state with a higher population and a greater number of industries. Further, employment multipliers are higher for regions of the state with low populations and a lower number of industries.

**Table 5.—Tourism output and employment multipliers**

| Region | Type II Output Multiplier | Type II Jobs/M$ | Population | No. of Industries |
|---|---|---|---|---|
| New Hampshire | 1.51 | 30.07 | 1,220,033 | 373 |
| Merrimack valley | 1.45 | 28.59 | 504,986 | 292 |
| Lakes | 1.44 | 31.82 | 95,341 | 205 |
| Seacoast | 1.43 | 31.8 | 392,231 | 272 |
| Dartmouth | 1.42 | 31.16 | 120,694 | 214 |
| White Mountains | 1.42 | 31.4 | 120,622 | 204 |
| Monadnock | 1.4 | 30.32 | 73,540 | 179 |
| Great North Woods | 1.33 | 32.19 | 33,240 | 120 |

*Source-IMPLAN Pro 2.0, 1999 New Hampshire County Data

The tourism output multipliers at the state-level are the highest reported output multipliers in this study. This makes sense when one considers that the state also has the highest population of any region in this study and the most number of industries, 1.2 million and 373 respectively. The Type II employment multiplier is the second lowest reported employment multiplier in this study. Only Merrimack valley, with its large industrial belt and high population has a lower employment multiplier.

The tourism output multipliers for the Great North Woods region are the lowest output multipliers reported in this study. This region has the lowest population (33,200) and the least amount of industry (120). Inversely, the Type II employment multiplier is the highest reported employment multiplier for any region in this study. Table 5 shows how the tourism output and employment multipliers vary across different regions of the state with different populations and economic bases.

For the most part, tourism output multipliers seem to be positively correlated with population and the number of industries in a given region, and employment multipliers appear to be negatively correlated to population size and the strength of economic bases.

### 4.2 Regression Analysis

Separate regression models for aggregate tourism output and employment multipliers were estimated using Eviews statistical software program. Since one of the research objectives is to develop a tool to simplify the selection of multipliers for New Hampshire recreation and tourism applications, only regional characteristics that are readily available to recreation and tourism managers were selected as independent variables. Two independent variables were selected, the natural log of population and the number of industries. However, due to the small sample size, we are limited to running the regressions with only one independent variable at a time.

**Model 1: Tourism Output Multipliers**

Using Eviews regression output data and the natural logs of population as the independent variable, the best prediction equation for the Type II tourism output multiplier was identified as:

Tourism Sales Multiplier = .967 + .038*ln (POP)
Std. Error- (.092) (.007)

Only one predictor ln (POP), the natural logs of population, was identified for this model and was found to be significant at a 95% confidence level. The model explains about 80 percent of the variation in the Type II output multiplier. Model 2 shows the best prediction equation for Type II tourism output multipliers using the number of industries (IND) as the independent variable.

**Model 2: Tourism Output Multipliers**

Tourism Sales Multiplier = 1.2889 + .000591*(IND)
Std. Error- (.0242) (.000099)

The independent variable, (IND), was also found to be significant at a 95 % confidence level. Model 2 explains about 85 percent of the variation in tourism output multipliers.

Model 3 shows the best prediction equation for Type II tourism employment multipliers in New Hampshire using the natural logs of population as the independent variable.

**Model 3: Type II Tourism Employment Multipliers**
Tourism Employment Multiplier =
38.146 - .599452 *ln(POP)
Std. Error- (4.053) (.3346)

The independent variable, ln(POP), was found to be significant at a 90 % confidence level. Model 3 explains about 45 percent of the variation in tourism employment multipliers. Model 4 shows the best prediction equation for Type II tourism employment multipliers using the number of industries (IND) as the independent variable.

**Model 4: Type II Tourism Employment Multipliers**
Tourism Employment Multiplier = 32.99 - .008968 *(IND)
Std. Error- (1.233) (.0050)

The independent variable, (IND), was also found to be significant at a 90 % confidence level. Model 4 explains about 45 percent of the variation in tourism multipliers. The Type II Tourism Employment models each had a low R-squared value and a higher p-value than the Type II Tourism Output models. However, the signs on both models are heading in the right direction. This signifies a positive relationship between the independent variables and the output multipliers, and a negative relationship between the independent variables and the employment multipliers. These results are consistent with Chang's (2001) study, which used a sample size of 114. A larger sample size in this case would increase R-square values and lower p-values for employment and output.

## 5.0 Conclusion

Economic multipliers of tourism do vary from region to region. In addition, the tourism output (sales) multipliers are higher for regions of the state with a larger population and the employment (jobs) multiplier are generally higher for regions of the state with low populations. A uniform, state-level tourism multiplier should not be applied to sub-state level regions. Also, the tourism output multiplier of 2.61, which was reported in the New Hampshire Fiscal Year 2002 Tourism Satellite Account, is misleading and is generally too high to be considered an appropriate tourism multiplier. For a more accurate representation of industrial linkages and re-spending in New Hampshire, state planners and recreation managers would be better served to use a state-level tourism output multiplier of around 1.5 and an employment multiplier of about 30. Further, regional output multipliers should be employed when looking at sub-state level regions.

Misapplication of tourism multipliers may lead to an inefficient distribution of state resources such as funding, protection, or advertising; and could ultimately result in incompatible business developments, unsustainable natural resource use, loss of jobs, and loss of local identity. Better defining the economic base of a given region using the reported multipliers will provide a greater understanding of the unique character of each of these regions. Multipliers can help recreation managers, town planners, and politicians to target investment in tourism in order to develop this industry in a more sustainable and compatible manner with a local community.

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# CHALLENGES OF ESTIMATING AND USING ECONOMIC IMPACTS FOR CULTURAL TOURISM

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## Abstract

A recent Michigan study is used as an example to illustrate the challenges associated with determining economic impacts of heritage or cultural tourism. Museums are used as a concrete representation of "heritage" and as a place to contact visitors involved in heritage tourism. Definitions, assumptions, geographic region and data weaknesses are discussed as contributing factors to economic impact estimation and use challenges.

## 1.0 Introduction

Sound bytes and simplicity. These concepts pervade our "modern" cognitive processing and decision making. Society seems to demand quick answers and simple solutions to almost everything. Often the media reinforces these expectations. Environmental, social and political issues are presented in brief snippets through "headline news" formats; promotions for upcoming news stories are almost as long as the news stories themselves. A long, in-depth news story is presented in a 20-minute segment that, when time is removed for commercial advertising, is only about 13 minutes. Actions and solutions are considered "right or wrong," "good or bad," "black or white" . . . with little room for shades of gray or complexity. Even complex issues around which political decisions are made are reduced to "simple" issues as portrayed in political advertising. When time is brief and attention superficial, it is impossible to rely on processing of thoughtful, analytical arguments and weighing of multiple, interacting variables. Thus, political pundits use image association and value-based arguments, relying on the strength of strongly held values rather than thoughtful analysis. The same is true for commercial advertising. Ads rely on pulling at heart strings to get people to untie their purse strings.

So what does this have to do with economic impact assessment for cultural tourism? Investment, development and policy decisions frequently are driven by their potential for economic benefit. No matter how socially or educationally positive the benefits of an effort, they may receive little support unless they also can be justified financially. In recent years, educational facilities, arts organizations, and other cultural institutions have realized that they no longer will be supported automatically for their "good works" unless they also show positive economic benefits. Consequently, performing arts, museums, historic sites and other cultural institutions have commissioned numerous economic impact studies to demonstrate their value in terms understandable by legislators, community and economic development authorities, and other entities responsible for allocating increasingly limited resources. (America for the Arts 2002; Clarion Associates 2002; Lane 2001; National Governors Association 2001; Stronge 2000, TIA 2001, 2003). Having limited or no training in business or economics, many are interested in a high dollar value "outcome" yet are unaware of or unconcerned with how the number is derived.

Numerous studies link economic benefits with tourism revenues that, often viewed as "new money" to a community or state, provide additional justification to support investment in arts and culture. Recent literature is full of reports indicating that cultural tourism is growing and that cultural tourists spend more, stay longer, and tend to stay at hotels rather than campgrounds or with friends/family more than do "general" tourists. Consequently, these tourists would be deemed "desirable" in terms of the economic contribution to the state or a region. However, calculating impacts is dependent on several assumptions – about the accuracy of visitation data, about which museum visitors/ users to include in analysis, about which expenditures during a tourist trip are attributed to cultural institutions and the heritage experience (beyond

[8]The contributions of Daniel Stynes (professor) and Ya-Yen Sun (graduate student), Michigan State University, to the economic impact analysis and writing of the project report are gratefully acknowledged. Also acknowledged is financial support for the study by Travel Michigan/Michigan Economic Development Corporation and MotorCities Automobile National Heritage Area, with additional support by Michigan Museums Association, Michigan Agricultural Experiment Station and participating museums.

direct expenditures at a cultural site), about inclusion of a site's operational expenses, multiplier effects, and numerous other factors. Using different assumptions results in substantially different outcomes. Also, results and models based on data aggregated at a state-wide level cannot be applied directly to individual communities or institutions. Further complicating the impact scenario are the differences between individual museums, including factors such as differences in physical size, annual budget, "mission mix," annual visitation, and nature of the site (mix of land, infrastructure, historic structure/fabric, artifacts/archives, etc.).

Using Michigan's museum-based visits as a context, this paper explores the challenges of reporting and using economic impact data, specifically as related to heritage tourism. While a brief summary of the study is presented, the focus of this paper is on the challenges of estimating, interpreting and using economic impact data. Definitional and contextual challenges are incorporated throughout. The original impetus for the study was to measure the importance and impact of cultural/heritage tourism (hereafter labeled "heritage tourism") to the state of Michigan, in part to justify investment in and support for Michigan's involvement in heritage tourism, a travel market segment recognized nationally and internationally as significant (TIA 2003). Despite a long-held perception of Michigan as primarily a woods-and-water-based outdoor recreation mecca, the state also contains many sites of national, state and local historic and cultural significance. Heritage attractions include facilities and special events celebrating the state's maritime, mining, agricultural, environmental, automotive, Native American, ethnic and other heritages. Most historic sites and events associated with these heritages are tourist attractions. In fact, one can argue that heritage and culture are part of most tourism activity in Michigan and elsewhere. Additionally, tourism itself and tourist destinations are integral parts of the State's history and culture. Thus, it is difficult to establish boundaries around the broad notion of heritage/cultural tourism. This presents the first major challenge in identifying and isolating economic impacts associated specifically with heritage tourism.

Because economic impact analysis requires a reasonably clear definition of the activity generating the impacts, the complex and intertwining nature of tourism experiences and sites make it challenging to isolate what is "heritage or culture" from other types or components of trips. Thus, for this study, it was necessary to narrow the context and operationalize a definition and component of the travel experience for conducting a study. Museums and their associated programs constitute a tangible set of facilities and activities. Museums represent many of the state's major heritage themes and, in many cases, are focal points for tourism activity related to these themes. Museums, therefore, provide a logical starting point for better documenting the size and economic importance of heritage tourism in the state. Most importantly for this study, museums provide a concrete sampling frame to identify organizations and visitors/trips that clearly fall within the scope of heritage tourism. One caveat: in choosing to focus on museums, only one portion of heritage tourism is documented. This study does not cover impacts associated with special events and community festivals, performing arts, or a host of historical sites and attractions that are not formally associated with a "museum." To the extent that visits to such sites are included in trips that include at least one museum visit, trip spending associated with these other sites is partially captured.

## 2.0 Methods

To gather both visitor spending data and operational expenditures contributing to local and state economies, two separate surveys, targeting different audiences, were used in this study. The first was a census of museum administrators (providers). The second was a visitor survey conducted of a sample of museum visitors at 35 selected museums across Michigan during June through September 2002. Museums, for this study, were identified based on the American Association of Museum's (AAM) broad definition that includes any facility having at least one physical site and offering programs and services to visitors. Facility types included: general interest museums, history museums, natural history museums, science museums, children's museums, art museums, historic sites and buildings, nature centers, botanical gardens, zoos, aquariums, planetariums, and special interest museums such as maritime museums, lighthouses, historic ships, automobile and railroad museums.

### 2.1 Administrator Survey

The survey of museum administrators, sent to 470 museums, was designed to gather visitation and budget data to be used in estimating the overall volume of museum visits, and to profile annual operating budgets,

levels of employment, and revenue sources of Michigan museums. A six-page instrument was developed to be consistent with the 1996 MMA administrator survey. Additional items about tourism (tourism season[s], tourist visitation patterns, and museum's relationship with tourists / tourism) and budget/economic issues were added to this instrument. Using a modified Dillman approach, museums received the original survey letter and instrument, a reminder postcard, reminder letter and duplicate survey, as needed. Administrators could complete the hard copy survey or respond on line, using a provided code number.

### 2.2 Visitor Survey

The survey of museum visitors gathered demographic and travel party information, trip characteristics, and spending data. Specific information needed for the economic analysis included primary trip purpose, zip code origin of visitors (to classify as local or not, based on travel more or less than 50 miles one way), whether a day or overnight trip, lodging type for overnight trips, and spending by the travel party within 30 miles of the museum. Museum visitors were contacted at museums where they completed a short on-site survey, and were invited to complete a more comprehensive post-trip survey by mail or on the web. This survey gathered detailed spending and other information after visitors completed their trips.

Ultimately, the museum visitor sample was taken from 35 "large" and "medium" museums[9] across Michigan, representing a range of geographic locations and museum types. Based on a planned sampling strategy unique to each site, visitors were contacted on dates selected to represent weekend and weekday visitors and different times of day. To serve as a contact site, the museum had to be willing to participate, have staff to conduct surveys, offer an incentive for study participation, and serve enough visitors to obtain an on-site sample efficiently. "Small" museums were not included because 1) they are assumed to have minimal economic impact, and 2) it was unlikely that they would have the staff or resources to conduct the on-site surveys. Visitors not responding to the initial "long" survey were sent reminders, via mail or email, based on their chosen response mode.

[9]Large museums have annual operating budgets over $1 million while medium-sized museums have budgets between $250,000 and a million.

### 2.3 Economic Impact Analysis

Economic estimates for visitor spending are produced using the Michigan Tourism Economic Impact Model (MITEIM). Three major inputs to the model are (Stynes, 2000):

1. number of visits divided into trip type segments (day or overnight; local or tourist; type of lodging if overnight).

   Trip type segments are defined from the museum visitor survey based on (1) whether or not the visitor lives within 50 miles of the museum (local visitors), (2) if they are staying overnight away from home on the trip, and (3) the type of lodging. These segments help define distinct markets and also explain differences in spending. Formally, the four museum trip type segments are defined as follows:

   ***Local day trips:*** Trips for which visitors traveled less than 50 miles and did not stay overnight away from home on the trip.

   ***Non-local day trips:*** Trips for which visitors traveled more than 50 miles from home but did not stay overnight in the local area (within 30 miles of the museum). This segment includes those whose primary destination was the museum as well as some visitors stopping en route to other destinations or as a side trip.

   ***Overnight hotel trips:*** Trips for which visitors stayed in hotels, motels, cabins or B&B's within 30 miles of the museum.

   ***Other overnight trips:*** Trips for which overnight visitors stayed in campgrounds, with friends and relatives, at owned seasonal homes or other types of lodging within 30 miles of the museum.

   Visitors in the non-local day trip and the two overnight trip segments are considered "tourists".

2. trip spending averages for each segment
3. economic multipliers for the state and local region

These inputs were estimated from data gathered in the visitor and museum administrator surveys. The visitor survey identifies the mix of trip types/segments and provides the data to estimate spending averages. The administrator survey was used to estimate total museum visits in 2001 (used to extrapolate spending to all visitors) and also to estimate museum employment, revenues and operating expenses (used to estimate impacts of museum operations). Multipliers were taken from the

MITEIM model, which was updated to 2000 using recent IMPLAN[10] data for Michigan. Economic ratios (jobs to sales, income to sales) specific to Michigan museums were estimated from the administrator survey and substituted for more generic ones typically used in the MITEIM model.

Spending profiles for each segment were created by estimating the average spending within 13 spending categories for visitors falling into each trip type segment. Spending was first estimated on a party trip basis and then converted to a party day/night basis by dividing by the length of stay in the area.

## 3.0 Results

### 3.1 Response Rates, Demographics and Trip Characteristics

Forty-six percent of the museum administrators responded to the survey (182 museums). A total of 6,417 museum visitors were contacted at cooperating museums. Sixty percent of these visitors agreed to participate in the post-trip survey and 34% of those agreeing actually completed the post-trip survey. Potential non-response bias in the visitor survey was assessed by comparing the on-site sample with those completing the post-trip survey. No significant differences were observed between the two groups in terms of trip purposes, but there were some differences in trip types. Local visitors were somewhat less likely to respond to the post-trip survey while visitors on overnight trips are over-represented in the post-trip sample. Because visitors on overnight trips spend considerably more than local visitors, spending estimates would be biased upward, if not adjusted for.

Museum visitors were fairly evenly distributed across age groups, sixty percent had household incomes between $25,000 and $75,000, three quarters had some college education or higher, and ninety percent were White/Caucasian. Almost one-fourth of museum visitors were retired. Only general admission adult visitors (age 18 or older) were sampled, so these statistics exclude visitors who were part of organized school or adult groups and visitors to most special events. Museum visitors were similar to the Michigan population as a whole with respect to age, but included fewer minorities. However, they had higher levels of education and income. About two-thirds of the sample were women.[11] There were no significant differences in demographic characteristics across trip types.

About half of the museum visitors came from within 50 miles of the museum. Forty-one percent of the trips involved an overnight stay in the local area.[12] Two-thirds of the trips were made primarily to visit the museum where the visitor was sampled, nineteen percent of respondents were visiting the community more generally, 8% were visiting friends and relatives, and 6% of trips were for other reasons. Day trips were more likely to be primarily to visit the museum; 81% of local day trips and 77% of non-local day trips were made primarily to visit the museum. Thirty-eight percent of overnight trips were made principally to visit the museum. The average party size for museum visitors was about three persons across all regions and segments. The average length of stay in the community was 2.4 nights for hotel visitors and 3.4 nights for visitors staying in other types of lodging.

### 3.2 Economic Impacts

Spending within 30 miles of the museum was itemized in 13 categories, grouped by expenditures inside the museum and those in the community. Spending averages were first computed on a party trip basis for each segment and then converted to a per day/night basis. Local day visitors and non-local day visitors spent $49 and $70 per party per trip, respectively, in the local community (Table 1). Non-local day visitors spent more on shopping, restaurant meals, and gas & oil than day visitors. Overnight visitors staying in hotels spent $569 per party per trip, $215 more than overnight visitors staying in other types of lodging. Almost half of the expenses of visitors in hotels was for lodging. Overnight visitors[13] spent about $32 per party inside the museum compared to about $21 per party for day visitors.

[10]The IMPLAN system is an input-output system, which represents flows of economic activity within a region, and can estimate models and multipliers down to a county level.

[11]Selection of individuals within visitor groups may not have been completely random or based on contact protocol. Research associates were instructed to alternate male and female respondents within groups.

[12]The mix of trip types varies considerably across different museums. While the museums sampled cover a range of locations and museum types, we cannot guarantee that the resulting sample of visitors is completely representative of all museum visitors.

[13]The 'other overnight trips' segment is a mix of campers and visitors staying with friends/relatives or in owned seasonal homes.

**Table 1.—Visitor Spending within 30 Miles of the Museum by Lodging Segment ($ per party per trip, except as noted)**

| | Day Trips | | Overnight Trips | |
|---|---|---|---|---|
| Spending Category | Local | Non-local | Hotel | Others |
| Inside the Museum: | | | | |
| Museum or exhibit admission | 9.31 | 10.22 | 14.31 | 16.77 |
| Gift shop or snack bar | 8.36 | 13.01 | 14.70 | 15.22 |
| All other expenses | 1.24 | 1.79 | 2.19 | 2.29 |
| Total in museum | 18.90 | 25.01 | 31.20 | 34.26 |
| In the Community: | | | | |
| Lodging | 0.00 | 0.00 | 259.47 | 79.01 |
| Restaurants and bars | 12.51 | 15.31 | 118.04 | 75.66 |
| Grocery and take-out food | 1.72 | 3.14 | 12.30 | 32.41 |
| Gas and oil | 4.68 | 9.51 | 34.41 | 40.09 |
| Other transportation | 0.70 | 1.52 | 18.32 | 15.99 |
| Admissions to other museums | 1.08 | 1.26 | 7.66 | 9.38 |
| Other admissions | 1.18 | 1.18 | 8.62 | 6.27 |
| Shopping | 7.81 | 11.37 | 64.14 | 50.58 |
| Casino gaming | 0.00 | 1.57 | 8.99 | 5.83 |
| All other expenses | 0.23 | 0.09 | 5.37 | 3.88 |
| Total in community | 29.91 | 44.94 | 537.31 | 319.10 |
| Grand Total within 30 Miles (per party per trip) | 48.81 | 69.95 | 568.51 | 353.36 |
| Percent of spending inside the museum | 39% | 36% | 5% | 10% |
| Number of cases | 406 | 198 | 281 | 197 |
| Grand Total within 30 Miles (per party per day/night) | 48.81 | 69.95 | 236.88 | 103.93 |

Spending averages were converted to a party day basis by dividing party trip spending by the average length of stay. Hotel visitors spent $237 per party per day in the local community, mainly lodging expenses $108, restaurants $49, and shopping (including gift shop in the museum) $33. Other overnight visitors spent $104 per party per day in the community, mainly on shopping, camping fees and restaurants.

Interestingly, spending averages based on visitor data differ from those based on spending reported by museum administrators. The original in-museum spending averages (visitor reports) when applied to visitation numbers yield total museum revenues from both general admissions and gift shop sales that are higher than corresponding revenue figures reported by museum administrators. This is probably due in part to the selection of "large" and "medium" museums for contacting visitors when about 3/4 of all Michigan museums are "small." Thus, we assume that the museums where visitors were sampled over-represent those having higher admission fees, more extensive gift shops and other spending opportunities inside the museum. Another possible contributing factor is the widespread use of inaccurate methods for determining annual visitation, especially by small museums (e.g., voluntary sign-in, clicker-counts, guesstimates). The in-museum spending averages were adjusted to 71% of the sample

average to balance the state-wide estimates with reported museum revenues.

As indicated in the "introduction," economic impact estimates can vary based on the assumptions used. To illustrate, three different scenarios – based on differing sets of assumptions – were calculated using study data and extrapolating to all museums in Michigan, based on reported 2001 annual visitation by admissions-paying general visitors. The three scenarios use different components of visitor spending and are based on different assumptions about which visitors to include and about how much of the spending outside the museums is attributable to the "heritage" portion of the trip:

Scenario A: All trip spending for all trips (local and non-local, day and overnight) that included a museum visit

Scenario B: All spending for trips for which visiting the museum was indicated as the "primary purpose" + all in-museum spending for "non-primary purpose" trips + 25% of non-museum spending for "non-primary" trips

Scenario C: Scenario B - local visitor spending outside museum

Based on these scenarios, the impacts ranged from $219 million to $733 million. Assuming the basic equation for calculating economic impact is [Economic Impact = # Visits * Spending * Multipliers], the proportional difference for spending at Michigan museums would be: Scenario A: $100; Scenario B: $50; Scenario C: $46.

An additional $625 million is contributed statewide to local economies by the museums' operations (in salaries, direct spending, and value added). This additional contribution was estimated using financial and employment data from the survey of museum administrators. Museum revenue, operating budget and employment profiles were estimated from 182 museums responding, though not all museums completed the financial information. Operating budget data was completed by 128 museums, 90 museums reported revenue information, and 122 reported the number of paid employees. Because museum sizes, annual budgets and staff wages range widely (representing varying mixes of paid/unpaid and full-time/part-time/seasonal staff), six museum size categories were used to extrapolate economic impact figures to all state museums. Additionally, revenue sources are variable across, as well as within, museum size categories. Smaller museums rely more on membership fees, gifts, and grants while larger museums generate more revenue from one or more of admissions, endowments or government sources, further confounding the "impact" picture. Across all museums in Michigan, about one third (32%) of museum operations are supported by visitor spending in the form of general admissions, special tickets, and gift shop and food sales. In estimating economic impacts of museums, we therefore count 68% of museum operating expenses as being in addition to the impacts of visitor spending presented in Scenarios A-C above.

## 4.0 Discussion: Complexities in Estimating Economic Impacts

Even in the simplified presentation of results above, some of the complexities and challenges of estimating economic impacts of heritage tourism begin to appear. Complexities arise out of 1) definitional challenges, 2) variability in museum size, visitation, structure, budget and income sources, 3) uncertainties about visitor counts, 4) assumptions and estimates for extrapolating to all museums, 5) assumptions about what portions of trip spending to attribute to heritage tourism, 6) complexities and assumptions used in calculating economic impacts, 7) differences between economic impact and economic significance, and 8) differences in multiplier effects statewide versus in different parts of the state and individual communities.

### 4.1 Definitions

Simply defining what is heritage and what is culture provides fodder for an entire discussion paper. Culture to some is restricted to "high" culture – the arts, both performing and visual. Heritage, to some, is restricted either to "history" or to people of different ethnicities. Broader definitions include anything that influences lifeways and lifestyles of humans in any community, historically and in the present, which can include the arts, food, labor, sports, recreation and natural resources. Regardless of the operational or scholarly definition selected by researchers, people being surveyed typically have a wide range of personal definitions that influence their responses if the terms "culture" or "heritage" are used in the survey instrument to solicit responses.

### 4.2 Museum Differences

So many factors about museum structure, mission and function influence the heritage/cultural tourism-based

contributions to the local or state economy. Some museums have missions focused primarily on serving the local community; others are developed as attractions to serve national and global visitors. Some museums focus on research and archival collections; others focus on education and visitor services. Some protect resources and tell stories of local significance, others of national or global significance. Some museums are individual sites; others are systems that might have multiple sites of different kinds throughout the state. Depending on the type and number of structures, historic buildings and artifacts, financial demands for resource management vary widely. Some museums charge admission fees, others charge only for special exhibits or events, others charge no fees; still others are open only by appointment. Some target the general public, others service primarily school and other youth groups. Some promote programs and services broadly; others do not advertise at all. These and other factors greatly influence the economic impacts that can, and should, be attributed to heritage tourism.

### 4.3 Visitor Count Methods and Extrapolating

As determined in a 1996 study (Michigan Museums Association 1998) and reconfirmed in this study, very few museums have reliable and consistent methods for determining visitor counts; these are primarily the large museums that charge admission, have a clear fee structure and registration procedures for facility use, and target tourists as part of their mission. The vast majority (three quarters) are small, have relatively low visitation, and have limited personnel (often only or mostly unpaid). Accurately counting visitors is a low priority. Visitor count strategies include reliance on automated systems (footpads or traffic counters that count people and vehicles [that do not distinguish between staff, service visitors, tourists, local visitors], voluntary visitor sign-in, clicker counts, and "guesstimates"). When spending data from surveys is extrapolated to all museums, and the visitor counts upon which these extrapolated results are based are faulty, those inaccuracies are reflected in the estimates of economic impacts. Further, many museums that do have accurate visitor counts do not differentiate between local visitors and tourists.

### 4.4 Attributions to Heritage Tourism

Some of the challenges associated with attributing visitor spending and economic impacts specifically to heritage tourism are affected by the problems discussed in the "definitions" section. Other challenges are illustrated by the discussion of the three scenarios presented in the results section. The kinds of spending intended to be captured in the 25% of non-museum spending for "non-primary" trips (an expert opinion-based estimated percentage itself) include spending for heritage-based transportation (e.g., trolleys, horse-drawn carriages, sleighs, tandem bicycles), local heritage crafts sold outside of museums, and food and lodging at adaptively re-used historic structures. In addition to the "estimated" nature of this calculation, other spending related to heritage may not be captured. This includes 1) tourism influenced by the general attractiveness of the community or region due to preservation of historic districts, redevelopment of historic waterfronts, protection of heritage landscapes; 2) spending associated with longer stays induced by non-fee-based experiences such as heritage walking tours (e.g., architecture, history theme-based), linear parks and trails, and outdoor interpretive exhibits; 3) spending at museums other than where survey respondents were contacted; 4) "shopping" and other spending occurring at adaptively re-used historic structures (e.g., factories, warehouses) converted to mixed use structures that include shopping/lodging/restaurants; 5) spending related to agricultural or natural resource-based heritage experiences.

One alternative to the researcher making assumptions about what spending to attribute to heritage tourism is to ask the visitor what portion of their trip spending they attribute to the cultural/heritage portion of the travel experience. In fact, this question was asked in this study. However, the estimates based on visitor assessments of their heritage-based spending differed from those calculated in Scenarios A, B and C. This is assumed to result from the widely variable personal interpretations of what visitors consider to be cultural or heritage. Thus, for this study, we relied more on visitor indications of "primary trip purpose." However, it is expected that there is also variability among visitors about how their trip motive may impact spending related to heritage or cultural components of their trip.

Finally, most individuals and travel parties participate in a variety of activities and experiences during any trip. Determining which portion of total trip spending to attribute to various "tourism types" will be influenced by the number of different activities as well as the intensity or duration of engagement in each. To illustrate the problems of not apportioning the attributions, assume

a single vacationing family golfs on one day, charters a fishing trip the next day, goes on a dinner cruise one evening, spends the next day shopping at heritage as well as modern stores, and visits a museum. Additionally, they take lodging one night at a historic B&B, one night aboard a historic ship, and one night at a chain motel. Another evening is spent at the local outdoor theater production, followed by a walk along the waterfront boardwalk. On two days, the parents let the children spend their time at the beach and a nearby water fun park. If that family were surveyed for several different tourism studies — golfing, boating, fishing, water-based recreation, heritage/culture — and all trip spending was used to calculate their economic impact on the community for each trip type, those expenditures could be counted as many as five times . . . exaggerating the impact.

Furthermore, some travel experiences may be blended to such an extent that activities cannot be separated. For example, a golf resort may be developed on a historic tourism site, extensively using historic structures and facilities (perhaps even the golf course itself). Historic tourism experiences may be the basis for the modern experience. How would such a trip's economic impacts be attributed?

Attribution challenges exist also in economic contributions other than direct spending and associated multipliers based on tourist spending. Development of historic districts, restoration or redevelopment of waterfronts, renovation and expansion of museums provide benefits to both the community and to tourists. Future programs and facilities may serve both locals and tourists. Spending (for example, by museums) for water, electricity, janitorial services and other maintenance, as well as for purchase of supplies and wages for staff, supports provision of programs and services for both residents and tourists. Various methods could be used for deciding how to attribute portions of the expenditures to tourism, but regardless of what method is used, the assumptions and guidelines are rarely questioned by those interested in "the big economic impact number."

### 4.5 Economic Impact vs. Economic Significance

Another source of potential confusion for users of study results is the difference between economic impacts and economic significance. Economic *significance* usually reflects *all* spending by people engaged in an activity (in this case, visits to museums), both local residents and tourists. In this study, estimates are first derived from all museum visitor spending (Scenario A) and then just the impacts directly attributed to museums plus a portion of other spending attributed to the heritage experience (Scenario B). Impacts are reported in terms of sales, personal income, jobs and value added, with direct effects itemized by sector and secondary effects reported in the aggregate. Direct effects include the sales, jobs and income in those businesses directly selling to museum visitors. Secondary effects cover sales, jobs and income from so-called "multiplier effects" resulting from economic activity in backward linked industries and household spending induced by the income received from employees in directly or indirectly affected businesses.

Economic *impacts*, on the other hand, measure only the changes in spending as a result of a particular activity being available or not (in this case, a community with or without a museum), specifically as a result of new dollars coming into a region from non-local visitors attracted to the facility (e.g., museum). Scenario C more closely reflects this condition, as spending by local visitors is removed. If an existing museum were to leave a community, all spending associated with that facility would be gone, not just the impacts from tourist spending. Another consideration is that some spending—by both residents and tourists, assuming other attractions are available to tourists in the community—could simply be redirected to other places and experiences. It is difficult to determine how much of this would be spent in the community or redirected outside the region/community.

### 4.6 Multiplier Effects and Scope of Application

Multiplier effects will be larger when assessing impacts on the state economy than when assessing impacts on local areas. Thus, a standard multiplier for a specific sector based on statewide data cannot be applied to a smaller region, an individual community, or a single museum or cultural/heritage site. Further, an increase in tourism spending in "community A" – for example, as a result of creation of a new cultural or heritage attraction – may be a result of attracting tourists who might previously have gone to "community B". Thus, economic benefits to "community A" would increase, but the impact or contribution to the state's economy might go unchanged. Therefore, it is important to recognize and acknowledge the scale of analysis (site, local, regional, state) desired.

If economic impact or significance information is to be used in planning (statewide cultural tourism, community development, or site planning), the purpose and use should be identified at the outset. The first consideration is the scale to which the analysis will be applied. Second, a decision should be made about whether the economic impact analysis will be used to estimate changes in economic activity (sales, jobs, income) or to identify impacts as a result of some action (development, policy, marketing, management). Finally, monitoring and follow-up research should be conducted to determine if the estimates (and assumptions upon which they were made) are valid.

### 4.7 Beyond Economic Impacts

Finally, it should be remembered that heritage, culture, the arts, museums and related facilities and services contribute in many ways in addition to economic. While economic benefits do accrue from presence of cultural and heritage sites available to tourists, they should not be the only ones valued. Preservation of history and heritage, education, facilitating discussion about social and environmental issues, and enhancement of quality of life all are legitimate benefits of heritage institutions and experiences. Not all museums and other heritage institutions will contribute in the same ways and to the same economic extent. Some may contribute more effectively to the economic portion of the contribution equation when clustered or packaged or partnered with other organizations and experiences (for both locals and tourists). Recommendations for proper use of economic impact analyses include: 1) use as part of the planning process; 2) identify the region, scope and purpose of the analysis before collecting data; and 3) balance the economic benefits with other benefits and contributions. Finally, remember that both residents and tourists accrue benefits from tourism-based development, and that enhanced economic impacts usually are associated with other types of impacts — to community social structure, the environment, the infrastructure, tax base and structure, traffic, etc. — which should be balanced with potential economic benefits.

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# *Visitor Management*

# STATE PARK TRAIL CONFLICTS AND RESOLUTION STRATEGIES

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## Abstract

Trail development and use continues to expand nationwide, following the 1986 predictions of the Presidents Commission on Americans Outdoors. This expansion sparks new conflicts and exacerbates old ones. The nation's state park systems are leaders in developing new recreation opportunities (e.g. mountain biking) while continuing to provide for traditional activities such as hiking. This makes state parks primary sites to study trail-related conflicts and their resolution. The authors, in cooperation with the National Association of State Park Directors, administered a mail questionnaire to the nation's 50 state park directors in July and August 2003 about state park trail conflict and resolution strategies. Of the 50 states, 32 responded. The mean state park system provided about 923 trail miles, with 62% for non-motorized use only, 33% shared non-motorized/motorized use and 5% motorized use only. Of the five types of conflicts studied (among or between trail users, between trail users and other recreationists, between trail users and adjacent private owners, within a trail use activity or with non-recreation land users and uses), conflicts among or between trail users were rated as the most serious by a majority of respondents who identified a most serious conflict. In particular, conflicts among motorized and non-motorized uses and between motorized uses were rated as the most serious. Management responses included signage promoting appropriate trail etiquette, seasonal restrictions on one or more uses, motorized safety patrols on shared use trails, ticketing illegal motorized use on non-motorized trails, physical barriers to motorized vehicles and creation of separate trails for conflicting uses.

## 1.0 Introduction

The Presidents Commission on Americans Outdoors (President's Commission on Americans Outdoors 1986) predicted a "prairie fire" of growth in trail related recreation opportunity and participation. Funding for non-motorized, shared use and motorized trail development has also been substantially increased at the federal level through the two most recent omnibus transportation appropriation statutes. In tandem, many states have also given high priority to trail development, partially as a match to available federal funds. Finally, unique windows of opportunity, such as the abandonment of rail-road rights of way, have provided the foundation for extensive new linear parks, including linear state parks. These parks link communities and provide substantial new trail mileage within easy reach of many recreationists.

Public interest in trail use has also expanded. Technological innovation has spurred new activities and bolstered traditional ones. For example, mountain biking is a relatively new form of bicycling activity, spurred by the development of lightweight, durable bicycles with wider tires and rugged suspension. Road biking, with a much longer history, has seen a resurgence in popularity as rail-trails provide a safe, paved non-motorized trails conducive to speed, family use, work related commuting and healthful aerobic exercise. In the motorized arena, snowmobiling has matured as machines now have improved suspension and are faster and quieter. This has led to the rise of multi-day snowmobile vacations covering hundreds of trail miles (Lynch 2000).

As trail use, interest and provision have expanded, conflict and the potential for conflict has also increased. Recreational conflict has been most often defined as goal interference in a recreational setting (Ewert et. al. 1999). Roggenbuck (1992) has noted that recreational conflict has physical, psychological and perceptual dimensions. Hence, effective conflict resolution needs to consider each of these dimensions.

When considering trails, they can be categorized into three management orientations: non-motorized (hiking, cross-county skiing, etc.), motorized (e.g. off-road vehicle use, snowmobiling) and shared use (allowing both non-

**Table 1.—State park trail mileage by type of use allowed.**

| Type of Trail | Number of States Reporting | Total Miles of Trail | Percentage of Total |
|---|---|---|---|
| Non-motorized only | 29 | 16,631 | 62 |
| Motorized and non-motorized | 29 | 8,846 | 33 |
| Motorized only | 29 | 1,293 | 5 |
| All trails | 29 | 26,770 | 100 |

motorized and motorized uses). The range of conflicts on trails can be segmented into five types:

1. Among (hikers, mountain bikers and equestrians) or between trail users (e.g. cross country skiing and snowmobiling)
2. Between trail users and other recreationists (e.g. hikers and hunters)
3. Between trail users and adjacent private landowners (e.g. hikers and trailside cabin owners)
4. Within a single trail use (e.g. traditional cross country skiers and ski skaters)
5. With non-recreation land uses (hiking and forestry)

An important venue that provides for all types of trails and trail conflicts are the nation's state park systems. They have been traditional providers of outdoor recreation opportunity and have also often been on the forefront of innovation in providing recreation opportunity. Because they are found across the country, they provide a useful national laboratory for better understanding recreation management issues and alternatives. They are also represented by an active professional association, the National Association of State Park Directors.

## 2.0 Methods

As a prelude to a presentation to the National Association of State Park Directors (NASPD) annual meeting in September 2003, the authors conducted a mail census of the 50 state park directors to determine the number and type of trails in respective state park systems, the prevalence and seriousness of conflicts on those trails and conflict resolution strategies and their efficacy. The survey was reviewed by the director of planning for Michigan State Parks and the State Trail Coordinator for the Michigan Department of Natural Resources. It was also vetted by the Michigan State University Committee on Research Involving Human Subjects. Funding for this project was provided by the Michigan Agricultural Experiment Station.

The 18-question, 7-page questionnaire was originally mailed in July 2003 with a cover letter and business reply envelope. The mailing list of state park directors was provided by the NASPD. A second mailing of the questionnaire with a revised cover letter and additional business reply envelope was sent to non-respondents in early August 2003. Data were entered and analyzed using SPSS. Since the questionnaire was distributed to the entire population of state park systems (census versus a probability sample) the results do indeed represent the whole population for the states that responded. Thus probability statistics are unnecessary as the whole population is described by the descriptive statistics.

## 3.0 Results

A total of 32 states completed and returned the questionnaire. States responding were: Arizona, California, Connecticut, Georgia, Hawaii, Iowa, Idaho, Illinois, Indiana, Kansas, Kentucky, Louisiana, Maryland, Maine, Michigan, Missouri, Montana, North Dakota, Nebraska, New Hampshire, New Jersey, Nevada, New York, Ohio, Oklahoma, Oregon, Pennsylvania, South Carolina, Vermont, Washington, Wisconsin and Wyoming. Respondents tended to be from more northerly states, perhaps because the NASPD conference in 2003 was held in northern Michigan and their likelihood of attendance was increased by proximity.

### 3.1 State Park Trail Systems and Opportunities

Of the 32 states responding, they reported a total of 26,770 miles of trails in their combined state park systems or slightly more than 920 miles per state park system (Table 1). Trails solely for non-motorized use

**Table 2.—Proportion of states providing selected trail activity on one or more state park trails.**

| Trail Use Provided | Number of States Responding | Percentage that Provide Use |
|---|---|---|
| Walk/hike | 32 | 100 |
| Equestrian | 32 | 100 |
| Mountain bike | 32 | 97 |
| Road bike | 32 | 75 |
| Cross country ski | 32 | 72 |
| In-line skate | 32 | 59 |
| Snowmobile | 32 | 50 |
| All terrain vehicle | 32 | 38 |
| Motorcycle | 32 | 38 |

accounted for almost two-thirds of the total trail mileage while motorized only trails accounted for 5%.

Non-motorized trail activity was provided by more states than motorized trail activity (Table 2). Walking/hiking and equestrian trail opportunities were provided in all responding state park systems and the majority provided every type of non-motorized trail use queried. Motorized trail use was less prevalent, with snowmobiling being the most common type provided.

### 3.2 Prevalence, Seriousness and Response to Conflict

Conflict was assessed by a yes/no question as to whether it existed and, if yes, a rating question on the seriousness of the conflict with the scale being 1 (conflict of minimal seriousness) to 5 (conflict of critical seriousness). Following those ratings, management response(s) to conflict was requested and the perceived efficacy of the response was rated on a scale of 1 (unsuccessful) to 5 (highly successful).

Conflict between trail uses was most common between non-motorized uses (Table 3). However, for those who have the conflict, the conflict between motorized and non-motorized trail uses was judged as more serious than conflicts among non-motorized trail users, although motorized/non-motorized conflict was reported in fewer states. The greater level of seriousness was related to concerns about health and safety of trail users in a potential motorized/non-motorized collision. Approaches to reduce conflict between trail users included signage clearly denoting appropriate activities, etiquette oriented signage, seasonal restrictions on certain uses (e.g. restricting mountain bike and equestrian use during spring to reduce physical damage to the trail), physical barriers to illegal motorized use and separate trails to segregate conflicting activities (e.g. going from shared use trails for hiking, mountain biking and equestrian to separate trails for each). Success in reducing conflict was assessed to be greatest in regards to conflicts between non-motorized uses and least in regards to conflicts between motorized and non-motorized uses and between motorized uses.

Conflict between trail uses and other recreation activities or non-recreation activities (e.g. forestry) non-trail use is less common than conflict between non-motorized trail activities (Table 4). However, conflict among trail users with and without dogs occurs in a majority of states. Also, conflicts between trail use and hunting occur in almost half the state park systems. To reduce dog related conflicts leash laws and their enforcement, prohibition of dogs from trails, etiquette training and mandatory dog feces removal are used in various states. These approaches appear to be moderately successful. Approaches taken to reduce conflicts between trail uses and hunting include temporary trail closures during some hunts, law enforcement against illegal hunting, closing some trail areas to hunting and controlled hunts using techniques such as a limited number of permits, archery only deer hunts and more restrictive hunting seasons in park areas. These approaches appear moderately successful. They also often walk a fine line between the need to control wildlife populations (e.g. white-tailed deer) which hunting can

**Table 3.—Prevalence, seriousness and efficacy of response to conflicts between trail users on state park trails.**

| Conflict | Percent with Conflict | Mean Rated Seriousness of Conflict[a] | Mean Rated Efficacy of Management Response[b] |
|---|---|---|---|
| Hike/bicycle | 69 | 2.0 | 3.6 |
| Equestrian/bicycle | 66 | 2.1 | 3.2 |
| Hike/equestrian | 58 | 1.3 | 3.6 |
| Motorized/non-motorized | 38 | 3.1 | 2.8 |
| Cross country ski/ snowmobile | 32 | 2.6 | 3.5 |
| Off-road vehicle/ snowmobile | 18 | 3.2 | 2.8 |

[a] Rating scale 1=Minimally serious to 5=Critically serious
[b] Rating scale 1=Unsuccessful to 5=Highly successful

**Table 4.—Prevalence, seriousness and efficacy of response to conflicts within trail uses, with adjacent non-trail recreation and with adjacent land uses on state park trails.**

| Conflict | Percent with Conflict | Mean Rated Seriousness of Conflict[a] | Mean Rated Efficacy of Management Response[b] |
|---|---|---|---|
| Trail users with and without dogs | 61 | 2.0 | 3.0 |
| Hunting with trail use | 47 | 2.1 | 3.3 |
| Trail use with agriculture | 34 | 1.9 | 3.0 |
| Trail use with forestry | 34 | 1.8 | 3.4 |
| Trail use with nature observation | 29 | 1.6 | 3.3 |
| Skill level conflict within a trail use | 17 | 2.2 | 1.7 |
| Traditional cross country skiing with ski skating | 13 | 2.0 | 4.0 |

[a] Rating scale 1=Minimally serious to 5=Critically serious
[b] Rating scale 1=Unsuccessful to 5=Highly successful

provide, provision of outdoor recreation (hunting and trail use) and the use of deadly weapons in proximity to a developed recreation site (trail).

The least success in resolving a conflict was reported in reducing conflicts among people involved in the same trail use with differing skill levels. Relating conflicts within a specific activity to the concept of recreational specialization (Bryan 1979) may enhance the ability of managers to conceptualize the conflict and provide for the range of users. For example, using a stacked loop trail design, trail difficulty can be increased on the more distant loops (steeper grade, narrower width, tighter turns, etc.), yet the stacked loop design allows for a single trailhead, rapid separation of more and less skilled trail users (e.g. cross country skiers) and still provides for an understandable system that allows low skill users to be confident they are not far from their vehicle and to readily determine their position on the trail system.

Trail vandalism is found in more than half the state park systems (Table 5). Conflict with adjacent landowners, often one of the major concerns of locating new trails, was most common in the case of trespass and least common in regard to noise and vandalism of private property. While none of the conflicts was mean rated as especially serious, conflicts with neighbors can quickly escalate into very negative publicity for a park system.

**Table 5.—Prevalence, seriousness and efficacy of response to vandalism and conflicts with adjacent private landowners on state park trails.**

| Conflict | Percent with Conflict | Mean Rated Seriousness of Conflict (a) | Mean Rated Efficacy of Management Response (b) |
|---|---|---|---|
| Vandalism to trail facilities | 58 | 1.8 | 2.7 |
| Trespass | 42 | 2.1 | 3.3 |
| Landowners harass trail users | 19 | 2.3 | 3.3 |
| Trail users harass landowners | 13 | 2.0 | 3.5 |
| Noise from trail users | 9 | 2.0 | 4.0 |
| Vandalism to private property | 9 | 1.7 | 3.5 |

(a) Rating scale 1=Minimally serious to 5=Critically serious
(b) Rating scale 1=Unsuccessful to 5=Highly successful

Likewise, vandalism to trail facilities can affect a park system in many ways including increasing maintenance costs, creating a park image of disrepair, instilling a visitor climate of concern about personal safety and disrupting staff work plans by taking away employees from other regularly scheduled activities. Management responses to vandalism include rapid repair of vandalized locations, installing vandal resistant facilities, providing easier means of patrol such as improved sight lines and increased enforcement and surveillance. Trespass onto private property is reduced by signage clearly marking boundaries of park ownership, education at trail heads and visitor centers about respecting adjacent property owner rights and fencing in severe cases.

### 4.0 Management Implications

The most common state park trail related conflicts are those involving those hiking, mountain biking and riding horses, dogs on the trails and vandalism to trail facilities. However, the most serious conflicts are those involving motorized and non-motorized uses or multiple motorized uses. The potential for human injury or death is the factor that increases the seriousness of the conflict. A key management response is to use the range of options available including education, planning, design, maintenance and enforcement. It is critical that there be coordination among all these aspects of park administration as they have the potential to be mutually reinforcing and together can be effective in working with a diverse clientele group. For example, education may work well with youngsters or new trail visitors to clearly explain rules and etiquette. For inherently conflicting activities such as cross country skiing and snowmobiling separate trail systems are much more realistic than asking snowmobilers to travel at the same pace as skiers or to "be quiet". For those who show little respect for others by knowingly disregarding the law, enforcement is a necessity. Thus the knowingly illegal motorized user on the designated non-motorized trail needs the certainty of punishment to positively change his/her behavior (Nelson et al. 1999).

In the future, one challenge that is likely to be exacerbated is that while state parks are not rapidly expanding in size, trail facilities and their use is likely to continue to grow. This results in a compression of use and users on a static acreage. In addition, continued technological innovation with activities that emphasize speed will also make once sufficient trail systems seem too short. These factors will likely lead to greater challenges for managers in conflict resolution. Cooperation among trained trail user volunteers from disparate activities such as off-road vehicle use, hiking, mountain biking and horse back riding in common functions such as trail grooming, search and rescue and resource protection may be valuable in creating tolerance. Conversely, solutions that solely emphasize development of additional trails on this static acreage will likely create new conflicts with dispersed recreation opportunity and may also lead to environmental conflicts as trails may be located in more ecologically sensitive areas to satisfy the demand by users for more mileage.

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# Factors Affecting Importance Ratings for Private Campground Amenities

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## Abstract

Ownership campgrounds are a little studied segment of outdoor recreation. This paper investigates the variations in relative importance campsite owners have of selected amenities at a large midwestern campground. Further questions asked respondents why they purchased their campsite and why they selected the particular campground.

## 1.0 Introduction

Ownership campgrounds provide developed camping facilities for people preferring different levels of security, amenities and services than those offered by public campgrounds. The ownership campground is organized similarly to a condominium association with individual owners owning their campsite and having a shared interest in the common areas of the resort campground and its amenities. In order to meet the needs of their market, ownership campgrounds must regularly evaluate their facilities and services.

## 2.0 Purpose

Though the overall study was intended to evaluate owners' campground usage patterns and attitudes and toward a variety of campground issues, the portion of the study reported in this article focuses on the amenities offered at the campground. This paper first looks at a variety of amenities offered at the facility to determine the owners' perceived level of importance for each. Additionally, the paper compares selected owner attitudes by various descriptive characteristics (user age, gender, years as an owner, etc.) to investigate possible relationships.

The campground in this study, located near Sublette, Illinois, is one of the largest private ownership campgrounds in the U.S. with 6,140 hardened campsites designed to accommodate "park model" campers. Contained within the 1,756 acres of the campground are: 70 acres of lakes, 40 miles of paved roads and 15 miles of recreational trails. Amenities include: pools/beach, recreation/activity centers, fishing/boating, planned recreational activities, sports courts, natural areas, comfort stations, and commercial amenities such as snack bars, laundries and small shops. Most of the campsite owners come from the Midwest, particularly from the major urban areas surrounding Chicago. Comprehensive evaluations of the campground operation are completed by the campground owner's association every five years in order to learn how the campsite owners feel about the management of the campground. Previous surveys were completed in 1992 and 1997.

## 3.0 Methods

Data was collected as part of a 5-year review process for the campground resort. Four page questionnaires were mailed to all 6,140 campground owners, with 2,012 usable surveys returned yielding a 30% response rate. Due to administrative decisions by the homeowner's association, no attempts to contact owners to determine nonrespondent bias were made. However, the general demographics were very similar to the previous studies and the known membership base.

Most questions were repeated from previous surveys though some new sections were added by the resort management team and the researcher. Before the questionnaire was mailed to campsite owners, it was first pre-tested and reviewed by the board of directors of the campground association. Most demographic and descriptive questions were forced choice. Attitude and importance questions used 5-point Lykert scales. Respondents were also asked to complete several open-end questions discussing some of their feeling about the management of the campgrounds, suggestions for the future etc. The analysis and discussion of these questions was not part of this paper.

**Table 1.—Description of Respondents**

| Age | Frequency | Valid Percent |
|---|---|---|
| 25 or younger | 8 | 0.40% |
| 26-25 | 91 | 4.50% |
| 36-45 | 364 | 18.10% |
| 46-55 | 558 | 27.80% |
| 56-65 | 505 | 25.20% |
| 66 or older | 476 | 23.70% |
| **Education level** | **Frequency** | **Valid Percent** |
| Less Than High School Graduate | 130 | 6.60% |
| High School Diploma or G.E.D | 535 | 27.20% |
| Some College | 572 | 29.10% |
| Associate/Technical/ Degree | 216 | 11.00% |
| Bachelor's Degree | 286 | 14.60% |
| Graduate Degree | 225 | 11.50% |
| **Income Level** | **Frequency** | **Percent** |
| $19,000 or less | 88 | 5.50% |
| $20,000 - $34,999 | 253 | 15.80% |
| $35,000 - $49,999 | 333 | 20.80% |
| $50,000 - $74,999 | 443 | 27.70% |
| $75,000 - $99,999 | 280 | 17.50% |
| $100,000 - $149,000 | 155 | 9.70% |
| $150,000 and up | 50 | 3.10% |
| **Years of Ownership at Campground** | **Frequency** | **Valid Percent** |
| Less Than One | 92 | 4.60% |
| 1-4 years | 482 | 24.20% |
| 5-9 years | 361 | 18.10% |
| 10-14 years | 239 | 12.00% |
| 15-20 years | 241 | 12.10% |
| More Than 20 years | 575 | 28.90% |

## 4.0 Description of the Respondents

As seen in Table 1, only about 23 % of the respondents were under the age of 46 while nearly 24% were 66 years of age or older. The largest group of respondents (27.8%) was in the 46-55 age with another large group (25.2%) aged 56-65. Overall, about 49% of the respondents were above the age of 55.

The level of education was relatively low with only about 37% reporting having any degree above a high school diploma. About 30 % reported some college while about 15% reported having a bachelor's degree and 12% reported having a graduate degree. The most commonly reported family income was $50,000 – $74,999 with about 28% of the respondents in this group. Abut 42% of the respondents reported family incomes less than $50,000 while about 40% reported having incomes above $75,000.

The management of the campground confirmed that these findings were similar to their known owner base. They describe their purchasers as primarily Midwestern, blue collar, industrial workers and their families. Many of the respondents owned their campsites for a long period of time. Overall about 52% of the owners reported owning their campsite for 10 or more years. The largest group reporting (nearly 29%) had owned their site more than twenty years while a total of about 29% had owned their sites for 4 years or less.

**Table 2.—Importance Ratings for Campground Amenities**

| | Very Important | Important | Neutral | Unimportant | Very Unimportant |
|---|---|---|---|---|---|
| Camping | 59.7% | 22.6% | 9.9% | 5.3% | 2.1% |
| Fishing/Boating | 35.2% | 35.5% | 18.5% | 7.7% | 3.0% |
| Pools/Beach | 57.2% | 28.3% | 11.1% | 2.2% | 1.2% |
| Sports Courts | 20.5% | 30.3% | 33.7% | 11.6% | 3.6% |
| Recreation Centers & Facilities | 37.0% | 35.6% | 21.2% | 4.4% | 1.8% |
| Comfort Stations | 47.7% | 32.7% | 13.8% | 4.1% | 1.7% |
| 21 and Older Buildings | 23.6% | 31.1% | 33.0% | 8.4% | 3.9% |
| Planned Recreational Activities | 26.7% | 35.3% | 27.6% | 7.9% | 2.5% |
| Commercial Amenities | 22.0% | 42.1% | 25.2% | 8.5% | 2.2% |
| Woodhaven's Natural Areas | 47.8% | 32.9% | 15.3% | 2.8% | 1.2% |
| Other | 65.2% | 34.8% | | | |

**Table 3.—Purposes for Purchasing a Campsite.**

| | Frequency | Valid Percent |
|---|---|---|
| Escape From the City | 367 | 18.9% |
| Quality Family Time | 364 | 18.7% |
| Activities | 61 | 3.1% |
| Relax | 780 | 40.1% |
| Experience Nature | 113 | 5.8% |
| Other | 32 | 1.6% |
| Multiple responses | 229 | 11.8% |
| Total | 1946 | 100.0% |

**Table 4.—Motivations for Choosing to Purchase at this Place**

| | Frequency | Valid Percent |
|---|---|---|
| Price/Value | 296 | 15.5% |
| Location | 263 | 13.8% |
| Family/Friends Here | 501 | 26.2% |
| Amenities | 189 | 9.9% |
| Other | 267 | 14.0% |
| Multiple responses | 396 | 20.7% |
| Total | 1912 | 100.0% |

## 5.0 Results

Table 2 shows that, in every case, the respondents indicated that each amenity was either "Very Important" or "Important" more than 50% of the time. There was variation in this however. Overall, Pools and Beach (86%), Camping (82%), Natural Areas (81%) and Comfort Stations (80%) had the highest totals of "Very Important" and "Important" percentages. Those amenities with the lowest combined importance rating were Sports Courts (51%) and the 21 and Older Building (55%)

A further analysis compared importance ratings by selected demographic variables. Overall, there were significant differences by age. Older respondents rated things less importantly. There were also differences in importance ranking by years of ownership. (Interestingly, those who purchase lots 10 to 14 years ago reported lower importance ranking that the other groups.) An additional analysis asked respondents why they purchased their campsite then compared the responses given by the previously mentioned demographic groups. As seen in Table 3, the most common reason for purchasing a campsite was "relaxation" (40%) followed by "escape from the city" (19%) and "quality family time" 19%.

A further analysis of the reason to purchase was conducted. When the purpose was compared by age, younger purchasers were more likely to purchase to "escape from the city" or for "quality family time" while older respondents more likely to purchase to "relax." The same pattern also followed when reason to purchase was compared by years of ownership. Newer owners were more likely to purchase to "escape from the city" or for "quality family time" while others were more likely to purchase to "relax."

Respondents were then asked what motivated them to purchase at this particular campground. As seen in Table 4, about 26% of the respondents reported purchasing because of "friends and family" while about 16% purchased because of "price and value."

When the motivation to purchase at this particular campground was compared by age group, some differences became apparent: "price/value" was more important for younger respondents while "location" more important for older ones. Also, "family & friends" was more important for younger groups. When the motivation to purchase at this campground was compared by the years of ownership, "family & friends" was most important for all but most senior owners. "Price/value" was important for the newer purchasers.

## 6.0 Conclusions

The initial analysis shows that importance levels for the various amenities was high but that the relative levels of importance attached to the amenities varied by age and the length of ownership at the campground. Generally, the more senior owners ranked the amenities less importantly than younger, newer members

Most respondents purchased for "relaxation" or "to escape the city" though the reasons to purchase varied by age and length of lot ownership. Being with "friends and family" and "price/value" were the two most common reasons reported for purchasing at this campground. Similar to the previous questions, the motivations for purchasing at this campground were also seen to vary by age and length of ownership. Overall, it is apparent that the campground owners are a diverse group with a variety of attitudes toward amenities and why they purchased at the campground.

## 7.0 Discussion

Campground managers must be aware of the different groups coexisting on their property. Since there are differences between the older more seasoned owners and the newer, younger owners, managers must constantly weigh their decisions. Focusing on older member might make the property less attractive to newer purchasers while focusing on the newer group could antagonize the older, loyal members. It is difficult to tell whether the differences shown by the older group come from changes in family lifecycle that have occurred over time, or whether they purchased with different motivation and perspectives. Interestingly, the campground is experiencing some multi-generational usage – where parents once took their children to play, they now take their grandchildren. This campground might make a good location for further family lifecycle studies.

Apparently, as the property has gone through its lifecycle, it has offered different benefits to potential purchasers. Sales and marketing staff need to understand that different age groups may be looking for different things from the campground. Specific marketing campaigns can be developed addressing the benefits required for each different age groups.

An unaddressed issue was ethnicity. Over the years, the ethnicity of the owners of the campsites has changed. (This became apparent as a theme in the open-ended comments.) Unfortunately, the association management group chose not to include the ethnicity variable in the survey.

# ASSESSMENT OF RECREATION IMPACTS ON WILDERNESS CAMPSITES, MARK TWAIN NATIONAL FOREST, MISSOURI

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## Abstract

Congressional direction in the Wilderness Act mandates the natural condition of wilderness be managed to restrict human influenced impacts on wilderness landscapes while providing outstanding opportunities for recreation and solitude. Many times these opposing interests come in conflict leaving resource managers with the task of balancing recreation use with the preservation of natural conditions. In order to manage these conflicts, this study identifies the patterns and intensity of adverse impacts caused by overnight camping in three designated wilderness areas in the Mark Twain National Forest. This study quantifies the condition of 24 campsites located along 37 miles of trail, representing about 60% of known campsites, using condition classes, physical measurements, and land type associations. The results of this study will be used to develop campsite management strategies to help Forest Service wilderness managers reduce the ongoing effects of campsite degradation in the study area.

## 1.0 Introduction

Recreation in national forests, parks, and wilderness has become one of the most increasingly popular uses of public lands. This trend is especially apparent in designated wilderness across the nation. Since receiving legislative protection from the United States Congress, Cole (1996) found that wilderness recreation use has undergone a sixfold increase. Past research has shown that any level of recreation use will cause some degree of change in natural ecosystems (Marion & Snow 1989). Reducing the adverse environmental impacts from increasing recreation use in wilderness requires reactive management strategies aimed at minimizing and mitigating for environmental losses. Congressional direction in the Wilderness Act states, "the character of wilderness is protected and managed to preserve natural conditions and to support primitive and unconfined solitude and recreation." It is not feasible, nor warranted, to entirely prohibit recreation in wilderness, so rather, the question then turns to how much impact from recreation use is acceptable?

Many management programs and techniques have been developed to assess current conditions and define actions to balance resource damage with the mandates of the Wilderness Act. Many of these programs have been accomplished in wilderness areas located in the mountainous regions of the western United States leaving a need for research in eastern wilderness areas (McEwen et al. 1996). Primarily, past studies in the east have been limited to highly visited areas such as the Boundary Waters Canoe Area Wilderness in Minnesota (Frissell 1978) and the Great Smokey Mountains National Park in the Appalachians (Marion & Leung 1998). A campsite impact study conducted in four wilderness areas in the South-Central United States by McEwen et al. (1996) found that needed research had been overlooked in geographical areas with high wilderness concentrations, such as the lower Midwest.

### 1.1 Recreation Use in the Mark Twain National Forest

The Mark Twain National Forest is Missouri's only National Forest and is approximately 1.5 million acres in size. Located in southern Missouri, the forest extends from the St. Francois Mountains in the southeast section of the state across the foothills and plateaus of the Ozarks to more rugged landscape near Table Rock Lake in southwest Missouri (USFS 1991). Seven congressionally designated wilderness areas are located in the Mark Twain and are managed solely by the Forest Service. Total wilderness lands comprise of more than 63,000 acres and primitive recreation is permitted in all wilderness areas on the forest.

With substantial overnight visitation, wilderness managers in the Mark Twain National Forest are presented with more of a challenge today than ever before in managing recreation use. The National Visitor Use Monitoring (NVUM) project was implemented by the Forest Service to better understand the satisfaction and

trends of national forest recreation visitors. The NVUM data from the Mark Twain National Forest estimated there were 22,809 wilderness recreation visits with an average stay of 33.4 hours for fiscal year 2002 (Kocis et al. 2003). This indicates many visitors to the wildernesses on the Mark Twain utilize the areas for overnight camping. In light of this data, ever-increasing trends in visitor use, and lack of up to date research underscore a need for an inventory to assess and monitor the related recreation impacts occurring in each wilderness on the Mark Twain National Forest.

### 1.2 Purpose and Objective

Building upon the campsite impact study conducted by McEwen et al. (1996) in the south-central United States, the purpose of this research is to evaluate recreation impacts associated with overnight campsites. More specifically, the research objectives are: (1) to collect field data on existing site conditions, (2) determine relationships between the degree of site disturbance and spatial and biophysical factors, and (3) recommend management options to reduce campsite degradation in the study area.

Given the recommendations of this study, the U.S. Forest Service will be able to implement a localized Limits of Acceptable Change (LAC) planning process (Stankey et al. 1985) to determine desired wilderness conditions and to take action to sustain these conditions in differing environments located in each wilderness. The LAC process first requires determining appropriate conditions in light of the unique situations present in each wilderness and then prescribing standards to manage acceptable levels of change. Within this framework this research will facilitate the start of a long term monitoring program to identify trends of campsite deterioration in the study area over periods of time and provide an inventory for the development of a LAC planning system.

## 2.0 Study Area

This study focuses on three wilderness areas in the Mark Twain National Forest: (1) Hercules Glades Wilderness, (2) Piney Creek Wilderness, and (3) Devil's Backbone Wilderness all located in the Ozarks of southern Missouri within the Ava/Cassville/Willow Springs Ranger District. The natural geology and soils of the Ozarks Highland Area are of scientific interest because they have essentially formed in place; not having been subject to glacial movement like other parts of northern Missouri and the upper Midwest (USFS 1982). This unique landform, over millions of years, has been carved by the action of flowing water as it cut into the underlying sedimentary limestone and sandstone formations creating a deeply dissected, rugged terrain of narrow hollows and flat ridgetops (USFS 1982). Located in the Ozark Highland Area, each wilderness has its own unique character and contains several land type associations, which is an integral factor in the development of this program.

Hercules Glades Wilderness contains large expanses of glades consisting of native prairie plant associations with interspersed eastern red cedar (Juniperus virginiana) on shallow, droughty soils. These glades extend over numerous balds and knobs and contain limestone outcroppings typical of the glade environment. Hercules Glades also is comprised of vast sections of oak-hickory forest that transition to bottomland hardwood riparian areas towards Long Creek, which is the primary drainage of the area. Hercules, the largest wilderness studied, contains 32 miles of designated non-motorized trail and is 12,315 acres in size. There are three wilderness trailheads located on the east, west, and southern boundaries. Hercules received official wilderness designation in 1976 in Public Law 94-557.

Piney Creek Wilderness is known for its rigid, karst topography, seeps, deep hollows and ephemeral headwater streams that drain into Piney Creek. The entire 6-mile Piney Creek sub-watershed is located within the wilderness and drains to the James River Arm of Table Rock Lake. The vegetation of the area is mostly mixed hardwood forest. However, the ridgetops demonstrate a codominance with shortleaf pine (Pinus echinata) and small open glades that disrupt the forest cover (Rebman, 1989). Piney Creek contains 16 miles of trail, has two trailheads, each located on the northern and southern sides of the wilderness, was designated in 1980 and is 8,412 acres in size.

Devil's Backbone Wilderness has rugged topography that drains to the center of the wilderness, the Northfork White River, and contains large tracts of mixed hardwood forest interspersed with compartments of shortleaf pine.

The Northfork River has been classified as a candidate wild and scenic river and receives heavy recreation use during the summer. Over 1.5 miles of the river flows through the wilderness and facilitates recreational camping, canoeing, and trout fishing. Devil's Backbone Wilderness was designated in 1980 in Public Law 96-550. This 6,595 acre wilderness contains 13 miles of designated non-motorized trail and has three trailheads located on the northern and southern boundaries. Devil's Backbone is the only wilderness in the study area that has a developed camping facility adjacent to the wilderness boundary.

## 3.0 Methods

### 3.1 Site Selection

Site surveys were conducted to assess the existing conditions of primitive campsites in the study area. Surveys were conducted within trail corridors and in popular destination spots in the wilderness areas. Sections of the wilderness were selectively (not randomly) sampled that tend to receive higher amounts of visitation and overnight use. Approximately 60 percent of trail corridors in each wilderness were surveyed in this study. Within this 60 percent sample, 19 miles of linear trail corridor was surveyed in Hercules Glades, 10 miles in Piney Creek, and 8 miles in Devil's Backbone were assessed to uncover campsite impacts in each wilderness.

### 3.2 Condition Class Estimate System

To gain a measurable understanding of overnight camping impacts, an adapted condition class estimate system was used (Frissell, 1978). This method was developed by Frissell (1978) for use in the Boundary Waters Canoe Area Wilderness and described in detail by Cole (1989) in a sourcebook for wilderness campsite monitoring. The system assigns a condition from four possible classes that provide a description of each site in the wilderness. The measurements for each class are as follows:

1 - Ground vegetation flattened but not permanently injured. Minimal physical change except for possibly a simple rock campfire ring.
2 - Ground vegetation worn away around campfire ring or center of activity. Tree damage is low.
3 - Ground vegetation lost on most of the site, but humus and leaf litter is present in all but a few areas. Tree damage is low to moderate and site uncleanliness is low to moderate.
4 - Bare mineral soil and soil compaction is obvious. Tree roots exposed on the surface and tree damage is high. Site uncleanliness is moderate to high.

### 3.3 Site Measurements

During the surveys, thorough site inventories were accomplished and each site was assigned a condition class estimate as previously described. Physical site measurements were taken and proximity to water sources and fragile areas was established using a Global Positioning System (GPS) and Geographic Information Systems (GIS). Also, a general land type was assigned where the site was located. Land type classifications include: mixed hardwood/riparian and glade/grassland. Most grasslands are typically fallow fields that received some level of anthropogenic disturbance prior to wilderness designation. Other land type classifications were parts of the wilderness that had relatively gone unaltered by human influence in the past.

Individual site location was mapped using GPS technology so site information can be efficiently recovered, maintained, and located in the field for future reference. Also, using GPS to map the site allowed for an interface with GIS for spatial database development to better assist in identifying trends and developing strategies to effectively manage campsite deterioration. Site attributes were cataloged and filed using a hardcopy method with data sheets, location, and photographic information included. By using both GIS and keeping hardcopy data, site information can be passed on to more than one individual and maintained over a period of time in the event of personnel changes. It is suggested the wildernesses in this study be re-inventoried at a minimum of every 5 years to determine the progression of impacts and condition changes in existing sites as well as new site additions to the wilderness.

### 3.4 Rationale and Logistics

The methodology was chosen for several reasons. First, the Mark Twain wilderness land type associations are well suited for this type of measurement. All of the wildernesses in the study area contain expanses of oak-hickory forest and many sites are located in bottomland areas near water features. Impacts in these areas are readily noticeable due to the sensitive vegetation and thick understory in the bottomlands. In the limestone glades found in Hercules and Piney Creek, shallow soils

**Table 1.—Inventoried Campsite Impacts in Hercules Glades Wilderness**

| Parameter | Mean | (n) |
|---|---|---|
| Disturbed Campsite Area (total) ($ft^2$) | 302.1 | 17 |
| Disturbed Campsite Area (hardwood/riparian) ($ft^2$) | 488.5 | 10 |
| Disturbed Campsite Area (glade/grassland) ($ft^2$) | 35.9 | 7 |
| Overall Condition (total) | 2.2 | 17 |
| Condition (hardwood/riparian) | 2.8 | 10 |
| Condition (glade/grassland) | 1.1 | 7 |

and susceptible glade vegetation allow for this condition class system to represent site conditions as well. Also, all wildernesses in the study area have relatively small acreages and contain a limited number of land type associations. Differing from wilderness preserves located in the western United States that contain a wide range of land types over hundreds of thousands of acres this system accurately addresses campsite impacts in a smaller, more confined study area. Secondly, this system is inexpensive and required only minimal training of personnel to collect data. Each site evaluation only took five to ten minutes to complete. Seasonal and volunteer personnel assist in many programs in the Mark Twain wildernesses. For future use, this system will be the most conducive by allowing the greatest number of personnel to collect data with the smallest amount of time spent in the office for training.

## 4.0 Results

### 4.1 Hercules Glades

The highest campsite density, 0.9 sites per surveyed trail mile, was found in Hercules Glades Wilderness. Overall, these sites showed a mean condition class of 2.2 and the mean disturbed campsite area was 302 $ft^2$. Table 1 illustrates the impacts in Hercules Glades Wilderness and Figure 1 shows the clustered distribution of campsite locations and impact classifications. Out of the 17 sites inventoried, 41 percent were assigned a condition class estimate of three or four. All of the heaviest impacted sites were located in mixed hardwood and riparian areas adjacent to water sources. In contrast, all sites inventoried in glade habitat showed a condition class estimate of one and only one field site was found and showed a condition class of two. Site measurements reflect a similar pattern with a significant difference in disturbed campsite area in mixed hardwoods when compared with the glade and grassland land types. Sites located in the wooded streamside zones had a mean disturbed campsite area of 489 $ft^2$. In comparison, sites located in the glades and grasslands showed minimal patterns of disturbance with a mean campsite area of 36 $ft^2$.

### 4.2 Piney Creek Wilderness

Using the same methods, campsites inventoried in Piney Creek showed a density of 0.5 sites per surveyed trail mile. Table 2 categorizes the impacts discovered during the site inventories and Figure 2 shows the inventoried site locations and condition classifications in the wilderness. Out of the five sites inventoried in Piney Creek, 100 percent were inventoried near a water source and the mean condition class was 2.2. Most notably, 80 percent were lakeside sites located less than 25 feet from Table Rock Lake. Even more pronounced than in Hercules, riparian and hardwood sites showed a mean disturbance area of 625 $ft^2$ whereas the grassland sites

**Table 2.—Inventoried Campsite Impacts in Piney Creek Wilderness**

| Parameter | Mean | (n) |
|---|---|---|
| Disturbed Campsite Area (total) ($ft^2$) | 257.0 | 5 |
| Disturbed Campsite Area (hardwood/riparian) ($ft^2$) | 625.0 | 2 |
| Disturbed Campsite Area (glade/grassland) ($ft^2$) | 11.8 | 3 |
| Overall Condition (total) | 2.2 | 5 |
| Condition (hardwood/riparian) | 4.0 | 2 |
| Condition (glade/grassland) | 1.0 | 3 |

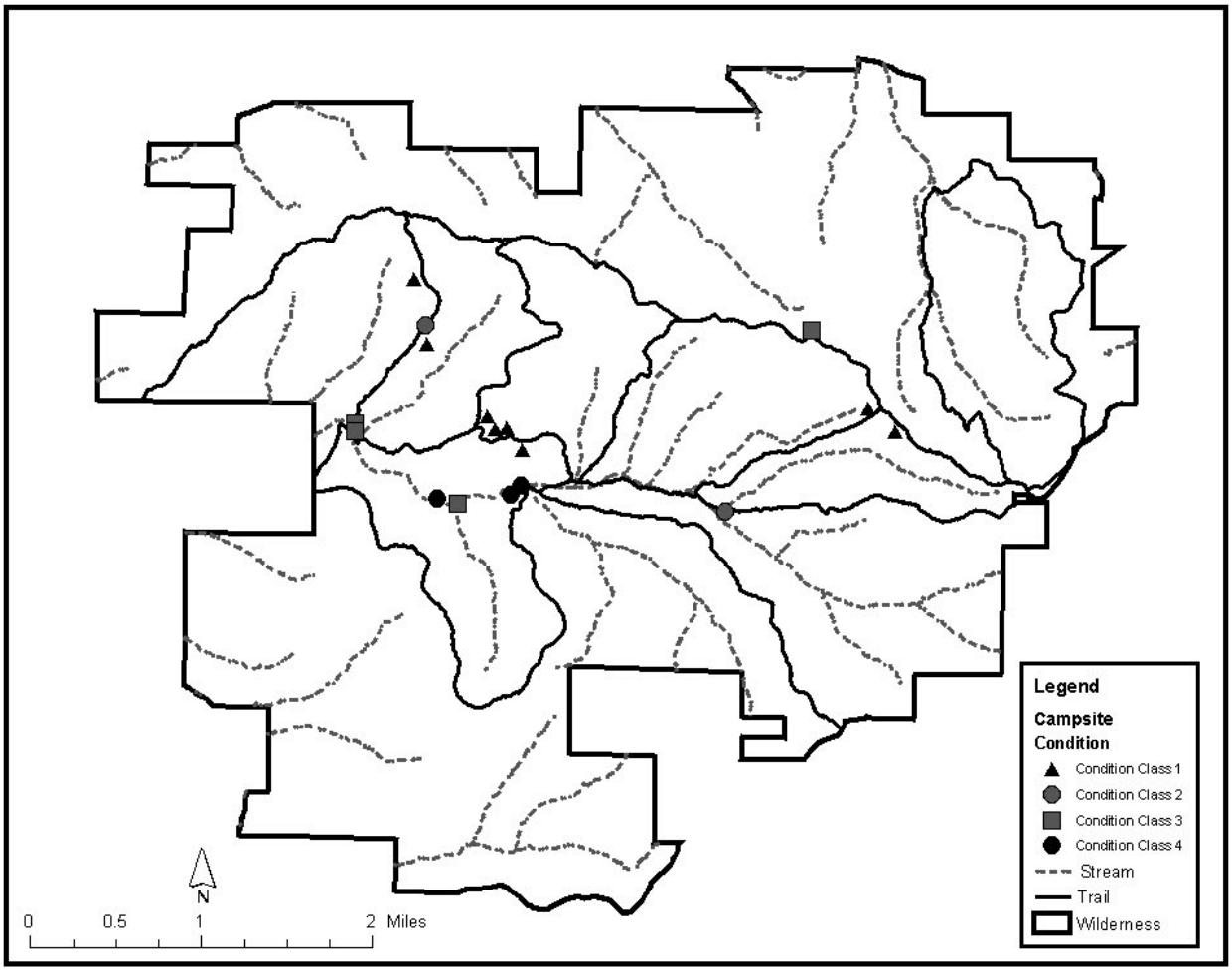


Figure 1.—Inventoried campsite locations and classifications in Hercules Glades Wilderness.

were found to have a mean campsite disturbance area of 12 $ft^2$. Likewise, the highest condition class estimates were assigned to sites located in the mixed hardwood land type (40%) and all were located near popular wilderness destinations. In contrast, 60 percent of the sites inventoried were located in fields and all of these sites showed a condition class of only one.

### 4.3 Devil's Backbone Wilderness

Table 3 and Figure 3 show the site impacts and their locations in the wilderness. Only two sites were found in Devil's Backbone and 100 percent of the sites inventoried were situated within 50 feet from the Northfork White River in riparian areas. Likewise, these sites both showed a condition class estimate of three, which predictably resulted in a mean condition class of 3.0. Both riverside sites were positioned in a central point in the wilderness where all designated recreation trails converge. Mean campsite disturbance area was 721 $ft^2$ with a campsite density of 0.25 sites per surveyed trail mile.

## 5.0 Management Options

Applying more than one management strategy based on the specific problems of campsite deterioration in the study area will allow managers to tailor a program that will be most effective in controlling campsite degradation levels (Cole, 1990). In light of the overall low campsite density, strong regulatory actions may not be needed to reduce the current levels of campsite degradation in the wildernesses. However, a flexible LAC planning process that controls the intensity and concentration of highly impacted forested and water sites should be implemented. Zoning opportunity areas, such as trail corridors and more highly visited sections of each

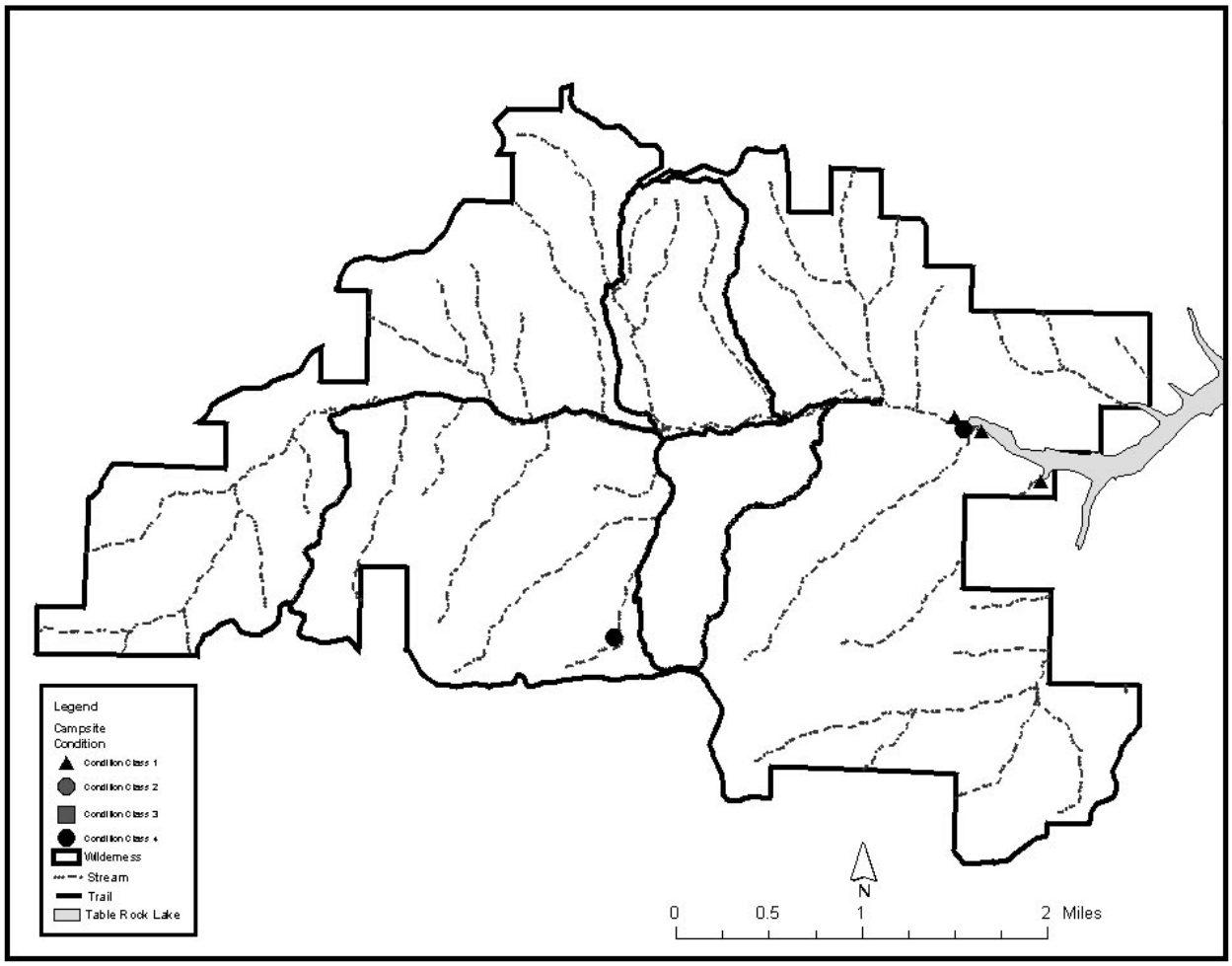


Figure 2.—Inventoried campsite locations and classifications in Piney Creek Wilderness.

**Table 3.—Inventoried Campsite Impacts in Devil's Backbone Wilderness**

| Parameter | Mean | (n) |
|---|---|---|
| Disturbed Campsite Area (total) (ft) | 721.0 | 2 |
| Disturbed Campsite Area (hardwood/riparian) (ft) | 721.0 | 2 |
| Overall Condition (total) | 3.0 | 2 |
| Condition (hardwood/riparian) | 3.0 | 2 |

wilderness to allow for a semi-primitive and primitive experience while zoning other less visited areas to pristine standards will prescribe allowable campsite deterioration levels. Implementing desired planning standards, such as not allowing more than two condition class three sites or one condition class four site per watercourse half-mile in the semi-primitive zone will assist managers to reduce heavy site concentrations and impacts in riparian habitats. For future planning, setting zones and standards will help balance use between the different wilderness land types and allow for management aimed at preserving natural conditions while meeting the demands of recreation use (Figure 4).

To achieve desired planning conditions minimum impact education tactics, such as posters at trailheads, "Leave No Trace" materials, and interpretative programs may best minimize current site degradation. Also,

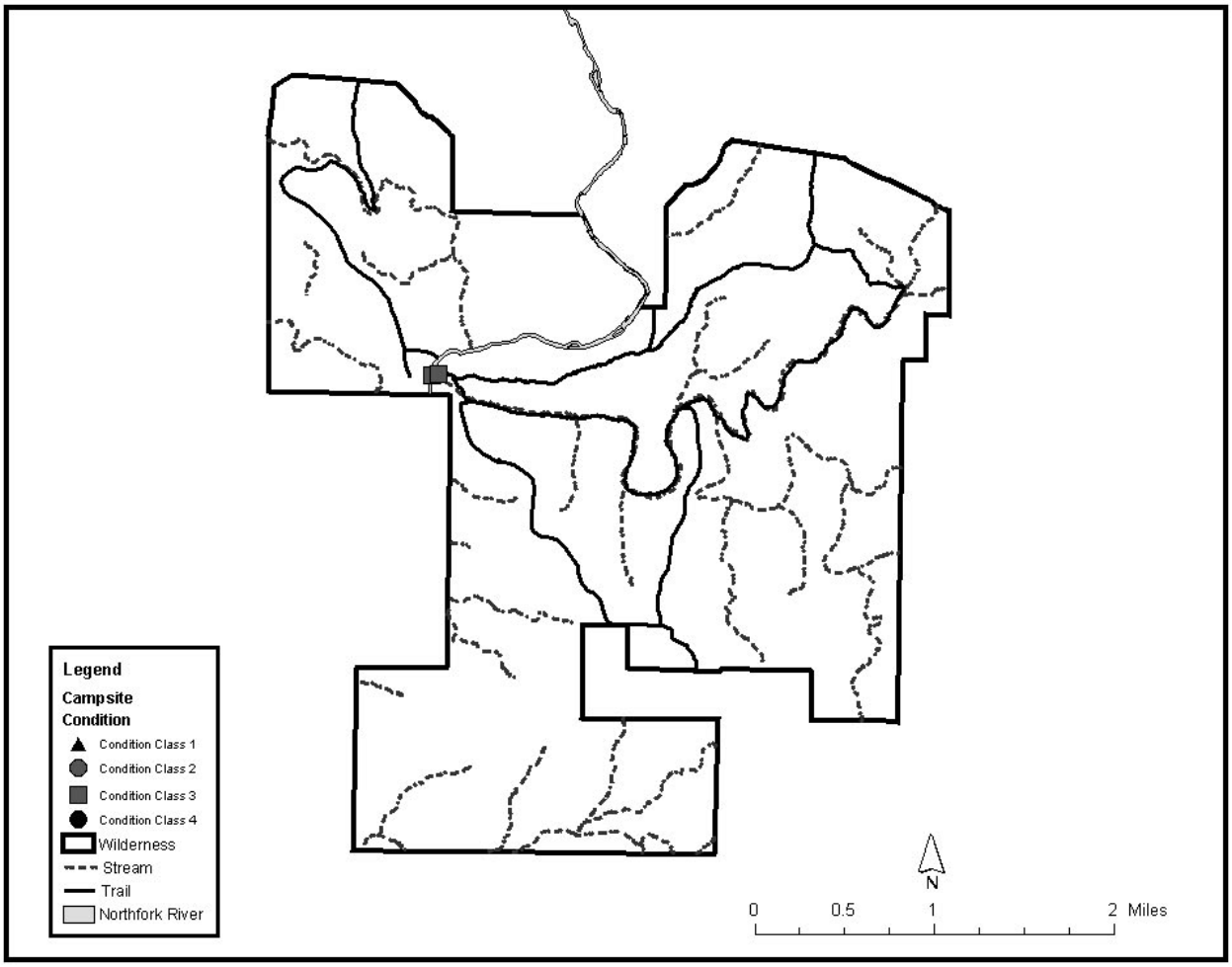


Figure 3.—Inventoried campsite locations and classifications in Devil's Backbone Wilderness.

educating visitors on current party limit and water setback regulations could improve compliance and result in a more successful campsite management program. Encouraging the use of the more durable glade and grassland sites can be included in an education program. By educating visitors on the benefits of glade and grassland campsites can reduce the current high levels of degradation on the forested and water sites by balancing use patterns between the two ecosystems.

In addition to an education program, applying a selective site closure strategy may prove to be beneficial in reducing the on-going degradation where sites were found in high concentrations in forested riparian habitats. Many highly impacted sites were concentrated in Hercules Glades near Longs Creek, in Piney Creek near Table Rock Lake, and in Devil's Backbone near the Northfork White River. Temporarily closing some of the more heavily impacted and concentrated sites in these areas may be needed to aid in recovery. Although Cole (1990) found natural site recovery is at best extremely slow in western wilderness areas the more humid and adaptable environments in the east may be more amenable to a temporary site closure strategy augmented with physical restoration. Physical restoration tactics such as site revegetation along with conditioning existing soil and using natural barriers to slow site expansion could mitigate and contain campsite deterioration levels in these wildernesses (Cole, 1990).

## 6.0 Conclusion

The Wilderness Act of 1964 created the guiding principles of how wilderness should be managed. However, managing the wild, natural character of wilderness with human activities requires careful decision-making. Approximately 63,000 acres of wilderness are found in the Missouri Ozarks on the Mark Twain National Forest, and over 26,000 of these acres

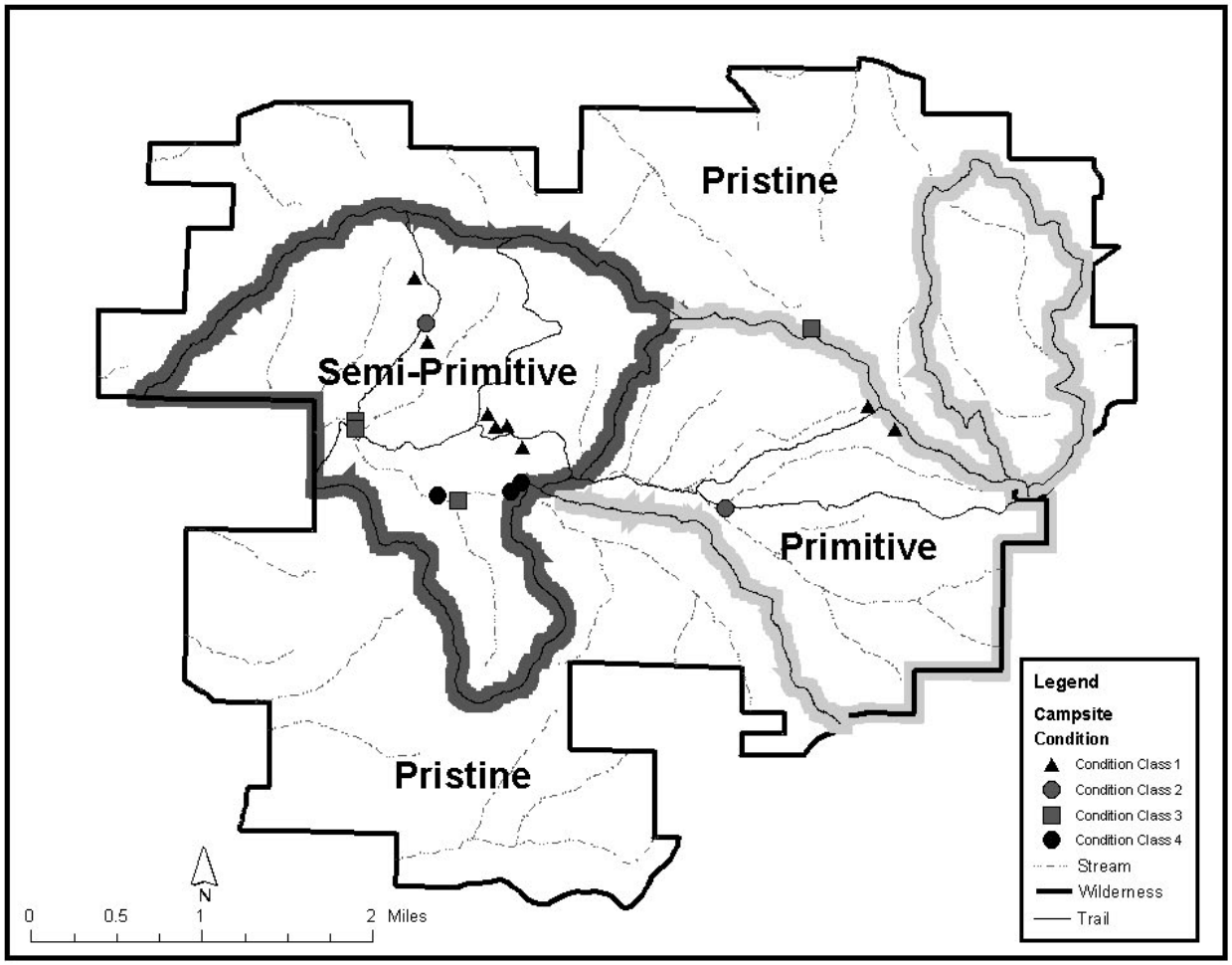


Figure 4.—A Limits of Acceptable Change planning model for Hercules Glades Wilderness.

are located in this study area. Within this vast amount of protected land, any level of human use in wilderness will result in some degree of change and undoubtedly impact the land. Resource specialists must design wilderness management programs that allow for recreation opportunities while maintaining untrammeled wilderness ecosystems. Evaluating the information collected from the site inventories it was shown that: (1) most (67%) of the 24 sites inventoried were located near water features, (2) disturbance was most notable in the hardwood/riparian sites, when compared to the glade/grassland sites, and (3) site conditions, such as excessive soil erosion and compaction may present a long term problem if not mitigated with effective management techniques. Using this research as a baseline and re-evaluating site conditions at a minimum of every 5 years will assist wilderness managers whose goals are to reduce campsite deterioration in the study area.

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# RECREATION USE AT DIAMOND LAKE, OREGON: PERCEPTIONS OF USERS' RECREATION EXPERIENCE BETWEEN 2001 AND 2003

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## Abstract

The purpose of the study was to examine recreationists' perceptions about their trip experience at Diamond Lake, Oregon, and to ascertain if user perceptions had changed over a 2-year period (2001-2003). Diamond Lake is a large natural lake, located in the Cascade Mountain range of central Oregon, less than 20 miles from Crater Lake. The introduction of a non-native fish species has resulted in a biological change in the lake that has reduced water quality and changed the use patterns at the lake. Diamond Lake users are generally satisfied with their recreation experience, but some differences were noted between the summer 2001 and summer 2003 recreation seasons. Although several of the quality domains and satisfaction items were significantly different between the 2001 users and the 2003 users, overall quality remained the same.

## 1.0 Introduction

Diamond Lake, located near Crater Lake National Park, has long been known as one of the best trout fishing lakes in the state of Oregon. Diamond Lake was naturally fishless, but for the past 96 years, the state of Oregon has stocked the lake with various species of trout all non-native to the lake. Accordingly, Diamond Lake became a primary destination for anglers from across Oregon and nearby states. In the mid-1940s, the tui chub (*Gila bicolor*), an undesirable, non-native species, was illegally introduced to the lake, probably as a bait fish. The tui chub thrived in Diamond Lake, eventually out-competing the trout for the zooplankton that both species ingest. The quality of trout fishing dropped significantly over the next several years, and in the mid 1950s, the lake was drawn down and poisoned with the chemical rotenone.

Once again, the state of Oregon stocked the lake with various species of trout, and after several years the lake's trout fishing was once again considered excellent. This situation continued for a few decades, until the lake once again fell victim to the same non-native species; the tui chub (Jackson et al. 2003; Loomis et al. 1999). And once again, the tui chub was probably introduced to the lake by an angler using the fish as bait. By the mid 1990s, the quality of trout fishing had dropped precipitously. In 2001, 2002, and 2003, the lake had to be closed each summer as a result of health risks associated from toxic algae bloom (*Anabaena flos-aquae*). The increases in the algae correlated closely with the increase in the tui chub (Eilers et al. 2001).

The purpose of the study was to examine recreationists' feelings about their trip experience at Diamond Lake over a 2-year period (2001 and 2003). During that timeframe, the social and biological conditions had changed at Diamond Lake. These differences are examined in this paper.

## 2.0 Methods

Data were collected through face-to-face interviews with visitors at Diamond Lake. A total of 685 completed surveys were used in conducting the analyses in this paper. A total of 262 surveys were completed during summer 2001 and 423 surveys were completed during summer 2003. The data were collected throughout a 3-month period during each summer season in 2001 and 2003. In 2003, the lake was closed to water-based recreation for a period during the summer due to a severe algae bloom. The surveys that were completed at Diamond Lake during 2003 were conducted in two data collection waves. These two waves were during the lake closure and after the lake reopened to swimming and

**Table 1.—Summary of Significant Differences in Demographics and Trip Characteristics by Year (Chi-square or t-values; non-significant values not shown)**

| Demographics and Trip Characteristics | 2001 | 2003 | Test of Significance |
|---|---|---|---|
| Non-Caucasian Respondents | 4% | 8% | $X^2$ = 5.538* |
| First Time Visitors | 9% | 33% | $X^2$ = 49.880*** |
| Recreate only at Diamond Lake | 61% | 50% | $X^2$ = 6.611** |
| Number of days spent recreating at DL on this trip | 4.78 | 4.12 | t = 2.238* |
| 1 to 2 days | 19% | 22% | |
| 3 days | 24% | 27% | |
| 4 days | 16% | 23% | |
| 5 or more days | 41% | 28% | |
| | | | $X^2$ = 10.082** |
| Number of days spent recreating at other lakes yearly | 13.42 | 8.17 | t = 3.359*** |
| 0 to 1 days | 14% | 20% | |
| 2 to 4 days | 16% | 32% | |
| 5 to 10 days | 34% | 29% | |
| 11 or more days | 36% | 19% | |
| | | | $X^2$ = 27.960*** |
| Number of days spent recreating at DL yearly | 8.94 | 6.55 | t = 2.088* |
| 0 to 1 days | 17% | 9% | |
| 2 to 3 days | 22% | 29% | |
| 4 to 6 days | 24% | 32% | |
| 7 or more days | 37% | 30% | |
| | | | $X^2$ = 12.209** |
| Group Composition | | | $X^2$ = 14.746** |
| Family | 68% | 59% | |
| Family/Friends | 20% | 28% | |
| Friends | 5% | 8% | |
| Alone | 4% | 4% | |
| Other | 4% | 1% | |

* Indicates significant differences between 2001 and 2003 (* $p < .05$, ** $p < .01$, *** $p < .001$)

boating. The interviews were conducted at day use sites, camping areas, along a bike trail, at areas around the Diamond Lake lodge, and at boat ramp areas. Diamond Lake visitors were asked a battery of questions about their trip characteristics, visitation patterns, recreation preferences, and satisfaction levels. For the purposes of this paper, differences in satisfaction levels and opinions about the lake were examined across the two study years.

## 3.0 Results

An analysis using cross tabulations and t- tests showed that there were numerous significant differences between the years 2001 and 2003. With regards to visitor demographics, the ethnic diversity of the respondents increased significantly in that two-year period (Table 1). The proportion of non-Caucasian visitors doubled ($X^2$ = 5.538*) between 2001 (4% non-Caucasian) and 2003 (8% non-Caucasian). However, no significant differences were noted for age or gender of the respondents across the two years. Group composition changed significantly between 2001-2003 ($X^2$ =1 4.746**), with the proportion of family and friends groups increasing from 20% to 28% from 2001 to 2003, and friends only groups increasing from 5% to 8%. Conversely, the proportion of visitors in family only groups dropped from 68% to 59%.

**Table 2.—Summary of Significant Differences in Satisfaction Ratings and Overall Satisfaction by Year**

| Satisfaction Ratings[a] | 2001 | 2003 | Test of significance (t) |
|---|---|---|---|
| Safety and Security | 3.72 | 4.23 | -7.085*** |
| Recreation Setting | 4.15 | 4.56 | -5.799*** |
| Responsiveness of Staff | 4.54 | 4.25 | 4.197*** |
| Condition of Facilities | 4.00 | 4.04 | N/S |
| Health and Cleanliness | 3.91 | 3.82 | N/S |
| Overall satisfaction (10-point scale) | 8.27 | 8.26 | N/S |

[a] Response Code: 1="Awful" to 5 = "Excellent"
* Indicates significant differences between 2001 and 2003 (* p < .05, ** p < .01, *** p < .001)

The proportion of first time visitors has increased dramatically over the two-year period ($X^2$ = 49.880***), from just 9% in 2001 to one-third of the respondents (33%) in 2003. There was a significant difference between years in the reported length of stay at Diamond Lake during the current visit ($X^2$=11.020**). The proportion of respondents staying for less than 5 days increased (2001 = 59%, 2003 = 72%), while the proportion of visits lasting 5 or more days dropped from 41% to 28%. This finding seems to identify a new user group for Diamond Lake, the weekenders, who stay for a few days, while the longer vacationers (5 days or more) are less prevalent.

Diamond Lake visitors are increasingly going to other places as well as recreating at Diamond Lake. In 2001, nearly two thirds (61%) of the subjects surveyed indicated that they recreated only at Diamond Lake. In 2003, that proportion had dropped to 50% ($X^2$ = 6.611*). Additionally, the respondents surveyed in 2003 reported that they spent significantly fewer days recreating at lakes other than Diamond Lake (2001 = 13.42, 2003 = 8.17, t = 3.359***) as well as at Diamond Lake (2001 = 8.94, 2003 = 6.55, t = 2.088). The proportion of respondents who visited other lakes between 0-4 days in the past year increased in 2003, with a precipitous drop in the number of recreationists who spent seven or more days recreating at lakes other than Diamond Lake ($X^2$ = 27.960***).

### 3.1 Customer Satisfaction

Regarding customer satisfaction, several levels of trip quality were measured in this study. These measures included 13 specific satisfaction attributes (5-point Likert scale) along with customer satisfaction ratings for five quality domains (5-point Likert scale) and an overall satisfaction rating (10-point Likert scale). Three of the five quality domains showed significant differences between 2001 and 2003 (Table 2). Two of those domains were rated higher in 2003 than 2001: condition of recreation setting (2001=4.15, 2003=4.56, t= -5.799***) and safety and security (2001=3.72, 2003=4.23, t = -7.085***). Conversely, the responsiveness of staff scale was rated lower (2001=4.54, 2003=4.25, (t = 4.197***).

About half of the specific satisfaction items (6 of 13) showed significant differences (Table 3). In 2003 visitors felt less crowded (2001=4.25, 2003=4.40), perceived less conflict (2001=4.25, 2003=4.39) and were less likely to agree that the conditions for fishing were not what they used to be (2001=4.34, 2003=3.83). However, the following items were rated worse in 2003: incompatibility of recreation activities (2001=1.29, 2003=2.29), level of disappointment with some aspect of the lake visit (2001=2.34, 2003=2.64), and the balance between social and biological values in the management of Diamond Lake (2001=3.73, 2003=3.57). Interestingly, there was no significant difference in the 10-point overall satisfaction rating (2001=8.27, 2003=8.26, see Table 2).

The final stage of data analysis used multiple regression analysis to determine the relationship between the specific satisfaction indicators (domain quality ratings and individual items, see Tables 2 and 3) and overall satisfaction. For this analysis, an overall satisfaction index

**Table 3.—Summary of Significant Differences in Recreationists' Opinions by Year**

| Opinions of Recreationists[a] | 2001 | 2003 | Test of significance (t) |
|---|---|---|---|
| I had the opportunity to recreate without feeling crowded | 4.25 | 4.40 | -2.362* |
| I could find places to recreate without conflict from other visitors | 4.25 | 4.39 | -2.300* |
| There is a good balance between social and biological values in the management of Diamond Lake | 3.73 | 3.57 | 2.124* |
| Recreation activities at the lake were NOT compatible | 1.96 | 2.29 | -3.951*** |
| I was disappointed with some aspects of my visit to the lake | 2.34 | 2.64 | -2.967** |
| Fishing at Diamond Lake is not what it used to be | 4.24 | 3.83 | -3.966*** |
| I thoroughly enjoyed my visit to Diamond Lake | 4.51 | 4.44 | N/S |
| My trip to Diamond Lake was well worth the money I spent to take it | 4.33 | 4.43 | N/S |
| I avoided some places at the lake because there were too many people there | 2.22 | 2.28 | N/S |
| The number of people at the lake reduced my enjoyment | 2.12 | 2.04 | N/S |
| The behavior of other people at the lake interfered with the quality of my experience | 2.18 | 2.06 | N/S |
| The other people at the lake increased my enjoyment | 3.23 | 3.21 | N/S |
| The lake and its surroundings are in good condition | 3.76 | 3.69 | N/S |

[a] Response Code: 1 = Strongly Disagree" to 5="Strongly Agree"
* Indicates significant differences between 2001 and 2003 (* $p < .05$, ** $p < .01$, *** $p < .001$)

was created using three of the individual satisfaction items (I thoroughly enjoyed my visit to Diamond Lake, My trip to Diamond Lake was well worth the money I spent to take it, I was disappointed in some aspects of my visit to the lake). Previous studies suggest that such multiple-item indices of satisfaction are more sensitive and reliable than single item ratings (Graefe and Fedler 1986). In this study, reliability analysis showed good reliability for an index created from these three items (standardized Cronbach's alpha = .69).

In 2001, multiple regression analysis identified three significant predictors of overall satisfaction. The strongest predictor of overall satisfaction was the item, "recreation activities at the lake were not compatible" ($\beta$= -.419***). Those who agreed more strongly with this statement were significantly less satisfied. The other two significant predictors of overall satisfaction were the quality ratings for the "condition of facilities" and "safety and security" domains. Higher ratings for these customer service domains were associated with higher overall trip satisfaction. This regression model accounted for approximately 50% of the variance in overall trip satisfaction.

In 2003, multiple regression analysis identified four significant predictors of overall satisfaction. Again, the statement, "recreation activities at the lake were not compatible" ($\beta$= -.314***) was a strong inverse predictor of overall satisfaction. The other significant predictors in 2003 were different than those in 2001. The statements, "there is a good balance between social and biological values in the management of Diamond Lake" ($\beta$= .142***) and "I had the opportunity to recreate without feeling crowded" ($\beta$= .338**) were significant predictors of overall satisfaction in 2003. Additionally, the rated quality of the "health and cleanliness" domain ($\beta$= .260**) was a significant predictor of overall satisfaction. Overall, this regression model accounted for approximately 46% of the variance associated with overall satisfaction.

## 4.0 Conclusions and Implications

The findings of this study show that significant differences in the user populations have taken place at Diamond Lake. However, the respondents' evaluation of their overall satisfaction has not been impacted. This seems to indicate that a simple examination of customer satisfaction is not an appropriate method of ascertaining visitor perceptions about Diamond Lake. Clearly, the

**Table 4.—Regression of Specific Satisfaction Attributes at Diamond Lake on Overall Satisfaction in 2001 and 2003 (non-significant values not shown).**

| Satisfaction Attributes Independent Variable[a] | Standardized coefficients (β) 2001 | 2003 |
|---|---|---|
| Rated quality – Health and Cleanliness | | .260 |
| Rated quality – Condition of Facilities | .285 | |
| Rated quality – Safety and Security | .229 | |
| Recreation activities at the lake were NOT compatible | -.419 | -.314 |
| There is a good balance between social and biological values in the management of Diamond Lake | | .142 |
| I had the opportunity to recreate without feeling crowded | | .338 |
| $R^2$ | .503 | .460 |
| Adjusted $R^2$ | .496 | .455 |

[a] Dependent variable is a satisfaction index created from 3 items: I thoroughly enjoyed my visit to Diamond Lake, My trip to Diamond Lake was well worth the money I spent to take it, I was disappointed in some aspects of my visit to the lake.

user groups at Diamond Lake have changed, and just as clear is the finding that the recreationists who were interviewed were satisfied with their experience. In fact, of those satisfaction categories where significant differences were found, two of the three satisfaction ratings were higher in 2003 than in 2001 (safety/security and condition of recreation setting). Similarly, of the six opinion statements that showed significant differences between 2001 and 2003, three of them showed Diamond Lake in a more positive light in 2003 than 2001.

Interestingly, the items that moved in a positive direction were related to visitors' perceptions about conflict, crowding, and the condition of fishing at the lake. And lastly, a linear regression model of the specific satisfaction attributes on overall satisfaction showed distinctly different predictors of satisfaction between 2001-2003. While the compatibility of recreation activities was a significant (but negative) predictor of satisfaction in both 2001 and 2003, the only other significant predictors of overall satisfaction in 2001 were the condition of facilities and safety/security. Conversely, in 2003 the balance between social and biological management and the crowding variable, along with the compatibility variable, predicted overall satisfaction.

Overall, these findings indicate that recreation resource managers should focus on maintaining and improving the environmental and social qualities of the lake, regardless of the make up of the user group. Certainly, the sociological and biological makeup of Diamond Lake has changed, and the resource managers charged with satisfying the public who visit the lake have met the needs of the new users at Diamond Lake. But study results suggest that resource managers should monitor traditional social carrying capacity issues at the lake and the surrounding area (e.g. crowding, conflict), and the impacts of the changes in the biological make up of the lake. Specifically, resource managers should continue to monitor recreationists' experience levels as changes in the biological and social configuration of the lake can directly affect a visitor's overall experience.

Future research at Diamond Lake should focus on understanding the dynamic changes that have taken place at Diamond Lake. For example, what happened to the recreationists who were interviewed in 2001, a group that was clearly different than the recreationists interviewed in 2003? Were these people displaced to other recreation areas, and if so, where have they gone? And lastly, given the diversity of the new user group, should resource managers focus on meeting the needs of the "weekenders" or attempt to lure back longer "vacationers?" Merely understanding that the overall satisfaction has remained high will not be sufficient information with which to provide a quality recreation experience for the many different types of users who recreate at Diamond Lake.

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# ALBANY PINE BUSH PRESERVE: A CASE STUDY USING CONCEPTS FROM THE LIMITS OF ACCEPTABLE CHANGE FRAMEWORK

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## Abstract

The Albany Pine Bush Preserve (APBP) is a relatively small natural area in downtown Albany. It has a relatively high potential for heavy recreation impacts from large numbers of users and multiple uses. The managers of the APBP realize the need to determine the APBP's baseline conditions in order to create a recreation management plan. This study uses three strategies to collect baseline data: a measurement of physical trail conditions, an estimation of visitor numbers, and a survey of visitors' perceptions of the trail conditions. This document uses the APBP as a case study to demonstrate how the baseline data collected may be utilized in the Limits of Acceptable Change (LAC) framework in order to aid the APBP managers in their planning process.

## 1.0 Introduction

The Albany Pine Bush Preserve (APBP) is a 2,725 acre Nature Conservancy preserve located in downtown Albany, NY (Figure 1). The preserve is managed by the APBP Commission under the guidance of the Nature Conservancy. The APBP ecosystem is known as a pine barrens and it sustains a variety of rare and endangered species such as the Karner Blue Butterfly and the Spadefoot Toad. The Nature Conservancy recognizes that the combination of excessively well-drained soils and the pitch pine/scrub oak vegetation creates a unique ecosystem that requires special protection and management (APBP Commission 2002). The Nature Conservancy has outlined some of the threats affecting the Pine Bush and focused on four main threats that have the greatest impact on the integrity of the resource: (1) fire suppression, (2) residential and commercial development, (3) invasive exotic species, and (4) irresponsible recreation behavior (APBP Commission 2002). The Nature Conservancy vision for the Pine Bush Preserve is "to maintain the natural ecological processes that support the long term viability of the…Pine Bush…The Preserve will also protect cultural resources, accommodate a variety of appropriate recreational uses, and provide educational and outreach opportunities for the public" (FEIS for Albany Pine Bush Preserve 2002, p. ii).

Although the APBP is managed primarily to maintain the ecological integrity of the area, the Nature Conservancy also realizes the need to address recreational uses and users. Due to its proximity to Albany's urban center and the fact that it allows multiple, non-motorized uses, the APBP has the potential to incur significant environmental and social impacts. In order to protect the resource and provide a quality recreation experience to a variety of users and diverse uses, the managers of the APBP must create a plan to guide recreation management for the Preserve.

Recreation managers across the country have faced similar challenges trying to balance recreation and resource protection. As a result, the Limits of Acceptable Change (LAC) framework for recreation planning was developed (Hendee and Dawson 2002). The LAC process is an approach to planning visitor management.

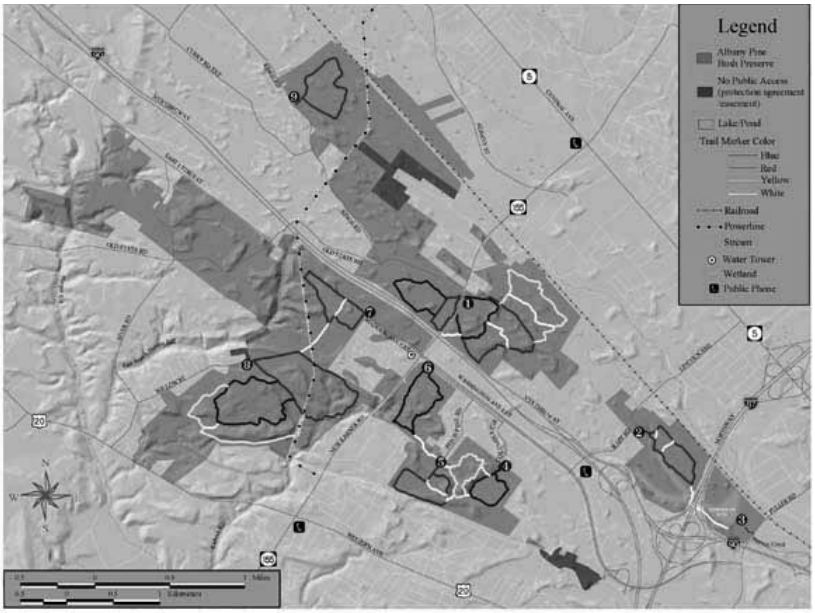


Figure 1.—Map of the Albany Pine Bush Preserve.

**Table 1.—Criteria for impact level assessment of APBP physical trail conditions.**

| Criteria | Level 1 | Level 2 | Level 3 | Level 4 |
|---|---|---|---|---|
| Trail Tread Depth | >3 feet | 2-3 feet | 0.5-2 feet | <0.5 feet |
| Trail Tread Width | >20 feet | 10-20 feet | 4-10 feet | <4 feet |

The LAC is a tool that helps managers understand the current conditions, define the desired conditions and create a plan for achieving and maintaining the desired conditions.

The challenges and conflicts that exist at the APBP make it a good case study about the use of the LAC process. One goal of this research project is to provide the APBP Commission with baseline information concerning the environmental and social conditions of the recreational trail system. The overall study examines the physical trail system, estimates the amount of use that the system receives, and explores visitors' perceptions of the recreational experience. The overall study provides the APBP Commission with the baseline information needed to start the LAC process and develop their recreation management plan.

This paper attempts to show how the baseline data collected in this study may be incorporated into the APBP recreation management plan through the use of the LAC framework. For example, the APBP Commission has already completed the first couple of steps in the LAC and planning process—they have defined their goals and identified the issues and threats for the area. This study, however, helps to identify more specific issues, concerns and threats related to recreation. Moreover, it plays a major role in identifying types of social and environmental impacts and it is an inventory of the current conditions. This paper provides suggestions for management actions to address issues of social and environmental impacts based on the overall study.

## 2.0 Methods

The research was conducted to determine the social and environmental baseline conditions of the recreation system at the APBP. It is a day use area and most visitors come specifically to use the hiking trails. Therefore, the trail system was selected to study environmental impacts. In order to understand the impacts of erosion throughout the APBP, an inventory of the twenty miles in the trail system was performed. Then the trail system was separated into four basic impact levels; level 1 was the most impacted while level 4 was the least impacted. The level of impact assigned to a segment of trail was based on the following factors: trail tread depth and trail tread width (Table 1); some visible characteristics such as surface water, slope sloughing and muddy conditions were also considered for rating impact levels.

After assigning ratings to all twenty miles of trail, five representative points from each rating level were selected. At these locations, evaluations of soil loss were made by measuring the soil lost in a cross section of trail at a selected location (Liddle 1997). Twenty sites were identified throughout the trail system. Metal stakes were placed on either side of the trail and a string was placed across the trail and made level. The depth of the trail was measured from the level string to the soil substrate at two-foot intervals between the stakes. Then the distance from stake to stake was measured along the ground. The total area of soil loss was calculated.

Visitor use was measured through the use of Trailmaster Infrared trail counters. Infrared trail counters were set up close to each of the nine access points to the APBP (Figure 1). The infrared counters operate by sending an infrared beam of light from the transmitter on one side of the trail to the receiver on the other side. If this beam of light is broken, then the counter records an incident. Each Friday, the incident records were downloaded from the counters to a laptop computer and processed with the Trailmaster Statpack Program. Visitor use was calculated from the incident counts. Since the trails starting from each access point have different layouts, different strategies were utilized to calculate the visitor use at each access point (Table 2).

The third part of the baseline study analyzed visitors' perceptions of the trail conditions. The information from the visitors was collected through the use of an on-site survey at each of the nine trailhead access points.

**Table 2.—Strategies to calculate visitor use estimates at the nine APBP trailhead access points.**

| Trail Type | Access Points | Strategy |
|---|---|---|
| Loop with one Access point | Karner Barrens West, King's Road | One incident equals one visitor |
| Loop with two access points | Karner Barrens East: Right and Left | Take average visitor use from two counters |
| Cherry stem (short entrance trail to a loop) | Blueberry Hill Columbia, Blueberry Hill Pitch Pine, Rapp Road | Divide total incidents by two for each counter |
| Loop with two access points, one on a cherry stem. | Great Dune and Madison | Divide Great Dune incidents by two then take the average of Great Dune and Madison incidents |

Figure 2.—Survey Photograph A

Figure 3.—Survey photograph B

Figure 4.—Survey Photograph C

Figure 5.—Survey photograph D

The interviewer went to the various access points on a revolving schedule, with three two-hour shifts (8-10 a.m., 12-2 p.m. and 5-7 p.m.) every Saturday, Sunday and Monday from May 31 to September 1. The survey contained ten questions: the first six questions had to do with demographics and educational information related to the APBP; and the last four questions dealt with visitors perceptions of four different photographs, which depicted various levels of trail impacts (Figures 2, 3, 4, and 5). This manuscript analyzes the survey question that asks visitors to arrange the four photographs from the most appealing to the least appealing for their recreation. The photograph ratings were used to compare how mountain bikers and walkers perceive the trail conditions. The information gathered from the surveys was analyzed using the SSPS statistical program.

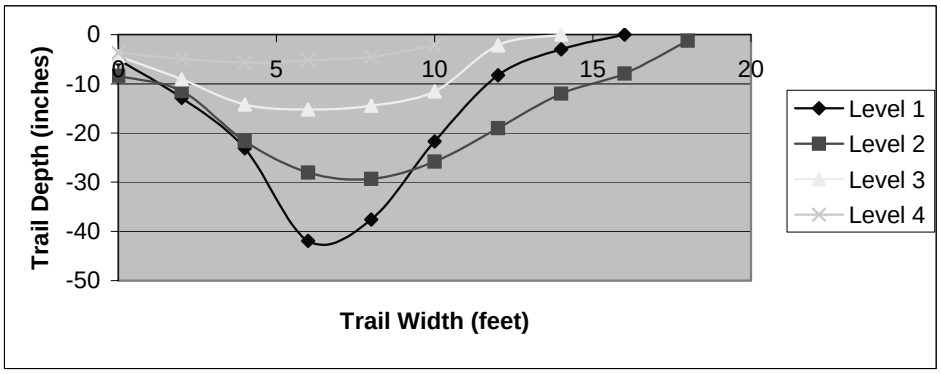


Figure 6.—Average trail depth for four different trail impact levels in the APBP.

## 3.0 Results and Discussion

### 3.1 Physical Trail Conditions

The study of the physical trail conditions resulted in an inventory of the entire trail system. The survey of the twenty miles of trail found that one percent of the trail system was Level 1, five percent was Level 2, twenty-seven percent was Level 3, and the remaining sixty-seven percent rated as Level 4 (showing the least amount of impact). Nevertheless, thirty-three percent of the trail system inventoried was noticeably impacted, with trail soil loss depths ranging from six inches to over three feet deep.

Figure 6 provides a visual depiction of the average trail depths for the four levels inventoried. Recall that only one percent of the trail system resembles Level 1 and it shows the dramatic impacts that are occurring in the APBP. That one percent of the system is spread out among different trails and most often found on steeper trail sections. One third of the trail system shows erosion greater than one foot deep. One percent of the trail system is more than three feet deep. There are visible impacts in the form of soil erosion that are affecting the environmental resource.

Previous studies such as David Cole's research in the Bitterroot Wilderness provide insight about soil erosion findings, such as the mechanisms of trail erosion. Cole explains that trails act as "conveyor belts" for materials down slope (1991). According to Liddle (1997), "soil is eroded mostly by wind or water; recreation activities provide the circumstances for erosion and increase its rate of occurrence," (pp. 39). Although erosion is a natural process, it is accelerated by recreation activities, which provide the conduit, the path of least resistance, for water erosion or an opening for wind erosion.

Recreation activities are one part of the equation and the resource characteristics of the site are the other part. The amount of impact an area can sustain is site specific and must be examined in terms of its soil and vegetation characteristics. These two related variables determine the relative impact of the recreation activities. For example, Cole (1991) showed that alpine systems and riparian systems were much more susceptible to recreation impacts than grassy prairie systems. There exists a relationship between recreation activities, the amount of use and the relative susceptibility of the particular ecosystem, in this case a pine barrens, to recreation impacts. The APBP has deep sandy soils (Dineen 1982) and this type of soil, like the sandy soils found in coastal areas, has been observed to erode easily both by wind and water (Giblertson 1983). Due to the relative susceptibility of the Pine Bush soils to erosion, managers must pay careful attention to the effects of recreation on trails and how trails are designed to mitigate erosion problems.

How do these results relate to the LAC framework and the APBP Commission's planning process? In the LAC process, indicators must be developed to monitor environmental impacts. In this section of the baseline study, erosion indicators were used to analyze the environmental impacts occurring on the trails. Pine Bush managers may utilize the indicators—trail tread depth and trail tread width—set up in the baseline study to monitor trail erosion in the future. Furthermore, they may set standards to determine the acceptable future conditions for the trail system based on these indicators. Thus, they will be able to compare the current conditions to the future conditions and determine whether the change that occurs is acceptable or not.

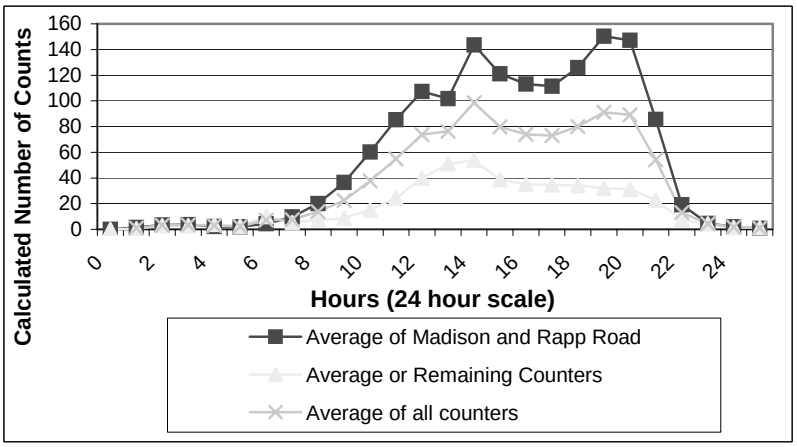


Figure 7.—The estimated distribution of APBP use over a 24-hour period

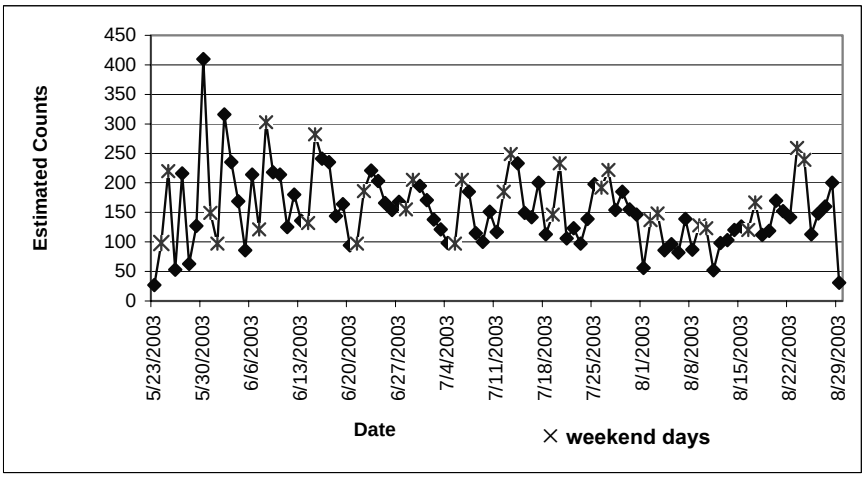


Figure 8.—The estimated distribution of APBP use for the period of May-September, 2003

These results are important because they show that environmental impacts currently exist on the trails. In the LAC process, managers will have to address these environmental impacts in order to fulfill the requirements of the Commission's vision. As part of the planning process, mangers must consider alternative trail designs and erosion control techniques to mitigate environmental impacts and continue to provide recreation opportunities. The trail design standards should reflect the multiple uses permitted on the trail system. With the participation of the public, the resource managers will consider alternative management actions during the LAC process. Each action should help to protect the resource on which the recreation activities depend.

### 3.2 Visitor Use Estimation

The results of the visitor use estimate provide a great deal of temporal information about how visitors use the APBP. Figure 7 shows the average distribution of users over the course of a day. It gives the overall average for the nine counters, and also separates out the Madison-Great Dune and Rapp Road areas from the other access points, because their patterns was different than the other areas. Note that the greatest amount of use at the Madison-Great Dune and Rapp Road areas occurred between 8 and 9 p.m., right at dusk during the summer months. The other peak time of use registered between 2 and 3 in the afternoon. Figure 8 illustrates the distribution of use over the course of the summer from May through August, 2003.

The distribution of use demonstrates an average decrease in use over the summer months. The stars that indicate the weekend days display an odd pattern. For the first half of the summer they show Saturday as a low use day but Sunday as a high use day. As the summer progresses,

**Table 3.—The arrangement of four impact level photographs by APBP walkers versus mountain bikers.**

| Photo Arrangement | Photo A | Photo B | Photo C | Photo D |
|---|---|---|---|---|
| Walkers | % | % | % | % |
| First (Most appealing) | 61.8 | 28.8 | 4.5 | 6.4 |
| Second | 14.5 | 31.5 | 31.8 | 23.6 |
| Third | 22.7 | 28.8 | 13.6 | 32.7 |
| Fourth (Least Appealing) | 0.9 | 10.8 | 50.0 | 37.3 |
| Mountain Bikers | | | | |
| First (Most Appealing) | 39.0 | 39.0 | 2.4 | 19.5 |
| Second | 9.8 | 36.6 | 14.6 | 39.0 |
| Third | 48.8 | 19.5 | 2.4 | 29.3 |
| Fourth (least appealing) | 2.4 | 4.9 | 80.5 | 12.2 |

however, Saturdays become a higher use day along with Sundays. The holiday weekends, Memorial Day, 4th of July and Labor Day, show low use values and the results suggest that the APBP is not a vacation destination. The distribution of visitation over a 24-hour period indicates that visitors did not come to the APBP to spend a whole day. It is more likely, judging by these results and by the size of the APBP and its trail system, that visitors come for short periods of time, perhaps on a lunch break, after school or work or even after dinner.

The visitor use estimation information can be incorporated into the LAC process through monitoring. The results represent the current conditions, but social changes may occur that affect these patterns. Understanding when visitors use the APBP provides information about the kind of recreation experience visitors are seeking. For example, the temporal distribution patterns suggest that visitors come to the Pine Bush for short visits. Managers can use this data to provide acceptable social opportunities during the planning process. The data from the physical trail conditions section shows that environmental impacts are occurring with the present amount of visitor use. Hence APBP managers must consider management actions that would address the environmental impacts at the current visitor use levels.

### 3.3 Visitors' Perceptions of Trail Conditions

The third part of the study dealt with visitors' perceptions of the trail conditions. The results of this section compare two user groups—walkers and mountain bikers—and how each group rated the trail impact photographs.

Although the results in table 3 were not statistically significant when comparing mountain bikers to walkers in a Chi Square analysis, some differences can be seen between the two user groups. The walkers show some preference for Photo A as the first choice, while the mountain bikers preferred both Photos A and B as the first choice. The most popular second choice for mountain bikers was Photo D, while walkers favored photos B and C for their second choice. Although the majority of both walkers and mountain bikers arranged Photo C as the least appealing, there were more mountain bikers (80% compared to only 50% of walkers) who ranked Photo C as their fourth choice.

The reason that the differences between the preferences of mountain bikers compared to walkers are important is that the two user groups have different needs and preferences for trail conditions. For example, the majority of mountain bikers agreed that Photo C is very unappealing and it shows an open sandy location that is difficult for mountain bikers to ride through. The walkers seem to prefer the less impacted trail conditions, while the mountain bikers may recognize the trail impacts, but they are looking for other elements like hills, challenges, or less sandy soils when determining their preferences.

During the LAC process, the recreation managers may use this comparative information to help understand the different preferences of the two user groups and to create management alternatives that fit the needs of each group. Furthermore, because the walkers and mountain bikers seek different experiences and trail conditions, user-

user conflicts may arise or increase if these differences are not addressed. In the planning process, managers should consider trail designs that target different users' needs. Considering changes to the trail design as part of the management actions for the alternative opportunity classes in the LAC process, may allow mangers to provide a quality recreation experience to its user groups, while protecting the resource on which the recreation opportunities depend.

## 4.0 Conclusion

Recreation management in the APBP is as complex and complicated as the resource itself. Due to the possible high use from the surrounding urban area, and the dedication to providing multiple use recreation opportunities, the APBP Commission is challenged with the management of a recreation resource that has a great potential for environmental impacts. In addition, the APBP protects a fragile and unique ecosystem, which is relatively susceptible to recreation impacts because of its sandy soils. In order to protect the resource and provide a quality, multiple use recreation area, the APBP managers create a recreation management plan that incorporates the information about the environmental and social conditions of the APBP. Using the LAC process, they can incorporate these data into their recreation plan and future monitoring program. Since the data shows that impacts are occurring with present number of visitors, there is an indication that management actions to address environmental impacts may be required. In order to achieve the APBP Commission's vision of preserving the pine barrens ecosystem and providing opportunities for recreation, heritage and education, the APBP managers must analyze the baseline data, illustrating the current social and environmental conditions and decide how to deal with unacceptable changes.

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# LEAVE NO TRACE AND NATIONAL PARK WILDERNESS AREAS

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## Abstract

Leave No Trace (LNT) is an educational program designed to reduce recreationalists' impact on the nation's wildlands. The goal of this research was to determine how the National Park Service (NPS) uses individual park websites to disseminate information about LNT principles. Forty-five NPS units containing wilderness were evaluated. Although both the parks and the wildernesses have existed for more than a decade, there is less use of LNT than might be expected. Over one third of the parks do not mention LNT at all. Of the parks that do mention LNT, some only mention it in administrative documents rather than ones users would be most likely to view during trip planning. To better protect wilderness values, the NPS should make more use of their websites to communicate LNT principles. If educational programs like LNT are not effective, a more heavy-handed regulatory approach will be needed to protect wilderness values.

## 1.0 Introduction

As backcountry and wilderness recreational use in the U.S. grew, so did impacts to the biophysical resource. Agencies used various methods to reduce impacts including restricting user activities. However, wilderness management principles dictate that managers' first priority to reduce user impacts should be to use education, primarily outside of wilderness, rather than restrict users within wilderness (Hendee and Dawson 2002).

Leave No Trace (LNT) is probably the most well known effort to educate users in hopes of changing their attitudes and subsequent behavior when recreating in the nation's wildlands. A Memorandum of Understanding formalized a partnership between the Bureau of Land Management, Fish and Wildlife Service, Forest Service and the National Park Service and Leave No Trace, Inc. to collaboratively work on modifying users' behaviors (Marion and Reed 2001). The Leave No Trace Center for Outdoor Ethics is "dedicated to promoting and inspiring responsible outdoor recreation through education, research and partnerships. Leave No Trace builds awareness, appreciation and respect for our wildlands" (Leave No Trace 2004).

**Table 1.—Leave No Trace Principles**

| |
|---|
| Plan Ahead and Prepare |
| Travel and Camp on Durable Surfaces |
| Dispose of Waste Properly |
| Leave What You Find |
| Minimize Campfire Impacts |
| Respect Wildlife |
| Be Considerate of Other Visitors |

Source: (LNT 2004)

The Leave No Trace program's widespread adoption is due in part to the fact that their principles are based on science. Print media are distributed widely by both land management agencies and LNT, Inc. The seven principles are packaged as short phrases in hopes that people will better retain the messages (Table 1). They also have an active program utilizing classroom and field training activities.

The focus of this research is to determine how the Leave No Trace message is communicated via National Park Service (NPS) websites that have Congressionally-delegated wilderness within them. The results of this research are important because if educational programs like LNT are not effective, a more heavy-handed regulatory approach will be needed to protect wilderness values.

## 2.0 Methods

The NPS was used in this research for several reasons. First, the public generally views the parks as having a recreational emphasis, which is the focus of LNT. Second, of the four land management agencies, their mission is the most restrictive; thus, they might be expected to have widely disseminated the LNT message. Only parks with wilderness areas were examined because one might expect wilderness areas to be the ones with the highest degree of protection and thus, would mention LNT more frequently. Another reason for only looking at the NPS is because they have the fewest number of wilderness areas (Figure 1).

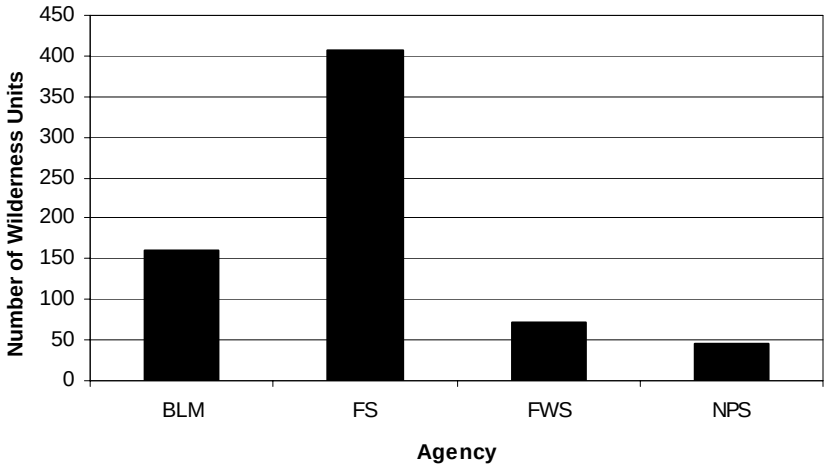


Figure 1.—Number of Wilderness Areas Managed by the Four Land Management Agencies

While the NPS communicates the LNT and other low impact messages using a variety of techniques (e.g., brochures, signs, ranger communication), the focus of this research was NPS websites. National Park Service websites were examined in this study because they were easily accessible by both the public and researchers.

Parks with wilderness designations were obtained from www.wilderness.net (Table 2). As of December 2002, 45 parks had wilderness designations. For the purposes of this research, park is used generically to refer to any unit of the National Park Service. The website was downloaded using Adobe Acrobat. A search was done for the following phrases: Leave No Trace or LNT. Each time either of these phrases was identified, their location and the type of information on each page were entered in a spreadsheet. Statistical analysis was done using SPSS.

## 3.0 Results

The results are broken down into two sections. The first section focuses on summarizing information about the dataset. The second section focuses on the LNT message.

### 3.1 Dataset

A total of 55,726 pages were analyzed. The average size of a website was 1,238 pages (median 501). The smallest website, Kobuk Valley, had 8 pages while the largest, Yosemite, had 14,581 pages. Most NPS websites are extensive indicating the websites can be a robust source of data for researchers to analyze. Larger websites had more user-related content but often website size had more to do with the number of administrative documents included in their entirety (e.g., General Management Plan, Environmental Assessment).

National park size varies considerably for the 45 units with wilderness (Fig. 2). Devils Postpile was the smallest unit analyzed and Wrangell-St. Elias was the largest. The number of recreational visitors and park size varies considerably (Figure 3, Table 3). Recreational visits is significantly larger than wilderness visits, but it is used as a proxy for the popularity of the park. Noatak had the fewest visitors in 2001 and Gulf Islands had the most. There is a slight negative, but not statistically significant, correlation, between park size and number of visitors.

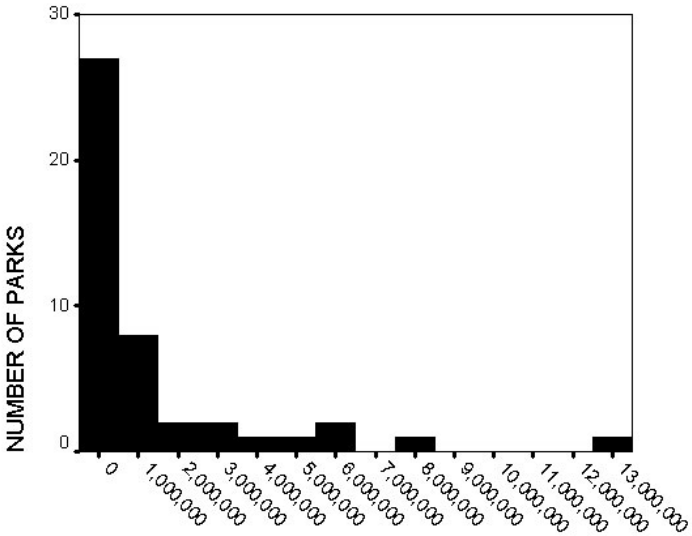


Figure 2.—Distribution of Parks by Park Acreage

**Table 2.—NPS Units with Wilderness as of December 2002**

| |
|---|
| Badlands National Park |
| Bandelier National Monument |
| Black Canyon of the Gunnison |
| Buffalo National River |
| Carlsbad Caverns National Park |
| Chiricahua National Monument |
| Congaree Swamp National Monument |
| Craters of the Moon National Monument and Preserve |
| Cumberland Island National Seashore |
| Death Valley National Park |
| Denali National Park and Preserve |
| Devils Postpile National Monument |
| Everglades National Park |
| Fire Island National Seashore |
| Gates of the Arctic National Park and Preserve |
| Glacier Bay National Park and Preserve |
| Great Sand Dunes National Preserve and Monument |
| Guadalupe Mountains National Park |
| Gulf Islands National Seashore |
| Haleakala National Park |
| Hawaii Volcanoes National Park |
| Isle Royale National Park |
| Joshua Tree National Park |
| Katmai National Park and Preserve |
| Kobuk Valley National Park |
| Lake Clark National Park and Preserve |
| Lassen Volcanic National Park |
| Lava Beds National Monument |
| Mesa Verde National Park |
| Mojave National Preserve |
| Mount Rainier National Park |
| Noatak National Preserve |
| North Cascades National Park |
| Olympic National Park |
| Organ Pipe Cactus National Monument |
| Petrified Forest National Park |
| Pinnacles National Monument |
| Point Reyes National Seashore |
| Rocky Mountain National Park |
| Saguaro National Park |
| Sequoia-Kings Canyon National Park |
| Shenandoah National Park |
| Theodore Roosevelt National Park |
| Wrangell-St. Elias National Park and Preserve |
| Yosemite National Park |

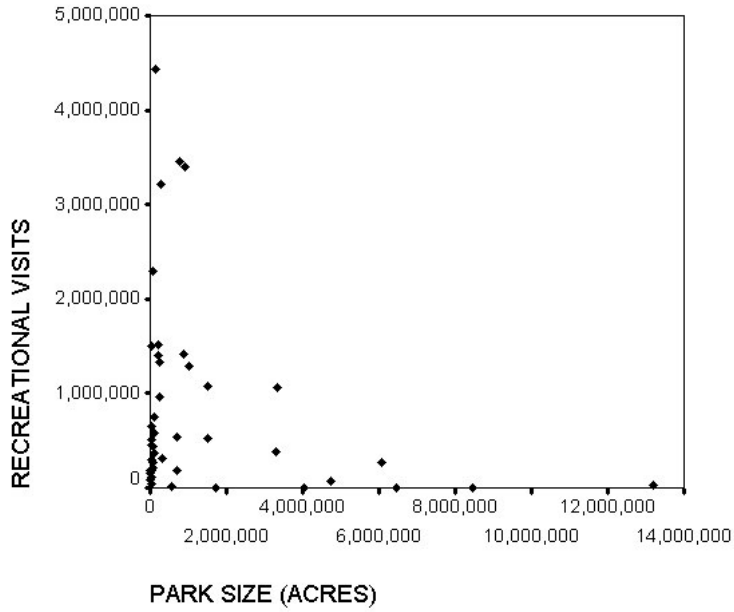

Figure 3. Recreational Visits Compared To Park Size

**Table 3.—Park Information**

| Statistics | Recreational visits | Park size (ac) |
|---|---|---|
| Minimum | 3,912 | 798 |
| Mean | 819,063 | 1,388,366 |
| Median | 441,989 | 209,695 |
| Maximum | 4,428,944 | 13,175,903 |

In keeping with the overall distribution of public land in the US, the majority of the parks with wilderness designations are found in the West (Table 4). The age of parks is important to examine because older parks would had more time to create their websites. Most of the parks (71%) were created prior to the Wilderness Act in 1964 (Fig. 4). All of the wilderness units within the park unit were designated between 1970 and 1994; thus, the most recent wilderness was designated eight years before this data set was obtained (Fig. 5).

The average percentage of wilderness for the 45 units is 58%. Only 16 of the units have less than 50% of the unit designated as wilderness (Figure 6). Rocky Mountain has the lowest percentage of the park unit as designated wilderness (1%) while Death Valley has the largest (97%).

**Table 4.—Regional Distribution of Parks**

| Region | Percent |
|---|---|
| Pacific West | 36 |
| Intermountain | 24 |
| Alaska | 18 |
| Midwest | 9 |
| Southeast | 9 |
| Northeast | 4 |

### 3.2 Mention of LNT

The number of times Leave No Trace was mentioned was counted. The dataset is heavily skewed by two national parks (Figure 7). Olympic National Park includes an individual page devoted to each of their hikes and Rocky Mountain National Park includes a similar designation for their backcountry hikes; both include at least one mention of leave no trace on the hikes. These two parks account for 75% of the 850 times LNT was mentioned for the 45 parks. The two outliers prevent the use of a mean as useful measure for subsequent analyses (mode was 0 mentions of LNT, and the median was 2). Figure 8 shows that 35% of the parks with wilderness do not mention LNT anywhere on the website. In some cases the only mention of LNT occurred on administrative pages (e.g., General Management Plan, Environmental Assessment).

Twenty-seven percent of the parks contained at least one link to the LNT website. The median and mode for links to the LNT website was 0. Few (13%) of the parks listed all seven principles (Fig. 9). Nearly 50% did not list any of the seven principles. The most commonly listed principle was "Dispose of Waste Properly" while the least mentioned is "Respect Wildlife" (Fig. 10).

Spearman correlation coefficients were analyzed for mention of Leave No Trace (recoded as yes or no) and the actual number of times LNT was mentioned. I speculated that parks and wilderness areas that are older will mention LNT and will mention it more frequently than newer parks or wilderness areas. Although there is a positive correlation, it is not statistically significant (Table 5).

I also thought that larger parks and wilderness areas would mention LNT and mention it more frequently than smaller ones. There is a positive correlation between

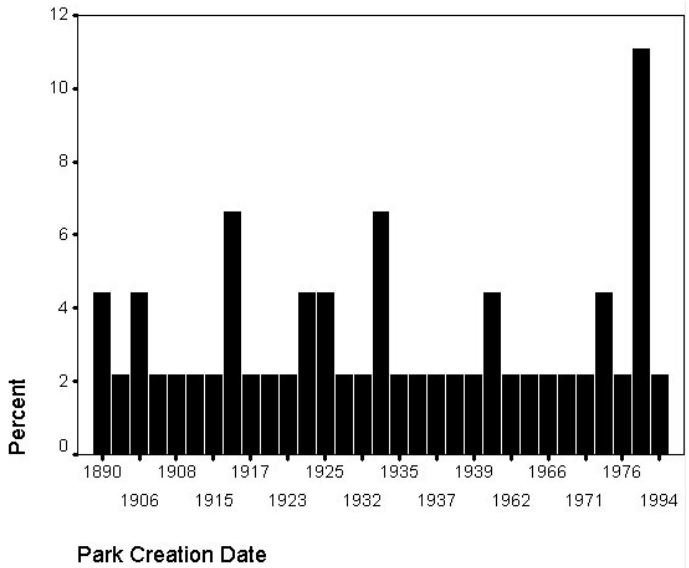

Figure 4.—Distribution of Parks by Date of Creation

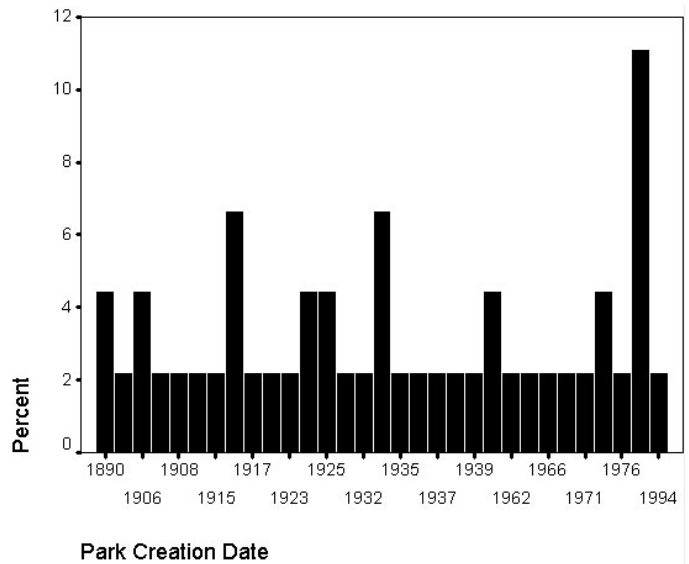

Figure 5.—Date Wilderness was Designated in Each NPS Unit

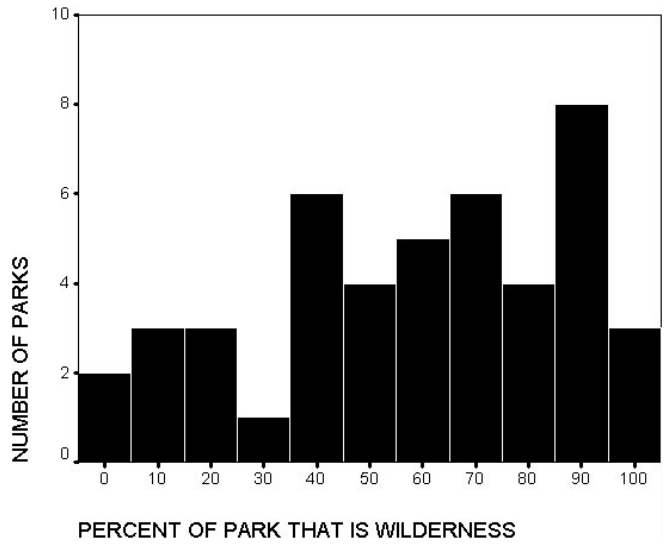

Figure 6.—Number of Park Designated as Wilderness

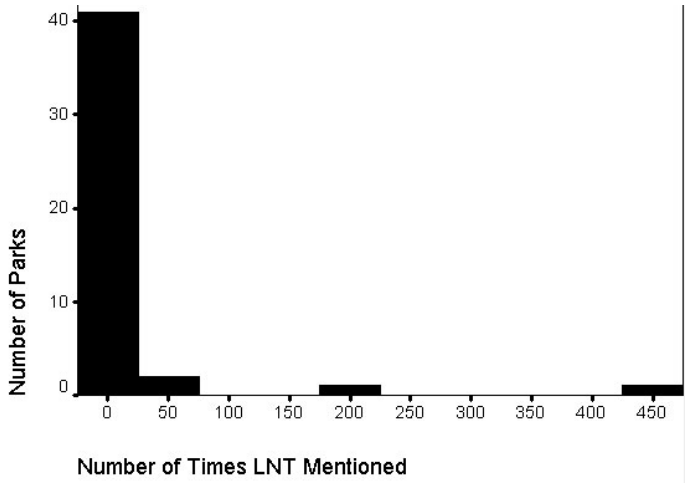

Figure 7.—Number of Times National Parks Mention LNT

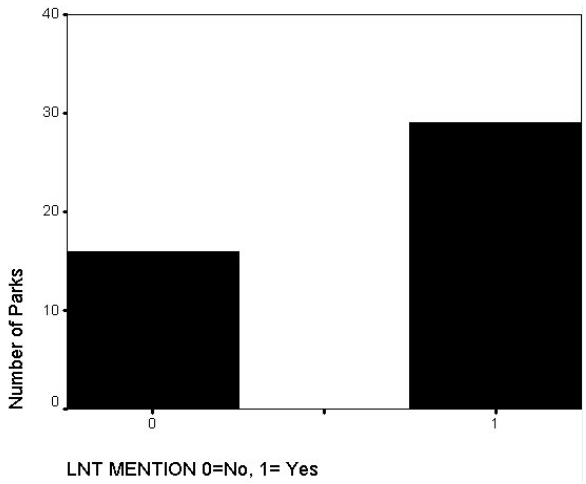

Figure 8.—Breakdown of the Number of Times National Parks mention LNT

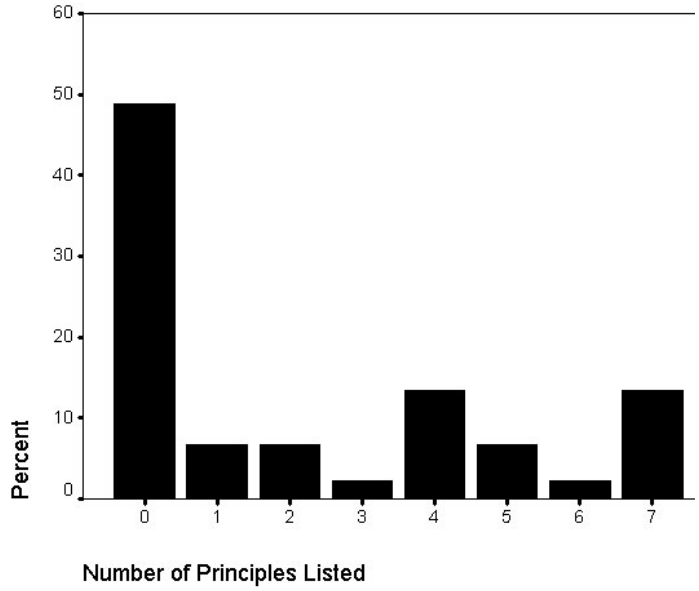

Figure 9.—Number of Principles Listed

wilderness and park size (Table 5). There is a statistically significant correlation between the number of times LNT is mentioned and wilderness size. There is also a statistically significant correlation between park size and the mention of LNT at all (as opposed to the number of times mentioned).

Parks with a larger percentage of wilderness might be expected to mention LNT and mention it more frequently than those with a small percentage of wilderness. There is a correlation but it is negative – the higher the percentage of wilderness found in a park, the less likely LNT is mentioned or is mentioned frequently (Table 5).

Finally, the number of recreational visits is positively correlated and statistically significant for both mention of LNT and frequency of mention.

## 4.0 Discussion and Conclusions

There is significant variation in park size and number of recreational visitors to a NPS unit containing wilderness. The parks have existed for a long time, wilderness designation was made more than a decade ago, and wilderness occupies a majority of most parks. These attributes of the dataset were hypothesized to be strongly positively correlated with the mention or frequency of mention of Leave No Trace, but in most cases the correlation is weakly positive and not statistically significant.

Despite the decade old Memorandum of Understanding with Leave No Trace, Inc. there is less usage of the LNT message on NPS websites than would be expected. This is particularly disturbing given the park's preservation mission. Although other parks were not analyzed, one would expect the term to occur more frequently on park web pages with wilderness than for other parks. Even though two thirds of the parks with wilderness do mention LNT, some of them only do so as a link to the Leave No Trace website. Linking to LNT is good, but the principles were designed to be short; thus, it may be advantageous for the National Park Service to list the LNT principles in addition to linking to LNT. The NPS should try to disseminate the Leave No Trace message as often as possible. Since the LNT message is relatively static, it could easily be added to many places on NPS websites and would require little updating. If the Leave

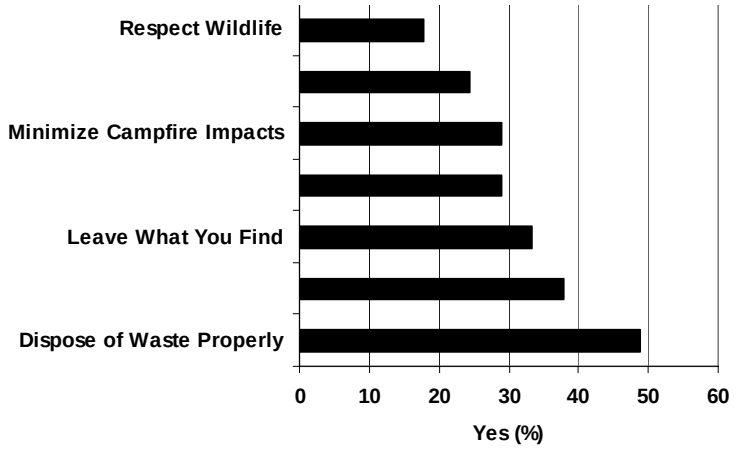


Figure 10.—Frequency of Mention for Each LNT Principle

**Table 5.—Correlations of Leave No Trace With Several Variables**

| Variable | LNT (yes or no) | LNT (number of times it occurs) |
|---|---|---|
| Wilderness Year | 0.110 | 0.175 |
| Wilderness Size | 0.164 | *0.316 |
| Wilderness Percent | -0.153 | -0.014 |
| Park Year | 0.153 | 0.037 |
| Park Size | **0.415 | 0.289 |
| Number of Recreational Visits | *.353 | *.303 |

*= statistically significant at 0.05 level
**=statistically significant at 0.01 level

No Trace message isn't communicated regularly and subsequently adopted by wilderness users, the wilderness resource will suffer. The result will be the inevitable use of regulatory techniques to reduce the human impact on wilderness values.

## 5.0 Limitations

There are several limitations to the study. First, the content of a park's website may be decentralized in that there may be many contributors. Wilderness stewardship is a collateral duty for nearly every NPS employee; thus, given the multiplicity of duties, updating the website may take a low priority. Second, the point behind the principles may appear on the website, but the LNT phrase may not accompany the principles.

## 6.0 Acknowledgments

The assistance of Soon Hong from GVSU's Statistical Consulting Center is much appreciated.

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# VISITOR PERCEPTIONS OF INTELLIGENT TRANSPORTATION SYSTEMS IN A NATIONAL PARK

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## Abstract

Congestion in national parks is an issue of concern for both visitors and managers. Increased visitation has resulted in a need to plan and manage for a balance between the visitor experience and resource protection. Understanding access issues, in particular as a way to ease congestion, improve the quality of the visitor experience, and maintain the integrity of the resource is integral to this process.

In 1991 Congress created the Intelligent Transportation Systems (ITS) program to address the needs of the transportation network in the United States. ITS solutions include technologies such as electronic toll collection and electronic message signs.

This study examined visitor attitudes toward and intent to use ITS in two of the national park units in California. The findings suggest a positive relationship exists between attitude and intention in regard to ITS tools in national parks, and between technology experience and intent to use technology at the study parks.

## 1.0 Introduction

The dual purpose of the National Park Service calls for preservation of resources as well as visitor enjoyment. The current use level of many of the parks is relevant to both aspects of the park mission; higher numbers of visitors can lead to resource damage and can also lower visitor enjoyment of the resource (Gramann 1982). Congestion, or crowding, in the parks has been the subject of many studies over the last thirty years, although the focus has been largely on the backcountry or primitive use areas rather than the frontcountry or developed areas of the parks (Ditton et al. 1983; Patterson & Hammitt, 1990; Lewis et al. 1996). While the number of visitors to the parks has fallen somewhat in the past few years (2000 and 2001 visitation was approximately 285 million and 280 million respectively), there have been increases at individual park units (e.g. Sequoia and Kings Canyon National Parks) (Public Use Statistics Office 2002). The continued demand for national park experiences draws attention to the need to study access to the parks, particularly the developed or frontcountry areas. The National Park Service (NPS) has utilized a series of development strategies over the years. One such strategy was Mission 66, a 10-year program created in 1956 to increase the number of facilities in the parks in response to ever increasing numbers of visitors. However, a more recent emphasis on preservation over use calls for the development of lower impact solutions that address impacts from congestion and crowding. As stated by Robert Stanton, then Director of the National Park Service, "As visitation to the parks continues to increase dramatically, so too does the challenge of ensuring resource protection while accommodating visitors and providing enjoyable experiences for them. We cannot simply build and widen roads and parking lots" (1999).

One approach to managing access is intelligent transportation systems. This approach uses information technology to improve transportation services for the public (U.S. Department of Transportation 1998). More specifically, ITS is used to address access and congestion concerns such as bottlenecks and safety. As noted by Roggenbuck (1992), visitors with better information may have more realistic expectations and, therefore, may be better able to reduce or avoid negative evaluations of their experience. The national park experience includes the journey to and through the parks. Thus, this study examined visitor attitudes towards ITS tools and their intentions to use them in two national parks in California.

## 2.0 Literature Review

### 2.1 Intelligent Transportation Systems

A 1997 Memorandum of Understanding (MOU) between the Departments of Transportation and The Interior set in place an agreement to examine a variety of joint transportation projects, including ITS in national parks. ITS tools include vehicle detection technologies, closed-circuit television cameras, electronic message signs, global positioning systems (GPS) to track vehicles such as shuttles, and use of the Internet to provide up-to-date

information to visitors. At a workshop in June 2002, transportation and national park experts agreed that the four most important issues with possible ITS solutions are: 1) provide driver information about roadway conditions to alleviate congestion; 2) provide information that allows visitors to make informed decisions about transit; 3) provide accurate, real-time information such as traffic, weather, and park conditions (e.g. openings and closings); and 4) use information systems to direct visitors to less congested areas (Volpe National Transportation Systems Center 2001). Furthermore, in addition to improving transportation safety and efficiency, ITS is intended to "enhance the visitor experience and contribute to the preservation of park resources" (Plosky et al. 2001).

A study examining tourists' use of ITS in the Branson, Missouri area and in northern Arizona (i.e. the Grand Canyon region) found several factors that affect the use of ITS (Clark 2000). The first factor, distance traveled, determined the type of information sought; general area information was obtained by those further away (often via the Internet) while detailed information (e.g. hotel and restaurant information) was more important to visitors once in the area. A second factor, previous experience in the area, had a varied effect. Repeat visitors to Branson had more knowledge of how to get around the area and avoid the congested times of day, while experienced northern Arizona visitors wanted information on new secondary sites. Both groups also expressed a need for information on the third factor, season and weather. Harsh winter weather in northern Arizona created the need for weather advisory and road condition updates, while peak season use (e.g. Christmas shopping) was a concern in the Branson area.

Changes in access to an area through route changes, changes in information available to the public or changes in the type of access allowed, may affect visitor behavior. An understanding of the types of visitors that travel to certain parks, as well as the way in which they plan their trips, is key to management's ability to determine the most effective way to provide traveler information in order to manage access. Furthermore, a summary of the National Workshop to Develop an Intelligent Transportation Systems Strategy for the National Park Service identified differing needs for various park types. Urban park representatives emphasized the need for in-park transit information, rural park representatives cited the need for initial trip planning information (e.g. is the park closed), and parkways representatives believed that their goal of fast, efficient travel could be best met by a travel information system that focused on roadway incidents and congestion (Volpe National Transportation Systems Center 2001).

### 2.2 Attitude Based Theories

Attitudes have long been considered to influence behavior. Early definitions of attitude include "the affect for or against a psychological object" (Thurstone 1931), and "an implicit, drive producing response considered socially significant in the individual's society" (Doob 1967). Critical to the early literature was the belief that attitudes were learned; therefore, motivation and perception must be considered relevant to the concept (Doob 1967). The expectancy-value models expanded on this, stating that attitude toward an object is drawn from an individual's salient beliefs, which are a function of the tendency to form beliefs about and evaluate the object's attributes (Ajzen & Fishbein 1980). These models also emphasized that two individuals can share the same attitude about an object, but behave differently as a result of differing evaluations of the consequences of performing the behavior. Alternatively, two individuals may share the same evaluation of behavioral consequences, but not share the same attitude toward that behavior (p. 67). Lawler (1973) stated that there are two things that must be known in order to predict possible behavioral choices: 1) the general classes or groups of outcomes that people find desirable or undesirable; and 2) the factors that influence the desirability of outcomes. He also maintained that some of the variables that may influence expectations are past experience, communication with others, the situation at hand, and personality. Understanding attitudes can provide a dual use for managers: a source of information to help guide managers and a social control tool that provides managers the ability to target attitudes that cause undesirable behaviors (Heberlein 1973).

The theory of planned behavior has also been utilized in studies regarding the adoption of technology. Klobas and Clyde (2000) attempted to determine what factors were important when measuring intent to use the Internet. Attitudes were an important factor, particularly as the acceptance of the Internet "as part of the future" outweighed perceived barriers to use (p. 32). A study that focused on the acceptance of technology by physicians

found that attitudes and perceived behavioral control were important determinants (Hu & Chau 1999). In this study, attitudes were measured as "positive or preferential attitudes toward use of telemedicine technology" (p. 29). Perceived behavioral control was measured as the perceived availability of training and access to telemedicine technology.

## 3.0 Methodology

The research team included the Western Transportation Institute, Texas Transportation Institute, California Department of Transportation, and the Recreation, Park & Tourism Administration Department at Texas A&M University. The research team held several meetings with stakeholder groups in California, including representatives from the National Park Service, USDA Forest Service, chambers of commerce, city transportation and safety experts, and park users in the San Francisco Area. As a result of these meetings, Golden Gate National Recreation Area (GOGA) and Sequoia and Kings Canyon National Parks (SEKI) were chosen by the research team as the study parks. Golden Gate National Recreation Area is one of the largest urban parks in the world and, with nearly 14 million visitors per year, is the most popular park within the national park system. The park is located on two peninsulas between the Pacific Ocean and San Francisco Bay in western California, and is linked by the Golden Gate Bridge.

Sequoia and Kings Canyon National Parks are located in central California on the eastern side of the San Joaquin Valley in the Sierra Nevada Mountains. Fresno and Visalia are the two principal cities located nearest the Park entrances, with Squaw Valley and Three Rivers serving as the gateway communities. Encompassing nearly 900,000 acres, SEKI contains a variety of natural features including sequoia groves, glacial canyons, rugged mountain terrain, and numerous caverns.

Visitors were surveyed at each park during the weeks of March 10-16, May 19-25, and July 14-20, 2002. The March survey was used as a pilot study to check the validity of the questionnaire. The survey team intercepted every nth visitor at various locations in the parks to obtain a random sample of park visitors. Contact locations (i.e. visitor centers, parking lots, museums) were rotated in an attempt to reach a random, yet widespread, population. A brief on-site survey was completed by each contact, who was then given a mail-back survey to return after their visit to the park. Nonresponse bias was checked by comparing the on-site survey items between the respondents and non-respondents. A modified Dillman approach was employed for each survey round. This approach endorses repeated follow-up with the contacted park visitors. First, a postcard reminder was mailed two weeks after the end of each survey distribution period. Secondly, a follow-up letter with a copy of the survey was mailed 2 weeks following the mailing of the postcard reminder.

The comprehensive study addressed traditional (e.g. tour books), alternative (e.g. shuttles) and intelligent transportation and travel planning tools. Visitors were asked a wide range of questions that addressed their experience with national parks, the study parks, and technology. Their attitudes towards and intent to use traditional, alternative and intelligent travel planning tools were also addressed. As stated earlier, the focus of this paper is on intelligent transportation tools. Attitudes toward transportation and travel planning tools in national parks were measured using an appropriateness scale. This was a five-point Likert scale ranging from inappropriate to appropriate. Respondents were asked to indicate how appropriate they believed each transportation and travel planning tool was for use in national parks (e.g. optional shuttle in park, tour book, PDA). Next, behavioral intent was addressed by asking respondents to rate how likely they were to use each of the media forms (e.g. tour book, GPS) and transportation modes (e.g. public bus, free shuttle) before arriving at the study parks (either before leaving home or en-route), and while at the study parks. This scale ranged from "not at all likely" to "very likely."

Multiple regression analysis was utilized to determine which predictor variables best explain the dependent variables: attitude and intention (Stevens 1996). The predictor items included external (e.g. past and current behavior) and internal (e.g. perceived conditions) antecedent variables. This type of analysis has been used to discern the strongest predictor variables in previous studies regarding attitudes (Ajzen & Driver 1992) and motivations (Lee et al. 2002).

## 4.0 Results

A total of 687 fully deliverable surveys were distributed at SEKI in May and July; 454 were returned for a response rate of 66.1 percent. At GOGA, a total of

**Table 1.—Factor Analysis of Appropriateness in National Park Items Used to Measure Attitude**

| | Factor Loading | Eigen-value | Variance Explained | Alpha |
|---|---|---|---|---|
| Traditional Electronic Media ($M^1$ = 3.9) | ----- | 4.46 | 27.90 | .86 |
| Commercial Radio | .844 | | | |
| Information Radio | .771 | | | |
| Commercial TV | .766 | | | |
| Park video | .765 | | | |
| NPS radio | .733 | | | |
| Electronic Signs ($M^1$ = 3.3) | ---- | 1.75 | 10.96 | .88 |
| EMS on parks roads | .915 | | | |
| EMS in parking lots | .903 | | | |
| Traditional ($M^1$ = 4.7) | ---- | 1.45 | 9.07 | .53 |
| Talk to ranger at park | .676 | | | |
| Visitor center info kiosks | .674 | | | |
| Tour book | .616 | | | |
| Optional shuttle in park | .542 | | | |
| Alternative Transportation ($M^1$ = 3.3) | ---- | 1.40 | 8.74 | .61 |
| Park and Bike | .793 | | | |
| Mandatory shuttle in park | .769 | | | |
| Public bus to park | .587 | | | |
| Technology ($M^1$ = 3.0) | ---- | 1.14 | 7.10 | .57 |
| Internet terminal in park | .856 | | | |
| PDA | .770 | | | |

[1]Mean scores based on scale of 1 -5 with 1 equaling inappropriate and 5 equaling appropriate.

368 fully deliverable surveys were distributed; 206 were returned for a response rate of 56.0 %. Overall, 48.7% of respondents were males and 51.3% were female. The overwhelming majority (90.6%) was white, and most respondents (69.4%) were between 35 and 64 years of age. Additionally, the majority was employed full-time (53.5%), although the next largest group was the retirees (21.4%). While 26.5% of SEKI respondents were retired, only 10.7% of GOGA respondents were retired. The majority of respondents (68.5%) also had at least a college degree. Most respondents earned over $40,000 per year; only 12.6% earned less. The respondents also included a large percentage of repeat visitors; over 38% had made one or more additional visits to the respective study parks during the previous year. Moreover, while 40.0% of respondents had visited three or fewer national parks during the preceding five years, 37.4% had visited seven or more national parks during that time.

A principal components factor analysis with Varimax rotation was conducted on the items included in the appropriateness scale to reduce the variables into underlying factors (Gall et al. 999). A Varimax rotation with Kaiser Normalization is the extraction method recommended by Stevens (1996). This method ensures that the resulting factors are uncorrelated and better enables interpretation of the factors. The result factors explained 65.39 percent of the variance (Table 1). These factors were traditional electronic media, electronic signs, traditional tools, alternative transportation, and technology. For the purposes of this paper, only the ITS items (e.g. technology, electronic signs) will be discussed.

Intent to behave was operationalized in a "likely to" scale. This five-point scale (1 = not at all likely, 5 = very likely) asked respondents to rate how likely they were to use each item while they were at the study parks. The principal components factor analysis with Varimax rotation revealed six factors that explained 70.85% of the variance. These six factors represented alternative transportation, kiosks, technology, TV and radio, EMS/HAR and traditional travel planning tools. As the focus

in this paper is on ITS, there are two factors of concern here, technology and EMS/HAR (electronic message signs and highway advisory radio).

There were several key findings derived from this study. The first was that attitudes regarding the appropriateness of ITS tools were predictive of the two ITS intention domains, technology and EMS/HAR. The technology intent factor included likelihood of using a park web site, other web site, current Internet, and PDA devices at the study parks. The EMS/HAR factor included electronic message signs and highway advisory radio at the study parks. Second, past experience with technology (as an individual independent variable) was related to attitudes toward technology in national parks. This supports the hypothesis that those with higher levels of experience with technology will assign a higher level of appropriateness to technology in national parks. Moreover, technology experience was also predictive of visitors' intentions to use technology (e.g. the Internet) at the study parks. Third, park type was predictive of the intent to use EMS/HAR tools at the study parks; furthermore, it was more likely at the rural park (SEKI) than the urban park (GOGA). Finally, one demographic, age, was predictive of the likelihood of using technology (e.g. the Internet) at the parks. There was an inverse relationship between intent to use the Internet and age.

## 5.0 Discussion

The strength of the relationship between attitudes and intentions, particularly in regard to technology, supports the literature and provides an insight to the potential use of these tools in the study parks. The relationship between experience with technology and both attitude toward and intent to use this technology at the study parks adds weight to this potential of these tools, particularly in the long term. Those with the highest level of experience with technology tended to be younger; 67% of "high tech" respondents were under 50 years of age. Alternatively, 69% of "low tech" respondents were over 50. As the population continues to age, the portion of the population that is not technologically savvy will continue to decline; technology such as PDAs, cell phones and the Internet are pervasive in society, particularly among the younger generation many of whom do not remember a world without these tools.

The greater likelihood that electronic signs and highway advisory radio would be used at the rural park (SEKI) rather than the urban park (GOGA) may have been related to external variables such as weather. While these two tools are more common in urban areas, snowstorms and road closings in Sequoia and Kings Canyon National Parks during the study may have influenced visitors' responses. Additionally, there is a highway advisory radio notice sign near the south entrance of SEKI. However, several respondents noted that the radio signal was not effective in the mountains, and, therefore, not particularly useful. While highway advisory radio has been in use much longer than most ITS tools, it is part of an integrated ITS system. Further study is needed to determine the potential effectiveness of this tool as part of this system.

Given the rapidly increasing uses of technology in society in general (e.g. cell phones with cameras and text messaging), it is likely that these tools will find their way into the national parks. The greater acceptance of these tools by the younger generations indicates that the use of these tools will become increasingly common over time. The way that these tools are used in the parks is dependent on both the ITS systems provided by park management and continued developments in technology. The use of electronic signs to advise visitors of open parking areas, road closures and other transportation access issues can improve the visitor experience by reducing time spent searching for a parking space and providing more up-to-date information regarding weather conditions. As stated above, directing visitors to less congested areas, the ability of the visitor to make informed decisions and the provision of accurate, real-time information are some of the most important issues that ITS is intended to address. Therefore, use of these tools by visitors is necessary to have a successfully integrated system. The visitor attitudes toward and willingness to use these tools as demonstrated in this study suggest that these tools have the potential to provide low impact solutions to congestion and crowding in the study parks.

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# ESTIMATING VISITOR USE AND DISTRIBUTION IN TWO ADIRONDACK WILDERNESS AREAS

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## Abstract

This study evaluated the temporal and spatial distribution of use and the patterns of use in two Adirondack wilderness areas from May through November of 2003. The three methods used for collecting the baseline data for this study were: active infrared trail counters, trail registers, and on-site visitor interviews. The locations for collecting information via registers, counters, and interviews were at major trailheads that provide access to these wilderness areas. Each method provided unique information relating to visitor use such as: group size, length of stay, destinations, and the dates and times visitors were utilizing the area.

## 1.0 Introduction

In June of 1972 the Adirondack Park Agency (APA) approved and submitted the master plan for management of New York's state lands following statutory procedures and extensive public hearings around the state. The master plan was designed to guide preservation, management, and use of these public lands by state agencies in the future. The overriding theme of the plan is to ensure protection and preservation of the natural resources of the state lands within the park. "It also serves as a place for human use and enjoyment, so long as the resources in their physical and biological context as well as their social or psychological aspects are not degraded (APSLMP 2001, p. 1)."

Section 816 of the Adirondack Park Agency Act directs the New York State Department of Environmental Conservation (NYSDEC) to develop, in consultation with the APA, individual management plans for each unit of land under its jurisdiction classified in the master plan (APA Act 1998). Major reviews of the master plan must take place every five years by the APA in consultation with the NYSDEC, as required by statute.

Each individual Unit Management Plan (UMP) must conform to the guidelines and criteria set forth in the master plan and cannot amend the master plan itself. These UMPs are required to contain an inventory and assessment of the physical, biological, and social attributes of each area as well as applicable administrative actions. UMPs should be used as a mechanism to refine and apply the general guidelines and criteria stated in the master plan to specific conditions on the ground, at a level of detail appropriate to administration and management. UMPs can assist in resolving questions of interpretation and application of the master plan (APSLMP 2001).

The Adirondack Park contains 17 units of wilderness totaling over 1 million acres. At the present time, 10 units have met the requirement for the individual UMP development (NYSDEC webpage 2004). Seven UMPs are either in the draft stage of development or have not yet been addressed. Of the 10 completed UMPs, most have not been reviewed 5 years from their date of completion as directed by the APSLMP.

UMPs are required to measure and monitor visitor use and its effects on the resources, which will aid in the planning and management of forest preserve areas. This study selected two areas based on the recommendations from the NYSDEC and other associated UMP planners. Neither area had a UMP and planners felt that this study would be beneficial to their developing UMPs for these two areas.

## 2.0 Site Descriptions

McKenzie Mountain and West Canada Lake Wilderness Areas are two major destinations for recreational users seeking a wilderness experience in the Adirondack Park.

McKenzie Mountain Wilderness area (MMWA) is located in the Northeast corner of the Adirondack Park. It is in Essex County in the towns of St. Armand, North Elba, Saranac Lake, Lake Placid, and Wilmington. These

areas are major destinations for visitors who generate a great deal of recreational use in MMWA throughout all seasons of the year. There are numerous trailheads to the 37,616-acre wilderness area providing public access from all sides.

MMWA is densely forested with mixed hardwoods and softwoods at lower elevations, while spruce and fir dominate the forest above 2,500 feet. The area is composed of steep and rugged terrain and the elevation ranges from 1,463 feet to 4,869 feet with excellent views from atop McKenzie, Haystack, Baker, and Moose Mountains. There are eight bodies of water and numerous pristine brooks and streams contributing to the lush ecosystems found in the valleys of MMWA.

Six trailheads provide access to destinations within MMWA such as Moose Pond, Mt Baker, Jackrabbit trail (east and west), Haystack / McKenzie mountains, and the Connery Pond trail which provides access to Whiteface Mountain. Spring, summer, and fall use in this area include hiking, camping, rock climbing, hunting, and fishing (APSLMP 2001).

West Canada Lake Wilderness area (WCLWA) is located in the Southwest corner of the Adirondack Park in Herkimer and Hamilton counties in the towns of Ohio, Morehouse, Arietta, Lake Pleasant, and Indian Lake. WCLWA is bounded on the north by Moose River Plains, on the east by both public and private land, on the south by Jessup River Wild Forest and private land, and on the west by West Canada Creek and private land. Access to several trailheads within this wilderness area is limited to travel on seasonally maintained dirt roads. Users of three public campgrounds and the Moose River Plains area, which are adjacent to WCLWA, contribute to use on some of the area's foot trails.

WCLWA consists of mixed hardwood and softwood forests with the terrain ranging from swamp flats and rolling hills to steep mountains. The elevation ranges from 1,390 feet in the valleys to 3,899 feet at the height of the land. This 156,695-acre wilderness area contains 168 bodies of water including numerous pond, lakes, and streams totaling 2,460 acres. There is also considerable acreage in spruce-fir swamps and beaver meadows (APSLMP 2001).

Eleven major trails provide access to destinations, such as Indian Lake, Falls Pond, Otter Brook, Northville-Lake Placid trail (north and south), Sucker Brook, Pillsbury Mountain, Miami River, Spruce Lake, T-Lake Mountain, and the South Branch trail. Recreational activities in this area in the spring, summer, and fall months include hiking, camping, hunting, and fishing.

## 3.0 Purpose of Study

The objective of this study is to aid UMP planners in developing baseline visitor use data in support of UMPs for each of the two wilderness areas. It will help establish a prototype for monitoring and implementation of visitor use assessments within these and other units within the Adirondack and Catskill parks.

## 4.0 Methods

Research was conducted on recreational use in MMWA and WCLWA in the Adirondack Park from May through November of 2003. The three methods utilized to gather data for this study are outlined below.

1. Estimations of recreational use with active infrared automated trail counters at eight access points in the MMWA and 11 access points in the WCLWA. The trail counters recorded the date and time that the users entered or exited the wilderness area from May 15 to November 1, 2003.
2. Brief on-site interviews were conducted systematically at all 19 major access points to the areas studied from May 15, 2003 to November 1, 2003. Interview questions were used to determine use characteristics and trip related experiences via the follow up survey.
3. Visitor data collected at 19 self-registration sites to gain information regarding date, group size, length of stay, and trip destination.

Active Infrared trail counters (sender and receiver units) were installed within 50 feet on each side of the trails providing access to the areas studied. They were mounted to trees with a large diameter in attempts to avoid false counts due to trees swaying in the wind. They were located on or near uphill or narrow portions of trail where users would likely be single file (Yuan et al. 1995). Camouflage was utilized to further conceal the equipment to prevent theft or tampering by the users.

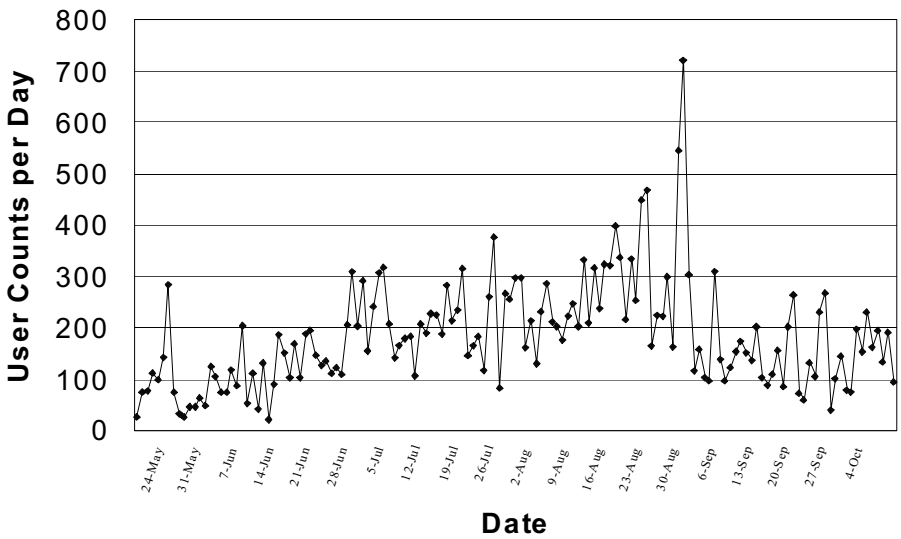


Figure 1.—McKenzie Mountain wilderness temporal distribution from trail counter data.

Vegetation that could potentially cause false counts between the two units was removed. Most operational problems in infrared trail counter equipment are related to improper initial setup and installation (Watson et al. 2000). Each pair of counters were visited weekly to download the previous week of data and to ensure that data was not lost because of equipment malfunction or changes in the surrounding area.

Trail register sheets from the trailheads were collected and entered into a spreadsheet for further analysis. Information gathered includes date, number of users per group, length of stay, and trip destinations. Registers provide valuable information about use in the area; however, signing is voluntary so participation was a concern (Watson et al. 2000).

Brief on-site field interviews were conducted to find out further trip-related information about each group entering or exiting the area. Information gathered includes group size, length of stay, number of previous visits to the wilderness area, trail register compliance, destination, date, time, type of user, and location of interview. The name and address of the interviewed users were also collected to send out more detailed surveys about trip related experiences. The follow-up surveys were mailed to the user promptly after the field interview to ensure a high response rate. Information was gathered regarding how the management activities in the area were perceived by the users and how those perceptions impacted their wilderness experience.

Using these techniques together can increase the validity of the data collected (Dawson et al. 2001). Analysis and comparison of the results of each technique provided additional detailed information about recreational users in the areas studied, allowing for more management implications to be made regarding use in the area.

## 5.0 Results and Discussion

To illustrate the temporal distribution of use in each area, trail counter event dates and frequencies were graphed (Figures 1 and 3). The x-axis dates represent Saturday of each week and the y-axis represents the number of events recorded per day. Similar trends were identified in both areas. Seasonally, use levels were lower early in the season with use picking up mid-summer and dropping back off as summer temperatures decline. Weekends received higher levels of use than that of weekdays. Holiday weekends were the most distinguishable peak times for recreational use. One noticeable difference between the two areas was that there was an additional spike of increased use in the fall in WCLWA, which can be attributed to late season backpacking and hunting.

Geographic Information System (GIS) software was used to illustrate the use and distribution of recreational users in each area (Figures 2 and 4). ArcGis 8.3 and ArcCatalog software was utilized to analyze the data gathered via trail counters, registers, and interviews. The coverages for each area were acquired from the APA's CD-rom set containing administrative data for the Adirondack Park. The purpose of these maps is to illustrate, using

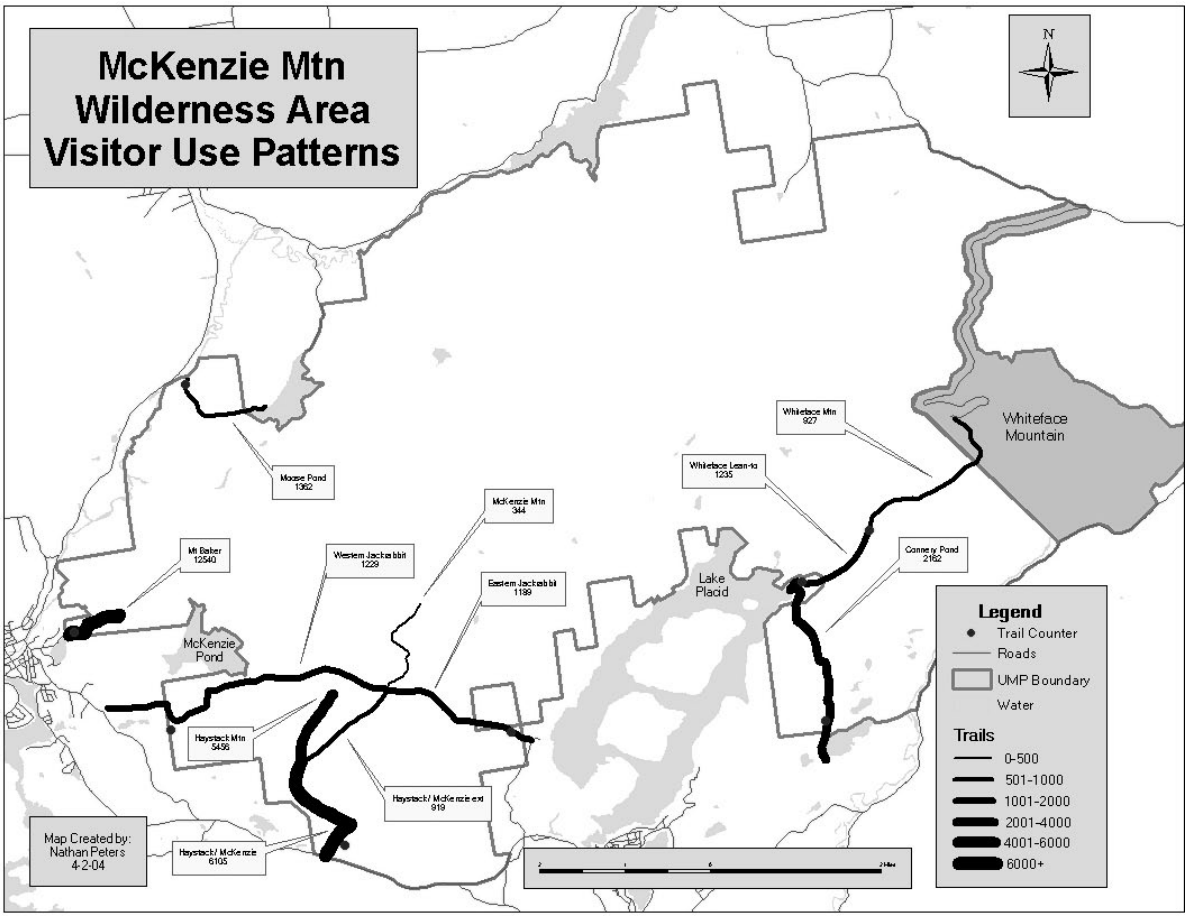


Figure 2.—McKenzie Mountain wilderness spatial distribution from trail counter and interview data.

a graduated line thickness, the use levels of each trail providing access to these wilderness areas.

Comparisons between data gathered via trail counters versus that gathered from trail registers indicate significant differences in each of the areas studied. The number of users accounted for in the trail registers were subtracted from the number of events on the trail counters divided in half, assuming all users hiked in and out on the same trail ((TC/2) -TR = difference). The difference column represents the number of users not accounted for in the trail register on each trail. Negative numbers demonstrate a higher frequency of compliance of those signing the trail register than the actual number of users reaching the trail counter (Tables 1 and 2). Speculations can be made that these differences are due to the location of the trail counter in relation to the trail register. Trails having negative differences had trail counters located more than a 5-minute walk from the trail register.

Throughout the study 84 interviews were attempted in MMWA and 105 in WCLWA (Table 3). Of those attempted, 83 were completed in MMWA and 103 in WCLWA.

**Table 1.—McKenzie Mountain Wilderness number of visitors from trail counters versus trail registers.**

| Trail | Trail Counter/2 | Trail Register | Difference |
|---|---|---|---|
| Whiteface Landing | 812 | 628 | 184 |
| Connery Pond | 1081 | 1412 | -331 |
| Jackrabbit (East) | 595 | 473 | 122 |
| Haystack / McKenzie | 2755 | 2564 | 191 |
| Jackrabbit (West) | 615 | 225 | 390 |
| Mt Baker | 6270 | 4211 | 2059 |
| Moose Pond | 681 | 374 | 307 |
| TOTAL | 12808 | 9887 | 2921 |

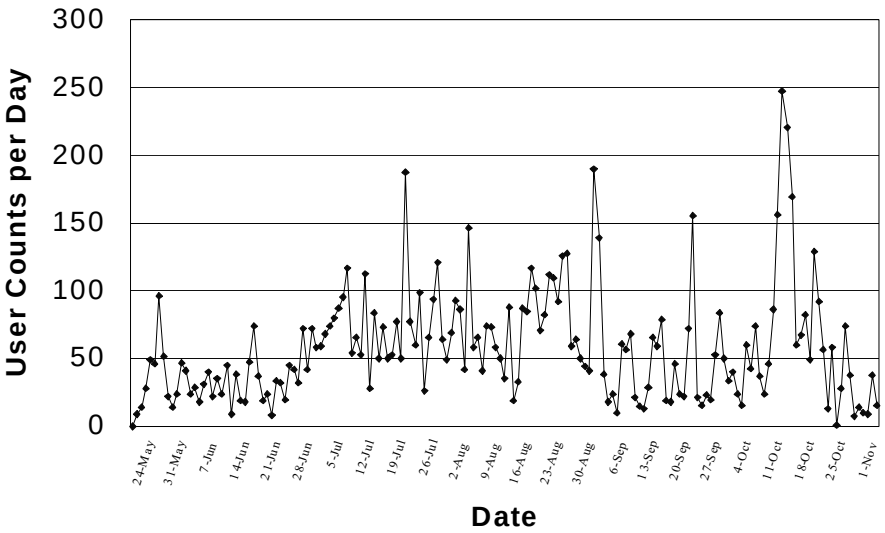


Figure 3.—West Canada Lake Wilderness temporal distribution from trail counter data.

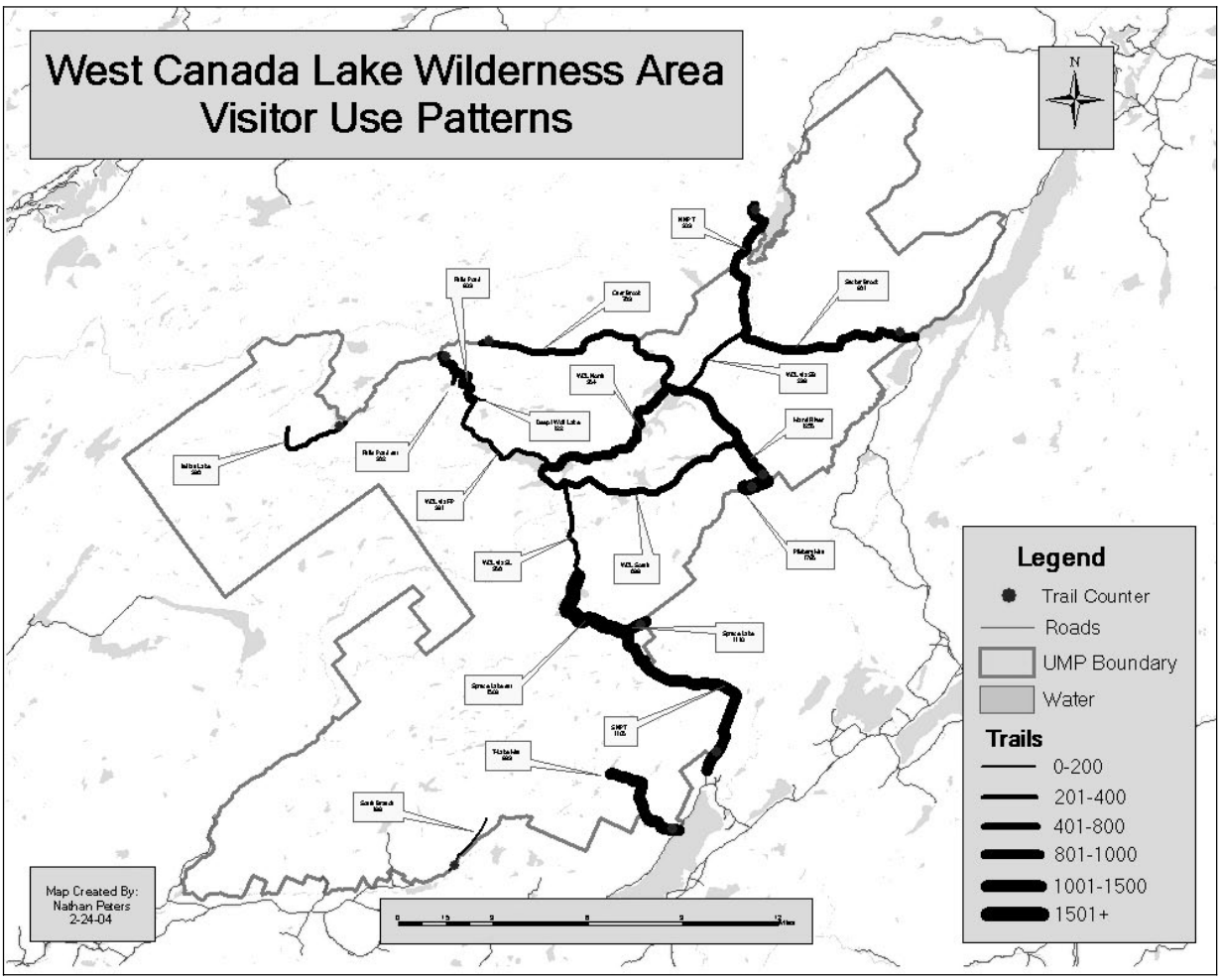


Figure 4.—West Canada Lake Wilderness spatial distribution from trail counter and interview data.

Responses from the field interview questions were analyzed to determine trail register compliance, day versus overnight use, and the number of previous visits to the area. In MMWA 44.6% of the users interviewed did not sign the trail register and in WCLWA, 8.0% did not sign (Table 4). In MMWA, day users were often non-compliant compared to the WCLWA (Table 5). In WCLWA, 5.0% of overnight users were non-compliant with signing the trail register (Table 5). The higher level of register non-compliance in MMWA could be attributed to users feeling more comfortable entering the area on short hikes due to its proximity to nearby developed areas; those entering WCLWA may feel a greater sense of remoteness.

Noncompliance was higher among those who had previous visits to the area: 52.8% of MMWA users had been to the area previously, but did not register, and in WCLWA, 8.8% of the users have been to the area previously, but did not register (Table 6). These differences could be attributed to the users feeling a greater sense of remoteness and risk when entering WCLWA compared to those entering MMWA.

In MMWA it was evident that users on short hikes and those with a greater familiarity with the area (i.e., had previous visits to the area) were less likely to be compliant with signing the register. In WCLWA, the level of non-compliant users who had been to the area previously did not greatly differ with familiarity to the area. WCLWA user registration compliance was most likely greater due to the remote character of the area and users wanting to be found if assistance was needed.

Comparing register noncompliance rates determined from the field interviews with those determined from analysis of trail registers and counters, it is evident that there is a difference. Based on interview responses, 45% of the users in MMWA were noncompliant while 8% were non-compliant in WCLWA. Noncompliance rates calculated when comparing the register and counter numbers were much lower than that found in the interviews, 23% in MMWA and 2% in WCLWA. The small sample size of interviews might explain (e.g. sampling error) why the estimated rate of non-compliance is higher based on the field interviews. Increasing the sample size would provide a rate of non-compliance that is more representative of the population.

**Table 2.—West Canada Lake Wilderness number of visitors from trail counters versus trail registers.**

| Trail | Trail Counter/2 | Trail Register | Difference |
|---|---|---|---|
| Sucker Brook | 340 | 497 | -157 |
| NPT (North) | 436 | 548 | -112 |
| Miami River | 628 | 575 | 53 |
| Pillsbury Mtn | 893 | 827 | 66 |
| Spruce Lake | 526 | 428 | 98 |
| NPT (South) * | 467 | 532 | -65 |
| T-Lake Mtn | 417 | 480 | -63 |
| South Branch | 94 | 127 | -33 |
| Indian Lake | 198 | 156 | 42 |
| Falls Pond | 405 | 376 | 29 |
| Otter Brook | 379 | 167 | 212 |
| TOTAL | 4783 | 4713 | 70 |

* Missing 20 days of trail register data.

**Table 3.—Visitor interview totals and refusal rates in 2003 studies.**

| | MMWA | WCLWA |
|---|---|---|
| Interviews Attempted | 84 | 105 |
| Interview Refusal Rate | 1.2% | 1.9% |

**Table 4.—Trail register compliance by visitors in 2003 studies.**

| | Trail Register | | |
|---|---|---|---|
| | Non-Compliance (%) | Compliance (%) | N |
| MMWA | 44.6 | 55.4 | 83 |
| WCLWA | 8.0 | 92.0 | 88 |
| TOTAL | 25.7 | 74.3 | 171 |

**Table 5.—Day-use versus overnight users and trail register compliance.**

| | | Trail Register | | |
|---|---|---|---|---|
| | | Non-Compliance (%) | Compliance (%) | N |
| MMWA | Day-use | 45.0 | 55.0 | 80 |
| | Overnight | 0 | 100.0 | 2 |
| TOTAL | | 43.9 | 56.1 | 82 |
| WCLWA | Day-use | 10.4 | 89.6 | 48 |
| | Overnight | 5.0 | 95.0 | 40 |
| TOTAL | | 8.0 | 92.0 | 88 |

**Table 6.—Previous visits to area and trail register compliance.**

| | | Trail Register | | |
|---|---|---|---|---|
| | | Non-Compliance (%) | Compliance (%) | N |
| MMWA | No | 27.6 | 72.4 | 29 |
| | Yes | 52.8 | 47.2 | 53 |
| TOTAL | | 43.9 | 56.1 | 82 |
| WCLWA | No | 6.5 | 93.5 | 31 |
| | Yes | 8.8 | 91.2 | 57 |
| TOTAL | | 8.0 | 92.0 | 88 |

## 6.0 Sources of Error

Trail registers provide a means by which managers can monitor recreational use in a particular area by gathering information about group size, length of stay, and trip destinations. There are, however, sources of error that should be taken into account when using these for estimation of visitor use. All of these sources could lead to an inaccurate representation of who is utilizing the area and for what length of time. Outlined below are the potential sources of error identified in trail registers for this study.

- Users reporting in the trail register the number of hours in the wilderness area or days they will be spending in the geographic area rather than the number of days spent in the wilderness area.
- Illegible handwriting, entering fictitious trips, or not reporting the correct date.
- More than one group member signing the register, and writing the number of users in their party causing multiple counts of the same group.
- Noncompliance (e.g., visitors not signing registers).

Trail counters are an effective way of monitoring visitor use. However, as with self-registration, there are sources of error that need to be accounted for when utilizing the data gathered. Outlined below are the potential sources of error identified in trail counters for this study.

- Mechanical interference due to environmental factors such as wind causing the sway of limbs and trees, heavy rain and fog, and the position of sun in relation to the trail counters' infrared light source.
- Tampering or theft of counters by recreational users.
- Browsing wildlife being counted on the trail (e.g., moose, whitetail deer).
- Damage to counter or camouflage from curious wildlife (e.g., black bear, squirrels).

## 7.0 Conclusions

The methodology for data collection in this study and Dawson et al. (2001) serve as building blocks for incremental change and improvement to the visitor use assessment prototype. We were able to collect baseline visitor use data in each of the areas studied reaffirming the value of this prototype. Minor changes to be made to improve the methodology for future studies would include locating trail counters closer to trail registers and increasing the sample size of interviews conducted.

The data collected for this study is beneficial to the Adirondack Park Agency and the New York State Department of Environmental Conservation Unit Management Plan planners, as it will aid in developing indicators for the Limits of Acceptable Change planning process. The baseline information collected emphasizes the areas that are currently receiving higher levels of use and the areas in which staffing and fiscal support may be needed for future management to maintain or improve the conditions of the resource and the recreational experience.

## 8.0 Acknowledgments

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# A CASE STUDY COMPARISON OF VISITOR SELF-REPORTED AND GPS RECORDED TRAVEL ROUTES

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## Abstract

The study of crowding in national parks and other protected areas most often examines concentrations of visitors along existing travel pathways, such as roads or trails. Data on travel routes have typically been gathered using visitor self-reporting where participants are asked to manually record their routes on maps. Since its inception in the 1970s, the satellite-based Global Positioning System (GPS) has become increasingly more accurate and has seen diverse use in public, private and academic realms. The survey of individual travel routes of visitors to national parks with GPS is a relatively recent but promising methodological application. Surveys at Muir Woods National Monument, California and Acadia National Park, Maine provide case studies for comparison of visitor self-reported and GPS-reported routes, respectively. Survey participants at Muir Woods were asked to manually record their travel route on a paper map. At Acadia, GARMIN eTrex Legend hand-held GPS units were provided to individuals upon their entrance. The GPS method recorded far more detailed and accurate travel routes than those from visitor self-reported routes. Furthermore, the GPS method collected a larger number of individual routes over fewer days and with a much lower refusal rate. The recording of similar data using self-reporting at Muir Woods was not humanly or technologically feasible. Despite the apparent advantages of GPS for surveying travel routes, several issues warrant consideration prior to its use, such as cost, operability in the area of study, and respondent handling of the GPS units. A brief assessment of the advantages and disadvantages of each methodology are presented in this paper. GPS technology has implications for researchers and managers in that it may produce more robust, detailed, and accurate studies of visitor travel patterns.

## 1.0 Introduction

Visitors to National Park Service (NPS) units almost exclusively use roadways and trails to access scenic vistas, attraction sites, or as a means for experiencing these natural areas. Manning (1979) described this pattern of spatial distribution as a system of links and nodes. For example, visitors may encounter each other as they move along a trail (link) or congregate at trailheads and shelters (nodes). Recreation use is generally characterized by spatial concentration along these links and nodes, which typically constitute a small percentage of the area within parks and wildlands (Hammitt and Cole 1998). This trend also results in concentrating and, in cases, exacerbating impacts – both social and ecological.

As visits to national parks have grown to over 260 million (NPS 2003) crowding has become a topic of increasing concern. NPS policies have directed superintendents to address the issue of crowding (NPS 2001) through structured decision making processes such as the Visitor Experience and Resource Protection (VERP) (NPS 1997). A fundamental step in frameworks such as VERP is the inventory of existing conditions. In terms of visitor use patterns, this means gathering site-specific data on where people go in a NPS unit and the how long they stay at certain sites. Collection of such information has traditionally involved asking visitors to record their own travel routes on paper map diaries. More recently the Global Positioning System (GPS) has been used to collect similar travel route data.

The objectives of this paper are to (1) introduce GPS technology as a means for collecting location information and (2) to present a comparison of two methods for

gathering visitor route information. Case studies from two national park units will be presented to make this comparison.

### 1.1 The Global Positioning System

In 1973, the U.S. Department of Defense (DoD) began use of a satellite-based system to provide location information to military units and equipment. This system, then known as NAVSTAR, has developed into the modern-day GPS. NAVSTAR operated solely for military purposes until the 1980s, when civilian use was first permitted. In 1994 GPS reached its full operational capacity when the last of 24 satellites was placed into orbit around the earth. This constellation of satellites provided GPS capability to the entire surface of the earth. To prevent use of the system for unauthorized purposes, the civilian mode was subject to an imposed inaccuracy known as selective availability (SA). This limited the accuracies obtained by civilian GPS units to approximately 100 meters. In 2000, the DoD removed the SA interference, which resulted in a greatly improved accuracy, to about 20 m (Garmin 2004). Further advances in GPS technology (Differential GPS and the Wide-Area Augmentation System 'WASS') now allow civilian GPS units to potentially record locations to accuracy of 3 m or less.

GPS operates based on the triangulation of highly accurate and precise satellite signals. Obtaining a GPS-derived location begins when a receiver (e.g., a hand held GPS unit) acquires a signal from one of the 24 satellites in the worldwide GPS constellation. The signal used for civilian purposes, designated as L1, operates at 1575.42 MHz in the UHF band (Garmin 2004). This signal contains a pseudorandom code that identifies the transmitting satellite, almanac data providing the satellite's orbit information to the receiver, and ephemeris data. The ephemeris data is constantly transmitted by the satellite and contains information that includes the current date and time. Each GPS satellite has 4 atomic clocks that provide the extremely accurate and precise times required for the receiver to calculate its distance from the satellite based on the time delay between when a signal was sent and when it was received. This narrows the solution space for the receiver's location to a circular path circumscribed by all points on the earth's surface with the measured distance equal to that calculated by the receiver. By acquiring signals, and thus distances, from two additional satellites, the solution space is narrowed to one possible location on the earth's surface. Finally, the time measurement of the L1 signal made by the receiver, and any associated error, is corrected by comparing the GPS-location with the distance from a fourth satellite – this sets the receiver's time measurement nearly equal to that of an atomic clock. For a more detailed description of GPS technology see El-Rabbany (2002).

The L1 signal follows a line of sight, capable of passing through transparent (e.g., glass) and some translucent objects (e.g., clouds). However, the signal will not reach the receiver if its path from the satellite is opaquely obscured – perhaps by topography, dense vegetation, or buildings. Use of GPS is restricted by this line of sight principle. Despite this limitation, GPS has successfully been used in many research contexts including, tracking wolves within Yellowstone; surveying archeological sites; and recently in collecting recreation use pattern information on trails, roads, and at attraction sites for developing computer simulation models of visitor use.

## 2.0 Study Sites

### 2.1 Muir Woods National Monument

After intensive harvesting in the 1800s, few stands of Coast Redwoods were left in the San Francisco region of California at the turn of the 20th century. Due largely to its inaccessibility, however, a 295-acre portion of virgin timber remained uncut. Congressman William Kent purchased this tract and donated it to the federal government in 1908, stipulating only that it be managed as a park and named after his friend John Muir (Runte 1997). In a letter of appreciation to Kent, Muir wrote that the land was "the best tree-lover's monument that could possibly be found in all the forests of the world."

Muir Woods National Monument is located in Redwood Canyon approximately 15 miles northeast of San Francisco. The monument receives over 700,000 visits annually (NPS 2003). A network of both paved and unimproved trails are used to experience the stands of Coast Redwoods, which serve as the primary attraction for most visitors. Trails generally meander through the bottom of Redwood Canyon with views constrained by the steep slopes of the canyon, other topography, or by the tree canopy (Figure 1).

Figure 1.—Trails through Redwood Canyon.

Figure 2.—The scenic road

### 2.2 Acadia National Park

Established as the first eastern national park, Acadia currently receives more than 2.5 million visits annually (Runte 1997; NPS 2003). Acadia National Park is located along the coast of Maine and consists of three geographically separate sections – Mount Desert Island, Isle au Haut, and the Schoodic Peninsula. The latter of these is a 2,266-acre area located approximately 1 hour's drive from the Mount Desert Island portion of the park.

A scenic park road is the only travel route through Schoodic Peninsula. The road follows the shoreline of the peninsula, providing access to two of the most frequently visited areas, Frazer Point and Schoodic Point. These locations are used by 88% and 52% of visitors to the Schoodic Peninsula, respectively (Manning et al. 2002). The road permits only one-way vehicle travel, except on short access roads to both scenic points. The scenic park road is the only entrance and exit point to this portion of the park.

Both the vegetation cover and land topography at Frazer Point, Schoodic Point, and on the scenic road are highly open. Each of the points provides visitors with relatively unobscured views of the coastline. The scenic road, likewise, allows views of the ocean, with relatively few trees or visual obstructions on the seaward side (Figure 2).

## 3.0 Methods

### 3.1 Muir Woods National Monument

In August 2003 visitors to the main trail system of Muir Woods National Monument were asked to participate in a survey of spatial use patterns. A researcher was stationed at the entrance during 15 days and gave participants a paper map diary to complete as they used the trails. The first visitor to arrive at the start of the data collection period was invited to participate in the study. Once the researcher completed providing a map diary and instructions to this visitor the next available visitor entering Muir Woods was selected. People were instructed to record on the map where they hiked/walked in the park. Participants were asked to mark the beginning and ending times of their hike/walk, locations where they stopped for greater than 5 minutes, and the amount of time spent at each stop. A sample route was provided to participants for reference in filling out their own map diary (Figure 3).

### 3.2 Acadia National Park

Visitor travel routes in the Schoodic Peninsula portion of Acadia National Park were collected using GPS. During nine days in July 2003 occupants of the first 10 cars to enter Schoodic Peninsula at the start of the daily data collection period (9 a.m.) were asked to participate in a study by carrying a GPS unit in their car. Each participant was given one of 10 GARMIN eTrex Legend GPS units used in the study. If any of the occupants of

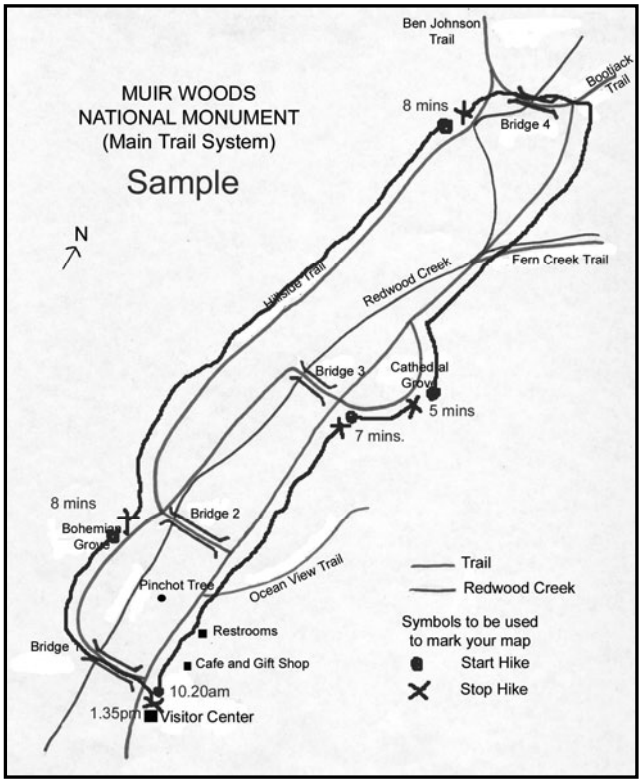


Figure 3.—Sample route provided to Muir Woods study participants to follow in filling out their own map diary.

the first 10 cars refused to participate, then additional cars were asked in the order of their arrival.

The GPS units used in this study are commercially available off-the-shelf and retail (in 2004 dollars) for $214. Each unit provided to visitors was on its default settings, which recorded individual location points automatically instead of at a defined time or distance interval. Participants were instructed to keep the GPS unit in their car and on their dashboards while driving. If they decided to leave their vehicle, the GPS units were to be kept in the vehicle but removed from direct exposure to the sun. Preliminary trials had determined that units were susceptible to overheating and malfunction when left in the sunlight on the dashboard of a vehicle.

The GPS units were collected from participants at the Schoodic Peninsula exit, and the route data were downloaded to a computer using Topofusion, one of the many available GPS route-mapping software programs. GPS units were then returned to the park entrance for collection of additional routes throughout the sampling day.

## 4.0 Results

### 4.1 Muir Woods National Monument

A total of 588 visitors were asked to participate in the study at Muir Woods by completing a map diary. Of these people, 407 were provided a paper map diary to complete and the remaining 181, or 30.8%, refused to participate. Furthermore, 94 (23.1%) of the map diaries collected were unusable, primarily because they were incomplete or unintelligible. In most of these cases either the direction of travel or the starting or stopping time was omitted.

The paper map diaries needed to be entered into a computer readable format for subsequent use. To digitize the route information a number was assigned to all stopping points indicated in the entire collection of sampled routes. These identifiers were then used to enter each individual route into a spreadsheet as a time-ordered series of stops. Time spent at each stop was also transferred into the spreadsheet.

### 4.2 Acadia National Park

Over 9 days a total of 215 individual travel routes were collected, and 11 people, or 4.9% of all those asked, refused to participate by carrying a GPS unit in their car. Of the routes collected, 22 (10.2%) were unusable due to either equipment malfunction or participant tampering. Each GPS route file downloaded contained numerous location points all with an associated latitude, longitude, altitude, and time. Each route was unique and provided great detail regarding where each car traveled, with an approximate accuracy of 20 feet and exact times at each location

Preparation of GPS recorded routes for further use – in the case of this study a computer simulation model of automobile traffic at the Schoodic Peninsula – required harvesting data points of interest from the many collected for each route. This was accomplished using an Arc Macro Language (AML) script. The script set a circular zone of predetermined radius around each intersection or point of interest. The radii of these zones of interest ranged from 27 to 120 feet, depending on the number of location points likely recorded around a particular point of interest. Zones were set visually by mapping all of the routes using Topofusion. They were then adjusted to ensure the smallest radius that would adequately capture data points of interest for each route. The AML script was written to select the earliest and latest recorded

data points from all of those within a particular zone of interest. The AML script was run for each of the 193 usable routes, resulting in greatly narrowed data set. The harvested data consisted of a maximum of two GPS locations at each point of interest.

## 5.0 Discussion and Implications

Comparison of travel routes obtained at Muir Woods and Acadia suggest several benefits in using GPS over self-reported travel routes. First, the GPS collected routes consisted of considerably more detailed and accurate location information. Even relatively minute directional changes or delays in travel, such as a vehicle pulling off the road at an undesignated scenic point, were recorded in the GPS route. Map diaries, such as the one used at Muir Woods, often show particular locations of interest (Bohemian and Cathedral Groves in Figure 3). The sites shown may affect respondents' record of their travel. GPS instead allows collection of route information without the potential bias associated with respondents recording their locations on a map. Furthermore, stopping times recorded by GPS are not subject to any appreciable rounding because GPS records locations so frequently and with times that are exact. Self-recorded routes have stopping times that are inherently rounded. The time burden for respondents and for data entry is also significantly reduced with GPS, which digitizes locations in a computer readable format as they are collected. Map diaries require substantial effort to translate the routes recorded on paper into files that can be use in computer based analysis or simulation modeling. Finally, the lower rate of refusal to participate, the smaller number of unusable routes, and the collection of a greater number of routes per day suggest that GPS reduces the burden placed upon respondents while permitting the collection of a greater amount of data.

Despite the apparent advantages of GPS for surveying travel routes, several drawbacks to the technology warrant consideration. Using GPS requires a modest capital investment and data collection is limited to the availability of units. Adding to this disadvantage is a concern for recollecting units. Multiple entry and exit points add complexity to ensuring their return. At the Schoodic Peninsula, a single entry and exit point facilitated recollection of units. Different approaches to recollect units are being used in other studies, such as having participants return them by mail (Topofusion, 2004). The abundant data collected is also a potential disadvantage. The data points of interest often must be harvested from the many collected. The script used to select such points from the GPS data collected at Acadia automated this process, but several work days were still required to run the script for each route, confirm the results, and correct any discrepancies in the points selected. Another shortcoming of GPS is the need for a line of sight with a minimum of four satellites. This requirement prevented GPS from being considered for use at Muir Woods. The steep canyon walls and the dense tree canopy did not permit the GPS unit to acquire the signal from enough satellites. Lastly, GPS provides no opportunities for respondents to indicate the purpose of their trip or other descriptive elements. Paper map diaries can easily overcome this problem while also having the advantages of being inexpensive, requiring no specialized knowledge or training regarding GPS technology, and they can be conducted regardless of topography or vegetation.

The use of GPS technology has implications for better understanding visitor use patterns. GPS recorded travel routes provide opportunities for more robust, detailed, and accurate studies. GPS can be used to capture travel that does not follow existing pathways or visit predetermined sites. Sites of interest may be selected after data is collected, instead of prompting participants to record time spent at specific preset locations. It also permits capturing highly complex travel routes, the full detail of which may not be represented in data collected by self-reported routes. The potential for more representative route data must, however, be weighed against the cost, technical complexity, and limitations associated with the technology. All factors equal, GPS-reported routes seem to offer an accuracy and wealth of data that cannot be obtained by self-reporting. Further recreation related studies will likely be required to realize the full potential and limitations of GPS as a methodology for collecting information on visitor use patterns.

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# *Tourism Development*

# AN EXPLORATORY STUDY OF ST. AUGUSTINE, FL: HERITAGE ATTRACTION TYPES

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## Abstract

Heritage tourism is a fast growing segment of the tourism industry. Heritage tourists are a sought after visitor group as they tend to stay longer and spend more money than the typical tourist (Confer & Kerstetter 2000). The purpose of this study is to determine if there are 'types' of heritage attractions at St. Augustine, Florida. A second purpose of this study is to determine if travel behavior characteristics of tourists are related to visitation to particular heritage attraction types. We found that sites within St. Augustine fall into three heritage types labeled: 1) "Spanish Heritage Sites"; 2) "Park and Beach Sites"; and 3) "Transportation Heritage Sites". The results of our study support previous research that different heritage visitors are drawn to various heritage attraction types (Jewell & Crotts 2001; Kerstetter et al. 1998) and differ in behavioral and visitor characteristics.

## 1.0 Introduction

Heritage tourism is a fast growing segment of the tourism industry (Light & Prentice 1994) and is expected to continue to grow (Boyd 2002). Heritage destinations not only face stiff competition from other heritage sites but other destination types (Confer & Kerstetter, 2000), as well as increasing demands for services from visitors (Fyall & Garrod 1998). In order to compete successfully, heritage destination personnel must learn business and marketing skills (Caldwell, 1996). Academicians and practitioners have taken a very narrow view of what constitutes 'heritage'. To maximize a destination's appeal, the notion of heritage must be expanded beyond that which is built. Other forms of heritage including; culture, industry and national environments (including National Parks) must also be emphasized (Boyd 2002).

Kerstetter et al. (1998) identified four types of industrial heritage attractions. They identified 'flood sites', 'railroad sites', 'battlefields and forts', and 'mines' as uniquely different as it related to visitor characteristics and trip behavior. Their results revealed that visitors to 'flood sites' were more likely just 'traveling through' or on a day trip. 'Flood site' visitors also reported taking fewer trips over the previous 12 months as compared to visitors of the other attraction types. Others have attempted to segment the heritage visitor through recreation specialization. Kerstetter et al. (2001) explored the notion of recreation specialization within heritage tourism. They identified a continuum of heritage specialization (low, medium, high). Their results showed that visitor characteristics and travel behavior vary depending on the level of heritage specialization (Kerstetter et al. 2001). Confirming the work of Kerstetter et al. (2001) Jewell & Crotts (2001) showed that a destination could be organized for the general leisure traveler and for the more specialized heritage tourist. They found that the motivations of visitors to heritage sites varied. Their results showed a segment of visitors motivated by relaxation. A second group was interested in gaining knowledge of the past, but they were motivated by pleasure. Seeking knowledge from the past motivated the third group identified.

The purpose of this study is to determine if there are distinct heritage attraction types within St. Augustine, Florida. Additionally, if distinct heritage attraction types are uncovered, a second purpose of this study is to determine if travel behavior characteristics of tourists are related to visitation to particular heritage attraction types.

## 2.0 Methods

In 2001-2002, data was collected on 52 days at different sites in an around St. Augustine. A random sample of travelers from each site was asked to complete an "intercept interview." One adult from each travel party was identified (alternating male and female) and asked to complete the interview as they left the site. Quotas per day were created to more accurately reflect the estimated ratio of weekday and weekend travelers (approximately 50% on Fridays, Saturdays and Sundays, 50% during the week). The research instrument consisted of questions such as: "What was your primary mode of

**Table 1.—Demographics of Sample**

| Demographics | N | % |
|---|---|---|
| Gender | | |
| Male | 563 | 51.5 |
| Female | 531 | 48.5 |
| Education | | |
| Less than high school | 6 | 0.6 |
| High school graduate | 187 | 17.2 |
| Technical school | 26 | 2.4 |
| Some college | 323 | 29.7 |
| College degree | 363 | 33.4 |
| Some graduate school | 68 | 6.3 |
| Advanced degree | 110 | 10.1 |
| DK/RF | 5 | 0.5 |
| Race or Ethnicity | | |
| Caucasian or white | 945 | 86.4 |
| African American or Black | 50 | 4.6 |
| Hispanic or Spanish | 79 | 7.2 |
| Native American or American Indian | 2 | 0.2 |
| Asian | 11 | 1.0 |
| Pacific Islander | 3 | 0.3 |
| Multi-racial or mixed race | 3 | 0.3 |
| Other | 1 | 0.1 |
| Income | | |
| Less than $24,000 | 54 | 4.9 |
| $24,000 to $34,000 | 105 | 9.6 |
| $35,000 to $49,000 | 195 | 17.9 |
| $50,000 to $74,999 | 281 | 25.7 |
| $75,000 to $99,999 | 164 | 15.0 |
| $100,000 to 124,999 | 107 | 9.8 |
| $125,000 and above | 65 | 6.0 |
| DK/RF | 121 | 11.1 |
| Who is traveling with you? | | |
| Alone | 71 | 6.5 |
| Friends | 176 | 16.1 |
| Family | 729 | 66.6 |
| Family and Friends | 102 | 9.3 |
| Tour Group | 12 | 1.1 |
| Other | 4 | 0.4 |
| Marital Status | | |
| Single | 264 | 24.2 |
| Partnered/Married | 789 | 72.2 |
| Widow/widower | 400 | 3.7 |

travel to here from your home city?" and "What was the main purpose of your trip?" Data were analyzed using the Statistical Package for the Social Sciences (SPSS). Descriptive statistics were run to profile the sample. Second, a principal components factor analysis with a varimax rotation was run to determine if people were visiting 'types' of heritage sites. Finally, a multiple analysis of variance was run (ONEWAY) to determine the relationship between type of heritage site and travel behavior characteristics.

**Table 2.—Factor Analysis Results with Varimax Rotation**

| Item (Attraction) | 1 | 2 | 3 |
|---|---|---|---|
| Factor 1: Spanish Heritage Sites | | | |
| Old St. Augustine Village | .667 | | |
| Oldest House Museum | .641 | | |
| Colonial Spanish Quarter | .637 | | |
| Lightner Museum | .626 | | |
| Old Florida Museum | .611 | | |
| Ghost Tours | .437 | | |
| Castillo de San Marcos (The Fort) | .416 | | |
| Factor 2: Park and Beach Sites | | | |
| Anastasia State Park | | .669 | |
| Ocean Pier Visitor's Center | | .623 | |
| St. Augustine Lighthouse & Museum | | .579 | |
| Fort Matanzas National Monument | | .547 | |
| Factor 3: Transportation Heritage Sites | | | |
| St. Augustine Authentic Attractions (Green trolley) | | | .833 |
| Florida Heritage Museum | | | .716 |
| Eigen value | 3.11 | 1.69 | 1.63 |
| % of common variance | 13.49 | 8.28 | 8.12 |
| Cumulative Variance | 13.49 | 21.78 | 29.89 |
| Alpha | 0.71 | 0.50 | 0.67 |

## 3.0 Results

The sample of visitors to St. Augustine and the Beaches was primarily Caucasian. Typically visitors were married/partnered (72%) traveling with family (67%). The sample was fairly educated with more than 63% either attending college or having graduated from college. Reflecting this, income levels were fairly high, with more than a third of the sample earning between $50,000 and $99,000 (Table 1).

The results of the factor analysis revealed 6 factors with eigen values exceeding 1.0. When the scree plot was referenced, only three factors fell cleanly above the break line. These three factors were tested for reliability. The seven items that represented Factor 1 included various museums and a district called the 'Colonial Spanish Quarter' and was named, "Spanish heritage sites." The four items that represented Factor 2 included the 'Ocean Pier Visitor Center' and 'Anastasia State Park' and was named "Park and Beach sites." Two items represented Factor 2 including the 'Green Trolly' and was named "transportation heritage sites." Coefficient alpha values for the three factors ranged from .50 to .71 (Table 2).

The relationship between the heritage site dimensions and travel behavior characteristics (including; type of trip, first time vs. repeat visit, season visited, overall satisfaction, likelihood of returning, number of activities participated in, and number of heritage activities participated in) was analyzed. Results showed a significant difference between trip type, number of activities participated in, and number of heritage activities participated in for all three factors. Those visiting 'Spanish Heritage Sites' were most likely to stay overnight. Visitors to 'Park and Beach Sites' participated in the most activities, while visitors to 'Spanish Heritage Sites' engaged in the most heritage activities. A significant difference was shown between first time vs. repeat visit and the likelihood of return between Factor 1 ('Spanish Heritage Sites') and Factor 3 ('Transportation Heritage Sites'). Those visiting both 'Spanish Heritage Sites' and 'Transportation Heritage Sites' were more likely to be first time visitors, with this inclination more predominant

**Table 3.—Relationship between Travel Behavior and Site Dimensions Using One-way Analysis of Variance**

| | | Factor 1 | Factor 2 | Factor 3 |
|---|---|---|---|---|
| Type of trip | Day trip | .21 | .13 | .17 |
| | Overnight | .39 | .25 | .26 |
| | | F=104.93*** | F=50.85*** | F=12.97*** |
| First time visited | Yes | .38 | | .26 |
| | No | .29 | | .21 |
| | | F=25.15*** | | F=12.97*** |
| Overall Satisfaction | Somewhat | .28 [a] | | |
| | Very | .35 [b] | | |
| | Extremely | .33 | | |
| | | F=3.39* | | |
| Likelihood of returning | Very | .39 | | .27 |
| | Extremely | .29 | | .21 |
| | | F=36.87*** | | F=5.8* |
| Season | Spring | .38 [b] | .27 [b] | .28 [b] |
| | Summer | .28 [a] | .24 [b] | .19 [a] |
| | Fall | .28 [a] | .11 [a] | .23 |
| | Winter | .39 [b] | .26 [b] | .25 |
| | | F=14.93*** | F=26.02*** | F=3.33* |
| Number of activities participated in | 1-3 | .24 [a] | .11 [a] | .18 [a] |
| | 4-6 | .31 [b] | .17 [b] | .25 |
| | 7-9 | .41 [b] | .31 [b] | .24 |
| | 10+ | .44 [b] | .46 [b] | .28 [b] |
| | | F=23.98*** | F=67.62*** | F=2.15* |
| Number of heritage activities participated in | 0 | .17 [a] | .15 [a] | .13 [a] |
| | 1 | .26 | .18 | .20 |
| | 2 | .35 [b] | .22 | 26 |
| | 3+ | .46 [b] | .27 b | .29 [b] |
| | | F=44.78*** | F=9.05*** | F=6.31* |

* significant at .05; *** significant at .001

in visitors to 'Spanish Heritage Sites'. Visitors to both 'Spanish Heritage Sites' and 'Transportation Heritage Sites' indicated their likelihood to return as predominately 'very' or 'extremely' likely (Table 3).

## 4.0 Discussion

In summary, three 'types' of heritage attractions were found: Spanish Heritage Sites, Park and Beach Sites, and Transportation Heritage Sites. The results support previous research findings that destinations can contain distinct heritage attraction types (Kerstetter et al. 1998). Previous research has shown that visitors to heritage sites with more knowledge and experience relating to heritage typically stay longer and visit more sites (Confer & Kerstetter 2000). The results of the present study show that visitors to 'Spanish Heritage Sites' and 'Transportation Heritage Sites' were more likely to be first-time visitors. Managers of the various attractions representing these two site types would be served to better educate their visitors. Better signage, brochures and interpretation would help in this respect.

Kerstetter et al. (2001) identified a continuum of heritage specialization which they identified as low, medium and high. Their results showed that visitor characteristics and travel behavior vary depending on the level of heritage specialization. The present study showed that visitors to 'Spanish Heritage Sites' participated in more heritage activities. Future research would be served by looking into the possible association between heritage attraction type and level of specialization. Because 'Spanish Heritage Site' visitors are shown to participate in more heritage activities, does that mean that they are highly specialized?

Another interesting future research direction would be to explore the relationship between heritage site type and visitor perceptions of the site as part of their personal heritage. In a study of visitors to the Wailing Wall, Poria

et al. (2003) found that those visitors with a strong connection to the site were more likely to revisit, more willing to pay user fees, typically more satisfied and more likely to recommend visitation to friends and family. An interesting question for future research would be to determine if there is an association between heritage site type and visitor perceptions of personal 'ownership'. This study showed that there are distinct types of heritage sites within St. Augustine, Florida. Specific attributes important within each site that represented the factors were not studied. Heritage research would be served and site managers given a better understanding of visitor behavior if specific attributes associated with each of the sites representing the three heritage site types could be determined by future research.

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# UNDERSTANDING ANGLER PREFERENCES FOR HARVEST REGULATIONS BY LEVEL OF SPECIES PREFERENCE

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## Abstract

A stated preference choice approach was used to understand anglers' preferences for harvest regulations by different levels of (first, second, and third choice) species preference. Seven attributes were investigated: bag limit, minimum size, maximum size, retention of big fish, average fish size, catch probability, and travel cost. Ten versions of a questionnaire with eight choice sets each were used. Questionnaires were mailed to 1,377 red drum anglers; 313 reported a first choice preference for a red drum fishing, 358 a second choice, and 120 a third. A conditional logit model was used to estimate four preference models. Anglers with a first preference for red drum wanted to catch larger fish, while those with a third preference wanted larger numbers. Anglers with a higher preference for red drum fishing were more likely to support current harvest regulations. All anglers regardless of preference level for red drum chose conservation of resources over exploitation.

## 1.0 Introduction

To develop and improve existing or new harvest regulations, fishery managers should have a basic knowledge of the extent to which anglers support current and proposed management options (Ditton 1996; Quinn 1996; Wilde & Ditton 1994). Prior to the era of public participation and open meeting laws in the 1970s, the nature and types of harvest regulations used were often left to managerial discretion. With mandates for greater public involvement, managers began to seek input from anglers as to whether they supported or opposed harvest restrictions as proposed. Not surprisingly, the area of angler preferences for various management alternatives has received less research attention than other human dimensions research areas.

Traditional research approaches for evaluating management preferences have focused on asking whether respondents support or oppose particular harvest restrictions (i.e., a proposed minimum size of 14 inches, a bag limit of four fish, etc) or on observing their actual fishing harvest behaviors at a site. Whereas the former approach was labeled as "opinion measurement" (Smith 1983), the latter has been referred to as a "revealed preference" approach (Louviere 1988). Unfortunately, these approaches do not yield insight into the relative importance of each of the harvest restrictions to anglers and the tradeoffs they are willing or not willing to make when viewing regulatory options jointly. For example, when anglers indicate support for a decreased bag limit, they also may support an increase in the minimum size limit or other additional means to reduce fishing mortality based on an opinion measurement approach. In addition, the revealed preference approach is limited for analyzing future regulation changes in that observable data on current anglers' harvest behavior does not provide sufficient variation for understanding angler preferences. Stated Preference choice models (SPCM) use hypothetical scenarios to derive individuals' preferences. SPCM have been used primarily in market research and evaluation to provide a means for simulating participant choices and analyzing preference data. Use of SPCM enables an understanding of the relationship of multiple factors as they contribute to preferences or choice behavior (Louviere 1988; Louviere & Timmermans 1990). These types of models have been used previously in natural resources management to better understand "consumer" preferences for various multi-attribute products and services including destination choices (Haider & Ewing 1990), park development and infrastructure needs (Hearne & Salinas 2002; Schroeder & Louviere 1999), and regulatory actions in natural resources settings (Adamowicz et al. 1998).

Various forms of stated preference models have been used previously to understand angler preferences for various proposals, "product" offerings (Driver 1985), and management alternatives. Roehl et al. (1993) used a stated preference approach (in a metric conjoint model) to understand angler preferences for four attributes (trip price, fishing quality, service quality, and catch) of the charter boat fishing experience. Also, they evaluated 16 fishing product profiles based on variations of the four attributes. Price was found to make the largest

contribution to preference followed by catching favorite fish species, fishing quality, and service quality. Aas et al. (2000) used a stated preference choice model to study how anglers would respond to various product profiles (three harvest regulation variables and two expectation variables) and to explore angler group differences in this regard. To avoid the problems associated with ranking data in a metric conjoint design, the discrete choice model made use of choice sets where respondents chose the most preferred set of alternatives. They found major choice differences between various angler groups based on gear use. Gillis and Ditton (2002) used metric conjoint analysis to investigate how anglers combined their preferences for various management measures under consideration and the relative influence of each management measure. Preference estimates were calculated for each level of a management measure and the 64 possible management measure combinations were ranked.

Harvest regulations are typically used as a means of allocating a limited fishery resource. In Texas, however, there is currently an abundance of red drum (Sciaenops ocellatus) fish stocks as a result of conservation measures that have increased escapement to offshore waters. Managers may be reaching a point where they can consider an increase in recreational harvest. To increase harvest in a fair and effective manner, managers want to know which various harvest regulations (set at current and proposed levels) are preferred by anglers and the trade-offs they are willing to make in the trip-decision process.

To avoid a typical assumption that the population of red drum anglers is a homogeneous group of individuals that all held the same views when it comes to management options under consideration, a means of segmentation is necessary to investigate group differences. Previously, Graefe (1981) developed and tested a classification of anglers targeting a particular species group to determine if there were unique angler sub-groups based on dedication, namely, those who fished exclusively for certain species, those who indicated those species as their first choice, etc. Whereas he found some noteworthy group differences consistent with the recreation specialization framework (Bryan 1977; Ditton et al. 1992; Scott & Shafer 2001), he did not find much evidence of unique angler sub-groups by dedication to a particular species group. Building on this work and extending it further into the area of preferences for management options, we sought to understand the differences in stated preferences for various policy options among those with stated first, second, and third choice preferences for red drum as a target species.

Our goal was to help the Texas Parks and Wildlife Department (TPWD) identify a user-friendly set of harvest regulations for red drum while also meeting their overall management objectives of maximizing angler satisfaction and long-term fishery conservation. The frequently conflicting relationship between those two objectives should be enhanced with a more holistic understanding of anglers' preferences. Accordingly, study objectives were to investigate the choices anglers make between hypothetical fishing trips as defined with varied harvest regulations, fishing expectations, and trip costs, to provide a ranking and analysis on the various management regulations being considered, and to understand choices according to their level of dedication to red drum as their preferred target species.

## 2.0 Methods

### 2.1 Survey Instrumentation

Stated preference choice modeling provides a means for investigating anglers' preferences for management products and for simulating the subsequent outcomes of changes in anglers' preferences. A two-step process was used to identify and reach the target sample of anglers with a preference for red drum fishing in coastal waters in Texas. The initial survey with a stratified random sample of 10,000 resident license holders to fish in Texas waters was conducted in 2002 (Anderson & Ditton 2003). We included a question that would allow us to identify a sample (N = 1,377) of anglers with a first, second, and third choice preference for red drum fishing for follow-up purposes. In 2003, a mail questionnaire was sent to ask about their red drum fishing trip preferences using a stated preference choice experimental design.

Seven attributes and subsequent attribute levels were selected based on a series of discussions with TPWD fishery managers. There were four types of management restrictions: (1) bag limit, (2) minimum size limit, (3) maximum size limit, and (4) retention of fish over the maximum size limit and three expectation attributes: (5) average fish size, (6) catch probability, and (7) trip cost per day. Non-regulatory attributes were included to have a realistic simulation of future fishing trips facing management changes (Aas et al. 2000; Gillis & Ditton 2002; Hicks 2002). A definition of each attribute is

**Table 1.—Proposed Attributes and Levels**

| | Attribute | Description | Level |
|---|---|---|---|
| Restrictions | Bag limit | The number of red drum that an angler can retain per day | 1. 3*<br>2. 4<br>3. 5 |
| | Minimum size limit | The minimum size of red drum that an angler can legally retain | 1. 18″<br>2. 19″<br>3. 20″ |
| | Maximum size limit | The maximum size of red drum that an angler can legally retain | 1. 28″<br>2. 29″<br>3. 30″ |
| | Retain big fish | Each fishing year, an angler can retain one fish over the current maximum length (28”using a tag provided by TPWD) | 1. two fish over the maximum size per year<br>2. five fish over the maximum size per year<br>3. seven fish over the maximum size per year |
| Expectations | Average fish size | Anglers’ expectations regarding size of red drum caught | 1. Smaller<br>2. Same as usual<br>3. Larger |
| | Catch Probability | The expected number of red drum that an angler catches on a typical fishing day | 1. about the same<br>2. one more fish caught<br>3. two more fish caught |
| | Travel cost / day | Travel cost that an angler spends for a fishing trip per day (including gas and other trip expenses) | 1. 25% less than your current total cost per day<br>2. Your current total cost per day<br>3. 25% more than your current total cost per day |

* The underlined levels reflect current TPWD regulations.

presented in Table 1. The three levels of variation in each attribute were determined to reduce the burden on respondents (Bennett & Adamowicz 2001). Each management attribute included the status quo (current level) of the management regulation as the base level. Minor changes were made after a pretest with a local fishing club.

Fractional factorial designs were employed to generate an economical number of choice sets. In addition, a blocking design was added to segment the choice sets into blocks to reduce respondent burden (Bennett & Adamowicz 2001). Finally, a fractional factorial design with consideration of two-way interaction effects generated 80 choice sets, which were divided among 10 different versions (blocks) of the mail questionnaire with eight choice sets each. Figure 1 provides an example of one choice profile.

### 2.2 Models

The procedural development of stated preference models were based on random utility theory. Random utility theory assumes that individuals make choices that lead to the highest utility even though utilities are treated as random variables because of uncertainty factors (Ben-Akiva and Lerman 1985; Manski 1977). Based on obtained preferences derived from choice sets, utility is estimated using the indirect utility function, which is comprised of a deterministic component and a random error component (Louviere 2000). Since it is rationally assumed that individuals seek to maximize their utility, anglers are expected to prefer one fishing trip over another when the utility of the first is greater than the second. Assuming the error terms are independently and identically distributed and Gumbel-distributed, the probability can result in the conditional logit model (McFadden 1974; Ben-Akiva & Lerman 1985).

| ATTRIBUTE | Trip A | Trip B | |
|---|---|---|---|
| BAG LIMIT | 5 | 4 | |
| MINIMUM SIZE | 20″ | 19″ | |
| MAXIMUM SIZE | 30″ | 30″ | |
| RETAIN BIG FISH | Two fish over maximum size per year | Two fish over maximum size per year | |
| AVERAGE FISH SIZE | Same as usual | Same as usual | |
| CATCH PROBABILITY | One more fish caught | About the same | |
| TRIP COST/ DAY | Your current trip cost/day | 25% less than your current trip cost / day | |
| Which trip do you prefer? (circle only one) | TRIP A | TRIP B | I would not take either trip |

Figure 1.—An Example of a Choice Set Sent to Respondents

## 3.0 Results

Of the 1,377 questionnaires mailed, we received 791 replies for an effective response rate of 59.8% using a slightly modified Dillman Total Design Survey Method (Dillman 1978). When we compared respondents and non-respondents across sociodemographics and general fishing behavior, respondents were generally older, had higher incomes, were more skilled and attributed more importance to fishing compared to other recreational activities, than nonrespondents. About 791 questionnaires were returned usable for an effective response rate of 60%; 313 with a stated first preference for a red drum fishing, 358 with a second preference, and 120 with a third preference.

We used a conditional logit model to estimate four different preference models including a pooled model for all anglers. Conditional logit model estimations are presented first in Table 2. As expected, all effects of the primary attributes were statistically significant ($p<0.05$). When C1 serve as alternative specific constants, the negative value for C1 (the "no trip" option) indicates that this option was less preferred to fishing trips conducted under the current fishing rules and regulations. As expected, an increase in bag limit and maximum size will lead to considerable increases in fishing trip participation in the pooled model. Likewise, there was a strong preference for increasing catch probability and anglers preferred a lower minimum size. However, contrary to expectations, anglers favored the current two fish over 28" maximum size per year regulation over the other options presented. That only 11% of anglers reported they had used red drum tags (provided free of charge) in the previous 12 months may demonstrate their indifference to the tag system intended by TPWD to distribute the catch of large fish as equitably as possible among the angler population. Two interaction effects were added to estimate specified models based on prior information regarding important relationships between variables. A likelihood ratio test indicated that the model with interaction effects was superior to that with main effects only.

In contrast with all primary attributes of angler preference which were statistically significant in the all-angler model and in the first-preference model, MAXIMUM and a two-way effect of CATCH and BAG LIMIT in the second-preference model and MAXIMUM, RETAIN, AVERAGE SIZE and a two-way effect of MAXIMUM and BAG LIMIT in the third-preference model were not statistically significant (Table 2). In general, anglers with a first preference for red drum generally preferred to catch larger fish, while those with a third preference preferred catching larger numbers.

An advantage of the stated preference choice method is that it provides a ranking of feasible management options (Blamey, Gordon, & Chapman, 1999). There are changes in utility as a result of a modification of regulations as well as expectations. Hence, the benefit gain or loss is measured by predicted probabilities to participate in a fishing trip given a specific level of attributes in each option. The predicted probabilities were computed as above and overall willingness- to-pay (WTP) values using $\frac{1}{\beta_{\text{trip cost}}}(V_C - V_N)$ as suggested by Hanemann (1984).

**Table 2.—Results of Conditional Logit Model**

| | All Anglers | | Preference Level | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | 1st Preference | | 2nd Preference | | 3rd Preference | |
| Variable | Estimated Coefficient | Z-value | Estimated Coefficient | Z-value | Estimated Coefficient | Z-value | Estimated Coefficient | Z-value |
| C1 | -0.7680 | -4.64* | -0.6038 | -2.29* | -0.9476 | -3.80* | -0.8565 | -2.00* |
| BAGLIMIT | 0.4408 | 6.59* | 0.4760 | 4.49* | 0.3727 | 3.70* | 0.5854 | 3.39* |
| MINIMUM | -0.1334 | -5.20* | -0.0921 | -2.24* | 0.1429 | -3.71* | -0.2233 | -3.44* |
| MAXIMUM | 0.1710 | 2.72* | 0.2156 | 2.16* | 0.1543 | 1.63 | 0.0982 | 0.60 |
| RETAIN | -0.0922 | -9.73* | -0.0682 | -4.55* | -0.1341 | -9.33* | -0.0331 | -1.37 |
| AVERAGE2 | 0.3497 | 6.87* | 0.5271 | 6.40* | 0.3109 | 4.06* | 0.0755 | 0.60 |
| AVERAGE3 | 0.6257 | 11.39* | 0.8140 | 9.19* | 0.6268 | 7.59* | 0.2322 | 1.68# |
| CATCH | 0.2870 | 4.65* | 0.3589 | 3.68* | 0.1911 | 2.06* | 0.4217 | 2.61* |
| TRIPCOST | -0.0254 | -23.44* | -0.0237 | -13.74* | 0.0272 | -16.77* | -0.02423 | -8.57* |
| MAX*BAG | -0.0976 | -3.40* | -0.0975 | -2.14* | -0.1004 | -2.32* | -0.0932 | -1.25 |
| CATCH*BAG | -0.0611 | -2.14* | -0.0806 | -1.78# | -0.0227 | -0.53 | -0.1483 | -2.00* |

* indicates the statistical significance at 0.05 level.
# indicates the statistical significance at 0.1 level.

Here, $V_C$ indicates the utility acquired from the current condition of a fishing trip and $V_N$ is the utility from the new scenario with altered levels of attributes.

A set of seven different red drum management scenarios with the changes in expectation variables for a red drum fishing trip are shown with predicted probabilities and overall WTP values in Table 3. The levels of expectation attributes were varied such that average fish size would remain the same while catch probability would increase with stricter rules and regulations. Likewise, with a relaxation of harvest restrictions comes an increase in average fish size but with less catch probability as a result of their increased harvest. This scenario consideration is useful in that anglers' fishing trips will likely be affected by their expectations. Their expectations can reflect their choices of fishing trips based on the expectations of catching fish in light of the condition of the fishery resource (fish stocks). The scenario analysis indicated that anglers with a higher preference for red drum fishing were more likely to prefer current harvest regulations and less willing to relax the rules and regulations.

## 4.0 Discussion

Managers can expect anglers with a different levels of species preference to react differently to management options under consideration. Overall, anglers (except for those with a third preference level for red drum) chose conservation of fishery resources over exploitation. These results can help managers take angler diversity into account in future management efforts and not disenfranchise certain angler segments by focusing on measures of central tendency. As management options are considered and policies are formulated, decision makers cannot please everyone. Management options that promote resource conservation and sustainability are likely to be more supported by anglers with a higher level of species preference accompanied with expressions of high economic value for the status quo option than by anglers with a lower level of species preference. Thus, the various scenario analyses can serve as a baseline to help managers optimize the selection of the best combination of regulation attributes for more efficient management.

Several points are noted in terms of management implementation and implications. First, willingness to pay is a useful reference value for benefit measurement in policy decision-making because the monetized value eases the decision process for efficient resource allocation and distribution. Thus, different willingness-to-pay values by species preferences can be useful for purposes of cost-benefit analysis. Second, different management priorities may indicate different policy changes. For

**Table 3.—The Predicted Probabilities and WTP of Proposed Scenarios with Changes in Fishing Trip Expectations**

| | | | | | | | Pooled | | 1st pref. | | 2nd pref. | | 3rd pref. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | BAG | MIN | MAX | RETAIN | AVE. | CATCH | Prob. | WTP | Prob. | WTP | Prob. | WTP | Prob. | WTP |
| Scenario1 | 3 | 20 | 28 | 2 | Same as usual | two more fish | 0.143(4) | | 0.136(5) | | 0.160(3) | | 0.080(7) | |
| Scenario2 | 3 | 19 | 28 | 2 | Same as usual | two more fish | 0.164(2) | 123.2 | 0.149(3) | 121.5 | 0.184(1) | 124.4 | 0.100(5) | 127.8 |
| Scenario3 | 4 | 20 | 29 | 5 | Same as usual | one more fish | 0.112(7) | 105.7 | 0.115(7) | 108.9 | 0.111(6) | 98.1 | 0.094(6) | 124.8 |
| Scenario4 | 4 | 19 | 29 | 5 | Larger | one more fish | 0.169(1) | 124.6 | 0.168(1) | 127.6 | 0.175(2) | 121.7 | 0.148(2) | 146.8 |
| Scenario5 | 4 | 19 | 29 | 7 | Larger | one more fish | 0.141(5) | 116.1 | 0.147(4) | 120.8 | 0.134(4) | 107.9 | 0.139(3) | 143.6 |
| Scenario6 | 4 | 19 | 30 | 7 | Larger | About the same | 0.116(6) | 107.4 | 0.123(6) | 112.1 | 0.106(7) | 95.6 | 0.135(4) | 142.3 |
| Scenario7 | 5 | 18 | 30 | 7 | Larger | About the same | 0.154(3) | 120.4 | 0.162(2) | 125.7 | 0.131(5) | 106.7 | 0.304(1) | 181.4 |

Note. Trip cost was restricted to be the same at the anglers' current trip cost for the comparison purpose.
The levels of Interaction effects were also changed depending on those of main effects.
WTP values were computed using average fishing trip expenditures of $117.

example, if the agency's goal is to attain long-term conservation goals and focus on resource protection, this is more likely secured by sustaining the current status quo management options. This is generally supported by the high probability (and willingness-to-pay values) of anglers' trip decisions with the current status quo options for angler groups with a first and second preference. On the other hand, this kind of management policy may deter additional participation by anglers with a third species preference. If the management goal is to attract additional participation of anglers who place the least importance on catching red drum previously, then a relaxation of management options is needed.

Overall, an understanding of disparate group preferences and trade-offs is an essential part of an efficient fishery management process that avoids over exploitation of fishery resources and maximizes angler satisfaction with their fishing trips. While the importance of maintaining or increasing angler satisfaction and preventing declines in angler numbers is important from a service delivery standpoint, balanced policy changes by the management agency are more likely.

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# REGULATIONS ON THE ENVIRONMENTAL MANAGEMENT OF TOURISM DEVELOPMENT IN YUNNAN PROVINCE, CHINA

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## Abstract

This study is to systematically analyze what types of environmental policies regulate tourism development in regional level. Yunnan province situated in Southwest China is selected as a research site in view of various regulations on environmental management, well-known tourism destination and cultural diversity. The finding of this study is that special regulations related to numbers of tourists, accommodation, transportation tools, environmental education campaigns for tourists and the cooperation of tourism associations are needed to enhance tourism environment management. Indigenous knowledge in ethnic areas of Yunnan is based on a sense of harmony with the natural environment resulted in sustainable use of natural resource. Rapid tourism developments in Yunnan imply that regulations on tourism activities may be the subject of a new body of rules to alleviate adverse environmental effects of tourism and related recreational activities.

## 1.0 Introduction

Tourism industry has been strongly linked to economic development in many countries. The World Tourism Organization (WTO 2004) forecasts that the number of tourist arrivals are expected to reach over 1.56 billion by the year 2020 and the global travel and tourism market is expected to reach $2,295 billion in 2004. (WTTC 2004). The top three receiving regions of tourist arrivals will be Europe (717 million), East Asia and the Pacific (397 million) and Americas (282 million).Especially, the annual growth rate of East Asia are anticipated to achieve over 5 percent which exceeds the world average of 4.1 percent.

Tourism, like other industries, also impact on natural environment. While a number of literatures addressed negative impacts of tourism on natural environment, tourism does positively influence environment in various ways (Mieczkowski, 1995). Tourism per se pressures on legislators, governments and private organization to concern more about the negative impact of human activities. Tourism is also acting as a rescuer of tourism resource to create revenue for environmental protection. On the other hand, tourists who show their interesting to the natural resource may enhance the pride of the local residents resulted in indirectly helping them to protect the natural resource and understand the value of nature conservation. On the contrary, tourism by no mean is a pure "green industry" or "smokeless industry" which has been reported to negatively impact on environment. The issues of negative effects of tourism on environment should be divided into two parts: the first part is analytical or disintegrative which reflects the impact on separate elements of environment element such as air, geology, soils, water, vegetation, and wildlife. The second part is systemic or integrative which denotes the impact on the holistic communities of biotic and abiotic components such as coastal, inland, mountain and polar ecosystems. (Mieczkowski 1995, p. 85).

In order to alleviate the negative impact of tourism on environment, many coping strategies are addressed by researchers. For examples, the issue of carrying capacity is associated with overuse and overload on natural environment associated with damaging ecosystems. Thus, establishing use limits in natural areas may minimize the negative impacts of tourism on the environment. Environmental education is one of the most important preventive and coping strategies that can be against negative human impacts on natural conservation. (Mieczkowski 1995). Society may acquire environmental awareness and change attitudes toward the environment through environmental education. Since mass tourism is criticized to adversely impact on natural and cultural resource by many environmentalists, alternative tourism is promoted to maintain sustainability and environmental conservation such as ecotourism which is a nature based form of alternative tourism. Regulations and laws on the environment have been used to conduct Environmental Impact Assessment (EIA). EIA is defined as "the systematic identification and evaluation of the potential impacts of proposed projects, plans, programs, or legislative actions relative to the physical-chemical, biological, cultural, and socioeconomic components of the total environment" (Canter 1996). The regulation

and laws may assist in environmental oversight such as planning, forecasting, control and evaluation, resolving environmentally-related problems, integrating environmental responsibilities into community, refining legal approaches to environmental problem, finding alternative environmental resolution methods, enhancing external relations management, and changing internal functions such as product design, marketing development and sales.(Jones, &Baldwin 1994). In order to more effectively implement the regulations and laws, global conventions and regional approaches on environmental management of tourism development are recommended because tourism is largely a worldwide phenomenon which tourists are traveling throughout the world and peculiarities of tourism in some regions may require unique managerial ways. (Perez-Salom 2001).
For example, some international conventions are implemented in international community such as Antarctic Treaty System, Biodiversity Convention, and ALPS Convention Tourism Protocol Convention. National level of environmental policies on environment management are promulgated in both developed and developing counties such as National Environmental Policy Act (USA), Environment Protection Law (China), Environment Protection and Biodiversity Conservation Act (Australia) . A few research conducted audit of national level of tourism policies. (Sofield, & Li 1998; Simpson 2003). Furthermore, dearths of research systematically analyze what types of environmental policies regulate tourism development in regional level. Therefore, this paper is to choose Yunnan of China as a case study to explore regulations on the environmental management of tourism development in regional level.

Yunnan province is situated at the southwest China adjacent to Vietnam, Laos and Burma and prestigiously viewed as one of the most diverse regions in China in terms of biological and cultural diversity. Yunnan possesses a rich diversity of eco-regions including major watershed systems (Yangzi, Mekong River) and mountain ranges (East Himalaya, Hengduan). There are 25 ethnic minority groups accounting for 40% of the population. Compared to other coastal regions in Eastern China, Yunnan is less developed province in China in view of geographical isolation. Tourism policy-makers have proposed that Yunnan's natural and cultural richness should be used to develop tourism industry to stimulate regional economy. Over the last decade, Yunnan's diverse

Figure 1.—Map of Yunnan

natural richness ranged from alpine mountain ranges to tropical rainforests and cultural richness are continuously developed by central government and provincial government, resulting in attracting more than 1 million foreign tourists and approximately 38 million domestic visitors in the year of 2000 (Yunnan Statistical Bureau 2001).Currently, Yunnan province's tourism sites are mainly focused on Xishuangbanna, Shilin, Dali,Lijiang, Lugu Lake and Shangri-la. (Figure 1).

On the other hand, China, as one of the fastest growth in tourist region (WTO 2004), has severe environmental problems characterized by air pollution, water pollution, acid rain, deforestation, soil erosion, desertification etc. (Sofield, & Li 1998; Palmer 2000). In this light, Environment Protection Law is enacted by National People's Congress of China to impose provincial and local governments on using jurisdiction to establish environmental standards to environment protection. Paucity of research study investigated how provincial and local governments implement regulations on environmental management. On the other hand, Paradoxically, China is a well-known Communist nation controlled by a one party (Chinese Communist Party). However, National Law of Minority Autonomy 1984 passed by the 2nd meeting of 6th the National People's Congress of Chinese Communist Party admits minority

autonomous right, respect minority internal affair and emphasize religious freedom etc. To our knowledge, contradictions between national political system and autonomous policy have not been documented by researchers. Yunnan province is a typical case which reflects the contradictions in terms of large number of ethnic groups and 37 autonomous prefectures and counties in the area.

Therefore, to understanding context of regulations on environmental management implemented provincial and local governments and contradictions between monoparty-controlled policy and minority autonomy, the purpose of the study is to explore what types of environmental policies regulate tourism development in Yunnan and to contrast the policies enacted by provincial and minority agencies on the basis of reviewing regulations akin to environment in Yunnan.

## 2.0 Methods

The initial data collection is retrieved from http://www.law-lib.com/law/ owned by Xihu Bookstore situated in Zhejiang province of Southern China and contains over 80,000 laws, regulations and acts which are enacted since 1949 in China. The website is authorized by the Bureau of Justice in Hangzhou of Capital of Zhejiang province and is viewed as one of most comprehensive databases related to laws in China. Regulations on environment and tourism were collected by imputing Yunnan (in Chinese) as a keyword resulted in 658 entries being found. Sixty-nine acts related to tourism and environment are identified by the authors by looking through one by one. Content analysis was conducted to compare provincial regulations with minority regulations. All existing regulations pertinent to tourism and environment in Yunnan are reviewed to explore tourism effect, environmental protection and environmental management.

The second stage of research is qualitative approach to collect data related to environment and tourism policy. Qualitative date collections for this study consist of four parts. First, provincial tourism experts and researchers from Kunming, the capital of Yunnan Province, are invited to participate in a focus group meeting to discuss impact of tourism on Yunnan Province and policy implementation. Nominal Group Technique (NGT) is designed for small group discussion which has been successfully used to reach consensus among community planners for the purpose of policy making (Ritchie 1985). Second, the Northwest region of Yunnan Province including, Dali, Lijiang and Shangri-la are chosen for the field study because they are well-known destinations for ethnic tourism in China. Community leaders and experts from these regions are recruited for this study to discuss impact of tourism on these regions and policy implementation. The interview protocol used in these meetings is the Nominal Group Technique (NGT). Third, group interviews are conducted with villagers from these regions to explore how tourism affects their daily life and socio-economic level. Since informants from these regions can not speak fluent Mandarin and have low literacy, Participant Rural Appraisal (PRA) model (Chambers 1994) is chosen for this study because it is an effective method to gather information form participants in less developed regions where there are challenges in verbal communication and time limitations. Participants are also encouraged to add or say anything else that they feel is relevant to the study. Fourth, journaling and photographs from field observations are used to help enhance the credibility and rigorousness of this qualitative study (Rossman & Rallis 19XX, p.69). All of interviews were recorded with the consent of the interviewees. NGT and PRA discussions are recorded in flipcharts. A Grounded Theory approach (Strauss & Corbin 1990 &1998) will be utilized to analyze qualitative data and to offer insight, enhance understanding, and provide a meaningful guide to action. According to this approach, a set of steps including open, axial and selective coding processes will be consecutively used to name, develop, and refine categories, subcategories and theory.

## 3.0 Results

### 3.1 Overview of the regulations

The National People's Congress Committee on Natural Resources and Environment Protection is the central governmental committee of drafting new environmental law and revising existing law. Similarly, in provincial and regional levels like Yunnan, the regulations are enacted by provincial People's Congress and regional People's Congress. Therefore, I found that thirty-four regulations are enacted by the provincial agency and thirty-five regulations are enacted by minority agencies (see Table 1).

All of the regulations have similar fundamental principles on reflecting administrative duty, protection, funding, incentive program, warning and fine.

**Table 1.—Overview of regulations**

| Acts | Province | Minorities |
|---|---|---|
| Forest Protection Acts | 3/20 | 17/20 |
| Natural Preservation Acts | 7/12 | 5/12 |
| Tourism Management Acts | 8/8 | 0/8 |
| Cultural Historical Heritage Protection Acts | 2/5 | 3/5 |
| Water Resource Protection Acts | 6/10 | 4/10 |
| Mineral Protection Acts | 3/5 | 2/5 |
| City Plan Management Acts | 3/5 | 2/5 |
| Environment Policy Acts | 1/2 | 1/2 |
| Endangered Species Protection Acts | 1/2 | 1/2 |
| Total | 34/69 | 35/69 |

#### 3.1.1 Administrative Duty

Every province, minority prefecture, township, village administration and affiliated institutions related to environment management are charged with the responsibility of implementing and supervising the regulations and monitoring environment from water, forest, mountains, natural reserve and endangered species to tourism management and culture etc.

#### 3.1.2 Funding and Incentive program

Financial supports for environmental protection rely on limited national funding, provincial budget, part of tourism revenue and donations. The regulation requires incentives program for environmental managers and organizations who contribute to rescue of endangered species, prosecution of illegal activities, research on preservation, fire management and education campaign on natural resource.

#### 3.1.3 Warning and penalties

Any organizations and people who violate regulations will be warned orally and fined administratively if they are not serious enough for criminal charges. However, any violations relating to environmental damage defined by the regulations will be reprimanded and charged for criminal punishment. For example, Yunnan Natural Preservation Act at Article 21 and 22 address "anyone who causes environmental damage will be fined up to 50000 yuan in accordance with the resulting damage of cases" and "anyone who violates the regulation on the administrative management in serious cases will be imprisoned".

### 3.2 Comparison between provincial regulations and minority regulations

#### 3.2.1 Ambiguity of funding source

Provincial government, in fact, is reluctant to allocate funding to minority areas resulted in provincial regulations ambiguously addressing funding source and amount. because natural reserves will slow down destruction of natural ecosystems which also can be thought of as a barrier to economic development. (Harkness 2000). Most recently, central government drafts a new policy that will invest 80 billion yuan in minority areas for acceleration of modernization: "in some regions of Inner-Mongolia, Qinghai, Ningxia and Xinjiang, levels of urbanization are higher than average level of China, and a great numbers of high buildings…… symbolize minorities are gradually becoming middle class (Xinhua Agency, 29 June 2004). On the contrary, since nature resource are seen by ethnic groups in Yunnan as their heritage of ancestors, ethnic groups think they must obtain enough financial support for protecting the nature resource. Thus, minority regulations address explicitly funding source, amount, for example, the historical and cultural Castle Conservation Act 1997 of Weishan Yi minority and Hui (Muslin) Autonomous county, at Article, requires "0.5% of annual county revenue should be used for protecting and developing the castle"

#### 3.2.2 Dispute on ownership

Provincial regulations emphasize all natural resource are national assets which should be managed by the country. The provincial government is keen to control natural resource because it has realized tourism is the most lucrative industry for the government. Likewise, nation-run agencies are encouraged by the government to manage environment and tourism industry. However, scarce conservative funds are used to support conservation. (Harkness 2000). On the other hand, Minority regulations clearly indicate that ownerships of natural resource are the properties of three different agencies: Private, community-owned, national. The minorities insist that all natural resource not belong to country because they live in the land from generation to generation. The government should give them rights for environmental management of tourism on natural resource.

#### 3.2.3 Obligation of people who are related to the issues

Provincial regulations unclearly address everyone should abide by the regulations. For example, Yunnan Tourism Industry Management Act at article 3 obliges "anyone who attends tourist activities, owns tourism businesses in the regions should abide by the regulations." However, it implies that army has privilege to exempt from obeying the regulations. On the contrary, minorities' regulations explicitly require everyone including army should abide by the regulations.

### 3.3 Implications of Regulations

#### 3.3.1 Scientific and technical co-operation

Yunnan Tourism Industry Management Act at Article 7 requires "Scientific management" and Yunnan Ninglang Yi Zu Autonomic County Forest Industry Management Act at Article imposes local people "rely on Science and technology developing forest industry". However, poor regions are unlikely to attract technically-trained people and enthusiastic people and are lack of funds for environmental protection. (Jahile 2000) According to the field work, even people who live in richer areas like Lijiang, are unwilling to let their children return to Lijiang after graduation from universities and wish their children to look for jobs in bigger cities like Kuming, Beijing or Shanghai. In order to solve the problems, Yunnan Government appoints each county to have a vice-Commissioner (Ke Ji Fu Xian Zhang) from research institutions in Kumming who is in-charge-of Science and Technology. Furthermore, in order to alleviate burden of a shortage of funds, foreign NGOs such as a Singaporean environment association, brought running water system and trash-disposed system to Shangri-la area to deal with increasing water usage and trash due to rapid growth of tourists in Shangri-la area.

#### 3.3.2 Legal Enhancement

China traditionally is viewed as a conservative country which the ruling party overpowers law. However, in the post-Mao era, Chinese government is increasingly reforming and refining the legal system on environment protection through the regulations. The purpose of the commitment is to demonstrate that everybody should respect Constitution and law, and everybody is protected by Constitution and law. However, while China as establish it basic legal system of environment regulation, it should be acknowledged that legal system is controlled by administrative power in some remote areas where are hardly supervised by central and provincial governments.

#### 3.3.3 Pseudo-minority orientation

China's ethnic autonomy system implemented by Chinese Communist Party (CCP) is a constitutional commitment of freedom for ethnic groups. Yunnan is a multiethnic province where are adjacent to many Southeast Asian countries. Any policies should be more tolerant of traditional ethnic culture to avoid any separatist tendencies, keep the region politically stable and minimize conflict between minorities and Han people. In this light, while ethnic autonomy is not actively promoted by the local government, the minorities still have rights to draft and implement their legislations which may be monitored by the government.

#### 3.3.4 Emphasis on External investment

Compared to the average income of Shanghai where is the highest income region in China, the average income of Yunnan is 46 % lower than that of Shanghai (National Bureau of Statistics of China 2004) and the average income of rural population of Yunnan is 33% lower than that of China.(Yunnan Government 2004). It is unlikely that provincial and regional has enough revenue to deal with environmental industry. Thus, the governments have already realized the necessity of external investment and funding to help Yunnan to develop environmental management and tourism industry. For example, NingLang Yi people Autonomous County Lugu Lake Management Act at Article 4, requires that "foreign and domestic investment are encouraged" and "whoever invests, whoever gets benefits". Article 18 in Yunnan Tourist Sites Management Act requires that "encourage co-operated investment on resource and protect investors' rights".

### 3.4 Barriers of Implementing Regulations

Though the appropriate regulations serve as obligations enhancing sustainable tourism development, it should be acknowledged that the implementations of regulations are jeopardized by interference of actual situations in the field. During a mouth of field work in Yunnan in 2002, I found that diversity and transmigration, cultural constraints, and conflict between government and local community, infrastructure level are barriers of implementation of regulations. Many environmental concerns and disputes are not translated into effective legal implementation rather than tolerated by local people.

### 3.4.1 Diversity and transmigration

Due to 25 ethnic minority groups in Yunnan province, ethnic tourism is promoted in the area as a primary strategy of tourism development. Large cities and towns close to main roads are selected to attract both international and domestic tourists. As a result, growth of ethnic tourism created job opportunities for locals, and transmigration simultaneously became active in Yunnan resulted in both non-local people and local people who live in adjacent areas flowing into tourist sites to seek jobs. In this context, it is necessary to acknowledge that diversity and transmigration positively impact on tourism development in Yunnan, however, they also play negative roles in impacting on environment protection and implementation of regulations. Before tourism was developed in Yunnan, transmigrations between ethnic groups in Yunnan are not frequently because ethnic groups enjoyed living in a peace, traditional and contented environment. However, transmigrations became vigorous since tourism was developed. In Li Jiang, local residents of the Naxi ethnic minority have been displaced from their traditional living environment due to the migration of tourism entrepreneurs from other provinces and the rapid growth of tourist numbers (Morais 2003). The field work found that the most concerned issue raised by the local Naxi people is "environmental problem" in term of local environmental regulations violated by non-local people. In Lugu Lake, the quality of the Lake water is aggregated by overcrowding and misusages of entrepreneurs. Paradoxically, since non-local people are encouraged to invest by government policies of "the high priority of economic development", local administration and local people have to be compromised by the policies to ignore environmental protection.

### 3.4.2 Cultural constraints

Culture as a constraint factor, may impact aspects of human behaviors include taboos, time perspectives, attitudes toward change, beliefs toward the scientific method, family and group responsibilities, religions, governmental regulation and decision-making styles. (Brightman 1981; Schutte & Ciarlante 1998).Therefore, cultural constraints are either prescriptive (people should do certain things) or proscriptive (people should not do certain things). (Chick & Dong 2003). The field work in Yunnan found that the most powerful constraint to the implementation of regulations is culture. Cultural taboos conspicuously impact on Children behaviors. In rural areas of China, open-seat pants or split pants (Kai Dang Ku) are culturally worn by Children who are under six years old in order to help children to conveniently empty their bladders and have their bowel movements immediately. This cultural behavior is tolerated and accepted by Chinese culture. Furthermore, religions have been documented by many researchers to stimulate environmental awareness among people who have religious beliefs. For example, violation of environment is views as sin by the new Roman Catholic catechism. Hindu religion respect nature as a "living conscious being and the quality of the life cycles". (Mieczkowski 1995). In Lijing, Dongba, as Naxi religion, play a role in educating Naxi people to cultivate ecological ethics which should respect nature to keep harmony between humans and natural environment. Said differently, religion is more likely to play a role in protecting environment than regulations do. On the other hand, cultural decision is dominant in decision-making styles which are not easily changed by external forces. Han people are educated by ideals of Chineseness as "China is a big country with abundant and inexhaustible nature resources" whereas are not educate how to protect environment. Another famous traditional saying, "If you have not been to the Great Wall, you are not a true man", only educates Chinese people "just visit" rather than "protection of the Great Wall". Ironically, According to annual Report on the State of the Environment in China in 2001, the rate of forest coverage of China is 16.55% which is 10.45% lower than the average level in the world. While members who participated in the compilation of the report are many governmental agencies including State Environmental Protection Administration, Ministry of Land Resources, Ministry of Construction, Ministry of Water Resources, Ministry of Health, Ministry of Agriculture, State Statistics Bureau, State Forestry Administration, State Oceanic Administration, China Meteorological Administration, and China Seismological Administration, Ministry of Education are excluded by State Environmental Protection Administration. Therefore, the government has not realized environmental education could make the public aware of the importance of nature preservation.

### 3.4.3 Infrastructure

While many regulations related to prevent water pollution and deal with littering are enacted by provincial and minority agencies, our field work found that violation of regulations are rampant and out of control

due to deficiency of infrastructure. In Dali, because of shortage of running water, women use water from ditches to take bath for their babies and wash vegetables. In Lugu Lake, "white waste" (plastic bags) abandoned by tourists and other trashes which are not easy to decay and decompose became unsolvable problems because disposal system has not been built up in the area. In Shangri-la, Tibetan people are not capable of disposing of human waste because public and private toilets are not established in most of villages. Thus, although local people have already realized the regulations on environment are effective ways to protect the natural resource, it is unlikely to implement the regulations for local people without establishment of running water and disposal system.

### 3.4.4 Conflict between government and local community

Since Yunnan has already had Forests Protection Acts, the provincial and regional governments believe natural resources in Yunnan are able to be well-managed and supervised by the regulations. However, I found that local communities does not favor the regulations enacted by the government because they think the regulations mainly serve for the government and does not have much powers to manage environment and benefit for local communities. For example, in Shangri-la, the first community-based non-governmental organizations (NGOs), Shangri-La Folk Environment Protection Association, was found by three local native Tibetans in 2002. The Shangba-La Farm Community-based Nature Reserve Villagers Act is enacted by the association to grant local community to have autonomous rights to manage the land. Unfortunately, Yunnan Forest Administration and Yunnan Environment Protection Bureau rejected the association application for registration as a social organization by the reason of "no approval ground". Not surprisingly, the authorities intend to encourage" governmentally-organized voluntary associations" that are controlled by the government. (Palmer 2000)

## 4.0 Conclusion

While 65 regulations address issues regarding heritage sites' authenticity, environmental pollution, water pollution, deforestation, environmental impact appraisal and special funds for tourism development etc., the negative impacts of tourism activities are less concentrated than business activities. Special regulations related to numbers of tourists, accommodation, transportation tools, environmental education campaigns for tourists and the cooperation of tourism associations are needed to enhance tourism environment management.

Yunnan's main tourist sites, Dali, Lijiang, Lugu Lake and Shangri-la, have different economic levels, however, it is important to recognize that rich areas efforts are not more likely to undertake environmental protection than poor areas where are lack of resources do.(Jahiel 2000). Indigenous knowledge in ethnic areas of Yunnan is based on a sense of harmony with the natural environment resulted in sustainable use of natural resource. Rapid tourism developments in Yunnan imply that regulations on tourism activities may be the subject of a new body of rules to alleviate adverse environmental effects of tourism and related recreational activities. Degradation of the natural heritages is not only China's problem, but also a global issue in view of internationalized tourism. While the global cooperation must integrate a regional approach, the ability to achieve effective environmental regulation in tourism is difficult because its main product of recreation is varied, and experienced differently by each customer. It also depends on consumer perceptions of landscape and culture, which may not support domestic development objectives (Forsyth 1997).

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# PERCEPTIONS OF HAITIANS TOWARD TOURISM DEVELOPMENT IN RURAL HAITI

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## Abstract

The purpose of this research project was to investigate the perceptions of Haitians regarding social, economic and environmental impacts, which tourism development might have in rural areas of Haiti. Three sites were chosen based on their annual flow of visitors, namely low, moderate and high. The researcher used the ethnographer's approach where a domain analysis was built by gathering data from local people. This domain analysis was then tested with interviews among locals. A population of 80 vacationers (adults, students and professionals) were chosen randomly and surveyed. Nonparametric tests were used to analyze data collected in the summer of 2003. The perceptions of locals changed (become more positive or negative) with the increased flow of visitors. The perceptions of vacationers about social impacts of tourism were more negative among older vacationers than younger vacationers. Locals and vacationers had different perceptions about the future development of tourism in rural Haiti.

## 1.0. Introduction

The intent of this research was to analyze the perceptions of locals and vacationers regarding tourism development in rural Haiti. Several researchers have discussed the impacts of tourism development in the Less Developed Countries (LDCs) and have concluded that tourism could have both beneficial and harmful effects (Tisdell 1983). Tourism should be developed with some consideration to reduce the harmful impacts it might have on local communities and the environment (Burke et al. 2000). Therefore, as suggested by several researchers, the beneficial and negative aspects of tourism are likely to be found in the perceptions of Haitians.

Tourism is one of the biggest industries in the world. Tropical weather and sandy beaches made the Caribbean one of the places with the fastest growth in the tourism industry (Crusol & Vellas 1996). Several Caribbean countries, such as the Bahamas and Barbados, have based their economy mainly on tourism income (Marshall 2002). Nevertheless, the tourism industry accounted for a low percentage of the Gross Domestic Product (GDP) in some other Caribbean countries such as Haiti. After being one of the pioneers of tourist destinations in the region during the 1950s and 1960s, internal turmoil and other circumstances drove Haiti out of the mass tourism market. According to the Plan Directeur du Tourisme or PDT (1996), investments required to relaunch mass tourism in Haiti were close to $60 million per year over 7 years. The required funds were not found to launch the PDT properly.

In addition to mass tourism in Haiti, the PDT considered the development of other types of tourism. Some researchers recommended that nature-centered tourism, such as ecotourism, should be developed alongside of or instead of mass tourism. (Burke et al. 2000; Crusol & Vellas 1996). Researchers, scientists and policy makers developed a long list of tourism types, such as ecotourism, ethnotourism, rural tourism, etc. The concept of rural tourism is the focus of this research. Rural tourism has been defined by the World Tourism Organization (WTO) as a set of activities carried out in the rural environment that go beyond accommodation (Wyss 2003). This definition gives rural tourism a non-conventional tourism status, in contrast to mass tourism; and like ecotourism, it has the potential of finding its place in the tourism market. The argument is that this form of tourism brings cash more rapidly and more directly to rural people.

## 2.0 Perceptions Toward Tourism Development

Among the different impacts attributed to tourism, three of them were the most relevant to this research, namely economic, social, and environmental impacts. However, all of them can have both positive and negative perceptions among people.

### 2.1 Economic Impacts

Job creation was the most important effect associated with tourism development in the past. With new

job opportunities, local residents had a better chance to ameliorate their income and their quality of life (Cattarinch 2001; Lewis 1998; Quinn & Strickland 1994; Wilson et al. 2001; Wyss 2003). In the small Caribbean island of Barbados, the tourism industry accounted for 30% of the available jobs, which was ten times more than the agricultural sector (Marshall 2002). Another example is wildlife tourism in Southern Africa, through which locals increased their income by selling handicrafts to tourists (Barnes et al. 1999). However, the fact that some small islands rely almost exclusively on tourism for economic success puts them at great risk regarding the volatility of the tourism market. Furthermore, the seasonality of the jobs does not provide enough money to locals for them to rely on tourism exclusively as an income source (Tisdell 1983). At the national level, countries with their economy relying on tourism are in danger if the industry collapses (Burke et al. 2000).

### 2.2 Social Impacts

Economic opportunities are among the primary reasons for migration from rural to urban areas. People migrate to pursue a better life (Afolayan 2001; Parnwell 1993). At the same time, tourism brings new economic opportunities to rural areas. Therefore, locals do not have to migrate to cities in their quest to improve their quality of life (Lewis 1998; Pelligrino 2000). Economic opportunities from tourism development encourage natives to return to their homes and non-natives to seize this opportunity to establish themselves in local areas (Paviagua 2002). The negative social impacts of tourism include crime, prostitution and all types of violence (Lea 1991). The Bahamas, Barbados, and Jamaica were among the tourist destinations with the highest crime rate in the Caribbean for the last three decades (Levantis 2002). Other negative impacts are exchanges between locals and visitors that often lead to acculturation and a loss of identity, traditions, and values. Rural areas appear to be more sensitive to acculturation than urban settings (Tisdell 1983). Sex tourism, considered one of the negative impacts of tourism development, has a more positive aspect in Thailand where sex tourism is one of the major industries in the country (Bronson 1993).

### 2.3 Environmental Impacts

Tourism serves as a nonconventional educational tool. In rural areas, nonconventional tourism creates an ideal situation for tourists to socialize with local people and scientists to conduct research (Pattulo 1996; Rome & Romeo 1998). The hope is that the results found with scientific research would lead to a better understanding of the local community in particular and the environment in general (Quinn & Strickland 1994). On the other hand, this educational tool has the potential to become harmful for the environment. The number of visitors should be limited, regarding the carrying capacity, to prevent pollution and other types of destruction of the natural resources (Burke et al. 2000; Pattulo 1996). The carrying capacity in tourism terms is understood to be the maximum number of people that an area can support without damaging the environment. As an illustration, Cancun was a small angler village on the Caribbean side of Mexico 30 years ago. Tourism development has brought millions of people to Cancun. As a result, the local population grew ten times its size. The government took necessary legal measures to protect natural areas from this continuous development (Burke et al. 2000).

## 3.0 Hypotheses

The hypotheses guiding this research were grouped into two categories: perceptions of locals and perceptions of domestic visitors. For perceptions of locals (rural people), the hypotheses stated: 1) the flow of visitors has a negative social impact; 2) the flow of visitors has a positive economic impact and 3) the flow of visitors has a negative environmental impact. For perceptions of domestic visitors (urban people), the hypotheses stated: 1) visitors with more disposable income think more positively about the economic impact of tourism; 2) older visitors have a more negative perception of social impacts of tourism than younger vacationers (students); 3) younger visitors have a more positive perception of environmental impacts of tourism than older vacationers (professionals); and 4) older visitors have a more negative perception about environmental impacts of tourism.

## 4.0 Materials and Methods

The methodology adopted for this research consisted of two distinct sections: data collection and data analysis. Data collection was based on observations, interviews and questionnaires. Observations are a valid means for collecting data among a community. They provide information on culture, behavior and environment (Kirk & Miller 1986). Formal interviews and informal conversations were used to gather data from locals in their community. A questionnaire was used to collect

data from vacationers. Data analysis was done with non-parametric tests, frequencies and salience reason methods.

### 4.1 Data Collection

Data collection consisted of three distinct sections: site selection, local interviews and visitor survey.

#### 4.1.1 Site Selection

Three rural sites were chosen based on the flow of visitors, attraction for tourists and accessibility. Because most vacation sites are access-free, it becomes harder to devise reliable statistical estimations of visitor numbers. Therefore, any estimation of the flow of visitors became somewhat subjective and based on observation. For this research, three qualitative categories were defined as low, moderate and high, referring to the annual flow of visitors: where low (Fort Royal) would represent less than 500 visitors, moderate (Vallue) between 500 and 1000, and high (Saut d'Eau) more than 1000 visitors per year. This categorization was made by combining data gathered among locals, on-site observations and additional information received from other contacted persons.

#### 4.1.2 Informant selection and local interviews

Local leaders and authorities were the first persons contacted. Local authorities were mayors or other members of city hall, and priests or other heads of the church. Local leaders were other well-known individuals among local people. A primary contact with locals was necessary for planning the research, having a list of potential informants, and working on schedule plans.

The purpose of the research was discussed with the contact person who was invited to comment on the research and to provide other suggestions that might increase the feasibility and the validity of the research. The first person was asked open-ended questions about tourism development in the particular rural area, such as "What are the impacts of the flow of visitors on the environment?" The answer was a list of responses that were the most important or obvious to the respondent. Examples were: "I have no idea; there are not so many people visiting the place; the problem of the environment is due to cutting trees to make charcoal." This free-listing process continued with the second, and third respondents, etc. After the fifth respondent had been questioned, the domain analysis was made with the most salient answers given by the five informants. This domain analysis was tested among ten to fifteen other informants. While being tested, the domain analysis became richer with other responses from subsequent respondents (Cutz & Chandler 1999; Spadley 1979). In addition to this free listing process, respondents were asked to rank their responses when possible (Weller & Romney 1988). Data were collected using the interview format in Haitian Creole. This option made the informant feel more comfortable with giving his perception of his community (Spradley 1979). Fifty-five people were interviewed in the three rural sites in 4 weeks. The interview guide was comprised of three sections. In the first section, questions were asked about local income sources, flow of tourist visits, and speculation on the reason for visits. Informants were asked about accommodations, eating facilities, and activities of visitors. The second part of the conversation focused on the impacts of visitors in social, economic and environmental terms. In this part of the conversation, informants were asked to comment on the ways that tourism can help local communities with economic development, environmental protection, and management. The conversation concluded by asking about the role that tourism might play in a local development process.

#### 4.1.3 Vacationer interviews

The researcher planned to interview active tourists visiting vacation sites (on-site) and potential visitors in cities (off-site). Twenty to thirty interviews were planned on-site (Saut d'Eau, Petit-Goâve) and off-site (Port-au-Prince). A two-page questionnaire was prepared to collect data, and 10 minutes was the minimum time required per interview. A brief summary of the purpose of the research was given to them. Their freedom and willingness to participate or not participate in this research was respected.

Almost all vacationers at the site of Saut d'Eau were too busy to participate in the research. Only two of them agreed to fill out the questionnaire themselves. Observations and informal talks were used to overcome this problem. Data were collected from Haitian vacationers in Port-au-Prince and Petit-Goâve. They agreed to fill out the questionnaire themselves after being informed of the purpose of the research. These vacationers were randomly chosen in Port-au-Prince and Petit-Goâve. Their ages ranged from 18 to 65. According the Haitian Institute of Statistics (IHSI), 46% of the Haitian population falls in this age range.

From 80 questionnaires distributed, 72 were completed and collected. Based on the objectives of this study, the sample was coded as two social groups: professionals and students. The professionals represented all respondents who worked or were retired. The students represented the non-professionals or the younger visitors. The process lasted 6 weeks, from late June to mid-August of 2003.

The questionnaire was designed to give freedom to the respondent with 13 open-ended questions. Respondents had the opportunity to state what they did on vacation, the places that they visited and the places they planned to visit. They gave their opinions on what could attract more visitors in rural areas and what types of housing should be promoted for tourist accommodation. They found room to talk about the impacts, positive and negative, that tourist flow might have on rural communities in social, economic and environmental terms. They were asked to share their personal experience in rural areas and to try to define the type of tourism that might be the best for local development. Finally, respondents were asked to define rural tourism and to give other suggestions about tourism development as a tool for rural development in Haiti.

### 4.2 Data Analysis

Most of the collected data were qualitative. Non-parametric tests were more appropriate for the analysis. Salient reason method, Chi-square and Cramer's V were used to study the frequency and association between qualitative variables (Healy, 2002). Salient reason is a tool used when multiple answers are associated with one question. Salient reason is a function of frequency by rank. For this research, answers were first weighted. For example if three answers were given to one question, the weighting was calculated as follows: 3/3 x answer 1, 2/3 x answer 2, and 1/3 x answer 3. Second, the salience reason was obtained as follows: 3/3 x answer Y (respondent A) + 4/5 x answer Y (respondent B) + 3/4 x answer Y (respondent C). In other words, salience reason was obtained by adding all the similar pre-weighted answers from different respondents (Chandler, personal communication, October 30, 2003; Venugopal 1999).

#### 4.2.1 Perceptions of locals and visitors

To study the perceptions of local people about tourism and local development, hypotheses were tested with Chi-square and Cramer's V tests. The first hypothesis to be tested was as follows: the perceptions of local people become more positive (or more negative) with an increased flow of visitors. The independent variable was the flow of annual visitors, and the three rural sites were ranked as low, moderate and high. The dependent variables were the perceptions of the locals regarding social, economic and environmental impacts. To study the perceptions of visitors, the following hypothesis was tested: the perceptions of visitors vary with their occupation, economic status or age. The perceptions of vacationers were divided into subcategories regarding economic, social and environmental issues. Each of these subcategories was a sub-hypothesis tested separately.

## 5.0 Results and Discussions

The selected sites were less than 100 km from the nation's capital. They offered different attraction types to visitors. Perceptions of locals varied with the flow of visitors. However, perceptions of visitors were not different in all cases.

### 5.1 Selected Sites

The site with the lowest rank for visitor flow was Fort-Royal, a remote area near the city of Petit-Goâve, 65 km southwest of Port-au-Prince. Visitors disregarded Fort-Royal as a vacation destination while the site had a noticeable potential for tourism development. The main attraction was the ruins of the fort (Fort-Royal) built during the colonial era to protect the city of Petit-Goâve against pirates and other naval attacks. The second attraction was the wild beach and the small island that lies in the middle of the small bay. The third attraction was the small-cultivated plain that could be seen from a hillside. The fourth attraction was voodoo. Fort-Royal was a place where people came to contact spirits and to consult medicine men. Finally, Fort-Royal offered the opportunity to rest in a peaceful environment free from disturbing noises.

The site with the moderate rank for visitor flow was Vallue located 55 km southwest of Port-au-Prince. The main attraction was the compound of APV[14], Association of the Peasants of Vallue. APV has conducted several projects with the local community, for example, school programs, soil conservation, reforestation, and food processing. Recently APV has introduced an ecotourism development program. At more than 600 m above sea level, Vallue offers a unique scenic view of the Gulf of

[14]Haitian NGO involved in rural development in Vallue since 1989.

La Gonâve and both bays of Grand-Goâve and Petit-Goâve to visitors. In addition, the sunrises and sunsets were two impressive natural events to be observed. Hotel rooms at the APV compound, rented rooms at peasant homes and staying with friends were visitor choices for accommodation. Some trails were offered to visitors for hiking.

The third site with the highest rank of flow of visitors was the well-known town of Saut d'Eau, also named Ville Bonheur (Happiness Town), at 60 km north of Port-au-Prince. Each year thousands of people visit Saut d'Eau to celebrate the festival of Our Lady of Mont Carmel on July 16. The main attraction was the mystic waterfall, the highest in the country. According to local belief, the Virgin Mary appeared on the top of falls during the 1860s. Since then, thousands of pilgrims and believers have come every year in their quest for luck and happiness. Another visitor attraction was the mass celebrated in the Catholic Church. Catholics, voodoo believers and others chose the same place to express their faith. They came to take a bain de chance or "luck bath" to become stronger in their fight with problems in life (Hurbon, 1993).

### 5.2 Perceptions of Locals

Locals were examined according to their perceptions of the impacts of tourism. In the research social, economic and environmental outcomes were considered.

#### 5.2.1 Social impacts

Locals were questioned about their perceptions of social impacts from tourism development on their community. The sub-hypothesis stated that the flow of visitors has a negative social impact in the perceptions of locals. Perceptions of locals were grouped into two categories: no impact and social exchange. The social exchange category grouped perceptions of locals related to all exchanges that tourism might facilitate between locals and visitors. A typical response was: "With tourism more people will discover our place and that would help us with some local project". This example illustrated the way that locals viewed tourism development as a tool that can play a dual role. This perception was shared by 100% of the respondents of Saut d'Eau, the most visited place. The no impact category grouped all responses of those who thought that tourism had or might have no social impact on their community. This perception was shared by 40% of respondents of Vallue, the place with moderate flow of visitors and 15% of respondents of Fort-Royal, the least visited place. The salient reason method helped to rank the responses regarding rank and frequency. Social exchange was the first answer for locals of Vallue and Saut d'Eau. The no impact category was the primary perception of locals of Fort-Royal. The perceptions of locals toward social impacts became more positive with increased flow of visitors ($\chi^2$: 23.4; $p<0.05$). The perceptions of locals strongly varied (Cramer's V >0.5) from neutral to positive with the higher flow of visitors. The answers grouped under social exchange were viewed as good opportunities for communication and other exchanges between locals and visitors. Experience and habit played a role in the perceptions of locals. With the habit of the flow of visitors, locals experienced positive results in term of social impacts. In Saut d'Eau, the flow of visitors was one of the factors that attracted attention to the community. As a result of the continuous growth in the flow of visitors, several social projects were executed for the community, such as road maintenance, potable water and electricity. However, locals complained about the fact that people are interested in Saut d'Eau only once a year. According to one local, "once the month of July is gone, locals get back to their hard reality of life and have to count on themselves only." In Fort-Royal, the less visited site, locals expressed more of a neutral point of view regarding the socio-economic impacts of tourism development. In conclusion, there was not enough evidence to support the sub-hypothesis that 1) the increased flow of visitors has a negative social impact. Rather, the higher flow of visitors created a positive perception about the social impacts of tourism development. This perception was statistically different among locals from different sites.

#### 5.2.2 Economic impacts

Locals were questioned about their perceptions of economic impacts from tourism development on their community. The sub-hypothesis stated that the flow of visitors has a positive economic impact in the perceptions of locals. Perceptions of locals were grouped into two categories no impact and more money. The more money category grouped perceptions expressed by locals related to economic exchanges and job opportunities that tourism brought into the local economy. The perception of more money in the local economy due to tourism was shared by 100% of the respondents of Saut d'Eau. The no impact category grouped all open-ended responses of those who thought that tourism had or might have no

economic impact on their community. This perception was shared by 87% of respondents of Vallue, the place with moderate flow of visitors and 90% of respondents of Fort-Royal, the least visited place. The salient reason method helped to rank the responses regarding their rank and their frequency. No impact category was the first answer for locals of Vallue and Fort-Royal. On the other hand, the more money category was the main perception of locals of Saut d'Eau. The perceptions of locals toward economic impacts became more positive with increased flow of visitors ($\chi^2$: 13.8; $p<0.05$). These perceptions of locals varied strongly (Cramer's V = 0.5) from neutral to positive with the increased flow of visitors. Experience and habit have played a role in the perceptions of locals. With the habit of the flow of visitors, people experienced positive results in terms of economic impacts. In Saut d'Eau, the continuous increased flow of visitors provided economic opportunities each year. These economic opportunities were in housing and accommodation, transportation, and the fresh food market. Locals from the other sites did not experience major economic outcome related to tourism. Nevertheless, locals from other sites thought tourism could have a positive impact on their economy. In conclusion, there was enough evidence to support the sub-hypothesis. Higher flows of visitors created a positive perception toward the economic impacts of tourism development.

#### 5.2.3 Environmental impacts

Locals were questioned regarding their perceptions about the environmental impacts of tourism development. The sub-hypothesis stated that the flow of visitors has a negative impact on perceptions about the environment. Answers were grouped into two categories, namely no impact and impact. Open-ended responses from those who considered tourism to have no impact on the environment were included under the first category. The responses from those who considered tourism to have any impact on the environment were grouped under the second category. In the second category, positive impacts were related to a better management of the environment and negative impacts were related to pollution. An example of a positive impact from the less visited site was: "the more visitors have an interest in this beach, the cleaner locals will keep it." A negative example was illustrated by the following statement: "every year the high number of visitors becomes a problem because of the lack of toilet facilities." This illustration came from respondents in the most visited site who complained about odors because of the lack of toilet facilities on-site. Salient reason method helped in ranking the different answers. The no impact category was the first answer for 80% of the respondents of the less visited site and for 40% of the respondents of the site with the moderate flow of visitors. On the other hand, the impact category was the first answer for 94.7% of the respondents of the most visited site. This research showed how the perceptions of visitors were sensitive to the flow of visitors ($\chi^2$: 8.1; $p<0.05$; Cramer's V <0.2). However, in contrast to the most visited place, the perceptions of locals from the less frequented sites were neutral and positive. Perceptions in the most visited place were divided equally between the positive and negative impacts of tourism development. In conclusion, there was enough evidence to support the hypothesis. In other words, the flow of visitors was perceived as having a negative impact on the environment.

### 5.3 Perceptions of Visitors

Perceptions among visitors did not change much. The only statistical difference was observed on social impacts that tourism development might have on rural Haiti. No statistical different were found about economic and environmental impacts.

#### 5.3.1 Economic impacts

The four most important impacts viewed as positive by vacationers were similar for students and professionals. Their perceptions of economic impacts were ranked similarly: improvement of local economy > more jobs > new market opportunities > local development. The less important perceptions were ranked: improvement of quality of life > discovery of the site > cultural development. The concept of improvement of local economy represented answers referring to economic opportunities in general and more jobs and new market opportunities specifically. The more jobs category included different jobs associated directly with tourism such as accommodation from service providers, and jobs created indirectly such as construction workers. The new market opportunities referred to markets for fresh produce and handicrafts. The local development category consisted of infrastructure improvements (roads, electricity, phones, etc.) in general. No statistical difference was found between students and professionals in the way that they ranked the four most important economic impacts. There was not enough evidence to support the sub-hypothesis stating vacationers with

higher socioeconomic status perceive of more positive economic impacts of tourism. In other words, the positive perceptions of students and professionals were statistically similar ($\chi^2$: 0.1; $p>0.05$; N = 63). The student population had a higher non-response rate (16.7%), while the professional population presented a lower rate of 3.3%.

**5.3.2 Social impacts**

The five most important impacts viewed as negative by students were ranked as follows: social degradation > demographic explosion > prostitution/ diseases > increased cost of living > drugs/violence. Professionals followed a different path in their view of negative social impacts. Their perceptions were ranked: social degradation > prostitution/diseases > drugs/violence > increased cost of living > demographic explosion. The social degradation category included answers related to changes in behaviors, traditions and local habits. Prostitution/diseases categorized answers regarding prostitution and the spread of diseases such as AIDS and other sexually-transmitted diseases. There was enough evidence to support the sub-hypothesis stating that older vacationers (professionals) have a more negative perception about social impacts of tourism ($\chi^2$: 9.8; $p<0.05$; N = 51). Significant differences were observed in responses about social degradation and demographic explosion. A lower rate of non-response was found in the professional population (10.0%) compared to the students (42.9%).

**5.3.3 Environmental impacts**

The three most important positive impacts viewed by students were ranked: natural resources/environmental appreciation > natural resources/environmental protection > job creation. The three most important positive impacts viewed by professionals were ranked: natural resources/ environmental protection > natural resources/environmental appreciation > job creation. The appreciation of natural resources and environment category included answers related to sustainable use of natural resources and use of fruit and other products to sell or to transform into products (food processing). The protection of environment and natural resources category grouped answers related to the need for having restricted areas, soil conservation and restoration. Job creation was related to environmental impacts, because it referred to jobs derived from tourism that might reduce pressure on the use of natural resources for income. A higher rate of non-response was found in the student population (30.9%) compared to professionals (13.3%). Even though there were differences among how answers were ranked in both cases, there was not enough evidence to support the sub-hypothesis. No significant difference was observed between the two groups regarding their positive perceptions of environmental impacts of tourism development ($\chi^2$: 5.9; $p>0.05$; N = 55). In other words, younger visitors (students) do not have a more positive perception about environmental impacts of tourism than older vacationers (professionals).

The three most important negative impacts viewed by students were ranked: pollution > environmental degradation in general > natural resources reduction. In contrast, professionals ranked their perceptions: environmental degradation in general > natural resources reduction > pollution. No significant difference was observed between students and professionals in their negative perceptions toward environmental impacts of tourism development ($\chi^2$: 2.6; $p>0.05$; N = 48). The non-response rate was 40.5% for students and 23.3% for professionals. Even though there were differences among how answers were ranked in both cases, there was not enough evidence that supported the sub-hypothesis. In other words, older visitors (professionals) do not have a more negative perception about environmental impacts of tourism than younger visitors (students).

## 6.0 Conclusion

This research was intended to analyze the perceptions of locals and domestic visitors about the potential for tourism development in rural Haiti. Some patterns in responses to open-ended questions were observed. The perceptions of locals varied with the increased flow of visitors. There was enough evidence to support two of the subhypotheses: the increased flow of visitors had positive economic and negative environmental impacts from the perspectives of locals. Locals from the most-visited site of Saut d'Eau thought tourism development might increase pollution. The lack of toilet facilities was one of the major concerns of locals regarding the flow of visitors in their region. On the other hand, there was not enough evidence to support that the increased flow of visitor had a negative social impacts from the perceptions of locals. The perceptions of domestic visitors were similar to each other in most cases except for social impacts of tourism development. There was not enough evidence to support the hypothesis regarding the perceptions of

visitors (students and professionals) toward economic and environmental impacts of tourism. The perceptions of visitors about social impacts of tourism were mostly negative. Only informal education was considered to have a positive social impact. In conclusion, there was enough evidence to support that older visitors had more negative perceptions about social impacts of tourism than younger visitors.

The limitations of this research suggest the need for further studies. One of the limitations refers to sample size. This study failed to identify respondents representing the poor among locals and vacationers. The perceptions of this group would give a broader spectrum of meanings for tourism development opportunities in rural areas. Another group that was not reached is the unemployed among vacationers. Even though Haiti has a high rate of unemployment, people without jobs have some vacations or some perceptions about tourism development. With its economic potential, unemployed people could view tourism as a source of job opportunities. A second limitation was time. More time is needed to study if the perceptions of people will change over time and in what direction. A third limitation is the diversity among sites. More sites need to be studied to have a complete view of the potential and variety of tourism development in rural Haiti.

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# EXAMINING THE BUSINESS TOURIST

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## Abstract

This study was an attempt to segment the business tourist market in north-central Florida county, and evaluate the business tourist's behavior before and during the business trip with respect to gathering information as well activity participation while at the destination. The theoretical framework for this study is market segmentation. Market segmentation is an extremely important tool in evaluating tourism marketing. The study found that business tourists participated in very few activities while in the county and used very few sources to gather information before traveling to Alachua County on business. Future research as to how to reach this type of tourist with regards to marketing local activities and attractions would benefit Visitor and Convention Bureaus in many counties across the state of Florida and possibly the United States.

## 1.0 Introduction

Tourism is a phenomenon that warrants investigation due to its economic and social impacts to a region or country. Business tourism has become an important segment in the tourism industry. The meetings and convention sector of the tourism industry is a large part of business tourism. It is important for destinations to understand who the business tourist is in order to effectively target this specific market. Destinations also need to understand the behavior of the business tourist. Specifically what activities they are participating in and how they obtain the information about the destination and these activities.

## 2.0 Theoretical Framework

Because business tourism is an extremely important segment of the tourism industry the theoretical framework for this study is market segmentation. Market segmentation is an extremely important tool in evaluating tourism marketing (Perdue & Pitegoff 1984). Schiffman and Kanuk (1978) defined market segmentation as "the process of dividing a potential market into distinct subsets of consumers and selecting one or more segments as a target to be reached with a distinct marketing mix" (p.31). In 1973 the National Tourism Resources Review Commission defined a tourist as "A tourist is one who travels away from home for a distance of at least 50 miles (one way) for business, pleasure, personal affairs, or any other purpose except to commute to work, whether he/she stays overnight or returns the same day" (McIntosh et al. 1998, p.11-12). Two of the methods mentioned by Swarbrooke and Horner for segmenting the business tourism market are indicated in this definition, which are distance traveled and length of stay.

## 3.0 Literature Review

In most of the literature the word business travel is used to describe the segment of the tourism market that encompasses traveling for the primary purpose of business. However, Swarbrook & Horner (2001) say that it should be called business tourism and that there is a distinctly different definition that separates the two terms. Business tourism is stated as "people traveling for purposes which are related to their work, encompasses all aspects of the experience of the business traveler" (Davidson 1994). Business travel however, solely focuses on the movement of the business traveler from point A to point B. The two terms tend to be used synonymously throughout research and thus in this paper as well.

Traveling to attend meetings is the primary reason for business travel. About 20 percent of all business trips are for the purpose of attending corporate meetings or conventions (Mill 1990). Most often, conferences and conventions are an important component of travel and tourism in a region (Grado et al. 1998). Nearly 50 percent of all business tourists attend meetings or conventions as the primary purpose of their trip, with another 12 percent reporting it as the secondary purpose of their trip (Survey of Business Travelers 1994). Meeting, conventions, and expositions generate tremendous amount of revenue within the hospitality industry. Successful Meetings magazine's "State of the Industry" report in 2001 indicated that current spending on meetings totaled $112.1 billion, broken down into three categories.

Survey of Business Travelers, stated that 85 percent of business tourists stay overnight while on trips. Because business tourists stay overnight there is greater economic

impact, which again emphasizes why this segment of the tourism market is so important (1994). Destinations have recognized that the further away a person lives and whether they stay overnight are two ingredients to greater economic impact (Grobar & Magadinno 2003). It is also known that business travelers also become leisure traveler after the workday is over. Therefore a definite link is developed between business tourism and leisure tourism (Mill 1990: Swarbrooke & Horner 2001). Meetings and conventions traditionally include "add on" activities which can ultimately increase the participation or attendance of an event and hence create repeat attendance for future events while bringing in more economic gains for the host communities (Green 2001; Smith & Jenner 1998).

## 4.0 Purpose of the Study

The purpose of this study was to understand the leisure behavior of different segments of the business tourist market. The data collected examined the activities that business tourists participate in while in a north-central county in Florida. The goal was also to understand how the business tourist to the County gathers information and from which sources prior to leaving for the trip. Finally a profile of the business tourist was constructed.

## 5.0 Methods

Data were colleted in 2001 at 14 sites in one county in north-central Florida. These sites included hotels, local attractions, special events and the regional airport. A fixed choice questionnaire contained items on demographic characteristics, types of information sources used to make the travel decisions, participation in twenty local activities and the destination origin of the traveler. Only those who indicated their primary purpose of the trip was business and those who responded 'yes' to the question 'Do you live outside of the county?' were included in this study (n=360).

Items on the questionnaire were derived from a thorough review of the literature; also, items from recent surveys in the area were retained to allow for possible longitudinal analysis. The length of stay was operationalized through two questions, 'How many nights in total do you plan to be away from home on this trip?' and 'Have you stayed or will you be staying in Alachua County on this trip?' The distance traveled was operationalized by a question inquiring about the respondent's zip code of his/her permanent address.

A list of 20 activities in the area was created and the respondents were asked to simply check those activities they had participated in (during this outing) in the county. A list of 16 information sources (and one option called 'other') was also generated to ask travelers to indicate the types of sources they had used to help make their travel decision. Demographic variables such as gender, age, income, education, employment status and number of children living in the household were also analyzed. The data were analyzed using the Statistical Package for the Social Sciences (SPSS 11.0).

## 6.0 Results

The first research question aimed to construct a profile of the business tourist. The majority of these business tourists were between 31-50 years old. Also most of them earned between $50,000 and $100,000 in annual income. It is interesting that most of the business tourists to the County have a college degree with some having advanced degrees. It is not surprising however, that seventy percent of the sample of business travelers to the county were men.

The second research question strived to identify if there were in fact, different segments to the business tourist market. The respondents were recoded according to how they answered the question if they stayed overnight during their trip or not and the question about the zip code of their permanent residence to in-state/out-of-state and overnight/daytrip. Simple descriptive statistics were used to identify frequencies. The results do indicate that according to our segmentation criteria, length of stay and distance traveled, there are differences in the business tourist market.

The next research question looked at what types and how many activities business tourists to Alachua County participated in while in the county on business. Interestingly only three activities of the 20 were significantly different among the four business tourist segments. These activities included dining out, taking in nightlife and visiting a state park. However shopping and antiquing was not significantly different, it was the third most participated in activity. Table 1 shows the top 15 activities of the 20 on the questionnaire as respondents indicated which activities they participated in. The number of activities participated in per business segment is significant also. Ranging from 2.25 activities for the ONOS traveler to 1.07 activities for the DTIS traveler.

**Table 1.—Activities participated in by segment**

| Activity | ONOS % | ONIS % | DTOS % | DTIS % |
|---|---|---|---|---|
| Dining out* | 82.9 | 63.3 | 60.0 | 39.3 |
| Take in nightlife* | 31.8 | 34.9 | 13.3 | 7.1 |
| Shopping/antiquing | 23.3 | 31.2 | 6.7 | 28.6 |
| Visit state park* | 14.0 | 2.8 | 0.0 | 3.6 |
| Visit a scenic area | 10.1 | 7.3 | 0.0 | 0.0 |
| Visit community park | 10.1 | 3.7 | 6.7 | 7.1 |
| Swimming | 9.3 | 7.3 | 0.0 | 0.0 |
| Golfing | 7.0 | 1.8 | 6.7 | 0.0 |
| Gallery/museum/historic site | 7.0 | 7.3 | 13.3 | 0.0 |
| Birding/wildlife viewing | 5.4 | 1.8 | 6.7 | 3.6 |
| Attend a UF sporting event | 3.9 | 5.5 | 0.0 | 3.6 |
| Attend a theatrical performance | 3.9 | 2.8 | 6.7 | 0.0 |
| Attend a festival | 3.1 | 5.5 | 6.7 | 7.1 |
| Tubing in the springs | 3.1 | 1.8 | 0.0 | 0.0 |
| Attend a non-UF sporting event | 2.3 | 3.7 | 0.0 | 7.1 |
| Average number of activities* | 2.25 | 1.85 | 1.27 | 1.07 |

* significant at $p \leq 0.05$

**Table 2.—Sources of Information Used by Business Segments**

| Information Source | ONOS % | ONIS % | DTOS % | DTIS % |
|---|---|---|---|---|
| Travel Agent* | 30.3 | 5.7 | 40.0 | 2.4 |
| Previous Visit | 25.8 | 27.4 | 20.0 | 19.0 |
| Internet* | 19.7 | 9.7 | 4.0 | 11.9 |
| Map | 8.6 | 2.4 | 4.0 | 11.9 |
| Own travel files | 5.3 | 0.8 | 4.0 | 9.5 |
| Friends and relatives* | 5.3 | 17.7 | 4.0 | 19.0 |
| Chamber of Commerce | 2.6 | 1.6 | 0.0 | 0.0 |
| Road signs* | 2.6 | 6.5 | 0.0 | 11.9 |
| Travel club | 1.3 | 1.6 | 0.0 | 7.1 |
| Travel guide | 1.3 | 2.4 | 0.0 | 2.4 |
| Total number of sources* | 1.16 | 0.9 | 0.9 | 1.21 |

* significant at $p \leq 0.05$

The fourth research question investigated the types of information sources used by business travelers to gather information for their trips. Table 2 shows those sources that were most frequently used and four sources being significantly different among the four segments. The first being travel agent with the DTOS travelers the most frequent users. The next significantly different source was the internet used more frequently by the ONOS followed by the DTOS traveler. Friends and relatives were used most by DTOS. Interestingly, road signs were used most by the DTIS travelers and next by the ONIS travelers. While not significantly different, previous visit had a strong presence in the sources used by business tourists to Alachua County.

The last research question sought to understand the demographics of each of the four segments of business travelers to Alachua County. Table 3 shows the four demographic variables analyzed that proved to be significantly different among the business segments; age, income, highest level of education and gender. The ONOS tourists were younger men with higher incomes and higher education. The ONIS tourists were older men with middle incomes and some college education. The DTOS tourists were younger men with high incomes and college degrees. Finally the DTIS tourists were middle-aged women with middle incomes and college degrees.

**Table 3.—Demographics by Business Traveler Segments**

| | ONOS | ONIS | DTOS | DTIS |
|---|---|---|---|---|
| Age* | % | % | % | % |
| 18 to 30 | 18.2 | 16.0 | 15.4 | 23.4 |
| 31 to 40 | 30.4 | 24.0 | 50.0 | 14.9 |
| 41 to 50 | 30.4 | 29.6 | 11.5 | 34.0 |
| 51 to 60 | 19.6 | 19.2 | 19.2 | 17.0 |
| 61 to 70 | 1.4 | 8.8 | 0.0 | 4.3 |
| 71 to 80 | 0.0 | 2.4 | 3.8 | 6.4 |
| Income* | | | | |
| Less than 24K | 2.1 | 3.4 | 7.7 | 9.8 |
| 24,001 to 35,000 | 4.2 | 10.3 | 0.0 | 9.8 |
| 35,001 to 50,000 | 8.3 | 15.5 | 7.7 | 8.6 |
| 50,001 to 75,000 | 22.9 | 24.1 | 19.2 | 48.8 |
| 75,001 to 100,000 | 19.4 | 20.7 | 26.9 | 14.6 |
| 100,001 to 125,000 | 16.7 | 14.7 | 19.2 | 4.9 |
| Over 125,001 | 26.4 | 11.2 | 19.2 | 4.9 |
| Highest level of education* | | | | |
| Less than high school | 0.0 | 0.8 | 3.4 | 4.3 |
| High school graduate | 1.9 | 11.0 | 3.4 | 6.5 |
| Technical school | 5.2 | 3.1 | 3.4 | 10.9 |
| College degree | 42.2 | 30.7 | 58.6 | 47.8 |
| Some graduate school | 9.1 | 3.9 | 3.4 | 13.0 |
| Some college | 8.4 | 21.3 | 0.0 | 6.5 |
| Advanced degree | 33.1 | 29.1 | 27.6 | 10.9 |
| Gender* | | | | |
| Male | 73.2 | 71.1 | 75.9 | 47.8 |
| Female | 26.8 | 28.9 | 24.1 | 52.2 |

*Significant at $p \leq .05$

## 7.0 Discussion

This study proposed that there were different segments within the business tourist market. As consistent with the literature the sample is made up of mostly young to middle-aged male business travelers with college educations and high incomes. ONOS business tourists were the most frequent visitor among the business segments followed by ONIS tourists. This is also consistent with the literature in that 85% of all business travelers stay overnight while on a trip.

The ONOS tourists used travel agents frequently but used the Internet more than any other segment of the market and participated in the most activities while on their trip. The in-state travelers used road signs and friends and family more for their information. The overnight travelers did tend to participate in more activities. The DTIS travelers were more females and participated in the least number of activities while in the county on business. The DTOS tourist used travel agents the most of the four segments in the business tourism market.

In general, business tourists did not participate in very many activities (mean=1.61). Of the activities participated in, dining out was most common, followed by taking in nightlife, and visiting a state park. Interestingly, dining out, taking in nightlife, and visiting a state park all varied by "type" of business tourist.

In general, overnight visitors tended to participate more frequently than daytrippers. These activities tended to be those that were easily accessible. Travel Industry of America suggests dining out is one of the activities that

most travelers take part in, so it is not surprising that business travelers are the same. The high participation rate from those ONOS travelers visiting a state park may be the result of a meeting or convention "adding on" this activity to the program.

Another interesting finding is how few information sources were used for all segments. The mean number of information sources used varied between 1.21 and .9 sources. Of the different segments, the DTIS travelers used the most number of sources. With the hype of the internet and travel, most business travelers still used travel agents. Perhaps they are gathering their information about local attractions, airline tickets, weather and driving directions before booking with their travel agents.

Florida residents were the most frequent users of road signs as an information source. This is not surprising in that Florida is a state which uses a large number of billboards and road signs to indicate where to exit the highway for local attractions, restaurants or gas. However, the Florida legislature has passed a law to construct no more new billboards along highways, although the current standing signs may remain. This is an interesting finding that Florida residents are relying on these signs for information and that perhaps the Florida state government is not taking into account the needs and wants of its residents.

As a result of this study has taken place, the Alachua County Visitor and Convention Bureau has implemented a grant program funded by the bed tax in the county to encourage meeting and convention planners to include local activities and attractions in their planning. This has been done through things like the downtown dine around and hosting meetings at local museums. Since then the activity participation among visitors to Alachua County has increased. Other Convention and Visitors Bureaus may use Alachua County as an example of one way to increase activity participation among all visitors and especially business tourists to the county.

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# MYTH VS. FACT: AN EXPLORATION OF FRIGHT TOURISM

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## Abstract

This paper investigates the new phenomena called "Fright Tourism." Fright Tourism occurs when a tourist seeks a scary opportunity for pleasure at a destination that may have a sinister history or may be promoted to have one. This research explores this topic by comparing and contrasting two sites in the world that have a reputation of sinister activity. Salem, Massachusetts and Transylvania, Romania are excellent examples of sites that promote fright tourism.
Keywords: Tourism planning, Dracula, Salem witches

## 1.0 Introduction

What is it that attracts humans to witness events associated with death and crisis? What draws tourists to visit sites of historic catastrophes? And how has popular media influenced tourist's interest in a bizarre history? Dark tourism (Lennon and Foley 2000) and thanatourism (Seaton 1996) are terms that came to the forefront as planners noticed an increase of tourists drawn to macabre attractions. This basic concept describes the phenomena associated with the tourist attraction to sites with a history of war, genocide, assassination and other tragic events.

This paper explores a variation of dark tourism we coin fright tourism, since individuals may seek a thrill or shock from the experience. In particular the tourist will seek a scary opportunity at a destination that may have sinister history or may be promoted to have one. Fright tourism is typically associated with the Halloween season, although it may occur for any frightful place explored for "recreation" or entertainment reasons. Here an exploration of two unique sites in the world will be compared and contrasted. Salem has an established infrastructure promoting the events of the Salem Witch Trials of 1692. In Transylvania, we find recent attention to the Dracula moniker as local Romanians attempt to preserve a cultural heritage in a newly founded market economy. Each site has a similar history while the differences may have been influenced by different political and economic factors.

The next section of this paper will provide the site and situation of the two case studies. In particular, the historical evolution of the fundamental attraction will be described and the current conditions will be explored. These case studies will be evaluated by the Butler (1980) model of the tourist area cycle of evolution. Future plans for both sites will be found next with a discussion of the implications to heritage tourism planning.

## 2.0 Background

Fright tourism has its roots in Dark Tourism or Thanatourism. In either case, tourists are attracted to sites that have a history of death or some disaster. Typical destinations include prisons (Strange, n.d.) or museums (Kazalarska 2002). In some cases the destination may already be managed as a heritage site such as Gettysburg National Military Park (National Park Service 2000). But other sites become unofficial attractions soon after some event. For example, the crash of United Flight 93 on September 11, 2001 created an impromptu memorial and later an official attraction for morning tourists (http://www.flt93memorial.org/). Here, a more whimsical definition is employed for Fright Tourism to reflect the leisure aspect of travel. People see these opportunities to be frightened and socialize with other like-minded travelers. Numerous tours cater to fright tourists. In the U.S., one can engage the services of a Connecticut Tour Operator to travel abroad to frightful attractions (Figure 1).

In America, Fright Tourism is big business. While generally timed around Halloween, fright attractions may be found year-round at amusement parks and museums. Since museum are typically associated with heritage tourism, professionals of the industry are concerned by the in-authenticity of theme park attractions and note that mass tourism will trivialize the factual events (Strange & Kempa 2003). In either case, tourist's interest in fright deserves additional attention.

## 3.0 Case Study

The two case studies may be separated by an ocean, but share a reputation that attracts fright tourists from

Figure 1.—An advertisement for Fright Tourism. (http://toursandevents.com/)

around the world. The first, Salem, Massachusetts has a long history of tourism associated with the frightful events of 1692, while Transylvania, Romania is experiencing a more recent influx of tourism despite an even earlier history of events.

### 3.1 Salem

Salem is a seaside community 25 km north of Boston. Its history is founded on it being the first major port in the United States. Of the 46.7 $km^2$ of area, only 20.9 $km^2$ are land. It is a densely populated town of 40,401 souls. Despite the important role in commerce and trade, the community admits that most visitors know about the "well-known blemish" centered on in the infamous Salem Witch Trials of 1692, more than the rich history of sea faring days (Massachusetts DHCD 2004).

Today tourism in Salem has capitalized on the historic events surrounding the Salem Witch Trials, especially during the Halloween season. While slightly geographically removed, the Salem Witch Trials remain a factual event in the region. Hysteria spread throughout the region in 1692 when the bizarre behavior of two young girls, the daughter and niece of the Salem Village minister, Reverend Samuel Parris, caused local citizens to be alarmed. Fueled by religious intolerance and unfair taxation, the Salem Witch Trails became one of the world's most infamous events.

Today, visitors will find six museums dedicated to the witch story (see the list in Appendix A). Generally clustered downtown, the community celebrates a month long event called Salem Haunted Happenings. The museum and shops open their doors to thousands of costumed revelers every autumn. Salem attracts about a million visitors a year, one quarter of which (pun intended) visit during the Halloween season of October (Lindsay 2004). Local tourist planners are seeking to expand the reputation of Salem beyond the annual celebration called Haunted Happenings. The campaign is centered around the theme "If you think you know Salem, think again" and is designed to promote the city as a year-round attraction and not simply based on the evolved Halloween theme of witches. As Mark Minelli, a tourism branding expert hired by Salem notes in this NPR interview "… no one is trying to take the history of the witches away from Salem. It's always going to be a valid part of what this city is about. Salem has an opportunity… to change its perception in a broader and more compelling way about what the city is and what it can become…" (NPR 2004).

### 3.2 Romania

Romania is found in Southeastern Europe bordering the Black Sea between Bulgaria and Ukraine. The total area is 237,500 km2 with a population more than 22 million. Given the location between the former Ottoman Empire and Hungary, the citizens have had to fight to protect their resources and access to markets through the Black Sea. See Figure 2 for a map of the region.

While Romania may be synonymous with Dracula, it was not until 1972 that Bram Stoker's Dracula was linked with Vlad the Impaler. The vampire myth as we know it today is a product of Eastern and Western European history with a bit of Hollywood thrown in (Secor 2003).

Figure 2.—Romania. (CIA map found at the Perry-Castañeda Library Map Collection)

Is Dracula a product of Romanian history, folklore and legends, or a rather mythical vampire character invented by the writer Bram Stoker, or maybe both? Unlike many of the citizens in Salem who have capitalized on their frightful history, this is not the case in Romania. The citizens have fought for decades the misrepresentation of Vlad the Impaler under the popular name of Dracula, a name penned by Bram Stoker. Interestingly enough is the fact that Stoker's novel was not translated in Romanian until 1992, the same year Romanians saw their first vampire film (Paduraru 2004).

Paduraru, President of the Transylvanian Society of Dracula (TSD), represents an organization devoted to demystifying the confusion between Dracula the vampire (myth) and Vlad Tepes (a historical figure). Paduraru and others have fought the misconception and connection of Bram Stoker's Dracula and Vlad Tepes; a connection perpetuated by the popular title authored by McNally and Florescu (1972). Thus, the dichotomy between Bram Stoker's fictional character Dracula the Vampire and the real Romanian prince Vlad Tepes needs a brief clarification.

Vlad Tepes was, indeed, a real individual. Unlike most international perceptions that depict him as a mysterious prince vampire that sucks the blood of his victims, research describes him fundamentally different. In

**Table 1.—Romania Tourism Data during the 1990s.**

| |
|---|
| A 20% decline in the number of foreign tourists, from 6.5 million to 5.2 million since 1990 |
| A 14% drop in the total number of beds in hotels and accommodation facilities, from 328,000 in 1990 to 283,000 in 1999 |
| A drop in the accommodation occupancy rate from 57.8% to 34.5% |
| A reduction in the length of stays in accommodation by 61% for Romanian tourists and 53% for foreign tourists. |

(Brancusi 2001).

Romania, Vlad Tepes has always been a highly revered and respected hero praised in Romanian history. Born in 1493 in the fortress of Sighisoara, Romania, Vlad Tepes was the son of Vlad Dracul, the ruler of Wallachia. This region was between two powerful forces of Hungary and the Ottoman Empire and thus a political quagmire. Like the previous rulers of Wallachia, Vlad Tepes was forced to cope with the pressures from surrounding empires. Under his rule in the mid-fifteenth Century, Wallachia gained its relative independence and sovereignty, albeit for a short time. While known as an overall fair and brave ruler, he was also known as a harsh punisher of foreign invaders and unruly citizens by impaling them on stakes. He then displayed them publicly to frighten his enemies and warning any would be enemies of his strict moral code. It is this harsh punishment system he enforced that led to the coining of the name Vlad the Impaler.

In contrast, Dracula is the mythical vampire character, created by the Irish writer Bram Stoker whose famous work is the 1897 gothic novel titled Dracula. The research for this novel began in 1890, when Stoker was on holiday in the English seaside town of Whitby, North Yorkshire (Skal 1996). Furthermore, what is even more astonishing is that Bram Stoker selected Transylvania as the focus of his novel without visiting the area (Chelminski 2003). Yet, the vampire legend is not even unique to Transylvania. Most cultures have some type of vampire blood-sucking monster in their folklore. For instance, Chinese vampires are blind, not repelled by garlic and hop! See Geung si sin sang (Mr. Vampire, 1985 Hong Kong) for a contemporary movie about Chinese vampires. And yet, despite or maybe because of its sheer fictional nature, Bram Stoker's invented monster continues to inflame the imagination of movie productions all over the world.

Today, contemporary tourism in Romania is evolving after the fall of communism in 1989 (Light & Andone 1996; Light & Dumbraveanu 1999). In December of that year, the Ceauşescu regime was violently overthrown and led Romania into a period of adjustment as the country became a market economy. Because of its geographic location and diversity of natural resources and landscapes, ranging from the Carpathian Mountains, to the Danube Delta and the Black Sea, Romania could and should perform well in terms of its overall tourism activities and revenues. However, despite general efforts to privatize and revitalize Romania's old tourism infrastructure, in the past decade, the tourism industry has undergone a general decline. Table 1 summarizes some of the recent travel data for Romania.

Optimism prevails since the revenue forecasts are expected to improve from $2,894.4 million in 2000, to $5,613.6 million by 2010 (WTTC 2000). Future expansion of the Predeal-Azuga Ski Area as a four-season attraction is expected to attract tourists (Brancusi, 2001). And tourism along the seacoasts remains a viable attraction, although Light (2000) contends that communism is a primary dark attractant in post–communist Europe, despite the fact that governmental leaders would prefer otherwise.

But a recent proposal by the Romanian Ministry of Tourism to develop a theme park has brought up some concerns. Given the promotion of tourism by the Romanian government, a consortium of planners proposed the first Dracula Theme Park in Transylvania. The former Minister of Tourism, Mr. Matei Agathon Dan, devised the Dracula Park idea after he attended the first Transylvania Society of Dracula (TSD) World Dracula Congress in 1995. A highly publicized event, the minister attracted world wide attention on Romania in general and the myth of Dracula in particular. Soliciting support from local interests, Dan inquired about a location for the proposed park and the TSD suggested that the whole country could be explored for the Dracula

assets. The TSD suggested that if a park was to be built, the logical choice would be in northern Romania, in Transylvania, the region promoted in Bram Stoker's novel.

Sighisoara, Vlad Tepes' birthplace, was promoted by the Town Council and the Romanian Ministry of Tourism to be the park location (Tagliabue 2004). Sighisoara is a small medieval town found between Brasov and Tirgu Mures in central Romania (Figure 2). After all, proponents stated that the best location for the site should be somewhere where Vlad had been born (Tagliabue 2004)

Despite governmental support, the world denounced Sighisoara as the selected site for a variety of reasons. One of the primary objections to this site was the recent declaration of Sighisoara as a World Heritage Site in 1999 (UNESCO 2004). Local planners should have anticipated this conflict. This poor planning is amplified when one hears about the planting of tropical palm trees along the beaches of the Black Sea, only to die from the harsh winters in central Europe (Mcaleer 2003). Likewise, as Turnock (2002) has found, the interior of Romania is plagued with the difficulties associated by remoteness and poor tourist infrastructure. Another site had to be located.

Dracula Park has died in central Romania, only to be reborn further south in the town of Snagov 40 km north of Bucharest (de Quetteville 2003). It is believed that Vlad the Impaler was buried nearby. And by ironic coincidence, the proposed site is found on a state-owned farm, once the residence of Mr. Ceauşescu!

At present (May 2004), the project has been postponed to generate additional funding. It is expected that work at Snagov will begin in the summer of 2004 with support from Coca Cola Helenic Bottling and Brau-Union AG (Austria). The cost of the project has expanded to $70 million and includes a golf course, horse racing and water sports facilities (Paduraru 2004).

## 4.0 Model

This research will explore the Tourist Area Life Cycle theory (Butler 1980) to the two sites. Expanding on the work of Christaller (1963), Butler proposed a hypothetical cycle of area evolution. Similar to a product cycle concept with a basic asymptotic curve, Butler proposed that the Exploration Stage is characteristic of a small number of tourists restricted by the lack of awareness and limited infrastructure. Tourists are attracted to the region because of the unique cultural and natural landmarks. Contemporary examples, notes Butler (1980), include the Canadian Arctic and Latin America.

Next the destination may evolve into the Exploration Stage. Here with an increase of tourists and the establishment of related infrastructure, we see local establishments catering specifically to tourists. This leads into the Development Stage, where a level of organization is begun and a well-defined tourist market becomes apparent. But during this Stage, outside interests begin to take over the management of the tourist resources and extensive commercialization is found. Tourist population will often exceed local numbers.

During the Consolidation Stage, the rate of increase in numbers of visitors will decline, although total numbers will still increase. A distinct recreation business district will be found. Conflicts, if not addressed in earlier stages, will begin to fester. A Stagnation Stage occurs at the peak of visitation. The carrying capacity will be exceeded, with all the associated environmental, economic and social problems. Artificial attractions replace local natural and cultural landmarks. Ownership of properties will frequently change hands. The future may be pessimistic or optimistic. In the Decline Stage, problems from the previous ones "boil-over" and the resort area may disappear completely or perhaps become a slum. Optimistically, the Rejuvenation Stage may take place. This may be the result of an addition of a major artificial attraction (e.g., casino) or expanding access to some natural resource (e.g., spa). In either case, partnerships between public and private interests must take place for the resort area to become rejuvenated (Butler 1980).

### 4.1 Comparison

Since the Salem case study may be in the "Consolidation" stage of the cycle and Romania is in the "Exploration" stage, several lessons may be applied to the proposed project in Europe.

Although the heritage industry may denounce the exploitation of a historic event in a theme park, one cannot underestimate how dark places may be marketable (Strange and Kempa 2003). The decision is not when to plan and manage such an attractions, but rather how.

While tourist fads may come and go, the desire for fright tourism is one that may continue to expand as access becomes easier to visit interesting and macabre sites.

Salem's willingness to exploit their history is explained by the factual nature of the events of 1692. The commercialization in America also defends a region's acceptance of the inevitable, that is, if locals do not capitalize on the phenomena, someone else will. Local tourist planners want to develop a sustainable tourist industry and by encouraging year-round visitation, they may be successful.

For Romania, the last 15 years have seen a tremendous change in the socio-political environment. Results in an early stage of development for Romania could be explained by the post-communist economy. To bring foreign capital into the country, it is better to provide something the tourist demands, rather than try to promote the existing and truthful history. But the Romanian Ministry of Tourism is wise to propose a multifaceted plan to expand tourism opportunities. And the Dracula Park is just one element of the plan. A planned upgrade of infrastructure should help tremendously.

## 5.0 Discussion

Fright tourism is a natural extension of risk recreation or adventure tourism. In those cases, individuals seek an opportunity that may be life threatening for the adrenaline rush. Likewise, fright tourism provides a similar rush, but hopefully not life threatening. Whether the depiction of reality is stretched or not is really the issue. Fantasy experiences are sought by tourists to fulfill some unmet need.

The fantasy afforded by Salem or the one proposed in Romania is basically harmless to the visitor, yet may degrade the quality of life for the local population. The tourism industry always faces this fact. So the issue becomes one of sustainability, that is, can the fright attraction continue to bring in tourists and help the local citizens? The challenge at hand is one where the heritage industry and museums must collaborate with the attraction sectors. Thus we can blend fact and fiction to one that holds values in high regard.

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**Appendix A. Related Websites**

The Transylvanian Society of Dracula
http://www.benecke.com/tsd.html

Museums & Attractions: Salem Witch Trials of 1692
http://www.cryinnocent.com

Salem Wax Museum of Witches & Seafarers
http://www.salemwaxmuseum.com

Salem Witch Village
http://www.salemwitchvillage.net

The Salem Witch Museum
http://www.salemwitchmuseum.com

Witch Dungeon
http://www.witchdungeon.com

Witch History Museum
http://www.witchhistorymuseum.com

# *Perceptions, Preferences and Attitudes*

# THE INFLUENCE OF DISTANCE AND VISITOR PERCEPTIONS OF SECURITY ON PERCEIVED MANAGEMENT PROBLEMS AMONG NEW ENGLAND ANGLERS

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## Abstract

This study explores the nature of the relationship between distance, place attachment, feelings about security and visitors' perceptions of problems at New England lakes. Understanding visitors' past experiences has been a valuable tool for managers in a variety of outdoor recreation settings. In this study, the researchers explore the previously mentioned relationships for a diverse group of anglers at lakes in the New England region. The results of the study show a common trend of positive and significant relationships between the independent and dependent variables. Distance was the least important predictor of perceived problems at the lake visitors went to most often. Security at the lake was the most powerful predictor of management problems, followed by place attachment. All four domains of management problems (lake and ramp access, impact of other users, lake and area conditions, and management actions) were significantly related to the independent variables.

## 1.0 Introduction

Previous studies (Smith 1985; Young & Smith 1979) examining spatial relationship variables (e.g., distance, urban-ness) have found that these variables play an important role in explaining recreation behavior. In this study we were interested in determining the effect of distance on management perceptions. The gravity model is useful for understanding intercity travel; however, the unmodified gravity model is not applicable to recreation travel, particularly with respect to parks (Wolfe 1970). In this case (parks or recreation sites), traffic is unidirectional (i.e., traffic is generated in one place and attracted to the other). In the model, distance is treated as friction. Wolfe (1970) indicated that the relationship between distance and visits to public parks is not simple. Wolfe (1970) suggested that the gravity model is applicable only for recreational trips between 100 and 150 miles. When trips are very short, the friction of distance is negligible, and beyond a certain considerable distance (e.g. one or two days' travel time) the friction of distance not only disappears but even reverses (Wolfe 1970). This is explained by the concept of "inertia" (Wolfe 1972).

The gravity model supports the idea of distance as a powerful predictor; however, this model has been criticized because it includes only two opposing forces that gravitate towards one another. Geographic distance has been shown to play a significant role in recreation site decision-making. Past studies have shown that the closer a person lives to a park, the more frequently they visit that recreation site (Smith 1985; Bell 1977). However, distance does not explain park visitation alone. Another problem with using distance as a variable is the many ways that distance can be measured. Examples include the actual distance between origins and destination (Bell 1977), time (Calatone et al. 1987), and cognitive distance (Ankomah & Crompton 1992). All of these have been shown to have an effect on the relationship to park visitation that visitors may experience. Recent literature (Ankomah & Crompton 1992; Ankomah et al. 1996) has placed emphasis on cognitive distance rather than actual distance because travelers may rely more upon their perceptions than on actual distance traveled.

As previous research shows, distance is not only an important variable for predicting visitors' behavior but is also useful for market segmentation. In the travel and tourism field, destination distance is considered an important traveler decision making criterion (Cook and McCleary 1983; Ankomah et al.1996). The relationships between distance and other variables, however, are not linear (Moutinho & Trimble 1991). For example, within a comfortable day's drive, a family can travel by a car at a cost per mile. Beyond that limit, when a family travels by air, an increase in miles is less important than for traveling by car.

Previous research has also shown that a safe and secure environment is necessary for visitors to outdoor recreation areas. In a study of perceived security at Lake Somerville, Texas, Fletcher (1983) found that perceived security problems negatively affected lake users' enjoyment of the area. Other researchers have found that as many as one-third of park visitors do not feel safe in parks they were visiting (Godbey & Blazey 1983; Westover, 1986).

This study also explores the relationship between place attachment and management problems. Place attachment (PA) is the extent to which an individual values or identifies with a particular setting (Moore & Graefe 1984). Recent attention to customers and their experiences and attitudes towards agencies has both managers and researchers interested in issues like customer satisfaction and management preferences. Mowen et al. (1997) examined the relationships between the constructs of place attachment and activity involvement with experience and setting evaluations. They took an important step in our understanding of place attachment when they examined the relationship of a combined place attachment/enduring involvement scale with both setting and experience evaluations.

## 2.0 Methods

Data for this investigation were collected as part of a larger project focusing on anglers in the New England District of the U.S. Army Corps of Engineers. Angler's names and addresses were collected from mailing lists of angling clubs, Corps of Engineers mailing lists, and from on-site contacts. A total of 176 useable surveys were collected through a mail survey (33% response rate). A follow-up telephone survey was conducted with nonrespondents to test for response bias (n=30). No significant differences were observed between respondents and nonrespondents with regards to multiple survey items. The hypothesized model was tested using regression analysis between independent variables (distance, place attachment, and views of security at the lake) and dependent variables (perceived problems at the lake).

Distance was determined by asking how many miles (one-way) anglers lived from their favorite lake. Eight items were used for the place attachment variable, which factor analyzed as one single dimension. The level of security at the lake was determined by asking how secure the angler felt at their favorite lake during the past 12 months. This study was conducted prior to major concerns arising from the incidents on September 11, 2001. Therefore, the results reflect a general assessment of security/safety at lakes in the New England region. Angler's perceptions of management issues were broken into four categories for the study: lake and ramp access, impact of other users, lake and area conditions, and management actions (Table 1). Lake managers and the researchers deemed these items/categories most relevant for the lakes in this region. The respondents were asked to indicate how serious they considered each of the problems to be using a three-point scale ranging from "not a problem" (1) to "a small problem" (2) to "a big problem" (3).

## 3.0 Analysis and Results

Regression analysis was used to examine the relationships between the independent variables and dependent variables. In Tables 2-5, only those dependent variables that were significantly related to the independent variables are displayed. In Table 2, the most powerful predictors of perceived problems in the lake and ramp access category were place attachment and feelings of security. As place attachment increased, anglers were more likely to consider foot access to the lake and an insufficient number of ramps to be a problem. For feelings of security, the more secure an angler felt at a lake, the lower their concern for the access variables.

The results in Table 3 are slightly different than in Table 2, with feelings of security being the only independent variable to be significantly related to the perceived impacts of other users. Again, the more secure an angler felt at a lake, the lower their concern level was for many of these problem items.

**Table 1.—Management problem items at New England lakes**

| LAKE AND RAMP ACCESS |
|---|
| Lake is difficult to access by vehicle |
| Lake is difficult to access by foot |
| Insufficient number of ramps |
| Ramps are difficult to use |
| Ramps need to be resurfaced |
| Not enough parking near the ramps |
| Hours of operation limit my access to ramps |
| Hours of operation limit my access to fishing areas |
| **IMPACT OF OTHER USERS** |
| Conflicting activities reduce my enjoyment at the lake |
| Too many other anglers along the shore |
| Too many other ramp-users at the lake |
| Groups encountered were too large |
| Some anglers inconsiderate |
| Too many places congested with people |
| Not enough people at the lake |
| Too many dogs at the lake |
| Dogs off leash at the lake |
| Noisy/rowdy people |
| Lack of privacy at fishing areas |
| Fishing areas too heavily impacted |
| **LAKE AND AREA CONDITIONS** |
| Not enough restrooms/portable toilets at the lake |
| Not enough fresh water points at the lake |
| Too many weeds in the lake |
| Too many submerged obstacles |
| Not enough submerged obstacles |
| Not enough fish |
| Fish are not large enough |
| Fish that I catch are not the species that I desire |
| **MANAGEMENT ACTIONS** |
| Not enough information available to anglers |
| Not enough information available on how to prepare for a safe trip |
| Regulations not adequately publicized |
| Too many rules and regulations |
| Too many rangers/management staff at the lake |
| Too few rangers/management staff at the lake |
| Too many facilities along the lake |

**Table 2.—Effects of independent variables on perceived ramp and lake access problems.**

| Independent Variable | Lake is difficult to access by foot | | Insufficient number of ramps | |
|---|---|---|---|---|
| | r | beta | r | beta |
| Place attachment | .167* | .164* | .220** | .226** |
| Feelings of security | -.181* | -.195** | -.122 | -.147* |
| Distance from lake | .076 | .135 | -.006 | .061 |
| R -squared | .077** | | .068** | |

***= Significant at .001 ** =Significant at .01 * =Significant at .05

In Table 4 as well, feelings of security was significantly related to the lake and area condition problems. As with the previous results, the more secure an angler felt at a lake, the lower the level of concern for several of these problem conditions. The exceptions in this table involve the dependent variables "too many weeds" and "not enough fish." In both cases, distance was inversely related to the perceived problem, suggesting that as people travel further to visit lakes, they are less concerned about the number of weeds and amount of fish at the lake. Perhaps this indicates that people are likely to travel farther to reach a lake where they expect to find fewer weeds and better fishing conditions. Place attachment also showed an inverse relationship with the perception that there may be too few fish in the lakes they were fishing.

In Table 5, two of the independent variables (security and distance) were significantly related to several problems in the management actions category. As before with feelings of security, the more secure an angler felt at a lake, the less concern they expressed for these management actions. Distance from the lake was significantly related to two dependent variables. The results suggest that the further an angler travels to a lake, the greater their perception that there are too few rangers/staff at the lake and that there is not enough information available for a safe trip.

The final step in the analysis for this paper involved preparing maps showing the origins of anglers at several of the more popular lakes in the study area. These maps (Figures 1-5) show that the smaller lakes (Lake Buffumville, Lake Congamond, East Brimfield Lake, and Webster Lake) tend to draw anglers from smaller areas. These lakes have a minimal amount of facilities compared to the wide variety of outdoor recreation opportunities that a person might find at the larger Lake Winnipesauke. The maps of the five lakes provide a visual image of the distances that anglers in this study traveled. The majority of anglers come from an area of less than 40 miles. Most of the anglers in this study were bass anglers.

**Table 3.—Effects of independent variables on perceived impact of other user problems.**

| Independent Variable | Some anglers inconsiderate | | Too many other ramp users | | Too many dogs | | Dogs off leash at lake | |
|---|---|---|---|---|---|---|---|---|
| | r | Beta | r | Beta | r | Beta | R | Beta |
| Place Attachment | .114 | -.098 | -.096 | .087 | -.066 | -.019 | -.057 | .021 |
| | -.217** | - | | | | | | |
| Feelings of security | .211** | | -.207 | -.203** | -.160* | -.178* | -.306** | -.327*** |
| Distance from lake | -.001 | .083 | -.085 | .100 | -.024 | -.101 | -.085 | -.138 |
| R -squared | .065** | | .053* | | .045* | | .127*** | |

***= Significant at .001 ** =Significant at .01 * =Significant at .05

**Table 3.—continued.**

| Independent Variable | Conflicting activities reduce my enjoyment | | Too many other ramp-users at lake | | Noisy/Rowdy people | |
|---|---|---|---|---|---|---|
| | r | Beta | r | Beta | r | Beta |
| Place Attachment | -.064 | -.044 | -.096 | -.082 | -.045 | .000 |
| Feelings of security | -.200* | -.215** | -.207** | -.177* | -.331** | -.333*** |
| Distance from lake | -.019 | .079 | -.085 | -.028 | -.066 | -.047 |
| R -squared | .055* | | .045* | | .114*** | |

***= Significant at .001 ** =Significant at .01 * =Significant at .05

**Table 4.—Effects of independent variables on perceived lake and area condition problems**

| Independent Variable | Not enough fish | | Not enough restrooms | | Not enough fresh water points | | Too many weeds in lake | |
|---|---|---|---|---|---|---|---|---|
| | r | Beta | r | Beta | r | Beta | R | Beta |
| Place Attachment | -.180* | -.162* | -.032 | -.005 | -.048 | .068 | -.024 | .006 |
| Feelings of security | -.024 | .001 | -.301 | -.297*** | -.227** | -.219** | -.185 * | -.164* |
| Distance from lake | .245** | -.162* | -.053 | .069 | -.048 | -.022 | -.173* | -.144* |
| R -squared | .060** | | .092** | | .048* | | .049** | |

***= Significant at .001 ** =Significant at .01 * =Significant at .05

**Table 5.—Effects of independent variables on perceived management action problems**

| Independent Variable | Not enough information available to angler | | Not enough information available to plan for a safe trip | | Too few rangers/ management staff | | Too many facilities along lake | |
|---|---|---|---|---|---|---|---|---|
| | r | Beta | r | Beta | r | Beta | r | Beta |
| Place Attachment | .101 | .113 | .086 | .073 | -.020 | -.006 | -.040 | -.017 |
| Feelings of security | -.175* | -.201** | -.160* | -.157* | -.332** | -.327*** | -.225** | -.237** |
| Distance from lake | .095 | .115 | .127 | .173* | .120 | .148* | .042 | .105 |
| R-squared | .060** | | .057** | | .124*** | | .066** | |

***= Significant at .001 ** =Significant at .01 * =Significant at .05

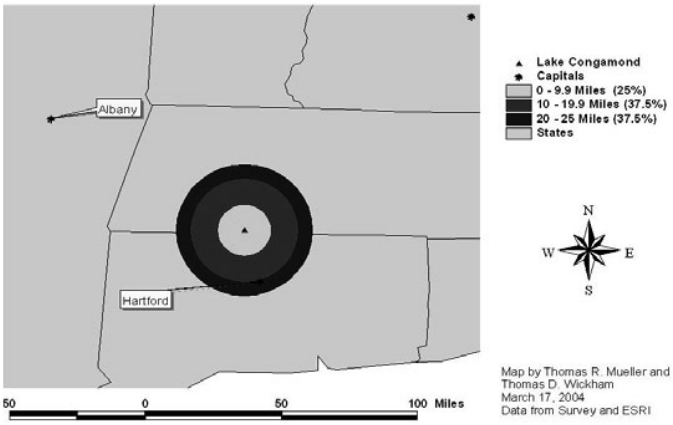


Figure 1.—Lake Conganomd (% Respondents)

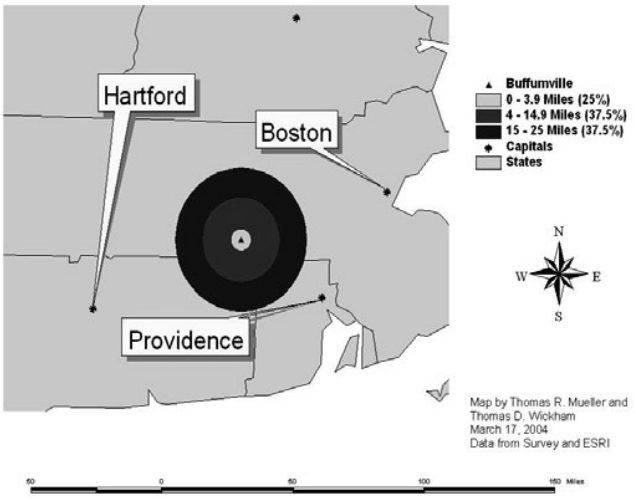


Figure 2.—Distance from Lake Buffumville (% Respondents)

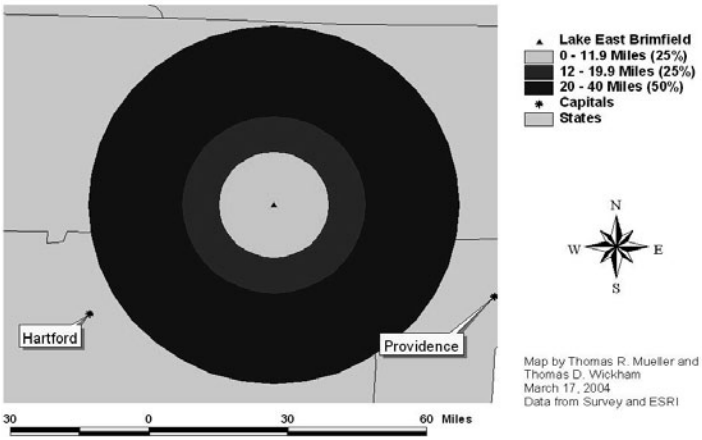


Figure 3.—Distance from Lake East Brimfield (% Respondents)

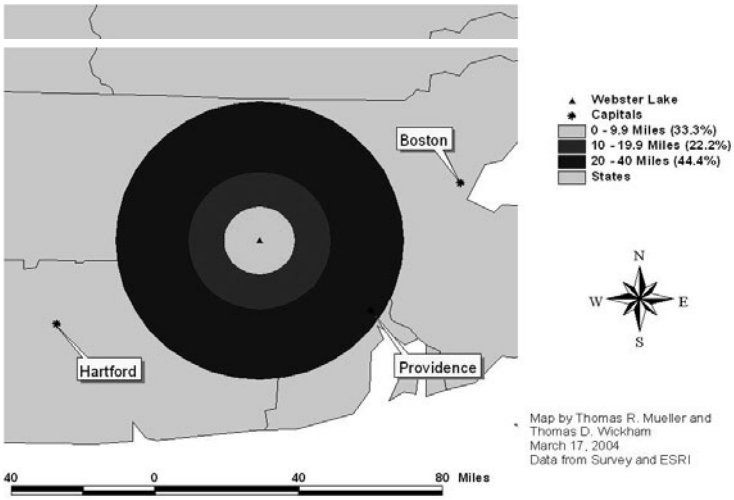


Figure 4.—Distance from Webster Lake (% Respondents)

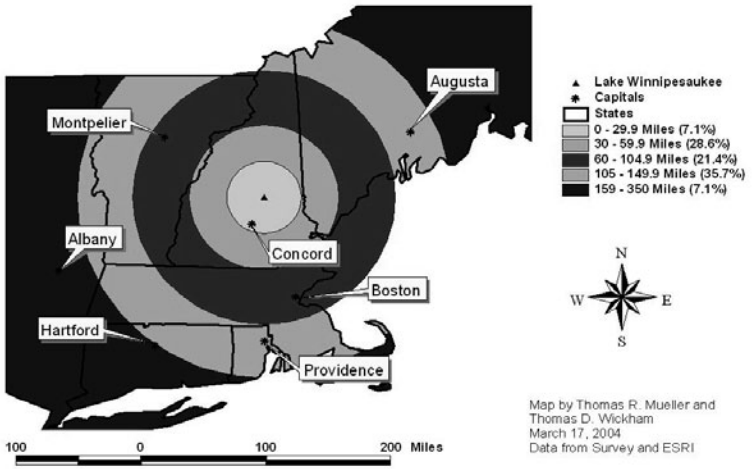


Figure 5.—Distance from Lake Winnipesaukee (% Respondents)

Many of these anglers are quite mobile, highly involved (members of fishing clubs or have invested large amounts of money for fishing boats and equipment). Lake Winnipesauke is a large lake in the New England region that attracts a large number of people. Anglers that fished at this lake were willing to travel as far as 350 miles. The majority of New England's major population centers fall within this distance range. The larger draw of Lake Winnipesauke makes sense due to the greater amount of resources available (camping, hiking and other outdoor recreation activities), as well as the fishing opportunities. Managers could use these maps to help visualize where most of their visitors come from when considering important managerial decisions or actions that might impact the various user groups at these lakes. Another use for these maps would be to promote the value (recreation opportunities) of these lakes to the areas from which they receive most of their visitors.

**Conclusions and implications**

There are a number of steps that could be taken to improve the overall study. The first would be to obtain a larger sample size. This would allow the researchers greater flexibility in making comparisons between lakes and various angling groups. The researchers might also consider other distance variables. We believe that the use of perceived distance or actual travel time might provide greater insight into how distance might influence how anglers perceive management problems and actions. Another option would be to consider examining the relationship between place attachment and distance variables. Other researchers might consider using the same variables in different recreation settings or modifying the current constructs as used in this study. The refinement of current measures might provide information to make more informed management decisions.

In summation, there were a number of important and interesting results. First, security at the lakes was the most consistent predictor of management problems among anglers in the New England region. Place attachment was also an important predictor of the some of the dependent variables. The last independent variable (distance) did not perform up to expectations and only played a small role in the analysis of this study. Perhaps some of the changes suggested above might improve our understanding of how distance may influence anglers' management perceptions.

In conclusion, all four types of management problems (lake and ramp access, impact of other users, lake and area conditions, and management actions) were significantly related to the independent variables in this study. The suggested changes may provide improved information from which researchers could draw stronger conclusions in future studies. In the end, such information may help resource managers to better understand how visitors' attitudes and travel behaviors influence management perceptions for lakes in New England.

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# COMPARATIVE ANALYSIS OF VISITOR ATTITUDES AND PREFERENCES IN THREE ADIRONDACK MANAGEMENT AREAS

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## Abstract

This study developed measures of people's perceptions of the natural and social conditions they experienced while visiting a unit within the Adirondack Park. The importance of and satisfaction with trip features did not differ in any meaningful way between areas, even though activity participation did. Nature and solitude were important factors for almost everyone and most people were satisfied with their trip experience. The frequency of problems differed by area, but the effect on visitors if a problem was observed did not differ by area. Support for management actions was as expected, with support more likely among those who experienced problems.

## 1.0 Introduction

In New York State, the State Land Master Plan (SLMP) requires the development of Unit Management Plans (UMPs). The Adirondack Park Agency (APA) sets the policy for public lands within the Adirondack Park via the SLMP. For each plan, visitor demand must be estimated and the carrying capacity of the area for human use must be considered. The Department of Environmental Conservation (DEC) is in charge of developing and implementing UMPs for the Adirondack Park. They have chosen to use the Limits of Acceptable Change (LAC) in their planning process instead of attempting to measure the more complex carrying capacity of an area. To utilize LAC, information on visitor use and resource and social conditions must be gathered.

The objectives of our study were to obtain estimates of visitor use, measure natural and social conditions, and assist DEC in the development of a protocol for collecting such information in the future. The results discussed herein focus on the second objective of this large study, but these results are limited to visitor perceptions and experiences on their trip and not the actual conditions. While measuring various aspects of visitor experiences is directly useful for managers and their accountability to the public, there are also important implications for designing social and resource indicators for an LAC planning process (Hendee and Dawson 2002). We developed measures of people's perceptions of the natural and social conditions they experienced while visiting a unit within the Adirondack Park. We also measured their level of satisfaction with various aspects of their visit and their preferences for management actions.

With the DEC and APA, we chose three areas for study within the Adirondack Park based on the diversity of recreational opportunities each provided, the stage of the UMP in the planning process, and how representative each area was of other units in the Adirondack Park. The study areas chosen were sufficiently similar to other areas in the Park that the findings could inform planning in other areas. The three areas chosen were the Bog River Management Complex, McKenzie Mountain Wilderness, and West Canada Lake Wilderness Area. Comparisons between the areas were designed to lead to insights and generalizations about the congruency or disparity of attitudes and preferences among recreationists.

The three management units chosen offered a diversity of recreational opportunities. The Bog River Management Complex in the western Adirondacks has several short day-hiking trails, most notably up Mt. Arab, and several drive-in campsites along Horseshoe Lake, but is known primarily for its non-motorized boating and camping opportunities up the Bog River Flow and into Lows Lake. The McKenzie area, adjacent to Lake Placid and Saranac Lake, is primarily a day-hiking area with a few overnight backpacking opportunities. The West Canada Lake Wilderness Area in the southern Adirondacks has a few day-hiking opportunities, but is primarily known for its overnight backpacking and wilderness fishing opportunities; the Northville-Lake Placid trail runs through this area.

## 2.0 Methods

Information on visitors to the three study areas was acquired through a two-stage survey process. First,

**Table 1.—Interview and response rate information, by area.**

| | McKenzie | West Canada | Bog River |
|---|---|---|---|
| Interview Information | | n | |
| Interviews attempted | 84 | 105 | 231 |
| Interviews completed | 83 | 103 | 231 |
| | | Percent % | |
| Refusal Rate | 1.2 | 1.9 | 0.0 |
| Response Rate Information | | n | |
| questionnaires mailed | 74 | 94 | 218 |
| returned undeliverable | 1 | 0 | 4 |
| returned completed | 52 | 75 | 176 |
| | | Percent % | |
| Adjusted response rate | 74.0 | 79.8 | 82.2 |

visitors were interviewed at trailheads, campsites, or put-in boating locations in one of the areas. These on-site interviews asked a few basic use-type questions and then obtained name and address information for stage two, a mail survey.

Mail questionnaires were developed based on past research by Human Dimensions Research Unit and SUNY-ESF staff and a review of recent literature (Shafer and Hammitt 1995; Cole and others 1995; Dawson and others 2001; Dawson and others 2002). Most questions on visitor characteristics and attitudes were similar for each area. Importance and satisfaction scales of trip features were developed from the work of Connelly (1987), Bowes and Dawson (1998), and Newman and Dawson (1998). Focus groups held in each area identified current issues or concerns in the area and possible management actions to address those concerns. Questions on natural and social conditions observed, possible problems, and acceptability of management actions were tailored more specifically to each area, based on the results of focus group meetings held in each area.

Each week from May through October, 2003, names and addresses of those interviewed in the field were obtained. Questionnaires were mailed to those individuals within a week of when they were interviewed in the field. Up to three reminder letters were sent to nonrespondents over the course of the month following their interview in the field to try to encourage their participation in the study.

Data from the interviews and the mail questionnaires were analyzed using SPSS software (version 11.0). Factor analysis (principal components analysis with varimax rotation) was used to group items on the importance and satisfaction scales. Statistical comparisons between the three areas were made using chi-square, t-test, and Scheffe's test.

## 3.0 Results and Discussion

We attempted to interview 420 people for this study and completed 417 interviews (Table 1). All interviewees who provided their name and address were sent follow-up questionnaires, unless they resided outside the U.S. and Canada or had been interviewed previously and had already received a questionnaire. Of the questionnaires mailed, almost all were deliverable and most were completed and returned to us (Table 1). The response rate, adjusted for the few undeliverable questionnaires, ranged from 74% to 82%. These high response rates likely can be attributed to the face-to-face contact made during the field interview, the high saliency of the topic, and our use of follow-up mailings to encourage response.

Nonresponse bias was found in only one of the three variables compared. Those from smaller groups (4 people or less) were more likely to respond (81%) than those from larger groups (67%) (P=0.04). The other two variables examined for nonresponse bias, past experience in the area and day-use versus overnight-use, were not significantly different.

Most visitors to West Canada Lake Wilderness and the Bog River area stayed overnight, whereas visitors to McKenzie Mountain Wilderness were largely day-users (Table 2). Bog River area visitors stayed on average 3 days and West Canada Lake users, just slightly over 2 days.

**Table 2.—Length of trip, by area.**

| | McKenzie | West Canada | Bog River |
|---|---|---|---|
| Length of Trip* | – – – – – – – – – – – – | Percent | – – – – – – – – – – – – – – |
| Day-use | 71.2 | 37.8 | 35.8 |
| Overnight | 28.8 | 62.2 | 64.2 |
| | – – – – – – – – – – – – | Days | – – – – – – – – – – – – – – |
| Average trip length | 1.8[a] | 2.3 | 3.0[b] |

*Statistically significant difference between areas using Chi-square test at P = 0.05.
[a,b]Statistically significant difference between areas using Scheffe's test at P = 0.05.

**Table 3.—Recreational activities participated in during trip, by area.**

| Recreational Activities | McKenzie | West Canada | Bog River |
|---|---|---|---|
| | – – – – – – – – | Percentage participating | – – – – – – – – |
| Hiking* | 94.2 | 88.0 | 50.6 |
| Camping* | 9.6 | 53.3 | 58.0 |
| Canoeing or kayaking* | 15.4 | 21.3 | 67.0 |
| Observing birds or other wildlife* | 25.0 | 40.0 | 53.4 |
| Photography* | 21.2 | 37.3 | 42.0 |
| Swimming | ----- | 28.0 | 39.2 |
| Fishing* | 3.8 | 29.3 | 33.5 |
| Plant/flower identification | ----- | 24.0 | 25.6 |
| Picnicking | 9.6 | 14.7 | 22.7 |
| Fitness running | 9.6 | ----- | ----- |
| Motorized boat use | ----- | ----- | 5.7 |
| Hunting | 0.0 | 8.0 | 5.1 |
| Mountain biking | ----- | ----- | 1.7 |
| Rock climbing | 0.0 | ----- | ----- |
| Other activities | 5.8 | 8.0 | 7.4 |

*Statistically significant difference between areas using Chi-square test at P = 0.05.

As would be expected based on our selection of research areas, activities participated in while on recreational trips differed by area (Table 3). Almost all McKenzie Mountain and West Canada Lake visitors went hiking during the trip in which they were interviewed. Half of Bog River area users went hiking and two-thirds participated in canoeing or kayaking. Fishing, swimming, observing wildlife, and photography were more popular among West Canada Lake and Bog River visitors than McKenzie Mountain visitors. Perhaps this was because West Canada Lake and Bog River users were more likely to be camping, staying overnight, and thus had more time in the area to participate in these activities. For the Bog River area, mountain biking and motorized boating were permitted in parts of the management unit, but we found few users engaged in those activities.

Respondents were asked to rate the importance of 13 trip features and their satisfaction with each feature on their trip. Using the results of factor analysis on the satisfaction items (70% of total variance explained), we have grouped the features into three factors for ease of discussion, and present them here in order of the percent of variability explained by the factor. The first, which we termed "social bonding and rejuvenation," contains items such as "opportunity to strengthen close personal relationships" and "opportunity to escape everyday problems." Respondents rated the importance of items in this group generally in the "important" range (4.0) for trip success Table 4). The second factor consisted of four items related to the concept of "solitude." These items (e.g., not feeling crowded by other groups) were rated as "very important" (4.2-4.8) by most respondents

**Table 4.—Importance of and satisfaction with trip features, by area.**

| | Importance | | | Satisfaction | | |
|---|---|---|---|---|---|---|
| Trip Features | McKenzie | West Canada | Bog River | McKenzie | West Canada | Bog River |
| *Social Bonding and Rejuvenation* | – – – – – – – – – – – – – – Mean Score[a] – – – – – – – – – – – – – – | | | | | |
| Opportunity to strengthen close personal relationships | 3.7 | 3.6 | 3.9 | 4.1 | 4.0 | 4.2 |
| Feeling of camaraderie within my group | 3.8 | 3.8 | 4.0 | 4.2 | 4.0 | 4.2 |
| Sharing the experience with my companions | 3.9 | 4.0 | 4.3 | 4.2 | 4.1b | 4.4c |
| Opportunity to escape everyday problems | 4.4 | 4.3 | 4.1 | 4.4 | 4.3 | 4.3 |
| Feeling of relaxation | 4.5 | 4.4 | 4.5 | 4.4 | 4.3 | 4.4 |
| *Solitude* | | | | | | |
| Not feeling crowded by other groups | 4.5 | 4.6 | 4.5 | 4.2 | 4.2 | 4.0 |
| Feeling of peace and quiet | 4.8 | 4.6 | 4.6 | 4.5 | 4.4 | 4.2 |
| Experiencing solitude | 4.2 | 4.3 | 4.2 | 4.0 | 4.0 | 4.0 |
| Privacy from most people, yet a personal relationship with my family and friends | 4.2 | 4.0 | 4.2 | 4.1 | 3.9 | 4.1 |
| *Nature* | | | | | | |
| Scenic beauty | 4.5 | 4.5 | 4.6 | 4.6 | 4.4 | 4.7 |
| Enjoying the natural world | 4.8 | 4.6 | 4.6 | 4.6 | 4.5 | 4.5 |
| Seeing, hearing wild animals and birds | 4.1 | 4.2 | 4.3 | 3.8 | 3.8[b] | 4.1[c] |
| Rugged, wildness environment | 4.1 | 4.3 | 4.2 | 4.2 | 4.2 | 4.2 |
| Overall trip satisfaction | | | | 4.4 | 4.3 | 4.5 |

[a]Mean score was based on 5-point Likert-type scales ranging from 1 = very unimportant to 5 = very important and 1 = very dissatisfied to 5 = very satisfied.
[b,c]Statistically significant difference between areas using Scheffe's test at P = 0.05.

regardless of management area. "Privacy from most people, yet a personal relationship with my family and friends" was rated as slightly less important. The third factor had items related to the concept of "nature" and the enjoyment of the natural world. These items were also "very important" (4.1-4.8) to most respondents. No significant differences were found between areas regarding the importance of trip features.

Respondents were generally satisfied with each of the trip features and their overall trip experience (Table 4). There was no statistically significant difference in overall satisfaction level between management areas. Satisfaction averaged in the "satisfied" to "very satisfied" range (4.0-4.4) for items in the "social bonding and rejuvenation" factor. Bog River respondents were more satisfied than visitors to West Canada Lake with "sharing the experience with my companions." Respondents were mostly "satisfied" or "very satisfied" (3.9-4.5) with the "solitude" factor. They were particularly satisfied with the item "feeling of peace and quiet." Respondents were generally "very satisfied" with the "nature" factor, especially "scenic beauty" and "enjoying the natural world." Compared to other items in this factor, respondents were less satisfied with their experiences of "seeing, hearing wild animals and birds," especially visitors to McKenzie Mountain and West Canada Lake.

Feeling crowded in a wilderness-type environment is a social condition of concern to managers. In the three

**Table 5.—Feelings about the number of other people seen on this trip, by area.**

| Types of Groups | McKenzie | West Canada | Bog River |
|---|---|---|---|
| *Groups using motorized equipment (like motor boats, jet skis, ATVs)* | | | |
| Too few | ----- | ----- | 9.6 |
| About right | ----- | ----- | 30.4 |
| Too many | ----- | ----- | 29.6 |
| Did not matter | ----- | ----- | 30.4 |
| *Groups with 10 or more members* | | | |
| Too few | 5.1 | 7.5 | 9.3 |
| About right | 30.8 | 41.5 | 31.4 |
| Too many | 7.7 | 13.2 | 23.8 |
| Did not matter | 56.4 | 37.8 | 35.5 |
| *Canoeing and boating groups on waterways* | | | |
| Too few | ----- | ----- | 6.1 |
| About right | ----- | ----- | 61.8 |
| Too many | ----- | ----- | 14.3 |
| Did not matter | ----- | ----- | 17.8 |
| *Hiking groups on trails** | | | |
| Too few | 6.0 | 5.8 | 4.0 |
| About right | 60.0 | 71.3 | 50.1 |
| Too many | 10.0 | 10.0 | 10.8 |
| Did not matter | 24.0 | 12.9 | 35.1 |
| *Camping groups near my campsite** | | | |
| Too few | 2.9 | 5.1 | 9.1 |
| About right | 25.7 | 55.9 | 59.0 |
| Too many | 11.4 | 11.9 | 8.4 |
| Did not matter | 60.0 | 27.1 | 23.5 |

*Statistically significant difference between areas using Chi-square test at P = 0.05.

areas studied, respondents felt the number and type of groups (e.g., hiking, canoeing) seen were generally "about right" or "did not matter" (Table 5). The two exceptions were in the Bog River area where almost one-third of visitors felt there were too many groups using motorized equipment (more visitors who were new to the area felt this way) and one-quarter of respondents felt there were too many groups with 10 or more members.

Respondents were asked if the number of each of the various types of groups detracted from their enjoyment. Most of those who thought there were too many of a specific type of group felt the number of those groups detracted at least "a little" from their enjoyment. Some respondents who thought the number of groups was about right also felt they detracted "a little" from their enjoyment. Groups using motorized equipment in the Bog River area detracted at least "a little" from the enjoyment of 40% of visitors. Groups with 10 or more members detracted from the enjoyment of one-third of visitors to the Bog River, but far fewer visitors at McKenzie Mountain or West Canada Lake.

Litter was the most frequently cited negative situation observed in all three of the areas, followed closely by campsites that had lost vegetation due to human use and trees that had been damaged or cut down by people (Table 6). These latter two conditions were more frequently seen in West Canada Lake Wilderness and the Bog River area than in McKenzie Mountain, probably because less camping occurs in McKenzie. In total, 59% of those who said they were camping on

**Table 6.—Natural and social conditions observed and for those observing a condition, the percent indicating the condition detracted from their enjoyment, by area.**

| Natural and Social Conditions Observed | McKenzie | West Canada | Bog River |
|---|---|---|---|
| | - - % Seeing Condition (% Detracted from Enjoyment) - - | | |
| Litter left behind by people | 37.3 (94.1) | 53.5 (97.4) | 45.3 (94.4) |
| Campsites that have lost vegetation due to human use* | 18.8 (66.6) | 40.8 (75.9) | 45.4 (67.6) |
| Trees that have been damaged or cut down by people* | 23.5 (75.0) | 45.1 (90.6) | 42.2 (81.2) |
| Many side trails off the primary trail, created by people | 27.5 (28.6) | 33.8 (39.1) | 23.0 (37.1) |
| Trails which were worn down from heavy use | 31.4 (62.5) | 35.2 (52.0) | 20.9 (53.1) |
| Inappropriate disposal of human body wastes* | 5.9 (66.6) | 14.1 (80.0) | 26.3 (92.7) |
| Camping equipment or boats left by other groups | 14.6 (28.6) | 23.9 (41.2) | 16.9 (48.0) |
| More than one campsite fire ring at a campsite | ----- | 12.9 (55.6) | 11.8 (38.9) |
| People using motorized equipment (like ATVs) | 0.0 (na) | 12.7 (88.8) | ----- |
| Mountain bikers on trails | 8.2 (100.0) | ------ | ----- |

*Statistically significant differences between areas using Chi-square test at P = 0.05.

this trip indicated they had seen campsites that had lost vegetation due to human use. Worn trails or side trails created by people were observed by one-third of visitors. Inappropriate disposal of human body wastes was observed primarily in the Bog River area. People using motorized equipment or mountain bikes in areas where they are not allowed were observed very infrequently.

Those observing a particular problem with a natural or social condition were asked if the condition detracted from their enjoyment of the area. Some conditions, like litter, detracted from almost everyone's enjoyment (Table 6). This was also true for the few people who observed motorized equipment or mountain bikes in areas where they are not allowed and for those who observed inappropriate disposal of human body wastes. For other conditions mentioned by many people, such as campsites that had lost vegetation due to human use, two-thirds to three-quarters felt the condition detracted from their enjoyment. The remaining conditions (e.g., trail conditions) were less likely to have detracted from people's enjoyment of an area. Interestingly, while the number of people observing certain problem conditions in each area differed, the amount the condition detracted from the experience did not differ by area.

Of the various potential management techniques suggested, limiting the sizes of groups (either 15 people traveling together or eight camping together) were among the most strongly favored (Table 7). On average, respondents favored these actions. While large groups were not identified earlier as a problem, with the possible exception of the Bog River area, visitors appear to want to maintain the status quo with regard to group size. Among those who thought large groups were a problem on their trip, almost all wanted to limit the size of groups.

Revegetation of sites was favored, especially in the McKenzie Mountain Wilderness, or viewed neutrally on average by respondents (Table 7). Respondents who indicated that vegetation loss or tree damage at campsites detracted from their enjoyment were more likely to favor this management action. The installation of pit toilets was supported by most visitors to the Bog River area, but less so by McKenzie Mountain Wilderness and West Canada Lake Wilderness visitors. Those who said inappropriate disposal of wastes detracted from their enjoyment were more likely to favor installation of pit toilets.

Development of additional campsites or lean-tos was opposed on average by respondents (Table 7). Perhaps this was due in part to the wording of the item which stated the trade-off that more sites might give more campsite options, but might also encourage more people to use the area. Those who had camped on their trip were more likely to have an opinion about the development

**Table 7.—Support or opposition for possible management techniques, by area**

| Possible Management Techniques | McKenzie | West Canada | Bog River |
|---|---|---|---|
| | | Mean[a] | |
| Limit the size of boating and hiking groups to 15 people traveling together | 3.8 | 3.6 | 3.9 |
| Limit the size of camping groups to 8 people as specified in the State Land Master Plan | 3.7 | 3.8 | 3.9 |
| Provide better information on when and where heavy canoeing, camping and hiking use is occurring | 4.0 | 3.9 | 3.9 |
| Build bulletin boards to post maps and travel information at popular launching sites and trailheads | 3.7 | 3.5 | 3.9 |
| Increase enforcement of rules and regulations, which would result in your seeing and talking with more rangers | 3.3 | 3.4 | 3.5 |
| Require camping only at designated sites, which would keep the whole area more natural, but might prevent you from camping during peak use periods | 3.6[c] | 2.8[b] | 3.2 |
| Revegetate sites impacted by human use, which would temporarily close those sites for your use | 3.8[c] | 3.4 | 3.3[b] |
| Install pit toilets, which would reduce problems with human waste, but give a more developed appearance | 2.9[b] | 2.9[b] | 3.6[c] |
| Increase directional signage on hiking trails, which allows people to better follow trails, but may give a more developed feel to the wilderness | 3.2 | 2.6[d] | ----- |
| Build bridging, stepping stones, or water bars over wet/swampy areas, which might give a more developed feel to the wilderness | 3.4 | 3.3 | ----- |
| Develop new campsites, which would give you more site options, but may encourage more people to use the area | 2.7 | 2.4 | 2.8 |
| Develop new lean-tos, which would give you more site options, but may encourage more people to use the area | 2.8 | 2.6 | 2.8 |
| Allow groups up to 12 people to practice minimum impact camping off-trail, provided they obtain a special use permit | 3.0 | 3.0 | ----- |
| Prohibit use of campfires, which might make campsites more natural, but would require you to carry a stove and fuel | 2.7 | 2.1[d] | ----- |
| Remove trees to provide scenic vistas, even though it disturbs the natural area, and may encourage more people to visit | 2.0 | 2.0 | ----- |

[a]Mean score was based on a 5-point Likert-type scale where 1 = strongly oppose and 5 = strongly favor.
[b,c]Statistically significant difference between areas using Scheffe's test at P = 0.05.
[d]Statistically significant difference between areas using t-test at P = 0.05.

of new campsites; 54% were opposed and 35% were in favor. Those who said vegetation loss or tree damage at campsites detracted from their enjoyment were even more likely to oppose the development of additional campsites or lean-tos; they likely did not see this as a solution to the problem of campsite degradation.

Respondents made suggestions for additional management techniques by responding to an open-ended question. In the Bog River area, several people suggested working on a ban for all motorized equipment currently allowed and limiting the number (not the size) of large groups allowed in the area at one time.

## 4.0 Conclusions

The importance of and satisfaction with trip features did not differ in any meaningful way between areas, even though activity participation did. Nature and solitude were important factors for almost everyone and most people were satisfied with their trip experience. Overall satisfaction was high in all areas, which is not an uncommon finding of recreational surveys, as everyone wants to enjoy their leisure time.

The frequency of problems differed by area, but the effect on visitors if a problem was observed did not differ by area. For example, campsite degradation was more frequently a problem in West Canada Lake Wilderness and the Bog River area than McKenzie Mountain Wilderness, but across all areas, two-thirds to three-quarters of those affected felt it detracted from their enjoyment. At what frequency of occurrence and level of impact are management actions necessary? Support for management actions was as expected, with support more likely among those who experienced problems.

Measuring various aspects of visitor experiences is directly useful to managers and their accountability to the public, and also has important implications for designing social and resource indicators for an LAC planning process. In both management and LAC planning, managers largely influence visitor experiences through management of social and resource conditions, but they must be aware of visitor reactions to those conditions. Visitor experiences are one type of management input that serves as a monitor of change (e.g., visitor perceptions of increasing litter or degraded campsites). However, only direct measurement of those conditions by objective and scientific techniques will show if an indicator for social and resource conditions has been exceeded or not (e.g., no more than one piece of litter per 1,000 feet of trail, no more than 100 sq. ft. in a campsite without herbaceous ground vegetation). Visitor perceptions help inform managers, but direct measurement of social and resource conditions are needed to completely carry out LAC planning and management processes.

## 5.0 Acknowledgments

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# *Trends*

# NORTHEAST'S RECREATION TRENDS AND MARKETS — A NEW DATA SOURCE

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## Abstract

The purpose of this paper was to examine recreation trends and markets in the Northeast over the period of 1993 through 2002 through the current NSGA data set. Activities examined were assigned into four major groups and included community based; resource-based; water-based and winter-based activities. The data set analyzed included data from the National Sporting Goods Association and the National Family Opinion, Inc. Trend patterns were presented and activities were examined to determine if patterns in the selected activities occurred. Fifteen (15) of 34 activities increased by overall market size in the Northeast. Resource-based activities and, in particular, trail-based activities (hiking, backpacking, off- and on-road mountain biking) revealed strong growth trend patterns in market size. The activity with the overall highest average annual increase in market size in the Northeast was participation in paint ball games followed closely by snowboarding.

## 1.0 Introduction

A number of different types of activity trends have occurred in recent years within an ever-widening area of recreation and sport pursuits. Some trends have been gradual in nature while others have been much more dramatic. The examination of trends over time is a fundamental necessity to determine if investments in the future are needed and whether appropriate planning needs to occur. Kelly and Warnick (1999) indicated that there were few consistent studies of a broad spectrum of recreation activities until their work in 1999 was completed. In recent years, the compilation of the National Sporting Goods Association (NSGA) data (2004) and the United States Forest Service's (USFS) National Survey on Recreation and the Environment (2004) data have provided new insights into the changes of a variety of activities. However, it is critical in these studies to both continue the monitoring of specific activities and to examine if these national trends are reflected in regional and local areas. Likewise, it is important to monitor the data consistently to determine if the changes in trends are gradual, dramatic, sustained or even masked within inter-regional locales. Shifts and interests in recreational activities are indeed likely to occur. Some of the shifts in activity patterns will also be reflected in how our populations in various regional areas change and evolve in the coming decades. With certain regions aging faster demographically (i.e., the Northeast) and other regions (i.e., the South and Southwest) down-aging with the influx of younger adults, young families and young immigrants, significant difference could occur within respective regional recreational interests and pursuits. Other changes may also be the result of activity promotion, marketing and improvements in technology. Many will react to these shifts by devising marketing strategies to grow various activities or will react to the changing demographic profiles of their respective areas by concentrating on selected profitable markets. However, these differences and changes, both gradual and dramatic, will clearly provide some evidence of future demand for the agencies supplying the management of resources for these recreational pursuits.

Recent studies (Warnick 2000, 1998, 1997a, 1997b, and Warnick and Kelly 2000) indicated activity trends in the Northeast and New England had become both mature and evolving as new activities replaced older common placed pursuits. Some activities such as biking for example have become more segmented and specialized. It is no longer "biking", but has become specialized with tour biking, on-road mountain biking, off-road biking and other hybrids. Other studies (Warnick 2002) have examined how New England's travel markets were also highly linked to active recreational pursuits. For many of the Northeast and New England attractions, the careful monitoring of trends in activities and markets is critical to these tourism-based economies. One must know what is and has happened and what will likely happen in the future.

## 2.0 Purpose of Study

The purpose of this study is to: 1) to first examine, suggest and assign typical trend patterns; 2) to identify national trends patterns in popular recreation pursuits and; 3) to examine the recreation trends of selected recreational activities in the Northeast over the time period of 1993 through 2002.

## 3.0 Method

In previous studies (Kelly and Warnick 1999; Warnick 1998), two databases were examined to understand the recreation trends in the Northeast and New England. These data sets included Simmons Market Research Bureau's Study of Media and Markets and Standard Rate and Data Service's (SRDS) Lifestyle Market Analyst. However, in this study, a new data set was explored which contained ten years of trend data from 1993 through 2002. The data came from the NGSA's sport business research network (www.sgrnet.com, 2004) and it was supplied to NGSA through the National Family Opinion (NFO) Research Group via this consumer research panel. The NFO's Consumer Panel Research Study is an annual survey of 20,000 households and is balanced and weighted to actual household regional distribution. The response rates exceed 70% and confidence intervals exceed 95%. The National Sporting Goods Association contracts from NFO to complete their annual study of sports and recreational activities. The data are compiled and made available to contracting universities for teaching and research purposes. The data are presented in tabular form, but there is no trend analysis. There is only a compilation of year participation totals of the market size and corresponding information the demographics and regional distribution of the markets.

There are a number of advantages to the use of the data set. They include: 1) the most recent data available – 2002 data for example; 2) a broad set of recreational activities; 3) the inclusion of children and youth activities as well as adults ranging in age from 7 years and up; and 4) the provision of data on both frequent (committed) participants, casual participants (these participants must be extrapolated) and regional profile participation. However, it suffers from some of the same limitations of the early Simmons data. The information is available only in tabular form; it must be complied accordingly, and it does not permit the re-analysis of the information on a selective basis. The data are not available at the web site on a case-by-case basis nor is the data available in any digital format for additional statistical analysis. However, it is very current and this study does provide a fresh current look at data that can be trend analyzed and compared to the preliminary and on-going work of NSRE to be released in 2005. For the purposes of this study, a number of statistic variables were used to describe the trends in these data.

The descriptive statistics used included an average annual adjusted percent change rate in the NSGA data. The average annual adjusted percent change rate examines the change from each year to the next (1994 to 1993, 1995 to 1994 and so on through 2002 to 2001) and averages the year-to-year changes over the entire period. Participation is measured by the number of participants (in millions) who participated in the activity in the previous 12-month period. A sub-segment of participants called "frequent participants" were also examined at the national level. NSGA (2004) sets a frequency limit for each activity and it varies by activity. For example, a frequent exercise walker is one who walks 110 or more per year where a frequent downhill skier is one who skis twenty (20) times or more per year. These national findings were discussed in the general trend analysis; but, the focus was the change in the activity markets and assignment of trend patterns of the Northeast markets. The Northeast is defined as states north of Maryland including the six (6) New England states (Maine, New Hampshire, Vermont, Massachusetts, Rhode Island and Connecticut) plus New York, Pennsylvania and New Jersey. The 34 selected recreational activities were grouped into sets of activities based on the classification and configuration of activities by Kelly and Warnick (1999) and NSRE (2004). These included 10 community-based activities, eight resource-based activities, nine water-based activities and seven winter-based activities. The community-based activities included: biking, bowling, exercise walking, golf, inline skating, paint ball games, running/jogging, skateboarding, tennis, and fitness club use. Resource-based activities included: backpacking, hiking, camping, hunting, off-road biking, on –road biking, target shooting, and archery. Water based activities included canoeing, kayak-rafting, freshwater fishing, sailing, power boating, snorkeling, swimming, water-skiing and windsurfing. Winter-based activities include cross-country skiing, ice skating, ice hockey, downhill skiing, snowboarding, snowmobiling, and snow shoeing.

To compare both national and regional trends, 10 patterns were reviewed, explored and assigned to each activity. These activity trend patterns included:

- Mass appeal – activities that typically maintain a wide and broad appeal of participation for a broad segment of the population – participation

rates are usually in the 40-50% range of the population participating

- Growth trend – participation numbers are steadily increasing and they are increasing at a rate faster than the population growth rate; growth rate has been sustain for at least three consecutive years
- Decline trend – participation numbers reveal a steady pattern of decline for three or more years in a row, occasionally a one year change in the pattern may occur; however, the overall trend pattern from the beginning of the trend period to the end is one of overall decline
- Growth with new participant base – this is a growth activity with a large influx of new or infrequent participants who are now trying the activities and the activity may now retain a significant new core of participants
- Growth to a stable level – the activity has a burst of activity growth over three years, but then settles into a stable or relatively flat pattern with little or no change over an extended time period of two or more years;
- Fad activity – rapid increase in number of participants followed by at least two years of rapid decline in interest
- Fluctuating trend pattern – no clear pattern of growth or decline, the number of participants varies substantial from year-to-year with no set pattern of spikes or growth or decline phases
- Peaking or spiking activity – an activity with has periodic spikes in activity interest over a sustained period of interest, spikes may be brought on by media or event attention (i.e., The Olympics)
- Growth to stable to uncertain trend future – this is an activity that has grown, peaked, and appears to have some stability but then also after one or two years drops off in activity interest
- Recycle or rebound – an activity which has grown, dropped off in popularity and has rebounded to recycled back to a new growth trend that is sustained over a two-year period
- No growth – stable activity – this is an activity with very little change in the number of participants or participation rates as it remains relatively stable over an extended period of time perhaps as little as three to five years but may extended into a longer stable period
- Niche activity – a small participation base of followers traditionally below three percent of all adults or under two (2) million in participants.

Some activities could be a combination of trends – such as a niche, growth activity. The sub-segment of "frequent participants" for each activity was also examined to determine if any trends were masked or revealed patterns internal to the overall market demand within the activity on a national basis. These trend patterns were recommended by Warnick and Kelly (2000).

## 4.0 Selected Findings

### 4.1 National Trends in Activity Participation

When individual activities were examined the five most poplar activities in 2002 for the general population that covers all adults from age 7 years through adulthood were:

1) exercise walking (82.2 million participants, up from 71.2 million in 2001
2) overnight camping – 55.4 million, up from 45.5 million in 2001
3) swimming – 54.7 million that has held steady since the early 2000
4) exercising with equipment – 43 million participants
5) bowling – 43.9 million participants – up from 40 million in 2001

The five fastest growing activities were:

1) wall climbing (artificial walls) – 41.9% growth in the number of participants
2) kick boxing – 21% growth
3) snowboarding – 14.9% growth
4) weightlifting – 9.3% growth
5) kayaking/rafting – 9% growth

In terms of frequency of participation and the frequent market segment, the five fastest growth segment activities were:

1) target shooting (20+ days per year) – up 20.7%
2) kayaking/rafting (10+ days per year) – up 19.5%
3) snowboarding (30+ days per year) – up 17.6% per year

**Table 1.—Community-Based Recreation Activity Trends in the Northeast, 1993-2002**

| Activity | 1993 | 1997 | 2002 | Change Rate | Trend Type |
|---|---|---|---|---|---|
| Bicycling | 10.3 | 8.9 | 8.1 | -2.0% | Decline |
| Bowling | 9.3 | 8.7 | 8.3 | -0.6% | No Growth/Slight Decline |
| Ex. Walking | 13.2 | 15.0 | 16.0 | 2.8% | Growth/Mass Appeal |
| Golf | 4.3 | 5.3 | 5.3 | 2.9% | Growth |
| Inline Skating | 2.4 | 5.3 | 3.2 | 5.6% | Growth Peak - Decline |
| Paint Games | n/a | n/a | 1.4 | 17.5% | Growth (Fad) |
| Running/Jog | 3.5 | 4.0 | 4.7 | 0.0% | Mature -Stable |
| Skateboarding | 1.1 | 1.2 | 1.8 | 8.0% | Growth Niche |
| Tennis | 3.4 | 2.1 | 2.5 | 0.0% | No Growth - Decline |
| Fitness Club | 4.0 | 4.0 | 5.6 | 4.7% | Growth |

Participation is listed in millions of participants in 1993, 1997 and 2002.
Note: Due to space limitations, only 1993 - 1997 - 2002 years shown in trend sequence.
Change rate is an average annual change rate based on number of participants. Northeast includes Mid-Atlantic Region and New England Region.

4) skateboarding (30+ days per year) – up 16.0% per year
5) work out at club (110+ days per year) – up 14.1% per year

The five biggest losers in terms of decline in activity participation were:

1) traditional roller skating – down 7.6% in participants
2) step aerobics – down 6.8% in participants
3) volleyball – down 5.8% in participants
4) cross country skiing – down 5.2% in participants
5) racquetball – down 4.4% in participants

Some overall activity patterns can actually be masked by internal market trends. For example, downhill skiing has declined by a negative 3.4% per year (average annual change rate) from 1993 to 2002. But, the number of frequent downhill skiers, those who ski 20 or more times per year, has increased by an average annual change rate of 4.9% per year. Furthermore, the composition of frequent downhill skiers has grown from 9.5% of all skiers in 1993 to 16.2% of all skiers in 2002. This suggests both a decline in the number of causal skiers and a reconfiguration of the internal market dynamics of the downhill ski market. Further internal analysis of the downhill ski market revealed that the 18 to 34 age demographic is where a major portion of the decline has occurred. Just as internal market trends of an activity can be masked, the dynamics of regional differences can also exist.

Within the Northeast Region, it was found that even though the number of downhill skiers had declined, the number of skiers in the New England region of the Northeast actually increased. The average annual growth rate in the New England downhill ski market revealed an average annual growth rate of 1.4%. This rate was higher than the growth of the general population.

### 4.2 Northeast Community-Based Activities.

Ten different activities were examined in the group of community-based activities. Only two activities declined in the Northeast – tennis and bicycling. One activity experienced no growth/ slight decline -- bowling and one activity experienced classic maturing followed by a decline phase (inline skating). All of the other seven activities either grew or rebounded during the period. Fitness club participation/use, golf and participation in paint ball games each experienced a substantial growth in the 10-year period. Exercise walking was found to be the region's most popular activity and had actually rebounded after a decline in 2001. One activity trend in the region that ran counted to the national trend was bowling. There was no growth in popularity in the Northeast whereas nationally the activity was one of the five most popular activities in terms of overall growth in participation. The community-based activity trend patterns and data are presented in Table 1.

**Table 2.—Resource-Based Recreation Activity Trends in the Northeast, 1993-2002.**

| Activity | 1993 | 1997 | 2002 | Change Rate | Trend Type |
|---|---|---|---|---|---|
| Archery | n/a | 1.7 | .9 | 1.0% | Growth/Spiking |
| Backpacking | 1.6 | 2.0 | 2.9 | 9.3% | Growth |
| Hiking | 3.6 | 5.6 | 5.3 | 5.7% | Growth |
| Camping | 7.0 | 7.3 | 9.9 | 0.0% | Stable/Rebound |
| Hunting | 3.4 | 2.7 | 2.7 | -1.2% | Decline/Spiking |
| Off-Road Biking | 1.0 | 1.7 | 1.8 | 8.8% | Growth Niche |
| On-Road Biking | 1.8 | 3.2 | 2.6 | 7.6% | Growth |
| Target Shooting | 2.2 | 2.4 | 2.8 | 0.0% | Stable Niche |

Participation is listed in millions for 1993, 1997 and 2002.
Note: Due to space limitations, only 1993 - 1997 - 2002 years shown in trend sequence.
Change rate is an average annual change rate based on number of participants. Northeast includes Mid-Atlantic Region and New England Region.

### 4.3 Northeast Resource-Based Activities.

Eight different activities were examined in the group of resource-based activities. Five (backpacking, hiking, off- and on-road mountain biking and archery) of the activities experienced growth in market size in the Northeast. Only one activity declined – hunting. Another activity, archery, grew at a rate of 1.6% per year, but its pattern revealed a spiking pattern. The spiking pattern lagged behind the national pattern for the activity and the activity interest in the Northeast spiked in the years after the Olympics – 1997 and 2001. There was also a contrast with the national trend in this activity as the national rate of interest in archery indicated an average annual decline of 1.6% per year in contrast to the average annual increase in the Northeast of 1.1% per year in overall market size. Two activities were statistically stable but the trend pattern actually indicated some increased interest – camping and target shooting. Overnight camping was the most popular of these activities in the Northeast with nearly 10 million participants by 2002.

Off-road mountain biking, although largely a niche market activity, experienced rather dramatic growth (8.8% average annual growth rate). This rate of growth was higher than the national average annual growth rate of 7.2% per year. This activity nearly doubled in market size from 1993 through 2002 – increasing from 1 million participants to 1.8 million participants in the Northeast. Although figures are not available by frequent off-road mountain bikers in the Northeast, the growth nationally in this segment is substantial and the trend is likely to be also pronounced in the Northeast had the trend data been made available through NSGA and NFO. Nationally, the growth in the frequent off-road mountain bikers indicated that the number has grown by an average annual rate of nearly 46% per year. In 1993, there were estimated to be about 300,000 frequent off-road mountain bikers, those who biked more than 30 days per year. By 2002, there were an estimated 2.4 million frequent, off-road mountain bikers. In 1993, 7% of all off-road mountain bikers were frequent participants, by 2002 the composition of frequent off-road mountain bikers had increased to 33% of all off-road mountain bikers.

One activity—hunting—experienced a decline, but its decline was not steady but one following a spike pattern. In 1993, there were 3.4 million hunters in the Northeast and by 2002, the number had declined to 2.7 million. This constitutes a decline of about 2% per year although there were spike patterns in this activity in the Northeast. This contrasted to a national trend where hunting actually grew in overall market size by 1.0% per year and the number of frequent hunters grew by an average annual rate of 5.3% per year. The spike years in the Northeast were 1993, 1996 and 2001 with declines in the number of hunters in the years following each of these spike years. It is not clear if there were any reasons to cause spike increases in these years of the declines thereafter in the Northeast. However, it is clear that the decline has indeed fluctuated and not been one of steady decline.

**Table 3.—Water-Based Recreation Activity Trends in the Northeast, 1993-2002.**

| Activity | 1993 | 1997 | 2001 or 2002 | Change Rate | Trend Type |
|---|---|---|---|---|---|
| Canoeing | 2.3 | 2.1 | 1.9 | -0.8% | Fluctuating/Decline |
| Kayak-Rafting* | 0.4 | 0.5 | 1.2 | 15.5% | Growth (Niche) |
| Freshwater Fish | 6.8 | 5.5 | 5.4 | -2.2% | Decline |
| Sailing* | 1.1 | 0.9 | 0.6 | -7.0% | Decline (Niche) |
| Power Boating* | 3.6 | 4.1 | 4.0 | 2.1% | Growth |
| Snorkeling* | 1.1 | 1.2 | 1.3 | 3.8% | Growth (Niche) |
| Swimming | 14.6 | 12.1 | 12.0 | -2.0% | Decline (Mass) |
| Water Skiing | 1.3 | 0.9 | 0.8 | -3.2% | Decline (Niche) |
| Wind Surfing* | 0.1 | 0.1 | 0.1 | 5.1% | Growth (Niche) |

Participation is listed in millions for 1993, 1997 and 2001/2002.

Note: Due to space limitations, only 1993 - 1997 – 2001/2002 years shown in trend sequence.
Change rate is an average annual change rate based on number of participants. Northeast includes Mid-Atlantic Region and New England Region.

*For kayak-rafting, sailing, power boating, snorkeling and wind surfing; trend data were available only through 2001.

Backpacking, hiking and on-road biking all experienced steady growth in the number of participants during this period, too. All trail related activities experienced strong growth in market size and each of these activities grew at rates equal to or excess of the national growth rates for the activity. The growth rate in market size in the Northeast for backpacking was 9.3% (average annual rate) compared to the national rate of 6.2% (average annual rate). The growth rate in market size for hiking in the Northeast was 5.7% (average annual rate) – the same as the national rate. The growth rate in market size for on-road mountain biking in the Northeast was 7.6% (average annual rate) compared to the national rate of 5.3% (average annual rate). The growth rate for off-road mountain biking, mentioned earlier in the Northeast was 8.8% (average annual rate) compared to the national rate of 7.2% (average annual rate). The resource-based activity trend patterns and data are presented in Table 2.

### 4.4 Northeast Water-Based Activities

Nine different activities were examined in the group of water-based activities. Three of the niche activities (those activities that have relatively small markets of less than two million participants) experienced growth in the overall size of the markets – kayak-rafting, snorkeling, and windsurfing in the Northeast Region. Two large market size activities, swimming and freshwater fishing, declined in market size overall in the Northeast. Two niche market activities, water skiing and sailing, also declined in overall market size. The only other activity to grow during the period was power boating. Demand for canoeing fluctuated substantially over the period and declined overall in average annual change rate. Swimming remains the most popular of all water-based activities with 12 million regular participants in the Northeast in 2002, but this number has declined from a peak of 14.6 million swimmers in 1993. The water-based activity trend patterns and data are presented in Table 3.

### 4.5 Northeast Winter-Based Activities

Seven different activities were examined in the group of winter-based activities. Two of the activities experienced strong growth during the 1993-2001/2002 period – snowboarding and snowmobiling. Snowboarding grew by 17.1% per year and increased from .4 million participants in 1993 to 1.7 million participants in 2002. The time period for snowmobiling was shorter, 1995 through 2001, but the number of riders has increase in the Northeast from 1.5 million to 2 million. The rate of growth in the Northeast was faster than the national growth rate for snowmobiling of 8.8% (average annual rate change). Four of the remaining activities experienced decline in the overall numbers of participants, including cross-country skiing (decline of 4.4% per year), ice skating (decline of 3.3% per year), ice hockey (decline 1.8% per year) and downhill skiing (decline of 1.9% per year). While the ice skating market has declined in size in the Northeast, still nearly a third of all ice skaters are from the Northeast.

While the market of people who play ice hockey has also declined in the Northeast, it is still a substantial

**Table 4.—Winter-Based Recreation Activity Trends in the Northeast, 1993-2002.**

| Activity | 1993 | 1997 | 2001/2002 | Change Rate | Trend Type |
|---|---|---|---|---|---|
| Cross Country Skiing | 1.3 | 0.7 | 0.8 | -4.4% | Decline |
| Ice Skating | 2.6 | 2.7 | 1.8* | -3.3% | Decline |
| Ice Hockey | 0.8 | 0.7 | 0.6 | -1.8% | Decline (Niche) |
| Downhill Skiing | 3.3 | 2.4 | 2.4 | -1.9% | Decline |
| Snowboarding | 0.4 | 0.8 | 1.7 | 17.1% | Growth |
| Snowmobiling | n/a | 1.5 | 2.0* | 9.2% | Growth |
| Snow shoeing | n/a | 0.2 | 0.4 | --- | Inconsistent trends |

Participation is listed in millions for 1993, 1997 and 2001/2002.
Note: Due to space limitations, only 1993 - 1997 – 2001/2002 years shown in trend sequence.
Change rate is an average annual change rate based on number of participants. Northeast includes Mid-Atlantic Region and New England Region.
*Snowmobling includes data only from 1997 through 2001.
*Ice skating includes data only from 1993 through 2001.

market. The market for ice hockey has actually grown nationally at an average annual rate of 3.3% per year. In fact, all regions outside of the Northeast have grown at a rate faster than the Northeast. Growth has been especially strong in the Eastern South Central, Mountain and Pacific Regions for ice hockey participation. While overall participation is up nationally, the real growth in the activity is in the number of frequent ice hockey participants (those who play ice hockey 30 or more times per year). The growth of frequent ice hockey players is up 16% per year (average annual change rate) and now nearly 50% of all ice hockey players are frequent participants.

Evidence also suggests that a portion of those people who were once downhill skiers may have convert to snowboarding. However, more likely it is the pattern that youth who learned to snowboard in the late 80s and 90s and who are now in the 18- to 34-year-old demographic is where the largest increase in snowboarders occurs. In contrast, the only age segments where downhill skiing decreased were from the same demographic – the 18- to 34-year-olds.

There was not enough data to document sustained trend changes for snow shoeing. Although the evidence suggests some increase in the activity in the Northeast, there was only 4 years of data collected and the most recent information was collected in 2000. The winter-based activity trend patterns and data are presented in Table 4.

## 5.0 Conclusions and Implications

In general, recreation activity markets in the Northeast have rebounded from previous study findings of stability or limited numbers of growing activities. Of 34 activities examined, 15 activities were found to have exhibited real growth patterns in overall market sizes during the period of 1993 through 2002. Especially strong growth was revealed in trailed-based activities such as backpacking, hiking, mountain biking, and snowboarding. One other new activity, playing paint ball games, also demonstrated the strongest sustained growth trend patterns even though data were only available for the period 1999 to 2002.

There was evidence that not all activity trend patterns reflected the national trend patterns. An example would be the community-based activity of bowling where growth in popularity was noted at the national level but not reflected in growth in the market size in the Northeast. Downhill skiing also reflected different trends regionally than nationally. For downhill skiing the overall market size declined; but, the internally the frequent market segment grew in both real numbers and in the overall composition of all skiers. On a regional analysis, the Northeast market of downhill skiers indicated an overall decline, too; however, the number of skiers in the sub-region of New England actually grew from its lowest numbers in 1999 to near its highest number in 2002. The rate of overall growth (average annual rate of increase of 1.4%) of downhill skiers in New England actually grew at a rate faster than the growth of the general population.

These findings also continued to support the revealed changes in activity segmentation. For example, biking as an activity has continued to become more specialized with the continued growth of off- and on-road mountain biking and the decline in the general biking category. As a group, the resource-based activities grew overall the most with more people participating in outdoor-based recreational pursuits. This supports trends similar to the trends found in the NSRE (2004).

In one particular case, snowboarding may have displaced downhill skiing as some participants have converted from downhill skiing to snowboarding. Other winter-based activities found general declines in the overall market size – including cross country skiing, ice skating and even ice hockey. Snow shoeing remains a small niche activity and the size of the market is simply too small to predict any trends or patterns in the activity with any level of certainty. The fitness movement does appear to be gaining strength both nationally and in the Northeast. Two strong indicators, working out at a club and exercise/fitness walking, each increased substantially during the 1993 to 2002 period.

Activity choice trends also appear to continue to emerge. The overall number of choice patterns among participants and activity maturation/saturation stages of selected activities continues to be supported. With more choices, the maturation of general mass appeal activities has occurred and the increases in activity specialization has appeared in both how the data are collected and recorded. Activities, such as swimming and biking (mass appeal activities) for example, are not and will not experience large increases in market growth now or in the future. Rather, these activities will likely become more segmented and specialized. While this trend was observed in biking in earlier studies and was again confirmed in this study, another example that appears to be evolving is swimming. The way one chooses to get wet has evolved as well as the opportunities and venues for one to do so. One may go to a water park, get wet but never really swim. The overall interest in water activity is there, but it is a much different set of activities and many different choices in water activity venues confront the consumer. It is likely that national data sets will begin to offer additional activity choices, much as they have with biking, for the "water activity" category. Swimming was a mature activity in this study and its lack of growth may actually be a result of how people perceive the "water activity" category. Going to a water park may be a water activity occurrence, but no swimming has occurred nor does one record, classify or perceive the activity as "swimming." From the management perspective of the operation of state park swimming areas or municipal pools, participation in general swimming is more likely to decline than grow.

Resource management issues for the management of wildlife in such activities as hunting and fishing may continue appear to be problematic in the Northeast. Hunting and freshwater fishing markets continued to decline in the Northeast based on these research findings. With some wildlife herds -- deer, turkey and even bears in the Northeast, the ability to manage these animals through increasing number of hunters will likely not occur and herd or wildlife management will become increasingly a challenge. On a positive note for those freshwater fishing areas that have been over-fished in the past, the decrease in the size of the freshwater fishing market may actually help the fish stock to rebound. However, it is also likely that the unwanted interaction and nuisance encounters between humans and wildlife in fringe suburban and rural areas that has been found to occur in the Northeast will likely continue to increase with a declining overall market of hunting participants and increasingly larger wildlife herd sizes. For those who do hunt, increased bag limits and increased length of seasons will likely continue to occur in order to offset the declining hunting market and to assist in the management of various types of wildlife. Managed hunts are also likely options to be observe in areas with the continued pressure of the rapid growth in wildlife herds.

An emerging trend that is beginning to appear is the presence of more individualized or personal recreational pursuits. Snowboarding, skateboarding and even paint ball games are examples of new evolving, but individualized markets. Participation in paint ball games is an especially noteworthy example. Just in the past few years has these data become available and been monitored. During the brief four years of data analysis for paint ball games, the market growth was sustained and the largest of any activity monitored here. Another big activity missing in this analysis was the participation in computer and video games. While these activities create various types of reality, the "reality activity-programming trend" will likely continue to grow. These trends need special attention as they may usurp large

amounts of free time among youth and young adults who have set their activity patterns in the formative years and may actually withdraw from other vigorous recreational pursuits. Furthermore, it is likely that games and activities created in virtual reality frameworks, such as in computer games, may actually evolve into simulated active reality games like participation in paint ball games. The "reality activity programming trends" need particularly close monitoring in the future.

In conclusion, the careful monitoring of trends over time and in a consistent format does reveal changes in consumer preferences and activity patterns. New trend pattern emerge and implications for management can be identified. Furthermore, activity patterns and changes in today's market will impact future trends in the coming decades.

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# TRENDS IN PARTICIPATION RATES FOR WILDLIFE-ASSOCIATED RECREATION BY RACE/ETHNICITY AND GENDER: 1980-2001

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## Abstract

This study looks at trends in participation rates in wildlife-associated recreation activities by race/ethnicity and gender among participants 16 years of age and older. Activities compared in the analysis are hunting, fishing, observing wildlife, and taking trips for the purpose of observing, feeding, and photographing wildlife. Five datasets from the National Survey of Fishing, Hunting, and Wildlife-Associated Recreation were used in this analysis. Hunting was the activity with the greatest disparity in participation by gender and race/ethnicity. However, more women are participating in this activity and there appeared to be an early trend toward more similar participation rates by gender within racial/ethnic groups. Hunting participation by females appears to have decreased or leveled off later in the study period. Other activities have had similar participation rates for men and women over the entire study period. The effect of changes in the survey methodology on this type of analysis is also discussed. Methodological changes have resulted in the reduction of the number of observations. This affects the analysis of activities among some minority groups and it raises questions about the use of these datasets for this type of analysis in the future.

## 1.0 Introduction

Identifying trends in participation in wildlife-associated recreation by gender and race/ethnicity is important to managers who must allocate funds and manage the natural resources to meet the needs of clients. Managers are interested in identifying all of their clients as well as changes in the gender mix of the clients so that their needs can be better addressed. Females and some racial/ethnic groups have a relatively low level of participation in certain forms of wildlife-associated recreation. Low participation rates tend to result in females and minority groups being overwhelmed by others in the data when general analyses of the population or participants in particular activities are carried out. A characterization of hunters, for example, provides considerable information about the activity of hunting and its potential effect on resources; but hunter demographics make it highly representative of non-Hispanic American white male hunters because they comprise the vast majority of hunters. The influence of females and African American and Hispanic hunters is small in such an analysis. However, managers are interested in female and African American and Hispanic hunters and how to better serve them. They are also interested in whether the percentage of female participants is changing over time. This type of information is also important to those who market goods and services to these participants. One objective of this study is to identify trends in participation rates in wildlife-associated recreation activities by race/ethnicity and gender among participants 6 years of age and older. This study updates an earlier study by Dwyer, Marsinko, and Fisher (1999), which covered the period 1980 to 1990 and found an apparent increase in the proportion of females who hunt and fish. Because of several changes in the method of conducting the surveys used in this analysis, we also look at the effects of selected methodological changes in the surveys and implications of these changes for future analyses.

## 2.0 Methods

The 1980, 1985, 1990, 1996, and 2001 National Surveys of Fishing, Hunting, and Wildlife-Associated Recreation were used in this analysis. The Census Bureau has conducted the surveys for the U.S. Fish and Wildlife Service approximately every 5 years since 1955 (U.S. Dept of Interior 1997). Each survey actually consists of three surveys that result in three datasets. The screening survey consists of demographic and limited participation data and is considered to be representative of the population of the United States in general. The sportsmen survey consists of detailed participation and expenditure data about hunting and fishing, and is considered to be representative of hunters and anglers residing in the United States. The wildlife watching survey consists of detailed participation and expenditure data about nonconsumptive wildlife-associated recreation activities and is considered to be representative of wildlife

watchers residing in the United States. The screening surveys were the primary source of data used in this analysis. Although the screening surveys contain only limited participation data, they permit comparisons of participants with nonparticipants as well as participation in all wildlife-associated activities (fishing, hunting, and wildlife watching). Participation data collected using the screening survey are for 1980, 1985, 1995, and 2000 and most of the data presented in the summary publications (U.S. Dept of Interior 1982, 1988, 1993, 1997, 2002), which are collected using the detailed surveys, are for 1980, 1985, 1996, and 2001. Because of the methodology used by the Census Bureau to select and adjust the weights for the detailed surveys, and the fact that the data are collected for different years, the total numbers of participants calculated using the screening surveys differ slightly from the total numbers of participants calculated using the detailed surveys.

Methodological changes in the surveys over the analysis period include a change from conducting the survey once per year to several times per year. In other words, each individual is contacted several times per year and asked about his or her participation and expenditures in each activity. The technology of conducting the survey has also changed. As a result of these changes, it has become difficult to analyze trends using these surveys. The change in the recall period is thought to have increased the accuracy of data about expenditures and days of participation. Thus, surveys conducted before the recall period changed are not usually compared to those conducted after the recall period changed. This analysis does compare surveys across the recall period change because it is based on whether an individual participated rather than level of participation. We felt that information about whether or not an individual participated in an activity would not be as likely to be affected by recall period or other methodological changes.

Other methodological changes may have affected the results of this study and they have implications for future studies. These changes include a reduction in the number of households surveyed, a decrease in the response rate, and a change in racial and ethnic definitions. More than 100,000 households were interviewed in 1980, 1985, and 1991. Only 44,000 were interviewed in 1996 and 52,500 were interviewed in 2001. Response rates were over 90% for 1980, 1985, and 1991. Response rates dropped to 71% in 1996 and 75% in 2001. Racial and ethnic definitions changed in 2001. Ethnicity (before 2001) was defined by the following question: Is (household member) of Spanish or Hispanic origin? Ethnicity (2001) was defined as follows: Is (household member) of Spanish or Hispanic or Latino origin? Race (before 2001) was defined by the following question: What is (household member)'s race—White; Black; American Indian, Aleut, Eskimo; Asian or Pacific Islander; or another group not mentioned? In the 2001 survey, Asian was split from Pacific Islander. Respondents could pick any or all of the above races. Then they were asked to pick the one race with which they identify most. Unfortunately, this last question contained all races listed above including "other".

For this analysis, we removed the Hispanic/Spanish/Latino group from the other races in order to analyze them separately and we refer to them as Hispanic in this paper. Thus, Hispanics are treated as a separate race in this paper. The following races were analyzed in this paper: White; Black; American Indian, Aleut, Eskimo; and Hispanic.

Analyses are presented in the paper as follows. First, trends in participation in hunting, fishing, and wildlife watching are addressed. Then, the effects of the changes in the survey are addressed along with the implications for future analyses.

## 3.0 Results

### 3.1Trends

Trends are presented using male/female participation ratios. This ratio is defined as the percent of males participating in an activity divided by percent of females participating in the activity. This ratio compares rates of participation, rather than numbers of participants. If the ratio is one, the rates of participation are the same. If the ratio is five, the male participation rate is five times that of the female participation rate. If the ratio is less than one, the female participation rate is higher than the male participation rate.

Male/female participation ratios for hunting range from about four to more than 40 (Table 1) and are higher than for any other activity considered in this analysis. The lowest ratios are for the American Indian, Aleut, Eskimo race, which means that a higher proportion of females in this race participate in hunting than for all other races. The opposite is true for African Americans (Black). The

**Table 1.—Male/Female Participation Ratios by Race/Ethnicity and Year of Survey (Hunting)**

| Race | 1980 | 1985 | 1990 | 1995 | 2000 |
|---|---|---|---|---|---|
| White | 12.1 | 11.1 | 8.6 | 10.9 | 9.1 |
| Black | 36.6 | 17.1 | 16.5 | 47.5* | 50.5* |
| Am Indian | 7.5 | 7.4 | 3.6 | 4.9 | 5.3 |
| Hispanic | 9.4 | 11 | 8.3 | 8 | 19.2 |

*Caution – These numbers are based on 3 observations each (see text)

**Table 2.—Male/Female Participation Ratios by Race/Ethnicity and Year of Survey (Fishing)**

| Race | 1980 | 1985 | 1990 | 1995 | 2000 |
|---|---|---|---|---|---|
| White | 2.3 | 2.2 | 2 | 2.1 | 2.2 |
| Black | 2.2 | 2.2 | 2.2 | 2.6 | 2.7 |
| Am Indian | 2 | 2 | 1.6 | 2.1 | 2.2 |
| Hispanic | 2.5 | 2.7 | 2.2 | 2.9 | 2.4 |

**Table 3.—Male/Female Participation Ratios by Race/Ethnicity and Year of Survey (Wildlife Watching Trip > 1 Mile from Home)**

| Race | 1980 | 1985 | 1990 | 1995 | 2000 |
|---|---|---|---|---|---|
| White | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 |
| Black | 1.2 | 1.2 | 1.1 | 1.1 | 1.2 |
| Am Indian | 1.2 | 1 | 1 | 1.1 | 1 |
| Hispanic | 1.1 | 1 | 1.1 | 1.1 | 1.1 |

general trends show the ratios decreasing from 1980 to 1990 and then leveling off or increasing slightly afterward. The apparent sharp increase in the ratio for African Americans after 1990 is highly questionable and may be due to a lack of data. Only three female African hunters were surveyed in 1996 and in 2001. This is due to methodological changes in the survey and it is discussed in greater detail later in this paper.

Male/female participation ratios for fishing are considerably less than the ratios for hunting. They range from 1.6 to 2.9 (Table 2). This indicates that females are much more likely to participate in fishing than hunting. As was the case for hunting, the lowest ratios are for the American Indian, Aleut, Eskimo race, which means that females in this race are more likely than other races to participate in both of these activities. The highest ratios are for Hispanics. The ratios for African Americans appear to be increasing, and, in this case, there is sufficient data to suggest that this increase is actually occurring. The ratios for whites appear to have remained almost constant over the period.

One wildlife watching activity involves taking a trip greater than one mile from home for the primary purpose of observing, photographing, or feeding wildlife. Table 3 indicates that the participation ratio is slightly higher for males than females. The ratios range from one to 1.2 and have remained relatively constant over the period. African Americans have slightly higher ratios than the other races.

Another wildlife watching activity involves observing wildlife within one mile of the home. Table 4 indicates that the participation ratio is slightly higher for males than females. The ratios range from .8 to 1.3 and have remained relatively constant over the period. There does not appear to be any differences between races for this activity.

### 3.2 Methodological changes in survey

Race definitions were changed for the 2001 survey. Prior to 2001 there were five race categories: White; Black; American Indian, Aleut, Eskimo; Asian or Pacific Islander; or another group not mentioned. In the 2001 survey, Asian was split from Pacific Islander. Respondents

**Table 4.—Male/Female Participation Ratios by Race/Ethnicity and Year of Survey (Observing Wildlife Within 1 Mile of Home)**

| Race | 1980 | 1985 | 1990 | 1995 | 2000 |
|---|---|---|---|---|---|
| White | 1.1 | 1 | 1.1 | 1 | 1 |
| Black | 1.2 | 1.1 | 1.2 | 1.2 | 1 |
| Am Indian | 1.1 | 1.3 | 1.2 | 0.8 | 1.1 |
| Hispanic | 1 | 1.1 | 1 | 1.1 | 1.1 |

**Table 5.—Effects of the 2001 Race/Ethnicity Changes (14.7 million assigned/reassigned)**

| Race | Before (% of total population less 14.7 million) | After (% of total population with 14.7 million added) | Population increase (as % of population before) |
|---|---|---|---|
| White | 85.9 | 85.3 | 6.5 |
| Black/African American | 9.9 | 10.2 | 10.4 |
| American Indian/Alaska Native | .6 | .7 | 16.4 |
| Asian | 3.1 | 3.4 | 14.8 |
| Native Hawaiian or other Pacific Islander | .3 | .4 | 29.6 |

could pick any or all of the above races. Then they were asked to pick the one race with which they identify most. "Other" was a valid response to this question. Those who chose "other" were reassigned to a specific race based on several criteria. If this variable was blank (i.e. no response to this question), race was assigned according to a priority list. For example, those who selected all races were assigned to the African American race. A total of 14.7 million people were assigned to races because they chose "other" or because they did not respond to this question. Assignment favored minority races. Table 4 shows the effect of the assignment of 14.7 million people to specific races. The first column shows each race as a percentage of the total population without the 14.7 million who were assigned to specific races. The second column shows the same information as the first after the 14.7 million were assigned. The effect was to reduce the percentage of whites and increase the percentage of all other races. The third column shows the effect of the assignment on each race. All races increased because 14.7 million people were added and some were added to each race, including the White race. The Native Hawaiian/Pacific Islander race increased by almost 30%, which is enough to affect the characteristics of this population.

Ethnicity was changed in 2001 by the adding the term "Latino" to the Hispanic/Spanish ethnicity question. This raises questions about whether the addition of the new term affected the size of this ethnic group or participation in the activities analyzed in this paper. Specifically, are there people who consider themselves to be Latino but do not consider themselves to be Hispanic/Spanish? If so, are they more or less likely than the Hispanic/Spanish group to participate in activities such as hunting, fishing, and wildlife watching? Unfortunately, this cannot be determined from the information available in these datasets.

More than 100,000 households were interviewed in 1980, 1985, and 1991. Only 44,000 were interviewed in 1996 and 52,500 were interviewed in 2001. Response rates were over 90% for 1980, 1985, and 1991, 71% in 1996, and 75% in 2001. Although response rates have decreased considerably, they are high relative to many surveys. The reduction in the number of households interviewed affected our analysis of hunting among African Americans. There were 37,000 female African American hunters in 1990. This is a weighted value based on 35 observations. There were 9,700 in 1995 and 7,300 in 2000. These are weighted values based on three observations in each survey. We feel that three observations are not enough to produce reliable results, particularly in this case where the number of interviews decreased, the weight per observation increased, and the response rate decreased.

## 4.0 Summary and Conclusions

The male/female participation ratio for hunting appears to have decreased from 1980 to 1990 and then leveled off or increased for most races, although the increase for African Americans is questionable due to a small number of observations. The lowest ratios were for the American Indian/Eskimo race. The ratio for the White and American Indian/Eskimo races changed the least over the study period.

The male/female participation ratio for fishing has increased the most for Black anglers. There was almost no change for Whites and there was no clear trend for other groups. The lowest ratios were for the American Indian/Eskimo race.

The male/female participation ratios for wildlife-watching trips and for observing wildlife around the home showed little variation among all groups with slightly higher participation rates for males throughout the years. There was no clear trend or clear indication of a change in ratios.

Methodological changes in the survey could have affected the results of this study and may also constrain future studies. Fewer households were surveyed and the response rate was lower in 1996 and 2001. Both of these conditions could affect the results of this type of study. The assignment/reassignment of 14.7 million individuals into specific races in 2001 could affect the makeup of minority groups. Hunting is probably affected the most by the reduction in the number of households surveyed and the reduction in the response rate. This is because hunting has few participants relative to most other activities in this database. Thus, a large number of observations is needed to assess minority participation in hunting. In the past, we have been able to rely on the screening survey to provide information about minority group participation in hunting. However, fewer households surveyed and lower response rates in the last two surveys have resulted in insufficient data to provide useful information about participation in this activity by some minority groups. If the number of households surveyed and response rates continue to decrease in future surveys, analysis of activities such as hunting among minority groups will become more difficult or impossible.

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# NEW YORK'S GREAT LAKES CHARTER BOAT FISHING INDUSTRY: 1975-2002

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## Abstract

The charter boat fishing industry in New York's Great Lakes Region was established in the 1970s, following the stocking of different species of fish in Lakes Ontario and Erie. Data on this industry were first collected by New York Sea Grant in 1975 when 33 charter businesses were in operation. The industry has since gone through both large increases and decreases in number of charter businesses. In 2002, a charter captain mail survey was conducted by the Great Lakes Sea Grant Network in each Great Lakes state, including New York, in order to identify the current status of the charter boat industry in each state and the Great Lakes Region as a whole. This presentation will focus on New York's charter boat industry by highlighting the results of the 2002 New York charter captain survey and discussing trends in the charter industry since 1975. Results pertaining to average number of charter trips per year, business income and expenses, advertising, customer markets, and future business plans of charter captains will be discussed using descriptive statistics. Results from the 2002 Great Lakes Region charter captain study will also be presented for comparison purposes. An estimated 305 captains were identified in New York's Great Lakes Region in 2002; 143 of these captains returned surveys for a response rate of 46%. Survey results indicate that the average New York State charter business was profitable and had a positive net return of $4,313 in 2002, while the average Great Lakes business had a negative net return of $791. Trends indicate that the size of New York's industry increased from 1975 to 1990, but then decreased between 1990, 1994, and 2002 (a pattern followed by the entire Great Lakes charter industry as well). Although a 24% decline in size occurred in New York's industry between 1994 and 2002, increases in total income from charter boat operators increased by 18% to $6.99 million because of increased business profitability. The size of New York's charter industry is expected to decrease slightly over the next 5 years (based on the stated future plans of charter captains), while profitability is expected to increase.

## 1.0 Introduction

The sport fisheries of New York's Great Lakes Region (comprised of Lakes Ontario and Erie, and the St. Lawrence and Niagara Rivers) contribute to the economy of the coast as well as the quality of life of residents. In the 1960s and 1970s, the sport fisheries were rehabilitated when five species of salmonines were stocked (i.e., Chinook salmon Oncorhynchus tshawytscha, coho salmon O. kisutch, rainbow trout O. mykiss, lake trout Salvelinus namaycush, and brown trout Salmo trutta), and populations of walleye Stizostedion vitreum were re-established in Lake Erie (Dawson, Lichtkoppler, and Pistis 1989). In response to the rehabilitated sport fisheries, angler effort in the region quickly increased. By 1988, 295,100 and 83,850 anglers were fishing New York's Lake Ontario and Lake Erie, respectively (Connelly, Brown, and Knuth 1990). In response to the expanded salmonid fishery and management policies that fostered sport fisheries rather than commercial net fisheries, a charter boat fishing industry began to develop in the late 1960s. In 1990, at the height of angler effort, 560 charter businesses existed in New York's Great Lakes Region.

In the early 1990s, declines in angler participation began, negatively impacting coastal economies and sport fishing-dependent businesses such as charter boat operations. On Lake Ontario, the estimated number of anglers declined 36% to 188,210 between 1988 and 1996; a decline of 25% occurred on Lake Erie (63,020 anglers estimated in 1996). Estimated at-location expenditures for anglers decreased from nearly $134 million to $88 million during this time period (Connelly, Brown, and Knuth 1990, 1997). By 1994, declines in angler participation had already begun to affect the charter boat industry, reducing the number of charter businesses operating along New York's Great Lakes coast from 560 to 400 (Figure 1).

Similar declines in angler activity and number of charter boat businesses occurred throughout the Great Lakes Region of the United States during this period as well. The estimated number of anglers in the Great Lakes Region declined from 3.766 million in 1985 to 2.552 million anglers by 1991, and decreased further to 1.847 million by 2001. Total angler expenditures from Great

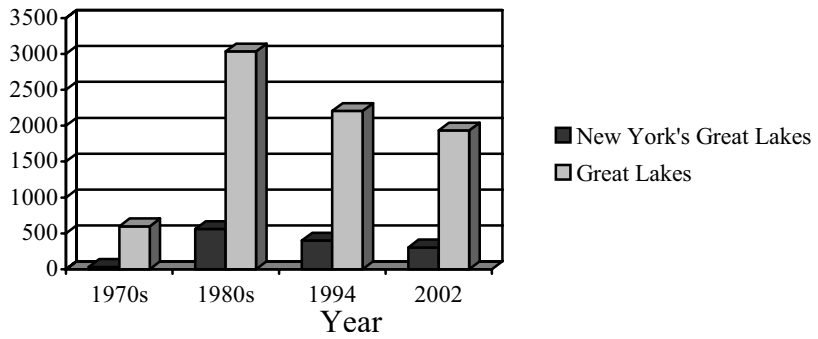


Figure 1.—Number of charter boat businesses in New York's Great Lakes Region and the entire Great Lakes Region, 1970s-2002.

Lake trips likewise declined from an estimated $1.56 billion in 1985 to an estimated $1.27 billion in 2001 (USDI Fish and Wildlife Service 1988; USDI Fish and Wildlife Service and USDC Census Bureau 1993, 2002).

This study was conducted to identify the status of New York's Great Lakes charter boat industry in the United States in 2002. For the purposes of this study, an active charter captain has been defined as a United States Coast Guard licensed captain who operates sport fishing charters for a fee using a charter boat or boats that he or she owns or leases. Descriptive statistics are used to summarize the characteristics of the 2002 New York's Great Lakes charter industry. Data on New York's charter industry have been collected for nearly 30 years by New York Sea Grant and the Great Lakes Sea Grant Network. The strong rapport between Sea Grant and charter captains resulted in a high survey response rate in 2002, indicating a high validity of the results. The extensive charter-business-related experience of both Sea Grant staff and charter captains also likely contributes to the validity of this study.

## 2.0 Methods

The New York charter boat industry study was part of a Great Lakes wide study undertaken by the Great Lakes Sea Grant Network. In fall 2002, New York Sea Grant compiled a complete list of charter captains along New York's Great lakes coast from charter boat association member lists and the business directories of tourism promotion agencies and chambers of commerce. The questionnaire used in the previous 1994 charter boat survey was used for the 2002 survey to ensure comparability of data between years; several questions were updated to reflect current issues. In January and February of 2003, the New York and Ohio Sea Grant programs surveyed all identified charter fishing captains in New York's Great Lakes Region by mail using a modified Total Design Method (Dillman 1978). Captains throughout the Great Lakes Region of the United States were surveyed at the same time. A sample of captains was randomly selected for Ohio because of the large number of charter businesses in this state; other Great Lakes states surveyed all identified captains. Nonrespondents were sent three reminder letters. Data from responding charter captains was entered into SPSS and analyzed using descriptive statistics.

## 3.0 Results

A total of 143 captains returned surveys with usable data in 2003 for a response rate of 46%. A 24% decline occurred in the number of charter businesses between 1994 (when an estimated 400 businesses existed) and 2002 (when 305 were identified). Of the responding captains, 99% were based in New York and 1% in Ohio. The homeports of 69% of the responding captains were on Lake Ontario, followed by 11% on the St. Lawrence River, 11% on Lake Erie, and 9% on the Niagara River (Licthkoppler and Kuehn 2003).

Of the 1,767 questionnaires distributed to charter captains throughout the entire Great Lakes Region in 2003, 871 were completed and returned for an overall response rate of 49%. An estimated 1,932 charter businesses existed in the Great Lakes Region of the United States in 2002, a 12% decline from 1994 (Kuehn et al. 2004).

### 3.1 Business characteristics

The typical New York charter captain in 2002 had been licensed for an average of 15.4 years. All of the responding captains were "six-pack" operators, licensed to carry no more than six passengers. Captains indicated that they work in the charter fishing industry because they enjoy helping people fish (77% of responding captains), like the work (72%), and to provide either a secondary (55%) or primary source of income (24%). Almost 99% of the responding captains operated their own charter firm. Eighty-nine percent of the charter boat businesses were sole proprietorships, 6% were corporations, 3% were partnerships, and 2% had some other form of business structure.

Charter boats were typically 26.7 feet long, almost 15 years old, and powered by an inboard (66%), inboard/outdrive (18%), or outboard (15%) motor. Most businesses (81%) operated one boat; 15% operated two boats and nearly 4% operated three or more boats. The average replacement cost for a New York charter vessel in 2002 was $60,112, and the replacement cost for onboard, business-related equipment was $12,596. About 36% of the respondents used a vehicle for towing their boats. The average replacement cost of the vehicle was $27,116, while that of the trailer was $3,997. The vehicle was used for boat towing 25% of the time and for other charter business 35% of the time.

### 3.2 Charter Fishing Trips

Charter trip fees varied according to length of the charter, target species, and services offered. Responding captains averaged 50.0 full-day and 11.1 half-day paid charter trips in New York in 2002, 57% of which were for lake trout and salmon. An estimated 18,626 charter trips were made, 82% of which were full-day and 18% half-day trips. The most popular trip was the whole day lake trout and salmon charter, costing an average $407 per boat (a range of $200 to $570). Most charter businesses provided tackle, ice, bait, and fish cleaning as part of their charter trip fee. A majority of responding captains offered trip photos and/or videos, and almost 48% provided lodging and food as part of their charter package or for an additional fee.

Eleven percent of New York charter captains conducted about 26% of their charters on a Great Lake or river other than the one on which their homeport was located. Almost 73% of the estimated New York charter trips and 65% of the charter businesses were located on Lake Ontario. Ten percent of the trips and almost 9% of the firms were on the St. Lawrence River. Less than nine percent of the trips each were on Lake Erie and the Niagara River, with almost 15% of the firms based on Lake Erie and 11% located on the Niagara River.

### 3.3 Costs and Returns

The average cash needed to operate a charter business is comprised of operating expenses plus boat loan payments (Table 1). For boat-owning captains, the largest annual operating expenses were boat fuel, advertising, hired labor, equipment repair, and boat dockage. In 2002, the average annual boat loan payment, including principal and interest, was $3,776. The typical New York Great Lake's charter firm that owned and operated a single boat needed to generate sales of either $14,869 (with boat loan payments) or $11,093 (without boat loan payments) in order to meet its 2002 cash needs.

Estimated average annual revenues were $22,907 per business in 2002 (Table 4). Subtracting operating expenses from these revenues results in a net positive cash flow of $8,038 for firms with boat loan payments and of $11,814 for firms without boat loan payments (Table 2). Depending on the situation, firms with a positive cash flow could pay the day-to-day bills to operate their charter business from the revenues earned from chartering. A firm with a positive cash flow can stay in business temporarily, even if no profit is made, since all outstanding bills can be paid from the revenues generated.

Economic costs are all the costs of operating the charter firm, and include operating costs plus capital costs. Boat loan payments are a cash requirement, but are not part of the economic costs. Capital costs include boat depreciation and the opportunity cost of owning a boat instead of investing in stocks, bonds, or other enterprise. The average annual depreciation reported by responding captains was $3,866. Interest costs are estimated at 5 % of the value of capital equipment. Since the boat ($60,112) plus equipment ($12,595) costs total $72,707, interest costs are estimated at $3,635. Thus the capital cost (depreciation plus interest) is $7,501.

Charter captains receive revenues in excess of operating and capital costs for their time and labor. To provide a positive return to the operating captain, the average New York charter business in 2002 would have had to generate

**Table 1.—Average annual operating costs for boat-owning captains in New York (Lichtkoppler and Kuehn 2003).**

| Item | Expense | Number of respondents |
|---|---|---|
| Fuel/Oil | $1,895 | 119 |
| Advertising | 1,200 | 109 |
| Labor (hired) | 1,168 | 106 |
| Equipment repair | 1,115 | 119 |
| Dockage | 1,096 | 119 |
| Miscellaneous | 901 | 112 |
| Insurance | 831 | 119 |
| Boat maintenance & repair | 717 | 118 |
| Office & communications | 531 | 107 |
| Boat storage fees | 429 | 119 |
| Boat repair not covered by insurance | 276 | 119 |
| Drug testing/Professional dues | 92 | 115 |
| License fees | 91 | 111 |
| Boat launch fees | 33 | 118 |
| TOTAL OPERATING COSTS | $11,093 | 100 |

**Table 2.—Annual cash flow of the average New York Great Lakes charter firm (Lichtkoppler and Kuehn 2003).**

| Income/Expenses | Businesses with boat loan payments | Businesses without boat loan payments |
|---|---|---|
| Average Revenue[a] | $22,907 | $22,907 |
| Cash flow needs | | |
| Average operating costs[b] | 11,093 | 11,093 |
| Boat loan payments[c] | 3,862 | 0 |
| Cash needed | 14,869 | 11,093 |
| Net cash flow | $8,038 | $11,814 |
| Economic Cost | | |
| Average operating cost | 11,0923 | 11,093 |
| Capital costs | | |
| Interest costs | 3,635 | 3,635 |
| Depreciation[d] | 3,866 | 0 |
| Total economic cost | $18,594 | $14,741 |
| Net Return to Operator | $4,313 | $8,166 |

[a]N = 124 respondents
[b]N = 100 respondents
[c]N = 45 respondents
[d]N = 14 respondents

sales exceeding $18,594 (businesses with depreciation) or $14,741 (businesses without depreciation) to cover the average operating and capital costs. The average New York charter firm operated at a net positive return of either $4,313 (with depreciation) or $8,166 (without depreciation) for the owner's time and labor.

Lake Ontario charter fishing businesses brought in the largest estimated total sales ($3.9 million), followed by Lake Erie ($1.3 million), the Niagara River ($0.5 million), and the St. Lawrence River ($0.4 million). Although the businesses with the largest positive net return or profit ($8,646) had their homeport on Lake Erie, the average Lake Ontario, Niagara River, and St. Lawrence River business was also profitable. Lake Erie captains had the highest economic cost per business ($20,432), followed closely by Lake Ontario captains ($19,731).

**Table 3.—Methods of advertising used by charter fishing businesses in New York (N = 133; Lichtkoppler and Kuehn 2003).**

| Advertising method | Percent of respondents using method % | Number of respondents using method | Effectiveness[a] |
|---|---|---|---|
| Word of mouth | 98 | 130 | 2.8 |
| Brochures | 90 | 119 | 2.2 |
| Direct mailings | 64 | 85 | 2.3 |
| Website | 59 | 79 | 2.1 |
| Tourism promotion agency | 56 | 79 | 1.8 |
| Chamber of commerce publications | 52 | 69 | 1.7 |
| Sport & travel shows | 44 | 59 | 2.1 |
| Signs | 41 | 54 | 1.8 |
| Charter association publications | 36 | 48 | 1.5 |
| Magazine ads | 35 | 46 | 1.7 |
| Newspaper ads | 35 | 46 | 1.6 |
| Telephone directory | 17 | 23 | 1.7 |
| Other | 6 | 8 | 2.6 |

[a]Scale = 1 (not effective) to 3 (very effective)

### 3.4 Promotion

Approximately 85% of New York charter customers come from 50 miles or more away from the charter firm's homeport. Captains rated different methods of marketing and advertising for effectiveness on a scale of 1 (not effective) to 3 (very effective; Table 3). Captains considered word of mouth (i.e., referrals), brochures, direct mail, and their web sites to be the most effective means of advertising. Almost 98% the respondents indicated that they use referrals, while 90% use brochures, 64% use direct mail, and 59% use a website.

### 3.5 Industry Trends and the Future of New York's Charter Industry

In 2002, New York's Great Lakes charter firms made an estimated 18,626 charter trips compared to an estimated 23,928 trips in 1994. The average charter firm made 61.1 trips in 2002, slightly more than the average of 59.7 trips made in 1994. The 305 charter captains generated an estimated $7.0 million in gross sales in 2002 (averaging $22,907 per firm), an increase to the inflation-adjusted estimate of $5.9 in gross sales generated by 400 active captains in 1994 (Kuehn and Dawson 1996). Thus, while the number of businesses has decreased over the past decade, the profitability of the remaining businesses appears to have increased.

Over the next five years, most captains (i.e., 57%) indicated that they plan on increasing the number of trips they make; about 34% plan to increase their charter fees as well (Table 4). However, almost 17% of the respondents plan on quitting the business. Based on these plans, future declines in the number of New York's charter businesses appear likely. However, the increased profitability of the remaining businesses due to decreased business competition is likely as well.

## 4.0 Conclusion

Results of the 2002 New York Great Lakes charter captain survey suggests that to continue increasing profitability, charter captains should aggressively market their industry, increase revenues, and reduce expenses. Charter captains should continually examine the management and marketing of their businesses. Offering nonfishing charters such as scuba diving or bird watching charters could attract new and diverse market groups. Captains should continue to use industry-wide marketing efforts and to advertise their businesses through local, state, and regional tourism bureaus. The increased effectiveness of the Internet also suggests that all charter businesses should consider having a website.

In order to increase revenues, captains can seek ways to increase the number of charter trips made annually.

**Table 4.—Five-year plans of New York's Great Lakes charter captains (N = 143; Lichtkoppler and Kuehn 2003).**

| Activity | Percent of respondents |
|---|---|
| Increase of number of annual trips | 57 |
| Increase prices of charter services | 34 |
| Buy/operate newer boat | 22 |
| No major changes | 22 |
| Quit the charter business | 17 |
| Buy/operate bigger boat | 12 |
| Branch out into other fishing related businesses | 11 |
| Expand into multi-activity and/or non-fishing charters | 11 |
| Other | 8 |
| Decrease number of annual trips | 7 |
| Hire additional charter captains | 5 |
| Hire additional first mate(s) | 4 |
| Buy/operate an additional boat(s) | 3 |
| Decrease prices | 1 |
| Buy own charter boat | <1 |

Some captains have increased their annual number of trips by following the seasonal nature of the fishery and fishing in "hot spots" at different times of the angling season. Diversifying the types of charters offered could also assist with increasing the number of trips. Half-day trips are popular as a way to lower costs to clients and possibly increase the total number of trips made; they are also popular with families with children. Increasing prices may or may not be possible, depending on the demand and the specific market where businesses operate. Refinancing boats at lower interest rates, holding onto an older paid-off boat in good condition, or buying a newer boat at a favorable price to avoid large repair bills may be ways to reduce expenses.

New York's Great Lakes charter industry provides high quality angling experiences and a higher than average catch rate to anglers from around the world. This industry provides the lake fishing access necessary for anglers who do not own boats. However, the size of the industry and the profitability of individual businesses appears to be highly dependent on factors such as angler activity, the national and regional economy, angler concerns over fish diseases, contaminants, and exotic species, and the weather. Seeking new market groups could help offset impacts cause by declines in angler activity.

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# EMERGING TRENDS IN PARK AND PROTECTED AREA MANAGEMENT: A CRITICAL ANALYSIS OF THE EASTERN JAMES BAY REGION OF QUEBEC, CANADA

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## Abstract

In the United States and Canada, national parks (and related protected areas) have typically been government-owned lands devoid of residents. However, new approaches have emerged that seek to include traditional resource uses and local communities within protected area boundaries. Some of these approaches are represented by the World Conservation Union's (IUCN) Category V model. Using a combination of Allison's (1969) conceptual lens method and on-site interviews, this paper assesses the potential applicability and utility of the Category V approach for the purpose of protecting Cree land and heritage in the Eastern James Bay region of Quebec, Canada.

The James Bay Agreement (1975) was, from the Cree perspective, negotiated to achieve 1) protection of subsistence lands from hydro-electric development, 2) political and administrative autonomy, and 3) reconciliation with the provincial government of Quebec and the federal government of Canada (Niezen 1998, p. 71). Despite these negotiated improvements, Cree land and heritage is faced with on-going threats resulting from the continued integration of the Crees into contemporary Canadian society. These threats include 1) increasing levels of regional-scale resource development and extraction on traditional Cree hunting grounds; 2) increasing pressure to create cash economy-based jobs for residents of Cree communities; and 3) Cree land managers (e.g., Tallymen) often have little legal authority over use of natural resources (e.g., recreational hunting and fishing) within their territories.

In response to these threats, several Cree communities are developing proposals to designate a portion of their hunting grounds as heritage areas (Category V, a provincial-level protected area status). Such designation is intended to further protect hunting grounds from over exploitation, provide economic stimulus through outdoor recreation and ecotourism related activities, and create partnership mechanisms whereby the Crees would gain some legal authority over the use and management of these resources. Results suggest that a heritage area-type approach may be appropriate if the Crees can overcome partnership and capacity related obstacles.

## 1.0 Introduction

The James Bay Agreement (1975) was, from the Cree perspective, negotiated to achieve 1) protection of subsistence lands from hydro-electric development, 2) political and administrative autonomy, and 3) reconciliation with the provincial government of Quebec and the federal government of Canada (Niezen 1998, p. 71). To some extent this agreement addressed these concerns. For example, the Agreement specified certain lands as protected "for the exclusive use and benefit of the…James Bay Cree bands" (Government of Quebec 1976, cited in Niezen 1998, p.55). In addition, the Agreement reorganized some governmental services to provide a degree of administrative autonomy for the Crees (Niezen 1998). These services included the creation of the Cree School Board and the Cree Board of Health and Social Services of James Bay. In many ways, the James Bay Agreement (1975) served as a catalyst for the further development of Cree communities, while providing technical and financial mechanisms for the preservation of Cree heritage.

Despite these negotiated improvements, Cree land and heritage is faced with on-going threats resulting from the continued integration of the Crees into contemporary Canadian society. These threats include 1) increasing levels of regional-scale resource development and extraction on traditional Cree hunting grounds (e.g., the mill located near Ouje-Bougoumou can process 40,000 trees per day); 2) increasing pressure to create cash economy-based jobs for residents of Cree communities[15]; and 3) Cree land managers (e.g., Tallymen) often have little legal authority over the consumptive use (hunting, etc.) of natural resources within their territories[16].

The Cree communities of Waswanipi and Ouje-Bougoumou are developing proposals to designate a portion of Cree hunting grounds as heritage areas, a provincial-level protected area status[17]. Such designation is intended to further protect hunting grounds from over

[15]Sam Bosum, Chief of the Ouje-Bougoumou Crees, personal communication, July 29, 2003
[16]Anna Bosum, Cree resident of Ouje-Bougoumou, personal communication, July 26, 2003
[17]Paul Wertman, Advisor to the Ouje-Bougoumou Cree Nation, personal communication, July 29, 2003

exploitation, provide economic stimulus through ecotourism related activities, and create partnership mechanisms whereby the Crees would gain some legal authority over the use and management of these protected areas.

The Cree decision to pursue provincial-level heritage area designation raises an important question: Is the protected landscape approach (IUCN Category V) an appropriate strategy for the Cree to achieve the goals outlined above? Using a combination of Allison's (1969) "conceptual lens" approach and on-site interviews, this paper assesses the potential applicability and utility of the Category V approach for the purpose of protecting Cree land and heritage.

## 2.0 Theoretical Context: A Conceptual Lens Approach

According to Graham Allison, "conceptual lenses" both "fix the mesh of the nets" as well as direct the casting of these nets "in select ponds, at certain depths, in order to catch the desired fish" (Allison 1969, p. 132). In other words, policy analysts (in this case, government officials and park managers) make judgments based not only empirical data, but also the conceptual lenses through which data are examined. Allison developed this approach to understand policy decisions during the Cuban missile crisis, and this approach has subsequently been applied to a range of public policy problems. The conceptual lens approach is relevant here because it provides a rationale for understanding and evaluating alternative protected areas models, which effectively are public policy alternatives. Allison's method relies on 1) articulation of basic conceptual lenses employed (either implicitly or explicitly) in alternative policies; 2) identification of organizing concepts underlying these conceptual lenses; and 3) specification of the logic (analytical assumptions) behind the organizing concepts (Allison 1969, p. 149). I will apply the conceptual lens approach to compare the traditional national park model developed in the United States with the Category V model recently developed by the World Conservation Union (IUCN)[18].

[18]It is important to note that a number of authors have thought deeply about the history and development of national parks in North America. In this analysis I will rely primarily on discussions of these topics presented by Callicott and Nelson (1998), Runte (1997), and Phillips (2003). By doing so, I risk reducing these topics to caricatures. However, as Allison (1969) suggests, caricatures can be instructive (p. 133).

## 3.0 National Parks and the Wilderness Ideal

### 3.1 Basic Conceptual Lenses

National parks in the United States have historically been places valued for their natural phenomena, scenic beauty, and wilderness character (Nash 2001; Runte 1997; Zaslowsky and Watkins 1994). For example, Runte (1997) discusses how the national park ideal emerged, in part, from romantic notions associated with frontier life during the westward expansion of the United States. With the official closure of the frontier in 1890, American elites were concerned that values derived from frontier-living would be lost once the nation industrialized (Nash 2001; Runte 1997; Marshall 1930; Muir 1901; Roosevelt 1897). Thus, the national park system was initially developed, in part, to preserve wild landscapes so that visitors might reconnect to the places and values associated with the American frontier legacy.

### 3.2 Organizing Concepts

Management of national parks in the United States has reflected the philosophical origins of the national park ideal as discussed above. For example, the Organic Act (1916), which created the U.S. National Park Service, charges the agency to manage for the conservation of "scenery and the natural and historic objects and wildlife therein and to provide for the enjoyment of the same in such a manner and by such means as will leave unimpaired for the enjoyment of future generations". Implicit in the Euro-American frontier experience, and the national park ideal, is the notion of wilderness. Robert Marshall (1930) defines wilderness as regions which contain "no permanent inhabitants, possess no possibility of conveyance by any mechanical means and sufficiently spacious that a person crossing it must have the experience of sleeping out" (p. 85).

In post-industrial American society, wilderness is understood as a pristine, unspoiled, and dehumanized landscape that offers refuge from urban life (Nash 2001; Runte 1997; Muir 1901). For example, the Wilderness Act (1964) codifies wilderness as an area "untrammeled by man, where he himself is a visitor who does not remain". Thus, national park and wilderness areas are typically large parcels of government owned land. They are places where people visit, but do not live, and are intended to provide opportunities for visitors to experience nature unspoiled by human degradation.

### 3.3 Analytical Assumptions

At least three analytical assumptions emerge from the above discussion and these are embedded in traditional, refuge-style parks and wilderness areas. These assumptions are 1) parks and wilderness areas are typically government-owned and managed; 2) these are places where people visit (recreate) but do not live; and 3) parks and wilderness areas are perceived to "natural" places, where the impacts of human activity are largely absent.

While perhaps appropriate for industrialized, western societies, the creation of refuge-style national parks and wilderness areas in developing countries has been problematic. For example, Calhoun (1972) documents the plight if the Ik (a tribe of nomadic hunters in Uganda) after the establishment of Kidepo National Park in 1962. In establishing Kidepo, the Ugandan government imported the refuge-style model and removed the Ik from their traditional hunting grounds located within the newly established national park. In addition, the Ugandan government prevented the Ik from hunting game, their traditional food source found within the park. Once deprived of their social economy and separated from their traditional homeland, the Ik literally disintegrated into a "travesty of humanity" (Calhoun 1972, p. 29).

Experiences like Kidepo have demonstrated some inadequacies of refuge-style approaches with respect to management of subsistence use and native peoples in parks and protected areas. Early attempts to address these inadequacies were often legislative initiatives geared towards modifying existing approaches. For example, the Alaska National Interest Lands Conservation Act (1980) contains specific provisions for subsistence use on federally protected lands (Bosworth 1995). While such legislative initiatives have improved access to subsistence resources in some cases, they fail to fully recognize the reciprocal influences between human cultures and natural systems. As a result, it has been argued that the wilderness concept may be grounded in analytical assumptions incapable of integrating subsistence use with refuge-style protected areas (Cronon 1995; Gomez-Pompa and Kaus 1995; Calicott 1991), and a new, complimentary national park model may be necessary for the preservation of cultural heritage and natural systems (Phillips 2003).

## 4.0 The Category V Approach

### 4.1 Basic Conceptual Lenses

The Category V approach is a radical extension of the national park model presented above. It is a protected area model intended to compliment, not replace, strictly protected areas, with a focus on maintaining relationships between people and nature (Phillips 2003; Phillips 2002; Beresford and Phillips 2000). The World Conservation Union (IUCN) defines Category V lands (Protected Landscapes) as,

"Area[s] of land, with coast and sea as appropriate, where the interaction of people and nature over time has produced an area of distinct character with significant aesthetic, ecological and/or cultural value, and often with high biological diversity. Safeguarding the integrity of this traditional interaction is vital to the protection, maintenance and evolution of such an area" (Phillips 2002, p. 9)".

A number of governments have created designations that contain some of the logic of the Category V approach, and these are sometimes generically referred to as "heritage areas". Examples of these include the US National Park Service Heritage Areas Program and the Canadian Heritage Rivers System (Parks Canada 2003). Although both of these programs are administered at the federal level, designation occurs in response to local initiatives and interest, and management responsibilities are shared by collaborations between a variety of stakeholder groups (National Park Service 2003; Parks Canada 2000). In addition, federal designation is not solely funded by large federal investments.

### 4.2 Organizing Concepts

Inherent in the Category V model is the notion of landscape. In this context, landscape refers to the interaction of people with their environment over time (ICOMOS-UK 2002). Unlike traditional national parks, Category V protected areas are lived-in landscapes, and research has shown that landscapes that were once thought of as pristine, or primeval, have been inhabited and modified for long periods of time (Phillips 2002; Cronon 1983).

In this regard, Category V is a unique protected area approach and model. The central concept behind this model is the maintenance of cultural and environmental

values where direct interaction between people and nature occurs (Phillips 2002). Management focus of Category V areas is not explicitly on nature preservation or conservation. Rather, management is about guiding human activities to protect the area and its resources, while allowing these activities to evolve in a sustainable way. In the Category V approach, the objective is to maintain and enhance natural and cultural values for visitors and resident populations (Phillips 2003; Phillips 2002).

Since its inception, interest in the Category V concept has increased throughout the world for three primary reasons (IUCN 2002; Hamin 2001). First, the Category V model offers a framework for trans-boundary collaboration between government agencies, third sector organizations, private landowners, and sustainable industry. A large body of literature addresses the importance of trans-boundary collaboration in achieving conservation goals (e.g., Brick et al. 2001; Wondolleck and Yaffee 2000; Knight and Landres 1998). Second, recent experience suggests that conservation may be most effective when conducted in concert with people closest to the resources (e.g., Brown and Mitchell 2000). Finally, as global populations continue to rise, few landscapes will remain uninhabited. Thus, protected area models must account for resident populations.

### 4.3 Analytical Assumptions

The analytical assumptions embedded in the Category V model can be summarized as follows: 1) Category V areas are not based on notions of wilderness and/or pristine lands; 2) reciprocal relationships (heritage) between landscapes and people have conservation value; and 3) sustainable partnerships (or co-management structures) between multiple actors are necessary. These assumptions suggest that the Category V approach may a viable management framework for protecting Cree land and heritage. The following sections discuss how Category V has been used previously, and examines why this approach may be appropriate for the Cree context.

## 5.0 The Category V Model and Cultural, Economic, and Ecological Sustainability

### 5.1 Silves

Chernela et al. (2002) present a case study from Silves, and the following is brief summary of their paper. Silves is an equatorial island municipality (~ 4,000 residents) located at intersection of the Urubu River and Lake Canacari, Amazonas, Brazil. Silves is approximately 175 miles from the urban center of Manaus, and its economy is a mixture of subsistence activities (e.g., approximately 50-75% of all animal protein consumed by the local population is from fish, extractive industries (e.g., commercial fishing, forestry) and ecotourism.

In the 1960s, the Brazilian government instituted a number of development projects in an attempt to integrate the Amazon into the modern Brazilian economy. These projects were large in scale and included the development of a 10,000 $km^2$ Free Trade Zone. As a result of these development initiatives, the population of Manaus rose from 173,000 in 1960 to 1.5 million in 1990, dramatically increasing pressure on local fisheries from commercial fishing (Chernela et al. 2002; Chernela 2000). By the 1980s, hundreds of commercial fishing vessels regularly entered the lakes at Silves, despite community pleas for conservation, and local residents began to note declines in fishing yields. This was indicated primarily by the scarcity of preferred fish species (Chernela et al. 2002).

Lacking assistance from government agencies, local residents of Silves responded by developing a long-term, strategic plan for the protection of local fisheries. Two types of aquatic preserves were developed for the Silves region. The first, Lago Sanctuorio, is a category of absolute preservation where fishing is strictly prohibited (similar to the aforementioned wilderness designation). The second, Lago de Conservacao prohibits commercial fishing while permitting local subsistence use, and this protected area status is similar to Category V (Chernela et al. 2002).

As a result of these grassroots conservation initiatives, Silves became an attractive partner for the World Wide Fund for Nature. In 1993, with help from the Fund, eight communities of Silves partnered to form a third sector organization called the Cultural and Environmental Protection Association of Silves (ASPAC). ASPAC's mission is to preserve the environmental and cultural inter-relationships, while supporting eco-development. In addition, ASPAC is charged with heightening local awareness of the importance of the lake reserves and to establish, monitor, and enforce fishing regulations (Chernela et al. 2002).

The success of the ASPAC project has lead to a number of initiatives that meet the spirit of the Category V approach. For example, an eco-tourism project was commissioned in 1994, and the community has since constructed an eco-lodge. Economic development associated with the lodge is expected to contribute to long-term community empowerment, while providing alternative sources of employment for local fisherman (e.g., heritage interpretation and guiding). In addition, local markets may be stimulated by tourist demand for food products and handicrafts, and public revenue is increased by the taxes generated from lodge income (Chernela et al. 2002).

Thus, the experience at Silves demonstrates how the Category V approach can help protect ecologically significant resources, preserve local heritage and customs, as well as serve as a catalyst for sustainable economic development. In addition, Silves provides a good example of how the Category V approach offers a framework with which different communities can engage in effective collaborative conservation efforts[19].

### 5.2 The Cree Context of Eastern James Bay, Quebec

A number of similarities exist between the Silves (Chernela et al. 2002) and Cree contexts and experiences. These similarities include 1) regional-scale development and extraction of natural resources on Cree subsistence hunting grounds; 2) increasing pressure to create cash economy-based jobs for local residents; and 3) a history of adversarial relationships between local (indigenous) peoples and state and federal level governments.

Like the communities in the Silves region, the Cree communities of the Eastern James Bay Region, Quebec are threatened by several regional-scale resource and development initiatives. Historically, these initiatives have been proposed by the governments of Quebec and Canada, and have included hydro-electric development, logging, and mining. Resource development and extraction typically ignored Cree subsistence activities, and often resulted in the displacement of peoples.

Subsistence activities continue to play important roles in Cree culture. For example, while in the field with David and Anna Bosum[20], we consumed a number of culturally important foods available only through the practice of subsistence (e.g., beaver, moose, bear, etc.). These foods have stories and rituals associated with their consumption, and these rituals appeared to guide the harvest of these animals. To preserve Cree heritage, it is necessary to create real opportunities for quality subsistence activities, not just set aside areas of land from development. Because the Category V approach identifies the interaction between nature and culture as a conservation target, it has the potential to further protect Cree hunting grounds from such large-scale development initiatives, while allowing subsistence harvest to continue.

The Cree communities of James Bay are a mixture of subsistence and cash-based economies. Both of these economic systems play important roles in contemporary Cree life. As discussed previously, we consumed a number of culturally important foods available only through the practice of subsistence. The harvesting of these foods, however, requires materials produced and purchased through the cash-based economy (e.g., rifles, ammunition, etc.). Furthermore, as the Crees continue to integrate into contemporary Canadian society, there is pressure to acquire skill sets associated with cash-based economies. This requires Cree students to spend time in school, not in the bush. As a result, while many older Crees continue to spend significant time in the bush, younger generations are raised in communities like Ouje-Bougoumou and Waswanipi, and visit the bush only when time allows.

Recognizing this transition, the current chief of Ouje-Bougoumou, Sam Bosum, identified job creation as the most important 5-year goal for the continued development of that Cree community[21]. Ouje-Bougoumou has subsequently responded by constructing a lodge for developing eco-tourism as a sustainable form of economic development. In addition, the Waswanipi

[19]For other case studies on Category V areas, see Parks, Vol. 12, No 2, (The World Conservation Union – IUCN) as well as Phillips, A (2002) Management Guidelines for IUCN Category V Protected Areas: Protected Landscapes/Seascapes. IUCN Gland, Switzerland and Cambridge, UK. xv + 122pp

[20]This site visit occurred between July 21, 2003 and July 30, 2003. Included in this site visit was a 6-day paddle trip with David and Anna Bosum. As Tallyman, David overseas his family's traditional hunting grounds. David is the brother of Sam Bosum, the current Chief of the Oujé – Bougoumou Crees

[21]Sam Bosum, Chief of the Ouje-Bougoumou Crees, personal communication, July 28, 2003

Cree have formed their own timber company, Mishtuk, which purports to harvest timber in a sustainable manner. Such economic development initiatives further underscore the dual economic systems (cash-based and subsistence-based) in which these Cree communities participate. Because the Category V model focuses on maintaining sustainable relationships between local communities and natural systems, it may be an effective approach for integrating subsistence and cash-based economies.

The Crees, like local community residents in Silves, have often had adversarial relations with state and federal-level governments. Historically, the tensions between the Crees and the governments of Quebec and Canada surrounded proposals to dam much of the James Bay region for hydro-electric development. Not surprisingly, the Crees opposed this development, and this opposition eventually led to the James Bay Agreement (1975). Although less so now, tensions continue and the Crees are currently in negotiation to obtain jurisdictional authority over recreational and consumptive use of fish and wildlife[22]. The Crees hope these negotiations will result in regulations that require non-native visitors to obtain permits (from the tallyman) for the recreational and consumptive use of fish and wildlife resources on Cree territory[23]. With its focus on trans-boundary collaboration, the Category V approach may offer a productive framework with which to conduct these negotiations.

As previously discussed, a number of similarities exist between the successful application of the Category V model at Silves and the current Cree context, suggesting that the Category V approach may be a useful strategy for the Crees. Moreover, concepts like respect for the natural world and environmentally sound land stewardship are well documented in Cree culture (Niezen 1998), and these values have been integrated into the design of village structures. For example, all village buildings are heated from waste saw-dust produced at by nearby saw mill. Because the Crees are experimenting with sustainable development, this suggests that the Category V concept may be more culturally relevant to the Crees than traditional models of protected areas discussed earlier.

## 6.0 Limitations of the Category V Approach in the Cree Context

Despite the potential utility of the Category V approach, it is important to understand the limitations and challenges associated with this model. First, as previously discussed, the Category V model requires effective use of partnerships to overcome administrative and political boundaries. Partnerships, however, can be challenging and require considerable social and administrative capacity (Brick and Weber 2001; Wondolleck and Yaffee 2000). In this sense, capacity includes abilities to develop resource management plans as well as technical and legal expertise. Although the James Bay Agreement (1975) helped to improve this situation dramatically, it remains unclear if the communities of Waswanipi and Ouje-Bougoumou possess the capacity to effectively sustain such partnerships at the present time[24].

Use of the Category V model also requires the Crees to give thoughtful consideration to how they define "sustainability". The Category V model can be an effective approach for preserving cultural landscapes and involving a diversity of stakeholder groups. However, IUCN management guidelines state that economic activities which do not need to take place within the protected area should be located outside it (Phillips 2002, p. 41). The Crees' timber company, Mishtuk, is actively harvesting on lands near Waswanipi, and other potential economic projects include the development of a Cree-owned mining company. The extent to which these economic activities are compatible with the objectives of a protected area for the preservation of Cree lands and heritage remains unclear.

Moreover, like other rural and indigenous communities, many of the Crees are enthusiastic about integrating eco-tourism into their local cash-based economies[25].

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[22]Anna Bosum, Cree resident of Ouje-Bougoumou, personal communication, July 26, 2003

[23]Anna Bosum, Cree resident of Ouje-Bougoumou, personal communication, July 26, 2003

[24]Susanne Hilton, Cultural Liaison to the Cree Nation of Waswanipi, personal communication, July 22, 2003; Rhonda Oblin, Manager of Waswanipi Model Forest, personal communication, July 22, 2003; Martin Pelletier, Consultant to Waswanipi Model Forest, personal communication, July 21, 2003

[25]Sam Gull, Cree resident of Waswanipi and entrepreneur, personal communication, July 22, 2003

Although eco-tourism may generate revenue, it can damage the integrity of indigenous communities through over-commodification. These and related questions deserve serious consideration as the Crees pursue protected area designation.

Finally, heritage areas and the Category V model have yet to undergo substantial evaluations. Although a number of rapid rural assessments and quasi-case studies (such as this paper) report success, additional analytical rigor is needed to determine the long-term effectiveness of this approach.

## 7.0 Conclusion

Despite the limitations raised above, I believe the Category V approach is potentially useful and applicable for the Crees. This model has been effective in similar contexts and is grounded in analytical assumptions focusing on reciprocal relationships between nature and culture. As a result, Category V designation may further protect traditional Cree hunting grounds, help to integrate the subsistence and cash-based economies, and perhaps provide a conciliatory and collaborative framework with which the Crees can engage both the governments of Quebec and Canada. In addition, Category V (and related) models may best be understood as the latest evolutionary step in the development of protected area management frameworks. Ultimately, these approaches create new opportunities for conservation by providing managers and policy makers with additional tools.

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# *Visitor Choice and Resource Attributes*

# THE IMPACT OF NEGATIVE ENVIRONMENTAL FACTORS ON RECREATION CHOICE BEHAVIOR

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## Abstract

In contrast to the amount of attention directed at examining the impact of recreation and tourism activity on the environment, very little research has explored the impact of the environment itself on recreation and tourism choice behavior. To address this gap in the research literature, a series of conjoint analysis experiments were conducted to examine how site selection decisions for selected outdoor recreation activities (golf, birdwatching, and fishing) would be affected by the negative environmental conditions often found in post-industrial urban areas (such as the Lake Calumet Region of Illinois/Indiana). This presentation reports results from data collected from samples of golfers and birders who evaluated conjoint profiles of hypothetical recreation sites described in terms of six study factors. Analysis of the study data provided insight into the relative importance of the factors across the two activity groups and among respondent subgroups that differed in terms of the level of activity specialization/ability. Taken together, the research findings contribute to our understanding of how environmental factors influence recreation choice behavior; and hold useful implications for those involved in managing and restoring natural resources and encouraging tourism visitation in post-industrial urban settings.

## 1.0 Introduction

The issue of how the environmental health/degradation of an area affects recreation usage and tourist visitation behavior is a critically important but sorely unexplored research topic. Prior research in recreation and tourism has examined the impact of environmental factors on preferences and choice behavior but primarily in the context of examining the impact of positive site or environmental features. For example, a study by Schroeder and Louviere (1999) examined how recreation usage would be affected by a variety of site features including the type of vegetation (i.e., whether grass and/or trees were present at the site), type of terrain (flat versus rolling hills), and the presence of water resources (none, stream/pond, river, lake, etc.). Similarly, Perdue (1995) investigated preferences among information center users for site features such as shade trees, grassy areas, mountain views, lakes/ponds in the environment.

Studies that have examined negative environmental factors have focused predominately on perceptions of environmental impacts caused by either recreation use or tourism activity. For instance, several studies have examined perceptions of litter at campgrounds and other wilderness settings (e.g., Merriam and Smith 1974). A related stream of research, reviewed in Wall (1989), has looked at negative environmental factors arising from mechanized versus non-mechanized forms of recreation activity. For example, there have been several investigations of differences in the experiences sought and conflicts arising between groups such as snowmobilers and cross-country skiers (Jackson and Wong 1982); and canoeists versus power-boaters (Lucas 1964). The impact of tourism development and tourist activity on the environment has been a frequent topic in tourism texts (e.g., Fridgen 1991; Nickerson 1996; Williams 1994; Wyllie 2000) and the subject of a considerable amount of empirical research (reviewed in Ap and Crompton 1998; Mathieson and Wall 1990). For example, Wang and Miko (1997) examined the significance of environmental concerns – such as water quality problems, air quality problems, vegetation (flora) or wildlife (fauna) problems, and coastline/shoreline problems – associated with tourist activity at U.S. National Parks.

In contrast to the amount of attention paid to the impact of recreation and tourism on the environment, there have been only a handful of efforts devoted to exploring the impact of the environment itself on recreation and tourism choice behavior. One group of studies has demonstrated the negative impact that industrial/commercial activity can have on different recreation user groups, specifically birders (Cole and Scott 1999) and river users (Knopp et al. 1979; Robertson and Burdge 1993). Another group of studies has concentrated on examining the impact of a single environmental factor, air quality (i.e., visibility levels), on visitation to U.S. National Parks (Winger and McKean 1991; Schulze et al. 1983). One final study examined the impact of environmental factors in an international travel context.

This study conducted by Huybers and Bennett (2000) focused on potential overseas vacation travelers from the UK to Australia and examined the impact of environmental factors at a very general level of description – e.g., the condition of the environment was operationalized as ranging from unspoilt to very spoilt. In sum then, while environmental factors have been shown to be important, researchers have yet to fully examine how negative or degraded environmental factors, especially those that might be inherent in post-industrial landscapes, might impact recreation and travel decision making.

## 2.0 Study Objectives

The present study sought to address this gap in the research literature by examining how recreation site choice decisions for three selected recreation activities – golf, bird watching, and fishing – would be affected by the negative environmental conditions that are often found in post-industrial urban areas. Such areas, like the Lake Calumet Region of IL/IN, are common across the country and represent primary targets for both ecological and economic restoration. In addition to examining how the impact of these environmental factors varied for different recreation activities, a secondary objective was to examine differences in the impact of the factors for respondent subgroups that differed in terms of their level of activity specialization. The general expectation was that respondents that were highly specialized (e.g., serious birders) would be more tolerant of degraded environmental factors compared to those that were less specialized (casual birders). This paper reports results for two of the study activities, golf and birding; data for the third study activity, fishing, is still underway and will be reported at a later time.

## 3.0 Methodology

A self-administered conjoint analytic approach was used to explore these objectives. The factors and factor levels were selected based on the results of a literature review, in-depth interviews with recreationists, and consultation with recreation planners and resource managers. A total of six study factors, each defined at three levels were selected for the study (a listing of the specific factors and factor levels employed are given in Table 1).

**Table 1.—Study Factors & Factor Levels**

| |
|---|
| Travel time (by car): |
| 15 minutes |
| 45 minutes |
| 90 minutes |
| Quality of birding (or golf) in the area: |
| Excellent |
| Good |
| Fair |
| Residential development: |
| No houses or residential development visible in the area |
| Some houses or residential development visible in the area |
| Heavy residential development visible in the area |
| Industrial activity: |
| No industrial activity visible in the area |
| Factory/industrial structures visible in the area |
| Landfill/waste treatment facility visible in the area |
| Air quality: |
| Good, no noticeable smells or odors in the air |
| Moderate, some noticeable manmade smells or odors in the air |
| Bad, strong/annoying manmade smells or odors in the air |
| Noise in the area: |
| Quiet, hear only natural sounds |
| Can hear some manmade or highway noises in the distance |
| Noisy, hear loud manmade or highway noises nearby |

A self-administered survey was developed consisting of four sections: (1) measures of golfing/birding behavior and interests; (2) conjoint ratings of hypothetical recreation sites described in terms of six study factors; (3) information on the types of environments typically experienced when golfing/birding; and (4) data on basic demographic characteristics. In order to minimize the number of profiles to be evaluated, and because the study factors were assumed to operate independently, a main-effects-only (fractional-factorial) design was employed. This design required respondents to evaluate only 18 profiles, rather than 729 profiles which would have been needed for a full-factorial (36) design. Respondents were instructed to imagine that they were planning an outing to go birding (or golfing) and to indicate how likely they would be to choose each option given the particular conditions described. A 9-point intentions scale was used for these ratings (where 1 was "extremely unlikely to choose" and 9 was "extremely likely to choose"). An example of the conjoint rating task and intentions scale is given in Figure 1.

**SECTION 1**

In this section are descriptions of options that might be available when selecting an area to go birding. We'd like you to imagine that you were planning an outing to go birding. For each option shown below, circle the number on the scale that best reflects how likely you would be to choose that option given the particular conditions described. Note that you should answer each based on your own personal desires, rather than the desires of the others that might bird or travel with you. *(Circle one for each option)*

| | | |
|---|---|---|
| **Option #1** | Travel time (by car) . . . . . | 90 minutes |
| | Quality of birding in the area . . . . | Good |
| | Residential development . . . . . | No houses or residential development visible in the area |
| | Industrial activity . . . . . | Factory/industrial structures visible in the area |
| | Air quality . . . . . | Bad, strong/annoying manmade smells or odors in the air |
| | Noise in the area . . . . . | Noisy, hear loud manmade or highway noises nearby |

**Extremely UNLIKELY to choose** 1 2 3 4 5 6 7 8 9 **Extremely LIKELY to choose**

Figure 1.—Example of the Conjoint Rating Task

Surveys were administered to a sample of 150 golfers at midwestern U.S. golf courses/practice centers via a drop-off and mail-back approach (which achieved a 40% response rate); and to 87 birders at meetings of midwest birding organizations using the same approach (for a 62% response). An additional sample of 728 birders was obtained using an online version of the survey posted on birding listservs. The data from the two birding groups were pooled, resulting in a total sample of 815 birders. Only those respondents that provided a complete set of conjoint ratings were retained for further analysis; this resulted in a total of 137 respondents in the golfer group and 736 in the birder group.

## 4.0 Findings

The data were analyzed using SPSS Conjoint 11.0. Inspection of the factor importance weights (given in Figs. 2 and 3 below) showed that golfers rated air quality/ odors as most important (with a factor importance weight of 29.6) , followed by travel time (22.8), activity

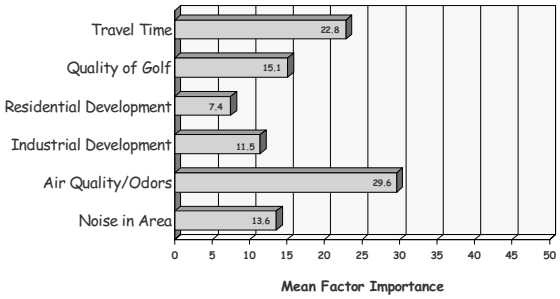


Figure 2.—Factor Importance Weights for Golfers (n=137)

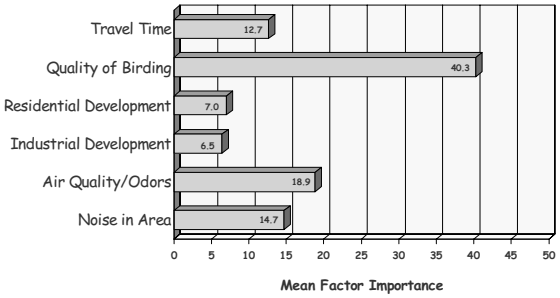


Figure 3.—Factor Importance Weights for Birders (n=736)

quality (15.1), noise (13.6), industrial development (11.5), and residential development (7.4). Birders, on the other hand, rated activity quality as most important (with a notably higher factor importance weight of 40.3), followed by air quality/odors (18.9), noise (14.7), travel time (12.7), residential development (7.0), and industrial development (6.5). Factor-level part-worth utility plots for the two activity groups (given in Fig. 4 below) show that preferences for the factors operated as would be expected – i.e., respondents in both groups had higher preferences for the more desirable factor levels (e.g., excellent birding quality) and lower preferences for levels that were less desirable (fair birding quality).

Subsequent analyses of the birding data were conducted to examine whether the conjoint ratings varied for respondents that differed in terms of their level of activity specialization. As a proxy for birding specialization, responses to a self-stated measure of the respondent's ability as a birder (i.e., "How would you rate yourself in terms of your ability to observe and identify birds?) was

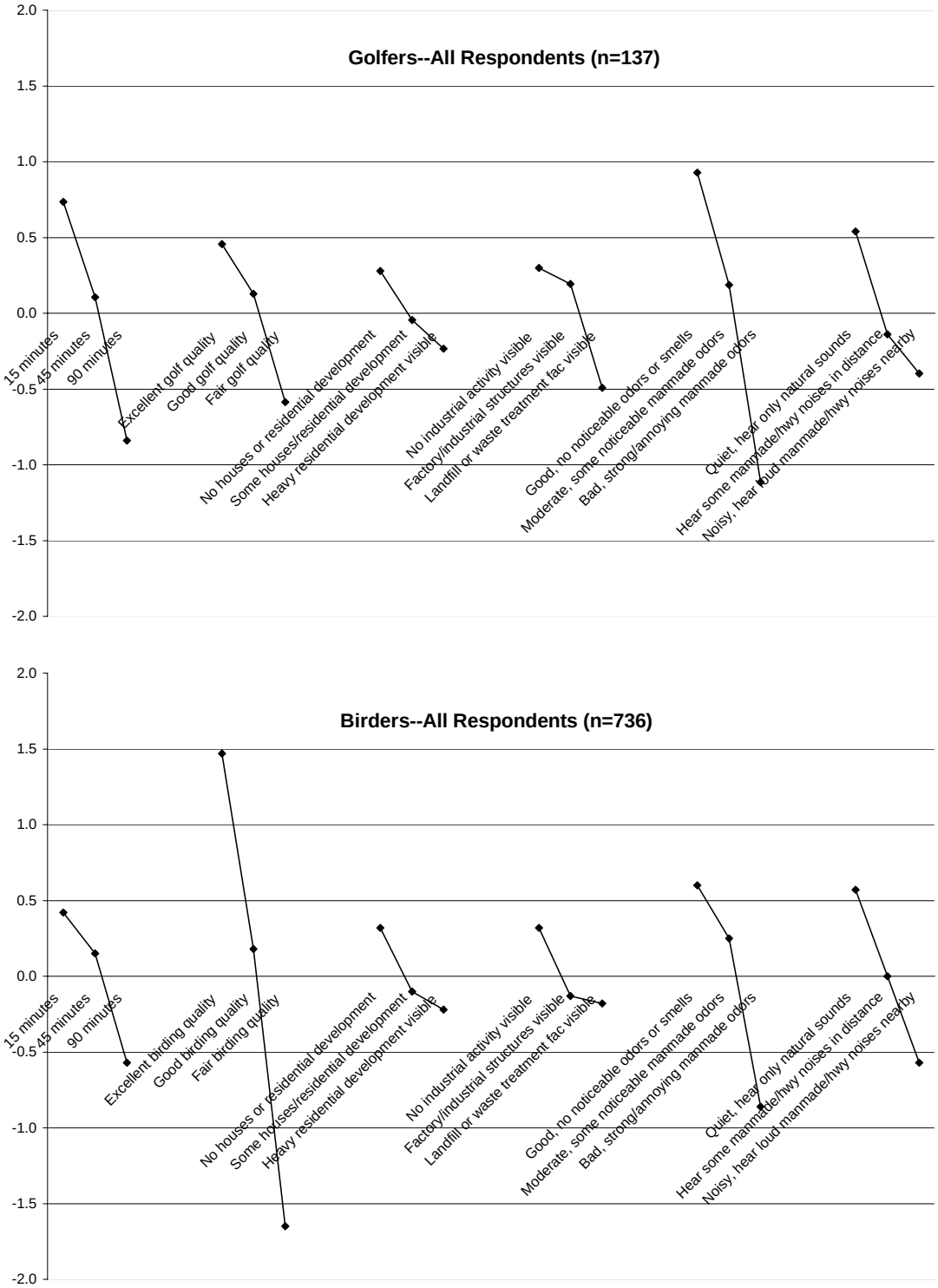


Figure 4.—Factor-Level Part-Worth Utility Plots for Golfers and Birders

used to classify respondents into one of four categories: beginner, intermediate, advanced, and expert. Data on the amount of money invested in birding-related equipment (mean replacement values) and frequency of birding activity by ability subgroup (shown in Tables 2 and 3) indicated that the four groups differed in ways that were consistent with the recreation specialization concept.

**Table 2.—Investment in Equipment (Mean Replacement Value) & Birding Frequency by Self-Stated Birding Ability**

| | Total (n=806) | Beginner (n=49) | Intermediate (n=336) | Advanced (n=341) | Expert (n=80) |
|---|---|---|---|---|---|
| Maintain a life list | 75.7% | 44.2% | 67.1% | 86.2% | 87.7% |
| Mean # species on life list | 657.4 | 137.1 | 425.1 | 763.9 | 1089.7 |
| Maintain other list | 59.4% | 11.5% | 51.9% | 68.6% | 81.5% |
| Using birding software | 19.5% | 3.8% | 17.2% | 23.5% | 22.2% |
| Attend birding field trips | 65.6% | 50.0% | 69.1% | 67.8% | 50.6% |
| Guide birding field trips | 36.5% | 1.9% | 16.9% | 53.2% | 70.9% |
| Attend birding talks | 68.9% | 71.2% | 65.9% | 73.1% | 62.0% |
| Lead/give birding talks | 24.4% | 3.8% | 9.2% | 33.6% | 63.3% |
| Report rare bird sightings | 53.3% | 7.7% | 35.9% | 70.5% | 83.5% |
| Participate in bird counts/surveys | 76.9% | 19.2% | 68.8% | 89.2% | 96.2% |
| Participate in habitat conservation | 63.0% | 28.8% | 55.8% | 71.9% | 77.2% |

**Table 3.—Investment in Equipment (Mean Replacement Value) & Birding Frequency by Self-Stated Birding Ability**

| | Total (n=806) | Beginner (n=49) | Intermediate (n=336) | Advanced (n=341) | Expert (n=80) |
|---|---|---|---|---|---|
| Mean RPV: | | | | | |
| Binoculars/scopes | $1,672 | $ 519 | $1,359 | $1,934 | $2,604 |
| Books/field guides | $1,000 | $ 155 | $ 465 | $1,141 | $3,184 |
| Cameras/lenses | $1,005 | $ 988 | $ 763 | $1,041 | $1,875 |
| Other equipment | $ 148 | $ 85 | $ 89 | $ 173 | $ 332 |
| Total all equip. | $ 3,825 | $1,747 | $2,676 | $4,290 | $7,996 |
| Mean Days Bird: | | | | | |
| In home state | 78.3 | 32.6 | 64.9 | 95.3 | 91.0 |
| In other states | 12.9 | 3.7 | 9.8 | 15.8 | 19.4 |
| Outside US | 5.2 | 1.4 | 3.3 | 6.1 | 12.5 |

Analysis of the conjoint data by ability subgroup revealed interesting differences in the importance of the study factors (Fig. 5). For instance, the factor importance weights for the birder group showed that those that rated themselves as beginners were most concerned with birding quality and air quality/odors (which had factor importance weights of 27.4 and 26.0 respectively), followed by travel time (15.5), noise (14.2), industrial development (9.9), and residential development (7.1). In contrast, those classifying themselves as experts were concerned first and foremost with birding quality (which had a factor importance weight of 48.6) and then noise (17.2). Several respondents commented that they would go almost anywhere to see the right bird and that too much noise makes it difficult to identify birds by sound. The remaining study factors had less of an impact on these respondents (travel time 11.0, air quality/odors 10.0, residential development 7.7, and industrial development 5.5).

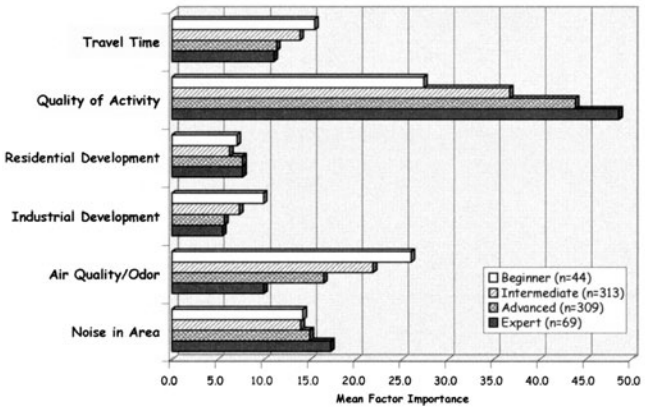


Figure 5.—Factor Importance Weights by Self-Rated Birding Ability

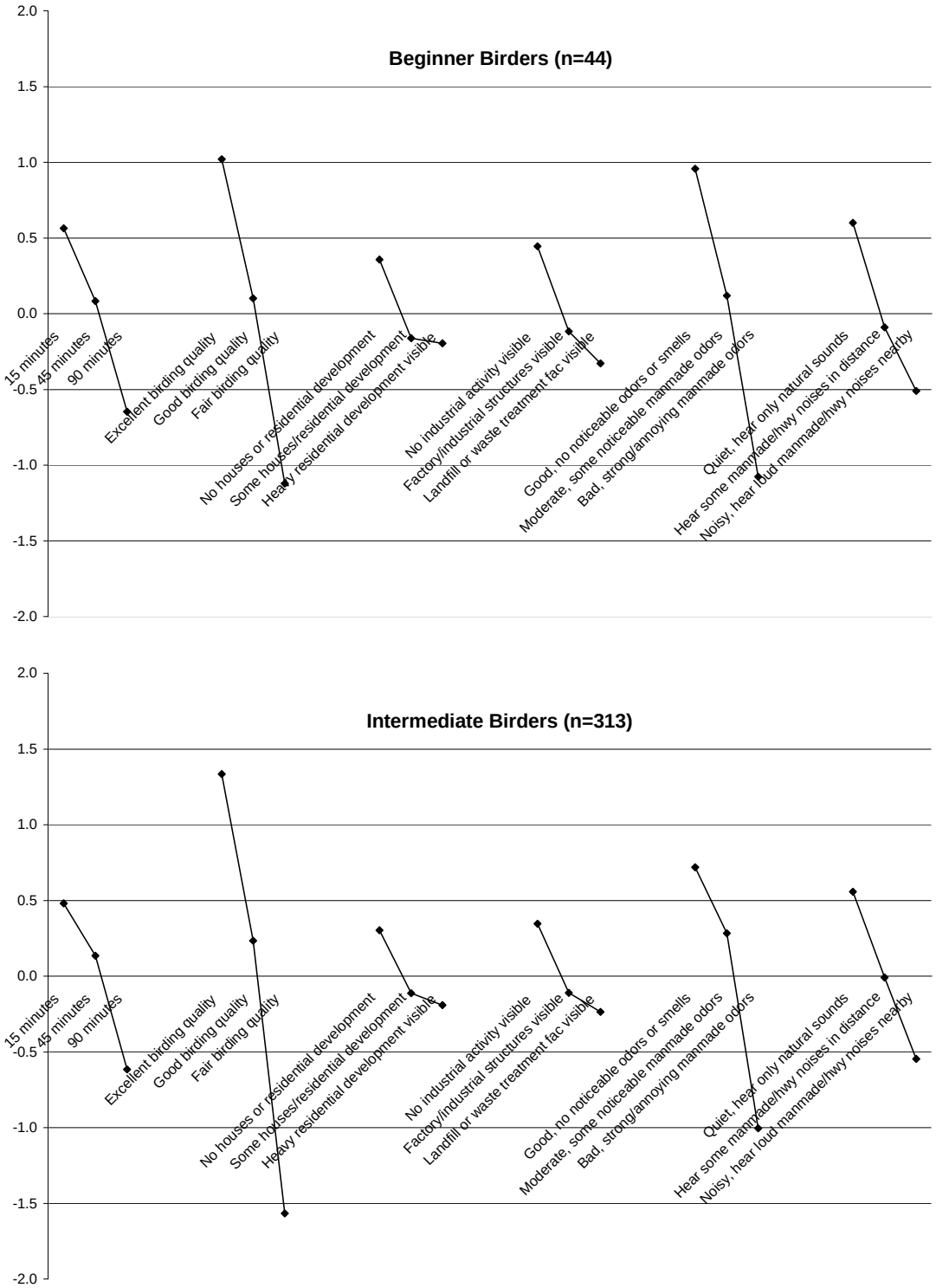


Figure 6.—Factor-Level Part-Worth Utility Plots for Beginner and Intermediate Birders

An inspection of the factor-level part-worth utility scores across the four subgroups (Figs. 6 & 7) revealed that preferences for the study factors generally operated as expected (i.e., all groups had higher preferences for more desirable factor levels and lower preferences for levels that were less desirable). The only exception involved the utility values for the landfill/waste treatment plant level of the industrial activity factor. Specifically, the part-worth plots indicated that advanced and expert birders tended to rate this factor level more positively compared to respondents in the other two ability groups. This anomaly was explained, in part, by several of these

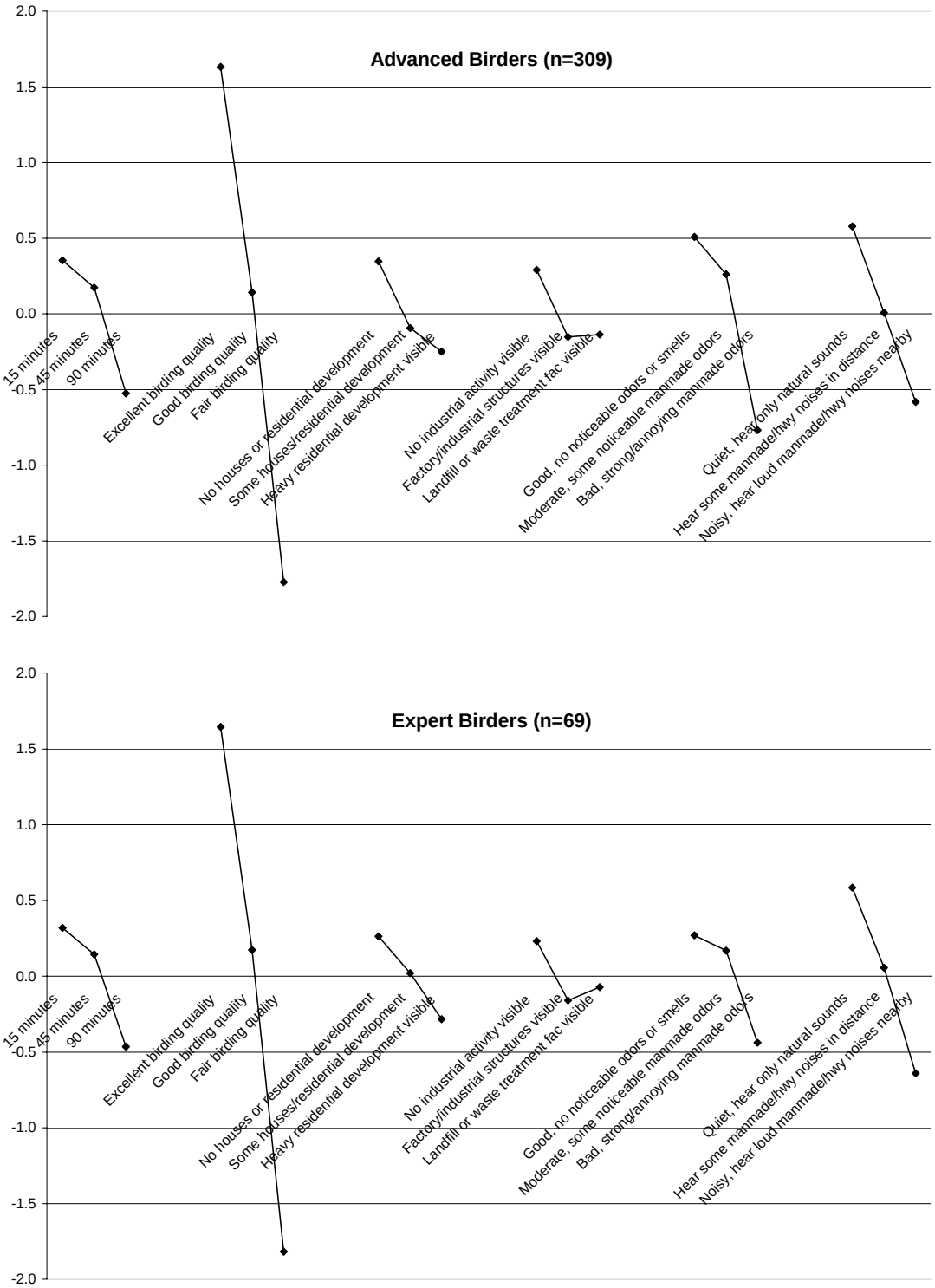


Figure 7.—Factor-Level Part-Worth Utility Plots for Advanced and Expert Birders

advanced/expert birders who noted that landfills and sewage treatment plants, since they typically attract a variety of bird species (and keep other recreation users away), often provide excellent birding opportunities.

## 5.0 Discussion

The results reported in this research showed that the impact of the study factors on recreation site selection decisions varied by activity and by level of

activity specialization or ability. In particular, as one's birding ability increased, the importance of the other environmental factors became secondary to the quality of birding in area. Interestingly, some of these factors became less important (or more tolerable) with increased birding ability (presence of factories/industrial structures, residential development, and air quality/odors in the air), while other factors became more important (less tolerable) with increased ability (noise in area). Taken together, these findings provide valuable insight into the impact that a negative or degraded environment can have on recreation site choice behavior; and thus should make a useful contribution to the recreation research literature.

In addition to their conceptual value, these results hold useful implications for those involved in managing and restoring natural resources in post-industrial urban settings. Restoring such areas for recreation use is critical to enhancing the quality of life of area residents and for rectifying, or at least addressing, resident concerns about environmental injustices that have occurred in the past. In addition to supporting the recreation interests of local residents, these areas hold considerable potential for attracting nature-oriented tourist visitation from outside the area. Continued research assessing the sensitivity of these outside resource users to the environmental conditions inherent in urban post-industrial areas should provide important insight to recreation planners and resource managers about the types of uses that would be sustainable, and thus should be encouraged and promoted in the future.

## 6.0 Acknowledgment

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# EXAMINING THE STRUCTURE OF THE LEISURE INVOLVEMENT/PLACE BONDING RELATIONSHIP IN THREE SUMTER NATIONAL FOREST CAMPING AREAS

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## Abstract

Recreation places often take on significant meaning for people for a plethora of reasons. Leisure literature has begun to examine the way that people's leisure involvement may impact their attachment to places. The purpose of this investigation was to examine the relationship between the dimensions of leisure involvement and the dimensions of place bonding among a sample of recreationists camping in three camping areas in a southeastern National Forest. Four hundred twenty four campers (83% response) in the Sumter National Forest in South Carolina were surveyed to examine the leisure involvementàplace bonding relationship. Using multidimensional conceptualizations of both constructs, our results indicated that leisure involvement was a positive predictor of recreationists attachment to the forest.

## 1.0 Introduction

Individuals often place a high value on specific locations and select recreational activities. For a variety of reasons, certain places matter to people. People may care for places because they have visited regularly, because they have memories tied to location or, perhaps, because the place possesses aesthetic beauty. Places may also take on significant meaning because of the involvement with the activities people enjoy there, given that involvement has been suggested as an antecedent of place attachment (Kyle et al. 2003; Moore & Graefe 1994).

In recent years, there has been considerable research within the recreation and leisure field focusing on the connections people feel with places (Bricker & Kerstetter 2000; Hammitt et al. in press; Moore & Scott 2003; Shumaker & Taylor 1983; Steel 2000) and about peoples' involvement with recreational activities (Gahwiler & Havitz 1998; Havitz & Dimanche 1990, 1997, 1999; Iwasaki & Havitz 1998; Kim et al. 1997). The literature has also begun to examine the way that people's leisure involvement may impact their place attachment (Kyle et al. 2003; Moore & Graefe 1994). Williams et al. (1992) suggested the potential connection between at least two of these constructs saying, "place attachment analysis offers a way to apply concepts of… involvement to recreational settings" (p. 43).

## 2.0 Previous Research

### 2.1 Leisure Involvement

Laurent and Kapferer (1985) suggest that enduring involvement "derives from the perception that the product is related to centrally held values, those defining one's singularity, and identity, one's ego" (p. 42.). They argued that involvement is best viewed as a multifaceted concept and proposed five facets of involvement, which opened the door for conceptualizing involvement on a multidimensional concept. Since the mid-1980s there has been a general consensus that multi-dimensional measures of the construct are best suited for measuring involvement (Havitz & Dimanche 1990, 1997, 1999; Kyle et al. 2003; McIntyre 1989; Selin & Howard 1988). McIntyre and Pigram (1992) have extended Laurent and Kapferer's (1985) research to develop three components of leisure involvement consisting of attraction (interest and enjoyment), self-expression, and centrality to lifestyle. The attraction component examines the importance and enjoyment recreationists' associate with specific leisure activities. Self-expression is closely linked with sign or symbolic values associated with leisure activities (Dimanche & Samdahl 1994). Lastly, centrality,

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represents the degree to which the activity holds a central role in one's life. McIntyre and Pigram echo Laurent and Kapferer's criticism of formerly used summative measures of involvement. They suggest that involvement profiles are preferred over using a summative index with a construct recognized as multidimensional, because profiles more appropriately acknowledge the singular contribution of each of the components of the construct.

In the leisure involvement literature, Havitz and Dimanche's (1997) definition of involvement has been frequently cited: "an unobservable state of motivation, arousal or interest toward a recreational activity or associated product. It is evoked by a particular stimulus or situation and has drive properties" (p. 246, adapted from Rothschild 1984). Though there is some disagreement as to which dimensions of involvement are most salient; several leisure involvement studies in the recreation field have adopted the conceptualization of involvement as a tripartite construct consisting of attraction, centrality, and self-expression (Bricker & Kerstetter 2000; Gahwiler & Havitz 1998; Kyle et al. 2003; McIntyre & Pigram 1992).

McIntyre and Pigram (1992) studied recreation involvement in the context of vehicle-based campers and used the construct to identify variation in campers' management preferences. In their study, McIntyre and Pigram expanded on Bryan's (1977) description of specialization by integrating an affective component from Laurent and Kapferer's (1985) work, which they termed enduring involvement. McIntyre and Pigram's study aimed to develop recreation involvement profiles for the sample and to demonstrate the usefulness of the profiles for segmenting their sample into subgroups that differ in terms if their attitude toward management of the study area. Four clusters of campers were identified that varied by their recreation involvement profiles, with some focused heavily on self-expression, some on centrality, and some on attraction. This finding revealed that involvement can be applied in broader contexts than rock-climbing and fishing including "more generic and less skill-oriented activities such as camping" (p. 10). Further, the profiles did prove useful in dividing the sample into homogenous groups that differed in terms of their attitudes toward management of the study area. The subgroup that was most centrally involved, most experienced, and most familiar was also most critical of management actions.

Recently, involvement studies have examined campers (Kyle & Chick 2002; Kyle et al. 2003) from quantitative and qualitative perspectives. Kyle and Chick examined campers attending an agricultural fair in central Pennsylvania using several ethnographic techniques in two stages. They sought to understand three questions: (1) Why do campers attend annually?; (2) What is the focus of the campers' involvement?; and (3) How is their involvement maintained? Through on-site and at-home contact, the investigators found that nurturing relationships with significant family and friends while camping to be the primary reason campers attend the agricultural fair annually for many decades. Additionally, social bonds were both the focus of the campers' involvement and the driving force behind their continuation. Centrality was found to be the least important dimension of involvement for the Pennsylvania campers, as the Fair only occupied 1 week of the year.

Kyle et al. (2003) examined involvement as an antecedent to place attachment among hikers along the Appalachian Trail. Across all groups of hikers (day hikers, overnight hikers, section hikers, through hikers), attraction was the most salient involvement dimension and centrality received the lowest importance ranking. Researchers found partial support for involvement as an antecedent to place attachment, however, due to the multidimensionality of both involvement and place attachment, this simple statement was found lacking. Self-expression and attraction were found to be good predictors of place identity, though the connection between self-expression and place dependence was less clear. "Overall, the dimensions of activity involvement were better predictors of the place identity dimension than they were of the place dependence dimension" (p. 267).

### 2.2 Place Bonding

The concept of person-place interactions has its roots in humanistic geography. People develop personal attachments to places and thereby acquire a sense of belonging and purpose that gives their lives meaning (Bricker & Kerstetter 2000; Buttimer 1980; Relph 1976; Tuan 1980). "To be human is to live in a world that is filled with significant places: to be human is to have and know your place" (Relph 1976). This knowing of place has been alternately termed sense of place (Jorgensen & Stedman 2001; Tuan 1980), place identity

(Moore & Graefe 1994; Proshansky et al. 1983), place dependence (Moore & Graefe 1994; Shumaker & Taylor 1983), place attachment (Bricker & Kerstetter 2000; Kyle et al. 2003;), and, most recently, place bonding (Hammitt 2000; Hammitt et al. in press; Steel, 2000). "Despite different names, the connecting theme among these concepts is that humans form affective bonds to significant places in their lives, whether the focus of the investigation is their home, their community or the places they recreate," (Hammitt et al. in press b). Shumaker and Taylor (1983) included "cognitions of satisfaction and expectations of stability, feelings of positive affect, greater knowledge of the locale, and behaviors that serve to maintain or enhance the locale" (p. 237) in their definition of place attachment. This definition incorporates cognitive, affective and behavioral components into place attachment. Place bonding to a resource suggests that over repeated exposure and through a transactional process of place-people interactions, that places take on an identity of their own (Fishwick & Vining 1992). Because of the similarities between interpersonal relationships and person-place relationships, human relationships may offer "a theoretical analogue that could serve to guide research in environmental relationships" (Steel 2000, p. 798).

Subsequently, place bonding has been partitioned into five dimensions: place familiarity, place belongingness, place identity, place dependence and place rootedness (Hammitt 2000; Hammitt et al. in press). Place familiarity involves place recognition that develops through experiences in/with the place, involving a sense of knowing and cognition associated with recreation place. Place belongingness entails a feeling of membership to/with a place. This dimension may include personal buy-in to the place or community and altruistic feelings and actions to the area, as if they hold "membership" and are a part of a resource place (Milligan 1998). Place identity is described by Proshansky (1978) as referring to "those dimensions of the self that define the individual's personal identity in relation to the physical environment by means of a complex pattern of conscious and unconscious ideas, beliefs, preferences feelings, values, goals and behavioral tendencies and skills relevant to this environment" (p. 155). The dimension, place identity, refers to the possibility that a person may come to define himself or herself in terms of the place. Place dependence, then, may include elements of other dimensions, but also requires a necessity of the specific resources. Place dependence hinges on the functional attachment reflecting the importance of a resource providing the setting and amenities for desired activities (Kyle & Chick 2003; Stokols & Shumaker 1981; Williams & Roggenbuck 1989) Place rootedness is a rare form of place bonding. Place rootedness, "in its essence means being completely at home – that is unreflectively secure and comfortable in a particular location" (Tuan 1980, p. 4). This dimension is so rooted in the notion of stability that recreation in other areas may be precluded.

Recently, Hammitt et al. (in press) analyzed place bonding of trout anglers on the Chattooga National Wild and Scenic River. They hypothesized that experience use history was associated with place bonding and resource substitution. It was anticipated that experienced anglers would feel more bonding to the resource and conceive of fewer recreation substitutes. Anglers studied felt a fairly strong bond to the Chattooga River, which was anticipated as the sample consisted of two Trout Unlimited Chapters that were affiliated with the river. In this study, the five-factor model of place bonding was confirmed, with Place Identity and Place Belongingness emerging as the most salient dimensions and Place Rootedness receiving the least support. Experience use history was found to predict place bonding more strongly than it predicted substitution behavior.

## 3.0 Methods and Results

### 3.1 Study Sites

This study focused on campers at three camping areas in the Sumter National Forest, located in the northwest corner of South Carolina near the Chattooga National Wild and Scenic River. The study sites were chosen due to their proximity to one another and differing levels of development. The three areas are within a 3-mile radius of one another. The close proximity eliminates most of the variability in campsite selection based on travel distance. Cherry Hill Campground is a developed area ($10 per night) with marked sites, picnic tables, level tent pads, lantern hangers, nearby potable running water, garbage receptacles, and a centrally located, heated bathhouse with flush toilets and showers. Burrell's Ford Walk-In Campground requires a 300-400 yard walk to the camping areas, but does not charge a camping fee. Once at the camping areas, campers may use a central vault toilet and may choose from unmarked sites with or without picnic tables or lantern posts. All camping areas at Burrell's Ford are located adjacent to or in close

proximity to the Chattooga National Wild and Scenic River. Camping in the Ellicott Rock Wilderness (8,274 acres) offers the most primitive camping experience. All campers must hike at least one-quarter of a mile from the trailhead into the Wilderness to legally camp. Camping areas are unmarked, offer no built amenities, and are free of charge. The trails in this relatively small Wilderness Area are well used and most campers spend the night near the Chattooga River. Though not all users of the Ellicott Rock Wilderness are campers, only those who camped at least one night within Ellicott Rock were surveyed at this study site. A non-probability convenience sample conducted over 18 weekends in the summer and fall of 2003 resulted in 506 camper contacts with just three refusals. On-site surveys were completed and returned by 307 campers, while 196 respondents elected to complete the survey later and return it in a postage-paid envelope. Respondents who chose the latter option were sent a postcard reminder roughly 2 weeks after initially contacted if the questionnaire had not already been received. After two additional weeks, a second survey packet including a cover letter, a second copy of the questionnaire, and a postage-paid envelope was sent to those campers who had not yet returned the initial questionnaire. This modified Dillman (2000) procedure resulted in a 59.7% mail back response rate (117 of the 196 surveys returned), producing a total of 424 complete questionnaires for an 83.3% overall response rate.

### 3.2 Sample Selection

The Forest Service estimated that the Sumter National Forest receives the most use in the summer months with additional use during fall colors. For this reason, this study sampled on every Friday and Saturday between and including Memorial Day weekend to Labor Day weekend during the summer of 2003, and on Fridays and Saturdays during October. Because only overnight campers were surveyed, the majority of campers were assumed to be surveyed Saturday evening that would be present Sunday, thus surveying was not conducted on Sundays. A non-probability convenience sample was employed by relying on available subjects in the camping areas. Each camping group seen was approached. A survey was distributed to each member of the group that was age 16 or older and willing to participate.

The questionnaire was distributed by the author and another graduate student on-site in the three camping areas. In the developed campground, Cherry Hill, questionnaires were distributed during the day at the campsites. Later the investigators collected the questionnaires during the evening around dinnertime (4 –7 p.m.), when campers were likely to be around the campsite. If the respondents so chose, they could leave the questionnaires on their picnic table under a rock in a gallon-sized zippered seal storage bag that was provided with the survey instrument. At Burrell's Ford Walk-In Campground, the questionnaires were distributed during the day and were collected in the early evening around dinnertime (4 –7 p.m.). The respondents were also given the option to complete the questionnaires and return them to the investigator immediately, rather than having the investigators return later in the day.

In the Ellicott Rock Wilderness Area, a slightly different technique was used. The investigators hiked in on a trail in the study area, distributing questionnaires to campers encountered. The investigators hiked through the Wilderness area throughout the day in an effort to contact every camper in the Wilderness area. To obtain complete questionnaires, a business reply envelope was provided to those respondents who preferred to fill out the survey at their convenience and drop it in the mail. This option was made available to respondents at Cherry Hill and Burrell's Ford campgrounds when campers were encountered late in the evening on Saturday and they wished to complete the questionnaire later. However, business reply envelopes were most frequently used in Ellicott Rock. When this option was utilized, a contact card was requested. Individuals who did not mail in the survey were contacted for follow up using a modified Dillman (2000) procedure.

### 3.3 Questionnaire Development

The questionnaire included questions about respondents' visit characteristics and about their involvement with the activities they participated in during their visit. Information requested included length of visit, group size, and group composition. In addition, respondents were given a list of ten activities and a blank space to add other activities; and were asked to mark an activity if they had participated in it during this visit. For all activities indicated, respondents were asked to rank the importance of that activity on a four-point scale ranging from "Not at all important" to Very important". Next, respondents were asked to list their primary activity from the given list of activities. Respondents were then asked to answer sixteen questions adapted on a five-point

Likert-type scale ranging from "Strongly Disagree" to "Strongly Agree" from McIntyre and Pigram's (1992) involvement scale with regard to their primary activity. McIntyre and Pigram's involvement scale consisted of three dimensions: centrality, attraction, and self-expression. This scale was modified to include items from a fourth proposed dimension: social bonding. Three items from the centrality dimension were included as well as four from attraction, six from self-expression, and three from social bonding. In addition, the questionnaire included questions relating to respondents' feelings toward or attachment to the camping area where they were contacted by measuring their place bonding. Items used were adapted from Hammitt (2000), consisting of five domains and 26 individual items. The five domains were familiarity, place belonging, place identity, place dependence, and rootedness. Hammitt's scale was originally adapted from Williams and Roggenbuck's (1989) place attachment scale which consisted of only two dimensions: place identity and place dependence. Respondents ranked items in order of importance on a five-point Likert type scale ranging from "highly unimportant" to "highly important." Individual items were listed in random order using a random numbers table. Finally, socio-demographic data were collected from respondents.

### 3.4 Data Analysis

Based on the previous literature, we hypothesized that the dimensions of involvement would positively influence the dimensions of place bonding. The hypothesized model was tested using covariance structure analysis provided through LISREL (version 8.51). Separate covariance matrices were constructed for each site. The hypothesized model was then tested across these settings (multigroup procedure).

### 3.5 Results

Respondents were 70.9% male and 29.1% female with the majority of respondents being between the age of 20 and 49. The majority of respondents reported having some post-secondary education (79.7%). Respondents' incomes were fairly evenly distributed among the range of income categories. The largest group of respondents (22.1%) stated their income was between $40,000 and $59,999. One percent of respondents identified themselves as either Hispanic or Latino. The vast majority of respondents identified themselves as White (94.4%). Other minority groups represented included 3.2% American Indian or Alaskan Native, 1.2% Asian American, 0.7% Black or African American, and 0.5% Native Hawaiian or other Pacific Islander.

On average, the camping groups were composed of 4.82 people. The majority of the camping groups were comprised of either family (36.2%) or friends (35.2%). The other 28.5% of camping groups were either alone (3.4%), were comprised of a combination of family and friends (18.2%), were a part of an organized group (5.3%), or identified some other group composition (1.7%). Other than camping, many campers participated in viewing scenery (67.9%), day hiking/walking (64.9%), and fishing (52.1%). A small majority of respondents considered camping (51.6%) to be their primary activity on this visit. On average, respondents had been camping at the area where they were contacted for 6.50 years (SD=8.88) and for 1.38 years (SD=2.63) at other local camping areas. Last year respondents reported camping at the area where they were contacted 9.49 times (SD=10.95) and 2.44 times (SD=4.23) at other local camping areas. The most important activity reported was camping (M=3.76).

The results of the model testing are depicted in Figure 1. Only the statistically significant relationships are reported ($p < .05$). These results offer partial support for our hypothesized model and indicate:

a. Bonding was positively influenced by Attraction ($\beta$=.23) and Identity Affirmation ($\beta$=.18);

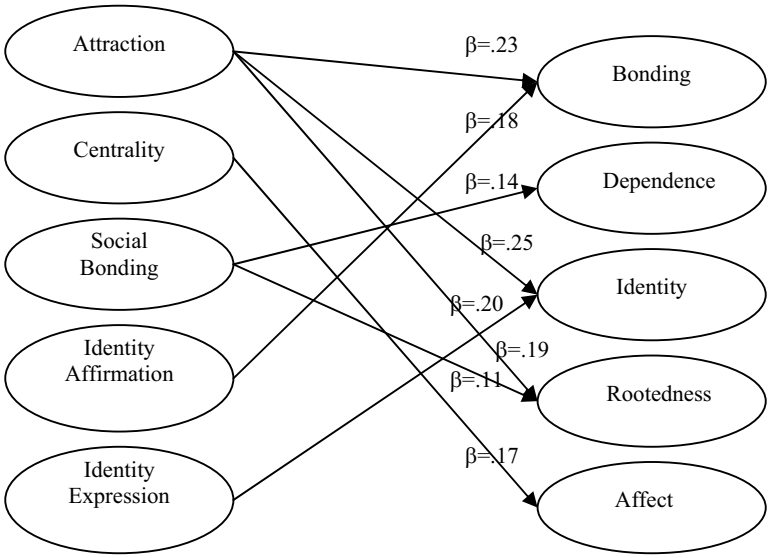
b. Dependence was positively influenced by Social Bonding ($\beta$=.14);

c. Identity was positively influenced by Attraction ($\beta$=.25) and Identity Expression ($\beta$=.20);

d. Rootedness was positively influenced by Social Bonding ($\beta$=.11); and

e. Affect was positively influenced by Attraction ($\beta$=.17)

The variance accounted for by involvement in the dimensions of place bonding was shown to vary across the sites where respondents were sampled. The general pattern of results indicated that the dimensions of involvement captured more of the variance in the dimensions of place bonding in the more primitive settings. Involvement was the strongest predictor of the Bonding and Identity dimensions of place bonding and the weakest predictor of Dependence and Affect.




| Cherry Hill | Burrell's Ford | Ellicott Rock |
|---|---|---|
| $R^2$ | | |
| .09 | .13 | .23 |
| .02 | .02 | .04 |
| .12 | .14 | .22 |
| .05 | .06 | .12 |
| .03 | .02 | .04 |

$\chi^2$=2845.11, df=1974, RMSEA=.056, NFI=.87, CFI=.93, IFI=.93

Figure 1.—Involvement → place bonding model

## 4.0 Discussion and Conclusions

Involvement, which consisted of five dimensions (attraction, centrality, social bonding, identity affirmation, and identity expression), was found to positively predict place bonding, which consisted of five dimensions (bonding, dependence, identity, rootedness, and affect). The variation in place bonding was best explained among campers in the most remote camping area, Ellicott Rock Wilderness, across all dimensions of place bonding.

This study found support for the five dimensional model of place bonding proposed by Hammitt (2000). The results of this study also confirmed previous findings (Bricker & Kerstetter 2000; Iwasaki & Havitz 1998; Kyle et al. 2003; Kyle et al. 2004) that involvement influences place bonding on a global scale, and that several dimensions of involvement have significant positive influences on the dimensions of place attachment, labeled here as place bonding. "[I]ndividuals initially form involvement(s) with an activity (e.g. running), then gradually develop psychological commitment to brands (e.g. running shoes, workout courses, specific road-races)" (Iwasaki & Havitz 1998, p. 278). The involvementàcommitment relationship described by Iwasaki and Havitz closely mirrored the involvementàplace bonding relationship noted here. Further, the results of this study supported multidimensional measures of the constructs (Havitz & Dimanche 1990, 1997, 1999; Kyle et al. 2003; McIntyre 1989; Selin & Howard 1988), which are "better equipped to tap into these meanings and provide researchers with profiles rather than a single summative score where subjects can then only be placed along a continuum from low to high" (Kyle et al. 2003, p. 266).

To serve the broader heterogeneous camping population, recreation managers have been using various planning frameworks, such as limits of acceptable change. In the planning process managers must identify stakeholders to inform and guide the decision making process. Williams and Stewart (1998) concluded that "it is not sufficient to continue to rely solely upon demographic variables like race and income to provide information about people's reaction to the natural world" (p. 12). Place bonding offers a more complete understanding of users, especially those who feel deep attachment to places, whereby managers may most effectively seek input from representative users. This becomes particularly important when smaller homogeneous subgroups are

identified within the broader heterogeneous camping population. These subgroups, categorized by the degree to which they are attached to place, often have varying, even contradictory, preferences and attitudes toward management practices.

In the future, place bonding should be examined in the context of specific areas (i.e. Cherry Hill Campground) versus bonding to the Sumter National Forest as a larger entity. Though respondents did not show strong dependence on the specific camping area where they were contacted, future investigators may find that similar campers do feel a dependence upon the Sumter National Forest as a whole. Conversely, those primarily interested in fishing might feel a weaker bond to the Sumter National Forest in its entirety, but a stronger bond to the Chattooga National Wild and Scenic River within its jurisdiction. Also, further investigation is needed in developing the place bonding scales to achieve reliability, validity, and parsimony across settings and activities. Future research could be extended to additional outdoor settings and activities, such as commercial rafters in the Grand Canyon, South Texas birders, Front Range climbers in Colorado, or even children using a soccer field in an urban area.

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# STREAM ATTRIBUTES FOR SELECTING SUBSTITUTABLE FISHING RESOURCES[27]

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## Abstract

The purpose of this study was to investigate the influence of the number of substitute streams and use history of substitute streams, on trout angler importance ratings of attributes when choosing a substitute stream to fish. Members (292) of two Trout Unlimited Chapters, associated with the Chattooga National Wild and Scenic River in South Carolina and Georgia, were surveyed by mail for their experience use history with local substitute streams, numbers of substitute streams they had for the Chattooga, and importance ratings for 12 stream and fishing attributes. Return rate for the questionnaire was 71%. Results indicated that anglers were quite experienced at using the alternative streams, averaging 17 years of use and an average of 21 fishing trips during the last 12 months. Contrary to the hypothesized influence of number of substituted streams and experience use history on importance of attribute ratings, there was no significant influence found.

## 1.0 Introduction

Recreation use experience influences the knowledge base by which humans perceive a management situation (Hammitt & McDonald 1983). In terms of outdoor recreation management, a recreationist who is a beginner may have little knowledge of the recreation activity undertaken and/or the setting in which it occurs. On the other hand, it is likely that an experienced recreationist has a substantially greater knowledge base (Schreyer et al 1984; Manning 1999). Such differences in knowledge and cognitive development may lead to differences in resource perceptions and management preferences, including user preferences toward resource attributes (Watson et al. 1999).

Cognitive development theory supports the proposition that amount of experience and associated developmental knowledge can influence the perception of setting attributes. More specifically, the theory suggests that greater experience leads to a greater range of attribute perceptions and greater differentiation among site attribute values (Watson et al. 1991:21). The authors state that we need to know more about the knowledge based frame-of-reference from which recreationist evaluate resource settings, how the frame-of-reference evolves with experience use history, and how the frame-of-reference shapes the importance and specificity of site attributes.

While considerable use history with a particular resource setting makes one quite knowledgeable and familiar with that specific site, it may mean that one has little EUH with alternative resources and has little familiarity with the physical and fishing attributes of alternative, substitute places. For example, if trout anglers have a lot of experience and attachment with one stream, and few fishing substitute streams, they are likely to be less knowledgeable about attributes of substitute streams. Likewise, an angler who has several substitute streams is likely to have a good knowledge base about attributes of substitute streams, and may perceive certain attributes more important than others.

The purpose of this paper was to investigate the influence of the number of substitute streams and use history (EUH) of substitute streams, on trout angler importance ratings of attributes when choosing a substitute stream to fish.

R.Q.1: Does the number of substitute streams of an angler influence their importance ratings of stream attributes?

R.Q.2: Does the experience use history of an angler influence their importance ratings of stream attributes?

## 2.0 Methods

### 2.1 Study Area and Participants

The research was conducted with Trout Unlimited (TU) members of the Chattooga River and Rabun Chapters, located in western South Carolina and northern Georgia, respectively. The study area was the Chattooga National Wild and Scenic River (CNWSR), a natural flowing

[27]This paper is an abbreviated version of a paper submitted for publication in a journal.

mountain river, with the upper reaches reserved for trout fishing while the lower sections are famous for whitewater paddling. The lower sections of the river are stocked with rainbow and brown trout, but not the upper section.

### 2.2 Data Collection

Active membership for the two chapters of TU was about 300 members. A seven page questionnaire was mailed to 292 members with current addresses. The questionnaire was mailed with a postage paid, return addressed, business reply envelope. A four stage mailing procedure, recommended by Dillman (2001), resulted in an adjusted response rate of 71% (n = 202). For the data analysis purposes of this specific paper, the questionnaire obtained the following information: 1) Background and fishing characteristics; (2) Numbers of substitute streams; (3) Experience use history at trout fishing; (4) Importance of substitute stream attributes.

### 2.3 Data Analysis

Measures of central tendency (i.e., means) and dispersion (i.e., standard deviations) were formed for the 12 substitute stream attributes, which anglers rated on a 5-point importance scale (1=not important, 3=neutral, 5=very important). The importance ratings for the substitute attributes were factor analyzed, using Principal Components Analysis with varimax rotation. Eigen values of $1.0 were required for factors to be retained, and factor loadings of items had to be $0.40 for items to be included in a factor component. Grand means (Factor means) and reliability values (Cronbach alphas) were formed for each factor component identified. To test the influence that the number of substitute streams and EUH has on the importance ratings of substitute attributes, ANOVA was used, with a significance level of 0.05.

## 3.0 Results

### 3.1 Angler Characteristics

The majority of respondents were male (97.5%), with an average age of 54 years. Ages ranged from 17 to 86 with nearly 70% over the age of 45. Close to 90% had some college or graduate school education (Mean = 16 years education). Thirty-six percent indicated job occupations of professional/technical, 33% were retired, followed by manager/administrator (11%). The most frequently reported income category was $60,000 to $79,999 (19.2%), while 16.8% had incomes of $40,000 - $59,999 and 16.2% had incomes of more than $140,000.

Trout Unlimited members predominately fished with other individuals. However, the fishing group was small, usually consisting of one to two companions. They fished about equally for brook (73%), brown (91%), and rainbow (93%) trout. When choosing a stream, 77% fished non-stocked streams containing naturalized (browns and rainbows) or native (brook) trout. Ninety percent of the anglers fished primarily with fly rods and flies (89.9%). In addition, the trout anglers were quite experienced, with an average of 32 years of trout fishing. On average, the respondents had fished the CNWSR for 15 years, averaging about 10 trips in the last year. They had also fished other local trout streams for an average of 17 years, and averaged about 21 fishing trips on other local streams last year (see Hammitt et al. in press, for more information on past experience of anglers.)

### 3.2 Number of Stream Substitutes

An overwhelming majority (91.5%) of the anglers said that if they could not fish the CNWSR for trout, they would trout fish another stream rather than do some other activity. When specifically asked, "How many streams or rivers do you think can offer an experience that is just as good as the Chattooga?" 65% reported three or fewer substitutes. About 20% of anglers had four to six substitutes, while nearly 15% reported seven or more substitutes. When asked to "name their best substitute for the Chattooga," over 40 different streams were listed. Thus, the Trout Unlimited anglers are an experienced group at fishing and have fished several places, suggesting that they should be aware of stream and fishing attributes of substitute streams.

### 3.3 Importance of Stream/Fishing Attributes

When anglers were asked to rate for importance 12 attributes when choosing a substitute stream for the Chattooga, the most important item was general water quality (Mean = 4.51). Scenery, number of other anglers, and number of fish were also rated as important to very important (Table 1). The presence of native trout and number of expected strikes were somewhat important. Anglers were neutral toward the items of driving distance, ease of river access, whether the stream was stocked, and cost of trip. While 41.3% found the cost of trip to an alternate stream "important," about an equal number found it unimportant (35.9%).

The 12 attributes were factor analyzed for underlying themes, producing four factors that explained 63% of the

**Table 1.—Frequencies (%), means and standard deviations for the importance of substitute stream and fishing attributes.**

| Item | Unimportant | Neutral | Important | Mean[1] | SD |
|---|---|---|---|---|---|
| General water quality | 1.2 | 6.4 | 92.4 | 4.51 | .67 |
| Scenery | 2.8 | 9.2 | 88.0 | 4.29 | .79 |
| Number of other anglers | 4.6 | 9.8 | 85.6 | 4.27 | .88 |
| Number of fish | 5.8 | 16.7 | 77.6 | 4.00 | .93 |
| Native trout | 7.0 | 23.8 | 69.2 | 3.93 | .98 |
| Number of expected strikes | 8.1 | 22.1 | 69.8 | 3.82 | .91 |
| Previous experience | 13.8 | 22.0 | 64.2 | 3.64 | 1.03 |
| Knowledge of alternatives | 9.3 | 28.5 | 62.2 | 3.62 | .88 |
| Drive distance | 27.3 | 10.3 | 58.6 | 3.33 | 1.30 |
| Ease of access | 30.1 | 20.8 | 49.8 | 3.14 | 1.21 |
| Stocked with trout | 24.4 | 35.5 | 40.1 | 3.13 | 1.17 |
| Cost of trip | 35.9 | 22.1 | 41.3 | 2.95 | 1.29 |

[1]Means based on a 5-point rating scale of importance, where 1 = not important, 2 = somewhat unimportant, 3 = neutral, 4 = somewhat important, 5 = very important.

**Table 2.—Principal components analysis of stream and fishing attribute importance items.**

| | Component Loadings | | | |
|---|---|---|---|---|
| Component and Items | Environment | Knowledge | Fishery | Willingness to pay |
| Environment (M = 4.25, % = 0.61) | | | | |
| Number of other anglers | .77 | | | |
| Scenery | .69 | | | |
| Native trout | .61 | | | |
| General water quality | .56 | | | |
| Knowledge (M = 3.47, % = 0.67) | | | | |
| Previous experience | | .86 | | |
| Knowledge of alternatives | | .79 | | |
| Ease of access | | .52 | | |
| Fishery (M = 3.65, % = 0.71) | | | | |
| Number of fish | | | .85 | |
| Number of expected strikes | | | .84 | |
| Stocked with trout | | | .54 | |
| Willingness to pay (M = 3.14, % = 0.72) | | | | |
| Cost of trip | | | | .90 |
| Drive distance | | | | .85 |
| Eigen values | 2.00 | 1.99 | 1.90 | 1.69 |
| % of variance | 16.70 | 16.56 | 15.82 | 14.04 |
| Total % variance explained = 63.12 | | | | |

variance (Table 2). The most important factor (Grand mean = 4.25) contained four attributes related to the physical and social environment found at the substitute streams. This component was labeled "Environment." Second in importance was the "Fishery" component Grand mean = 3.65), containing three items that dealt with the quality of fishing. The third component included three attributes that indicated the importance of knowledge about the substitute resource. The last component, with two items concerning willingness to

**Table 3.—Effect of number of substitute streams on importance of attributes of substitute streams (ANOVA)**

| | Number of substitute streams | | | | | | F | P-level |
|---|---|---|---|---|---|---|---|---|
| Attribute Factor | 0 | 1 | 2 | 3 | 4-6 | 7+ | | |
| Environment | 4.31[1] | 4.20 | 4.08 | 4.24 | 4.27 | 4.43 | 1.12 | 0.35 |
| Knowledge | 3.25 | 3.54 | 3.52 | 3.60 | 3.59 | 3.39 | 0.62 | 0.69 |
| Fishery | 3.60 | 3.65 | 3.66 | 3.73 | 3.69 | 3.54 | 0.16 | 0.98 |
| Willingness to pay | 3.40 | 3.33 | 3.29 | 3.06 | 2.95 | 2.93 | 0.73 | 0.56 |

[1]Means based on a 5-point importance scale, where 1 = not important, 2 = somewhat unimportant, 3 = neutral, 4 = somewhat important, 5 = very important.

pay, was rated neutral by anglers (Grand mean = 3.14). All four factored components were reliable measures, having Cronbach alphas ranging from 0.61 to 0.72. In summary, TU anglers found environmental attributes concerned with the quality of the substitute stream and density of anglers to be most important, and attributes dealing with the quality of fishing as somewhat important. They felt that knowledge about alternative streams was somewhat important, but that cost and driving attributes were not a factor when choosing a substitute stream for the CNWSR. This may be explained, partially, by the abundance and fishing quality of alternative streams in the local area of the Chattooga River (Hammitt et al. in press).

### 3.4 Influence of Number of Substitute Streams on Attribute Importance

Since the TU anglers were quite experienced at fishing the CNWSR and alternative streams in the surrounding area, and felt that "previous experience" and "knowledge of alternative streams" were fairly important substitute attributes (Table 1), we wanted to know if number of substitute streams had a differential effect on importance of substitute attributes (R.Q.1). In other words, does having more resource substitutes make an individual more knowledgeable and therefore more critical or different in how they rate the different attributes of substitute resources?

Results of the ANOVA indicated that there were no significant differences in the mean ratings of the attributes, no matter how many substitute streams an angler has (Table 3). Whether anglers had no substitutes or seven-plus, they rated the 12 attributes the same ($p \geq 0.05$). This finding goes against the hypothesized relationship predicted; that anglers with more substitute streams would have a greater base of knowledge and reference frame from which to evaluate and rate the various attributes. Possible explanations for the counter finding are: 1) the attributes selected for evaluation are too generic or universally desired that their rating of importance is not dependent on cognitive knowledge gained by exposure to more substitutes; and 2) the number of substitute streams is only one measure of exposure/experience with substitute streams. Years of experience and frequency of fishing substitute streams might be a better differentiating variable. It could be possible that an angler with only two substitution streams would be a longer term and more frequency user of those streams than an angler with five substitutes who is a short term and infrequent user of those five streams.

### 3.5 Influence of Experience Fishing Substitute Streams on Attribute Importance

To examine the second explanation in the previous paragraph, four classifications of anglers, based on number of years and frequency of trout fishing substitute streams were formed and tested against the four attribute components. The four experience classifications were computed by using the median value for the number of years fishing alternate local streams and for the number of times fishing alternate local streams last year to form a low and high half for each variable. The low and high 50-percentile of respondents were classified as short and long term substitute anglers, respectively. The low and high frequency halves were classified as infrequent and frequent anglers. ANOVA was then used to test for significant differences between each experience classification and the importance ratings of the four attribute components. Again, there was little evidence that experience with substitute streams influenced how anglers rated the stream and fishing attributes (Table 4).

**Table 4.Effect of fishing experience with alternate local streams on importance of attribute of substitute streams (ANOVA).**

| | Angler Experience Classification[1] | | | | F | P-level |
|---|---|---|---|---|---|---|
| Attribute Factor | Short term, frequent | Long term, frequent | Short term, infrequent | Long term, infrequent | | |
| Environment | 4.24[2] | 4.37 | 4.20 | 4.22 | 0.83 | 0.48 |
| Knowledge | 3.26 | 3.62 | 3.49 | 3.40 | 1.38 | 0.25 |
| Fishery | 3.69 | 3.71 | 3.67 | 3.44 | 0.87 | 0.46 |
| Willingness to pay | 2.999 | 2.80[a] | 3.30 | 3.40[b] | 2.86 | 0.05 |

[1] Short term, frequent angler: low years of use, but high frequency of use.
Long term, frequent anglers: High years of use, high frequency of use.
Short term, infrequent angler: Low years of use, low frequency of use.
Long term, infrequent angler: High years of use, but low frequency of use.
[2] Means based on a 5-point importance scale, where 1=not important, 2=somewhat unimportant, 3=neutral, 4=somewhat important, 5=very important
[a]Means with different letter superscripts are significantly different, Duncan's Mean Different Test.

Only willingness to pay showed a significant difference ($F = 2.66$, $df = 3,162$, $p = 0.05$). Long term, frequent anglers rated willingness to pay lower (Mean = 2.80) in importance than long term, infrequent anglers (Mean = 3.40). However, this variable just reached the minimum alpha level of 0.05; both means are in the neutral (i.e., 3.0) range of the importance rating scale. The other three attributes did not come close to being influenced significantly by substitute experience (see significance level in Table 4). Thus, we have to conclude that amount of past experience fishing substitute streams does not have an effect on how Trout Unlimited anglers perceived and rated the importance of various stream and fishing attributes (R.Q.2).

## 4.0 Summary and Discussion

Cognitive development theory and some recreation management research predicts that amount of past use experience and associated developmental knowledge with a resource place can influence user perception of setting attributes. However, we had to reject this hypothesis, as number of substitute streams experienced and experience use history (years and frequency) of fishing substitute streams, had little significant ($p \leq 0.05$) influence on the perception of attributes. How does one explain this discrepancy in predicted results? One possible explanation concerns the lack of specificity in our list of stream and fishing attributes. They may have been too generic and important to any trout stream; not dependent on specific acquired knowledge characteristic of a specific setting or place. The list of attributes was adapted from previous research (Shelby & Vaske 1991) and may have been too generic for our purposes. It is suggested that future research explore the use of a more specific list of place and fishing attributes that are more dependent on acquired knowledge gained from use history with a particular place.

A second possible explanation is that the majority of the respondents in our study were quite experienced users. For example, the medians used to form the four experience classifications of anglers tested in Table 4 were 15 for years of use and eight for times last year at fishing alternate rivers. Thus, even though the "short term, infrequent anglers" had the lowest amount of experience (i.e., < 15 years, < eight trips), this is still considerable exposure to alternative streams. Future research with a less experienced group of anglers may produce different attribute perceptions. However, the authors favor the lack of knowledge dependence and specificity in stream/fishing attributes' explanation, based on a similar analysis between experience use history (i.e., independent variable) and degree of place bonding (dependent variable) with the study river (Hammitt et al. in press). In that analysis, experience use history of the same respondents studied here had a significant ($p < 0.05$) influence on all six aspects of place bonding tested. Thus, specificity of the dependent variable may be the problem.

In conclusion, even though the predicted outcomes were not supported by our data, there was considerable information gained from the study to assist fishery

managers. The Trout Unlimited anglers were a very experienced group of stream users and a knowledgeable group, not only concerning the study stream but other streams in the local area. They are a valuable resource group of users for management input and support. They could be an important focus group concerning resource management issues in the area. They know the resource, its attributes, and feel many of the stream attributes are important. For example, scenery, number of other anglers, and number of fish, were rated important to very important stream and fishing attributes. For the Chattooga National Wild and Scenic River the scenery of the resource is protected by law, but the social carrying capacity of anglers and fish density are not. Currently, there is controversy on the upper section of the Chattooga which has been reserved for years for trout fishing, but now is being petitioned for use by private, whitewater paddlers. EUH information made fishery managers of the Chattooga aware of the specific number of years and frequency of use of Trout Unlimited anglers associated with the river. The fact that anglers have substitute streams in the local area is also important for fishery managers to know, but it may have little influence on the high value and possessive feelings that anglers have acquired through years of using the study river.

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# EXPLAINING PATTERNS OF CHOICE AMONG OUTDOOR RECREATION SITES IN METROPOLITAN AREAS

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## Abstract

This paper reports on a study of the outdoor recreation behavior of 618 (non-Hispanic) Whites, 647 African Americans, and 346 Hispanic Americans in Cook County, Illinois. Respondents were contacted for a phone survey using random digit dialing and a quota for each group. Binary logistic regression models were estimated to explain the use of 19 sites in and near the Chicago Metropolitan Area and one distant site. This paper presents the results of newly-expanded models that include 1) distance to 19 alternative destinations; and 2) demographic characteristics of origins. Suggestions are made for improving modeling and other efforts to explain the use of recreation sites in and near Metropolitan areas.

## 1.0 Introduction

In a previous paper (Dwyer and Klenosky 2004) we presented binary logistic regression models that explain the use of 19 sites in the Chicago Metropolitan Area and one distant site in southern Illinois (Fig. 1). These models were estimated from data on outdoor recreation behavior and individual characteristics of 618 (non-Hispanic) Whites, 647 African Americans, and 347 Hispanic Americans in Cook County, IL interviewed via telephone survey. The initial models helped explain the implications of demographic variables for participation at each of the 20 recreation sites. Explanatory variables in those models include estimated distance from the individual's home to the site, race/ethnicity (three categories), age (five categories), area of residence (five areas in Cook County), education (seven categories), annual household income (six categories), household size, and gender. Travel distance and section of the county where respondents lived were calculated from the residential zip codes that respondents provided. In this paper we extend our analysis beyond the characteristics of individuals and the distances they live from a particular site to include proximity to other sites and demographic characteristics of the zip code where they live. Among the characteristics of zip code origins that will be evaluated are: 1) racial/ethnic composition: (2) income: and (3) population density. With the other recreation sites included in the analysis, we will estimate how distance from the individual's residence to the other sites, as well as characteristics of origins, contribute to site choice models for each site. The results will help outdoor recreation site planners, managers, and researchers better understand patterns of use for sites in metropolitan areas and simultaneously appreciate the methodological and analytical challenges involved in such an endeavor.

## 2.0 The Impact of Distance to Alternative Sites

The decision to visit a site for recreation can be viewed as a choice among a set of alternative sites that the decision maker considers. These alternatives may vary in terms of their locations and the attributes that may attract or discourage visitation by a given individual. Information on the attributes and locations of sites that are seen as substitutes for or complements to a particular site could improve site choice models.

The 20 diverse sites in our study are difficult to characterize in a simple or straightforward way. Many of the sites are large and complex, offering a wide range of experiences, and we do not have a systematic set of attributes for all of them. We do know the location (zip code) of each site, and we calculated the straight line distances from the center of the zip code where each respondent lives to the center of the zip code where the site is located. Theoretically we could simultaneously enter distance to each of the sites into the site choice model and see which ones make a significant

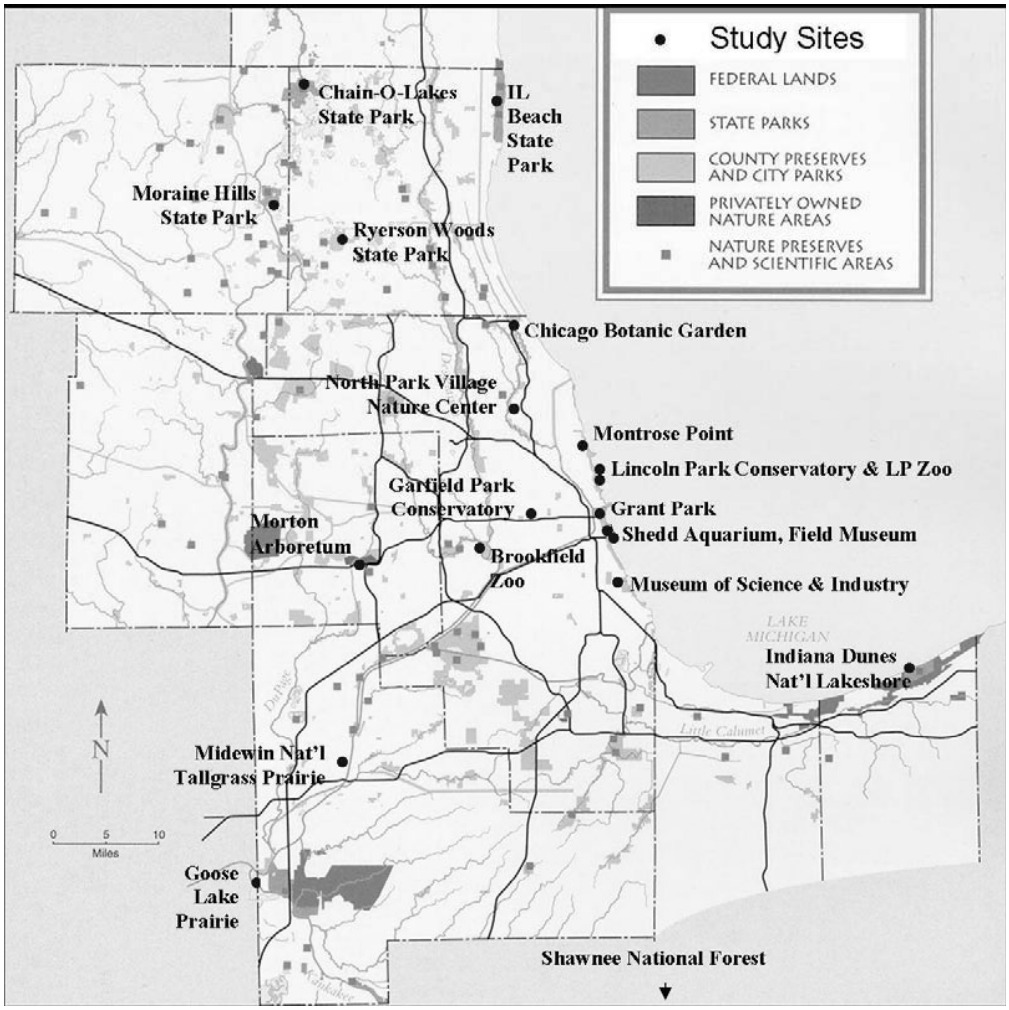


Figure 1.—Map of Chicago area study sites.

contribution to the model for predicting visitation to each site. As with our previous models, we expect that the coefficient for distance from an origin to the site being evaluated would be negative – the farther the individual is from the site, the less likely he or she is to visit it. If another site in the choice set was a substitute for the site being evaluated, we would expect the coefficient for distance to the substitute to be positive, indicating that the farther the individual is from the substitute site, the more likely it is that he or she would visit the site being evaluated. Alternatively, a site may be a complement to another site, in which case if a person visits one, he or she is likely to visit the other. With a complementary site, we expect a negative sign for distance to that site – the farther that the complementary site is from the individual, the less likely it is that he or she would use the site being evaluated. Given the diversity of the sites, relative crudeness of the measures of distance to sites, and clustering of sites in the Chicago area, it is difficult to anticipate which sites might be substitutes and which might be complements for a given site.

Initial analyses indicated numerous significant correlations among both the distances to the site being evaluated and among the distances to alternative sites. Correlations among distances to the various sites were particularly troublesome because of the concentration of all origins and many of the sites in Cook County, and the geographic clustering of many of the sites. Consequently, we adopted a simple approach where we tested the effect of each individual site as a substitute or a complement by entering the distance to that site into the model along with distance to the site being evaluated and all other variables in the basic site-choice model (respondent's

race/ethnicity, age, education, income, household size, and gender). Variables representing the section of Cook County where the respondent resided were dropped from the model because they were correlated with distance to some of the sites.

The results of our efforts to include single sites in the model one at a time were highly variable (Table 1). Models for 12 of the sites had no alternative sites with a significant coefficient for distance (i.e., suggesting no complement or substitute sites). This may be due, in part, to the inter-correlations among distances to the sites in our data set. Another dimension of the difficulty with this analysis is that distance from an origin (zip code) to two sites largely defines the section of Cook County where the individual lives. That section may have its own unique set of physical, biological, and social attributes which themselves might influence choice of recreation sites. It can be difficult to sort out the influence of these place-specific variables from the distance variables.

When distances to alternative sites in a model are correlated, it is not possible to sort out the influence of alternative sites on site choice. With our data, correlations among distances to sites are very strong for sites in relatively close proximity (e.g., 0.956** between distances to Grant Park and Lincoln Park Zoo) and moderate for sites distant from each other (e.g., 0.712** between Chicago Botanic Garden and Lincoln Park Zoo). This suggests that only distant pairs of sites could be tested for substitutability/ complimentarity by entering them into the model.

Correlations between distance to sites and demographic variables are common as well, often a result of the unique distributions of demographic variables across Cook County. As can be seen in the data from the 2000 U. S. Census, the African American population is concentrated immediately west and south of downtown Chicago. The Asian population in concentrated in the north. The Hispanic population is found mostly to the west and southwest of downtown. The White population is concentrated to the north and the west. Median household income is highest just north of downtown Chicago and in the northern and western parts of the county. Population density is highest within Chicago and particularly to the north of the downtown area

Table 1

*Beta Coefficients for Models Estimated to Predict Number of Visits from Each of 140 Zip Code to the 20 Recreation Sites (Using Aggregated Dataset Weighted by Number of Survey Respondents in the Zip Code)*

Table 1.1

*Linear Regression Models without Substitute Sites*

| | Grant Park | Museum Science Industry | Field Museum | Shedd Aquarium | Brookfield Zoo | Lincoln Park Zoo | North Park Village | Lincoln Park Cons. | Garfield Park Cons. | Montrose Point | Morton Arb. | Chicago Botanic Garden | Indiana Dunes | Illinois Beach SP | Chain-O-Lakes SP | Ryerson Woods SP | Moraine Hills SP | Shawnee Nat'l Forest | Goose Lake Prairie | Midewin Prairie |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total Population | 0.646** | 0.659** | 0.669** | 0.640** | 0.703** | 0.603** | 0.154** | 0.428** | 0.474** | 0.336** | 0.364** | 0.613** | 0.569** | 0.580** | 0.496** | 0.378** | 0.429** | 0.362** | 0.311** | 0.308** |
| Percent Black | 0.256** | 0.220** | 0.254** | 0.316** | 0.074** | 0.143** | - 0.263** | 0.098** | 0.555** | - 0.095** | - 0.278** | 0.010 | - 0.169** | - 0.048 | - 0.516** | 0.102** | - 0.022 | - 0.299** | 0.047 | 0.250** |
| Percent Hispanic | - 0.186** | - 0.110** | - 0.113** | 0.079* | 0.022 | 0.054 | - 0.210** | 0.066* | 0.075* | 0.026 | - 0.266** | - 0.254** | - 0.287** | - 0.204** | - 0.410** | - 0.073 | - 0.220** | - 0.252** | 0.081* | 0.149** |
| Per Capita Income | 0.075** | 0.115** | 0.094** | 0.149** | - 0.065* | 0.100** | - 0.314** | 0.092** | 0.088** | 0.073* | 0.102** | 0.073* | 0.001 | 0.016 | - 0.210** | 0.111** | 0.008 | - 0.116** | - 0.044 | 0.019 |
| Population per sq miile | 0.094** | - 0.091** | - 0.023 | - 0.092** | - 0.238** | 0.215** | 0.373** | 0.295** | - 0.039 | 0.349** | 0.042 | 0.066* | - 0.123** | - 0.056 | - 0.121** | - 0.236** | - 0.214** | 0.102** | 0.049 | - 0.061* |
| Distance to Site | - 0.025 | - 0.232** | - 0.071** | - 0.067* | - 0.096** | 0.056* | - 0.153** | - 0.021 | - 0.101** | - 0.052 | - 0.140** | - 0.175** | - 0.490** | 0.058* | - 0.218** | - 0.079** | - 0.160** | - 0.408** | - 0.120** | 0.009 |
| R Square | 0.481 | 0.527 | 0.469 | 0.490 | 0.463 | 0.537 | 0.322 | 0.461 | 0.577 | 0.416 | 0.150 | 0.334 | 0.383 | 0.194 | 0.304 | 0.086 | 0.109 | 0.177 | 0.163 | 0.196 |

Table 1.2

*Linear Regression Models with Substitute Sites*

| | Museums | | Zoos | | Conservatories | | Arboreta | |
|---|---|---|---|---|---|---|---|---|
| | Museum Science Industry | Field Museum | Brookfield Zoo | Lincoln Park Zoo | Lincoln Park Cons. | Garfield Park Cons. | Morton Arb. | Chicago Botanic Garden |
| Total Population | 0.647** | 0.647** | 0.710** | 0.563** | 0.391** | 0.481** | 0.397** | 0.586** |
| Percent Black | 0.175** | 0.096** | 0.078** | 0.131** | 0.134** | 0.549** | - 0.365** | - 0.026 |
| Percent Hispanic | - 0.065* | - 0.080* | 0.029 | 0.065* | 0.118** | - 0.070* | - 0.275** | - 0.242** |
| Per Capita Income | 0.151** | 0.149** | - 0.047 | 0.035 | - 0.001 | 0.106** | 0.179** | 0.023 |
| Population per sq miile | 0.026 | 0.105** | - 0.187** | 0.087** | 0.112** | 0.004 | 0.196** | 0.017 |
| Distance to Site | - 0.452** | 0.349** | - 0.141** | - 0.213** | - 0.917** | - 0.238** | - 0.247** | - 0.258** |
| Distance to Sub Site | 0.293** | - 0.474** | 0.089** | 0.240** | 0.798** | 0.171* | 0.331** | 0.181** |
| R Square | 0.540 | 0.509 | 0.464 | 0.558 | 0.492 | 0.578 | 0.205 | 0.357 |

* coefficient significant at 0.05 level, ** coefficient significant at 0.01 level

and along Lake Michigan. Significant correlations among these variables include percent African American with a negative correlation with median household income (-0.431**) and percent Hispanic American (-0.217**). Percent Hispanic American has a negative correlation with median household income (-0.337**), and a positive correlation with population per square mile (+0.298**). Population per square mile has a negative correlation with median household income (-0.406**).

When looking at correlations between distance to individual study sites and these same demographic variables, similar findings emerge. Some examples of these correlations include: Population per square mile has a strong negative correlation with distance from Montrose Point (-0.801**). Median income per household has a strong positive correlation with distance from the Museum of Science and Industry (+0.670**). Percent Asian has a moderately strong positive correlation with distance from sites in the west (Goose Lake Prairie (+0.454**) and Midewin National Tallgrass Prairie (+0.503**), and a moderate negative correlation with distance from sites in the north (Illinois Beach State Park (-0.472**), Ryerson Woods (-0.453**), Chain-O-Lakes State Park (-0.450**), and Moraine Hills State Park (-0.439**)). Percent Hispanic has a moderate negative correlation with distance from downtown sites such as Lincoln Park Zoo (-0.471) and Grant Park (-0.427**), and distance to sites on the near west side such as Garfield Park Conservatory (-0.512). Percent African American is positively correlated with distance from sites in the north such as Moraine Hills State Park (+0.535**) and Chain-O-Lakes State Park (+0.533**), and negatively correlated with sites to the south such as the Museum of Science and Industry (-0.559**) and Indiana Dunes National Lakeshore (-0.591**). As we discuss later, these correlations, which are an inherent characteristic of metropolitan areas, complicate efforts to model site visitation patterns in such areas.

Despite these differences due to intercorrelations, the results of the modeling effort do shed some light on possible substitution among some of the sites. The models for Lincoln Park Zoo and Lincoln Park Conservatory suggest that Garfield Park Conservatory, Morton Arboretum, Brookfield Zoo, and Goose Lake Prairie are substitutes for these two sites. Lincoln Park Zoo and Lincoln Park Conservatory are adjacent and visitors can easily visit both. Garfield Park Conservatory and Morton Arboretum both offer special displays of flowers and other plants, while Brookfield Zoo presents animals in a well-landscaped context. It is not difficult to see these sites as substitutes for Lincoln Park Zoo and Lincoln Park Conservatory in providing certain types of experiences. Goose Lake Prairie, the distance to which is also significant in the models for Lincoln Park Zoo and Lincoln Park Conservatory, offers a distinctly different wildland setting west of the Chicago area. It would be difficult to see it as a substitute for the two Lincoln Park sites because it is far away. The positive coefficient for distance to Goose Lake Prairie suggests that people in the Chicago area are more likely to visit the two Lincoln Park sites. This can be seen as reinforcing the negative coefficient for distance to the site. People who live a long way from Goose Lake Prairie also live closer to Lincoln Park Zoo and Lincoln Park Conservatory and are likely to visit those sites. However, with both intercorrelated distance variables in the model, distance to the site and to a possible substitute, it is impossible to interpret the two coefficients. And with the critical significance that a travel cost model places on the coefficient for distance to the site, use of such a model in a travel cost analysis could be misleading (McCullom et al. 1990).

In the model explaining use of the Chicago Botanic Garden, both Morton Arboretum and Brookfield Zoo emerge as substitute sites. This is not surprising in that Morton Arboretum and Brookfield Zoo are both places where people can go to see a wide range of unusual plants in attractive displays. Brookfield Zoo focuses on animals, but the animals are found in an attractive landscape. All three sites charge entry fees, offer educational programs, and are situated in an extended natural environment that includes nearby forest preserves.

In the model explaining use of Grant Park, there were a number of sites that emerged as possible substitutes, including North Park Village Nature Center, Garfield Park Conservatory, Morton Arboretum, Brookfield Zoo, Moraine Hills State Park, Chain-O-Lakes State Park, and Ryerson Woods. Grant Park is a highly-developed park with a spectacular fountain that is located on the Chicago Lakefront not far from the center of the city. It seems unlikely that any of the above sites would be considered substitutes by users, and what may be at work is that distances to these sites, all of which are peripheral to the City Center, are a proxy for living close to Grant Park and thereby being likely to visit.

Other site choice models where alternative sites emerged as substitutes and complements are Brookfield Zoo, Illinois Dunes National Lakeshore, Moraine Hills State Park, and Chain-O-Lakes State Park. With all of these sites, there were a number of alternative sites where the coefficients for distance are significant and positive, suggesting substitutes, or significant and negative, suggesting complements. Shawnee National Forest was a significant complement for all four of the sites. This makes sense in that a trip to the Shawnee in far southern Illinois would not be viewed as a substitute for a trip to a local site. Midewin National Tallgrass Prairie emerged as a significant complement for three sites (Brookfield Zoo, Illinois Dunes National Lakeshore, and Chain-O-Lakes State Park). This may be attributable to the unique character of Midewin, in that it is a large site that is fenced and closed to the public unless they are invited for special events. This is unlike any of the other sites. Moraine Hills State Park and Goose Lake Prairie also emerged as complements for Chain-O-Lake State Park (along with Midewin). Moraine Hills State Park is in the same general vicinity as Chain-O-Lakes State Park; and Goose Lake Prairie, while distant, offers somewhat similar experiences. With all four sites there are a number of sites where the distances to them are significant but many of them are clustered. There are similar coefficients for distance to sites that are clustered together.

## 3.0 The Impact of Origin Characteristics

The characteristics of the areas where people live can influence site choices by affecting an individual's desire to visit places. Important local influences may include the kinds of recreation opportunities available nearby, the accessibility of those opportunities to the individual, and the characteristics of the people who live in the area. In our analysis we used the 140 Cook County zip codes that were reported by respondents in our original phone survey as our basis for the study of origins. Using data about each of these zip codes from the 2000 U.S. Census, we selected the following variables to include in the analysis: population per square mile, mean per capita income, percent African American, and percent Hispanic American. We reasoned that population density may be an indicator of open space in the area and the other variables would describe the population living there. These local-area variables were added on to each observation based on the zip code the survey respondent reported. Thus all of the observations from a given zip code had the same values for these origin characteristics. The basic site choice model to which we added these characteristics included the race/ethnicity and income of individual respondents.

We then re-estimated all site choice models using the basic information that was in the original model (Dwyer and Klenosky 2004) plus the origin-based variables outlined above. These variables did not add significantly to the explanatory power of the models. In fact, the coefficients for the variables were significantly different from zero in only a few instances, largely reflecting the influence of ethnic populations nearby. The overall lack of significant coefficients may reflect, in part, correlations between the characteristics of origins, and (1) the characteristics of individuals sampled from those origins, and (2) the distance to the site being evaluated.

Travel cost models often use the characteristics of origins, usually counties, and their distances from sites to estimate the number of trips to sites. There is evidence from other studies that the characteristics of areas where people live influence their recreation preferences and behavior. Edwards (1981), for example, reported that African Americans living in predominately White residential settings, as opposed to non-white or mixed communities, had higher expectations of leisure needs. To test that finding, we divided our sample into areas (zip codes) where different racial/ethnic groups predominated (i.e., 66% or more of the population). Each of the 140 zip codes in the study area was classified as predominately White (79 zip codes), predominately African American (22), predominately Hispanic American (6), or mixed (33). The zip codes in each category were aggregated, and for those groups of zip codes, the percent of each racial/ethnic group that visited each site was calculated. The results were mixed, and interpretation was hampered by small sample sizes, such as the number of African Americans living in Hispanic neighborhoods that used a particular site.

African Americans who lived in predominately White zip codes had a higher rate of participation at 10 of the sites than African Americans living in predominately African American zip codes. However, with most of these sites, the predominately White neighborhoods were closer to these sites than were the predominately African American neighborhoods. Thus it is not clear to what extent the pattern of participation by neighborhood is due to ethnic composition or location with respect to a site. Similarly

Whites who lived in predominately African American neighborhoods were more likely to visit 11 sites than Whites who live in predominately White neighborhoods, at least partly because they lived in neighborhoods that were closer to the sites. Much, but not all, of the difference in participation across ethnic neighborhoods appears to be attributable to proximity to a site. Analysis of the site participation patterns by additional racial/ethnic groups across neighborhoods of different racial/ethnic compositions did not yield clear patterns, although this may be due, in part, to limited sample sizes by neighborhood and racial/ethnic group.

## 4.0 Discussion

Based on past successes in estimating simple travel cost models and site choice models for urban sites, we set out to build more complex, and hopefully more useful, models to explain urban site choices. We were particularly interested in building the availability of alternative sites and the characteristics of origins into the model. Our analysis was limited, in part, by our data, which came from a previous study. We had fairly crude data for locations (zip codes) of the alternative sites and residences of respondents, and no systematic information on site attributes. Travel distances between residences and sites were approximated by straight line distances between the centers of zip codes. Information at the origin level was limited to simple demographic characteristics, the values for which were often clustered in particular parts of Cook County. The 20 study sites are diverse, and frequently several were clustered near each other. Many of the sites and all of the origins were in Cook County, which resulted in numerous correlations among travel distances to sites. It was not clear what relationship to expect between participation at various sites since we did not have prior information about how individuals perceived sites or their interrelationships.

Distances to each of the 19 other sites were not particularly helpful in increasing the explanatory power of our site choice models. The analysis was complicated by correlations among the distance variables (including to the site being evaluated and possible complements and substitutes), as well as correlations with demographic variables. These correlations were significant because demographic characteristics tended to cluster in the landscape, resulting in significant correlations with distances to a number of the sites.

What did emerge as significant in the analysis was substitutability among some of the more similar sites such as Lincoln Park Zoo, Lincoln Park Conservatory, Garfield Park Conservatory, Chicago Botanic Garden, and Brookfield Zoo. These sites have relatively specific missions and provide distinctive outdoor environments that have some commonalities. This is in relatively sharp contrast to some of the other sites in the analysis which include city parks, county forest preserves, or state parks that provide a wide range of experiences and opportunities, some of which are unique.

In this study we approached site choice from a gross overall view looking for relationships between sites, and relatively few emerged. Would another approach be better? Are complements and substitutes the most useful framework for looking at the interrelationships among sites? Should the analysis be extended beyond sites used in a single year to those used over a multi-year period? Our data suggests that people experience a range of sites over time (Dwyer and Barro 2001), and some sites may enter an individual's life at various stages – such as taking children to a zoo, and then at a much later time taking grandchildren to that same zoo. Do earlier experiences at a site affect how people currently perceive natural resources, or are these perceptions based mostly on sites that are visited at present? Should we limit our analysis to groups of similar sites such as state parks, arboreta and botanic gardens, etc?

## 5.0 Summary and Conclusions

Our efforts to build more complex models of urban site choice were less than fully successful. We were able to identify complementary and substitute sites for some of the 20 study sites, but this resulted in limited improvements in our site choice models. Part of the problem could be solved with additional information – for example, by including more respondents in a study and gathering more information about sites and neighborhoods across a wider geographic area. But it is also clear that the complexity of urban neighborhoods and sites is a significant factor that is likely to become even more challenging over time. It may be useful to rethink the precise questions that need to be addressed concerning urban natural resource management and use before proceeding with additional research on modeling site choices in urban systems. Is it a matter of identifying the sites that substitute for or complement an individual

site? Or is it more a matter of identifying the clusters of sites that people visit over a period of time? And examine whether and how these clusters change over time? Would we better understand how management options influence urban site choice behavior if we presented possible management options such as changes in the landscape, educational programs, or number and character to sites to individuals and asked how they would respond? Or if we perhaps asked them how and why their site choice behavior has changed over time? Finally, whereas this research has focused primarily on the utility of incorporating information about the characteristics of individuals and where they live to examine site visitation behavior, future modeling efforts might include additional information about the characteristics of the sites themselves (i.e., observable/objective site characteristics and/or unobservable/perceived site characteristics). Prior research by Lin et al. (1988) conducted with site visitors in an urban setting suggested that accounting for the impact of such site characteristics may lead to a more complete and (albeit arguably) more useful site choice models.

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# *Norms and Carrying Capacity*

# DETERMINING ACCEPTABLE CARRYING CAPACITIES FOR RECREATION USE AS IDENTIFIED BY KEY STAKEHOLDERS: A FOCUS GROUP PROCESS

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## Abstract

In recent years a permit system has been in place that attempts to limit use of the Georgia Department of Natural Resource's Tallulah Gorge State Park to 100 people per day. This limit is often exceeded due to increasing large group use of the area. The purpose of this study was to determine desired future conditions (DFCs) for the Gorge in context of social-psychological/ biological user carrying capacities acceptable to key stakeholders. We used a focus group method to allow for public input and included both recreation and non-recreation use stakeholders, allowing them to address concerns and identify DFCs for recreation use levels in the Gorge. Salient themes were identified through the use of constant comparative analysis. Findings are discussed in terms of their relevance to permit systems, crowding, and place attachment. Also discussed is the effectiveness of involving stakeholders in a managerial process.

## 1.0 Introduction

This study was funded by the State of Georgia Department of Natural Resources' (DNR) Tallulah Gorge (Gorge).The qualitative focus group portion is part of larger, mixed methods study based on the Limits of Acceptable Change framework (Stankey et al. 1985).

Tallulah Gorge State Park is located 33 miles northeast of Atlanta putting it in the center of a common urban interface park dilemma—how to allow maximum use without denigrating the park's natural resources. Complicating this dilemma is the fact that the Gorge area is relatively small, being only 2 miles long and 1000 feet deep. The Gorge was a major tourist attraction until 1912 when Georgia Power dammed it for hydro power. Between 1912 and 1992, Georgia Power managed the Gorge solely for hydropower. During this time, the Gorge was used informally, with no government management, by camps and individuals for recreational purposes such as climbing and hiking. During this time the Gorge saw substantial user impact (e.g., erosion, litter) In 1992 Tallulah Gorge State Park was created and management was performed jointly by Georgia Department of Natural Resources (GADNR) and Georgia Power.

GADNR took over in 1992 and began to manage through two main vectors: 1) a permit system; and 2) the placement of infrastructure. The permit system was put in place in an attempt to limit use to 100 people in the Gorge floor and 20 climbers on Gorge walls per day. This limit was often exceeded, in part, due to increasing large group use of the area. The use limit numbers in this system were chosen somewhat randomly, but park management did perform a literature review on methods and numbers used in national parks to set permit limits. Initial and ongoing park management also included the development of infrastructure to offset previous (and potential) overuse issues (e.g., trail erosion, vegetation impacts) that GADNR managers inherited. Thus, park managers began building steps into the Gorge to protect sensitive and endangered species (i.e., persistent trillium, monkey faced orchid) and prevent the erosion that had occurred as a result of the pre-state park use.

Presently, recreational use of Tallulah Gorge primarily in the form of hiking, swimming, guided and non-guided nature viewing, kayaking and climbing and as individual/ small group versus large group sizes. Because the permit system had been chosen "out of the air" the DNR sought research to assess whether the numbers initially proposed were satisfactory in term of social, environmental, and managerial carrying capacities. Through the focus group study two critical issues were addressed: 1) agency perceptions of crowding and management (infrastructure and permit system) in the Gorge; and 2) socio-environmental quality (aesthetics) of the gorge.

We sought to determine a range of acceptable levels of carrying capacity for the Tallulah Gorge. Our approach is based on a model developed by Tarrant and English

(1996), which recognizes that carrying capacities should reflect management objectives and evaluative standards (that are, in turn, influenced by user perceptions of crowding levels) and is based on the Limits of Acceptable Change (LAC) framework (Stankey et al. 1985). In the case of social carrying capacities for recreational hiking in the Tallulah Gorge, management objectives define the desired recreation opportunity to be provided (e.g., primitive/low density to developed/high density) and evaluative standards refer to acceptable levels of impact (i.e., desired crowding conditions).

Our approach also recognizes that recreation planners and managers require carrying capacity formulations that are flexible and that reflect the multiple influences on management decisions regarding use levels (Manning 1985). Increasing demands from outfitters for permits, political pressure from interest groups, variations in natural resource conditions, and GADNR/agency directives, as well as user preferences require that any given recreation opportunity is associated with a range of standards that are associated with each management objective so as to allow greater managerial flexibility in setting use levels.

## 2.0 Purpose and Objectives

The purpose of the study was to use a Focus Group approach to identify carrying capacities (i.e., limits) acceptable to large groups based on perceived crowding and environmental impacts in the Gorge. Acceptable social-psychological (e.g., crowding) and socio-environmental (e.g., perceptions of environmental quality) user carrying capacities were determined based upon key stakeholders' DFCs for the Gorge and the recommendations of Georgia Power. The objectives of the study were:

1. To determine agency perceptions of crowding in the Gorge.
2. To determine agency perceptions of the impact of past user activity on the environmental health of Tallulah Gorge.
3. To determine agency perceptions of managerial practices in the gorge, including infrastructure and the permit system.
4. To make recommendations concerning DFCs (i.e., acceptable use levels) and perceived environmental health for recreation activities in the Gorge.

## 3.0 Data Collection and Analysis Methods

Initially, the DNR provided a list of the key stakeholders (and contact information) that affect, or were affected by, decisions to establish acceptable use levels for recreation in the Gorge. The list included approximately 25 key stakeholders (and their contact information) that affect, or were affected by, decisions to establish acceptable use levels for recreation in the Gorge. These agencies/individuals were contacted via letter first, with a phone call in the following two weeks in which the importance of focus group to GADNR management was emphasized. The focus group consisted of 15 participants, including one Georgia Power representatives, eight camp representatives, four GADNR reps, and a town councilman.

The focus group was held because an on-site survey might only address individual recreation users of the Gorge. Thus, the public forum was held to include the DFCs of key group recreational (i.e., camps) and non-recreation use stakeholders (i.e., Georgia Power, Georgia Department of Natural Resources). The method used to guide the focus group was a semi-structured format. Pre-determined questions were used to steer the discussion toward issues of interest to both GADNR managers and researchers (e.g., perceived crowding levels, managerial conditions). This format also allowed the discussion facilitator to probe into specific areas where additional information might prove useful. The discussion data was recorded using a boom microphone and transcribed for further analysis.

Data analysis was performed using constant comparative method, in which themes are identified and coded within the data. Themes were developed initially through open coding. Open coding involves the identification and analysis of central or basic themes in the data. Later, more complex themes were identified using axial coding. Axial coding involves looking at the intersections between themes and interpreting them. The interpretations are then connected back to other theories and literature. Through the process of axial coding grounded theory began to emerge. This grounded theory is still tentative as the theoretical model is being developed and connected with other literature. This data was then used in conjunction with the social-psychological data to determine overall visitor carrying capacities of the gorge.

**Table 1.—Focus Group Themes and Selected Supporting Data**

| |
|---|
| Theme 1: Camp representatives were generally appreciative and supportive of DNR management efforts both within the gorge floor and outside the Gorge. |
| (A) Camp personal felt environmental quality had increased with general management presence, including the permit system and management placed infrastructure. |
| "We can change how the site is impacted, what's built there, all those kinda things. We can stop it from being loved to death but change is inevitable" |
| "I think ya'll do a pretty good job… I think what ya'll doing now is, as good as you're gonna get" |
| "I think ya know, we talked about impact on it and stuff and there was no greater impact on it then damming it and there is not greater impact than the things that have been done to past, ya know in the past to it, and at this point, I'd say we're on an upswing ya know the gorge is definitely improving, the vegetation in it and the wildlife and everything in it are improving" |
| "I also know how that trail used to look and ya know climb up that other side and up that trail behind Hurricane Falls, was pretty eroded and pretty rough trying to climb out of there, and now you walked out through there and you feel like you're in a pristine, non-touched, because you look down below that staircase and it's just all vegetated… and so that's ya know, that's encouraging to me, I think that's a good improvement and uh, I mean I know there's a lot of people that don't like something that's not natural…it may not be natural but it's definitely an improvement over the sandy eroded path that preexisted that." |
| (B) Camp representatives felt the gorge was safer (e.g. fewer accidents and deaths) and cleaner than it had been prior to management as a state park. |
| "We've seen a change from…6 fatalities and 53 technical rescues in a year and a half to no fatalities in now 8 years…for what's that worth, it's a positive thing" |
| "…there is people who aren't self preserving and they don't ya know consider their actions, and you can't ever get around that but I like what ya'll've done." |
| Theme 2: There was evidence of a willingness on the part of all agencies to cooperate with one another. |
| "…it's made everybody more aware. Their more educated and they want to take care of it." |
| "FERC has been unusually cooperative and let us make some decisions. They basically years ago allowed me to put my neck on the line and say ok, [FERC] approved us to allow a hundred hikers and 20 rock climbers per day in the gorge." |
| "FERC has really been good working with all of us umm they're giving us an opportunity to manage this in the right ways….FERC will work with us and they've been real cooperative and Georgia Power has too in working with us as long as we realize that we've gotta protect the environment down there and we make reasonable decisions so we don't really see FERC as umm some organization out of Washington that's standing over us watching…." |
| "…we tell em to stay on the trail and everybody walk in a single file line and you get down there and you can go swim and use a buddy system and we have life guards down there and we pick up trash when we're down there and we always leave an area ya know, we tell em to leave it cleaner then when you found it, ya know if it's not your trash, pick it up anyway! And uh, we try to not let em climb around on the rocks where they're not supposed to be ya know you stay in that area and then you leave." |
| Theme 3: Camp representatives were willing to share or sacrifice time in the gorge to allow individual users who had traveled from far away to experience the Gorge, especially those with fixed time commitments. |
| "I do think that we should look at the ya know the fact that there are people that come from a long ways to see Tallulah Gorge and we ourselves have had the privilege of enjoying it as much as we have which I personally have enjoyed it a lot." |
| "…we understand it but we don't get a 100 spots a day, we only get X amount, we leave X amount for the public…" |
| "If one of the camps come one day and sorry, Happy Camp beat you here, you have to take your kids to the beach. It's not the end of the world, they still have a park experience, it's not the end of the world for someone to walk down the staircase rather than scamper across rocks…" |

**Table 1.—continued.**

| |
|---|
| "I would forgo my right to go down in there to keep it that way because I have enjoyed the gorge, I've had great experiences in the gorge, and um, I've, I guess you could say, I've had my fair share." |
| Theme 4: Camp/agency representatives exhibited a high degree of place attachment to Tallulah Gorge |
| "I took my honeymoon in it, spent a week down in it, climb out of it, fell off the cliff, and picked 2 boys up outta Dead Man's whole who had died in it and um now I am using a camp, I have my own camp, I'm a silent observer, I had never contributed one single thing to Tallulah Gorge and I'm dumbfounded and all at the fact that they have done what they have done with it. When I go down there and I see the staircase now and the bridge and things that ya'll have done I just, I say thank you, thank you and wow!" |
| "…going down Sliding Rock is a tradition of the kids in Athens." |
| Theme 5: Local government and camp managers were pleased with community benefits the managed park provided |
| "…for the community of Tallulah Falls it's our cash cow this is our golden goose and as a business person here in town and umm our livelihood depends upon the people coming up here to use and use the resource…" |
| "But the character that it builds in them you know, and the accomplishment that ya know that they can make it out of that the rest of the week is…hey remember when you were going up the gorge and you didn't think you could do it and you made it? Uh, there's so many other lessons that you can learn from those kind of things." |
| "…local people are starting to take a little more pride in ownership of the fact that the gorge is there…." |
| "…I had dinner over here tonight at the little café called Isabel's and um, there was a couple that sat next to me and um, I guess they thought that maybe I lived here but uh, they asked me some questions that I was able to answer for 'em, and they, they just offered to me that uh, that they lived on Lake Hartwell, they said 50 miles away and they said this was the first time that they had ever been to Tallulah Gorge. And they said they just couldn't believe it and so they were making, as they left they were making arrangements with the restaurant there, Isabel's, to bring some kind of a large group back in September…" |
| "…like recruiting and all. We have big pictures of a kid going down Sliding Rock getting all the parents going, hey what is that and we tell them all about it and they think it's the greatest thing they've ever heard." |

## 4.0 Results

Three main themes (themes 1-3), with various sub-themes, were identified during open-coding analysis of the focus group discussion. An additional two themes (themes 4 and 5) were identified through the axial coding process. The data to support these themes is found in Table 1.

The first, and strongest, theme identified (theme 1) was that camp representatives were generally appreciative and supportive of DNR management efforts both within the gorge floor and outside the Gorge. DNR's management of the Gorge was linked with the idea they had positively impacted the environmental quality of the gorge, both aesthetically and socially. Thus, a sub theme identified (theme 1A) was that camp personnel felt environmental quality had increased (i.e., user impact had decreased) with general management presence, including the permit system and management placed infrastructure (i.e., staircases, bridge). Additionally, camp representatives felt the gorge was safer (e.g. fewer accidents and deaths) and cleaner (i.e., broken glass, trash) (theme 1B) than it had been prior to management as a state park. They cited such evidence as fewer deaths and rescues occurring in the gorge, and less observation of individual users acting in a dangerous manner.

The second theme identified (theme 2) was the willingness on the part of all agencies (i.e., local government, Georgia Power, GA DNR, camp representatives) to cooperate with one another. All participants in the discussion were understanding and appreciative of each others ideas as well as the fact that managers (i.e., GADNR, GA Power) had a job to do and still considered the needs of camps. No evidence of dissention between camps/government was identified.

A third theme identified (theme 3) was that camp representatives were willing to share or sacrifice time in the gorge to allow individual users who had traveled from far away to experience the Gorge, especially those with fixed time commitments. This directly illustrates a satisfaction with the permit process, as is, on the part of camp representatives. Again, they understand that management of user volume is necessary to keep the gorge in good quality, and because they are local, they understand the importance of stepping aside where necessary to allow non-local users to enjoy the Gorge.

A fourth theme identified during axial coding, while not directly relevant the study objectives, is presented here because of its relationship to Themes 1-3. Camp/agency representatives exhibited a high degree of place attachment to Tallulah Gorge (theme 4). "Place attachment arises when settings (e.g., local parks) are imbued with meanings that create or enhance one's emotional tie to a natural resource" (Vaske and Kobrin 2001). Many of these individuals self-identified as having long term ties to the park. Many of the camps had used the Gorge for group programming before GADNR began managing it. From the Gorge's inception as a state park, they had a vested interest in how the park was managed when the GADNR took it over. Additionally, many of the focus group participants had pre-GADNR personal experience with gorge before they worked for an agency associated with the gorge.

Finally, a fifth theme identified (Theme 5) was that local government and camp managers were pleased with community benefits the managed park provided. While a minor part of the discussion, the economic benefits that the Gorge has brought to the town may be important to the camps and local government.

## 5.0 Discussion

### 5.1 Limitations

While the findings are generally positive and suggest managers of the Tallulah Gorge are doing an admirable job in responding to visitor concerns about environmental and social conditions in the Gorge, the results of this study should be interpreted with some caution for at least the following reasons. First, this study sampled only current user groups and did not survey past users, some of whom may have been dissatisfied with their experience at the Gorge and now utilize other recreation sites. Second, the presence of Georgia DNR in the focus group process may have influenced the attitudes and comments of the agencies that use the gorge.

### 5.2 Conclusions

In general, one statement sums up the findings of the focus group study. The DNR should "Keep up the Good Work." Two strong concepts back this adage.

First, the numbers (100 individual users, 20 large group users) set in the initial permit system seem to be satisfactory to large group users (e.g., camps) of the Gorge. Thus, social management of the Gorge is succeeding in context of large group representatives. This is illustrated by the finding that: 1) the majority of groups using the gorge were satisfied by the number of permits issued and thought they should remain the same; 2) participants in the focus group were of the mindset that the limitation of users set in place by the permit system had increased gorge environmental quality and safety. While the DNR may try increasing numbers of permits issued in the future, it is evident from the data that no large group representatives desire permit numbers to decrease. Thus, based on these user attitudes, the DNR has succeeded in setting an appropriate number for its permit system.

Second, the concept that physical/environmental management is desired over environmental deterioration is strongly supported by the data. The focus group results indicate that the camp and government participants felt the environmental and aesthetic integrity of the Gorge had increased since the inception of the state park and DNR management. References to the difference in erosion pre and post stairs are a strong indicator of the acceptance and appreciation of physical managerial efforts by camp and government agencies. From these results, one could surmise that focus group participants would be in favor of future physical manipulation of the Gorge (e.g., stairs, bridges) where it would prevent environmental degradation. Surely, large group users are much less concerned about management (e.g., building stairs) than they are about physical conditions (e.g., erosion) of the Gorge.

### 5.3 Implications

A number of implications for future management and research arise from these results. First, the DNR can rest assured that, in terms of socio-environmental impacts (i.e., aesthetics, crowding), their managerial efforts (i.e.,

permit system, infrastructure) are accepted and most likely appreciated by large group users. Thus, they should continue to manage environmental conditions and use levels as they have in the past, while the possibility of future increases in numbers of permits issued exists. However, the latter should only be attempted under close scrutiny of group and individual user reactions. Second, the methods employed in this research project might provide assistance to the GADNR state park system in assessing the success of future permit systems. These methods may serve as an acceptable template for future attempts at determining and monitoring stakeholder perceptions of socio-environmental carrying capacity in other state parks. Third, an interesting consideration for future research involves the high degree of positive cooperation between government, private, and non-profit agencies that was evidenced in the focus group discussion. Future study should examine this effort to determine what factors (e.g., hiring of local managers, involvement of stakeholders in the planning process, high degree of place attachment) allowed for these three groups to work so well together in the early stages of the parks inception and management. These findings could be highly valuable for agencies embarking on other such endeavors.

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# AN IPSATIVE APPROACH TO NORM CRYSTALLIZATION

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## Abstract

The structural characteristics of norms have prompted a considerable amount of research. One of these characteristics, norm crystallization, has received comparatively little attention in the literature. This paper proposes an ipsative form of norm crystallization and presents results from a wildland fire policy study to illustrate the approach. The results highlight the utility of continued work on the ipsative crystallization measure in terms of both methodology and application for natural resource management decision-making.

## 1.0 Introduction and Background

Public acceptance of natural resource policies is often driven by what individuals or society believes is appropriate for a given context (Shelby et al. 1996). Norm theory offers a paradigm for understanding why the public judges management actions as acceptable or unacceptable. Over the past two decades, at least 75 studies have applied norm theory to natural resource management issues (see Donnelly et al. 2000; Manning 1999; Shelby et al. 1996; Vaske & Donnelly 2002 for reviews). In these studies, norms are defined as evaluative standards regarding acceptable behaviors or conditions in a given context (Vaske & Whittaker 2004). Such evaluative standards can refer to either individual or institutional (e.g., an agency's policy regarding fire management) behaviors.

### 1.1 Characteristics of Norms

Norms have been analyzed for various structural characteristics: 1) the range of acceptable management actions; 2) intensity or strength of the norm; and 3) level of agreement or norm crystallization. Most empirical attention has concentrated on measures of central tendency (e.g., means, medians) when describing the intensity of a group norm (e.g., the average evaluation made by individuals within a group or subgroups). Normative agreement can refer to variations in a group's evaluations and is typically calculated using the standard deviation, coefficient of variation, or percentage of respondents rating a particular situation as acceptable or unacceptable. A high level of agreement (high norm crystallization) for a given situation indicates a high level of acceptability (or unacceptability) for a proposed action (e.g., management policy). Lower levels of agreement (low norm crystallization) signal potential conflict. Most studies have emphasized differences between groups and implied similarity/consistency within individuals. Less attention has focused on the extent to which variation exists within an individual's normative responses.

Examination of response variability for an individual necessitates repeated measures across a series of situations that vary on dimensions considered important to managers or researchers. Researchers (Kneeshaw et al. 2004a, 2004b), for example, have examined the acceptability of different wildfire management actions (e.g., contain or totally suppress a wildfire) under different conditions (e.g., human versus lightening caused) and levels of human impact (e.g., damage to private property, impact on air quality). Similarly, researchers (Wittmann et al. 1998; Zinn et al. 1998) have asked respondents to evaluate different wildlife species (e.g., beaver, coyote, mountain lion), the actions of the animal (e.g., ate vegetation, killed a pet, injured a person), and the appropriateness of actions taken by a wildlife agency (e.g., frighten the animal away, destroy the animal). Results from these investigations have primarily emphasized between-group differences using analysis techniques such as t-tests and ANOVAs. This paper focuses on the intra-individual (or ipsativity) of an individual's norms regarding wildland fire policy.

### 1.2 Ipsative Measurement

Between-group approaches concentrate on differences among subgroups and imply similarity or consistency within individual respondents in a group. Little attention has focused on the extent to which there is variation within each individual's normative responses. The consistency with which a group of individuals responds to different evaluation contexts does not necessarily account for the variation that exists within each individual. Some individuals may give responses that are often greater than the group mean; others consistently report evaluations below the group mean. An ipsative

approach to norm crystallization (agreement) examines these patterns of individual responses (Greenleaf 1992). That is, some variation is expected due to an individual's own personal set of beliefs, attitudes or values and their reaction to a given situation. Such variation is, by definition, ipsative, or "within the individual himself or herself," and requires some sort of repeated measure to assess.

Moreover, an intra-individual variation approach to crystallization can directly influence support for management actions. Norms that are highly ipsatively crystallized, for example, are difficult to change regardless of the amount or type of persuasion. Persuasion attempts need to account for this ipsative property of an individual's personal norm (Beaman & Vaske 1995).

Two individual (ipsative) aspects of norm responses have been noted (see Beaman & Vaske 1995 for a review). The first concerns an individual's mean level of acceptable / unacceptable ratings on a set of items. The second refers to narrow or wide swing patterns in the responses. Some people, for example, may consistently indicate that a wildfire should be suppressed regardless of the context, and express this belief as "highly acceptable" on all rating scales in the survey. The average score for these individuals is expected to be greater than the group mean. Others may hold their beliefs toward management actions just as strongly ("highly acceptable" or "highly unacceptable"), but vary their responses depending on the specific situation. The response pattern for those who are less sure of what is an appropriate management action may only vary between "slightly acceptable" and "slightly unacceptable."

## 2.0 Study Objective

This paper develops an ipsative measure of norm crystallization based on each respondent's standard deviation from a set of wildland fire related questions. We then examine how this response pattern variability (low to high norm crystallization) is related to support for wildland fire management actions across demographic and geographic characteristics.

## 3.0 Methods

Data were obtained from a mail survey of visitors to three national forests: 1) Arapaho-Roosevelt, Colorado (n = 469); 2) Mt. Baker-Snoqualmie, Washington (n = 498); and 3) San Bernardino, California (n = 321). Respondents' evaluated eight scenarios that described the potential effects of a wildland fire. The scenarios varied the source of fire ignition (lightning vs. unintentionally caused by humans) and the effect of the fire on air quality, private property, forest recovery, and outdoor recreation. Following each scenario, three possible actions that the U.S. Forest Service might take were presented: 1) immediately put the fire out (full suppression); 2) let the fire burn, but contain it so that it does not get out of control; and 3) let the fire burn out on its own without trying to contain it. Respondents rated each of the 24 management actions (8 scenarios x 3 management actions) on a 7-point scale ranging from "highly unacceptable" (-3) through "no opinion" (0) to "highly acceptable" (3). We treated these measures as three sets of repeated ratings of the same general phenomenon (support for fire management policies). These raw scores were then transformed into a measure of each individual's standard deviation from the scenario items. Based on this variation measure, we assigned each individual to one of three groups corresponding to low, medium, or high crystallization. These three groups were then compared across the three management actions (suppression, containment, let burn), demographic indicators (age, gender, education, income, race / ethnicity), and use-related variables (forest visited).

## 4.0 Results

The three crystallization groups were defined based on each individual's ipsative standard deviation. These standard deviations ranged from 0 to 3.21. Because a low ipsative standard deviation equates to high crystallization, the three groups were defined as 0 - .99 = high crystallization, 1.00 - 1.99 = medium crystallization, and 2.00 - 3.21 = low crystallization.

Between 41% (let the fire burn policy) and 53% (contain the fire policy) of the respondents were in the high crystallization group (Table 1). Approximately one-third were in the medium crystallization group. The low crystallization group contained the fewest number of respondents (17% to 24%). These findings suggest that individual respondents in this sample varied on the extent to which they agree on acceptable wildland fire management policies. Because norms are context specific, such variability is expected and needs to be accounted for in analyses.

**Table 1.—Crystallization groups by wildland fire policy.[1]**

| Policy | High | Medium | Low |
|---|---|---|---|
| Put the fire out | 45 | 33 | 22 |
| Contain the fire | 53 | 31 | 17 |
| Let the fire burn | 41 | 36 | 24 |

[1]Cell entries are row percents

**Table 2.—Overall summary statistics (p-values) for 15 norm crystallization analyses: Forest use and demographic variables for each wildland fire policy**

| | Norm crystallization for management policies | | |
|---|---|---|---|
| | Put the fire out | Contain the fire | Let the fire burn |
| Forest[1] | < .001 | < .001 | .002 |
| Education[2] | < .001 | .002 | < .001 |
| Sex[3] | .188 | .076 | .023 |
| Age[4] | .030 | .013 | .115 |
| Ethnicity / race[5] | .092 | .019 | .062 |

[1]Three forests: Arapaho-Roosevelt, Colorado; Mt. Baker-Snoqualmie, Washington State; and San Bernardino, California.
[2]Three levels of education: High school diploma or less, technical degree or some college, and college degree or more.
[3]Sex: males and females.
[4]Three levels of age: 18-34, 35-54, and 55+.
[5]Ethnicity / race: Hispanic, white, other.

The three crystallization groups were compared for each management policy against forest use and demographic variables (Table 2). Ten of the 15 chi-square tests were statistically significant, suggesting that crystallization influences the relationship between forest locale, education, gender, age, ethnicity, and support for management actions. The geographic location of the forest, for example, was affected by norm crystallization for all three management policies.

To illustrate the norm crystallization relationships in Table 2, Table 3 displays the detailed results for three chi-square analyses, one for each policy variable: "put the fire out" by forest, "contain the fire" by age, and "let the fire burn" by education. The forest variable showed a range of policy support by crystallization and suggests geographic variation in crystallization effects. Respondents from San Bernardino forest were the most crystallized and visitors to Arapaho–Roosevelt Forest were the least crystallized group. Second, education revealed a distinct pattern by crystallization for "let the fire burn." Those with lower education tended to be in the high crystallization group, whereas those with the highest education were the least crystallized. Finally, the containment policy is differentiable through crystallization across age groups, with older respondents holding higher levels of crystallization.

## 5.0 Conclusions / Implications

This paper extends the discussion of norms by considering one ipsative form of crystallization. The ipsative standard deviations from a series of questions related to wildfire management actions identified three crystallization groups (low, medium, high). Comparing these groups against demographic and use-related variables suggested preliminary evidence for the validity of this approach.

Results revealed that an ipsative approach to crystallization facilitates understanding the patterns of responses in the data. Each of the three wildland fire policy support variables had a similar pattern of crystallization. The norm crystallization groups, however, varied in terms of their demographic profile (e.g.,

**Table 3.—Sample norm crystallization distributions for three analyses**

| | Crystallization group[1] | | | | |
|---|---|---|---|---|---|
| Support for… | High | Medium | Low | $\chi^2$ | p-value |
| "Put the fire out" by forest | | | | 16.72 | .002 |
| Arapahoe-Roosevelt | 39 | 37 | 24 | | |
| Mt. Baker- Snoqualmie | 46 | 32 | 22 | | |
| San Bernardino | 53 | 27 | 20 | | |
| "Contain fire" by age: | | | | 12.73 | .013 |
| 18 – 34 | 50 | 35 | 15 | | |
| 35 – 54 | 53 | 28 | 19 | | |
| 55+ | 56 | 33 | 11 | | |
| "Let fire burn" by education: | | | | 44.81 | < .001 |
| HS degree or less | 61 | 28 | 11 | | |
| Tech degree, or some college | 49 | 28 | 23 | | |
| College degree or more | 34 | 40 | 26 | | |

[1]Cell entries are percents.

education, age, gender) and the forest visited. For natural resource managers, these findings imply that norm crystallization could substantially inform their ability to persuade recreationists, homeowners, or other key stakeholders.

The data also supported continued investigation of an ipsative approach to norm crystallization. Several avenues for further research should be explored. First, our analyses concentrated on ipsative standard deviations. Equally important is consideration of the ipsative means (i.e., how strongly to individuals hold their norms toward alternative management actions). Second, we classified individuals into three crystallization groups (low, medium, high). A respondent-defined approach (e.g., cluster analysis of ipsative transformed data) is an alternative categorization procedure worthy of examination.

Overall, this study should be viewed as an initial step in broadening the understanding of norm crystallization. Our methodology and findings are suggestive rather than definitive. We encourage other researchers to explore and enhance this measurement approach and apply the technique to other natural resource and wildland fire management situations.

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# *Specialization and Participation Development*

# CONSTRAINTS TO RECREATIONAL FISHING: CONCEPTS AND QUESTIONS TO UNDERSTAND UNDERREPRESENTED ANGLING GROUPS

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## Abstract

Fishing opportunities are often catered to the predominant angler group: male Anglos. However, in coming years, the U.S. population is predicted to become more ethnically diverse. These changes are likely to have an impact on the recreational angler population. If new angler groups are not catered to by fisheries managers, there may be fewer anglers in the future, and consequently a reduction in public funding and support for fisheries management. However, little is known about the motives and preferences of non-Anglo anglers. Additionally, there is more to be learned about what constraints these underrepresented groups face. Ethnic minority groups may be differently affected by constraints due to income, place of residence, and social structure. Women may face constraints related to family commitments and perceptions of traditional gender roles. Combining knowledge about minority groups and women with leisure constraints research may help to inform future research efforts on underrepresented angling groups.

## 1.0 Introduction

Until recently, research into the human dimensions of fisheries management has focused primarily on white males. This research is reflective of the homogenous demographic composition of anglers in the United States. In 2001, over 93% of recreational anglers were white. In the same year, seventy-four percent of anglers were men (DOI 2002, pages 15 and 17). Lower percentages of women, African Americans, and Hispanics participate in recreational fishing than their white, male counterparts (FWS 2000).

Because white males have been the predominant participant group, fishing opportunities in the U.S. have been largely catered to the needs and preferences of this demographic group. However, ethnic minority groups could account for a substantial increase in recreational fishing participants in coming years (Murdock et al, 1996, Hunt and Ditton, 2002). The demographic composition of the United States is predicted to change considerably in coming decades (Table 1). Between 2004 and 2050, the white population is predicted to grow by just 7.1%, while Asian, Hispanic, and African American populations are predicted to increase by 195%, 165%, and 52%, respectively (U.S. Census 2000). Immigrants and their descendents are expected to account for a substantial amount of U.S. population growth—and possibly recreational fishing participant growth—in coming years (Murdock et al. 1996).

However, if new angler groups, including minority ethnic groups, older anglers, and women, are not catered to by fisheries managers, there may be fewer anglers in the future, and consequently a reduction in public funding and support for fisheries management. While it has been shown that there may be an interest in greater fishing participation among minority groups, we know little about their preferences and behaviors (Hunt and Ditton 2002). Understanding the needs of underrepresented groups is important to encouraging their participation in the activity.

One area of research that may be helpful in explaining the current lack of participation of minority groups in recreational fishing is that of leisure constraints. If fisheries agencies intend to attract more minorities and women into fishing, research scientists and practitioners need to do more to understand not only the preferences of these groups, but also the factors that keep these groups from fishing in the first place.

## 2.0 Leisure Constraints Research

Barriers to leisure—or leisure constraints—were first measured formally as early as the 1960s, when the first Outdoor Recreation Resources Review Commission reports were published. Most formal research in the field occurred from the 1980s through today (Crawford et al. 1991). Early constraints research focused primarily on participation vs. non-participation. That is, lists of items were tested as "barriers" that prevented a person from

**Table 1.—U.S. Population Composition and Projected Change**

| | 2004 | | 2050 | | 2004 to 2050 |
|---|---|---|---|---|---|
| | Population | Percent Composition | Population | Percent Composition | Percent Increase |
| White | 198,895 | 69.7% | 212,990 | 52.8% | 7.1% |
| Hispanic | 37,059 | 13.0% | 98,228 | 24.3% | 165.1% |
| Black | 35,049 | 12.3% | 53,466 | 13.2% | 52.5% |
| Asian/Pacific Islander | 12,116 | 4.2% | 35,759 | 8.9% | 195.1% |
| Native American | 2,145 | 0.8% | 3,241 | 0.8% | 51.1% |
| Total | 285,264 | 100.0% | 403,684 | 100.0% | 41.5% |

Source: 2000 U.S. Census

participating in a desired activity. While this approach would later be criticized for not adequately explaining nonparticipation, two general items have emerged that are considered constraints by a wide variety of people: time and money (Jackson 2000, Kay and Jackson 1991). Other patterns that have emerged in reported constraints include the availability of facilities, and personal skills and abilities (Jackson 2000).

While reported barriers provided a very applied approach to understanding leisure constraints, later research found that these lists of barriers did not adequately explain participation. For example, Kay and Jackson (1991) found that people reported recreation constraints even though their participation was not greatly affected. In some cases, people participated less than they wanted because of a reported constraint, but they did not cease participation altogether. Kay and Jackson termed this as "participation despite constraint." In 2000, Jackson referred to the phenomenon as "constraints negotiation," meaning that people will find ways around constraints if they are motivated and perceive that the benefits of the activity are important.

To help explain the varying influences that constraints have on different groups of people, Crawford and Godbey (1987) posited that people really experience three different types of constraints: structural, intrapersonal, and interpersonal. Structural constraints are the barriers between a desired activity and participation (e.g., time, money, skill) that was the focus of much early constraints research. Intrapersonal constraints are related to individual characteristics that influence leisure preference. Some examples of intrapersonal constraints include: stress, anxiety, and perception of ability. Finally, interpersonal barriers involve the interactions between people. For example, an individual may not have a partner to recreate with or someone's preferences may change when he or she is with a partner (Crawford and Godbey 1987). Crawford et al. (1991) take the 1987 model a step further, saying that the three constraint types are hierarchical in nature. That is, a person will first encounter intrapersonal constraints, then interpersonal constraints, and finally structural constraints.

Jackson and Dunn (1991) shed further light on the complexities involved in defining "leisure constraints." The authors found that the aspect of leisure being constrained may affect the perception of whether an item is a barrier to participation. That is, an individual could face constraints to starting a new activity. Alternatively, there could be constraints that cause individuals to cease participation in a former activity. In this case, leisure constraints are not "internally homogenous" (Jackson and Rucks 1993). In other words, constraints can not be equally applied to different aspects of leisure participation.

## 3.0 Leisure Constraints and Underrepresented Groups

Understanding lack of participation in recreational fisheries by underrepresented groups involves gaining an understanding of the constraints that may be especially present among these groups. In this section, three issues will be considered that could involve greater constraints among ethnic minority groups: income level, place of residence, and social structure. Also, some constraints that may be experienced by women will be considered.

Money has frequently been identified as a constraint to leisure (Jackson 2000). In Crawford et al.'s (1991) model, money could function as a structural constraint. That is, once a person has formed a preference for an activity, the costs of that activity could constrain his or her participation. The burden of the cost constraint could vary as a person becomes more specialized in an activity. As one becomes more specialized, he or she is more likely to invest more money into equipment and materials related to the activity (Ditton et al. 1992). In this case, money could be a constraint to participating "more often" in an activity.

With the understanding of how money could act as a general leisure constraint, one could consider how the money constraint could especially impact underrepresented fishing groups. In general, it is known that minority groups in the U.S. have lower income levels than Anglos. For example, a 2002 study found that only 29% of whites reported earning an annual household income of less than $30,000, compared to 50% of Hispanics and 44% of African Americans. Forty-two percent of whites reported earning $50,000 or more, while only 17% of Hispanics and 22% of African Americans fell into this category (Brodie et al., 2002, page 12). Furthermore, there does appear to be a connection between income level and fishing participation. In 2001, individuals with an annual income of $35,000 had the highest fishing participant rates. Fishing participation rates steadily declined with income (DOI 2002, page 16).

A second constraint to recreational fishing that could be of special significance to minority groups is place of residence. Location could act as a structural or intrapersonal constraint. For example, people who desire to fish may not have adequate access to fishing resources, or to quality resources. On the other hand, if opportunities to go fishing are not readily available, the preference to fish may not even be formed. Today, many ethnic minority groups live in the central cores of large cities, as a consequence of government policies that encouraged urban "white flight" (Bullard et al. 2000). Conversely, minorities comprise just 17% of the population in rural areas (USDA 2004). Minorities in cities may not be close to good fishing locations, may not know where to go fishing, and may face issues of water pollution (RBFF 2002). These constraints may, in part, help to explain the connection between urban and rural residence and fishing participation. The highest fishing participation rates in 2001 (24%) occurred among those living in rural areas. The lowest fishing participation (12%) occurred among those living in large metropolitan statistical areas (DOI 2002, page 16).

A third area to consider when examining minority participation in fishing is social structure. Ethnic minority groups may have a social structure that is different from the majority white population. Social structure may relate to intrapersonal and interpersonal constraints. That is, characteristics of culture may relate to the formation of preference for an activity. For example, extended family and family ties may be more central to the lives of African Americans and Hispanics than whites. This is reflected in what Hunt and Ditton (2002) term a more "collectivistic culture" of some minority groups compared to the more "individualistic" culture of Anglos. Some of these differences are apparent in a 2002 Recreational Boating and Fishing Foundation study, in which African American and Hispanic anglers reported that relaxation, being outdoors, and spending time with friends and family were more important aspects of fishing than competitions or skill development (RBFF 2002).

Lastly, there is evidence to suggest that women may be affected by leisure constraints differently than men. A Pew research study revealed that one-half of women with children were working full time (Pew 1997). For these women, the constraint of time may be especially significant. Some evidence suggests that women may be more affected by constraints of social isolation and skill than men (Jackson and Henderson 1995). Isolation and skill could be considered intrapersonal and interpersonal constraints, which relate to the formation of fishing preference. Another issue to consider is how perceptions of traditional gender roles relate to women and fishing. Thrane (2000) suggests that leisure constraints faced by women relate more to cultural gender roles than biological sex.

## 4.0 Generating Questions

Using leisure constraints research as a framework, future research efforts may lead to a better understanding of the lack of participation among underrepresented groups in recreational fishing. Leisure constraints research offers a model for understanding the types of constraints that reduce leisure participation: these may be defined as

intrapersonal, interpersonal, and structural. Furthermore, research revealing that leisure constraints could be experienced differently depending upon the type of participation points to the need to examine whether individuals from underrepresented groups have stopped fishing, never started fishing, or are fishing less than they would like.

Moving beyond the different types of constraints and leisure behaviors, some characteristics of ethnic minority groups and women can be examined to consider how these groups may be differently affected by constraints. Some minority groups may have lower disposable incomes and live in more urban residences. Ethnic minorities may also have a different social structure than the white majority, which involves less of a focus on competition and greater importance of extended family. Furthermore, some ethnic minority groups may use languages that are not catered to in fisheries management. For women, commitments to children and family and perceptions of traditional gender roles may be additional factors to consider as constraints to recreational fishing.

Leisure constraints research could be combined with information about ethnic minority groups and women in future research endeavors. For example, researchers may consider asking questions relating to both structural and antecedent constraints. Structural variables that may be of special significance to ethnic minority groups could include: equipment costs, availability of activities for families, the proximity of good fishing locations to underrepresented groups, and the availability managers who can communicate in different languages. Antecedent variables that could be considered include: perceptions of cost, who "should" participate, activity difficulty, and discrimination. Exploring these questions may bring human dimensions researchers a step closer to understanding the needs and preferences of underrepresented groups. This understanding, in turn, may help to insure the future healthy participation of a diverse group of U.S. citizens in recreational fishing.

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# UNDERSTANDING VOLUNTEERS' MOTIVATIONS

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## Abstract

Volunteers are an important human resource for many organizations. Reasons to volunteers are attributed to factors such as the increasing number of nonprofit organizations, decreasing pool of volunteers, competition for volunteer recruitment among organizations, and problems in volunteers' retention to an organization. Groups of college students from six departments were stratified according to service oriented and non-service oriented majors. For this study, a two-part questionnaire, including the six scale of the Volunteer Inventory Functions (VFI) was administered to college students. The results showed differences between volunteers and non-volunteers, males and females, and service-oriented and non-service oriented majors in their motivations to volunteer.

## 1.0 Introduction

Volunteering is an activity that is undertaken by an individual for no financial reward and benefits someone other than the person who volunteers. Every year, millions of people devote important amounts of time and energy to volunteer in different organizations. According to findings from a national survey (Independent Sector 2001), 44% of adults in the U.S. over the age of 21 volunteered in a formal organization in 2000. Volunteer activities take many forms; involvement in voluntary associations, activism focusing on social change or donations of money, supplies or blood donations (Wilson 2000). Other expressions of volunteering are mutual help in the health and social welfare field, philanthropy to others within voluntary or community organizations. Volunteers in hospitals, schools, religious organizations, sport clubs and other community organizations all contribute to the breadth and effectiveness of services (Hiatt & Jones 1998). Thus, volunteers, apart from their contribution to the social welfare, may be considered an essential human resource for many organizations. Consequently, the total dollar value of volunteer time was $11.30 per hour for 1998 and increased to $15.40 per hour in 2000 (Independent Sector 2001).

However, although the dollar value of volunteer hours increased over the past 10 years in the U.S., the percentage of volunteers decreased over the 1998-2000 period from 55.5% to 44%. Specifically, young people and men are two groups most often under represented (Bussel & Forbes 2002). Due to the signs that there is a decreasing pool of volunteers (Independent Sector, 2001), the competition for volunteer recruitment by the public sector and voluntary organizations is stronger. Volunteer managers have become increasingly concerned with the recruitment and retention of volunteers (Bussel & Forbes 2002). An important marketing technique for the recruitment and retention of volunteers that has been the focus of many studies is understanding what motivates individuals to volunteer their time and effort to different organizations (Benson et al. 1980; Clary & Orenstein 1991; Penner & Finkelstein 1998; Farmer & Fedor 2001; Bussel & Forbes 2002).

The majority of the studies conducted in this area agree that volunteers can compose homogenous subgroups depending on the different reasons or motives for joining a volunteer organization (Clary & Orenstein 1991; Penner & Finkelstein 1998). Moreover, these groups may predict the amount of help (deciding whether to help and how much) they will contribute to an organization (Clary & Miller 1986; Rosenhan 1970). Motivation issues may affect the retention of the volunteers' services due to prior studies (Clary & Miller 1986; Clary & Orenstein 1991; Penner & Finkelstein 1998). Most of them found that altruistic motives are related positively to the length of service (Rosenhan 1970; Clary & Miller 1986; Clary & Orenstein 1991). However, volunteers who receive benefits relevant to their primary motivations are most likely to be satisfied with their service and to continue to volunteer (Clary et al. 1998). These findings indicate that some volunteer motivations may predict serious intention of involvement in a volunteer activity

and maybe these motivations are the ones to be pursued by the organizations in order to recruit their volunteers. Thus, from an applied perspective, it is important to learn about the factors that lead people to volunteer in different organizations, to understand these factors and use them successfully in the planning, recruiting, and managing process.

Findings from several studies report that volunteering is gender specific, with more women than men volunteering (Bussel & Forbes 2002; Independent Sector 1998) Clary and his colleagues (1998) analyzed the survey data on volunteerism in the U.S and explored the role of motivations in relation to gender differences and found that females assigned more importance to all six motivations of the VFI (values, understanding, social, career, protective, and enhancement) than did males. However, they found that men and women assigned the same importance on the six functions, with the highest rated motives being Values, Enhancement, and Social, and the lowest rated motives being Understanding, Protective, and Career (Clary et al. 1998).

Volunteering in different organizations is a type of students' extracurricular activities. A review of 20 studies of the personality characteristics of community volunteers for students' volunteer motivations concluded that volunteers had higher moral standards, had higher self-esteem, were more empathic, and were more emotionally stable than non-volunteer students (Allen & Rushton 1983). Fitch (1987) reported that students volunteered for both egoistic and altruistic reasons. Fitch (1991) did a study to determine if there are characteristics that distinguish student volunteers from other students who are involved in extracurricular activities not of a service nature and from those who are not involved at all. Students involved in service were significantly different from both of the other groups on all three scales, scoring higher on Conformity (doing what is actually correct and conform to regulations) and Benevolence (helping the unfortunate and doing things for others) and lower on Independence (being able to do things in one's way and being free to make one's own decisions).

There are different approaches to measure volunteers' motivations, but the classic issue in the literature concerns whether the helper's motives are altruistic as opposed to egoistic. The one-factor model is the unidimensional model that suggests that volunteers act from a combination of motives described as a meaningful whole and not from a single motive or a category of motives (Cnaan & Goldberg-Glen 1991; Luciani 1993). Conversely, other researchers argue that people have more than one reason for volunteering (Unger 1991; Omoto & Snyder 1995; Penner & Finkelstein 1998). The two-factor model suggests that individuals volunteer for two reasons: 1) for concerns to others (altruistic motives); and 2) for themselves (egoistic motives). One of the most promising strategies for uncovering the motivational forces underlying an activity like volunteering comes from functional theories or beliefs and behaviors. This approach points that similar beliefs or similar behaviors may well serve different psychological functions for different people. Hence, in volunteering, people engage in volunteer work in order to achieve important psychological goals, and that different individuals will be seeking to satisfy different motivations through volunteer activity (Clary et al. 1998). Recently, Clary, Snyder, and their colleagues have been applying the functional approach to the motivations underlying involvement in volunteer work (Clary & Snyder 1991; Clary et al. 1992; Clary et al. 1994; Clary et al., 1995). This work has resulted in the identification of six categories of motivations or psychological functions that may be served by volunteering.

The functional approach to volunteerism (Clary et al. 1998) suggests that people may be attempting to satisfy a Values function, whereby they participate in volunteer work to express and act on values important to the self (e.g. humanitarian values or altruistic concerns). In the case of the Career function, some people engage in volunteer work to gain experiences that will benefit their careers. For others, volunteering helps them to increase their knowledge of the world and to develop and practice skills that might otherwise go unpracticed, thus satisfying an Understanding function. Other people view volunteer work as an opportunity to help them fit in and get along with social groups that are important to them, thus serving a Social function. However, for some individuals volunteer work serves the purpose of allowing the individual to engage in psychological development and enhance their esteem, thereby satisfying an Enhancement function. Finally, some people attempt to satisfy a Protective function and engage in volunteer work to cope with inner anxieties and conflicts, thus affording some protection for the ego (e.g. to reduce feelings of guilt, to combat feelings of inferiority) (Clary et al. 1998).

In this study motivational differences between important subgroups were investigated. Therefore, the objectives of this study were to examine the motivational differences for volunteering between: 1) volunteer and non-volunteer college students; 2) male and female college students; and 3) college students pursuing a service-oriented major versus college students pursuing a non-service oriented major.

## 2.0 Research Participants

The sample consisted of 437 undergraduate students enrolled in classes at six departments of SUNY College at Brockport: Psychology, Recreation and Leisure Studies, Nursing, Business and Administration, Communications, and Biology. The research sample was divided into six groups. Students who had volunteered at least once in their life (Group A, nA=373), students who had never volunteered in their life (Group B, nB=64), female students (Group C nC=278), male students (Group D, nD=159), students pursuing a service-oriented college major (Psychology, Recreation and Leisure Studies, and Nursing) (Group E, nE=169) and students pursuing a non-service oriented college major (Business and Administration, Communications, and Biology) (Group F, nF=177). Service-oriented majors were those majors that would most likely lead to professions where people will have to work in social and customer service settings towards the welfare of different population groups (children, seniors, etc.). Non-service oriented majors were those majors who would most likely lead to highly ordered professions, both verbal and numerical and probably in an office setting.

## 3.0 Procedure and Measures

A two-part, self-administered questionnaire was distributed to 17 academic sessions within the six departments. For most of the sessions, students completed the survey at the beginning of the class, whereas for the rest of the sessions, the students completed the survey during their spare time and returned it the next session. The first page of the survey was an informed consent document, indicating that the survey is voluntary and anonymous. The first part of the questionnaire was the six scale (Values, Career, Understanding, Social, Enhancement, and Protective) of the Volunteer Functions Inventory (VFI) (Clary et al. 1998). The VFI asked students 30 reasons for volunteering-volunteers were asked to indicate the importance of each reason for volunteering. Particularly, respondents were asked to rate each reason from 1 to 4, respectively, as not at all important, not too important, somewhat important, and very important. The second part of the questionnaire included sociodemographic questions (gender, major, academic year) and questions about the student's previous volunteer experience (if they had any volunteering activity in their life, how many hours they volunteered every week, areas of volunteering etc.)

## 4.0 Data Analysis

In order to examine the motivational differences between volunteers and non-volunteers (Group A vs. Group B), male students and female students (Group C vs. Group D), and students pursuing a service-oriented major and students pursuing a non-service oriented major (Group E vs. Group F) a series of t-tests were performed. For the first t-test the grouping variable was Experience (Group A vs. Group B), then Gender (Group C vs. Group D), and finally Major (Group E vs. Group F), and the test variables for all the t-tests were the six functions of the VFI (Values, Career, Understanding, Social, Enhancement, and Protective). Moreover, a calculation of the mean scores for each function for all the groups was performed to find out which function was the most important within each group.

## 5.0 Results

The results from the series of t-tests that compared the six motivational functions of the respondents who reported some volunteering in the past with those who reported no volunteering at all (Group A vs. Group B) demonstrated interesting findings (Table 1). Group A and Group B differed on three of the six motivations, with students in Group A reporting greater levels (* when a=.05 and ** when a=.001) of Values (p=.006*), Understanding (p=.000**), and Enhancement (p=.013*). Thus, the Values, Enhancement and Understanding functions of the VFI distinguished those who had serves as volunteers at least once in their life from those who had not participated in any voluntary activity in their lifetime. In addition, according to the mean scores for each function, the importance of the six motivations was not the same for Group A and Group B, with the highest rated function for Group A being Values and for Group B Career.

The t -test results that compared the motivational difference between female and male students (Group

**Table 1.—Mean Values and T-Test Results of Volunteers VS Non-Volunteers on Their Motivations to Volunteer**

| VFI Scale | Volunteers | Nonvolunteers | T-STAT | P-Value |
|---|---|---|---|---|
| Protective | 10.23 | 9.98 | -.560 | .117 |
| Values | 15.91 | 14.11 | -4.005 | .006** |
| Career | 14.87 | 15.19 | .682 | .301 |
| Social | 10.42 | 9.77 | -1.515 | .171 |
| Understanding | 15.17 | 14.06 | -2.486 | .000** |
| Enhancement | 13.22 | 12.34 | -1.900 | .013* |

*, ** denote significance at the 5% and 1% levels respectively

**Table 2.—Mean Values and T-Test Results of Males VS Females on Their Motivations to Volunteer**

| VFI Scale | Male | Female | T-STAT | P-Value |
|---|---|---|---|---|
| Protective | 9.54 | 10.57 | -3.192 | .085 |
| Values | 13.92 | 16.64 | -8.763 | .000** |
| Career | 14.36 | 15.23 | -2.563 | .054 |
| Social | 9.92 | 10.55 | -1.983 | .462 |
| Understanding | 13.61 | 15.81 | -7.039 | .007** |
| Enhancement | 11.77 | 13.85 | -6.361 | .031* |

*, ** denote significance at the 5% and 1% levels respectively

**Table 3.—Mean Values and T-Test Results of Service VS Non-Service Oriented Majors on Their Motivations to Volunteer**

| VFI Scale | Service | Non-service | T-STAT | P-Value |
|---|---|---|---|---|
| Protective | 10.31 | 9.87 | -1.263 | .091 |
| Values | 16.43 | 14.78 | -4.726 | .002* |
| Career | 14.83 | 14.85 | .051 | .953 |
| Social | 10.31 | 10.22 | -.272 | .441 |
| Understanding | 15.59 | 14.29 | -3.779 | .010* |
| Enhancement | 13.54 | 12.49 | -2.922 | .077 |

* denote significance at the 1% level

C vs. Group D) and showed that students in Group C assigned more importance to the Values (p= .000**), Understanding (p= .007*), and Enhancement (p= .031*) functions of the VFI (Table 2). Thus, the Values, Enhancement and Understanding functions of the VFI distinguished female students from male students. Additionally, according to the mean scores for each function, the importance of the six motivations was not the same for Group C and Group D, with the highest rated function for Group C being Values and for Group D Career.

Finally, the results from the t-tests that compared the six motivational functions of the respondents who were pursuing a service-oriented college major with those who were pursuing a non-service-oriented major (Group E vs. Group F) showed that students in Group E assigned more importance to the Values (p= .002*) function of the VFI (Table 3). Moreover, according to the mean scores for each function, the importance of the six motivations was not the same for Group E and Group F with the highest rated function for Group E being Values and for Group F Career.

## 6.0 Discussion

According to this study's findings, motivational differences for volunteering do exist between volunteer and non-volunteer students, female and male students, and students pursuing a service-oriented major and students pursuing a non-service-oriented major. Students who had volunteered at some point in their life assigned significantly more importance to the Values, Understanding and Enhancement function than students who had never volunteered in their life. These findings are partially consisted with other studies' findings that reported both altruistic and egoistic reasons for volunteering among volunteers (Clary et al. 1992; Penner & Finkelstein 1998). However, these research findings are inconsistent with other researches' reports that found that the Social function was also very important for volunteering for volunteers (Fitch 1991; Clary et al. 1998).

The Values, Understanding, and Enhancement function were assigned significantly more important for the female students in comparison to the male students. These findings on the Values function fit the traditional feminine stereotype that women are more caring, emotional and service-oriented that men. These study's findings are partially consisted with the findings from a National survey (Clary et al. 1998). Clary et al. (1998) found that women assigned more importance to five of the six motivational functions of the VFI, adding the Social and the Protective function. Fitch (1987) found no significant gender differences in motivations for volunteering among college students. Penner and Finkelstein (1998) reported that female volunteers scored lower than males both on the measures of altruistic motives and egoistic motives.

Service-oriented major students assigned more importance to the Values function. An interpretation of this finding might be that the Values function is "stronger" among the service-oriented majors due to the nature of their coursework and career orientation. Service-oriented majors are preparing mostly for careers in the helping professions. The fact that there were no significant differences between the two groups of college majors and the other VFI functions could suggest that a combination of functions lead those individuals to volunteer and that the type of college major (service vs. non-service oriented) cannot distinguish those motivations. Because other studies that have compared motivations for volunteering among different college majors classified the academic majors differently, no reasonable comparisons could be made to these findings.

## 7.0 Implications for Practice

Clary et al. (1998) suggest that people can be recruited into volunteerism by appealing to their own psychological functions. College students are more likely to express an intend to volunteer when they are exposed to persuasive messages that are tailored to the most salient motive for volunteering (Clary et al. 1998). According to the findings of this study, Values play the biggest role in motivating an individual to volunteer, especially when these individuals are women and service-oriented major students. Volunteer recruitment messages for everyone should include Values statements and benefits. Moreover, practitioners might want to develop messages identifying direct benefits to personal development and positive feelings (Understanding and Enhancement functions), due to the fact that these functions were more important to volunteer than the non-volunteer students. Volunteer coordinators who are seeking to recruit college students, after they target their potential volunteers among college students, they can use, accordingly, the findings on the VFI to develop appeals that emphasize these functions and recruit the volunteers. For example, if an organization is looking to recruit women students, they should develop persuasive messages that emphasize Values, Enhancement, and Understanding functions.

Finally, these findings might enable colleges and universities to better market volunteer opportunities to students without the use of a formal requirement incentive such as academic credit that might lower volunteering intentions (Stukas et al. 1999). After all, aside from volunteerism's contribution to the social welfare, students who participate in extracurricular activities are less likely to drop out and more likely to be satisfied with their college experiences than are non-participants (Astin 1977, 1984a, 1984b).

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# VALIDATING LEVEL OF DEVELOPMENT THROUGH SELF-ASSESSMENTS OF ADVENTURE RECREATIONISTS

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## Abstract

The purpose of this study was to validate and extend the use of a self-selected single measure of level of development to adventure recreationists in a college course format. A second objective was to discover if a two-week experience could positively change participants' perceived levels of development. Therefore, changes in levels of development were examined over time by identifying which aspects changed significantly from pre- to posttest. Results showed that a single measure of level of development can be used to represent corresponding levels of experience, participation, skill, equipment, knowledge, and commitment for beginner, intermediate, and advanced adventure recreationists. Furthermore, a 2-week course does affect their growth and development in terms of all six factors. Those at the earliest stages of development are more likely to perceive these changes as strong enough to warrant a change in developmental stage, and are more cognizant of changes in knowledge and participation levels.

## 1.0 Introduction

Studies focusing on developmental levels of outdoor adventure (or risk) recreation behavior often incorporate Ewert's (1989) Adventure Recreation Model (ARM) (Ewert & Hollenhorst 1989; Anderson et al. 2000), where development is characterized by three variables: level of engagement/experience, frequency of participation, and skill level (see Fig. 1). Other studies of growth and development in leisure activities rely on Bryan's theory of specialization (1977, 1979) or Stebbins' theory of serious leisure and amateur/professional growth (1979, 1992). Todd combined both theories, providing evidence that a single self-selected measure of "level of development" was significantly related to indices measuring not only experience, participation, and skill (the three items identified in the ARM), but also indices measuring equipment, knowledge, amateur/professional development, and commitment. For both quiltmakers (Todd 1997) and SCUBA divers (Todd 2000), these factors tended to increase from beginner to expert and then decrease for post-experts.

In a subsequent longitudinal study, Todd (1999) tracked changes in level of development for 230 quiltmakers. While two-thirds of the quiltmakers remained at the same level of development over a 2-year period (1996 to 1998), one-fourth of the respondents actually progressed to a higher level of development, and some (13%) even retrogressed to a previous stage. When changes in related factors were examined in relationship to change in developmental level, the percentage of quiltmakers who perceived a positive change in perceived skill, knowledge,

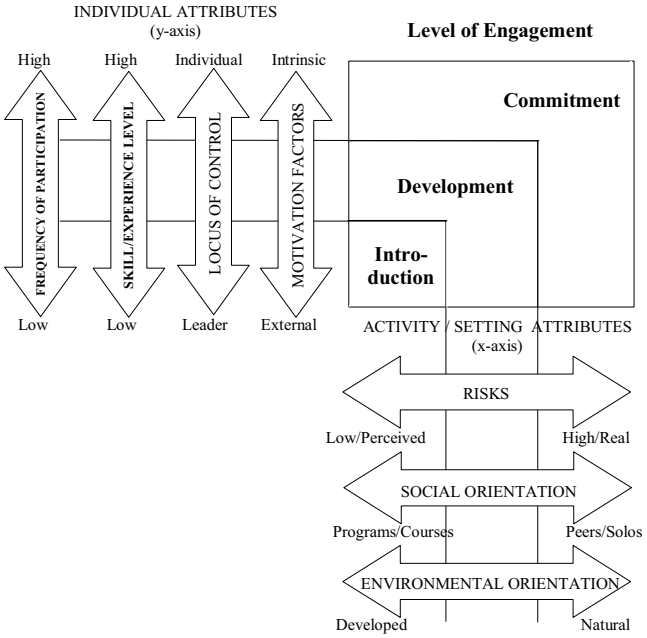


Figure 1.—The Adventure Recreation Model (Ewert & Hollenhorst 1989).

and experience level was highest for those who progressed to a higher level of development, followed by those who stayed at the same level and those who had retrogressed, respectively. On the other hand, the percentage of quiltmakers who perceived no change or a decrease in these factors was greatest for those who had retrogressed to a previous stage of development, followed by those who remained at the same stage and those who had progressed, respectively.

The purposes of this study were three-fold: 1) to validate and extend the use of the self-selected "level of development" measure beyond quiltmakers and SCUBA divers, by applying the construct to outdoor adventure recreationists in a college course format; 2) to document changes in level of development over a shorter period of time (i.e., a 2-week period between the administration of pre- and posttests, instead of the 2-year gap between data collection points used in the 1999 Todd study); and 3) to identify which aspects of level of development changed significantly over time (from pre- to post-test).

## 2.0 Methods

Subjects were 76 undergraduate recreation majors from two separate, but similar, summer session Outdoor Education Practicum courses, one held in 2002 (n=36) and the other in 2003 (n=40). Fifty-three percent of the subjects were female, and ages ranged from 18 to 43, with an average age of 22. The 13-day course included 7 days in a camp-like resident outdoor education setting, with amenities, dining facilities, and a structured program. The course also included a 6-day wilderness canoe trip in New York's Adirondack Park. Subjects completed a written questionnaire prior to the start of the course and again on the last full day of the course.

Replicating Todd's measure (2000), respondents characterized their current stages of development in outdoor adventure recreation as either beginner, intermediate, advanced, expert, or "post-expert" – not the expert I once was. As shown in Table 1, the following six factors predicted to be related to or encompassed by level of development were operationalized by a total of 19 scaled items: experience level (3 scaled measures), perceived skill (2), frequency of participation (5), knowledge (1), equipment (2), and commitment (6). Three of these 19 items (engagement, skill, and participation) were measured by Ewert & Hollenhorst's 1989 Adventure Recreation Model Instrument. For commitment, five items (central life interest, self-identity, image, importance, and self-esteem) were modeled after measures used by McIntyre & Pigram (1992) in their study of campers' enduring involvement. The remaining items were based on measures used by Todd to reflect factors related to quiltmakers' (1997) and divers' (2000) levels of development. However, each successive study winnowed down the number of items used, based on the strength of prior results: while 144 individual items assessed factors related to quiltmakers' levels of development, approximately 60 items were used in the diver study, and only 19 were employed in the current study.

## 3.0 Results

As expected, given the nature of the study design, the sample was positively skewed on the pretest in terms of level of development with 16 beginners, 38 intermediates, 22 advanced, and no experts or post-experts. These three groups were subsequently compared on the factors hypothesized to be positively related to level of development. When mean scores of each of the 19 measures were compared among adventure recreationists using one-way analysis of variance followed by Tukey's HSD post hoc test, 15 of the 19 items significantly increased ($p < .05$) from beginner through intermediate and advanced in a linear fashion (Table 2).

Chi-square analysis showed that although two-thirds of the respondents remained at the same level of development by the end of the 2-week course (Table 3), one-third perceived a change in status. By the post-test, 10 of 15 beginners progressed to an intermediate stage of development, 10 of 36 intermediates changed their ratings to advanced, and 1 of 22 advanced respondents subsequently became an expert. Interestingly, three respondents actually recorded that they had regressed to a lower stage of development, perhaps due to a tendency to over-estimate level of development at the start of the project. Due to low numbers, the three respondents who had retrogressed were dropped from the remaining analyses.

When pretest scores were compared to posttest scores of all respondents using dependent t-tests, 9 of the 19 individual items significantly increased over time ($p < .05$), with all six areas of development represented

**Table 1.—Operational measures of indicator factors.**

| INDICATOR FACTOR<br>Measures | Survey questions<br>*scales* |
|---|---|
| EXPERIENCE | |
| Engagement<br>*(9-pt. scale)* | As an outdoor adventurer, I would consider myself to have had…<br>*(1) little or no experience to (9) a great deal of experience* |
| Experience<br>*(4-pt. scale)* | How would you describe yourself in regards to your degree of outdoor adventure experience?<br>*(1) low, (2) moderate, (3) moderately high, or (4) extremely high* |
| Lifetime years<br>*(6-pt. scale)* | How many years during your lifetime have you been involved in outdoor adventure recreation?<br>*(1) less than a year, (2) 1 to 2 years, (3) 3 to 5 years, (4) 6 to 10 years, (5) 11 to 15 years, or (6) more than 15 years* |
| SKILL | |
| Skill<br>*(9-pt. scale)* | As an outdoor adventurer, I would consider myself to be a(n)…<br>*(1) beginner with little or no skills to (9) expert, highly skilled* |
| Skill level<br>*(4-pt. scale)* | How would you describe yourself in regards to your skill level as an outdoor adventure recreationist? *(1) low, (2) moderate, (3) moderately high, or (4) extremely high* |
| PARTICIPATION | |
| Frequency<br>*(5-pt. scale)* | How many adventure experiences have you had in the last two years?<br>*(0) none, (1) 1-2, (2) 3-6, (3) 7-10, or (4) more than 10* |
| Participation<br>*(4-pt. scale)* | How would you describe yourself in regards to your frequency of participation in outdoor adventure recreation?<br>*(1) low, (2) moderate, (3) moderately high, or (4) extremely high* |
| COOP interest<br>*(6-pt. scale)* | Which of the following best describes your interest in enrolling in or attending Cortland Outdoor Opportunities Program (COOP) courses or activities in the future? (0) N/A, (1)No interest at all, *(2) low interest, (3) moderate interest, (4) moderately high interest, or (5) extremely high interest* |
| COOP activities<br>*(4-pt. scale)* | How many COOP courses or activities have you enrolled in or attended?<br>*(1) none, (2) 1-2, (3) 3-5, or (4) 6 or more* |
| Desired future level<br>*(4-pt. scale)* | Which of the following best describes your desired level of participation in outdoor adventure recreation in the future? *(1) I want to increase my level, (2) I want to maintain my level, (3) I want to decrease my level, or (4) I do not plan to participate in the future* |
| KNOWLEDGE | |
| Knowledge<br>*(4-pt. scale)* | How would you describe yourself in regards to your level of outdoor adventure-related knowledge? *(1) low, (2) moderate, (3) moderately high, or (4) extremely high* |
| EQUIPMENT | |
| Equipment inventory<br>*(4-pt. scale)* | How would you describe yourself in regards to your inventory of outdoor adventure equipment?<br>*(1) low, (2) moderate, (3) moderately high, or (4) extremely high* |
| Plan to buy<br>*(5-pt. scale)* | How much outdoor adventure-related equipment do you plan to buy in the next 12 months?<br>*(1) none, (2) some/a few items, (3) a moderate amount, (4) many, or (5) a high number of items* |
| COMMITMENT | |
| Commitment<br>*(4-pt. scale)* | How would you describe yourself in regards to your commitment to outdoor adventure recreation? *(1) low, (2) moderate, (3) moderately high, or (4) extremely high* |
| Central life interest<br>*(9-pt. scale)* | I find that a lot of my life is organized around outdoor adventure recreation.<br>*(1) strongly disagree to (9) strongly agree* |
| Self-identity<br>*(9-pt. scale)* | Outdoor adventure recreation says a lot about who I am.<br>*(1) strongly disagree to (9) strongly agree* |
| Image<br>*(9-pt. scale)* | Many people think of me in terms of being an outdoor adventure recreationist.<br>*(1) strongly disagree to (9) strongly agree* |
| Importance<br>*(9-pt. scale)* | Outdoor adventure recreation is very important to me.<br>*(1) strongly disagree to (9) strongly agree* |
| Self-esteem<br>*(9-pt. scale)* | Participation in outdoor adventure recreation contributes to my self-esteem.<br>*(1) strongly disagree to (9) strongly agree* |

**Table 2.—One-way analysis of variance results: Indicator items by level of development.**

| INDICATOR FACTOR Measures | Stage of Development Total (n=76) | Beginner (n=16) | Intermediate (n=38) | Advanced (n=22) | F-value[1] | p-value | # of differences detected |
|---|---|---|---|---|---|---|---|
| EXPERIENCE | | | | | | | |
| Engagement *(9-pt. scale)* | 4.76 | 2.06a | 4.87b | 6.55c | 52.21 | .000 | 3 |
| Experience *(4-pt. scale)* | 2.11 | 1.19a | 2.05b | 2.86c | 35.57 | .000 | 3 |
| Lifetime years *(6-pt. scale)* | 3.66 | 1.88a | 3.74b | 4.82c | 22.59 | .000 | 3 |
| SKILL | | | | | | | |
| Skill *(9-pt. scale)* | 4.74 | 2.13a | 4.79b | 6.55c | 67.83 | .000 | 3 |
| Skill level *(4-pt. scale)* | 2.18 | 1.38a | 2.11b | 2.91c | 38.44 | .000 | 3 |
| PARTICIPATION | | | | | | | |
| Frequency *(5-pt. scale)* | 2.08 | 0.75a | 2.03b | 3.14c | 30.90 | .000 | 3 |
| Participation *(4-pt. scale)* | 2.18 | 1.25a | 2.11b | 3.00c | 20.81 | .000 | 3 |
| COOP interest *(6-pt. scale)* | 3.58 | 2.44a | 3.82b | 4.11b | 9.37 | .001 | 2 |
| COOP activities *(4-pt. scale)* | 1.70 | 1.22a | 1.64ab | 2.33b | 5.16 | .011 | 1 |
| Desired future level *(4-pt. scale)* | 1.16 | 1.40 | 1.14 | 1.05 | 1.50 | .231 | n.s. |
| KNOWLEDGE | | | | | | | |
| Knowledge *(4-pt. scale)* | 2.15 | 1.06a | 2.16b | 2.91c | 41.48 | .000 | 3 |
| EQUIPMENT | | | | | | | |
| Equipment inventory *(4-pt. scale)* | 2.01 | 1.25a | 1.79a | 2.95b | 26.52 | .000 | 2 |
| Plan to buy *(5-pt. scale)* | 2.76 | 2.44 | 2.89 | 2.77 | 1.74 | .182 | n.s. |
| COMMITMENT | | | | | | | |
| Commitment *(4-pt. scale)* | 2.35 | 1.38a | 2.29b | 3.19c | 22.26 | .000 | 3 |
| Central life interest *(9-pt. scale)* | 3.34 | 1.56a | 3.34b | 4.64b | 9.52 | .000 | 2 |
| Self-identity *(9-pt. scale)* | 3.71 | 2.00a | 3.55a | 5.23b | 8.03 | .001 | 2 |
| Image *(9-pt. scale)* | 3.26 | 1.44a | 3.21b | 4.32b | 7.75 | .001 | 2 |
| Importance *(9-pt. scale)* | 4.66 | 3.57 | 4.63 | 5.50 | 2.46 | .092 | n.s. |
| Self-esteem *(9-pt. scale)* | 5.11 | 5.20 | 5.00 | 5.24 | 0.06 | .941 | n.s. |

Values are mean scores on various scales (see Table 1).
[1]F-values are a result of one-way analysis of variance; means with different superscripts are significantly different at the .05 level using Tukey- HSD post hoc test.

**Table 3.—Chi-square results: Pretest level of development by posttest level of development.**

| Count Column % | Pretest *Stage of Development* Beginner | Intermediate | Advanced | Row Total |
|---|---|---|---|---|
| Beginner | 5 (33.3) | 1 (2.8) | | 6 (8.2) |
| Intermediate | 10 (66.7) | 25 (69.4) | 2 (9.1) | 37 (50.7) |
| Advanced | | 10 (27.8) | 19 (86.4) | 29 (39.7) |
| Expert | | | 1 (4.5) | 1 (1.4) |
| Column Total | 15 (20.5) | 36 (49.3) | 22 (30.1) | 73 (100.0) |

Chi-square = 47.00 (p<.001)

(see Table 4). Interestingly, one item (self-identity) significantly decreased over time, again perhaps due to students' initial tendency to over-estimate this item.

Splitting the sample into those who stayed at the same level of development and those who increased their levels of development resulted in some variation. Measures of engagement, experience, skill, equipment inventory, and image increased from pre- to posttest for both groups, but frequency, COOP interest, knowledge, and central life interest increased only for those who identified a perceived change in stage of development. Interestingly, this group also recorded a significant decrease in self-identity, so the two-week course provided a "reality check" for this group in particular. For those who remained at the same level of development, eight items still increased over time, but apparently not enough for them to perceive an actual change in stage of development. The Outdoor Education Practicum particularly impacted them in terms of commitment, desired future level, and participation; these three items did not increase significantly for students who progressed to a higher level of development. Incidentally, independent t-tests revealed that only changes in skill and frequency from pre- to post-test were significantly greater for those who changed levels of development compared to those who stayed at the same stage.

## 4.0 Conclusions and Implications

Although limitations of the sample restrict generalizations of the results of this study, several conclusions may be drawn. First, a single measure of level of development can be used with confidence to represent corresponding levels of experience, participation, skill, equipment, knowledge, and commitment for beginner, intermediate, and advanced adventure recreationists. Although a more diverse sample could verify if experts' and post-experts' characteristics follow the pattern established by Todd for quiltmakers (1997) and SCUBA divers (2000), once again, this study reinforced that level of development adequately represents a holistic view of participants' growth. Secondly, an intense, two-week course does affect these adventure recreationists' growth and development in terms of all six factors. Those at the earliest stages of development are more likely to perceive these changes as strong enough to warrant a change in developmental stage (e.g., beginner to intermediate; and intermediate to advanced, to a lesser degree); they are also more cognizant of changes in knowledge and frequency of participation.

It is hoped that resource managers, tourism professionals, camp administrators, instructors, and club organizers may improve their understanding of how adventure recreationists differ by developmental levels in order to better facilitate their needs, experiences, and growth. As suggested by Todd & Graefe (2002), particularly in the beginning and post-expert stages of development when participants are most vulnerable to dropping out of the activity, possible strategies and solutions to adapt or overcome various structural, interpersonal, and intrapersonal constraints could be employed. Future research in this area could thus link adventure recreationists' growth and development to constraints and discontinuance behavior, be designed as extended longitudinal studies (e.g., 2 years instead of 2 weeks), and include experts and post-experts.

**Table 4.—Dependent t-test results: Pre/posttest indicator factors by change in level of development.**

| | ALL (n = 70) | | | Did not change level of development from pre- to posttest (n = 49) | | | Increased level of development from pre- to posttest (n = 21) | | |
|---|---|---|---|---|---|---|---|---|---|
| INDICATOR FACTOR<br>Measures | Pretest Mean (sd) | *Posttest* Mean (sd) | t-value | Pretest Mean (sd) | *Posttest* Mean (sd) | t-value | Pretest Mean (sd) | *Posttest* Mean (sd) | t-value |
| EXPERIENCE | | | | | | | | | |
| Engagement | 4.81 | 6.26 | 7.00** | 5.06 | 6.45 | 6.10** | 4.24 | 5.81 | 3.53** |
| *(9-pt. scale)* | (2.07) | (1.59) | | (1.92) | (1.49) | | (2.32) | (1.75) | |
| Experience | 2.11 | 2.36 | 3.14** | 2.20 | 2.43 | 2.29* | 1.90 | 2.19 | 2.34* |
| (4-pt. scale) | (0.84) | (0.76) | | (0.84) | (0.74) | | (0.83) | (0.81) | |
| Lifetime years | 3.74 | 3.67 | 0.57 | 4.02 | 3.94 | 0.54 | 3.10 | 3.05 | 0.20 |
| *(6-pt. scale)* | (1.68) | (1.71) | | (1.65) | (1.65) | | (1.61) | (1.72) | |
| SKILL | | | | | | | | | |
| Skill[1] | 4.83 | 5.91 | 6.44** | 5.14 | 5.96 | 4.44** | 4.10 | 5.81 | 5.16** |
| *(9-pt. scale)* | (1.94) | (1.33) | | (1.81) | (1.37) | | (2.07) | (1.25) | |
| Skill level | 2.34 | 2.21 | 1.83 | 2.39 | 2.31 | 0.94 | 2.24 | 2.00 | 2.02 |
| *(4-pt. scale)* | (0.72) | (0.75) | | (0.73) | (0.80) | | (0.70) | (0.63) | |
| PARTICIPATION | | | | | | | | | |
| Frequency[2] | 2.05 | 2.17 | 1.47 | 2.29 | 2.29 | 0.00 | 1.57 | 1.95 | 2.61* |
| *(5-pt. scale)* | (1.22) | (1.04) | | (1.24) | (1.04) | | (1.08) | (1.02) | |
| Participation | 2.21 | 2.43 | 2.30* | 2.27 | 2.53 | 2.37* | 2.10 | 2.19 | 0.57 |
| *(4-pt. scale)* | (1.04) | (0.93) | | (1.10) | (0.94) | | (0.94) | (0.87) | |
| COOP interest | 3.55 | 3.74 | 0.98 | 3.84 | 3.84 | 0.00 | 3.00 | 3.54 | 2.50* |
| *(6-pt. scale)* | (1.08) | (1.11) | | (1.03) | (1.18) | | (1.00) | (0.97) | |
| COOP activities | 1.69 | 1.77 | 0.68 | 1.80 | 1.80 | 0.00 | 1.50 | 1.71 | 1.15 |
| *(4-pt. scale)* | (0.83) | (0.78) | | (0.82) | (0.71) | | (0.86) | (0.91) | |
| Desired future level | 1.12 | 1.17 | 0.77 | 1.11 | 1.23 | 2.35* | 1.14 | 1.05 | 0.62 |
| *(4-pt. scale)* | (0.55) | (0.49) | | (0.49) | (0.57) | | (0.66) | (0.22) | |
| KNOWLEDGE | | | | | | | | | |
| Knowledge | 2.16 | 2.40 | 2.86** | 2.31 | 2.49 | 1.84 | 1.81 | 2.19 | 2.36* |
| *(4-pt. scale)* | (0.90) | (0.67) | | (0.87) | (0.65) | | (0.87) | (0.68) | |
| EQUIPMENT | | | | | | | | | |
| Equipment inventory | 2.01 | 2.51 | 5.27** | 2.12 | 2.57 | 3.73** | 1.76 | 2.38 | 4.24** |
| *(4-pt. scale)* | (1.00) | (0.88) | | (1.05) | (0.87) | | (0.83) | (0.92) | |
| Plan to buy | 2.75 | 2.77 | 0.13 | 2.79 | 2.79 | 0.00 | 2.67 | 2.71 | 0.29 |
| *(5-pt. scale)* | (0.86) | (0.81) | | (0.92) | (0.87) | | (0.73) | (0.64) | |
| COMMITMENT | | | | | | | | | |
| Commitment | 2.36 | 2.68 | 3.26** | 2.42 | 2.75 | 2.77** | 2.24 | 2.52 | 1.67 |
| *(4-pt. scale)* | (1.04) | (0.93) | | (1.07) | (0.93) | | (1.00) | (0.93) | |
| Central life interest | 5.69 | 4.76 | 2.54** | 3.51 | 4.29 | 1.61 | 2.86 | 4.14 | 2.69** |
| *(9-pt. scale)* | (2.42) | (2.43) | | (2.38) | (2.48) | | (2.50) | (2.37) | |
| Self-identity | 4.27 | 5.36 | 2.91** | 5.06 | 4.12 | 1.92 | 3.95 | 2.52 | 2.80** |
| *(9-pt. scale)* | (2.71) | (2.72) | | (2.70) | (2.73) | | (2.62) | (2.42) | |
| Image | 5.91 | 4.71 | 3.41** | 3.20 | 4.29 | 2.47* | 2.81 | 4.29 | 2.53* |
| *(9-pt. scale)* | (2.45) | (2.64) | | (2.54) | (2.72) | | (2.25) | (2.49) | |
| Importance | 4.38 | 3.90 | 1.16 | 4.94 | 5.40 | 0.85 | 3.90 | 4.43 | 0.92 |
| *(9-pt. scale)* | (2.75) | (2.72) | | (2.79) | (2.76) | | (2.57) | (2.58) | |
| Self-esteem | 3.84 | 3.49 | 0.84 | 5.15 | 5.81 | 1.29 | 5.20 | 4.80 | 0.56 |
| *(9-pt. scale)* | (2.74) | (2.57) | | (2.85) | (2.47) | | (2.53) | (2.73) | |

Values are mean scores on various scales (see Table 1). Means that are highlighted are significantly different (*$p < .05$, **$p < .01$).
[1]Independent t-tests revealed that changes in skill from pre- to posttest were significantly greater for those who changed levels of development (1.71 mean gain score) compared to those who stayed at the same stage (.82 mean gain score) ($t=2.53$, $p<.01$).
[2]Independent t-tests revealed that changes in frequency from pre- to posttest were significantly greater for those who changed levels of development (.38 mean gain score) compared to those who stayed at the same stage (.00 mean gain score) ($t=2.14$, $p<.05$).

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# *Planning and Administration*

# USING THE CASE STUDY METHOD TO EXPLORE THE POTENTIALS AND PITFALLS OF FAST FERRY IN ROCHESTER, NY

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## Abstract

Tourism is the largest service sector industries worldwide and is viewed as a vehicle for addressing pressing economic problems in society. Yet, for all its economic potentials, tourism development is a haven for social and ecological concerns. This paper used the case study method to examine the potentials and pitfalls of fast ferry development and service in Lake Ontario, connecting the cities of Rochester, NY with Toronto, ON. Through a method that applied a series of interviews and document analyses, environmental and social concerns were expressed and addressed by stakeholders. The results showed that stakeholders were favorably predisposed to the project as a means of stimulating the local economy while at the same time bringing to the forefront the challenges of using the case study method.

## 1.0 Introduction

With the sharp downturn in manufacturing jobs in recent years, many governments and investors are turning to service sector initiatives to revitalize the economy. Foremost among these service sector activities is tourism development. This is likely influenced by the fact that worldwide, tourism is expected to generate $ 5,490.4 billion in economic activity (total demand) by the end of 2004, growing to $9,557.5 billion by 2014 and demand is expected to grow by 4.5% annually between 2004 and 2014 (World Travel and Tourism Council 2004). Corresponding employment is estimated at 214,697,000 jobs in 2004, representing 8.1% of total employment, growing to 259,930,000, 8.6% of total employment by 2014. In the United States alone tourism is expected to generate $1,460.1 billion in economic activities and creating 16,688,100 jobs, 11.9% of total employment, by the end of 2004, growing to $2730.6 billion and accounting for 19,579,800, jobs, 12.6% of total employment by 2014 (World Travel and Tourism Council 2004). Tourism is the second largest industry in New York State and a major factor in the Rochester economy.

The City of Rochester and its surrounding region has been faced with economic distress since the early 1990s when Kodak and other corporations, in an attempt to compete within their markets, began a process of restructuring that resulted in loss of jobs (McLean's 1993). Given, that the region is adjacent to Lake Ontario and its proximity to the Finger Lakes, tourism was looked to as a potential source for reinvigorating the regional economy (LaBella Associates 2001). Analysis indicates that the region's leaders were correct in viewing tourism as a potential contributor to economic vitality. Mechanisms were needed to bring people (tourists) to the Rochester, Finger Lakes and Genesee Regions of New York. Canada was considered a primary source of tourists. Entrepreneurs began to analyze the possibility of recasting an old transportation system, a ferry. Ferries plied the waters of Lake Ontario from Rochester to various points in Canada from the 1880's. From 1915 until 1950 ferries carried automobiles between Coburg, ON and Rochester, NY. However, no ferries have visited the Port of Rochester for the past 54 years (Chaisson 2003).

In August 2001 the Rochester entered a lease agreement with Canadian American Transportation Systems, LLC, a limited liability company existing under the laws of the State of Delaware, to provide ferry service between Rochester and Toronto. The service will be "high speed", operating at over 50 miles/hour, accommodating approximately 750 walk-on passengers, up to 220 cars and up to 10 trucks and busses (Canadian American Transportation Systems [CATS] 2004). More than just a method of transportation, the venture is expected to be a unique travel experience, offering amenities and ambience worthy of a mini cruise ship. Importantly, the 2.25 hour port-to-port trip will act as a virtual bridge, connecting the national highway systems of Canada and the U.S., and acting as a catalyst for economic development, tourism activity and job growth on both sides of the border (Rochester Environment).

Greater Rochester is an 11 county region with a population of 1.2 million. During 2001, over 1.4 million people visited Rochester, a decline over 2000 that reflects national trends of decreased corporate travel (Rochester Business Alliance). These visitors expended $226 million. The Greater Toronto region is an area with a population of approximately 5.2 million and attracted 16.3 million visitors who spent C$3.5 billion/U.S.$2.4 billion in 2002 (Economist 2003).

The demographic disparity of these cities is apparent, thus, there is a long-standing concern over Rochester's ability to compete on a level playing field. Despite this concern, in 1990 a local Waterfront Revitalization Program (LWRP) was adopted by the City of Rochester as part of its comprehensive plan, and in 1991 the city adopted the River Harbor District into its zoning code (LaBella Associates 2001). This was intended to preserve and enhance the recreational character of the harbor at the mouth of the Genesee River and encourage tourism in the area. This, along with the ferry initiative, has resulted in the realignment and construction of infrastructure including roads, marinas parking facilities and a ferry terminal. However, the researchers believe that it is not enough to build terminals and commission state of the art vessels to transport passengers and cargo. A city as small as Rochester, competing with other large cities, is forced to devise strategies to capitalize on its attractive resources through careful packaging.

### 1.1 Rochester's Tourism Product

Water, entertainment, sports, culture and family-oriented tourist attractions are fast becoming the major draws for the leisure tourist. Both Rochester and Toronto, but particularly Rochester with a less developed tourism sector, have a tremendous opportunity to capitalize on these and other tourism-related development opportunities as well as convention and conferencing possibilities to transform the cities into destinations that can bring new leisure visitors as well as business travelers to the cities from the surrounding regions, other parts of Canada and the U.S. and overseas (City of Rochester Comprehensive Plan). The Great Lakes Information Network recognizes outdoor recreation in the Great Lakes Region as a way of life. They offer outstanding tourism and recreation opportunities, ranging from pristine wilderness activities in national parks to waterfront beaches in major cities. A well-defined four-season climate supports many types of recreation from ice fishing, skiing and snowmobiling in the winter to golf, fishing, boating and swimming in the summer. The eight Great Lakes states have about 3.7 million registered boats, or about one-third of the nation's total. The commercial and sport fishing industry is collectively valued at more than $4 billion annually. Diving on shipwrecks is a growing Great Lakes recreation pursuit, thanks to many underwater preserves and parks throughout the lakes (Great Lakes Information Network 2002).

Birding is becoming a contributor to tourism around Lake Ontario. Lake Ontario is on several major flyways, including waterfowl, hawks and songbirds (Birding.com 2004; West 2004; New York State Department of Environmental Conservation 2004). Economic figures indicate that in New York State alone there were 2.9 million birders, approximately 4,700 full and part-time jobs were supported by birding, $219 million was generated in retail sales, and $15 million was generated in state sales tax in 1998 (Dunn 1998). Specifically, both the Rochester/Genesee/Finger Lakes regions of the United States and the City of Toronto and Ontario Province in Canada offer many outdoor recreation, cultural, and historical tourist opportunities (Greater Rochester Visitors Association 2004), (Toronto Convention and Visitors Association 2004), (Ministry of Tourism and Recreation 2004), (Finger Lakes Tourism 2004).

Building on the many recreation opportunities of the area, a local summit of tourism officials was convened in January 2004 to coordinate and share strategies. One potential tourist opportunity identified, but not related to outdoor recreation was shopping as a main attraction for Canadians. Other tourist attractions mentioned were golf, wineries, and the many summer festivals. Additionally, the Fast Ferry nicknamed "The Breeze" is also considered a tourist attraction in its own right (Champagne 2004).

### 1.2 Ecological and Social Issues

It is apparent that Rochester is fully energized to take advantage of the economic potentials inherent in this ferry project. One common denominator in the proposed development appears to be Lake Ontario, a resource shared by both cities. As such, the ferry project has reenergized the environmental debate and brought the social concerns into focus. Among the key questions are the issues of air pollution, particulate matter exhaust,

wake damage, wildlife impact, noise pollution, and safety (Regan 2004). The Great Lakes with 20% of the world's surface fresh water, is recognized as one of the region's, and for that matter, one of the world's most important natural resources. It offers outstanding tourism and recreation opportunities ranging from pristine wilderness activities to highly developed recreation. Yet for all its tourism potential, size and power, the Great Lakes is fragile. Over the course of history, many types of pollution have inflicted damage and reduced recreation opportunities in the region (Great Lakes Information Network 2002).

For Rochester to take advantage of its harbor resources and to accommodate the Fast Ferry service to Toronto, it had a legal obligation to develop the harbor in accordance with the Clean Water Act of 1977. A Section 404 permit was required from the U.S. Arms Corps of Engineers for disposal of dredged material. The dredging was necessary along the west side of the Genesee River to accommodate the berth of the ferry and other large commercial passenger vessels expected to dock along the river wall. All dredging within the river wall was done hydraulically to minimize turbidity to the greatest extent possible (LaBella Associates 2001).

The Port of Rochester Harbor Improvement and Ferry Terminal Project is subject to the requirements of the NYS department of State (NYSDOS), Coastal Zone Management Program, which provides for the management of the State's coastal resources with the intent of balancing economic development with preservation. The policies are intended to permit the beneficial use of waterfront resources while preventing the loss of living resources, diminution of open space or public access to the waterfront, shoreline flooding and erosion, impairment of scenic beauty, or permanent adverse changes to ecological systems. The NYS Coastal Zone Management Program is carried out in partnership with local governments who have the primary responsibility for directly regulating land use (LaBella Associates 2001).

In addition to the environmental issues, social concerns were also addressed. The project area is located in north central Monroe County, in an area commonly known as Charlotte community within the city of Rochester. The Genesee River and the Town of Irondequoit to the east, the commercial corridor of Lake Avenue and residential neighborhoods to the west, Ontario Beach Park to the north, border the port area and residential uses at the south end. Also, on the east side of the Genesee River are the U.S. Coast Guard facilities, several private marinas and commercial businesses. Beyond these shoreline uses, areas of single family and multifamily residences commonly known as Summerville (Town of Irondequoit). The waterfront area is predominantly recreational in use (Labella Associates). The proposed project does not involve physical alteration to neighborhoods within the Charlotte community nor will it result in isolation of portions of any neighborhood, ethnic group, or low-income community. Historically the community was established through its relationship to Lake Ontario and the commercial navigation industry. At the turn of the twentieth century Charlotte was known as the "Coney Island" of Western New York. Parts of the area experienced a brief period of industrial use due to its proximity to the river and railroad tracks. Coal was a major export to Canada. However, the industry faded by the 1930s. Neighborhoods and business owners believe that the port site, in its vacant state, had been a barrier to progress. Both the residential and business communities have long supported the redevelopment of the area and have actively participated in all local planning efforts (LaBella Associates 2001).

Thus, the purpose of this study was to present an overview of the Fast Ferry Initiative in Rochester, NY, analyze the potentials and pitfalls of such development, economically, socially, and ecologically, report the results of the fast ferry development process, based on a case study, and examine the advantages and disadvantages of using the case study method in this research project.

## 2.0 Methodology

The case study being reported is a research project carried out between 2001and 2003. This method was chosen because, according to Coolican (1996), Henderson & Bialeschki (1995) and Sayer (1992) case studies are particularly good if an evaluator is examining one situation and does not wish to compare it to another situation, individual, or group. Case studies are both specific and broad as they capture many variables and include descriptions of history and context (Henderson & Bialeschki 1995). The research site is Rochester, NY. The data gathering process included interviews of stakeholders including, local residents, students, visitor association representatives, small business owners, and

government representatives; and a review of various documents. The case study process generated large amounts of data from these sources. The data was coded in order to develop an understanding of information derived, and utilized the "loose networks" (to discover those ideas from interviewees and documents that had links between them) and "tension statements" (a device to explore certain properties of those ideas that were specifically of interest to the researcher and subjects) (Gough & Scott 2000). Network is defined as a collection of nodes (Miles & Huberman 1994) or an extension of the familiar business of putting things into categories (Bliss, Monk & Ogborn 1993). Loose networks propose that networks can be used to promote analysis of any qualitative data that falls into the middle between two extremes. These extremes are, on one hand, data that are clearly idiosyncratic and unique (such as description of a particular event – in this case the fast ferry Project), and on the other hand, data that fall un-conspicuously into simple groupings (such as solutions to problems that are correct, incorrect, or incomplete (Gough & Scott 2000). In addition, elements of Henderson & Bialeschki's (1995) seven-step evaluative research process were used as follows: 1) identifying the focus of the investigation; 2) outline what needs to be studies; 3) select appropriate measurement tools; 4) develop a plan to collect the data considering effectiveness, efficiency, budget and timeframe; 5) collect all the data; 6) interpret the data; and 7) make recommendations for the study.

## 3.0 Results

One purpose of the study was to present an overview of the Fast Ferry Initiative in Rochester.The data shows that the concept is not a novel one. Rochester had a rich history in the shipping industry, primarily for industrial purposes. This new initiative is merely a shift to the service sector, with an emphasis on tourism. However, the development process was complicated because of the multiple interest groups involved (multiple government agencies, private investors, multinational governments and investors, etc.).

With regards to the economic, social and ecological potentials and pitfalls, the results of the study showed that stakeholders such as the Visitor Association, Convention and Visitors Bureau, Chamber of Commerce, Small Business, Association, Mayor's Office, and the Renaissance 2010 Tourism Committee, are favorably predisposed to the Fast Ferry Project. They concede there are risks involved; however, they are confident that the marketing plan dubbed "Two Nation Vacation" will be effective. Documents such as the environmental impact study reveal environmental concerns such as the disturbance of wildlife habitat, pollution, and wake damage. Environmental advocates expressed concern over the limited airing of the environmental issues. However, concerns were assessed and appropriately addressed by the EPA, which approved the environmental impact study. Local residents were more concerned about social issues such as traffic congestions, increased crime and overcrowding. These issues are being partially addressed with new road construction. College students, who represent a part of the transient market, were intrigued by the novelty of the Fast Ferry and would be interested in the initial experience, but were not absolutely sure if they would become repeat customers. The results also showed a potential area of conflict stemming from the fact that the west side of the developments site is owned by Rochester (Democratic) and the east side is owned by the town of Irondequoit (Republican), as well as logistical challenges associated with the cross-border issues as outlined in Figure 1 and evidenced by media coverage, particularly in Rochester, as outlined in Table 1.

The final purpose of the study was to examine the advantages and disadvantages of using the case study method for this study. Since there is no universally agreed view of the coding process in qualitative research, the researchers did not begin the process with a definitive approach in mind. Thus, the sequence of research activities was unclear. The researchers did not bring to the research setting a priori construction of the social setting of the research (Lincoln & Guba 1985) because of the uncertainties surrounding the Fast Ferry Initiative. Despite the initial challenges, the case study

**Table 1.—Results of Rochester Press Coverage**

| Year | Total | Positive | Neutral | Negative |
|---|---|---|---|---|
| 1998 | 3 | 1 | 2 | 0 |
| 1999 | 1 | 0 | 0 | 1 |
| 2000 | 3 | 2 | 1 | 0 |
| 2001 | 2 | 1 | 1 | 0 |
| 2002 | 26 | 10 | 6 | 10 |
| 2003 | 22 | 13 | 3 | 6 |

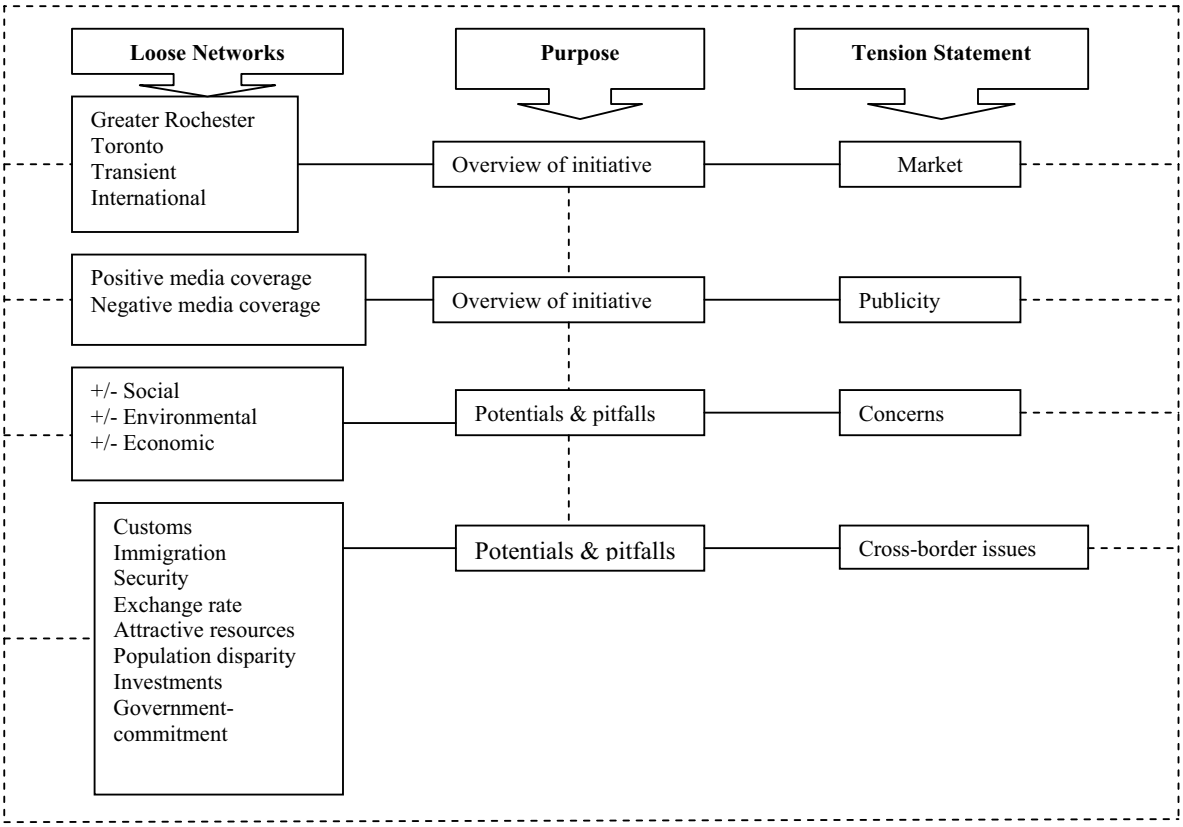


Figure 1.—Relationship between loose networks and tension statement and purpose of the study (solid lines show a direct link, broken lines show that all the elements are interrelated)

method allowed the researchers to collect large amounts of data without prescribing to a definition of what was meaningful. This approach allowed a much easier fit for the "loose network" and "tension statement" concepts (Gough & Scott 2000). The seven-step process of Henderson and Bialeschki (1995) allowed the researcher to later add a systematic structure and process to the research.

## 4.0 Discussion and Conclusions

It was concluded that organizations, particularly those directly connected with the tourism product, were more supportive of the Fast Ferry project, host residents who were concerned about the social carrying capacity of their community expressed the greatest concern. College students viewed the project as a novelty idea, probably because they are transient and are likely to relocate once they have graduated from college. With the dual ownership and political control of the development site, it is evident that there will be a need for collaboration in the greater Rochester area. However, this is of greater concern with regard to cross-border issues. An examination of ferry-related headlines in the major Rochester newspaper suggested the ferry initiative was a one sided affair. For example, "Toronto holds off helping to fund ferry, 7/11/02; Canada's help sought for ferry 10/1/02; Ferry Canadian link unclear 10/23/02; Ferry 'not real' yet to Canadians, 1/5/03; Toronto ferry stop has rough edges, 15/03; No sign of ferry port at Toronto, 7/31/03. One could argue that Rochester has more to gain since its waterfront tourism is underdeveloped, and as such needs to be the aggressor in moving the project forward. Toronto, on the other hand, has a thriving waterfront tourism product, and as such, its development efforts need only be peripheral. In order to ease public tension, all parties need to air these and other concerns, such as security, customs, immigration, the level of Canadian investment, and the relative attractiveness and competitiveness of Rochester as a tourist destination.

Recommendations for further research include strengthen the reliability and validity of the qualitative data with quantitative data. The researchers for this study should continue to collect data to see if or how the views of

stakeholders have evolved. The ferry launch date is set for June 18, 2004. This would enable the researchers to conduct interviews of actual passengers. Other methods of data coding and analysis, for example, pre-coding, where the researcher is itic, rather than emic in nature should be applied (Lincoln & Guba 1985). Expanding data collection in order to reflect a more balanced perspective of media coverage and public sentiments, particularly in Toronto would also enhance the research.

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# ANATOMY OF A HERITAGE AREA START-UP: THE APPALACHIAN FOREST HERITAGE AREA

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## Abstract

The heritage area movement is gaining momentum in the United States, offering new opportunities for recreation and park managers to acquire financial resources and build relationships with new constituents. Despite this rapid growth, there is little systematic data on the heritage area movement to support its efficient and effective growth. This article reports on a research study examining the anatomy of a heritage area start-up, namely the Appalachian Forest Heritage Area (AFHA) in West Virginia and western Maryland. Case study research methods and participant evaluations were used to construct a case history and stakeholder profile of the AFHA initiative as well as to assess issues, perceived benefits, and visions as expressed by AFHA participants. Results underscore the diversity of interest groups coalescing into the heritage area movement. Issues raised by participants highlight many of the challenges heritage area projects face nationwide such as accommodating private property owner concerns not to limit their land use options. A preliminary research agenda for heritage areas is advanced as well as implications for heritage area policy and management.

Keywords: Heritage; parks; management; partnerships; tourism; planning; research

## 1.0 Introduction

The heritage area movement is gaining momentum in the United States, offering new opportunities for astute recreation and park managers to acquire financial resources and build relationships with new constituents. There are now 23 officially designated National Heritage Areas in the United States with 37 proposals pending before the U.S. Congress to designate new National Heritage Areas. State heritage area programs are expanding at a rapid rate, with strong programs in Pennsylvania, Maryland, New York, and Utah to name a few. Brenda Barrett, National Park Service heritage area coordinator, estimates there are over 200 ad hoc heritage areas in the Unites States that have no "official" government designation (B. Barrett, personal communication, November 15, 2002).

Despite this rapid growth, there is little systematic data on the heritage area movement to support its efficient and effective growth. Proponents struggle to define just what a heritage area is. The National Park Service, charged by Congress to support National Heritage Areas, works to designate areas where, "natural, cultural, historic, and recreational resources combine for a cohesive, nationally-distinctive landscape arising from patterns of human activity shaped by geography" (Pillifant 2002). For example, the Rivers of Steel National Heritage Area in the Pittsburgh area tells the story of how the steel industry contributed to the rise of the industrial revolution in America. According to Mary Means (1999), heritage areas project the idea of a national park to the landscape or regional level and are implemented through partnerships between landowners, communities, businesses, and state and federal agencies. Perhaps one reason for the growth of the heritage area movement is there is something of value in it for many constituent groups (recreation; tourism; historic preservation; economic development).

Heritage areas are coordinated at a regional level, coalescing a diverse set of partners that have a common interest in the culture and history of the region. As such, the heritage area movement is redefining opportunities for traditional park and recreation agencies. New organizational forms and partnerships are emerging where state parks, national forests, recreation businesses, and community festivals and events often form the cornerstone of heritage areas while recreation and park managers often play leadership roles in these regional heritage initiatives. Participating in heritage area initiatives can offer new sources of financing to recreation agencies struggling to make ends meet in an era of fiscal uncertainty. Finally, the heritage area movement is in dire

need of sound applied management and social science research to guide management decisions and build political support for the movement.
Therefore, the purpose of this paper is to construct an agenda for applied research within the heritage area movement. This is accomplished by systematically examining the anatomy of a heritage area start-up, namely the Appalachian Forest Heritage Area (AFHA) in West Virginia and western Maryland. Case study research methods and participant evaluations are used to build a case history of the AFHA initiative as well as to create a descriptive profile of heritage area partners, their visions for the heritage area, personal and organizational benefits derived, and major issues/conflicts addressed in implementing the regional heritage area. Outcomes from three national workshops on the research needs of heritage areas are also summarized.

## 2.0 Methodology

Data for this research study was compiled using a case study research methodology (Yinn 1989). Multiple sources of data were collected to control for possible biases (Miles and Huberman 1984). Data sources included letters, agendas and minutes, administrative documents (reports, proposals, brochures) and newspaper clippings. Organizational and participant profile data were collected in three evaluation surveys administered at AFHA membership meetings n November 2001, March 2002, and September 2002. A case history of the AFHA initiative was compiled from the sources collected. Evaluation surveys were coded to reflect major themes and then recoded into sub-themes to reflect specific content (Strauss 1987).

## 3.0 The Appalachian Forest Heritage Area

The Appalachian Forest Heritage Area has its roots in the long history of human use of the highland forests of West Virginia and western Maryland. For centuries, the forests of the Appalachian Mountains have sustained local settlers, provided raw materials for America's economic expansion, and inspired visitors. AFHA tells the story of this forest legacy and the mountain people who forged it.

The inspiration for the creation of a forest heritage area was born when the residents of Webster Springs, WV proposed a Woodchopper's Village, building upon the success of their Woodchopper's Festival, a community celebration held annually to commemorate the rich forest heritage of the community. This community initiative was noticed by a team of forestry and recreation and park faculty and extension agents at West Virginia University who applied for a USDA Fund for Rural America grant and thus the idea of a regional forest heritage area was born. The USDA was looking for proposals that crossed state borders so the forest heritage area was conceived as including the highland forest regions of West Virginia and western Maryland.

The Appalachian Forest Heritage Area (AFHA) initiative is now in the second year of a 44 -year USDA Fund for Rural America grant. Though budgetary control during the initial grant period resides with the Division of Forestry at West Virginia University, the implementation process and long-term management of the heritage area is taking the form of a community-based, collaborative decision process.

An initial project workshop was held at Blackwater Falls State Park in November 2001 and attended by over 90 people representing a diverse set of interests including resource management agencies, economic development authorities, educators, tourism officials, environmental groups, wood product firms, foresters, and community leaders. Participants grappled with the meaning of forest heritage and what the mission of the forest heritage area should be. An organizational structure was adopted for the implementing phase of the project consisting of a Project Leadership Team of staff and co-project investigators from West Virginia University and the Canaan Valley Institute, a Steering Committee composed of Leadership Team members and active community and government partners, and six Task Groups or sub-committees addressing topical issues such as: Asset Mapping, Interpretation, Business and Infrastructure, Networking, Organization and Sustainability, and Marketing.

Over the first year, the Appalachian Forest Heritage Area has adopted its formal name and refined its purpose and mission. Forest heritage is defined as, "the ongoing story of how the forest shapes history and culture, and how ecology and human use have shaped the forest" (AFHA 2002). The mission of the AFHA is:

> "To work locally to conserve, develop, interpret, and promote a regional network of forest-based attractions and resources in the highlands of West Virginia and Maryland, for the enjoyment and

appreciation of residents and visitors, in order to enhance economic and community development."

Though remaining somewhat flexible to consider new partners, the current geographic scale of the heritage area includes 15 counties in West Virginia and two counties in western Maryland. The Monongahela National Forest lies at the heart of the heritage area.

Task groups have been meeting regularly and two more general meeting were held in April 2002 and September 2002. Three pilot communities were identified including Webster Springs and Elkins in West Virginia and Oakland, Maryland. Project goals for year two of the AFHA initiative include administering a mini-grants program designed to support community-based initiatives that advance the regional goals of the Appalachian Forest Heritage Area. A "draft" list of local projects from Webster Springs included directional and interpretive signing for a historic sycamore tree, a loop tour and brochure for forest artisans in Webster County, and restoration of the Mollahan Mill, a 19th century grist mill in the area. Other short-term goals of AFHA include pursuing national designation of the heritage area; developing a memorandum of understanding with the Monongahela National Forest; and compiling a formal management plan for the heritage area. During the first 2 years of the project, efforts to leverage additional funding have been made to support AFHA projects. These projects include developing a digital archive of historic photographs and stories from the region, facilitating workshops on heritage trail development and marketing, and providing service-learning opportunities for natural resource management students at West Virginia University.

## 4.0 Profile of Partners

The future success of the Appalachian Forest Heritage Area will be dependent on the regional support of a diverse set of stakeholder groups. From its inception, the AFHA has relied heavily on the human, technical, and financial resources of many individuals and organizations. The 90 participants in the AFHA initial organizing meeting represented a unique confluence of interests that foreshadow the potential strength of the heritage area movement including: the economic development community, the tourism industry, historic preservation organizations, resource management agencies, environmental/conservation organizations, the wood products industry, and educational institutions. Examples of participating interest groups from each of these topical areas are illustrated in Table 1. While the participation of a number of interest groups can be explained by the forest heritage theme, the mutual goal of expanding heritage tourism opportunities in the region seems to coalesce a potentially influential coalition of economic development, tourism, and historic preservation groups across many heritage area initiatives.

The organizations listed in Table 1 underscore the importance of community or place-based advocacy in the long-term success of the Appalachian Forest Heritage Area. Many of the voluntary historic preservation and environmental groups participating in the AFHA represent concerned local citizens with an abiding interest in one particular heritage or ecological site. For example, the Rich Mountain Battlefield Association works to preserve and tell the story of this historic Civil War battlefield. Members trace their lineage back to soldiers that fought here during the Civil War. These community groups are complemented by a number of participating organizations with regional management, development, promotion, or technical assistance roles in the Appalachian Forest Heritage Area. The Canaan Valley Institute is a good example with their regional support of community-based conservation and economic development efforts in the Middle Atlantic region. Above all, heritage areas bring together odd bedfellows. In the Appalachian Forest Heritage Area, for example, task group meetings might bring together a CEO of a large wood products corporation with a community leader who happens to be a monk and makes goat cheese for a living.

## 5.0 Partner Visions of Heritage Area

The 90 participants of the November 2001 general stakeholders' meeting were asked to reflect on what their vision of the heritage area was. Not surprisingly, these responses were varied and in large part reflected the organizational and personal values of participants. Nevertheless, common themes run through the visions expressed by participants, articulating some of the underlying dynamics and social tensions of the heritage area movement. A commonly expressed dialectic was the regionalism versus local control theme. Regionalism was often couched in the language of cooperation, partnerships, coordination, interdependence, or networking. Typical regional visions expressed were,

**Table 1.—Selected Interest Groups Participating in AFHA by Topical Area**

| Topical Area | Interest Group |
|---|---|
| Economic Development | West Virginia Development Office<br>West Virginia Rural Development Council<br>West Virginia Bureau of Commerce<br>Webster County Development Authority<br>Region VII Economic Development Authority<br>Randolph County Chamber of Commerce |
| Tourism | West Virginia Division of Tourism<br>Randolph County Convention and Visitors Bureau<br>Maryland Office of Tourism Development<br>Pocahontas County Convention and Visitors Bureau<br>Pendleton County Visitors Committee |
| Historic Preservation | Preservation Alliance of West Virginia<br>Potomac Heritage Partnership<br>Rich Mountain Battlefield Association<br>Aurora Area Heritage Society<br>Elkins Historic Landmarks Commission<br>Mountain State Railroad & Logging Historical Association |
| Resource Management | USDA Forest Service<br>DOI National Park Service<br>Maryland Department of Natural Resources<br>West Virginia Division of Forestry<br>DOI US Fish and Wildlife Service<br>Woodland Owners Association of West Virginia |
| Environmental/Conservation | Canaan Valley Institute<br>West Virginia Highlands Conservancy<br>Shaver's Fork Coalition<br>Conservation International<br>West Virginia Land Trust |
| Wood Products Industry | West Virginia Forestry Association<br>Georgia Pacific Corporation<br>Allegheny Wood Products<br>Mead Wesvaco Corporation |
| Education | West Virginia University Forest Management Program<br>WVU Recreation, Parks, and Tourism Resources Program<br>WVU Extension Service<br>WVU Bureau of Business Research<br>WVU Office of Service Learning |

"the Forest Heritage Area is about establishing an umbrella of communities for planning the development, interpretation, and promotion of forest-based attractions" or "the Forest Heritage Area is a centrally administered transportation, experience, and information network of routes and trails." On the other end of the spectrum, community leaders often emphasized the importance of local control and validation for the heritage area. For example, "the heritage area should be sustained by community consensus and support by school systems and civic organization" or "the heritage area should serve to document and conserve local histories and reflect local roots that are shared with the visitor."

Participant visions for the Forest Heritage Area also reinforced the realization that heritage areas represent a new kind of sustainable development, one that integrates historic preservation, tourism, and economic development. Historic preservation advocates emphasized the importance of preservation in restoring

rural economies. "Communities are discovering how well the preservation of historic, cultural, and natural resources combines with tourism development to enable communities to diversify their economies and promote traditional ways of life." Regional economic development authorities tended to focus on the commerce potential of the Appalachian Forest Heritage Area typified by comments such as, "[the Forest Heritage Area will] create commerce through the development, preservation, interpretation, and promotion of forest-based attractions in the region." State tourism officials and representatives of regional Convention and Visitors Bureaus portrayed the Forest Heritage Area as a heritage tourism initiative. "Heritage tourism is an important economic development strategy for rural communities in West Virginia. It offers an outstanding opportunity to encourage diversified economic development." Finally, somewhat unique to the forest and forestry heritage theme of the Appalachian Forest Heritage Area, forest industry representatives and forestry consultants see the Appalachian Forest Heritage Area as an opportunity to educate the public about forestry practices and wood products.

> "The trail emphasizes the amazing resiliency of the Appalachian hardwood forest and changes in attitudes and treatment of the forest from the era of manifest destiny to the development of modern forest stewardship and the rapidly evolving science of applied woodland management. It is important for visitors to the Mountain State, as well as those who live here, to understand the significant role forests played in the lives of West Virginia's early settlers."

## 6.0 Perceived Benefits of Heritage Area

Participants of the November 2001 stakeholder's meeting identified a diverse set of benefits or outcomes that could result from the heritage area initiative. These benefits can be categorized into community, economic, cultural, educational, environmental, and collaboration benefits as outlined in Table 2. These are similar to benefit categories identified by the Northern Forest Center (2000) in their analysis of the Northern Forest region that includes portions of Maine, New Hampshire, Vermont, and New York. Both the Northern Forest and Appalachian region share a rich forest heritage. Based upon participant responses, a sixth benefit category, collaboration, was added to coalesce the significant number of references to the importance of building partnerships, working together, and building common ground and trust across political, geographic, administrative, and stakeholder boundaries. This benefit category is more of a process indicator but has emerged as an important objective of the Appalachian Forest Heritage Area. Taken together, this set of benefit categories and item can serve as a starting point for monitoring studies, examining the effectiveness and impact of heritage area initiatives.

## 7.0 Heritage Area Issues

The planning process to develop the Appalachian Forest Heritage Area has not been without its growing pains and challenges. Strong efforts have been made to be inclusive, encouraging active participation from the broadest set of stakeholder groups. This has inevitably led to occasional differences of opinion between participating organizations and interest groups. For example, at the initial project workshop in November 2001, a disagreement emerged over whether the heritage area should focus on forest heritage or forestry heritage. Participating wood products firm representatives and forestry advocates felt strongly that the project should focus more narrowly on the history and practice of forestry while representatives of environmental and watershed groups advocated for a broader project focus of forest heritage—one that included forestry but also encompassed forest ecology, preservation, and forest-based artisans. Eventually, a consensus decision was made at the April 2002 general stakeholders meeting to move forward under the more inclusive forest heritage theme, however the decision has dissatisfied some project stakeholders.

A second issue or challenge for the heritage area has been accommodating property rights concerns of project stakeholders and county landowners. In West Virginia and western Maryland and, indeed, nationally — property rights issues have emerged as a major constraint to heritage area development and the passage of national enabling legislation for heritage areas. Corporate and private landowners want assurances that heritage area designation will not limit their land use options through increased regulations or federal government purchase of land. The National Park Service counters by asserting that the heritage area approach is based on locally driven partnerships that emphasize local control of land (Hoffman 2003). In the AFHA region of West Virginia and western Maryland, approximately 83 percent of the land area is privately owned, 7 percent industry owned,

**Table 2.—Perceived Benefits Resulting from Heritage Area**

| Benefit Categories | Benefit Items |
|---|---|
| Community | build social capital<br>increase community pride<br>enhance sense of place<br>improve quality of life<br>stimulate other development initiatives |
| Economic | create jobs<br>increase private investment<br>improve small business opportunities<br>diversify local economy<br>enhance leveraging of outside dollars<br>increase number of heritage tourists |
| Cultural | celebrate and conserve local history<br>preserve cultural traditions<br>protect traditional ways of life |
| Educational | visitor appreciation of forestry practices<br>local appreciation for regional history<br>understanding the role forests have played<br>inspire visitor sense of place<br>foster wonder and appreciation for forests |
| Environmental | preservation of forests<br>stewardship of natural resources<br>contribute to sustainable forest management practices<br>protect special places |
| Collaboration | build common ground and trust<br>opportunity to work together<br>build partnerships<br>better communication and working relationship<br>promote regional planning/cooperative approach |

and 10 percent are publicly owned lands. So far, AFHA has accommodated these concerns by developing an asset mapping protocol where forest-based attractions can only be listed with the landowner's permission. If a landowner refuses to list a potential heritage area asset, for example an old sawmill foundation, then the site is not listed in the regional asset map being compiled.

## 8.0 Developing a Research Agenda for Heritage Areas

Despite the growth of the heritage area movement, little systematic research has been conducted on heritage areas to guide public policy and program implementation. Responding to this critical need, the National Park Service and the National Trust for Historic Preservation convened a workshop in November 2002 to construct a research agenda for heritage areas (National Park Service 2002). Workshop participants identified a number of potential research topics including the need to monitor both the economic and community impacts of national heritage areas. This work will be facilitated by the coordinated identification of appropriate economic and community well-being indicators such as those advanced by the Northern Forest Center (2000). Other research topics suggested by participants included identifying keys to successful heritage area planning and potential constraints through case histories of different heritage areas. Visitor profile and decision-making data is also needed to guide heritage area management and communication strategies. Many other questions were identified that could provide support for future research. What factors are impelling the heritage area movement? Do these factors vary by region? What is motivating different stakeholder groups to either support or oppose

heritage area formation? Finally, workshop participants agreed that a coordinated research program is needed to address these questions as well as dedicated financial support provided through the National Park Service and national heritage and preservation foundations.

## 9.0 Conclusions

Heritage areas hold much promise for recreation and park managers to partner with new constituent groups and acquire new sources of financing. Heritage areas are contributing sustainable economic benefits to rural regions throughout America in addition to enhancing community pride and well-being. However, systematic research and monitoring of heritage areas is still in its infancy.

Preliminary results from this study underscore the diversity of interest groups that are coalescing into the heritage area movement. While this diversity is a potential strength, it can also be a weakness as heritage areas transcend the statutory duties of any single land-holding agency and rely heavily on coordinated management at the landscape level. Results also illustrate how heritage areas are emerging as a new form of sustainable development, one that integrates historic preservation, tourism, the wood products industry, and economic development. Finally, the birthing process of the Appalachian Forest Heritage Area highlights the many challenges heritage area projects face nationwide such as accommodating private property owner concerns not to limit their land use options.

The Appalachian Forest Heritage Area, initially conceived in the crucible of a university setting, is in a unique position to serve as a model or demonstration project for future heritage areas. Lessons learned, economic and social benefits derived, and implementation constraints will be continuously monitored and reported to the larger heritage, tourism, and recreation and park communities.

Heritage areas, like the Appalachian Forest Heritage Area, are gaining momentum because people seek solace and meaning in their local and regional landscapes and special places when there is so much uncertainty in global economic and political affairs. Park and recreation managers and researchers need to seize upon this emerging opportunity.

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# SURVEY TECHNIQUES FOR ASSESSING PUBLIC PREFERENCES FOR ALTERNATE SILVICULTURAL TREATMENTS IN THE ADIRONDACKS

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## Abstract

Forest management that includes timber harvesting is sometimes controversial. Silvicultural prescriptions influence stand appearance, wildlife habitats, and recreational opportunities, as well as timber characteristics. We used a conjoint ranking survey, a form of stated choice modeling, to assess public preferences and acceptable tradeoffs with respect to silvicultural treatments to be applied on private lands in the Adirondacks. A series of demographic and attitudinal questions also were completed by respondents, enabling us to examine how preferences for silvicultural treatments and the resulting benefits vary by respondent category. Survey procedures, statistical methods, and techniques for segmenting respondents by their preference structures will be discussed. Results will provide insight into public views on landowner and societal rights and responsibilities regarding private lands as well as the relative values and preferences for alternative silvicultural treatments on privately owned forests.

## 1.0 Introduction

Nearly three-quarters of the northeastern forest is held by a diverse array of nonindustrial private forest landowners (USDA Forest Service 1988, 1995). The extent of these holdings makes obvious their potential importance in meeting society's needs for timber, outdoor recreation, wildlife habitats, aesthetics, biodiversity, and other benefits that forests offer. Selection of a method for harvesting timber and regenerating a new forest has a profound effect on the appearance of the landscape as well as the mix of forest-related benefits to be provided.

The primary focus of most prior research has been on the perspectives of individual forest landowners regarding their attitudes toward timber harvesting, forest management, and the benefits that they derive from their land. In this study we examine broader public perspectives toward private lands, specifically, public preferences for various silvicultural techniques used to harvest timber, change habitat conditions for wildlife, and regenerate a new forest. Public perspectives are important because the public has an increasing role and interest in the management of private lands. Public funding, such as tax incentives, direct cost sharing, and provision of technical help, frequently is used to pay for programs to promote forest management on private lands. The public also considers regulations and taxes designed to influence the method and extent of harvesting on private forests.

To gain insight into public perspectives concerning forestry practices on private lands, we administered a conjoint ranking survey and a series of attitudinal questions to visitors at the Adirondack Visitor Interpretive Center located in Paul Smiths, New York. The survey focused on public preferences for regeneration treatments as parts of four alternative silvicultural systems: single tree selection, two-aged management, shelterwood management, and clearcutting.

## 2.0 Methods

### 2.1 Analytical

Conjoint analysis, a form of stated choice modeling, is a technique for measuring psychological judgments that is used frequently in marketing research to measure consumer preferences (Green et al. 1988). Respondents choose between alternative products or scenarios that display varying levels of selected attributes. The utility of each attribute can be inferred from the respondent's overall evaluations. These partial utilities or part worths indicate the relative importance of each attribute's contribution to overall preference or utility. They can be combined to estimate relative preferences for any combination of attribute levels. Conjoint techniques are

well suited for soliciting and analyzing preferences in environmental decisions that frequently entail tradeoffs between costs and benefits that are not represented efficiently in market transactions.

A random utility model is used to explain public preferences toward the use of different silvicultural treatments on varying portions of the landscape. When presented with a set of alternatives, individuals are assumed to make choices that maximize their utility or satisfaction. The utility that the ith individual derives from the jth alternative (Uij) can be represented as:

$$U_{ij} = X'_{ij} + e_{ij} \qquad (1)$$

where Xij is a vector of variables, which may include transformations of variables, that represent values for each of the four attributes (silvicultural treatments) of the jth alternative to the ith individual; is a vector of unknown parameters; and eij is a random disturbance, which may reflect unobserved attributes of the alternatives, random choice behavior, or measurement error. In the empirical study under consideration, a respondent's utility level (Uij) for each alternative is not observed, but a ranking (rj) is observed that is assumed to proxy for his or her underlying utility. McKelvey and Zavoina (1975) developed a polychotomous probit model to analyze ordinal level dependent variables.

Following McKenzie (1990, 1993) and others, the analytical capabilities of the conjoint ranking model can be illustrated by assuming that ranking (rj) can be modeled as a linear combination of the variables representing the attribute levels. Quadratic terms can be included to examine nonlinear relationships among the variables (increasing or decreasing marginal returns). Although quadratic terms are often important, they are not included here to simplify the presentation and interpretation. Nonlinear relationships will be examined in the final analyses.

$$r_j = a + b_1x_{1j} + b_2x_{2j} + \ldots + b_nx_{nj} \qquad (2)$$

The estimated partial utilities are the linear effects (bn's) of a discreet change in the level of the associated attribute on overall preference (n references attributes). Relative overall preference for any alternative (combination of attribute levels) can be determined by summing across Equation 2.

| | |
|---|---|
| ALTERNATIVE # (1-9) | |
| PORTION OF LANDSCAPE: | |
| CLEARCUTTING | NONE, 5%, 10% |
| SHELTERWOOD | NONE, 5%, 10% |
| 2-AGED | NONE, 10%, 20% |
| SELECTION | NONE, 20%, 40% |
| RANK ? (1-9) | |

Figure 1.—Sample card layout for the conjoint ranking survey.

The marginal rate of substitution (MRS) is the rate at which an individual is willing to trade one good for another while remaining equally well off (Nicholson 1978). The MRS, or acceptable tradeoff of one attribute for another, is determined by the ratio of the marginal responses. Setting the total differential of (2) to the point of indifference and solving yields the marginal rates of substitution or the acceptable tradeoffs for the respective attributes:

$$dr_j = b_1dx_{1j} + b_2dx_{2j} + \ldots + b_ndx_{nj} = 0 \qquad (3)$$

$$dx_{1j} / dx_{2j} = - b_2 / b_1$$

### 2.2 Survey

Surveys were conducted in person at the Adirondack Visitor Interpretive Center in Paul Smiths, NY. Each respondent was asked to rank nine alternative scenarios depicting varying levels in the proportion of the landscape in which the different cutting treatments might be noticeable at any time. The range of each variable was determined by estimates of how long a treatment would remain visible, how often a system required application of a treatment, an estimated 100-year rotation for mature trees, and a maximum of half the forested lands under management. About 50 percent of the forested land in the Adirondacks is publicly owned and does not receive active forest management. Each alternative was displayed on a sample card that contained a different mix of the levels for the four attributes depicted in Figure 1. Only one level of each attribute was presented in a single alternative. An orthogonal sample design was used to select the particular levels to be included on each card to allow estimation over the entire range of alternatives (34 = 81) with the minimum number of ranked alternatives. Respondents also completed a series of attitudinal questions using a 5-point Likert scale (strongly agree/agree/neutral/disagree/strongly disagree) and a brief demographic survey.

The orthogonal design also allows estimation of partial utilities for each respondent, thus outlining each respondent's preference structure. A clustering procedure can then be used to segment respondents into groups that have similar preferences. The groups or segments can then be compared and contrasted with respect to demographic and attitudinal information.

## 3.0 Demonstration Area

Before completing the surveys, respondents took a guided walking tour of demonstration sites that show the effects of different silvicultural treatments on timber growth and quality, wildlife habitats, aesthetics, and recreational opportunities. These topics were discussed during the tour. Upon returning to the visitor center, respondents were provided with an explanation of the purpose and form of the conjoint survey and were given an opportunity to ask questions or discuss any portion of the survey or tour. The walking tour and survey took approximately 60 minutes and 20 minutes to complete, respectively.

The demonstration area was implemented entirely within a large northern hardwood stand that had not had any cutting treatments for approximately 30 years. The area included two control sites (5 acres each) where no cutting took place and natural tree death and replacement can be witnessed. The demonstration area and tour also included five sites (5 acres each) where silvicultural treatments were applied. On the single tree selection site about one-third of the mature trees were cut. Scattered trees were cut so that no large openings exist. This type of cutting is designed to provide timber products at approximately 20-year intervals and to increase or maintain shade-tolerant species such as sugar maple, hemlock, and beech. Trees of all sizes and ages are maintained providing habitat for forest interior bird species. About one-third of the trees also were cut on the group selection site but the cutting was concentrated in small groups to provide light to the forest floor. This allows some additional tree species to prosper. On the two-aged site, most trees larger than 10 inches in diameter were cut to create a new stand with two age classes approximately 50 years apart. This treatment creates a new, less crowded forest with medium sized trees and many seedlings. The cut was distributed evenly to provide light to the ground and promote new growth. This system is designed to provide timber products at 50-year intervals and to maintain current forest composition. On the shelterwood site, 60-70 percent of the basal area was cut from the middle of the diameter distribution. The residual large trees are well distributed and provide seed, shade, and protection for new seedlings. The remaining canopy trees may be removed in 10-20 years. The purpose is to create a new forest mixed with light-loving species such as yellow birch and cherry, as well as maple and spruce. This treatment creates habitat for birds that require open areas but maintains enough large trees to keep the look of a forest until the new trees are well established. Deer browse and berries increase but some shade is maintained to protect forest interior ground plants. All trees were cut on the clearcut site to create an even-aged forest of light-loving trees. The stand is converted to predominantly shade intolerant species such as white birch, aspen, and cherry. Deer browse and berries are greatly increased and the area provides habitat for birds requiring open areas. There is one major disturbance per 100 years in both the shelterwood and clearcut treatments.

## 4.0 Results and Discussion

Although the conjoint data has not been fully analyzed, some descriptive statistics and preliminary data can be reported. Three hundred and seventy-three respondents completed the surveys. This included students enrolled in several introductory forestry classes from nearby Paul Smith's College. Eighty percent of the respondents were male and nearly 75 percent were younger than 30 years. Thirty-eight percent of the respondents owned some forest land; 13 percent were raised in a large city and 8 percent currently live in a large city.

While this sample is not representative of the public at large, primarily due to the rural location of the survey, inclusion of college students, and possible self selectivity of those choosing to participate, we believe it will provide useful information. As mentioned previously, the orthogonal sample design allows estimation of partial utilities or preference structures for each respondent. These may be segmented by demographic profile to identify and analyze differences in the preferences for various segments of the sample.

Several interesting results emerged from analyzing responses to the attitudinal questions. Most respondents (85%) strongly agreed or agreed that the availability of forest recreation is important to society, and 82 percent believe landowners should be permitted to restrict access to their land. However, only 48 percent believe

landowners should be given incentives to allow public recreation on their land.

Most respondents (90%) also strongly agreed or agreed that rare or threatened species should be protected and 77 percent believe that landowners should be given incentives to enhance wildlife habitats on their lands. Nearly 60 percent agreed that keeping land in forest was important and would vote to give tax relief to landowners who agree not to develop their land.

Nearly half of the respondents believe landowners should be permitted to do as they please with their land, but 88 percent disagreed with the statement "Society has no responsibility to provide healthy forests for future generations". About half of the respondents agreed that land should provide an economic return to cover expenses associated with ownership, though many believe too much emphasis is placed on economics in land-use decisions. Most respondents agreed that both ecology and economics should be considered along with the needs of future generations.

Nearly 90 percent of the respondents agreed that wood products are important to society, but only about 40 percent agreed with separate statements indicating that either public or private lands should be a source for wood products. Seventy-two percent agreed that landowners should be able to earn a profit from their land.

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# THE INFLUENCE OF WATER CLARITY ON RECREATION AND HOME PURCHASING DECISIONS ON NEW HAMPSHIRE LAKES

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## Abstract

This article looks at whether or not the water clarity of New Hampshire Lakes influences a persons' purchase decision of lakefront property. The influence of water clarity was compared against nine independent variables to look at the characteristics of the people who are influenced by water clarity. The results of this study should allow for better management of New Hampshire Lakes, as it is better understood how people use their lakes and the characteristics of these people. This research shows that water clarity does influence a person's decision to buy, and that selected personal characteristics do influence the desire for improved water clarity.

## 1.0 Introduction

In recent years the use and development of New Hampshire lakes has increased. Both people within the state and outside the state have bought houses on New Hampshire lakes. This study looks at the influence of water clarity of these lakes on potential buyers of lakefront property and how concerns for fishing, swimming and other factors are affected by water clarity.

An understanding of the importance of water clarity is a good tool for future management of New Hampshire lakes. Due to the fact that water quality and clarity are in many respects public goods it is difficult to monitor their health. It is important to understand the level of clarity people desire in their lakes in order to implement a long-range strategy for environmental monitoring of New Hampshire lakes.

The utility of a lake house is a function of its structural, location and environmental characteristics. The environmental characteristics are made up of water clarity, the size of the lake, its depth, and other aspects. This paper looks at the water clarity aspect. The objectives of this study are to determine if people base their decision to purchase lakefront property on the lakes' water clarity. In addition, this study will look at the characteristics of these people to see what types of people are influenced by water clarity.

### 1.1 The Survey

This survey was originally conducted in 1999 by Julie Gibbs and was entitled "New Hampshire Lake Water Quality Survey". It consisted of 55 questions, broken down into six different sections. The sections looked at the important characteristics of a lake to the buyer, what structures were on the property at the time of purchase, the location of the lakefront property, the familiarity of the lake prior to purchase, the minimum water clarity during summer months and the demographic data of the respondent.

The objective of the survey was to determine possible effects that water clarity has on lakefront properties in New Hampshire. The surveys were sent to individuals who purchased lakefront property between 1990 and 1995. One hundred and seventy-eight surveys were collected from an area of 16 lakes. From the 178 responses, 75 were useable for this study, after deleting the observations with missing data points. The water clarity question in the survey served as the dependent variable and was stated "Did the minimum water clarity during the summer months at the time you purchased the property influence your decision to buy the property". It was selected because clarity best serves as a generalization for many of the most sought after water characteristics, although it does not account for any chemicals (harmful or otherwise) in the lake.

### 1.2 Case Study Area

The Lakes Region in Central New Hampshire was selected as the study area to examine the effects water clarity had on specific behaviors of lakefront property owners. The study includes the area around Lake Winnipesaukee, however does not include the lake itself.

Lake Winnipesaukee consists of several geographical and political barriers, and could not be included for logistical and financial factors in the original survey. Sixteen lakes were studied within the Lakes Region (Bearcamp, Squam, Sunset, Hills, Winnesquam, Suncook, Waukewan, Winona, Crystal, Wicwas, Lee, Loon, Wentworth, Mirror, Whiteoak and Merrymeeting Lakes).

## 2.0 Literature review

A search of existing literature concerning water clarity and property value provided limited results. A master's thesis by Julie Gibbs (2000) examined the freshwater lakes in the State of New Hampshire. She attempted to quantify the effects varying water clarity had on lakefront property pricing. Six market areas in the state were identified and water clarity was determined to have an influence on an individual's decision to buy.

A paper by Shapiro and Kroll (2001) was an attempt to study the economic values of the surface waters in the state of New Hampshire. It was done as the first stage of a multi-level project. Phase One was a preliminary assessment of relevant literature, data, and methodological approaches for estimating the economic value of surface water. They found there were many values associated with the waters, including aesthetic, spiritual, and cultural. A NHDES study of Lake Wentworth (1999) yielded some interesting insight into this issue. The study noted that the water clarity in Lake Wentworth has actually improved over the past several decades, and also notes that the lake is considered "Class A" by NHDES. The property values on the lake have increased over the past two decades. The report falls short, however, of linking the two characteristics.

A search was also performed regarding the type of model to utilize for the study. A paper by Capps and Kramer (1985) used a qualitative choice model to determine household participation in a food stamp program using a logit and probit model. The authors concluded there was no relative advantage to either methodology. Another study reviewed was by Miller and Hay (1981) that used a logit model or a linear probability model to determine duck hunter participation in a particular geographic region. The authors concluded that a logit model was superior on theoretical and statistical grounds. Also examined was a bivariate logit model used in the paper by Halstead et al. (1990) that examined the likelihood of a farmer to use manure testing for their soil.

## 3.0 Model Details

An econometric model was pieced together from the results of the survey to estimate the effects water clarity had on several use and demographic variables of current lakefront property owners. Logit analysis, or a multinomial logit model is a general model of maximization. An individual is assumed to have preferences defined over a set of alternatives. It is assumed that the primary determination of the choice is the characteristics of the individual. Whether or not a person was influenced by water clarity had to do with the characteristics of that person.

Since the only possible answers to the question, "Did water clarity affect your decision to buy your lakefront property?" are "yes" and "no", it was decided to use a qualitative choice model (logit analysis). This technique has been employed in various other fields including wildlife (Miller and Hay 1981), social programs (Capps and Kramer 1985), and agriculture (Halstead et al. 1990).

Water clarity was measured as whether or not it had an influence on the purchasing of the property. Nine independent variables were chosen to see what effect they had on water clarity; that is, to see if the independent variables influenced the desire for water clarity. The variables are described below. Expected results are also presented in the following variable descriptions.

## 4.0 Variable Descriptions

Lake Frontage (FF). Does the need for greater water clarity increase with an increase in frontage? It would follow that this would be the case as people with more lake frontage see more water. It seems that it would be in their best interest to see clear, unpolluted water.

Good Salmon/Trout Fishing (E). Do people with a greater desire for salmon/trout fishing have a need for better water clarity? Salmon and trout need clear, clean water. Anyone who values trout fishing would also, it seems, want good water clarity.

Good Bass/Perch Fishing (F). Do people with a greater desire for bass/perch fishing have a need for better water clarity? Bass and perch occur in most, if not all of the lakes in our study area. They, unlike trout and salmon, do not need really clear water. If the species do not require

**Table 1.—Relationship and Strength of Relationship Between Dependent and Independent Variables**

| Coefficient | Asymptotic t-ratios | Significance Interval | Mean |
|---|---|---|---|
| Constant | -0.529 | 0.5968 | |
| Foot Frontage | -1.59 | 0.1118 | 150.2 |
| Trout/Salmon Fishing | -1.962 | 0.0497 | 3.84 |
| Bass/Perch Fishing | 1.469 | 0.142 | 3.96 |
| Swimming | 1.945 | 0.0518 | 4.87 |
| Water Quality | -2.89 | 0.0038 | 4.29 |
| Weeds | -0.044 | 0.9651 | 3.13 |
| Buyer's Age | 0.538 | 0.5902 | 46.29 |
| Education | 1.923 | 0.0545 | 5.05 |
| Employment | -0.34 | 0.7338 | 1.59 |

clean, clear water, than the anglers who target them do not need it either.

Good Swimming (G). Do people with a greater desire for good swimming have a need for better clarity? People like to swim in clear water where they can see the bottom. People who enjoy swimming should partially base their purchase decision on the clarity of the lake.

Water Quality (H20LMH). Does how people rate the overall water quality influence their desire for water clarity? This seems relatively straightforward. If they rate the water quality as low and still purchased the property, then they did not base their decision on the water clarity. These two variables would seem to be correlated.

Weed Growth (in water) in Front of Property (WEEDS). Does weeds in front of house influence your need for water clarity? If there was a high level of weeds and they still purchased the property, then the water clarity wouldn't be very good. You could say they did not base their decision to purchase on the water clarity.

Age (BUYERSAGE). Does the age of a person influence their need for water clarity? Do older people care less? More? Maybe younger people are more environmentally biased in their decisions and activities.

Level of Education (EDUCATION). Does the education of a person influence their need for water clarity? The higher the education, maybe, the better informed the person on the importance for good water clarity. The expectation in this case would be that there is a correlation between the two variables.

Employment Level at Time of Purchase (EMPLOYED). Do retired people want better water clarity? Do people who work full time want better water clarity? Does employment influence this decision?

## 5.0 Results

Results of the model are presented in Table 1. The sign of the t-ratios indicate whether or not each independent variable increased or decreased the probability the buyer was influenced by water clarity. The t-ratios show if the coefficient is statistically significant. The significance interval is how reliable this relationship between the variables is. The mean is the average of all the responses for each variable.

A word of caution should be given here before proceeding with the interpretation of the results. The dependent variable, water clarity, had a scale where yes = 0 and no = 1. The scale used for the independent variables is inversed. That is, the scale or ordering of "yes" type responses would be 1 and a "no" type response would be 0. This applies to all of the independent variables except Weeds, which had the same ordering as the dependent variable. A positive sign reduces the probability the buyer was influenced by water clarity and a negative sign increases the probability the buyer was influenced by water clarity. In the case of weeds the negative sign means it decreased the probability the buyer was influenced by water clarity, because both variables used the same scale.

For the study six variables were significant at a confidence level of 0.15. Three variables were found to be not statistically significant. These were: the employment level of the individual, the buyer's age and the weed growth in front of the property. The fact that weeds were not significant was surprising, and will be discussed later in the paper.

The results for bass/perch fishing (negative relationship), salmon/trout fishing (positive relationship), water quality (positive relationship) and foot frontage (positive relationship) were as expected. Salmon and trout fishing increased the probability the buyer would be influenced by water clarity in their decision to purchase. This was at a .05 confidence level, suggesting it's a strong relationship. Another variable that was significant at .05 was water quality. A high level of water quality increased the probability the person was influenced by water clarity in their purchase decision. The amount of lakefront

footage was significant at the .15 level. This was at the periphery of allowable significance, but was included in this study. The results for this variable showed that the greater amount of lake frontage increased the probability the owner was influenced by water clarity. If the person has more lake frontage and sees more of the lake, they'll want that view to be a nice one.

The fact that the relationship for bass and perch fishing was negative was not a surprise. This is due to the fact that bass and perch not only live in water with low clarity, they can thrive there. So anyone who is fishing for them isn't going to mind low water clarity because the fish don't mind. The results of the variables indicate that bass and perch fishing reduce the probability the buyer was influenced by water clarity. This also indicates that a fair amount of background knowledge on the part of the purchaser.

Two coefficients that were significant and went against the predicted results were swimming and the education level of the buyer. The desire for good swimming reduced the probability the buyer was influenced by water clarity (at a significance level of 0.10). Wouldn't people who enjoyed good swimming want clear water to swim in? People may base good swimming on other factors (such as the bottom substrate, swimming area, etc.).

The other variable that went against predicted results was the level of education. A negative relationship says that a higher level of education reduces or decreases the probability the buyer was influenced by water clarity (significant at 0.10). Possibly the level of education does not have any bearing on the buyer's decision. Or, maybe a more educated person believes that water clarity alone is not enough for home buying decisions.

The McFadden $R^2$ examines the variable's goodness of fit. McFadden's $R^2$ is interpreted as the model's explanatory power. The variables included in the model explain 31% (0.31375) of the probability of getting a "Yes" response. McFadden's $R^2$ is sometimes referred to as a "pseudo $R^2$" (Halstead et al. 1990). A traditional $R^2$ is what portion of our dependent variable's variance can be explained by our independent variables.

The accuracy of the model was also tested comparing the actual response rate of "yes" and "no" for the dependent variable (did water clarity affect decision to purchase) compared to the predicted response rate of "yes" and "no". The results are displayed in Table 2. The model predicted that 41 of the responses were 0 ("yes") when the actual number was 40. The model also predicted that 34 respondents would not be affected by the water clarity, while the actual number was 35. Also shown in this table is the fact that 40 respondents out of 75 total said that water clarity affected their decision to purchase their property (over 50 percent).

**Table 2**

| Actual | Predicted | | |
|---|---|---|---|
| | 0 | 1 | Total |
| 0 | 33 | 7 | 40 |
| 1 | 8 | 27 | 35 |
| Total | 41 | 34 | 75 |

## 6.0 Conclusions

There were several variables that behaved as originally predicted through the statistical analysis. As initially expected the coefficient of the trout and salmon fishing variable was found to be statistically significant based on an individual's need for water clarity. Knowing the specific habitat requirements for these fish led to the expectations of how the respondents who value them would answer. Also knowing the non-specific habitat requirements for bass and perch species led to the belief that individuals who target bass and perch would not have the same need for water clarity as the trout and salmon anglers. As predicted there was a significant negative relationship between bass and perch fishing and the need for water clarity.

Knowing how valued water clarity is, the public's desire for trout and salmon fisheries should demonstrate a greater need for proper management strategies. The population that responded to the survey would applaud regulations put in place to protect the fragile habitats. Knowing how much the public values the combination of trout and salmon fishing and water clarity, state agencies would be able to better allocate resources to address these issues.

The swimming variable was found to go against our predicted results. Seemingly, an individual would seek the clearest, cleanest water for which to swim in.

Perhaps people base their swimming area preference on the availability of facilities, clean beaches, or bottom substrate (sandy bottom versus mucky). This could be studied further to establish the variables that determine what qualifies as good swimming.

As the amount of lake frontage an individual looks to buy increases, so does the price for that property. It should be clear that there is a positive relationship between the amount of lake frontage an individual has and their need for water clarity. As an individual spends more of their resources on lake frontage, they would want to ensure they are buying it on an environmentally stable, effectively managed water body. Their investment is more likely to hold its value if the abutting water body is desirable for its clarity and overall quality.

The variable of weed growth went against the predictions of the study. With the recent outcry against invasive species, it is difficult to understand how such a hot topic was found to be not significant. There are several reasons why this might have occurred. For one, when this survey was done, the concern about Milfoil and other invasive weeds was not great. Or, perhaps the lakes surveyed did not have a significant problem with weed growth. A third explanation could be that people think of weeds and water clarity as separate. Water can have a high clarity and still have weeds growing in it.

Whatever the reason for this lack of relationship it seems that more research should be done. Milfoil has become a large concern throughout New Hampshire as it chokes out other plants and fish, rendering the water it resides in almost unusable. There have been documented studies by the New Hampshire Department of Environmental Services (NHDES) (Smagula and Connor 1999), the New Hampshire Lakes Association (NHLA), and the University of New Hampshire (UNH) (Halstead et al. 2003) among others, suggesting the dangers that invasive and exotic species pose to property values.

Education was another variable that behaved contrary to original predictions. Logically, as a person's education level increases, their knowledge of the importance of water clarity and quality would increase. In the model, there was a negative relationship, suggesting as an individual's education level increases, their need for water clarity decreases. Perhaps it does not take a well educated person to understand the advantages to having a lake with a high level of water clarity. Or perhaps a well-educated person knows to look at other factors besides water clarity when making their purchase decision.

Overall the results in our study were split. Several variables behaved as originally predicted (salmon/trout fishing, bass/perch fishing, foot frontage) while others did not (swimming, education). The data has applicable uses in the management of New Hampshire's lakes. The results of this paper could provide a guiding analysis for state and local decision makers and managers.

## 7.0 Limitations

The analysis performed in this study used 75 observations. This is inadequate for a generalization for all of the Lakes Region in New Hampshire. The limited number of usable observations undoubtedly compromised the accuracy of the results. The age of the data is also something that should give analysts pause. The survey was done of people who had purchased between 1990 and 1995. This is almost 15 years ago, in some cases. The priorities of buyers and the conditions of the lakes could very likely have changed during this time.

Another limitation to the accuracy of the study is the exclusion of Lake Winnipesaukee. Popular thinking suggests that the large lake is the centerpiece of the Lakes Region, and not including it presents a huge gap in the data set. As logistically challenging as it may be to collect the pertinent information, it would benefit the accuracy of the study overall if it were included for analysis. Invasive species also pose a danger on Lake Winnipesaukee, and its inclusion in the data would provide more insight on if the need for water clarity is affected by weed growth.

Expanding the survey population outward by one level to include people who bought property with water access or water rights would also help the study be more comprehensive. This population of people has the same opportunity to use a lake as lakefront property owners, therefore they should be considered when studying concerned or affected stakeholders. This population, although not directly on the lake, has the same concern for protecting the water body and seeing that it is managed properly as lakefront owners.

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# *Submitted Papers from the Poster Session*

# ILLINOIS DEPARTMENT OF NATURAL RESOURCES "BECOMING AN OUTDOORS-WOMAN® (B.O.W.)" PROGRAM: FACTORS RELATED TO OUTDOOR RECREATION PARTICIPATION

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## Abstract

The purpose of this study was to learn about factors that influenced women's participation in the Illinois DNR "Becoming An Outdoors-Woman® (BOW)" program and outdoor recreation in general. Women were asked about their past experiences in outdoor pursuits, the perceived benefits they associated with outdoor recreation, and their impressions of a "women only" outdoor recreation training program. Socio-demographic information was also collected about the Illinois BOW program participants. Study outcomes included comments that they highly enjoyed the "women only" environment of the BOW Program, because it permitted them to learn in a safe environment (i.e., ridicule free, non-patronizing, supportive, on a level as equals). Other prominent comments emphasized how exciting it was for BOW attendees to learn new outdoor skills, to take time out for oneself for a change, and to feel more competent and confident in the outdoors. For some women, the BOW Workshop was a life transforming eye-opener concerning another world of play and social camaraderie that was made available to them.

## 1.0 Introduction

I tied a fly. I started a campfire. I shot a rifle and a muzzleloader. I identified several different tree species. I learned how to paddle a canoe for a river trip.

Today, more and more women may be heard making these comments and celebrating their newfound leisure skills. While these may be skills that boys and men are routinely exposed to, for woman these skills have not been the usual part of their leisure development and repertoire--until BOW®. The times and outdoor recreation opportunities for women and girls are changing for the better. Numerous girls and women today are increasingly interested in learning about outdoor recreation skills in endeavors that they previously have not typically participated in (e.g., hunting, fishing, skeet shooting, boating, wilderness treks, etc.). In the past, many women may have yearned to participate in outdoor recreation, but they did not have the know how, exposure, or access to the traditional means of passing on the skills as males do from an older male role model to son or younger brother or nephew (Yoesting & Burkhead 1973; Freysinger 1990, p. 49).

The Becoming An Outdoors-Woman® (BOW) Program began in 1991 when it was first offered at the University of Wisconsin-Stevens Point. The first workshop was held at Treehaven Field Station and attracted over 100 participants. Dr. Christine Thomas, a natural resources professor in the College of Natural Resources at the University of Wisconsin-Stevens Point, initiated the BOW program and developed the educational workshop series in association with the Wisconsin Department of Natural Resources (DNR) for women to acquire these desired outdoor skills. The Wisconsin workshops for women were very successful and became an indicator that there was a growing interest and need for more of this type of educational program in other states concerning outdoor leisure skills for women. Numerous state DNR's began to sponsor BOW workshops across the U.S. The BOW programs have expanded to over 40 states (e.g., state Department of Natural Resources (DNR) or Department of Environmental Conservation (DEC) offices) and several Canadian Provinces (Becoming an Outdoors-Woman®, 2003).

BOW workshops offer women an opportunity to learn more about the outdoors, and to develop their skills, appreciation for, and confidence to participate in outdoor activities. Examples of popular workshops include hunting, fishing, canoeing, kayaking, backpacking and camping, nature identification, medicinal plant use, nature photography, archery, outdoor cookery, and bow hunting. Aside from learning valuable skills which enable women to participate in outdoor leisure pursuits, that have tended to be the domain of males in the past, BOW participants gain valuable insight about themselves, they learn what new leisure possibilities exist within their reach, and how their social circle may be enlarged by discovering other persons who share similar outdoor interests. Recent trends show that the growth areas in

outdoor activities are among girls and women, minorities, and people with disabilities (Ibrahim & Cordes 2002). Outdoor resource managers and marketers need to know more about this expanding user segment so they may be better prepared to provide appropriate areas, facilities, programs, and services for the expanding numbers of women involved in outdoor pursuits.

## 2.0 Study Objectives

The main objectives of this study were focused on learning about factors that influenced women's participation in outdoor recreation: the past experiences women had in outdoor pursuits, what BOW workshop participants perceived to be the benefits of partaking in outdoor recreation pursuits in general and specifically "women's only" outdoor recreation training programs and activities. Also, this study asked women participants to characterize the nature and quality of "women only" outdoor pursuits and workshops, and to identify potential constraints and fears they associated with engaging in outdoor recreation. BOW participants were also asked to identify a preferred "women only" outdoor recreation endeavor they might wish to pursue and the reasons for that. A socio-demographic profile of the Illinois BOW program participants was also conducted.

## 3.0 Methodology

A two-page post-BOW Workshop survey was developed and administered to participants attending a spring weekend Illinois Department of Natural Resources BOW Workshop held at Lorado Taft Field Campus adjacent to Lowden State Park at Oregon, Illinois and the Rock River. Closed-ended and open-ended questions were included, as well as several socio-demographic related items (e.g., gender, age, marital status, ethnicity, occupation, education level, residence, and household income level). Descriptive statistics were performed on the socio-demographic data and qualitative themes were generated from the open-ended question data analysis.

## 4.0 Results

Seventy-five women participated in this late spring Illinois DNR BOW weekend program. About one-fifth of the group had 0 to 5 years of outdoor recreation involvement and another fifth claimed 31-55 years of experience. Sixty percent of the group had between 6-30 years of outdoor recreation experience. The mode and the average number of years of involvement in outdoor pursuits for this group of women was between 20-25 years.

The overall number of outdoor recreation trips taken by BOW workshop participants ranged from novices with zero trips to the more experienced with 1000 trips. The median number of trips was 21 and the average was 72.77 trips. A little over a third had taken 0-15 trips (36.4%), a little under a third took 16-30 trips (26.8%), and a little over a third (36.3%) took 31-1000 trips.

The average number of outdoor recreation trips per year was 9.57 for these workshop participants, with the median and the mode being two trips per year, and the range was zero to 150 trips per year. A little over two-thirds (70.4%) averaged 0-5 trips per year.

The benefits the women associated with outdoor recreation included things such as the following themes: to be exposed to new experiences to share with family members, to appreciate and enjoy nature; to learn new skills; to take part in challenge, adventure, and exploration activities; to be more independent; to have a better sense of overall well-being; to attain a sense of accomplishment and the confidence that is attached to it; to expand one's social circles; and to cooperate and share responsibility with others. Additionally, these women wanted to have fun in outdoor environments, to have a means of stress relief, to gain a sense of peace, and to develop their spirituality (Table 1).

Some of the benefits attributed to participation in a "women only" program to learn outdoor skills were as follows: to have time away for quiet, solitude, and to reflect; to be able to focus on one's own self and interests; to enjoy nature; to get exercise; to participate in challenging activities that develop one's skills; to learn in a supportive atmosphere; and to share and experience camaraderie with other women interested in outdoor recreation pursuits and not be subjected to competition or feeling intimidated with males around. Also mentioned were the benefits of meeting new friends, having a great time, getting away for a change of pace and to relax, and leaving the workshop with a more positive attitude towards living (Table 2).

If "women only" outdoor opportunities were made available, numerous women in the weekend program said they would like to take part in another BOW program or other specific outdoor activities. For the most part, they were interested in any outdoor recreation activity that

**Table 1.—Benefits Attributed To Participation In Outdoor Recreation Activities**

- A total new experience I can share with my child (New ways to share with kids and family; Share experiences)
- To appreciate and enjoy nature (Appreciation of nature; Respect for the earth; Appreciation of the beautiful things and surroundings we have for free; Viewing nature; An increased knowledge and love of nature;
- Learning about natural history; Learn more about nature; Beautiful; Connection to the world and nature; Be one with nature; Seeing wildlife, stars, and scenery; Enjoying the outdoors in general)
- Learning new skills (Education leading to new hobbies; Increased expertise; Growth, knowledge; Interesting; The outdoor activities and skills (canoeing, biking, photography, camping, diving, fishing, picnicking, archery, backpacking, orienteering, hunting); The ability to teach others)
- Challenge, adventure, exploration (Transferability—I feel like I can do other things (like a work or business task) if I "conquer" a hike or figure something out)
- Freedom (Sense of independence)
- Better emotional, physical health, and mental well-being (Ways to keep in shape; Exercise, physical fitness; An active mind and body; Physical health, feel better physically and mentally; Good exercise)
- Feeling of accomplishment & confidence, better self-esteem (I'm much more confident about going out on my own; Builds confidence and self-esteem; Acquiring the confidence to try new skills and activities; Increases self-Esteem)
- Socialization (Socialize with others; Camaraderie; A circle of friends who enjoy these activities also; To meet new People; Making and keeping friends; Co-ed is OK, but some women don't agree)
- Ability to cooperate with others and putting the group needs over self-needs (To cooperate with others; Responsibility)
- To have fun in the outdoor environment (Enjoyment; Fun; Fun with others camping and cooking; Pleasure)
- Stress Relief (Simplification of the life process: food, clothing, and shelter are our true needs; My sanity! A need for unaccounted time, quiet, & solitude, as well as adventure and challenge; Renewal, refreshment, relaxation)
- A sense of peace & a grounding in what is important in life (Feeling of peace; Peace in body, mind, spirit; A spiritual sense of peacefulness; Happiness; Serenity when alone in thoughts; Uplifting)
- Spirituality (Spiritual benefits)

sounded interesting to them and that provided the chance to partake in it with other women (Table 3).

The workshop attendees indicated that they would like to participate in "women only" outdoor activities with other BOW participants. They would also like to try these endeavors with a wide range of other women, either family, friends, or women from other social circles or organized clubs.

If participating in "women only" outdoor activities, participants identified where they would like to take part in these outdoor recreation endeavors. The women mentioned places that were near home or local (i.e., less than 100 miles), relatively close to them (i.e., within a 4 to 5 hour/day's drive), or at regional midwest sites (i.e., Illinois, Michigan, Minnesota, Wisconsin). Other locations some of them would like to try included the western and northern parts of the country, the Appalachian Trail, wilderness areas, and various places across the United States in general. Wooded areas, such as state forests and parks, the prairies, warm weather areas, and shooting ranges were also preferred places for their outdoor recreation interests.

Aside from the usual motivations for engaging in outdoor recreation (e.g., relaxation, a weekend getaway, just being outdoors, to hike, to go new places, to learn

**Table 2.—Benefits Attributed To Participation In "Women Only" Outdoor Recreation Activities**

- Occasional stretches of unaccounted time, quiet, and solitude (Sanity; Relaxation; Existence; Serenity; Spirituality)
- Self-fulfillment (Can center more on ourselves which is nice; Self-esteem)
- Appreciation of nature (Fresh air; Be one with nature)
- Good exercise
- Adventure and challenge (Canoeing, biking, photography, camping, diving, fishing, picnicking, archery, backpacking; Adventure; Exploration)
- Came here to learn (Specialized training on specific equipment for women; Better skill development; Enhanced learning with less competition, focused on learning, more comfortable asking questions; Knowing how to adapt [activities and equipment] to a women's body strength & size; Properly sized equipment; Learning better techniques; the proper way to do things; Learning new skills and activities in a non-intimidating environment. Women are very supportive in a learning environment; Learning without competition; Less intimidated; more likely to ask questions of instructor; The learning aspect is very nurturing, supportive, and non-competitive; The opportunity to learn in a supportive and controlled environment; Women talk more about interesting topics)
- Camaraderie among other women (Discussing life issues with other women of different ages and backgrounds [Women] teachers who understand us better; Can try different things without feeling embarrassed; Good bonding and sharing experiences; Encouragement from other women; Nurturing, supportive environment; Really wonderful relationships & we all communicate the same way!; It's more comfortable, very supportive, non-competitive; Supportiveness; Lack of competition; Low competition; More comfortable and laid back with women only; Comfortable learning without competition; Women are more understanding, supportive, and helpful; Less threatening environment; supportive; More willing to ask questions; Willingness to share; We support each other beautifully; We don't have to worry what we look like; Good friends; Special bonding and camaraderie; great camaraderie; Patient partners; Better teamwork; Feeling of knowing I can be the equal or leader instead of the follower; Less social stress, great support/camaraderie; More relaxed, not so self-conscious about being evaluated, not as afraid to fail; Less pressure, more fun; No ego, increased comfort level; Non-competitive participation; In general, men are too arrogant around females; Men are condescending to women in outdoor activities and sports; Don't have male competition; Less intimidating than when guys are around; Lack of male intimidators! Yeah!; No embarrassment; men don't really bother me; I wouldn't go with my husband; Non-threatening environment; Not having the stress of having men around (either being spoken down to or "hit on"); No one condescends to us; No competition from having men present
- Meeting friends (Meet fun people)
- To enjoy a good time (Having fun; More fun!)
- More relaxing
- A positive attitude toward living
- Don't really do "women only" activities

**Table 3.—What Activity Would You Participate In If It Was "Women Only" Outdoor Recreation Endeavors**

- The Becoming An Outdoors-Woman® (BOW) Program; Another Becoming An Outdoors-Woman® (BOW) weekend Learning different outdoor pursuits (Sailing; Canoeing / Wilderness canoe trip; Birding / Bird watching; Camping;
- Hiking; Archery; Shotgun shooting; Backpacking; Fishing; Sports; Big Skeet / Trap shooting; Kayaking; Boating; Plant identification; Reading the woods; Bringing nature home; Outdoor camp cooking; Rock climbing; Nature walks; Car camping; Climbing/rappelling; Eco-challenge; Orienteering; Nature (flora and fauna) trips; Anything that sounded interesting; It does not matter as long as there are other women)

**Table 4.—Why Would You Participate In "Women Only" Outdoor Recreation Endeavors (Motivations)**

Just being outdoors
- Love hiking and finding directions
- Peace, enjoy outdoors, learn natural history; refreshing
- Quiet and peaceful
- Relaxation
- Recreation, school functions
- As a weekend getaway-retreat, personal time to gain confidence

Camaraderie, Bonding,
- I enjoy the activities and instructors, enjoy their company
- Supportive environment
- Practice skills and experience camaraderie, supportiveness, relaxation, patient partners, better teamwork
- More equal participation, more challenging
- Socializing and physical benefits
- I don't usually seek out "women only" outdoor recreation, but I appreciate and enjoy them when I am involved with them
- Safety/social aspect/ common goals

Learning
- To go to places I have never been before
- To increase abilities
- It's educational and good exercise; it's fun
- For the knowledge; to learn more
- Learning for my kids and family activity
- To learn and try to do new things; to learn new skills, build confidence
- To become more independent, self assured
- Sense of accomplishment, activity

Because it's the best challenge and thrill
- Never been there; a challenge
- Adventure

For enjoyment, for fun, renewal, and friendship
- I enjoy it and am good at it

To gain experience in a non-threatening atmosphere
- I'd like to learn [about the outdoors], but with guys they makes me nervous
- Less intimidating than with men

My husband won't camp
Lack of female access
Well, duh? Why not?!

about natural history), some of the reasons BOW participants gave for their interest to participate in "women only" outdoor endeavors included learning in a more comfortable environment among the camaraderie, support, and patience of other women. The women expressed that it was beneficial to learn new outdoor skills in the company of other women because they feel less nervous or intimidated than if the men were teaching them. They also believed they were better able to challenge themselves, become more independent and confident, and practice these techniques among other women, who they felt they were on a more equal basis with regard to outdoor pursuits (Table 4).

Other reasons given for participation in "women only" outdoor recreation endeavors were that it was helpful for

identifying other women who share similar interests. The opportunity to identify and network with other women was a valuable offshoot of being exposed to an organized outdoor program designed for women above and beyond the scope of the initial weekend workshop skill content. Women also expressed that it helped their self-esteem by knowing that there are other women out there who also dare to venture into new leisure interests and adventure territory (e.g., rock climbing, fishing, shooting, etc.), especially for women in middle or older adulthood who may not have had the chance to be exposed to these outdoor pursuits earlier in life. These women also mentioned that they appreciated the patience, gentle encouragement, and teaching skills of female outdoor recreation instructors. The BOW Program served as a valuable conduit for exposing women to other women who also shared a zeal for outdoor pursuit interests.

Becoming An Outdoors-Woman® (BOW) Program attendees in Illinois described the nature of their "women only" outdoor experience as having numerous positive qualities. Women expressed experiencing a supportive atmosphere wherein women feel free to try new things and make mistakes without feeling self-conscious. They felt that there was less competition and intimidation without men being in the courses, who they perceive tend to act like they know it all. The women observed that they act differently without men around, by taking on more active roles in outdoor activities versus being relegated to minor roles "as the followers, organizers, and cleaners" around a campsite or for other outdoor activities. Based on gender, they felt less defined in their outdoor roles amidst other women. This gave them the opportunity to actually participate in outdoor skills development and enjoy the pursuits, rather than merely serve on the sidelines to support men's outdoor activities. For example, this comment was made: "Too often it's the women work and the men recreate in the outdoors." With other women in the outdoors, they did not have to be as concerned about their appearance and they did not feel afraid to be more assertive. This was liberating in terms of trying activities that may have had a connotation of being stereotypically a "male" activity (e.g., fishing, hunting, archery, backcountry camping). If men were involved in outdoor activities with the women, the women felt like the men tended to dominate the activity, used it to show off their male prowess, or used it as an opportunity to act superior or make disparaging comments about women participating in outdoor endeavors. One female participant stated, "a 'women only' outdoor group realizes women's strengths and weaknesses, insecurities, and needs." This helped to create a more conducive learning environment and pace for the women, leading to skill mastery, confidence, and heightened enjoyment of the outdoor pursuits (Table 5).

The BOW participants identified several constraints they may have encountered with regard to their outdoor pursuits. Some did not have spouses, partners, or friends who were also interested in pursuing outdoor activities with them. Others were turned off by past experiences with overly patronizing males or those who were "too helpful" in an outdoor pursuit and did not allow a female to become more substantively involved in an outdoor activity or skill. Some women expressed concerns about physical limitations of strength or endurance hindering their participation, either now or in the future, in the outdoors. A lack of knowledge or information about outdoor recreation pursuits, as well as concerns about safety or dangers were other constraints that were reported. Finding the time away from work and family obligations (e.g., children, spouse) were cited as other potential constraints to outdoor endeavors for women. Some women mentioned that the costs involved with outdoor activities and the lack of suitable areas (i.e., land availability) were other concerns and potential limitations for them. Extremes in the weather (i.e., heat or cold) and the discomfort associated with those temperatures, winds, or rain were other drawbacks limiting participation for some women (Table 6).

Similar to the constraints related to outdoor recreation in general, some constraints women may encounter with "women only" outdoor recreation pursuits again included the following: concerns about the costs, as well as safety and potential injuries; having available time and energy, the necessary knowledge, and freedom from family obligations; and not being fit or strong enough to participate in outdoor activities. An additional factor, which may hinder participation specifically in "women only" outdoor recreation, was the lack of programs that are available or the lack of knowledge about similar programs for women only. Also, some women said that they did not know other women who might be interested in these types of outdoor pursuits, or their women friends were busy with work and their families.

**Table 5.—Describe the Nature or Quality of a "Women Only" Outdoor Experience Versus A Mixed Gender Group**

I think it's a more supportive atmosphere

- In a female group, one can be free to try new things
- Better perspective
- Less threatening. Open to discuss fears and make mistakes
- More likely to share chores and do things by consensus. Less likely to have "hotdogs" or pointless competition
- Not as much competition, women are freer to be themselves without the pressure of males; non-competitive environment (nurturing, supportive)
- Women can do their thing without competing with men.
- Women develop different relationships with each other when there are no men around
- In the wild, going to the "bathroom" is easier without men around
- Women feel more comfortable in a "women's only" group. More confidence in themselves. Willing to try different things that are stereotypically male activities.
- Women need bathrooms and showers! And go easy and slow with us; we want knowledge. We don't have to master anything.
- Women act differently when there are no men around. We take on more [active roles]
- Less defined roles based on gender
- Not as much stress as with the men around and knowing it all already
- Less intimidated; more likely to ask questions of instructor; not feeling intimated; less intimidating
- Less intimidating than when guys are around. Women are more understanding, supportive, and helpful.
- More comfortable in a "women's only" group; women are more supportive in a "women's only" group
- More confidence, not intimidating, more opportunity to meet and share experiences (platonic)
- More easy going, more relaxed; less competitive with females only
- Women are more supportive of each other; not as competitive as men with each other
- "Women only" group has less competition, different communication techniques are needed, and there are different interests and level of knowledge.
- Less competition, equal responsibilities, more support, less emphasis on results or achieving, more cooperative, And more fun!
- Women understand the limitations that one may have to overcome to do a task that has stereotypically been associated with men
- A "women only" outdoor group realizes women's strengths and weaknesses, insecurities, and needs. Men can be distracting to the women's overall experience. With an all women's group, it is a helpful to the learning environment. With men it could be more competitive, with arrogance, and an air of superiority
- "Women only" group is less self-conscious, more supportive, not worried about appearance, not afraid to be more assertive
- I think men would act superior, more experienced, maybe look down on women for wanting to become involved in what is traditionally male recreation
- It depends on the age and relationship of participants. Too often it's the women work and the men recreate in the outdoors
- Women tend to be seen as the followers, organizers, cleaners, inferior
- It really depends on the individuals; competition with men or men competing with each other and taking a lot of time with this
- Many men are supportive and helpful, but too many put us down
- Men tend to "know it all" and probably would try to take over the class. We women would preen more, worry about how we looked more
- Too many distractions and not enough learning [with men around]

**Table 5.—continued.**

- We don't have to wait on the fellows
- Women may not excel as much in a co-ed environment. Men have a harder time learning from women.
- Less mingling and more separation between groups
- Men would be showing off, being center of attention, criticizing, "hogging" the equipment, making negative comments about the women
- No male domination/superiority issues
- Some men want to do things using their muscles, most women are interested in learning the correct techniques
- Offer co-ed, but possibly split classes into male or female if it is better separate

Canoeing, play with clay
Learning and teaching differences
Less distance every day; easy to prepare and clean up meals; an enjoyable "pace"

**Table 6.—Constraints Women May Encounter with Outdoor Recreation Pursuits**

Partners to do things with

- People that I am compatible with
- Not being in a traditional relationship

Competition, having males be too patronizing or too helpful
Physical limitations

- None except for creaky joints
- Personal handicaps slow me down. Walking is stressful and stairs are painful
- Physical strength and endurance and energy; physical limitations
- Heavy lifting; not being fit
- Sometimes I can't keep up w/the men athletically or skill wise

Safety; lack of knowledge

- I no longer choose to do dangerous sports such as rock climbing and caving
- Bugs, dangers of animals, injuries, reptiles, insects, and injury
- Lack of ability and knowledge
- Finding information about these activities and events
- Knowing what to expect

Children, spouse, not being able to get away for a weekend. Fridays are tough to take off from work; Cannot take off too many days, but for a program like this 3 days

- Family obligations
- Having (two) small children
- Kids cooperation and having a budget for it
- Difficult to finance; getting time off from work
- Having enough time to arrange work schedule
- Time and money available to do things
- Lack of time
- Cost
- Economic, right now it is affordable; physical concerns as health deteriorates

Comfort, depending on the weather

- Extreme heat or cold

Land availability
None

When asked about any fears they might have concerning participation in outdoor recreation in general, the women replied they had fears about personal injury from accidents, acts by others against them, or from wildlife. They also had some concerns about getting lost and coming in contact with poison ivy. Some expressed concerns about their physical abilities, learning the outdoor skills properly, and performing successfully in the field. They did not want others, especially men, to make fun of them (e.g., their lack of skill, getting sweaty, having no make-up on, and not being athletic enough). For others, potential group dynamics was an issue, as well as the possible curtailment of state and federal funding supporting outdoor recreation opportunities (Table 7).

The highest level of education among BOW participants was a doctoral degree (5.9%). Education level attained ranged from a high school diploma/G.E.D. (1.5%) to recipients of the doctorate. The most frequent (mode) education level reported was "some college"(27.9%) and the median was a "college degree" (26.5%). About twenty-two percent (22.15) had a Master's degree and another 13.2% had some graduate school coursework. A small number (2.9%) had attended vocational/technical school.

Most of the Illinois DNR Becoming An Outdoors-Woman® (BOW) Program attendees, not surprisingly, reported their home residence to be Illinois (88.9%). One person was from North Dakota (1.4%) and someone else indicated "other" (1.4%) as her home residence.

The majority (72.7%) of workshop participants indicated that they lived in a single-family house. The median and mode housing type was also a single-family house. Housing among attendees ranged from single-family homes to house trailers. About twelve percent (12.1%) lived in apartments, 6.1% in condominiums, 4.5% in townhouses, 3% in duplexes, and 1.5% in house trailers.

The mean total household income (for 2001) for Illinois BOW participants was $65,536.35, with a median of $60,000, and a mode of $50,000. The total household income (2001) ranged from $16,000 to $200,000 among BOW participants. The majority (43.7%) had a total household income in the middle-income bracket between $46,000 and $75,999. About a third (30.7%) had a total household income in the $16,000 to $45,999 lower middle-income bracket. About twelve percent (12.6%) had a total household income in the upper middle-income bracket. Another 14.4% were in the upper income bracket between $106,000 to $200,000.

## 5.0 Conclusions and Implications

Overall, from other miscellaneous comments made, many participants thought the BOW Program was "totally cool!" The women thought this was a "wonderful program." They urged Illinois DNR staff to "please tell the [IL] legislature that we need to keep funding this [BOW Program]." In the Illinois program, the BOW staff has teamed up with national sporting goods manufacturers to sponsor scholarships for the women's program. Additionally, numerous sporting equipment companies and instructors donate various outdoor recreation items for the auction and silent auctions that are used to raise funds for the program. The program is working effectively to expose a new population to the wonders, enjoyment, and personal enrichment to be found in our rich outdoor heritage. Outdoor recreation resource managers would do well to inspect or use this model program as a means to diversify use and access to our public outdoor resources.

The BOW Program has experienced a wellspring of interest, growth, and support over the past decade and it has reached a previously under-tapped segment of our population with regard to educating people for outdoor pursuits.

In the past, as children, adolescents, or young adults, many women may not have had the same opportunities, access, skill development, or encouragement to participate in outdoor recreation, as male do from role models (Yoesting & Burkhead 1973; Freysinger 1990, p. 49). Today, programs like BOW are helping to change that by opening up a wider venue of leisure possibilities for woman. Knowing what motivates and satisfies this user segment and the benefits they reap from outdoor participation is important to state DNR/DEC offices, BOW Program coordinators, environmental educators, community recreation providers, and outdoor resource managers as our user base is becoming increasingly more diversified. This program is now well established and we have only begun to pose questions to help us to learn more about this clientele.

**Table 7.—Fears Concerning Participation In Outdoor Recreation**

I like to feel personally safe (i.e., not get assaulted), and I have a fear of heights

- Bugs, creatures, dangers of bites of critters, falling
- Predators: human and wildlife
- Accidental injuries and those in commission of a crime against me
- Getting injured; Injury; Hurting myself
- Getting lost
- Safety in some classes; safety
- Poison ivy

Being "good" or learning it "right"

- That I'll screw up

Lack of knowledge or skill

- Not knowing "enough" [about the outdoors]

Loss of state and federal funds to support programs

Physical ability/competition

- I'm strong enough to not do something I don't want to do
- Men making fun of me; lacking skills; looking "fat", sweaty, no make-up, etc.; not being athletic

Group dynamics issues (unless I'm solo)

Too many unknowns

None, No fears

Fears concerning participation in "women's only" outdoor recreation again included concerns about personal safety, physical ability, inexperience in outdoor endeavors, and cutbacks in government funding of outdoor programs. Some unique fears associated with "women's only" programs were having women in the group who were pre-occupied with their appearance (i.e., hair and make-up) or who were "anti-men." Others indicated a concern about being able to fit in with the group and its dynamics. Someone mentioned having no fears so long as they were prepared for an endeavor.

A socio-demographic profile of this Becoming An Outdoors-Woman® (BOW) group of participants follows. All the BOW Program participants were females. There were, however, several male instructors for the weekend workshop courses.

The mean and median age of BOW participants was about 44 years old, with attendees ranging in age from 20 to 76 years. Almost half (46.9%) of the program participants were between 41 to 50 years old, with 41 years being the most frequent (mode) age of attendees. A little over a third (38.5%) were between the ages of 20 and 40 years old. Almost one-fifth (18%) of the group was 51 to 60 years old.

With regard to marital status, the majority of the BOW participants were married (40.9%), a little over one-fifth (22.7%) were single, and another fifth (19.7%) were divorced. Additionally, 10.6% had domestic partners and 6.1% were separated.

The BOW workshop participants had an average of .74 dependents under the age of 21, with a range of zero to three of these dependents. The majority of attendees (59.6%) had no dependents less than 21 years old. Almost one-third (31.9%) indicated they had one or two dependents younger than 21 years of age.

The BOW workshop attendees had an average of .56 dependents over the age of 21, with a range of zero to three of these dependents. The majority of participants (70.7%) had no dependents over 21 years old. A little over one-fifth (22%) had one or two dependents over 21 years of age. In both cases regarding the age of dependents, the majority of BOW participants reported having no dependents. Certainly, having dependents seems to make it more difficult for women to make arrangements to cover their family responsibilities or to take the time to get away for some leisure of their own.

With respect to ethnicity, 96.9% of the BOW participants were Caucasian and 3.1% were Asian. These statistics indicating the under-representation of minority ethnicities are consistent with data on U.S. outdoor recreation participation in general, for both males and females (Ewert 1989, p. 2).

In terms of occupational field, the largest cluster of BOW participants was associated with the education field (16.8%). Seven percent (7%) were in a business related field. BOW workshop attendees otherwise represented a wide array of career fields.

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# MONITORING THE IMPACTS OF VISITORS TO SHOREBIRD POPULATIONS IN THE NPS COASTAL AND BARRIER ISLAND NETWORK AREAS

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## Abstract

The impacts of recreationists on wildlife are a growing concern in protected natural areas around the world. In the NE Coastal and Barrier Island Network areas managed by the National Park Service (NPS), the effect of ever increasing visitor numbers on beach nesting shorebirds such as the piping plover is an ongoing management concern. Currently, these NPS areas conduct counts of shorebird species and numbers, but do not monitor other important trends such as visitor-wildlife interactions. The purpose of this study was to evaluate established procedures for the assessing the type and frequency of human disturbance to shorebirds and to determine the applicability of these procedures to monitoring trends of impact in the Coastal Network. Based on a literature review of disturbance studies, and a preliminary field assessment, the monitoring variables of pre and post disturbance behavior, visitor activity type and number of visitors are suggested for future field testing.

## 1.0 Introduction

Parks and protected areas are often seen as refuges of naturalness, where visitors can have opportunities to experience the many aspects of the natural world first hand. Such opportunities are becoming increasingly rare in an ever more urbanized world. Protecting the resources so vital to these experiences is arguably more challenging than ever before in an age of increasing visitation, urban area expansion and demand for natural resource extraction.

Progressively more visitors are drawn to parks and protected areas for opportunities to view wildlife. Approximately 12% of the U.S. population over 16 years of age cite a range of wildlife-dependent activities as a primary reason traveling to a park or protected area. Nearly 63 million visitors to public lands in the US enjoyed various activities dependent on wildlife (USFWS 1996). Despite the value of wildlife to visitors, there remain many situations where wildlife needs and recreation activities conflict. Although significant knowledge gaps remain, recent reviews of the impact of recreation on wildlife (Knight and Gutzwiller 1995; Hammitt and Cole 1998) suggest several overall conclusions. First, recreational impacts may be direct or indirect, the former from interactions with humans, the latter from habitat or environmental alterations. Second, different species have different tolerances to human disturbance. Third, the major impact to wildlife by recreationists is unintentional harassment by visitors who unknowingly produce stressful situations for wildlife. Finally, the frequent presence of visitors in and near wildlife habitats can alter the behavior of animals significantly.

Perhaps a quintessential example of a situation were these conflicts arise is coastal beaches, where millions are drawn annually to enjoy the recreational opportunities these areas provide. The very locations sought by the beach visitors—sandy areas near the ocean—are also exclusive habitat to various shorebird species. Although shorebird protection programs exist, many coastal managers have little information on their efficacy in terms of visitor compliance and the ongoing frequency and type of direct disturbances by recreationists.

The purpose of this research was to examine the current state of knowledge on the assessment and monitoring of direct human disturbance to shorebirds to determine if a viable program of monitoring these impacts could be developed. Specifically the context for this work is the Vital Signs Monitoring Program of National Park Service with a focus on the Northeast Coastal and Barrier Island Network parks. This study is part of a larger project charged with the development of monitoring protocols for visitor impacts to resources across the Coastal Network, a group of eight eastern NPS managed areas extending from Cape Cod National Seashore in the north to Colonial National Historic Park in the south. In

this context, this research sought to examine the directly relevant literature to determine the extent of current shorebird monitoring methods, determine specifically which variables and methodologies might be adaptable to the Vital Signs Monitoring Program and finally, through a preliminary field exercise, determine which methodologies showed the most promise for future field testing.

## 2.0 Monitoring Visitor Impacts to Wildlife

Monitoring recreation impacts to wildlife is inherently more complex than the assessment of soil and plant disturbance. Wildlife are mobile, exhibit learned behavioral responses and are more complex biologically than other ecosystem components (Cahill and Marion 2004). As such, the majority of recreation impact monitoring efforts to date have not involved detailed wildlife assessments (Marion et al. 1993; Cahill and Marion 2004). Given the aforementioned recent advances in our understanding of wildlife impacts due to recreation activities (e.g., Knight and Gutzwiller 1995; Hammitt and Cole 1998), accurate and reliable monitoring methods are of clear importance for managers of protected areas. The development of meaningful assessment methods is complicated by the staff and funding limitations that managers often face, making full physiological assessment of responses impractical. Cahill and Marion (2004) reviewed the range of possible methods for monitoring given these limitations and concluded that monitoring a limited number of observational indicators that assess direct human wildlife disturbance events may be the most effective for managers. Although they acknowledge that more extensive, long-term, experimental studies are needed to determine cause and effect, observations of a limited number of indicators may be all that is needed for managers to take precautionary interventions to limit undesirable human disturbance to wildlife (Cahill and Marion 2004). The goal of this project is to suggest a suite of practical observation-based indicators that could be field tested in the future to monitor human disturbance on shorebird species.

## 3.0 Approach

A comprehensive scoping process on visitor impacts in the Coastal Network (Monz et al. 2004) found that the impacts of visitors to nesting piping plovers (Charadrius melodus), an endangered shorebird, was an overriding concern of managers at several areas in the Coastal Network. As such, we focused this study on one of the NPS Network areas, the Sandy Hook unit of Gateway National Recreation Area in New Jersey where both historically and presently many plovers reside during nesting season. Prime plover habitat—sandy beaches—are also the primary areas of concentrated visitor use at Sandy Hook. This spatial overlap necessitates that managers employ the use of exclosures directly surrounding the nests, and signage and fencing to prohibit visitors from disturbing the birds. The Sandy Hook area provided an opportunity to view current plover management strategies first hand, observe the interaction of visitors and nesting birds and conduct some preliminary investigations as to the feasibility of established impact assessment methodologies. Although this project focused on Sandy Hook, the issues and concerns of visitor impacts and the management thereof are similar in many areas in the northeast and mid-Atlantic coast.

After an initial site visit to Sandy Hook, an extensive literature review of the existing methodologies for observing visitor impacts to piping plovers and other similar shorebirds was conducted. Based on this literature review, we designed a preliminary monitoring protocol and informally field tested these procedures in a second visit to Sandy Hook. The efficacy of monitoring protocols were evaluated on the basis of a) ease of measurement; b) time required to obtain measurement; c) ability to determine a disturbance response; and d) consistency among several observers. This preliminary selection of monitoring indicators and protocols is the first step in the process of developing appropriate and feasible monitoring strategies in the context of the Vital Signs Program (Fancy 2002) and the suggestions provided in this work will be subject to further refinement in future phases of this project.

## 4.0 Findings and Discussion

A significant body of information exists on the effects of various recreation activities to the piping plover, the majority of this work having been conducted in coastal areas of New Jersey (e.g., Burger 1995). Plovers are solitary nesting species and therefore have a limited ability to defend against intruders than colonially nesting birds. The consequences of visitors on plovers reported in the literature (Table 1) include: 1) direct nest disturbances such as stepping on eggs and chicks and scaring adults from nests; 2) alteration of habits as

**Table 1.—A Summary of Visitor Impacts to Piping Plovers and Other Beach-Nesting Shorebirds**

| Study | Impacts Assessed | Salient Findings |
|---|---|---|
| Burger and Gochfeld (1998) | Visitor impacts on foraging behavior of five species | Presence if visitors influenced foraging behavior; time of day was a significant factor |
| Burger (1995) | Beach recreation effects on nesting birds | Stepping on eggs/ chicks, scaring incubating parents from chicks/ nests, forcing birds to alter habits, impeding foraging |
| Burger (1994) | Effects of human disturbance of foraging behavior and habitat use | Time spend foraging inversely related to number of visitors. Habitat use depends upon tidal conditions and numbers of visitors |
| Burger (1991) | Disruption of foraging time due to visitor activities | Loss of foraging time due to visitors, foraging at night observed. Direct relationship between number of visitors within 100 m and alert behavior |

a consequence of the close proximity of beach visitors; and 3) swimmers moving in and out of waves causing a disruption of normal foraging activities in intertidal areas (Burger 1995). Foraging behavior was found to be disrupted considerably by heavy daytime beach activity and foraging at night to obtain enough food was observed (Burger 1991). Adults were found to be distracted from normal foraging activities as disturbance forced them to be alert and to defend the nest. Direct disturbance events (such as a jogger passing in close proximity) caused chicks to scatter. Repeated disturbance resulted in fewer and fewer chicks remaining and when only one or two chicks were left could the adults then devote sufficient time to feeding. As such, overall reproductive success may have been reduced (Burger 1995). A direct relationship was found between the number of seconds a foraging plover devoted to alert behavior and the number of people within 100 m (Burger 1991).

The above research findings and the general aspects of monitoring visitor impacts to wildlife (Cahill and Marion 2004) suggest four important variables for assessing visitor impacts to plovers (Table 2). Two of these variables focus on the behavioral response of the plovers and are thus direct assessments of disturbance while the others are observations of visitor behavior. First, a primary concern is whether any clear disturbance response behaviors can be observed including interrupted foraging, flushing and nest defense. Habituation to humans is included in this category as "no response". The change in plover behavior is captured in the comparison of pre- and post-disturbance observations. A second concern is the assessment of visitor behaviors that are the sources of potential disturbance. Although indirect in terms of wildlife species, these measurements are relatively easy to conduct, are related to impact and may be useful to managers in determining the efficacy of visitor management programs (Cahill and Marion 2004). In this case, monitoring potentially disruptive behavior and the number of visitors near nests and exclosures is suggested (Table 2).

Various elements of sampling must be addressed in order to develop feasible and accurate monitoring protocols (Table 3). The literature and some common sense conclusions suggest that the distance of the observer to the nest, length of sampling time per observation, time of day and time of year are important considerations. Preliminary field trials suggest that a distance of 75 m and a sampling time of 2 min are optimal for observations given the limitations of potential disturbance by the observers and the practical considerations of allowing a reasonable opportunity to observe plover behavior.

**Table 2.—Important variables and their attributes for piping plover disturbance assessment**

| Variable | Attributes |
|---|---|
| Post-disturbance behavior | • Alert<br>• Interrupted foraging<br>• Flushing<br>• Defending nest<br>• No response |
| Visitor activity type in proximity of the nest | • Running<br>• Walking<br>• Sedentary activity<br>• Throwing objects<br>• Kite flying<br>• Fishing |
| Pre-disturbance behavior | • Foraging<br>• Resting<br>• Preening<br>• Attending to chicks |
| Visitors in proximity of nests | Number of people within 50 meters of nest/exclosure |
| Plover age classes | • Adults<br>• Chicks |

**Table 3.—Important sampling considerations for plover human disturbance assessment**

| Sampling Consideration | Research findings and options | Suggested protocol for field testing and rational for tentative selection |
|---|---|---|
| Observation Distance | • 25, 40,75,100,120 meters from nest/exclosure (Burger 1994) | • 75 meters<br>• Ease of identification of species. Closer observations distances resulted in disturbance of species |
| Sampling Time per Observation | • 30s, 2min, 4min. (Burger 1994) | • 2 min.<br>• Longer time intervals impractical for continuous observation, shorter intervals lack opportunity to observe behavior |
| Time of Day | • Low tide and peak visitor use times (Burger 1991) | • Hours of plover foraging and high potential visitor disturbance |
| Time of year | • During breeding season until chicks fledge (April-July) | • Regular periodic assessments during times of high visitor use (May-July) |

It should be stressed that the suggestions for monitoring presented here have not been thoroughly field tested and additional work is needed to refine these ideas into a well developed protocol. Nonetheless, the research findings examining human-wildlife interactions and the literature specific to plover disturbance suggest that several observation based variables of plover and human behavior can be measured to provide an index of the frequency and extent of visitor disturbance. The informal field trials conducted at Sandy Hook demonstrated the importance of standardization of certain procedures such as the distances at which to observe the plovers, amount of observation time and the need to train multiple observers for consistency and accuracy. Future phases of this project will seek to refine and test the suggestions provided here in an effort to develop specific monitoring protocols for

visitor disturbance to plovers and to potentially adapt these methods to other beach nesting species across the Coastal Network.

## 5.0 Conclusions

This project examined the possibility of utilizing basic observational indictors as a surrogate to more extensive population or physiologically based studies of human disturbance to piping plovers. A preliminary suite of indicators (Tables 2 and 3) and protocols (Table 3) are suggested for field testing in future phases of this project. Further research is needed to examine the validity of using human-wildlife interaction measures as a surrogate for more traditional wildlife disturbance assessments. However, the observation-based assessments suggested here are more feasible for managers in need of gathering some useful data to manage undesirable visitor wildlife disturbance. Future phases of this project will refine the suggested indicators into a suite of specific protocols for monitoring and seek to collaborate with the current NPS assessments of plover populations to determine the validity of these assessments.

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# COGNITIVE MAPPING: AN APPLICATION FOR TRAIL MANAGEMENT

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## Abstract

Outdoor recreation managers and planners need to use effective and efficient methods to monitor environmental impacts and degradation in areas under their jurisdiction. Traditional methods used to accomplish these tasks generally rely on managerial assessments or other techniques that are monitored over time. These methods generally focus on the resource itself, not the visitor to the resource, and are usually implemented after impacts have become evident. One method that may allow recreation managers and planners an earlier opportunity at intervention is to assess the perceptions of resource visitors through the use of cognitive mapping methodology. This paper explores the use of cognitive mapping methodology to assess hikers perceptions of trails and trail conditions on the island of Oahu, Hawaii. Visitors to established trail systems on Oahu were randomly intercepted and asked to participate in a survey that employed cognitive mapping methodology in conjunction with more traditional survey methods. Specifically respondents were asked to mark on maps of Oahu the hiking trails that they perceived to be the most popular, the perceived trail conditions / impacts on trails, and to indicate the variables that were associated with their own satisfaction levels. This study suggests that cognitive mapping can be used, in addition to more established methods, as an outdoor recreation management tool.

## 1.0 Introduction

This paper explores the use of cognitive mapping as a means of gathering data related to recreational use patterns (RUP) and impacts on hiking trail systems on the Island of Oahu, Hawaii. Further it suggests ways that such data might be used by managers to mitigate recreational impacts that may occur from those RUP's. Recreational use is destroying and disrupting the biological diversity and site amenities of many recreation areas in Hawaii. Subsequently it is important for managers to use methods that allow for the measurement of recreational impacts. Data of this type can then be used to help maintain the integrity of a given resource. Most traditional recreational impact studies focus on visitors / users after they have visited a recreation resource area, or rely on managerial judgment that is based on data gathered from techniques such as milacre plots or photo file inventories. Unfortunately this information is not necessarily conducive to designing management and maintenance programs to mitigate impact until the damage has already occurred. Another method of gathering data related to impacts is to have users identify popular areas and conditions using cognitive mapping techniques. This data provides a spatial map of current recreation use, the most significant biophysical attractors, and an approximate number of visitations to these areas.

The hiking trails on the island of Oahu are considered a major asset in terms of tourism and leisure opportunities for resident and visitor populations (Lankford et al. 1994). The Hawaiian words, Na Ala Hele, mean "hiking trails," or literally, "trails for walking." This system of trails is prevalent on all the Hawaiian islands. Many of the trail systems encompass shoreline and mountain trails built and used by the old Hawaiians. Unique to this system is the presence of many makahas (water circulation channels from the ocean or fresh water sources) which allow hikers to cool off in the arid regions of the islands. In addition, many of the trails connect various parts of the island's parks, open spaces and beaches.

As a consequence, the State Department of Business and Economic Development promotes these trail systems as an "eco-tourism" resource. Unfortunately, the State Division of Forestry & Wildlife employs only one specialist to manage the trail systems on each of the islands. Consequently, the management and monitoring of the trail system is inadequate. This study was designed to help the Wildlife Trail and Access System managers make decisions concerning existing trail conditions in areas that are being used frequently. Secondly, the study identified general characteristics of hikers for use in the development of eco-tourism management strategies.

### 1.1 Cognitive Mapping

Cognitive mapping alludes to an individual's ability to construct a mental representation of the geographical environment (Blades et al. 1999). This representation can be formed in more than one way. For example, an individual may cognitively form a mental representation through direct experience with the environment. In this process an individual visits an area and gradually builds up a knowledge base of places and routes in that environment. Jacob and Luloff (1995) term this process as "existential experience." Individuals may also develop cognitive maps through indirect means. Examples would include assimilating geographical information from verbal descriptions (personal communication), written descriptions (guide books, etc.), and graphic materials (maps, etc.). Despite the means used to construct these cognitive maps, the end result is a compendium of the larger environment that may include information and knowledge of areas and distances not actually visited or experienced. According to Gilmartin (1985), cognitive maps have the potential to significantly impact an individuals behavior, beliefs, and attitudes regarding places.

Cognitive mapping also speaks to an individuals sense of place. As noted by Downs and Stea (1977), sense of place relates to a broad based awareness of a geographical place and its attributes. This sense of place is often widely held by the local population or users of a particular area. Jacob and Luloff (1995) suggest that these individuals may form cognitive maps that serve as representations of the spatial environment. These representations serve to index assorted reference information related to a particular environment. These representations, or cognitive maps, are considered accurate in that they serve as: (a) a means for an individual to share information with others; (b) help an individual navigate between places; and (c) may serve as a means of recall allowing an individual to recollect important information about a specific geographical area.

The application of cognitive mapping procedures to the study of recreation and tourism activities has been limited (Britton 1979; Fridgen 1987; Guy et al. 1990; Jacob & Luloff 1995; Pearce 1981; Walmsley & Jenkins 1992). Yet as noted by Downs and Stea (1977) and Fridgen (1987) recreation and cognitive maps are inseparable. This is due to the connection between cognitive mapping and spatial behavior. Spatial behavior refers to patterns of movement that can be characterized by its origins, distances, destinations, directions, and frequencies of occurrence. In an outdoor recreation context for example, an individual is constantly making decisions about places to visit and how to get there. The tourism and recreation industry therefore works hard to produce marketing materials that will manipulate and favorably influence an individuals cognitive representation of place. All forms of recreation and travel have some form of environmental cognition because people must orient, traverse, and locate recreation destinations and attractions. Cognitive mapping allows recreation resource managers the opportunity to identify where users perceive the best recreation areas are located. It is important to understand these perceptions in order to manage intensive use areas appropriately in terms of maintenance, supervision, budgeting, and planning.

As noted earlier cognitive mapping has been used to study recreation and tourism related issues. Fridgen (1987) used cognitive mapping to help research individuals perceptions of tourism regions in the state of Michigan. Using a random traveler intercept methodology, Fridgen surveyed travelers that had stopped at Travel Information Centers in Michigan. Respondents were asked to indicate on a map which areas of Michigan they perceived to be recreation and tourism regions. Data from the survey were collapsed into a Tourism Location Score. These scores were then used to compare tourism locations and establish which areas of the state were most popular. Fridgen's findings indicated that most travelers rated coastal areas as being most popular and were most likely to provide excellent tourism and recreation opportunities.

In a study related to tourism issues, Jacob and Luloff (1995) used cognitive mapping to research residents perceptions of rural areas in the state of Pennsylvania. Using a total design method mail survey (Dillman 1978), the researchers asked respondents to indicate on a blank map of Pennsylvania those areas they perceived to be most rural. Results indicated that most respondents could indicate rural areas on the map. There were however differences with respect to the population density of the respondents place of residence. Urban respondents reported a larger percent of rural area than did those who lived in less populated areas. The authors also noted the incongruities between so called "objective" (road) and "subjective" (tourism promotion) maps. Discussed

was the Amish Country located in Lancaster County, Pennsylvania. Long marketed as a rural "eden," this area is one of the most popular tourist destinations in Pennsylvania. This county benefits from its rural image despite having a population that exceeds 400,000. This example shows that cognitive maps and imagery can be a powerful marketing tool for tourism based agencies.

Walmsley and Jenkins (1992) used cognitive mapping to research tourists attitudes and behaviors in Coffs Harbour Australia. The researchers were interested in how tourists experience "environmental learning" (or understanding) about an areas new and unfamiliar attributes. They believed that an understanding of this process would be of value to those concerned with the promotion and commercial viability of tourist attractions. Respondents were selected at random and asked to complete a sketch map of the Coffs Harbour area. Respondents were also asked to complete a questionnaire designed to elicit information about other factors that might influence their cognitive mapping experience or perceptions. Walmsley and Jenkins concluded that cognitive maps were a useful means of exploring how tourists come to know the environment of a resort area. They found that environmental learning occurs quickly and is influenced by a number of variables. Specifically they found that length of stay prior to the mapping activity and being the driver of a motor vehicle (as opposed to being a passenger) positively impacted the quality of the cognitive maps. Individuals from urban areas were also more likely to produce a quality map than were those from rural areas. It is believed that individuals who are familiar with complex urban environments are better at interpreting new environments.

### 1.2 Cognitive Mapping Analysis Issues and Methods

The analysis of cognitive maps can present problems. As noted by Walmsley and Jenkins (1992), every cognitive map is somewhat idiosyncratic as each contains perceptions of information that are of particular significance to the maps author. The end result then is the potential for a series of maps with a high degree of variability. This is due to the fact that each map is an individual's attempt to externalize a cognitive image. Although there is no way to ascertain how well each map represents its creator's cognitive imagery, the research suggests that such maps do provide valuable data into the ways that individuals develop environmental knowledge (Downs & Stea 1977). The technique used by most researchers for this purpose is to analyze cognitive maps in terms of Lynch's (1960) typology of map features. This approach filters out idiosyncratic elements by focusing on the main items recorded. Maps are then analyzed in the aggregate to bring out the generality and quantity of recorded items (landmarks, paths, topographical features, etc.).

## 2.0 Methods of Present Study

The following research questions were proposed for this study: (a) which areas of Oahu are perceived as the most popular hiking areas?; (b) are hikers primarily drawn to popular accessible areas?; (c) does a relationship exist between familiarity and use levels with the trails on Oahu and cognitive maps of the hiking resources?; and (d) once cognitive mapping information is collected, what factors can be identified with visitor satisfaction to a particular trail?

Cognitive maps were prepared by griding the Island of Oahu into distinct hiking zones (see Map 1). These zones took into consideration existing geographic regions, climatic conditions, landscape features, marine resources, and recreation sites. The grids allowed respondents to indicate primary hiking sites and the resulting composite maps allowed the researchers to identify high impact areas. In cooperation with the State Division of Forestry, and Wildlife Trail and Access System managers, researchers collected data at specified trail heads around the island (four trailheads, which included leeward, windward, northshore and southshore). Random sites, days, times, and respondents were chosen for data collection. Surveys were collected from 100 hikers (N=100, of which 25 surveys were collected at each of the trailheads).

Respondents were asked to answer various questions and mark maps which addressed the objectives of the study. In addition socio-demographic information and data related to the management and use of the areas were collected. Following the methods of Fridgen (1987), respondents were asked to indicate the top three hiking zones on the map (by circling the three most important recreational hiking trails on the island; and then indicate which zone was best for their own recreational hiking (by placing an X in the circle of their choice). Subsequently a recreation hiking location score (RHLS) was calculated for various hiking locations on the island of Oahu as follows:

**Table 1.—Recreation Hiking Location Score Indicating Most Popular Hiking Trails and Respondent's Ratings of Single Best Trail and Most Frequently Visited Trail as Validation of Cognitive Mapping**

| Area of Island | Recreation Hiking Location Score (RHLS) | Single Best Trail (%) As Validation | Most Frequently Visited (%) As Validation |
|---|---|---|---|
| Honolulu (urban) | 38.8 | 39 | 49 |
| Koolaupoko (windward, south) | 20.6 | 9 | 9 |
| Koolauloa (windward, north) | 19.0 | 12 | 8 |
| Waianae (leeward, western) | 12.6 | 6 | 3 |
| Waialua (north shore) | 12.2 | 4 | 1 |
| Ewa/Pearl City (leeward) | 12.0 | 10 | 8 |

A = A tally of circles for each part of the island was made to represent the three most important hiking areas on the island;
B = A tally of partial circles for each part of the island was made to account for overlap between boundaries/zones on the map: and
C= A tally of X's (representing their own "best" hiking trail)

As a result of this formula, the calculation of the RHLS was: RHLS = (.4A + .4C + .2B). Therefore, each respondents cognitive mapping was worth one point, with .4 points given to full circles, .4 points to the X's which represented their best/favorite hiking area; and .2 points for the partial circles (the researchers determined which zones these partial circles would fall). This RHLS score allowed researchers to determine which areas of the island had the most relative use. In addition respondents were asked to indicate their own most frequently used hiking trail and to indicate the single best hiking trail on the island. Results from these two questions were used to validate the RHLS procedure.

## 3.0 Findings

Analysis of the sample indicated that males comprised 62% of the sample, while females represented 38%. Almost one third (27%) of the hikers had graduate degrees and third (34%) had four year degrees. Residents of Oahu comprised 64% of the sample, while tourists comprised 28%. Residents of neighboring islands comprised the remaining 8% of respondents who completed the cognitive mapping task.

Results indicate that the cognitive mapping and resulting recreation hiking location scores (RHLS) helped to identify the most heavily impacted hiking areas on the island of Oahu. Honolulu does receive the largest impact in terms of users to its extensive trail systems on the mountain side (mauka) of the urban area. The windward south (Koolaupoko) and windward north (Koolauloa) were the next most popular hiking spots (see Table 1).

Analysis of the questions used to validate the RLS scores verified that these three areas were the most popular hiking destinations on the island. These findings also indicate that the Honolulu trail system is the most popular hiking area on Oahu. This is not surprising given that 68% of the island's population lives in Honolulu. This finding suggests that hikers are primarily attracted to accessible hiking areas. The findings also indicate there is some relationship between the visitation and perception of the island trail systems and the recreational hiking areas as noted on the cognitive maps. For example, when examining the respondents (grouped by area of island according to the map responses) by the "trail they most visited/best trail" all the indicated they were at least somewhat familiar with the hiking trails on the island. There were no significant differences observed by these

respondent groups. Pearson correlation coefficients were generated to determine which variables were related to overall satisfaction of the respondents. Satisfaction with that day of hiking was significantly correlated (p=.05) with: (a) condition of the trail (r=.52); (b) ability of other hikers (r=.45); (c) damage caused by overuse (r=.59); and (d) the need for a reservation system in high use areas (r=.59).

A one-way ANOVA was used to identify specific issues (5 = added great satisfaction, 1= detracted greatly from satisfaction) for each area of Oahu that was "most visited/best trail" by the respondents. The hikers to the trail systems indicated a significant difference (p=.05) with respect to parking issues. Specifically, visitors to Koolaupoko (M = 4.11) and Ewa / Pearl City(M = 4) trail systems indicated that availability of parking added greatly to their hiking satisfaction, which differed significantly from visitors to the other areas. The presence of litter negatively impacted visitors to all trail systems. Finally, with the exception of visitors to Koolaupoko, respondents in all areas felt that the existing trail systems were being damaged by overuse.

## 4.0 Discussion of the Use of Cognitive Mapping for Assessing Trail Use

The cognitive mapping process outlined in this study appears to have usefulness in identifying popular and potentially impacted hiking areas on the island of Oahu. The findings also indicate that self reported familiarity with the existing trail systems, current visitations, and recreational use patterns can help validate the findings of the cognitive mapping process (Table 1).

Not surprisingly it appears that hiking trail systems adjacent to urban areas receive the most use and account for the most perceived impacts. More importantly, respondents indicated that these areas were overused, littered, and should be managed through some type of reservation system. Finally, the findings relative to satisfaction with hiking are important in that appropriate management action can be implemented before both residents and tourists become disenchanted with hiking on Oahu. Hiking is an important aspect of the State of Hawaii's eco-tourism promotion.

It is expected that information gathered using a cognitive mapping methodology will assist recreation managers in managing trail resources under their jurisdiction. By identifying high impact sites, adjustments can be made to current management, maintenance, and law enforcement activities. This process can then take place before further environmental degradation occurs in areas that are not currently given priority. Refinement of the cognitive mapping procedures will enable future researchers to use the technique for recreation and tourism management and planning.

### 4.1 Implications for Professional Practice

It is important to note that cognitive mapping is useful in survey research studies designed to assist the recreation resource manager. No attempt is being made to suggest that cognitive mapping should replace any other monitoring technique or research methodology. Rather, it is suggested that cognitive mapping be used to supplement or strengthen existing monitoring efforts. The strength of the technique is that it allows the resource manager an opportunity to identify locations and areas (spatial aspects) of potential impact and high use from the perception of the resource visitor. High scores on the RHLS may suggest attachment to a trail or system of trails. Moore and Graefe (1994) noted that managers need to be aware that visitors attachment to areas may be an important factor to take into consideration during the area planning process. They suggested that understanding place attachment (of which the RHLS may be one minor indicator) is important if managers are to be able to effectively maximize public benefits. In fact, when public hearings are proposed or considered relative to management actions on the trail systems, the trail managers on the Island of Oahu may have an idea of the issues, viewpoints, and behaviors of the trails users by site or area due to the data provided by the RHLS. In fact, Lloyd and Steinke (1986), and Raitz and Ulack (1981) argued in support of this statement in that cognitive maps and images should be similar for groups that share similar knowledge, beliefs, and experiences about places.

Cognitive mapping methodology may also prove useful in monitoring recreational user conflicts. It is important for land managers to be aware of the issues and differing goal orientations of hikers and other trail users. Ruddell and Hendricks (1995) noted that land managers and trail users are increasingly concerned about conflicts associated with the popularity of mountain biking. In Hawaii, there have been many instances of hiker and mountain bike conflicts on the trails. Some studies suggest that

maintenance problems and lowered hiker satisfaction with the trail systems in Hawaii are increasing (Lankford and Knowles-Lankford, 1993; Lankford, Kipling, & Mood, 1994; Lankford, Silva, Kowalski, 1996). Given the survey data and identification of popular hiking areas, Ruddell and Hendricks suggested that an educational system that identifies rules of etiquette associated with conflict be used, rather than enforcing prohibitive codes. Moore and Scott (1995) recommended that targeted educational efforts designed to expose users to the rationale / purposes of different activities may be effective in reducing conflicts on suburban trails. Cognitive mapping may allow the trail managers to identify the exact trails where these conflicts are emerging. In addition, the trail manager should integrate behavioral data with the cognitive maps to better understand specialization, goal orientation of users, perceived satisfaction and conflicts. Hase et al. (1996) noted that specialization can be a useful indicator for understanding motivations, perceived conflicts and management preferences.

According to Freundschuh and Kitchin (1999) cognitive mapping has evolved into a rich multi-disciplinary field, with a broad range of topical interests, in which geography is a key component. Through this collaborative process cognitive mapping research has provided insights into many theoretical issues concerning how individuals learn, comprehend, and behave in geographic space. Cognitive mapping research also provides for real world spatial applications. These include the development of search and rescue technology, map design, implementation of geographic information systems, and the development of mobility and navigation aids for visually impaired people (Jackson & Kitchin 1998). Kitchin (1997) noted that cognitive mapping research has theoretical utility in understanding spatial decision making, especially as it relates to way finding ability, migration choices, consumer behavior, and recreation decisions and behaviors.

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# A COMPARISON OF THE OF THE PERCEIVED RELATIVE IMPORTANCE OF COUNCIL ON ACCREDITATION CURRICULUM STANDARDS BETWEEN ACADEMICIANS AND PUBLIC PARK AND RECREATION ADMINISTRATORS

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## Abstract

An important factor in developing an effective curriculum is the need for academicians to understand the breadth of knowledge, skills, and abilities needed to engage in professional practice. Previous and recent research indicates that academicians may need a better understanding of the breadth of mastery needed by students in certain NRPA identified professional competency areas. The purpose of the current study was to compare academician's perceptions of the level of competence being received by graduates to public park and recreation administrator's perceptions of the level of competence needed for professional practice. The study identified that discrepancies exist between the views of academicians and practitioners as to what is the critical education undergraduates need in order to become successful practitioners. Results further indicate that professional preparation programs should focus more heavily on developing student competence in administration and management.

## 1.0 Introduction

The stability of any profession is maintained through a profession's ability to prepare competent individuals who can successfully engage in professional practice. As such, profession's strive to produce leaders who are competent, current, and informed (Sessoms 1998a). In order to accomplish this outcome, a profession must take measures to ensure that its professional preparation programs provide the knowledge, skills, and abilities required for professional practice. This is generally done using specialized accreditation. Primarily, specialized accreditors use specific competency standards to assess an academic program's ability to demonstrate that its graduates possess the competencies (i.e. knowledge, skill, abilities) recognized as essential for entry-level practice in the specialized accreditor's profession (Council for Higher Education Accreditation [CHEA] 2002).

Within the recreation, park resources and leisure services profession, competencies recognized as essential for entry-level practice are reflected in the Professional Competencies (Series Standards 8.00) of the Standards of Evaluative Criteria for Baccalaureate Programs in Recreation, Park Resources and Leisure Services (National Recreation and Park Association [NRPA], 2000). The Professional Competency series encompasses 42 criterion-referenced standards classified into eight specific competency areas. These competency areas include: Conceptual Foundations; Leisure Services Profession; Leisure Services Delivery Systems; Programming Strategies; Assessment, Planning and Evaluation; Administration and Management; Legislative and Legal Aspects; and Field Experience. These standards represent the core areas of knowledge, skills, and abilities graduates should posses upon entry into the profession, and also the criteria a professional preparation program should meet in order to provide an educational experience consistent with the profession's standards of practice (Sessoms 1998b). Formally adopted by the National Recreation and Park Association/American Association of Leisure and Recreation (NRPA/AALR) sponsored Council on Accreditation in 1975 (NRPA 1975), these standards serve as a guide for the development of recreation, park resources and leisure services undergraduate curriculum.

However, because the Professional Competency series standards are criterion-referenced their use as a guide for professional preparation does have limitations. One limitation is that criterion-referenced standards represent minimum proficiency or competency (Baumgartner, Strong, & Hensley, 2002). A second limitation is that criterion-referenced standards commonly do not discern a relative standing or comparison (Lundgren & Farrell, 1985). As a result, academicians commonly face the challenge of determining the extent or breadth at which specific areas of competency should be covered in their professional preparation curriculum. For example, is a student better served by a greater breadth of study related to the conceptual foundations of play, recreation, and leisure or a greater breadth of study related to the assessment, planning, and evaluation of leisure services? Further, is a student better served by a greater breadth of study related to programming strategies than both conceptual foundations or assessment, planning, and evaluation?

Previous research indicates that the profession has had difficulty answering these questions. In examining competency and continuing education needs, Hulverson (1979) and Henderson (1982) identified that deficiencies in preparation for professional practice were evident within the profession. Reporting on the proceedings of the National Curriculum Conference, held as part of the 1998 Annual NRPA Congress, Sessoms (1998a) indicated that there was evidence to support that deficiencies in professional preparation continues to be evident. According to Sessoms, "there currently appears to be a discrepancy among the views of educators and practitioners as to what is the critical education undergraduates need in order to become successful practitioners" (p. 23). Further expanding on the issue, Sessoms highlighted research presented that concluded that graduates were not receiving the preparation needed in competency areas such as assessment, planning and evaluation, administration and management, and legislative and legal matters.

An important factor in developing an effective professional preparation curriculum is the need for academicians to understand the level(s) of knowledge, skills, and abilities needed to effectively engage in professional practice. This understanding serves to better ensure that academic preparation (actual knowledge, skill, and ability acquisition) parallels required competencies for professional practice (needed knowledge, skill, and ability). As such, the purpose of the current study was to compare academician's perceptions of the level(s) of competence received by graduates of recreation, park resources and leisure services professional preparation programs with public park and recreation administrator's perceptions of the level(s) of competence required for professional practice based on NRPA identified Professional Competencies. Specifically, the current study was conducted to examine: a) whether or not deficiencies in professional preparation are still evident in the profession; and b) whether or not discrepancies between academicians and practitioners as to what is critical in undergraduate education are still evident in the profession.

## 2.0 Method

The current study is a comparative analysis between academician's perceptions of the academic preparation of recreation, park resources and leisure services students collected by Longsdorf (2001) and public park and recreation administrator's perceptions of the preparation needed for professional practice in recreation, park resources and leisure services collected in 2003.

### 2.1 Instrumentation

The author developed the measurement instrument used to collect both sets of data. Content items included in the measurement instrument were developed from the Professional Competencies (Series Standards 8.00) of the Standards and Evaluative Criteria for Baccalaureate Programs in Recreation, Park Resources, and Leisure Services (NRPA, 2000) and the testing domains outlined in the Official Study Guide for the Certified Park and Recreation Professional Examination (Rossman & McKinney 2000). These references guided the development of the content items of the measurement instrument that addressed at minimum three professional competencies related to: Conceptual Foundations; Leisure Services Profession; Leisure Services Delivery Systems; Programming Strategies; Assessment, Planning and Evaluation; Administration and Management; Legislative and Legal Aspects. Validity of the survey questionnaire was verified by the authors' decision to adopt NRPA published Professional Competency standards. Reliability testing for all scaled content items was done using a test-retest procedure for both academicians and practitioners. Reliability was measured using Pearson's r correlation coefficients. The responses to the 34 scaled content items were summed to create a total score. The scores on this scale were found to have acceptable reliability ($r = .79$) for academicians and acceptable reliability ($r = .77$) for practitioners.

### 2.2 Sample Selection

The population of colleges and universities in the 2001 study consisted of 182 colleges and universities offering degrees in recreation, park resources and leisure services in the U.S. The population included 100 NRPA/AALR accredited programs and 82 colleges without NRPA/AALR accreditation. Evaluative criteria to be included in the 2001 study were: a) the college or university had to be located in the U.S.; b) the professional preparation program had to offer no less than a baccalaureate degree, and c) the professional preparation program had to confer a degree in recreation, park resources and leisure services. From the 150 colleges and universities identified that met the study criteria that had more than one full time academician instructing recreation, park resources and leisure services courses, one academician from each

**Table 1.—Professional Competency Area Percentile Ranks: Academicians**

| Competency Area | Composite Mean | Weighted Mean | Standard Score | z Value | Percentage | Percentile Rank |
|---|---|---|---|---|---|---|
| Conceptual Foundations | 16.32 | 1.02 | .41 | .3409 | 34.09 | 65.91 |
| Leisure Services Profession | 16.38 | 1.02 | .48 | .3156 | 31.56 | 68.44 |
| Leisure Services Delivery System | 11.71 | .976 | -.54 | .2946 | 29.46 | 29.46 |
| Programming Strategies | 12.98 | 1.08 | 1.73 | .0418 | 4.18 | 95.82 |
| Assessment, Planning and Evaluation | 26.79 | .957 | -.94 | .1736 | 17.36 | 17.36 |
| Administration & Management | 32.11 | 1.00 | .06 | .4761 | 47.61 | 52.39 |
| Legislative and Legal Aspects | 15.11 | .945 | -1.20 | .1151 | 11.51 | 11.51 |

Note: Areas under standard normal curve for values of z to compute percentile rank were identified from Fisher, R.A. & Yates, F. (1974). Statistical tables for biological, agricultural and medical research. (6th ed.). In Hinkle, D.E., Wiersma, W., & Jurs, S.G. (1994). Applied statistics for the behavioral sciences. (3rd ed.). Geneva, IL: Houghton Mifflin.

institution was randomly selected to participate in the study. Thirty-two colleges and universities identified for the study had only one full time academician instructing recreation, park resources and leisure services courses. The 2001 study collecting academician data, following two mailings, yielded an actual response rate of 63% and a useable response rate of 52% (n = 96) for analysis in the current study.

The population of practitioners sampled in 2003 included 600 administrators operating public park and recreation agencies from across the United States. The population of practitioners selected for the current study was randomly identified from a database of administrators registered as members with the NRPA. In order to be eligible to participate in the study a respondent had to be employed at the time the survey instrument was received as the director, supervisor, or administrator of the public park and recreation agency in which the measurement instrument was addressed. Out of the 600 respondents identified for the study 567 met the study criteria. An initial and follow-up mailing of the measurement instrument yielded 331 responses, an actual response rate of 58%. Twenty-eight of the survey instruments returned were removed from the study due to incomplete or unusable data, which yielded a usable response rate of 53% (n = 303).

### 2.3 Data Analysis

Each Professional Competency area had its own scale from which its composite mean and composite standard deviation was derived. This was due to the variable number of questions comprising each Professional Competency area on the measurement instrument. Composite means were able to be used to test for significant differences between academician's perceptions of the competencies received in recreation, park resources and leisure services professional preparation programs and practitioner's perceptions of the competencies needed for professional practice. However, in order to facilitate a comparison of the importance of each individual Professional Competency area as perceived by academicians and practitioners, the composite mean of each Professional Competency area was adjusted for scale range to yield a weighted mean. The adjustment to weighted means allowed for each weighted mean to be converted to a standard score, reflecting each individual competency area's percentile rank.

The above described data analysis procedures were done using SPSS statistical software. All data reported in the result section was analyzed and reported as grouped data. Only measurement instruments with no missing points of data were included in the study analysis.

## 3.0 Results

The results of this study are presented in four tables. Table 1 reports the percentile rank of each Professional Competency area as reported by academicians. Table 2 reports the percentile rank of each Professional Competency area as reported by practitioners. Table 3 presents a comparison of the percentile rank of each Professional Competency area as reported by both academicians and practitioners. Table 4 reports t Test results comparing academician's perceptions of actual preparation for professional practice to practitioner's perceptions of needed preparation for professional practice.

**Table 2.—Professional Competency Area Percentile Ranks: Practitioners**

| Competency Area | Composite Mean | Weighted Mean | Standard Score | z Value | Percentage | Percentile Rank |
|---|---|---|---|---|---|---|
| Conceptual Foundations | 15.24 | .952 | -.78 | .2177 | 21.77 | 21.77 |
| Leisure Services Profession | 15.42 | .964 | -.50 | .3085 | 30.85 | 30.85 |
| Leisure Services Delivery System | 11.47 | .956 | -.70 | .2420 | 24.20 | 24.20 |
| Programming Strategies | 12.47 | 1.04 | 1.32 | .0934 | 9.34 | 90.66 |
| Assessment, Planning & Evaluation | 26.65 | .952 | -.79 | .2148 | 21.48 | 21.48 |
| Administration & Management | 34.26 | 1.07 | 2.09 | .0183 | 1.83 | 98.17 |
| Legislative & Legal Aspects | 15.33 | .958 | -.64 | .2611 | 26.11 | 26.11 |

Note: Areas under standard normal curve for values of z to compute percentile rank were identified from Fisher, R.A. & Yates, F. (1974). Statistical tables for biological, agricultural and medical research. (6th ed.). In Hinkle, D.E., Wiersma, W., & Jurs, S.G. (1994). Applied statistics for the behavioral sciences. (3rd ed.). Geneva, IL: Houghton Mifflin.

**Table 3.—Professional Competency Area Percentile Rank Comparison: Academicians v. Practitioners**

| Competency Area | Academician Percentile Rank | Practitioner Percentile Rank |
|---|---|---|
| Conceptual Foundations | 65.91 | 21.77 |
| Leisure Services Profession | 68.44 | 30.85 |
| Leisure Services Delivery System | 29.46 | 24.20 |
| Programming Strategies | 95.82 | 90.66 |
| Assessment, Planning & Evaluation | 17.36 | 21.48 |
| Administration & Management | 52.39 | 98.17 |
| Legislative & Legal Aspects | 11.51 | 26.11 |

**Table 4.—T-Test Results: Competency Perceptions**

| | Academicians[a] | | Practitioners[b] | | | |
|---|---|---|---|---|---|---|
| Competency Area | (M) | (SD) | (M) | (SD) | t | p |
| Conceptual Foundations | 15.24 | 2.69 | 16.32 | 2.83 | (397) = -3.40 | *.001 |
| Leisure Services Profession | 15.42 | 2.24 | 16.38 | 2.51 | (397) = -3.52 | *.000 |
| Leisure Services Delivery Systems | 11.47 | 1.98 | 11.71 | 2.21 | (397) = -1.00 | .316 |
| Programming Strategies | 12.47 | 1.78 | 12.97 | 1.60 | (397) = -2.50 | *.013 |
| Assessment Planning and Evaluation | 26.65 | 3.66 | 26.79 | 4.47 | (397) = -0.31 | .779 |
| Administration & Management | 34.26 | 3.90 | 32.11 | 4.93 | (397) = 4.40 | *.000 |
| Legislative and Legal Aspects | 15.32 | 2.51 | 15.11 | 3.05 | (397) = 0.68 | .537 |

[a]n = 96 [b]n = 303
*p < .05

## 4.0 Conclusions

Results from this study indicate that possible deficiencies still exist within recreation, park resources and leisure services professional preparation programs and that discrepancies still exist between academicians and practitioners as to what is critical in undergraduate education. Based on the comparisons made between the two sets of data, recreation, park resources and leisure services students are receiving greater competency in the conceptual foundations, the leisure services profession, and programming strategies than may be actually needed for professional practice. Further, results indicate that students may be receiving a deficient level of the competency in administration and management. These results should not be interpreted to indicate that less value should be placed on ensuring student competency in the areas of the conceptual foundations of play, recreation and leisure, the leisure

services profession, and programming strategies, but interpreted to indicate that professional preparation programs need to strengthen their students administrative and management competencies. Overall, results from this study indicate our professional preparation programs need to do a better job at ensuring students possess the following: strong communication skills; an understanding of administration and management concepts; an understanding of techniques related to budget, finance, and fiscal accountability; the ability to make application of marketing, public relations and other promotion techniques and strategies; an understanding of administrative and operational methods and procedures; the ability to make application of personnel management techniques and; strong computer skills.

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# IDENTIFYING ISSUES WITH LOCAL RECREATION PROVIDERS FOR THE 2004-2009 INDIANA SCORP

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## Abstract

The focus of this research was to identify issues faced by local recreation providers. The State Division of Outdoor Recreation, as sponsor of the project, considered local issues identification important, because they are responsible for documenting issues and trends across the state. The research team conducted a content analysis of the master plans of local park departments to identify important issues, which were then tested with quantitative approaches through a mail survey. Responses from agency employees and park board members were organized into the following categories – organizational structure, demographics, administration, capital projects, facility maintenance and renovation, educational and other programming, and funding issues. In some instances, qualitative and quantitative results were similar. In other cases, the qualitative method produced findings somewhat unique from those found through the quantitative method. Results were provided to the state agency for documentation of local issues in writing the next Statewide Comprehensive Outdoor Recreation Plan.

## 1.0 Introduction

The purpose of this project was to identify the most pressing issues facing local park and recreation providers across Indiana. Local providers were defined as those agencies providing recreation at municipal, township, and county levels of government. The funding agency for the project was the Indiana Division of Outdoor Recreation. As the agency responsible for statewide recreation planning, they sought to better understand local issues and to incorporate research findings into the writing of the next 2005-2009 Statewide Comprehensive Outdoor Recreation Plan (SCORP). The research was conducted by a team of students and their faculty advisor at a state university.

There are various issues facing local park and recreation providers. For example, one important issue involves the role that the local park and recreation system plays in the minds of citizens and community leaders. As Hunt, Scott, and Richardson (2003) suggest, local recreation leaders try to position a public park and recreation agency as an important part of the local community in the minds of citizens. Kraus and Curtis (2000) argue that the concept of community relations is one of the most important things that recreation managers need to address for successfully reaching their goals. This involves working with several stakeholder groups in the community, not only clients using recreation programs. Thus, issues would include perceptions of residents about the community role of their park boards and recreation agencies.

The role that local park systems play in the community can be examined from different perspectives. One is that park and recreation providers seek to improve the health and quality of life for their citizens. Health goals can be formulated for all citizens, or for specific groups, such as senior citizens or persons with disabilities. Public recreation agencies can offer a variety of programs and facilities, often more diverse than the offerings of fitness clubs. Furthermore, the philosophy behind public provision of parks and recreation is that opportunities can be made available and accessible for all citizens (Orsega-Smith et al. 2000). In order to provide opportunities for participants, local recreation agencies have to manage facilities, which may involve capital projects or facility renovation. They may also provide staff for programming. Some have argued that these goals are increasingly difficult with shrinking governmental budgets. Others have counter-argued that there is a lack of empirical data to show that municipal parks have experienced budget declines and in fact that park budgets have remained stable (Connolly and Smale 2001/2002) or that capital project funding has increased over time. According to Crompton and Kaczynski (2003), money for capital projects by local governments across the U.S. grew by 58% from the early 1990s to 2000. However, as noted by Gladwell et al. (2003), funding affects every part of a park and recreation agency and is increasingly an important issue. For this reason, local providers seem to be look to alternative funding strategies, such as fees

and partnerships. They also look to marketing to enhance their identity in the community and increase public participation.

Local recreation providers deal with community issues, facility renovation, capital projects, funding, programming, staffing, and marketing, as well as many other issues. In the statewide project being discussed, we sought to identify those issues as perceived as most important by local recreation providers. Issues were defined for this project as follows: goals, objectives, concerns, opportunities or threats that can be identified as most relevant to planning for the future activities of local park and recreation departments.

## 2.0 Methods

Qualitative and quantitative methods were used for this project. First, a qualitative approach involved doing a content analysis of a stratified, random sample of local master plans based on population size (N =55). The sample was drawn to represent different community sizes in the state. These five-year plans were read to detect the most important issues, based on how much coverage they were given in the master plans. Interviews were also conducted with park and recreation leaders as a qualitative approach, using open-ended questions. Qualitative approaches were used for the project from 2002-2003. The issues identified through qualitative methods were placed into one of several categories. They were as follows: 1) Park and Recreation Organization; 2) Community and Demographics; 3) Administration; 4) Capital Projects / Facility Development; 5) Facility Maintenance and Refurbishment; 6) Education/Programming; and 7) Funding. From the issues that emerged from the qualitative methods, questions were created for a mail survey. Variables were measured using quantitative approaches, e.g., Likert scales. An important goal of the project was to compare and contrast the qualitative and quantitative findings. For this reason, the survey questions were created based on the content-analysis of the local, five-year master plans. In this monograph, a selection of issues was made to be addressed from the mail survey data, given space constraints. However, they were some of the most important issues identified through the quantitative and qualitative methods.

The mail survey was sent to park superintendents and park board members operating at the local government level, based on a mailing list supplied by the State Division of Outdoor Recreation. The mail survey questionnaires were mailed in November of 2003. All responses were received by the end of January 2004.

### 2.1 Response Rate

Multiple mailings were used to try to achieve a higher response rate (Sallant and Dillman 1994). A total of 484 mail surveys were sent to local leaders, defined as park board members and park and recreation superintendents. One week after the initial mailing, a reminder postcard was sent. Based on the mail survey and postcards sent, 16 had undeliverable addresses. After the initial mailing and the reminder postcard, there were 182 usable questionnaires returned and entered into an SPSS database for analysis. The effective response rate for the mail survey was as follows: 182 responses/468 deliverable surveys, i.e., a 39% response rate.

## 3.0 Results

Findings from the mail survey are now examined according to some of the categories that had been identified in the content analysis of local master plans. Survey results are presented in subsequent sections as follows: characteristics of respondents; community representation, issue identification, capital projects and facility maintenance issues, and marketing strategies.

### 3.1 Survey Respondents

Respondents were examined according to the government agency and role they represented. The mail survey was mailed to park board members and employees of park and recreation departments. The term "local" was defined for this project as municipal, township, or county government. The data in Table 1 suggest that there are two dominant voices represented by the survey respondents, namely municipal employees and park board members. There were fewer respondents from township and county levels of government.

Regarding organizational structure, respondents represented different types of systems: 60% (N = 110) had both park boards and park and recreation departments in their communities; 34% (N = 62) had only park boards operating but no park and recreation department; 5% had a park and recreation department but no park board; and one rare respondent noted neither a park and recreation agency nor a park board.

**Table 1.—Characteristics of mail survey respondents.**

| Respondent role in park system | Frequency | Percent |
|---|---|---|
| Employee of Municipal Park and Recreation Department | 81 | 44.5 |
| Employee of Township Park and Recreation Department | 1 | 0.5 |
| Employee of County Park and Recreation Department | 19 | 10.4 |
| Member of Park Board | 59 | 32.4 |
| Other | 17 | 9.3 |
| No answer | 5 | 2.7 |
| Total | 182 | 100.0 |

Survey respondents were examined by gender and years of experience as shown in Table 2. There were more men in parks and recreation leadership roles than women. More than half of the respondents had 10 years or less of experience working with the parks and recreation profession; however 19% had been in the profession for more than 21 years. This represented a range of professional experience among park and recreation leaders in Indiana's communities.

### 3.2 Community Sizes

Respondents represented communities of different sizes. The data were compared to all of Indiana's jurisdictions. The mail survey had higher representation from larger communities than smaller communities based on the state distribution of community sizes. On the other hand, there were higher frequencies of respondents from smaller communities. The highest response was from persons associated with populations between 10,000 and 49,999.

**Table 2.—Gender and years of experience among survey respondents.**

| Gender | Frequency | Percent |
|---|---|---|
| Male | 121 | 68.0 |
| Female | 57 | 32.0 |
| Years in parks and recreation | Frequency | Percent |
| 1-5 | 44 | 25.9 |
| 6-10 | 51 | 30.0 |
| 11-15 | 26 | 15.3 |
| 16-20 | 16 | 9.4 |
| 21 or more | 33 | 19.4 |

### 3.3 Identifying Issues

Respondents to the mail survey were given an open-ended question that asked them to indicate the biggest issues their park department faces in planning for the future. Analyzing these data involved a two step approach. First, the terms were coded into broader categories when possible, and we noted how many times a word or phrase was listed first, second or third. In a separate question, later in the survey, respondents were provided a list of specific issues and asked to rank them as 1st, 2nd, or 3rd in importance. In this way, there was a qualitative, open-ended question used to identify issues, as well as a quantitative question incorporated into the mail survey.

By far the most frequently listed items fell into the category of budgets/funding. More than half of the respondents listed this issue first in their answers to the open-ended question. The next most important issue was the need for land acquisition. This was listed first, second or third by many of the respondents. Maintenance of existing facilities seemed to emerge as the next most important item, followed by capital projects. Finally, personnel issues were seen as important to local providers. These items were based on open-ended responses.

In a separate question, survey respondents were given a list of items that had been created after the research team read the local master plans. It was our intent to see how the mail survey respondents would rank a list of 11 items that seemed to emerge as important concepts from the local master plans. These items were also revised by a panel of experts serving on the SCORP advisory committee. We felt confident that they were important and accurate issues based on the expert opinion of local

**Table 3.—Size of population represented by survey respondents.**

| Population | Frequency of Survey Respondents | Percent of Survey Respondents | Percent of Indiana Jurisdictions |
|---|---|---|---|
| 4,999 or less | 46 | 25.3 | 68.5 |
| 5,000-9,999 | 27 | 14.8 | 7.6 |
| 10,000-49,999 | 72 | 39.6 | 17.8 |
| 50,000-149,999 | 26 | 14.3 | 4.4 |
| 150,000 or more | 10 | 5.5 | 1.4 |
| Total | 182 | 100.0 | 100.0 |

**Table 4.—Ranked votes for an issue list provided in the mail survey.**

| Item | Number of first place votes | Number of second place votes | Number of third place votes | Total votes | Mean score |
|---|---|---|---|---|---|
| Competition from other recreation providers | 29 | 21 | 10 | 60 | 1.68 |
| Staffing | 37 | 15 | 20 | 72 | 1.76 |
| Level of public participation | 28 | 17 | 21 | 66 | 1.89 |
| Amount of facilities available | 19 | 21 | 13 | 53 | 1.89 |
| Communication issues | 16 | 21 | 18 | 55 | 2.04 |
| Safety | 9 | 11 | 12 | 32 | 2.09 |
| Staff training and development | 3 | 4 | 5 | 12 | 2.17 |
| Number of programs offered | 17 | 27 | 31 | 75 | 2.19 |
| Perceived value of parks and recreation | 4 | 10 | 11 | 25 | 2.28 |
| ADA compliance | 5 | 16 | 16 | 37 | 2.30 |
| Land for recreation | 2 | 6 | 9 | 17 | 2.41 |

recreation leaders. The first, second, and third-place votes as well as the mean score for each item of the issue list are shown in Table 4. The most important items were competition from other providers, staffing, public participation, and facilities.

### 3.4 Facility Renovation

Based on a content analysis of local master plans, it appeared that facility renovation was a more pressing issue than the need for capital projects for many communities. Facility renovation was noted in the local master plans to include various repairs and changes, e.g., infrastructure improvements with parking lots, buildings, lighting, and water/drainage systems. Mail survey respondents were asked to note needed facility renovations from a list provided to them. The top categories for facility renovation from the mail survey data are shown in Table 5. The quantitative data showed the playgrounds, parking lots, and buildings, such as

**Table 5.—Top categories for facilities needing renovation and refurbishment (N = 182).**

| Renovation Projects | Percent of Respondents |
|---|---|
| Playgrounds | 50% |
| Parking Lots | 48% |
| Other buildings (Restrooms) | 40% |
| Shelter houses | 37% |
| Tennis Courts | 35% |
| Baseball Diamonds | 34% |
| Basketball/Volleyball Courts | 31% |
| Swimming Pools | 27% |
| Lighting System | 26% |
| Picnic Areas/Gardens | 22% |

restrooms and shelter houses were the most important renovation projects for the future. These suggest the need for improvements in the infrastructure of their properties. Sports facilities are also in need of repair, for example to support tennis, baseball, and basketball opportunities. These quantitative findings are consistent with the qualitative findings from the content analysis of local master plans.

### 3.5 Capital Projects

Although local recreation providers need to renovate and refurbish many types of facilities, they also are pursuing capital projects. The two most popular types of capital projects mentioned in the local master plans were land acquisition projects and trail networks. Many park and recreation departments and park boards are seeking to acquire land and green space specifically to keep pace with urban sprawl. Authors of the master plans wrote about focusing land acquisition efforts on the rural/urban fringe. They are also searching out locations near areas of new development to provide recreation to new neighborhoods. Finally, they are often deciding to focus the acquisition of land on underserved neighborhoods, to provide recreational opportunities where they were previously non-existent.

Another important theme from the content analysis of local master plans was the need for developing trail networks. Local park departments were facing issues with how to develop walking and biking trails, multi-use trails, greenways, trails between their own parks, and trails to connect communities, e.g., a local park in one area to a state park in another. Communities ranging in size from very small towns to metropolitan regions are pursuing trail projects. These findings from the qualitative data can be compared to quantitative data in the mail survey. The mail survey respondents were asked to select from a list of capital projects that they planned to pursue in the next five years. Their responses are shown in Table 6. Playgrounds, a traditional use for parks and recreation areas, had the highest frequency of respondents as a capital project category. Multi-use trails and land acquisition projects were noted by half of the respondents.

Facility renovation and capital projects both require budget amounts to be allocated. As an example of a case study from the local master plans, a larger city in Indiana was pursuing some innovative strategies. In their local master plan, they recommend that 10% of a capital budget for a project be put into a maintenance endowment fund within the Parks Foundation when new parks are developed, and they also recommended that maintenance plans be included in the scope of work for design plans for all new park sites and facilities. For many reasons, facility renovation and capital projects are related, and they both create ongoing issues for local government providers.

**Table 6.—Most popular capital projects planned for the next 5 years (N = 182).**

| Capital Projects | Percent Selecting Response |
|---|---|
| Playgrounds | 58% |
| Multi-use trail | 54% |
| Land acquisition | 51% |
| Parking Lot | 50% |
| Other Buildings (nature center) | 49% |
| Picnic Areas /Gardens | 44% |
| Shelter House | 43% |

### 3.6 Marketing Strategies

In order to justify the ongoing desire for funding, facilities, and programs, local recreation providers need to send messages to the public at large about the value of parks and recreation. Achieving goals for positive community relations involves marketing parks and recreation effectively. The need for marketing was a strong theme in the local master plans, thus it was a qualitative finding that seemed particularly important. Local providers discussed that they needed to develop strategic marketing plans. They also talked about diverse ways of marketing, such as through logos, signage, web sites, and mass media approaches. Some communities are moving toward more web-based services, such as providing programming information online and using these tools for scheduling participants into programs.

There was a strong desire expressed by the authors of the local master plans to pursue marketing strategies for parks and recreation in Indiana's communities. They wanted to make their residents more aware of the facilities and programs that local recreation providers offer to communities. Marketing included a need for public

**Table 7.—Marketing strategies used to promote programs and services.**

| Marketing Strategy | Frequency of respondents | Percent of respondents |
|---|---|---|
| Newspapers | 158 | 82 |
| Informational Signs | 131 | 69 |
| Pamphlets or Flyers | 119 | 63 |
| Web site | 84 | 46 |
| Radio | 82 | 45 |
| Park and Recreation Logo | 82 | 45 |
| Direct Mail | 58 | 32 |
| Newsletter | 49 | 27 |
| Television | 40 | 22 |

relations campaigns and the establishment of a marketing image, i.e., an identity, so that members of the local community can become more aware of the services and programs provided by the parks department. Some local park departments talked specifically in their master plans about increasing their advertising through signs, flyers, and other materials. For other departments, developing a marketing image meant plans to create a specific logo to increase visibility. Another issue is implied in marketing efforts – that of the relationship between parks and recreation and the tourism industry. Communities not only provide recreation for citizens; but they also attract tourists into their communities, who in turn bring in revenue and boost economic activity. For many different reasons, marketing was discussed in the local master plans.

We tested the marketing theme as a qualitative finding from the local master plans by adding a question about marketing in the mail survey. Respondents indicated how likely they were to use different marketing strategies (Table 7). Mass media approaches were the most important to mail survey respondents, such as the use of newspapers. Many of the strategies discussed in the local master plans were not yet popular among local recreation providers: less than half of the mail survey respondents were pursuing web sites, logos, or direct mail campaigns.

## 4.0 Conclusions

This statewide project involved an examination of the important issues faced by local recreation providers. Local providers were defined as park and recreation agencies or boards operating at the municipal, township, and county levels of government. The project was designed to allow for a comparison of qualitative and quantitative findings, by using a content-analysis of local master plans followed by a mail survey of local superintendents and park board members. Many of the findings from the mail survey confirmed themes that had emerged from the content of the local master plans. Local government providers face many issues in planning for the future. Some involve demographic issues, such as size of the population to be served. Other issues deal with budgets and funding, which relate to the availability of monies for facility renovation and capital projects. Finally, local government providers exist in a competitive environment. To achieve their goals, they pursue marketing strategies to create greater awareness about the recreational opportunities available. All of the issues discussed in this project are interconnected. This creates the need for local recreation leaders who can take into account the many varied issues and the ways that they affect each other, as they provide important services to their communities and plan for the future.

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# THE RELATIONSHIP AMONG LEISURE RESOURCEFULNESS AND RECREATION SPECIALIZATION AMONG A SAMPLE OF SENIOR ADULTS

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## Abstract

Individual pursuits of hobbies among senior adults indicate a sustained interest in a recreation activity over an extended period of time. In this research the average number of years participating in a hobby is 42.8 years. Moreover, respondents indicated quite a diversity of recreational interests. Of the 172 respondents in the sample population, 127 respondents indicated that they had acquired a high recreation specialist status in his/her hobby participation. The Leisure Resourcefulness Scale (LRS) was used as a predictor variable to ascertain high recreation specialist or low recreation specialist status in his/her hobby participation. Following data reduction of the LRS, factor loadings identified two or three items in each of the five subscales of the LRS that best describe each subscale. However, only one of the five subscales served as a predictor variable of high recreation specialist status, and none of the five subscales identified low recreation specialist status.

## 1.0 Purpose of the Research

The purpose of this research is to examine the Leisure Resourcefulness Scale (LRS) as a means of identifying individuals who are high or low in recreation specialization. Respondents' recreation specialization status serves as an indicator of his/her leisure resourcefulness. High recreation specialization status indicates a considerable amount of sustained effort over time of energy, knowledge, resources, and dedication in a recreational pursuit. These individuals have the ability to identify and express a leisure need throughout life cycle stages. Presumably, individuals who are resourceful at leisure have a higher degree of personal capability in exhibiting an appropriate leisure lifestyle.

## 2.0 Objectives of the Research

1. To determine the reliability of the LRS.
2. To ascertain the dimensions of the subscales of the LRS.
3. To ascertain the dimensions of the scale items measuring recreation specialization.
4. To examine the relationship between leisure resourcefulness and recreation specialization.

## 3.0 Conceptual Background

Leisure resourcefulness is a concept advanced by Rapoport and Rapoport (1975). Resourcefulness pertains first, to the individual's ability to know and be able to make a meaningful life for him/herself within the realities of his/her own existence, and, second, being able to or knowing how to change those realities to effect an appropriate leisure lifestyle or one's mode or manner of personal expression during nonwork time. The Rapports state that some individuals are more resourceful than others during their leisure time due to having more leisure resources of time, attitude, money, companions, knowledge, and equipment. The authors go on to state that leisure resourcefulness also varies with the personality of the person, one's life cycle stage, and one's adaptive abilities as changes occur during and throughout life cycle stages.

As used in this research an individual's leisure resourcefulness was measured using a series of five scales with a five-point Likert-type rating from strongly agree to strongly disagree. All scales but one consist of 10 items for a total of 49 items: leisure time, leisure knowledge, leisure attitude, leisure companions, and leisure equipment. The results of Cronbach's Alpha test for reliability of each of the five subscales are provided in Table 1. Experience in a previous study with the LRS indicates both consistency and acceptability of reliability scores (Ricciardo 1999).

## 4.0 Recreational Specialization

Recreation specialization research has been studied using different conceptual frameworks. Bricker and Kerstetter (2000) studied the concept from a place attachment perspective; Miller and Graefe (2000) examined the concept from different kinds of hunting activity; Graefe (1980) studied it from levels of participation. Ditton et al. (1992) reconceptualized recreation specialization for high and low recreation specialists from different perspectives of resource dependency, mediated interaction or needs for specific information concerning participation, and activity specific elements or perceived benefits of participation in the recreation experience.

The initial conceptualization of recreation specialization was Bryan's (1977) descriptive study of fishermen in the

**Table 1.—Reliability Coefficients and Average Scores for the Leisure Resourcefulness Scale**

| LRS Subscales | No. of Items | Standardized Item Alphas | Average Scores[1] | |
|---|---|---|---|---|
| Leisure Time | 10 | .693 | 3.33 | s.d. .41 |
| Leisure Knowledge | 10 | .819 | 3.27 | s.d. .45 |
| Leisure Attitude | 10 | .824 | 2.41 | s.d. .41 |
| Leisure Companions | 09 | .896 | 2.62 | s.d. .64 |
| Leisure Equipment | 10 | .887 | 2.35 | s.d. .57 |

[1]Each scale item was measured as: 1=strongly agree, 2=agree, 3=neither agree nor disagree, 4=disagree, 5=strongly disagree

northwest. Bryan stated that characteristic patterns of participation occur as fishermen "move through stages in their 'fishing career'" from an occasional fisherman to a generalist, a technique specialist, and ultimately to a technique setting specialist. Each stage is characterized by increasing degrees of sophistication in fishing equipment, specific resource types, and changing membership in the fisherman's social group; the fisherman moves from family participation to eventual membership in a group of fellow specialists. Bryan (1979) went on to apply the concept of specialization to a wide variety of outdoor recreation activities. In re-examining the concept of recreation specialization, Bryan (2000) stated, "I would emphasize a behavioral operational definition of the specialization continuum, length and degree of involvement in an activity. But integral to and concomitant with length and intensity of involvement are clusters of attitudes and values as to the sport's meaning and its centrality to individual identity" (p. 19).

Scott and Shafer (2001) concluded that Bryan believed: 1) recreation specialization exists in all activities; 2) activities differ in level of complexity; 3) the end product of specialization is an elite or privileged status in a leisure social world; and 4) the degree of specialization is a product of time, money, skill, and psychic commitment. Specialization occurs over time, that is, it is a developmental process as the participant moves along a continuum from an occasional participant with no or little commitment to the activity to a participant having a considerable investment of self and personal resources to become a specialist with the activity as a central life interest. Scott and Shafer (2001) further state from a review of multiple studies of specialization that, "Beyond the recognition that recreational specialization includes a set of behaviors and attitudes, there remains little agreement about how precisely to characterize and measure the construct" (p. 326).

This research identified recreation specialization as a "yes" or "no" variety, that is, high or low in specialization. The diversity and sophistication of both existing and current research of recreation specialization did not provide the basic conceptual framework needed to operationalize recreation specialization into a dichotomous variable. Bryan's (1977) conceptualization of recreation specialization provided the framework for developing a measuring device to dichotomize respondents in this study into either high or low recreation specialists.

A total of 15 items were provided in the data collection instrument to identify the respondent as either high or low in recreation specialization in his/her stated hobby based on Bryan's conceptualization: the social group[1], knowledge of the activity[2], place of participation[3], equipment[4], commitment[5], and stage of development[6]. The respondent was asked to either agree or disagree with each item.

[1]I mostly participate in this activity with my family.
[1]I mostly participate in this activity with others who are as good as I am.
[2]I know more about this activity than most people.
[2]I have taught this activity to others (family, friends, interested persons).
[3]I require special places (a room, area, setting) to enjoy this activity.

[4]I require specialized equipment to participate in this activity.

[5]I go on vacations just to participate in this activity.
[5]I have read a lot of books about this activity.
[5]This activity is an important part of my life.
[5]I receive a great deal of satisfaction from this activity.
[5]I spend a good amount of time and money to participate in this activity.
[6]I have received awards or certificates for my skills in this activity.

[6]I have a lot to learn about this activity.
[6]I am a beginner in this activity.

## 5.0 Data Collection & Sample

Data were collected by students enrolled in recreation courses by way of a self-administered questionnaire. Each student was provided five self-administered questionnaires. Students were instructed to provide one questionnaire per household to an adult 65 years of age or older who may be a family member, relative, friend, or acquaintance. The students are commuters who are residents of a major metropolitan area. The sample population consists of 172 respondents.

## 6.0 Results

### 6.1 Sample Population

Eighty-six percent of the sample respondents are Caucasian and approximately six percent are African American. The average age is 68 with an approximately equal number of males and females. Sixty percent of the respondents are married and 57 percent live at home with their spouse. One-third of the sample has earned a college or advanced degree. Fifty-five percent have either graduated from high school, a tech school, or experienced some college. Forty percent of the respondents have an income of less than $40,000 and 36 percent have incomes between $40,000 and $70,000 while 18 percent have incomes greater than $70,000. Fifty percent of the sample population report having one or two sources of income in their retirement and 50 percent experience three or four sources of income. Fifty-eight percent of the sample population worked at their occupations for 30 or more years. Seventy-two percent of the respondents report their present health as excellent or good, and 86 percent of the respondents state that they have their own transportation.

### 6.2 Hobbies

The question concerning hobby participation asked: "What leisure activity/hobby have you been participating in the longest (for example, you may have been fishing or collecting since childhood, play a musical instrument, play cards)?" Sporting activities shows the highest number of participants (47) with an average number of years of participation of 40.3 years (Table 2). Thirty respondents participate in crafts averaging 50.6 years of participation. This is followed by participants in table games averaging 41.0 years of participation followed by those who fish/hunt with an average of 60.9 years of participation.

The average number of years participating in a hobby is 42.8 years. Hobbies that ranked highest in average years of participation are baking/cooking (67.0 years) followed by fishing/hunting (60.9), animal husbandry (59.0), playing a musical instrument (58.5), and research/study (57.0). The highest maximum number of years reported in hobby participation is 86 years in crafts followed by 79 years in fishing/hunting, 73 years in baking/cooking, and 69 years in restoration of cars or furniture. The average minimum number of years participating is 28.5 years and the average maximum number of years participating is 56.3 years.

Sixty-one percent of the respondents reported that either a parent (57 or 33.1%) or a friend (48 or 27.9%) got them started in their chosen hobby.

### 6.3 Leisure Resourcefulness

Five subscales are used to measure leisure resourcefulness: leisure time, leisure knowledge, leisure attitude, leisure companions, and leisure equipment. Each of the five subscales was factor analyzed using the principal components method with varimax rotation to determine the dimensionality of the scales. Statistics from the five subscale analyses indicate that each subscale is unidimensional. The subscales were again factor analyzed but with no rotations. The results of these analyses are provided in Table 3. Of the 10 items in each subscale, the factor loadings indicate that only two or three factors load highest for each subscale. The factors scores were saved and used as independent or predictor variables of high or low specialist status in hobby participation.

### 6.4 Recreation Specialization

Cronbach's Alpha test for reliability for the recreation specialization scale is .602, the lower limit of acceptability. These scale items were factor analyzed using principal components analysis with multiple rotations.

**Table 2.—Hobby or Recreation Activity Participation**

| Hobby | N | % | Years Participating | | |
|---|---|---|---|---|---|
| | | | Average | Min | Max |
| Animal husbandry | 1 | 0.6 | 59.0 | 59 | 59 |
| Baking/Cooking | 3 | 1.7 | 67.0 | 61 | 73 |
| Biking/Cycling | 2 | 1.2 | 36.0 | 36 | 36 |
| Camping/Hiking/Boating | 4 | 2.3 | 46.7 | 25 | 65 |
| Collecting[1] | 8 | 4.7 | 40.1 | 15 | 65 |
| Computers | 2 | 1.2 | 1.5 | 1 | 2 |
| Crafts[2] | 30 | 17.4 | 50.6 | 11 | 86 |
| Drawing/Painting | 4 | 2.3 | 49.7 | 19 | 65 |
| Fish/Hunt | 15 | 8.7 | 60.9 | 43 | 79 |
| Gardening | 5 | 2.9 | 43.6 | 22 | 68 |
| Go to Bar/Church/Sports | 3 | 1.7 | 36.5 | 26 | 47 |
| Horseback Ride | 1 | 0.6 | 45.0 | 45 | 45 |
| Play Musical Instrument[3] | 3 | 1.7 | 58.5 | 56 | 61 |
| Read/Watch TV | 6 | 3.5 | 47.0 | 36 | 66 |
| Research/Study[4] | 3 | 1.7 | 57.0 | 40 | 66 |
| Restoration[5] | 6 | 3.5 | 48.6 | 40 | 69 |
| Shopping/Go to Flea Markets | 4 | 2.3 | 33.0 | 10 | 61 |
| Sports[6] | 47 | 27.3 | 40.3 | 11 | 64 |
| Square Dancing | 1 | 0.6 | md | md | md |
| Table Games[7] | 16 | 9.3 | 41.0 | 2 | 68 |
| Traveling | 2 | 1.2 | 8.5 | 7 | 10 |
| Volunteering | 1 | 0.6 | 40.0 | 40 | 40 |
| Walking | 4 | 2.3 | 32.3 | 22 | 45 |
| Missing | 1 | 0.6 | | | |
| Totals | 172 | 100.0 | | | |

[1]Antiques, cards, coins, stamps, toys
[2]Sewing, ceramics, crocheting, knitting, model airplanes, photography, quilting, rug hooking, stitching, wood carving, wood work
[3]Piano, cello
[4]Covered bridges, geographic areas, inventing
[5]Cars, furniture
[6]Billiards, bowling, cycling, exercise, golf, ice hockey, jogging, racket ball, shooting, skiing, softball, swimming, triathalons, weight training
[7]Bingo, bridge, card playing, chess, gambling, crosswords, jigsaw puzzles

Results of the factor analysis are provided in Table 4. Three factors identify the high recreation specialist: recreation equipment, knowledge of the activity, and stage of development. Two items load highest on the low recreation specialist. These factors are identified with stage of development. This research identified 127 or 73.8 percent of the respondents as high recreation specialists, that is, the respondent agreed with all three of the high recreation specialist factors. Thirty-nine or 22.7 percent of the respondents agreed with the two scale items identifying low recreation specialists (missing data = 6 or 3.5 percent).

### 6.5 The Relationship Between Recreation Specialization and the LRS Subscales

The factor scores for recreation specialization were used as dependent variables, and the factor scores for the LRS subscales were used as independent variables. Multiple linear regression indicated significance for the subscale of leisure equipment as a predictor variable to identify respondents who are high recreation specialists (Table 5). However, the R2 is very low, only .082 or 8 percent and with low value correlation coefficients. No variables in the LRS subscales identified the low recreation specialist.

**Table 3.—Factor Analysis Results for the Leisure Resourcefulness Scale: Leisure Time, Leisure Knowledge, Leisure Attitude, Leisure Companions, and Leisure Equipment**

| | | | | |
|---|---|---|---|---|
| *Leisure Time* | | | | |
| Leisure time is for enjoyment. | | | | 0.760 |
| Leisure time is doing things I like to do. | | | | 0.732 |
| I value my free time. | | | | 0.716 |
| Summary Statistics | | | | |
| Factor | Eigenvalue | % of Variance | Cumulative % | |
| 1 | 3.136 | 31.356 | 31.356 | |
| 2 | 1.444 | 14.445 | 45.801 | |
| 3 | 1.267 | 12.669 | 58.469 | |
| *Leisure Knowledge* | | | | |
| I know a lot of things to do in leisure. | | | | 0.753 |
| I know leisure opportunities when I see them. | | | | 0.747 |
| I know places to go for leisure. | | | | 0.738 |
| Summary Statistics | | | | |
| Factor | Eigenvalue | % of Variance | Cumulative % | |
| 1 | 4.096 | 40.957 | 40.957 | |
| 2 | 1.196 | 11.959 | 52.916 | |
| 3 | 0.839 | 8.387 | 61.302 | |
| *Leisure Attitude* | | | | |
| Leisure is a necessary part of my life. | | | | 0.703 |
| I know why leisure is important to me. | | | | 0.700 |
| Summary Statistics | | | | |
| Factor | Eigenvalue | % of Variance | Cumulative % | |
| 1 | 4.124 | 41.243 | 41.243 | |
| 2 | 1.015 | 10.153 | 51.396 | |
| *Leisure Companions* | | | | |
| I have friends to do most anything I want to do in leisure. | | | | 0.793 |
| My friends know a lot of leisure activities. | | | | 0.750 |
| Summary Statistics | | | | |
| Factor | Eigenvalue | % of Variance | Cumulative % | |
| 1 | 4.927 | 54.746 | 54.746 | |
| 2 | 0.807 | 8.964 | 63.709 | |
| *Leisure Equipment* | | | | |
| I know how to use my leisure equipment | | | | 0.843 |
| I know where to purchase equipment I need. | | | | 0.823 |
| Summary Statistics | | | | |
| Factor | Eigenvalue | % of Variance | Cumulative % | |
| 1 | 5.271 | 52.709 | 52.709 | |
| 2 | 1.229 | 12.291 | 64.999 | |

**Table 4.—Factor Analysis Results for the Recreation Specialization Scale**

| | |
|---|---|
| High Recreation Specialist (n = 127) | |
| I require specialized equipment to participate in this activity. | 0.625 |
| I have taught this activity to others. | 0.525 |
| I have received awards or certificates for my skills in this activity | 0.504 |
| Low Recreation Specialist (n = 39) | |
| I am a beginner in this activity. | 0.723 |
| I just started participating in this activity. | 0.671 |

Summary Statistics

| Factor | Eigenvalue | % of Variance | Cumulative % |
|---|---|---|---|
| 1 | 2.516 | 16.775 | 16.775 |
| 2 | 1.841 | 12.275 | 29.050 |

**Table 5.—Summary Statistics of Multiple Regression Analysis of Respondents Who Are High Recreation Specialists or Low Recreation Specialists and the Leisure Resourcefulness Scales (LRS)**

| LRS as Independent Variables | Beta | t | Sig. | Correlation Coefficients Zero-Order | Partial | Part |
|---|---|---|---|---|---|---|
| High Recreation Specialist (n=127) | | | | | | |
| Leisure Time | .008 | .082 | .935 | .092 | .007 | .007 |
| Leisure Knowledge | .093 | .821 | .413 | .199 | .069 | .066 |
| Leisure Attitude | -.048 | -.376 | .707 | .146 | -.032 | -.030 |
| Leisure Companions | .066 | .715 | .476 | .160 | .060 | .058 |
| Leisure Equipment | .220 | 2.272 | .025 | .270 | .189 | .184 |
| $R^2$=.082 | | | | | | |
| Low Recreation Specialist (n=39) | | | | | | |
| Leisure Time | -.017 | -.165 | .869 | -.036 | -.014 | -.014 |
| Leisure Knowledge | -.044 | -.376 | .707 | -.061 | -.032 | -.031 |
| Leisure Attitude | -.004 | -.033 | .974 | -.039 | -.003 | -.003 |
| Leisure Companions | .163 | 1.734 | .085 | .089 | .145 | .144 |
| Leisure Equipment | -.145 | -1.461 | .146 | -.116 | -.123 | -.121 |
| $R^2$=.035 | | | | | | |

## 7.0 Conclusions

Sample respondents in this research represent a convenience sample, that is, students collecting data among family, relatives, friends, and acquaintances. The socio-demographic characteristics of the sample population closely approximate those provided by U. S. Census Bureau data for the State of Michigan in ethnicity, income, education, and occupation.

The sample data provide some interesting insights into hobbies over the respondents' life span as seen in Table 2. A wide range of classifications of hobbies are possible: indoors-outdoors, active-passive, expressive-nonexpressive, solitary-nonsolitary, equipment specialized-nonspecialized, expensive-inexpensive, formal-informal, readily available-distant, skilled-unskilled, public-private, and resource dependent-resource independent.

The influence of the parents or friends in getting the respondent started in the activity indicates the importance of the immediate social group for leisure

continuity or the transfer of leisure knowledge and skills from one's earlier and formative years to one's adult years.

Average scores on the LRS subscales (Table 1) indicate that respondents neither strongly agreed nor agreed with statements in the LRS subscales of leisure time and leisure knowledge (average scores of 3.33 and 3.27 respectively). The implication is that learning about leisure is hit-or-miss, or sometimes successful and sometimes not. Given that individuals pursue careers of work with such intensity as to devote their youthful years and personal and societal resources to acquire work skills, careers at leisure are given token consideration in our society. Yet with an increasing life span (average of 89 years of age by 2050) individuals will have several decades after retirement with huge blocks of time available for leisure careers, nonwork opportunities, and the pursuit of appropriate leisure lifestyles unencumbered by the demands of work organizations. Leisure education would assist in empowering these individuals to command appropriate leisure lifestyles.

Specialized leisure equipment and the transfer of and/or demonstration of specialized knowledge of a specific recreation activity (Table 4) distinguish the high recreation specialist from the low recreation specialist. The commitment of individual resources of time, space, money, effort, equipment, and enthusiasm to pursue a specific recreation activity for four to five decades (Table 2) underlines the effort individuals will exert to achieve life satisfaction and a leisure identity through participation and recognition in a recreation activity.

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# RESIDENTS' ATTITUDES TOWARD TOURIST MARKET SEGMENTS AND TOURISM DEVELOPMENT IN VALDEZ, ALASKA: A COMPARISON OF RESIDENTS' PERCEPTIONS OF TOURIST IMPACTS ON THE ECONOMY AND QUALITY OF LIFE

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## Abstract

Residents of Valdez Alaska were studied to understand their attitudes toward and perceptions of tourism development in their community. This study provided an assessment of residents' support for (or against) current and potential future levels of tourism. Specifically, residents were asked to rate tourist markets by the impact these market segments have on resident's quality of life (QOL) and economic livelihood. Mean scores, correlation analysis, a consistent versus inconsistent rating analysis, and a plot of mean scores show four visitor markets emerging as the most desirable: friends and relative visitors, sport fishers, summer independent travelers, and military personnel on leave. The significance of these segments to the local economy is discussed.

## 1.0 Introduction

Residents of Valdez Alaska were studied to better understand their attitudes toward and perceptions of tourism development in their community. Valdez offers year around recreation and tourism opportunities to residents and tourists. The area is connected to Anchorage by road, planes, the state ferry, and private boats and is a popular port for cruise ships that extend the vacation package onto land. Valdez's population of 4,036 residents (2000 Census) is out numbered by the thousands of tourists, particularly during the summer season. While tourism is a significant industry to the community, other industries have provided lucrative salaries to residents including oil and cargo shipping, commercial fishing, and seafood processing. The Trans Alaska Pipeline's southern terminus is both an important economic stimulus to the area, but was also involved in the Exxon Valdez oil spill. Transportation, fishing and tourism are all large sectors in the area (Crone et al. 2002).

Research on residents' attitude toward tourism development has been a popular research topic as scholars and consultants are asked to assist with or participate in community-level economic development. Very few studies have examined specific tourist market segments and instead tourists are seen as a single group or mass market. Annual tracking by the Travel Industry Association (TIA) shows tourist segments contribute differently to an economy, however, studies tend not to investigate the impact these different segments have on residents' quality of life. Andereck and Vogt (2000) showed residents differ in their support for types of tourism development in their community. This supply-side research and the work of Smith (1980) and Ap and Crompton (1993) suggest residents may also perceive tourist market segments differently. The destination context is that some tourists have little interaction with residents, while other tourists (e.g., friends or relatives visiting) have extensive interaction with the hosting local resident (Ap 1992; Ap & Crompton 1993; Smith 1980). Further, studies have shown that the level of interaction (Ap & Crompton, 1993) and dependency on the tourism industry for a household's livelihood (King et al. 1993; Madrigal 1995; Perdue et al. 1987) influence attitudes held toward tourism.

The problem of this study was an assessment of residents' support for (or against) current and potential future levels of tourism. Specifically, residents were asked to rate tourist markets by the impact these market segments have on resident's quality of life (QOL) and economic livelihood. Specifically, residents rated 14 visitor markets by the impact they have on the local economy and QOL. This research demonstrates consistent and inconsistent relationships between economic and QOL impacts.

The research questions examined in this study included:

- Are ratings of QOL and economic impacts for individual target markets significantly different?

- Are QOL and economic impacts correlated?
- What visitor markets yield consistent QOL and economic impacts ratings? Inconsistent ratings?
- What visitor markets are most desirable based on QOL and economic ratings?

## 2.0 Literature Review on Residents' Perceptions of Tourism Activity

Communities change with tourism development and the influx of tourists. Three models provide a background to examine residents' perceptions to tourism activities in a community or area. Butler (1980) illustrated the nature of changes in a destination life cycle model that suggests over time, based on a destination gaining popularity, more visitors brings change in the tourism system. These changes are enhanced by entrepreneurial and corporate activities of locals and outsiders eager to gain economically. Butler's model illustrates changes to the destination as a whole, but this model could also be studied according to tourist market segments. Over time in a destination, some tourist market segments will continue and flourish, and other segments will diminish for a variety of reasons.

Ap and Crompton (1993) profiled four levels of reactions by residents to tourism activities. The first level is embracement, which describes a euphoric stage where residents hold very positive attitudes toward tourists and their impacts. Tolerance is next on the continuum and describes residents who are positive on some impacts and negative toward others. Adjustment is the third level on the continuum where residents have learned to cope with tourists and find ways of continuing with their lives with tourists crowding their community. Finally, the withdrawal strategy describes a community where residents leave when the tourists arrive.

Smith (1989) suggested residents react to both the type and quantity of tourists. Her seven types of tourists range from explorer, which represents an independent traveler, to a charter, which represents large group touring, and she suggests that these tourist segments impact a community differently. The explorer tourist accepts the local conditions and environment and tries to fit in with and get along with residents. The charter tourist arrives with expectations that may not match the local environment and does little to adjust; instead, the charter demands amenities that are familiar and accommodating to their needs. A destination typically services few explorer-types and sees them having a "soft" impact on the local community. Explorers tend to be positively accepted by the local residents. Conversely, a destination, if popular, may host significant numbers of charter-types, which place many and "hard" impacts on the local community. According to Smith, charter-type tourists are less positive perceived by residents. An example of research examining resident's rating of tourist segments can be found in King and his colleagues (1993) research of residents of a Fiji island perceiving foreign tourists very differently than tourists on vacation in their own country. While this study shows tourist market perception differences, they did not explore possible differences between explorer-type segments versus charter tourists.

These three models suggest that residents should perceive tourist market segments differently depending on the economic productivity and the level of interaction between residents and tourists. Perceptions of economic and quality of life impacts may depend on a variety of factors, for example, the quantity of tourists in a particular segment, the economic return of investments made to attract targeted tourist groups (e.g., building a port to attract cruise ships), or the level of sharing of community places and services between tourists and residents. In a community with a growing tourism industry such as Valdez's, it is hypothesized that economic impacts from tourism would be perceived positively and quality of life impacts would be somewhat compromised. This is based on the belief that Alaska residents live in that state to escape the urban lifestyle to live a more secluded environment, however, economic livability is still important. Evidence of tolerance would be detected with data that shows that economic and quality of life impacts are positive, but may not be the same (inconsistent); and embracement would be evident with consistent and extremely positive perceptions of both economic and quality of life impacts. The impacts of visitor market segments such as visiting friends and relatives and "explorers" (e.g., summer and winter independent, back country winter) would mostly likely be viewed positively and consistency (supporting embracement). Segments such as cruise ship passengers, group tours, RVers, and conventioneers (markets exhibiting charter-like characteristics) would mostly likely be viewed less positively and inconsistently (supporting tolerance).

## 3.0 Methodology

A mail questionnaire was used to collect data from residents in Valdez, Alaska. This was a first study of its type for Valdez, therefore is considered a cross-sectional or one time data collection effort. Attitudes represent how residents feel today or see the situation today, not necessarily in the past or future. A list that was maintained by the city provided the basis for randomly selecting 1,000 households (from a possible 1,494 households based on 2000 Census). The list included both residents and business owners in Valdez who may live in the outlying area (a methodology similar to Lankford 1994). An abridged Dillman mail procedure was employed using a first mailing and a reminder postcard to all addresses in the sample. A subsample of nonrespondents were called and encouraged to return the questionnaire (10 returned from these phone calls). A second mailing of the questionnaire was not possible for budgetary reasons. A total of 256 questionnaires (or a 26% response rate) were returned. To gain an understanding of respondents in comparison to the general population, demographic data were compared to the 2000 Census. Respondents were more likely to have children in their household, less likely to live by themselves, and more likely to be in households with adults 65 years or older.

The questionnaire was four-pages long and included 24 questions. Many of the questions were rating a list of features or statements. Specifically, the questionnaire asked residents to rate visitor market segments impacting the local economy and their own quality of life using a five-point Likert scale with "1" being very positive, "2" positive, "3" neutral, "4" negative, and "5" very negative. A "no opinion" option was also provided for those respondents who may not be familiar with the tourist market segments under inquiry. From 2 (on RVers) to 14 (on group tours) of the respondents selected this "no opinion" answer rather than rating the statements. The tourist market segments offered in the survey were identified by the researchers and Valdez's tourism staff. The segments studied were back country winter travelers, business travelers, conventioneers, day boat cruisers, group tours, heli-skiers, summer independent travelers, winter independent travelers, military members on leave, cruise ship passengers (port of call), RVers (in and out of state), snowmobilers, sport fishers, and visitors of friends and relatives. Respondents were also asked to rate the best opportunities for economic development in Valdez, community infrastructure and services, the personal importance of a community, tourism-oriented decisions in Valdez, and demographics. The focus of this paper was on tourist market segments, and demographics for descriptive purposes only.

Tourist market segment data were analyzed several ways to assess the relationship between economic and quality of life impacts effected by the 14 tourist market segments. Initially, the mean scores for economic impact and quality of life impact were analyzed using a paired-sample t-test with a p-level of .05 for significance testing to determine which impact exceeded the other. Next, a Pearson correlation was estimated on the economic and quality of life data for each tourist group to determine how these impacts relate to each other. Next, a cross-tabulation on economic and quality of life data were tabulated for each tourist group and the percent of respondents who consistently rated these impacts were computed. Consistency was judged as a "1 or 2" rating was grouped as positive, "3" remained as neutral, and "4 or 5" rating was grouped as negative. Inconsistent ratings were scores off-the diagonal of the cross-tabulation. For inconsistent ratings, cells were grouped two ways: (1) economic score being greater than the quality of life score; and (2) vice versa. Finally, mean scores were plotted in a four-quadrant diagram to show those visitor markets rated as most desirable (on economic and QOL of life impacts), desirable but not as strong on economics, desirable for economics but lower on QOL, and least desirable on both economics and QOL. Categorization into these quadrants was done by calculating an overall mean score on economics and QOL and then using this mean to determine whether a tourist market segment fell above or below this overall mean.

## 4.0 Results

A demographic profile of respondents is presented in Table 1 with comparable population data from the 2000 Census. On age, over half of the respondents were between the ages of 35 and 54 years old. Twenty percent were young adults of 34 years or younger and twenty percent were 55 years and older. This age distribution slightly over represents older adults in the sample, compared to the population age distribution of the Valdez-Cordova area. On gender, women were more likely to respond than men, which is commonly found in survey research. On education, six out ten respondents held college or graduate degrees. Only a few respondents

**Table 1.—Valdez Resident Demographic Profiles**

| Profiles | Survey | | Population (2000 Census Data) | |
|---|---|---|---|---|
| Age | n | % | n | % |
| 20 – 24 | 8 | 3.4% | 477 | 6.9% |
| 25 – 34 | 40 | 16.9 | 1,169 | 16.8 |
| 35 – 44 | 58 | 24.5 | 1,979 | 28.5 |
| 45 – 54 | 72 | 30.4 | 1,885 | 27.2 |
| 55 – 64 | 42 | 17.7 | 815 | 11.7 |
| 65 – 74 | 9 | 3.8 | 393 | 5.7 |
| 75 – 84 | 7 | 3.0 | 172 | 2.5 |
| More than 84 | 1 | 0.4 | 49 | 0.7 |
| Gender | | | | |
| Female | 142 | 58.2% | 4,767 | 46.8% |
| Male | 102 | 41.8 | 5,428 | 53.2 |
| Education | | | | |
| Less than high school | 2 | 0.8% | N/A | N/A |
| High school graduate | 91 | 37.1 | | |
| College graduate | 114 | 46.6 | | |
| Graduate degree | 38 | 15.5 | | |
| Number of years as a resident | | | | |
| Less than 2 years | 9 | 3.6% | N/A | N/A |
| 2 – 10 years | 87 | 35.0 | | |
| 11 - 20 years | 68 | 27.3 | | |
| 21 - 30 years | 62 | 24.9 | | |
| More than 30 years | 23 | 9.2 | | |
| Tourism dependency of all household members | | | | |
| Not employed in tourism | 171 | 69.2% | N/A | N/A |
| Employed in tourism | 76 | 30.8 | | |
| Residency status | | | | |
| Seasonal resident | 10 | 4.0% | N/A | N/A |
| Full time resident | 241 | 96.0 | | |

did not have high school degrees. On length of residency, the largest group was households living in Valdez between two and ten years. Over half lived in Valdez, 11 to 30 years and an additional nine percent lived in Valdez more than 30 years. Most respondents (96%) were full-time residents. On employment, three out of ten respondents worked in the tourism industry.

Residents expressed that all 14 visitor market segments had a greater positive contribution on the economy than their own QOL (Figure 1). All the paired t-tests were significant at $p<.01$. The visiting friend and relative market and sport fisher market held the most positive economic and QOL ratings. QOL and economic ratings for each target market were positively correlated ranging from 0.35 for summer independent travelers to 0.66 for snowmobilers (Figure 2). An additional analysis showed how these two impacts were rated consistently (on the diagonal of a cross-tabulation). Consistency in ratings ranged from 48% of respondents positively rating the impact recreation vehicle travelers had on QOL and economics to 72% of respondents positively rating QOL and economic impacts. For those who rated impacts inconsistently, economic impacts were most commonly rated more positively than QOL impacts (Figure 3). Inconsistency in ratings ranged from a high of 52% respondents rating RVer's economic impact more positive than QOL impacts to a low of 28% respondents rating VFR's economic impact more positive than QOL impact. As shown in Figure 3, small numbers of respondents rated any of the tourist market segments as impacting QOL more positively than economic impacts.

Figure 1.—Residents' perceptions of tourist impacts o their quality of life and economy in Valdez.
*Note: Scale continued to "5" for very negative*

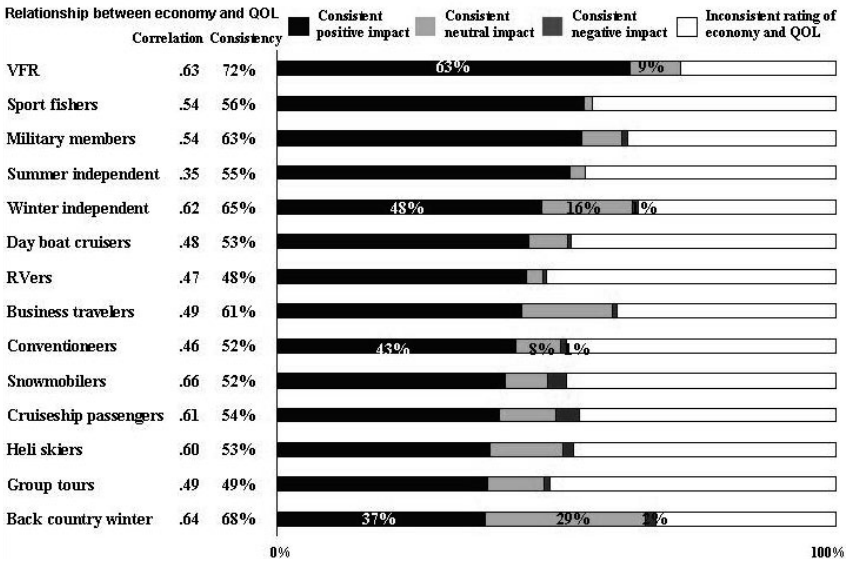


Figure 2.—Correlation and consistency of tourist impacts on the economy and quality of life in Valdez as viewed by residents

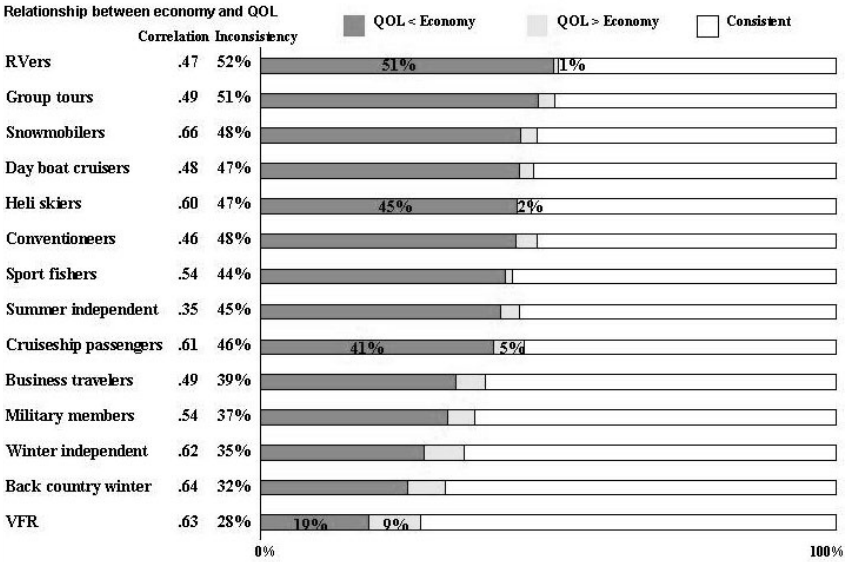


Figure 3.—Correlation and inconsistency of tourist impacts on the economy and quality of life in Valdez as viewed by residents

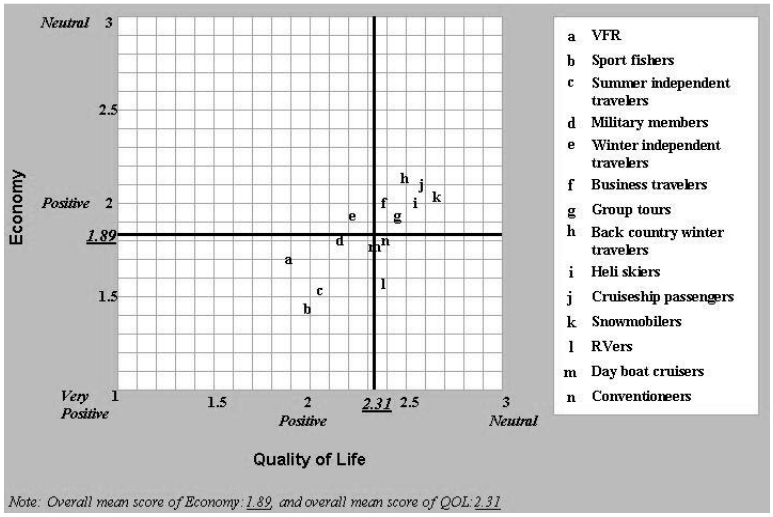


Figure 4a.—Plot of mean scores

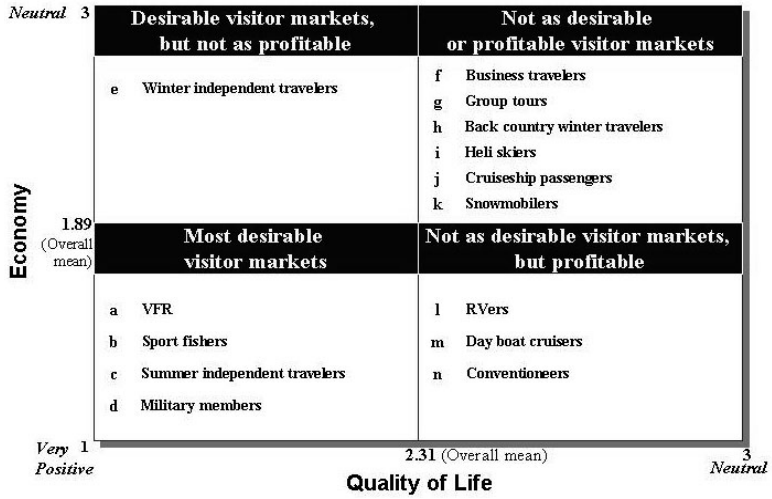


Figure 4b.—A closer look at target markets "above and below" the means

When ratings were plotted, the most desirable tourist segments were friends and relative visitors, sport fishers, summer independent travelers, and military personnel on leave (Figure 4a and 4b). Back country winter travelers, cruise ship passengers, heli skiers, and snowmobilers shared a similar place in the plot that was less desirable. Winter independent travelers were rated by residents as a market that was desirable in terms of its impact on QOL, however not particularly profitable. RVers, day boat cruisers and conventioneers were viewed as contributing economically, however not as desirable from a QOL perspective. A final strategy for assessing the perceptions of tourist market segments by residents was to ask in an open-ended manner those markets that hold the greatest opportunity for the community. Residents were allowed up to three markets and on average, 2.5 target markets were provided. Sport fishers, RVers, cruise ship passengers, and summer independent travelers each received at least 50 votes from residents (Figure 5).

## 5.0 Discussion

This research shows residents view visitor markets differently by the impacts they have on quality of life and the economy. Residents in Valdez rated economic impacts more positively than the impacts visitor markets have on QOL across all 14 visitor markets examined. Sportfishing is particularly positive in residents' views of the economy possibly to support the loss of commercial fishing jobs. Overall, our findings could be interpreted as visitors are economically important and provide positive

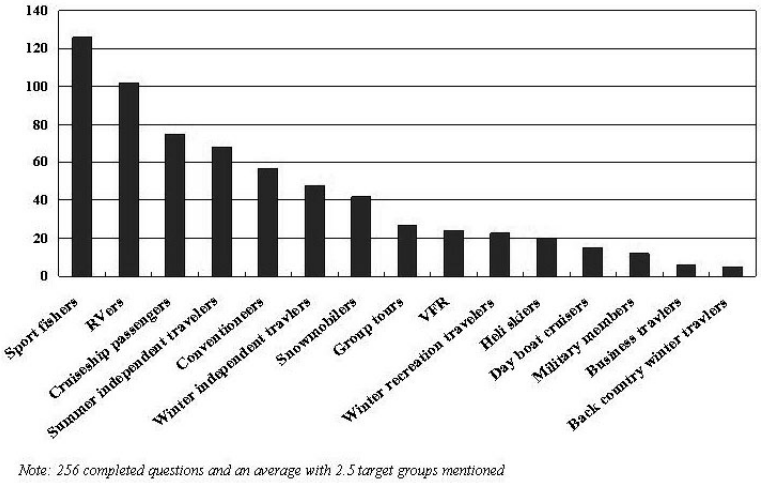


Figure 5.—Residents' importance rating of target groups for future tourism development inf Valdez

impacts to the economy, however have less of a positive impact on residents' quality of life possibly because residents and tourists may not encounter each other. Another explanation is that visitors and residents interact in the community and residents feel their QOL is slightly compromised. The correlation between QOL and economic ratings were moderately strong in a positive direction for all visitor markets. Next, consistency in ratings were examined and showed that several visitor markets (e.g., VFR, sport fishers, military, and summer independent travelers) garnered consistent positive ratings on both QOL and economics. Other target markets received more inconsistent ratings. For instance, residents rated RVers, group tours, snowmobilers, and day boat cruisers as contributing more to the economy than residents' QOL.

The theoretical contribution of this research shows that Valdez residents hold a mix of tolerance and embracement strategies (Ap & Crompton 1993) toward tourist market segments. The strong support for the economic impact that tourism brings, particularly with summer tourism markets, shows the locals embrace their current dependence and future livelihood on tourism. Further, as expected, VFR, independent travelers, and back country winter visitors were positively and consistently rated on economics and QOL. For social or quality of life support, residents show more of a tolerate strategy with economics rated higher than the effect tourism has on local households' QOL. Additionally, as expected, RVers, group tours, conventioneers, and cruise ship passengers received the highest inconsistency levels with economics rated more positively than QOL impacts. Little empirical evidence from this study suggests residents hold an adjustment or withdrawal strategy.

The managerial contribution of this research suggests to Valdez that there are preferred or more desirable tourist market segments to the residents of the destination. The mean plot figures (Figures 4a and 4b) show the most desirable visitor markets to Valdez residents include – VFR, sport fishers, summer independent travelers and military personnel on temporary leave. Visitor markets with lower ratings on both QOL and economic impacts include: cruise ship passengers, business travelers and group tours. Additionally, visitor market segments that residents find particularly attractive in the future are sport fishers, RVers, cruise ship passengers, summer independent travelers and conventioneers. Residents may see these four markets as important because they are growing and sizable markets to the Valdez economy. Tourism leaders in Valdez should be watchful of changes in QOL brought on by cruise and convention groups, as well as RVers, and work to garner maximum economic impacts from these groups with local suppliers and local employees.

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# EXAMINING SPECIALIZATION FOR A FISHING SUBACTIVITY: IS ACTIVITY AND PLACE SPECIALIZATION BETTER UNDERSTOOD AT THE ACTIVITY OR SUBACTIVITY LEVEL?

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## Abstract

Recreation specialization offers an approach to examining the heterogeneity of participants involved in an activity such as fishing. Bryan (1979) suggested that broader recreational activities (i.e. fishing) would have subactivities (i.e. pay pond fishing) that differ by degree and range of specialization. This 2002 West Virginia study is the first to examine specialization for the subactivity of pay pond fishing. The purpose of this study of pay pond anglers is to examine the effect of recreation exclusiveness (at two levels of specificity- pay pond fishing and fishing exclusiveness) on activity and place specialization. In this study, the level of exclusive involvement in pay pond fishing and fishing activities were regressed on activity and place specialization scores, and their effects were compared to better address a scale question: Is activity and place specialization better understood at the activity or subactivity level? Regression analysis indicated that pay pond fishing exclusiveness was a better predictor of place specialization (Beta=.253; p=.001). Both pay pond fishing and fishing exclusiveness had negative effects on activity specialization; whereas, pay pond fishing was the better predictor (Beta=-.237; p=.001). The results of our study suggest that specialization at the subactivity level is meaningful—both activity and place specialization are better understood at the subactivity level than the activity level. As a pay pond angler becomes more exclusive in the subactivity, they exhibit more place attachment and less activity specialization. Perhaps place attachment occurred as a result of exclusive participation in a subactivity. A closer examination of pay pond anglers' meanings of place may help understand attachment to the focal setting and be used to address management for recruitment of new and repeat visitors.

## 1.0 Introduction

Recreation specialization offers an approach to examining the heterogeneity of participants involved in an activity such as fishing. Private pay pond fishing is a subactivity of fishing. It involves paying a fee for the privilege of fishing a private pond where fish populations are enhanced by stocking of fish (Cichara 1982).

The concept of recreation specialization indicates that participation in an activity progresses along a continuum from general interest and low involvement to specialized interest and high involvement, reflected by equipment and skills used in the sport and activity preferences (Bryan 1977). Bryan (1979) suggested that broader recreational activities (e.g., fishing) would have subactivities (e.g., pay pond fishing) that differ by degree and range of specialization. Several studies have examined recreation specialization for anglers within the larger activity of fishing, but this is the first to examine specialization for the subactivity of pay pond fishing.

## 2.0 Purpose

The purpose of this study of pay pond anglers is to examine the effect of recreation exclusiveness at two levels of specificity—activity (i.e., fishing) and subactivity (i.e., pay pond fishing)—on activity and place specialization.

## 3.0 Method

### 3.1 Study Area

This study was conducted at three West Virginia pay pond establishments- each representing different biophysical, social, and managerial setting characteristics. A description of each study site follows.

#### 3.1.1 Family Fishing and Camping

Family Fishing and Camping (FFAC) is a large-scale pay fishing operation situated on 235 wooded acres near Grafton, WV. There are 10 ponds on site. Four ponds, between one acre and an acre and a half in size, are reserved for pay pond fishing. Stocked fish

species vary among the four ponds but together FFAC ponds provide anglers the opportunity to fish for trout, shovelhead and channel catfish, largemouth bass, bluegill, and carp. FFAC charges its adult customers $5 per day to catch-and-release; children are free. During trout season, customers pay $10 per day to catch-and-keep a limit of eight trout. From mid-April to mid-October, customers may pay $10 to participant in weekend catfish tournaments (two rod limit). Weekend catfish tournaments are held every Saturday night and Fridays starting in June, with the top three finishers each night receiving a monetary prize. During the summer of 2002, one Friday night tournament in July was designated Lady's Night.

In addition to pay pond fishing, FFAC maintains hiking trails, primitive campsites, cabin rentals, and RV/trailer site rentals. FFAC is planning on expanding their operation in all areas. The owners are planning to add West Virginia farm-raised hybrid bluegill and hybrid striped bass to their list of stocked species. Three ponds will be developed for breeding fish and three will be reserved for stocking fish before they are released in one of four pay fishing ponds. A concession stand, an entrance booth and gate, additional restrooms, more camping and RV/trailer sites, and a racecar track are being considered, planned, or developed for the site.

#### 3.1.2 Whispering Pines

Whispering Pines is located in Alum Creek, WV, outside of the capitol city, Charleston. Whispering Pines pay lake is situated on 64-acres at the mouth of a small valley. It is surrounded by pine trees, hence the name. It is open year-round and there is a restaurant and bait shop on site. Whispering Pines maintains one three-acre pond that is stocked with catfish, shovelhead, and brown trout. Anglers can choose to catch-and-keep or catch-and-release the fish they catch. Each person is allowed to use two rods at a time. Regardless of whether the angler keeps their 10 fish limit, they are charged $10 Monday through Thursday, or $12 Friday through Sunday. If the angler chooses to fish after he/she hooks their limit, they must pay the same fee again to fish for up to another 10 hooked fish. Additionally, anglers may participate in catfish tournaments if they are targeting catfish species.

#### 3.1.3 Mill Run Farm

Located in Marlinton, WV, within close proximity of the Monongahela National Forest, Mill Run Farm features four pay ponds, a restaurant, a tree nursery, and horse boarding stables on 30 acres. The pay ponds are stocked with three species of trout (i.e., brook, brown, and rainbow) and steelhead salmon. Pay pond fishing occurs between March and October. Anglers are charged a flat fee of $8 to catch-and-release or a fee per pound to catch-and-keep. The catch-and-keep limit is based on the weight of a maximum of four fish. Unlike the other sites, Mill Run does not host fishing tournaments.

### 3.2 Data Collection

Data collection was administered according to Dillman's (2000) Tailored Design Method in order to optimize questionnaire response rate. To achieve high response rates, the procedure included five elements: (1) a respondent-friendly questionnaire; (2) up to three contacts with the questionnaire recipient; (3) inclusion of a (self-addressed) stamped return envelope (and pencil); (4) personalized correspondence; and (5) a token financial incentive sent with the survey request (Dillman, 2000). To test survey instruments for content validity, a pilot study was administered prior to the formal data collection period. Formal data collection was conducted over an eight-week period, from June 2002 to August 2002. Four sampling dates per week were selected at random and the three pay pond locations were visited during that time. Adults, 16-years or older, were randomly selected to participate. Only one adult per group was eligible to participate; the eligible participant was selected using a random numbers table. Those who agreed to participate were assured their responses would be confidential and their name would not be connected with the results of this study. On-site interviews were conducted and mail-back questionnaires were distributed to 337 randomly selected pay pond anglers. Of the 337 anglers who received questionnaires, 212 returned usable questionnaires, a response rate of 65%. After data collection, non-response error was examined by performing Pearson's Chi-square test on selected variables. The results indicated no statistical differences between respondents and non-respondents.

### 3.3 Data Analysis

An angler's measure of activity specialization was determined by combining standardized z scores for five variables that reflect commitment and involvement in fishing. The measure of place specialization was determined based on an average score of nine place attachment variables (Williams et al. 1992). For the larger

**Table 1.—Results of two multiple linear regression models of specialization**

| | *N* | *Beta* | *Adj $R^2$* | *F* | *p* |
|---|---|---|---|---|---|
| Model 1—Activity specialization | 194 | | 0.058 | 6.981 | 0.001 |
| Fishing exclusiveness | | -0.061 | | | 0.402 |
| Pay pond fishing exclusiveness | | -0.237 | | | 0.001 |
| Model 2—Place specialization | 186 | | 0.059 | 6.848 | 0.001 |
| Fishing exclusiveness | | 0.036 | | | 0.493 |
| Pay pond fishing exclusiveness | | 0.253 | | | 0.001 |

recreation activity, fishing exclusiveness was calculated as the total number of recreation activities participated in by respondents during the last 12 months multiplied by -1. That is, the higher the score, the more exclusive the respondent participates in fishing. Subactivity exclusiveness was measured as the percent of fishing days an angler spends pay pond fishing in relation to all days spent fishing. Multiple linear regression analysis was performed for two models– one for activity specialization and one for place specialization. The independent variables were activity and subactivity exclusiveness; the dependent variables were activity and place specialization scores. For these models, the effects of regression were compared to better address a scale question: Is activity and place specialization better understood at the activity or subactivity level?

## 4.0 Results

Regression analysis indicated that pay pond fishing exclusiveness was a better predictor of place specialization (Beta=.253; p=.001) (Table 1). Fishing exclusiveness had only a small positive effect (Beta=.036; p=.493). Both pay pond fishing and fishing exclusiveness had negative effects on activity specialization; whereas, pay pond fishing was the better predictor (Beta=-.237; p=.001). As a pay pond angler becomes more exclusive in the subactivity, they exhibit more place attachment and less activity specialization.

## 5.0 Discussion

Recreation specialization is a complex phenomenon and the results of this study, the comparison between the utility of specialization at the pay pond exclusiveness and fishing exclusiveness scales, suggested that specialization at the subactivity level is more meaningful. In the case of pay pond anglers in West Virginia, both activity and place specialization are better understood at the subactivity level than the activity level. Perhaps place attachment occurred as a result of exclusive participation in a subactivity. A closer examination of pay pond anglers' meanings of place may help understand attachment to the focal setting and be used to address management for recruitment of new and repeat visitors. Our study suggests that fishing clubs or other exclusive memberships may be one way to enhance "sense of place" and encourage repeat business to pay pond lakes.

### 5.1 Theoretical Implications

Not all anglers, particularly those who fish at pay ponds, are willing to devote the time and energy to pursue the subactivity or activity to the full extent possible; those who are not fall on the low end of activity specialization. On the other hand, exclusive pay pond anglers are generally partial to a pay pond establishment and exhibit high place specialization. Future research should attempt to devise a measure of subactivity specialization for recreationists engaged in a subactivity of the larger recreation activity. Future research should attempt to devise a measure of subactivity specialization for recreationists engaged in a subactivity (e.g., canyoneering) within a broader recreation activity (e.g., rock climbing). This idea is challenging, as researchers will have to uncover the slight differences among measures of specialization for subactivities. For instance, since type of fishing equipment is similar for multiple fishing subactivities, it would be necessary for researchers to distinguish specialized (or non-specialized) gear for particular subactivities. Variables of measure must then be tailored for use in specialization indices to distinguish specialization for participants engaged in subactivities.

Understanding activity specialization of pay pond anglers between various fishing subactivities could be investigated to determine whether there is a progression of typical stages through which anglers are likely to progress between subactivities. Suggested research questions include: Is pay pond fishing a gateway to the larger fishing community? and; Does pay pond angling initiate anglers to graduate to more advanced subactivities after mastering skills acquired in the pay pond arena? Bryan's (2000) proposition that assumes participation in fishing closely follows a pattern similar to a career could be tested for pay pond anglers: Do participants move from low involvement and general recreation interests to high involvement and more specific interests?

Additional research of pay pond anglers could examine the seemingly diverse and complex meanings associated with various levels of place specialization. A study by Williams and Patterson (1999) provided a framework for studying four unique domains of place meanings. They determined place meanings associated with inherent/aesthetic, instrumental/goal oriented, cultural/symbolic, and individual/expressive. Certainly a closer examination of pay pond anglers' meanings of place may help understand attachment to the focal setting and be used to address management for recruitment of new and repeat visitors.

### 5.2 Management Implications

Understanding the distinctions between customers can aid pay pond owners in providing opportunities for a variety of anglers, and can aid in advertisement of their business and recruitment of new anglers. Our study suggests that fishing clubs or other exclusive memberships in this subactivity of fishing can enhance "sense of place" and encourage repeat business.

To encourage new recruits and repeat business, pay pond owners could offer season passes, or a pay pond membership, available to visitors for purchase. A membership would allow repeat visitors to have the freedom to visit their favorite pay pond as they please with the luxury of not having to pay fees every time they show up to fish. Fishing clinics could also be hosted by the pay pond for a nominal fee. As a result, pay pond anglers might acquire skills that improve their angling and might become more adept at fishing the waters on-site, thereby increasing their success. Season passes and fishing clinics are two manners in which pay pond anglers may develop a sense of place and possibly shift towards being a more exclusive pay pond angler.

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# *Papers Presented at the 2003 Conference*

# WHO PARTICIPATES IN FALL-COLOR TOURING ON PLEASURE TRIPS?

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## Abstract

The tourism industry is vulnerable to seasonality. This study is pertinent to an effort to mitigate the variation of the seasonality. Predictor variables that could distinguish between fall-color touring participants and non-participants were identified using discriminant analysis. The results of the study indicated that fall-color touring participants are more likely to regard general touring or driving for pleasure as their trip purpose. They also are eager to participate in outdoor activities. Marketing implications are suggested.

## 1.0 Introduction

Seasonality in tourism industry has greatly influenced demands of tourist destinations. Because of variations in tourist demands throughout the year, on-season makes tourist destinations greatly congested and their facilities overused, in comparison with times of year when tourist destinations are less visited and their facilities not much used. Spotts and Mahoney (1993) suggested that many efforts are needed to temper seasonal problems during other times of the year in the tourism industry.

Although several studies have identified the seasonality variation in their studies (Bonn et al. 1992; Hui & Yuen 2002; Lim & McAleer 2001), few studies have paid much attention to mitigation of seasonality. What kinds of efforts are necessary for variation of the seasonality? To date, price strategy has been utilized as one of the most popular methods to decrease the variability and to increase tourism in a different season. However, without an existing seasonal tourism market, price strategy would be difficult to optimize. Spotts and Mahoney (1993) suggested finding different seasonal markets and attractions such as fall market with fall-color touring. According to the Mining Journal (2001), for instance, fall-color touring is one of the seasonal markets in Michigan. AAA Michigan estimated 2.8 million Michiganders traveled to view fall colors in 1997 (Detroit Free Press 1997). Fall-color touring can help moderate variation of seasonality.

This study, therefore, develops a pleasure travel profile based on fall-color touring participation. More specifically, this study investigates the differences between pleasure travelers who participate in fall-color touring and those who do not. The specific research questions include: 1) Do socio-demographic characteristics differ between pleasure travelers who participate in fall-color touring and those who do not?; and 2) Do travelers' behavioral characteristics vary between these two types of travelers?. By understanding these characteristics, destination marketing practitioners can design more effectively, can target their promotional materials to appropriate consumers, and can reduce, mitigate, and/or soften effects of, variation of seasonality.

## 2.0 Methods

Data was collected in a computer-assisted telephone interviewing (CATI) laboratory maintained by the Michigan Tourism Resource Center at Michigan State University, from January 1996 through December 2002. The survey employed random digit-dial samples of household telephone numbers purchased from Survey Sampling, Inc. in a study region. The study population consists of adults aged 18 or older who permanently reside in Michigan's primary market area, such as Illinois, Indiana, Michigan, Ohio, Wisconsin and Ontario (Canada). The completed interviews averaged 474 each month. The complete rate is 47%, including partial completion. Respondents of the survey were asked: "In the past twelve months, have you taken any day or overnight pleasure trip to any destination?" In the survey 'pleasure trip' was defined as 'any overnight or day trip to a place at least 50 miles from your home that was made for your enjoyment, including vacations, weekend getaways, shopping trips, and trips to visit friends or relatives'.

Moreover, respondents who visited Michigan and participated in fall-color touring during the preceding 12 months were used for the study (N=1,328). Thus all travelers who met the criteria above were classified as either fall-color touring participants or nonparticipants. The survey also contained socio-demographic questions about such variables as income, age, ethnicity, origins of

**Table 1.—Classification Results**

| | Fall-color touring participation | Predicted Group Membership | | |
|---|---|---|---|---|
| | | Yes | No | Total |
| Original count | Yes | 319 | 40 | 359 |
| | No | 75 | 894 | 969 |
| Percentage | Yes | 89% | 11% | 100 |
| | No | 8% | 92% | 100 |

Note: 90% of original grouping of cases was correctly classified.

**Table 2.—Canonical Discriminant Functions I**

| Function | Eigenvalue | Percentage of Variance | Cumulative Percentage | Canonical Correlation |
|---|---|---|---|---|
| 1 | 1.05 | 100.0 | 100.0 | .52 |

Note: One (the first) canonical discriminant function was used in the analysis

**Table 3.—Canonical Discriminant Functions II**

| Test of Function | Wilks's Lamda | Chi-Square | Degree of Freedom | Significance |
|---|---|---|---|---|
| 1 | .73 | 105.3 | 10 | .00 |

travelers, and household types. Travel behavioral questions included number of pleasure trips, type of trip (overnight or day trip), length of stay, type of lodging, primary purpose of trip, season in which trip began, Internet use to gather travel information, number of days since beginning planning of the trip, and travel expenditure per party.

Three procedures of statistical methods were used to investigate research questions. Discriminant analysis, as an initial analysis, was conducted because such analysis is a statistical technique to identify problems that present a collection of variables such as income, age, marital status, when we intend to distinguish from two or more mutually exclusive groups. It is useful when we intend to develop a procedure to predict group membership for new cases whose group membership is not yet determined (Norusis 1988). A backward discriminant analysis was performed using fall color-touring participants and non-participants on pleasure trips as grouping variables, in order to discover which variables are most important to distinguish between mutually exclusive participant and non-participant groups. This procedure is a first step for predicting group membership and subsequent consumer-profile development for new fall-color touring travelers. The chi-square test, the second analysis, was applied to profile the two segments (fall-color participants vs. non-participants) due to categorical and nominal data identified by the first discriminant analysis (i.e., educational level, income level, pleasure trip plan period, Internet use to gather travel information, travel party etc.). T-test, the third analysis, was employed to analyze continuous variables (i.e., travel expenditure per party, number of pleasure trips, number of days since beginning to plan the trip, number of participated activities during the trip, age etc.).

## 3.0 Results

After the first step of discriminant analysis, 10 predictor variables were identified; overnight trip, visit a state or national park, dine at unique restaurants, number of activities participated in, general touring or driving for pleasure, attend a festival or event, visit farmer market, outdoor recreation, age, state in which respondent resides. The results of discriminant analysis revealed that 90% of the original group was correctly classified (see Table 1). The result of Canonical Correlation is high (.52) (see Table 2). According to Table 3, a Wilks' lamda (.73) indicated that there was a high level of variability between fall-color touring participant and non-participant groups. In addition, standardized

**Table 4.—Standardized Canonical Discriminant Function**

| Predictor Variables | Function 1 |
|---|---|
| Overnight trip | .10 |
| Visit a state or national park | .23 |
| Dine at unique restaurants | .32 |
| Number of activities participated in on the trip | .78 |
| General touring or driving for pleasure | 1.29 |
| Attend a festival or event | -.39 |
| Visit farmer market | .03 |
| Outdoor recreation | .01 |
| Age | .18 |
| States of residence | .10 |

**Table 5.—Chi-Square Analysis of Segments by Fall color-touring participants and non-participants**

| | Fall-color touring participation on the Trip | | | | |
|---|---|---|---|---|---|
| Variable | Yes (%) | No (%) | $\chi^2$ | df | **p** |
| Overnight trip (n=1,323) | | | | | |
| Yes | 87.1 | 78.8 | | | |
| No | 12.9 | 21.2 | 9.8 | 1 | .00 |
| A state or national park (n=1,291) | | | | | |
| Yes | 41.9 | 21.4 | | | |
| No | 58.1 | 78.6 | 44.8 | 1 | .00 |
| Unique restaurants (n=1,306) | | | | | |
| Yes | 61.8 | 42.9 | | | |
| No | 38.2 | 57.1 | 29.3 | 1 | .00 |
| General touring/driving for pleasure (n=1,329) | | | | | |
| Yes | 81.0 | 42.8 | | | |
| No | 19.0 | 57.2 | 131.2 | 1 | .00 |
| Attend a festival or event (n=1,318) | | | | | |
| Yes | 17.9 | 23.2 | | | |
| No | 82.1 | 66.8 | 3.4 | 1 | .02 |
| Visit farmer market (n=1,299) | | | | | |
| Yes | 29.0 | 11.0 | | | |
| No | 71.0 | 89.0 | 40.5 | 1 | .00 |
| Outdoor recreation (n=1,322) | | | | | |
| Yes | 61.6 | 38.3 | | | |
| No | 71.0 | 89.0 | 49.3 | 1 | .00 |
| State of residence (n=1,328) | | | | | |
| Michigan | 66.0 | 59.0 | | | |
| Non-Michigan | 34.0 | 41.0 | 4.7 | 1 | .03 |

coefficients for canonical discriminant function determined independent variables to distinguish between fall-color touring participants and nonparticipants. The relative order and function values of predictor variables suggest that "general touring or driving for pleasure" and "number of activities participated in" are the best discriminatory predictors available to researchers for this study (see Table 4).

Chi-square analyses were conducted to develop a profile of fall-color touring participants on the pleasure trips. The results of the chi-square analyses indicated that overnight trip, $\chi^2$ (1, N=1,323) = 9.8, $p < .001$), visit a state or national park, $\chi^2$ (1, N=1,291) = 44.8, $p < .001$, dine at unique restaurants, $\chi^2$ (1, N=1,306) = 29.3, $p < .001$, general touring or driving for pleasure, $\chi^2$ (1,

**Table 6.—T-test of Segments by Fall color-touring participants vs. Non-participants**

| | Fall-color touring participation on the Trip | | | | |
|---|---|---|---|---|---|
| | Yes | No | | | |
| Variable | Mean | Mean | t | df | *p* |
| Number of activities participated (n=1,321) | 7 activities | 4 activities | 305.7 | 1,001 | .00 |
| Age (n=1,327) | 46 | 42 | 10.5 | 1,024 | .00 |

1,329) = 131.2, p < .001), attend a festival or event, $\chi^2$ (1, N=1,318) = 3.4, p < .05), visit farmer markets, $\chi^2$ (1, N=1,299) = 40.5, p < .001, outdoor recreation, $\chi^2$ (1, 1,322) = 49.3, p < .001, and state of residence, $\chi^2$ (1, 1,328) = 4.7, p < .05, were statistically significant (see Table 5). The significant test of number of activities participated in, and age between fall color-touring participants and non-participants was conducted and revealed that they were statistically significant, t (1,001) = 305.7, p < .001 (two-tailed), t (1,024) = 10.5, p < .001 (two-tailed) (see Table 6).

A profile of fall-color touring participants was built as follows: the majority of fall-color touring participants (66%) were from Michigan, compared to non-participants (59%). Fall color-touring participants have older age grouping than nonparticipants (average: 46 vs. 42 years). Moreover, fall-color touring participants, in comparison to non-participants, were: (a) more likely to take overnight (87% vs. 79%); (b) more likely to participate in many activities (average: 7 vs. 4 activities); (c) more likely to visit a state or national park (42% vs. 21%); (d) more likely to dine at unique restaurants (62% vs. 43%); (e) more likely to take general touring or driving for pleasure (81% vs. 43%); (f) more likely to participate in outdoor recreation (62% vs. 38%); and (g) more likely to visit farmer markets (29% vs. 11%). However, fall-color touring participants are: (h) less likely to attend a festival or event (18% vs. 23%).

## 4.0 Conclusion

The study explored fall market with a fall-color touring in an effort to find a way of diminishing the variation of tourism demand throughout the year. Overall, the findings of this study indicated that fall-color touring participants have different travel behavioral characteristics and socio-demographics comparing to non-participants. In details, fall-color participants are more active and willing to participate in outdoor recreations than nonparticipants. Their purpose of trip seems to take general touring or driving for pleasure and to be middle-aged group. The results suggest that practitioners need to develop fall-color touring drive routes as well as destination marketers need to advertise fall-color touring to those who visit "state or national park" and "farm market" in summer. In conclusion, fall-color touring as a fall destination attraction can be believed to help reduce or soften the variation of seasonality.

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## Author Index


Absher, James D. 39, 281, 310
Anderson, Laura E. 70, 316
Anderson, Lynn 327
Anderson, Dale 327
Backlund, Erik A. 289
Bixler, Robert D. 289
Blizard, Clifford 57
Bright, Alan D. 20
Bristow, Robert S. 215
Brown, Tommy L. 231
Budruk, Megha 172
Burns, Robert C. 139, 224
Burtz, Randall T. 20
Cavin, Drew A. 39, 281
Cavin, Jenny K. 39, 281
Chang, Guang-Hwa Andy 90
Chi, Yeong Nain 90
Confer, John 180
Connelly, Nancy A. 231
Dawson, Chad P. 145, 164, 231
Dennis, Donald F. 350
Dilworth, Ginni 158
Ditton, Robert B. 185
Dong, Erwei 192
Dwyer, John F. 251, 295
Flood, Joseph 81
Floyd, Myron 75
Frater, Joel 321, 336
Gernert, Angela 343
Gibbs, Julie 354
Gómez, Edwin 66
Graefe, Alan 14, 139, 224
Graham, Arthur 336
Gray, Victoria E. 145
Griffin, Carol 152
Griffin, Tonya 321
Hallo, Jeffrey C. 172
Halsted, John 354
Hammitt, William E. 1, 289
Hansen, Bruce 350
Henschell, Jennifer 120
Holdnak, Andrew 126
Horton, Kale 130
Huh, Chang 418
Jennings, Rebecca 120
Jun, Soo Hyun 404
Kil, Sunny Nam 139
Kim, Jung Eun 46
Kim, Sungsoo 75
Kim, Seunghyun 418
Klenosky, David B. 272, 295
Kuehn, Diane M. 256
Kuentzel, Walter 6
Kyle, Gerard 14, 39, 281
Lankford, Samuel V. 378
Lankford, Jill 378
Laven, Daniel 263
LeBlanc, Cherie L. 295
Lee, Injae 75
Leung, Yu-Fai 373
Lichtkoppler, Frank R. 256
Longsdorf, Eric L. 385
Loomis, David K. 70, 316
Manning, Robert E. 14, 172
Marsinko, Allan 251
Martin, Susan 343
McAvoy, Leo 81
McCarthy, Ryan 354
McGill, David 343
Moldovanyi, Aurora 412
Monz, Christopher A. 373
Morris, Doug 102
Mueller, Thomas 224
Nelson, Charles M. 120
Newman, Mirela 215
Nice, Brandi 209
Nicholas, Lorraine 75
Oh, Chi-Ok 185
Papadakis, Katerina 321
Pavlowsky, Robert 130
Pawelko, Katherine A. 362
Peden, John G. 29
Pennington-Grey, Lori 46, 180, 209
Peters, Nathan E. 164
Pfister, Robert 378
Pierskalla, Chad 412
Pistis, Charles 256
Porter, Rob 304
Rechlin, Michael A. 350
Ricciardo, Jerry L. 397
Robertson, Robert 102
Rodgers, Ellen Drogin 126
Salz, Ronald J. 70, 316
Sanders, Gloria 75
Scheaffer, Amy 200
Scholl, Kathy 378
Schroeder, Herbert W. 52
Schuett, Michael 412
Schuster, Jr., Rudolph 29, 57
Scribner, Kevin 354
Selin, Steven 343
Shafer, Scott 158
Sheaffer, Amy L. 200, 390
Shirilla, Paul 81
Stynes, Daniel 98
Sun, Ya-Yen 98
Sung, Yi-Lung 200, 390
Tarrant, Michael A. 304
Thermil, Alain R. 200
Todd, Sharon L. 327
Twery, Mark J. 350
Valliere, William 172
Vander Stoep, Gail A. 109
Vaske, Jerry J. 310
Vogt, Christine A. 404
Wagenheim, Matt 180
Warnick, Rodney B. 242
Wickham, Thomas 224
Wiersma, Joshua 102
Williams, Albert 378
Young, Anderson B. 327
Young, Erica A. 373

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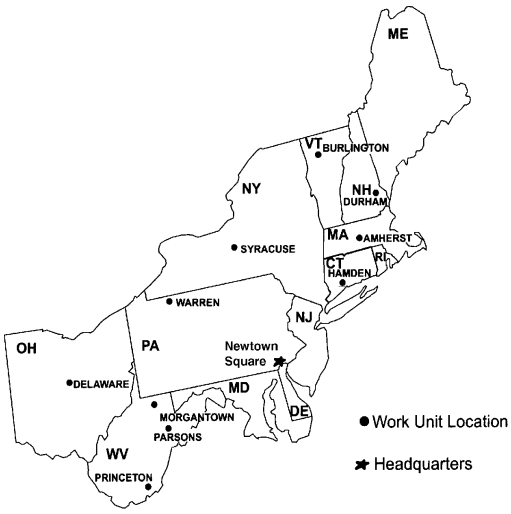


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