



United States  
Department of  
Agriculture

Forest  
Service

Northern  
Research Station

General Technical  
Report NRS-P-94



# Proceedings of the 2010 Northeastern Recreation Research Symposium



## **Northeastern Recreation Research Symposium Policy Statement**

The objective of the NERR Symposium is to influence our profession in a positive way by allowing managers and academicians in the governmental, education, and private recreation and tourism sectors to share practical and scientific knowledge. This objective is met through providing a professional forum for quality information exchange on current management practices, programs, and research applications in the field, as well as a comfortable social setting that allows participants to foster friendships with colleagues. Students and all those interested in continuing their education in recreation and tourism management are welcome.

### **NERR 2010 Steering Committee**

Arne Amberger – University of BOKU, Vienna, Austria  
Erik Backlund – St. Lawrence University  
Kelly Bricker – University of Utah  
Robert Bristow – Westfield State College  
Robert Burns – West Virginia University (Program Chair)  
Fred Clark – U.S. Forest Service  
John Confer – California University of Pennsylvania  
Chad Dawson – SUNY College of Environmental Science & Forestry  
Edwin Gomez – Old Dominion University  
Alan Graefe – Penn State University  
Laurie Harmon – George Mason University  
Andrew Holdnak – University of West Florida  
Deborah Kerstetter – Penn State University  
David Klenosky – Purdue University (Proceedings co-editor)  
Diane Kuehn - SUNY College of Environmental Science & Forestry (Website Coordinator)  
Walter Kuentzel – University of Vermont  
Gerard Kyle – Texas A&M University  
Bob Lee – Bowling Green State University  
James Murdy – NY Institute of Technology  
Chad Pierskalla – West Virginia University  
Roy Ramthun – Concord University  
Ellen Drogin Rodgers – George Mason University  
Rudy Schuster – SUNY College of Environmental Science & Forestry  
David Solan – Mansfield University  
Sharon Todd – SUNY Cortland  
Gail Vander Stoep – Michigan State University  
Hans Vogelsong – East Carolina University  
Christine Vogt – Michigan State University  
Clifton Watts – East Carolina University  
Rodney Warnick – University of Massachusetts at Amherst  
Thomas Wickham – California University of Pennsylvania  
Maureen Wakefield – SUNY College of Environmental Science & Forestry (Conference Logistics)  
Alvin Yu – St. Cloud State University  
Harry Zinn – Penn State University

Cover photo used with permission from Rudolph M. Schuster.

The findings and conclusions of each article in this publication are those of the individual author(s) and do not necessarily represent the views of the U.S. Department of Agriculture Forest Service. All articles were received in digital format and were edited for uniform type and style; each author is responsible for the accuracy and content of his or her own paper.

The use of trade, firm, or corporation names in this publication is for the information and convenience of the reader. Such use does not constitute an official endorsement or approval by the U.S. Department of Agriculture or the Forest Service of any product or service to the exclusion of others that may be suitable.



# PROCEEDINGS OF THE 2010 NORTHEASTERN RECREATION RESEARCH SYMPOSIUM

April 11-13, 2010  
Bolton Landing, NY

**Program Chair:**

Clifton E. Watts, Jr.  
East Carolina University

**Compiled and Edited by:**

Cherie LeBlanc Fisher  
U.S. Forest Service  
Northern Research Station

Clifton E. Watts, Jr.  
East Carolina University

**Sponsors:**

U.S. Forest Service  
Northern Research Station

Venture Publishing

**Published by:**

U.S. Forest Service  
Northern Research Station  
Newtown Square, PA

# CONTENTS

## FISH AND WILDLIFE MANAGEMENT I

### Big Game Hunting Practices, Meanings, Motivations and Constraints:

- A Survey of Oregon Big Game Hunters** ..... 1  
*Suresh K. Shrestha and Robert C. Burns*

### Differences in Reported Satisfaction Ratings by Consumptive and Nonconsumptive

- Recreationists: A Comparative Analysis of Three Decades of Research** ..... 9  
*Jennifer M. Roemer and Jerry J. Vaske*

## PLACE MEANINGS, ATTACHMENT, AND IDENTITY

- Place Attachment and Recreation Demand on the West Branch of the Farmington River** ..... 17  
*Jordan W. Smith and Roger L. Moore*

## LEISURE RESEARCH

- Motivations and Sensation Seeking Characteristics of Recreational Storm Chasers** ..... 23  
*Shuangyu Xu, Sonja Wilhelm Stanis, Carla Barbieri, and Jiawen Chen*

- Korean American Males' Interracial Contact Experiences During Serious Leisure Activity** .... 30  
*KangJae Jerry Lee and David Scott*

- The Multiple Meanings Associated with the Football Tailgating Ritual.** ..... 38  
*Deborah Kerstetter, Mary Stansfield, Phileshia Dombroski, So Young Bae, Lindsay Usher, and Matthew McKinney*

- An Application of Importance-Performance Analysis to Recreational Storm Chasing** ..... 45  
*Jiawen Chen, Sonja Wilhelm Stanis, Carla Barbieri, and Shuangyu Xu*

## ENGAGING DIVERSE POPULATIONS

- Physical Activity in Georgia State Parks: A Pilot Study** ..... 53  
*Lincoln R. Larson, Jason W. Whiting, and Gary T. Green*

- Valuing State Parks: Accounting for Diverse Visitor Perspectives** ..... 58  
*Jason W. Whiting, Lincoln R. Larson, and Gary T. Green*

## POSTER SESSION

- Agrileisure: Exploring the “Fun” of Local Food** ..... 65  
*Ben Amsden and Jesse McEntee*

- A Naturalistic Inquiry into the Social World of Whitewater Kayakers** ..... 71  
*Jason W. Whiting and Katharine A. Pawelko*

## TOURISM

- An Exploratory Study of the Application of Sense of Community in a Local Festival** ..... 78  
*Alvin H. Yu and Fengfeng Ke*

## **FISH AND WILDLIFE MANAGEMENT II**

- Constraints and Motivations Related to Fishing Along the Lake Ontario Coast** ..... 85  
*Matthew P. Brincka, Jr., Diane M. Kuehn, and Valerie Luzadis*
- Conflict and Normative Sanctions Among Galapagos Fishermen** ..... 91  
*Arren Mendezona Allegretti, Jerry J. Vaske, and Ryan Finchum*
- Angler Segmentation Using Perceptions of Experiential Quality  
in the Great Barrier Reef Marine Park** ..... 98  
*William Smith, Gerard Kyle, and Stephen G. Sutton*

## **MANAGEMENT APPLICATIONS**

- Perceptions of Relative Attractiveness of Nature-Based Tourism Assets:  
A Comparison between CVB Directors and Visitors** ..... 106  
*Jinyang Deng, David Dyre, and Jing Wang*

## **RECREATION RESOURCE MANAGEMENT**

- Perceptions of Public Forest Managers Concerning Trail Use  
by Off-Highway Vehicle Riders in the Northeast United States** ..... 113  
*Diane M. Kuehn, Valerie A. Luzadis, Robert W. Malmshemer, and Rudolph M. Schuster*

## **RURAL RECREATION AND TOURISM**

- A Visitation-based Profile of Agritourism Farms in Missouri** ..... 120  
*Christine Tew and Carla Barbieri*
- The Leisure Style of Canadian Rural Recreation Participants:  
An Analysis Based on Three Different Rural Leisure Settings** ..... 126  
*Paul Heintzman and Don Dawson*

## **NORMS, CROWDING, AND CONFLICT**

- Managing Outdoor Recreation Conflict  
on the Squamish, British Columbia Trail Network** ..... 134  
*Ana Elia Ramón Hidalgo and Howard Harshaw*
- How Place Attachments Influence Recreation Conflict and Coping Behavior** ..... 141  
*Cheng-Ping Wang and Yin-Hsun Chang*

## **MEASUREMENT & APPLICATION**

- Perceived Community Benefits from Recreation Resources:  
From Scale Development to Validation** ..... 148  
*Jordan W. Smith, Dorothy H. Anderson, Mae A. Davenport, and Jessica E. Leahy*
- Measuring the Educational Impact of Promoting Environmental Awareness  
in Kids (PEAK): The Development and Implementation of a New Scale** ..... 155  
*Jennifer Miller, Lindsey Brown, Eddie Hill, Amy Shellman, Ron Ramsing, and Edwin Gómez*

## **PLANNING AND PARTNERSHIPS**

- Recreation Partnerships on National Forests: The Influences  
of Institutional Commitment and Urban Proximity on Agency Capacity** ..... 160  
*Allie E. McCreary, Erin Seekamp, and Lee Cerveny*

## **URBAN GREEN SPACE AND ENVIRONMENTS**

- Enjoying Green Cities: Assessing Visitors' Attitude and Preferences  
of Urban Forests in Washington, D.C.** ..... 168  
*Rogelio Andrada II and Jinyang Deng*
- Mapping Urban Tourist Experience Zones in Downtown Raleigh, North Carolina** ..... 175  
*Holly Bosley Perry*

## **CARRYING CAPACITY**

- Determinates of Clustering Across America's National Parks:  
An Application of the Gini Coefficients** ..... 183  
*R. Geoffrey Lacher and Matthew T.J. Brownlee*

## **CONSERVATION AND NATURE-BASED TOURISM AND RECREATION**

- Exploring the Relationship Between Outdoor Recreation Activities,  
Community Participation, and Environmental Attitudes** ..... 190  
*Lindsey Barker and Chad Dawson*
- The Impact of Park Development on the Lives of Local Inhabitants  
Within Gros Morne National Park** ..... 197  
*Margot Herd and Paul Heintzman*

## **OUDOOR RECREATION**

- Roadside Camping on Forest Preserve Lands in the Adirondack Park:  
A Qualitative Exploration of Place Attachment and Resource Substitutability** ..... 205  
*David A. Graefe, Chad Dawson, and Rudolph M. Schuster*

## **CLIMATE CHANGE AND RESOURCE PLANNING**

- Classification of Forest-Based Ecotourism Areas in Pocahontas County  
of West Virginia Using GIS and Pairwise Comparison Method** ..... 215  
*Ishwar Dhami and Jinyang Deng*
- Parks and the Urban Heat Island: A Longitudinal Study in Westfield, Massachusetts** ..... 224  
*Robert S. Bristow, Robert Blackie, and Nicole Brown*
- Climate Change and Environmentally Responsible Behavior  
on the Great Barrier Reef, Australia** ..... 231  
*Jee In Yoon, Gerard Kyle, Carena J. vanRiper, and Stephen G. Sutton*
- Australian Community Members' Attitudes toward Climate Change Impacts  
at the Great Barrier Reef** ..... 239  
*Carena J. vanRiper, Gerard Kyle, Jee In Yoon, and Stephen G. Sutton*

## **TOURISM MARKETING AND MANAGEMENT**

<b>Purchase Decision Involvement: Event Management Segments and Related Event Behavior</b> .....	<b>248</b>
<i>Rodney B. Warnick and David C. Bojanic</i>	
<b>Reinventing “Retrotels”: Using Engaged Scholarship to Market Nostalgia Tourism in Rural New Hampshire</b> .....	<b>257</b>
<i>Ben Amsden, Thad Guldbrandsen, and Mark Okrant</i>	

*FISH AND WILDLIFE  
MANAGEMENT I*

# BIG GAME HUNTING PRACTICES, MEANINGS, MOTIVATIONS, AND CONSTRAINTS: A SURVEY OF OREGON BIG GAME HUNTERS

---

Suresh K. Shrestha, Ph.D.  
Recreation, Parks and Tourism Resources  
West Virginia University  
sshresth@mix.wvu.edu

Robert C. Burns  
West Virginia University

---

**Abstract.**—We conducted a self-administered mail survey in September 2009 with randomly selected Oregon hunters who had purchased big game hunting licenses/tags for the 2008 hunting season. Survey questions explored hunting practices, the meanings of and motivations for big game hunting, the constraints to big game hunting participation, and the effects of age, years of hunting experience, hunting motivations, hunting meanings, and hunting success on overall quality of experience. The study found that although hunters gave high scores to the emotional and traditional meanings of hunting, their quality of experience depended largely on hunting success. In addition, seeing/finding big game animals was the biggest constraint for hunters in Oregon.

---

## 1.0 BACKGROUND

Hunting has played a multifaceted role in the American way of life as both a subsistence activity and a pastime activity (Brown et al. 1995, Brown et al. 2000). Studies indicate that in recent times sport hunting has helped people achieve a variety of health, psychological, emotional, social, political, economic, and environmental benefits (NSSF/Southwick Associates 2008; Responsive Management 2006a, 2006b; RM/NSSF 2008; Southwick Associates 2007; USDI and USDC 2006). From a management perspective, regulated hunting is a primary mechanism for managing deer and other wildlife populations

(Brown 2009, Brown et al. 2000) and many wildlife conservation programs are funded through the sales of hunting licenses (Anderson et al. 1985, Floyd and Lee 2002).

The trend data, however, indicate that the participation of Americans in hunting has been declining over the past decade (USDI and USDC 2006). Similar downward trends have been noted in the number of days spent in general hunting and big game hunting, and in hunters' expenditures. Considering the dependence of wildlife managers on regulated hunting to manage populations of game species as well as pest wildlife species, a decline in the number of hunters will have tremendous direct and indirect managerial, social, economic, and environmental implications (Anderson et al. 1985, Floyd and Lee 2002, Lauber and Brown 2000, Sun et al. 2005).

The situation in the Pacific Northwest, including the state of Oregon, is even worse with respect to hunting trends (USDI and USDC 2006). According to a recent study (Responsive Management 2008), the number of hunting license holders in Oregon declined by 33 percent between the years 1981 and 2005. Fishing and hunting activities contribute \$2.8 billion to the Oregon economy (Dean Runyan Associates 2009); hence any decline in the number of hunters could negatively affect the state's wildlife conservation programs. To counter these trends, wildlife managers need to develop a comprehensive management plan aimed at both retaining existing hunters and recruiting new hunters, especially among younger people (Lauber and Brown 2000). In order to develop an effective management scheme, wildlife managers need to understand hunters, as well as the meanings, motivations, and constraints related to hunting. This paper presents the findings of a study carried out in Oregon to generate this much needed information.

## 2.0 STUDY OBJECTIVES

This study's objectives are:

- To describe demographics and hunting practices of big game hunters;
- To identify the meanings of and motivations for big game hunting;
- To understand the constraints to big game hunting participation; and
- To identify the effects of age, number of years of hunting, number of days spent hunting per year, hunting motivations, hunting meanings, and hunting success on overall quality of experience.

## 3.0 METHODS

A self administered mail survey was conducted in September 2009 with 2000 randomly selected Oregon hunters who had purchased big game hunting license/tags (for deer, elk and bear) for the 2008 hunting season. Altogether, 360 completed surveys were returned for a response rate of 18 percent. The survey questions focused on the characteristics of the respondents, the meanings of and motivations for participating in big game hunting, satisfaction from hunting participation, and constraints to big game hunting participation.

The meanings of big game hunting were explored with 13 different statements reflecting various emotional, traditional, associational, and consumptive meanings of hunting. The respondents expressed their level of agreement with these statements on a 7-point Likert scale where "1" meant lowest level of agreement and "7" meant highest level of agreement. To identify the most important motivations of big game hunting, 10 motivation items from the 2004 South Dakota Black Hills Deer Hunter Survey were used (Gigliotti 2005). The respondents were asked to check three motivations that were most important to them. The quality of the hunting experience was ascertained using a 6-point scale on which "1" meant worst and "6" meant excellent. Big game hunting constraints were measured with 25 items adapted from Shinew et al. (2004) and Burns and Graefe (2007) that were reworded to focus on big game hunting.

Data were analyzed using SPSS. Descriptive statistics were used for analyzing hunters' demographics, meanings, motivations, satisfaction, and constraints to hunting. Inferential analysis was conducted using suitable statistical tests, which included correlations, T-tests, and analysis of variance.

## 4.0 RESULTS AND DISCUSSION

### 4.1 Profile of the Respondents

Respondents were overwhelmingly male (82 percent) and Caucasian (96 percent). Figure 1 shows that more than half of the respondents (55 percent) belonged to age group "51 years or older" and very few respondents (15 percent) were age 30 or younger.

### 4.2 Hunting Practices

The respondents were generally very experienced hunters, with an average of 26.9 years of experience (range of 0 to 65 years for all respondents). Only seven respondents had participated in big game hunting for the first time during the year of the survey. These experience figures suggest an alarming situation for the future growth of hunting in the state. A large percentage of respondents (88 percent) had participated in deer hunting, followed by elk hunting (76 percent), and bear hunting (42 percent). About one-third (35 percent) had participated in hunting for all three big game animals. Gun/rifle was the most common hunting equipment for the respondents (86 percent), while 10 percent reported that they used bow/

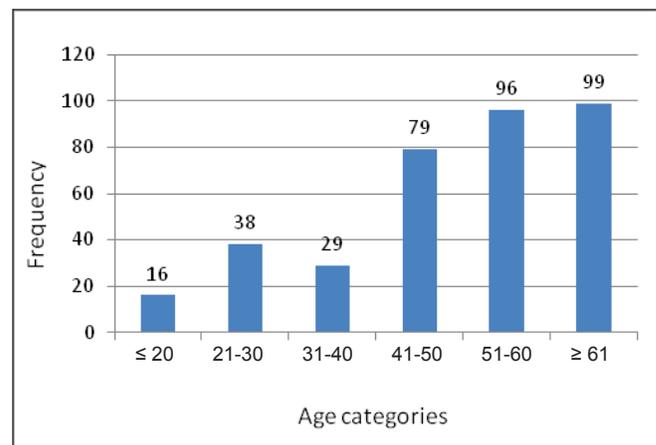


Figure 1.—Number of study respondents by age.

archery, and just 4 percent used both. The harvesting success rate of deer hunting was very low (35 percent) for the year 2008.

### 4.3 Number of Days Spent Hunting

The most recent 5-year trend data shows that the mean number of days spent in big game hunting per hunter declined by at least one day between 2004 to 2008 (i.e., from 11.24 days/year to 10.11 days/year) (Figure 2).

### 4.4 Meanings of Hunting

Among the 13 different meanings of hunting, respondents expressed higher levels of agreement with statements that represented emotional, traditional, and longtime association values of hunting than with statements that reflected consumptive, material, or economic values (Table 1). More than 60 percent of the respondents agreed with statements about

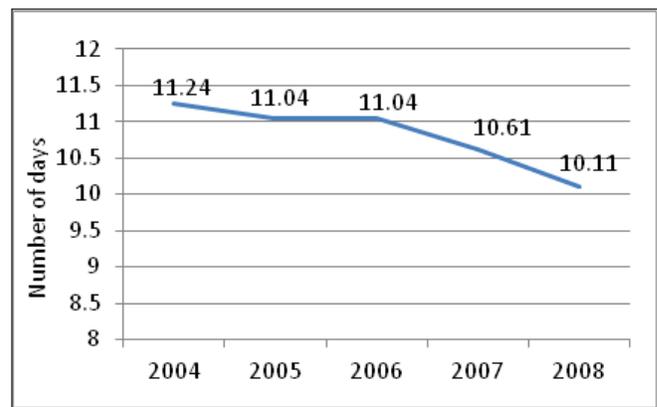


Figure 2.—Trend in hunters' average number of days spent hunting between 2004 and 2008.

emotional values such as hunting being a big part of life, hunting being an annual tradition, hunting providing a sense of achievement, and hunting having long-term association values (e.g., “given the amount of effort I have put in, it would be difficult

Table 1.—Percentage of respondents agreeing with different meanings of big game hunting

Factor	Factor Loading	Meaning of hunting	% agreed	Mean Score (out of 7)
1: Emotional, Traditional and Association Factor	.872	Given the skills and knowledge developed over the years, it is important that I continue to hunt deer	75%	5.5
	.867	If I stopped deer hunting, an important part of my life would be missing	78%	5.6
	.857	Participation in hunting is a large part of my life	67%	5.27
	.820	Deer hunting is an annual tradition that has become important to me over the years	84%	5.9
	.806	Given the amount of effort I have put, it would be difficult for me to find another activity to replace deer hunting	42%	4.8
	.639	If I quit hunting, the effort I have put into accumulating the right deer hunting equipments would be wasted	45%	4.3
	.558	I would describe my skill level in deer hunting as advanced or expert	55%	4.7
2: Consumptive, Investments and Skill Testing Factor	.669	I mainly hunt deer only to bring trophy	12%	2.4
	.620	Over the years, I have invested a lot of money in deer hunting equipments	60%	4.8
	.602	Over the years, I have accumulated a lot of deer hunting equipments	60%	4.9
	.546	I mainly hunt deer only to bring the meat home to eat	52%	4.5
	.506	Testing/improving my hunting skills more important to me than harvesting deer	45%	4.2
3: Sense of Achievement Factor	.771	A hunting trip can be successful to me even if no deer harvested	66%	5.7

Extraction Method: Principal Component Analysis; Rotation Method: Varimax with Kaiser Normalization.

for me to find another activity and application of accumulated skill, knowledge and equipment”). The mean level of agreement for each of these values was above 5 (where the highest possible score was 7). Only about 50 percent of the respondents agreed with statements about consumptive values such as hunting for meat, and just 12 percent agreed that they hunted for trophies. A factor analysis showed that the meanings of hunting can be grouped into three factors: 1) emotional, traditional, and association factor; 2) consumptive, investments, and skill testing factor; and 3) sense of achievement factor.

#### 4.5 Motivations for Hunting

Among the 10 motivation items, the respondents reported harvesting deer for meat and trophy as most important for their participation in hunting, followed by spending time with family and friends, enjoying

nature/open space, and the challenge of hunting (Table 2).

#### 4.6 Quality of Experience

The respondents indicated that the quality of their 2008 hunting experiences in Oregon was not very good; mean rating of experience quality was 2.9 out of 6 (Table 3). In addition, more than one-third (36 percent) indicated that the quality of their 2008 experience was lower than previous years, while only 10 percent felt it was better than previous years (Table 4). These results suggest that the quality of big game hunting in Oregon is declining. According to the respondents, low success (harvest) rate, low deer population, reduced access to the hunting areas that were previously open for hunting, and too many hunters were the main reasons for lower quality experiences.

**Table 2.—Percentage of respondents by most important motivations of hunting**

Motivation items	Primary motivation	Secondary motivation	Tertiary motivation
Harvest deer (meat/trophy)	45%	13%	22%
Time with friends and family	19%	27%	15%
Enjoy nature/open space	18%	26%	19%
Challenge of hunt	12%	14%	19%

**Table 3.—Quality of respondents’ 2008 hunting experiences**

Quality of Experience	1 Poor	2 Fair	3 Good	4 Very good	5 Excellent	6 Perfect	Mean
Number and percentage of respondents (n= 316)	54 (17%)	90 (28%)	79 (25%)	47 (15%)	29 (9%)	17 (5%)	2.871

**Table 4.—Quality of 2008 hunting experience relative to past years**

Quality of Experience	1 (Worse)	2 (Same)	3 (Better)	4 (No idea)	Mean
Number and percentage of respondents (n= 319)	114 (35.7%)	173 (54.2%)	31 (9.7%)	1 (0.3%)	1.75

## 4.7 Constraints to Hunting

Based on the survey data, the 25 constraints to hunting can be categorized into three groups: higher level constraints (mean above 2.00); medium level constraints (mean 1.5-1.99); and lower level constraints (mean below 1.50) (Table 5). The higher-level constraints mostly included site- and health-related items. The site-related items included “difficulty finding deer/elk/bear,” “sites too crowded,” “complex rules and regulation,” “sites are closed when wanted,” and “sites too far away.” The items “my physical health” and “physical health of someone you want to go with” are examples of health-related constraints. “Lack of time” was another important constraint. About 10-20 percent of respondents felt that

they faced each of these constraints a lot and another 40-50 percent said they felt these constraints a little or sometimes.

Medium-level constraints frequently faced by the hunters included specific management and interpersonal issues such as “inadequate facilities in Oregon,” “no opportunity to hunt,” “lack of information,” “feeling unwelcomed by ranger/staff,” “conflict with other uses/users,” and “don’t have anyone to go with.” Many respondents also reported that they “can’t afford” hunting. Among the lowest perceived constraints were “fear of outdoors,” “racial conflicts,” “lack of skills,” and “fear of crime.”

**Table 5.—Perceived hunting constraints of the Oregon big game hunters (n= 359)**

To what extent do the following constraints affect your participation in hunting?	Percentage agreeing			mean	s. d.
	Not at all	A little or some	Quite a bit or a lot		
Lack of/difficulty finding deer	26.7%	51.5%	21.7%	2.58	1.232
Sites too crowded in Oregon	22.3%	58.4%	19.2%	2.58	1.135
Lack of time	31.5%	50.9%	17.6%	2.35	1.198
Complex rules and regulation	31.8%	50.7%	17.6%	2.33	1.215
Sites are closed	37.3%	47.1%	15.6%	2.26	1.215
Like to do other things for recreation	35.9%	53.5%	10.6%	2.16	1.102
Sites are far away	37.3%	52.1%	10.5%	2.12	1.071
Your physical health	46.2%	39.0%	14.8%	2.06	1.226
Physical health of someone you like to hunt with	39.3%	49.9%	10.9%	2.03	1.066
Can't afford	41.8%	53.2%	5.0%	1.94	0.952
Don't have anyone	53.2%	36.2%	10.6%	1.88	1.159
Inadequate facilities in OR	49.0%	45.9%	5.0%	1.79	0.931
Conflict with other uses/users	51.8%	40.9%	7.3%	1.78	0.993
No opportunity to hunt	47.9%	49.0%	3.1%	1.75	0.85
Lack of info	55.4%	41.2%	3.4%	1.64	0.831
Feeling unwelcomed by ranger/staff	62.1%	33.8%	5.1%	1.58	0.88
Lack of training facilities	69.4%	28.7%	1.9%	1.43	0.732
Fear of crime	72.1%	25.1%	2.8%	1.40	0.766
Lack of skills	70.8%	28.9%	0.3%	1.37	0.629
Lack of transportation	73.5%	25.3%	1.1%	1.35	0.664
Don't like to do things in outdoor	82.2%	13.6%	4.2%	1.33	0.837
Lack of self-confidence	82.5%	16.1%	1.4%	1.24	0.592
Racial conflicts among users	83.6%	16.1%	0.3%	1.19	0.478
Fear of outdoors	85.5%	14.5%	0.0%	1.17	0.438
Fear of sexual assault	85.5%	13.7%	0.9%	1.18	0.517
Overall Mean				1.78	0.436

## 4.8 Factors Affecting Quality of Experience

Table 6 displays the results of *T*-tests, *F*-tests, and correlation tests conducted to examine the effects of various factors on overall quality of hunting experience in 2008. The *T*-test results show that harvest success played a significant role in hunters' overall perceptions of hunting quality. The mean values indicate that hunters who were able to harvest a deer/elk/bear expressed higher levels of satisfaction (mean 3.6) than those who did not harvest any animal (mean 2.4). On the other hand, hunting motivation, either for meat/trophy or for any non-consumptive use, did not have a significant effect on quality of experience. Likewise, the *F*-values of the ANOVA test indicated there were no significant differences in the quality of experience of hunters by the type of big game species they hunted. The mean values, however,

indicated that hunters who “hunted all the three species” or “hunted deer and elk” were relatively more satisfied (2.9), while those who participated in “only bear hunting” were least satisfied (mean 1.3).

The correlation analysis (Table 6) showed that the age of the hunters, number of days spent hunting, and number of years hunting are negatively correlated with quality of hunting experience. This indicates that more experienced hunters were less satisfied with their hunting experiences. However, this correlation was not statistically significant. The correlation analysis also showed that among the three types of meanings, “a hunting trip could be successful even if no deer is harvested” was significantly correlated with quality of experience. This means the hunters who placed a high value on hunting regardless of outcome were more satisfied with their hunting experience.

**Table 6.—Effects of various factors on quality of hunting experience**

<b>T-test</b>		Mean quality of experience	Std. dev	<i>t</i> -value	<i>p</i> -value
Harvested deer or not	N				
No	195	2.44	1.227	-7.622**	.000
Yes	120	3.581	.382		
Motivation					
Meat/Trophy		2.77	1.437	1.097	.274
Non-Consumptive		2.95	1.364		

<b>ANOVA</b>		Mean quality of experience	Std. dev	<i>F</i> -value	<i>p</i> -value
Species hunted	N				
hunted only deer	50	2.60	1.370	1.139	.338
hunted only elk	2	2.50	.707		
hunted only bear	3	1.33	.577		
hunted only deer and elk	121	2.94	1.362		
hunted only deer and bear	17	3.12	1.453		
hunted only elk and bear	1	2.00	.		
hunted all 3 species	118	2.94	1.434		
Total	312	2.87	1.399		

<b>Correlations</b>	Person's <i>r</i>	<i>p</i> -level
Number of days hunted in 2008	-.029	.311
Number of years hunting in OR	-.042	.239
Age of the respondents	-.066	.124
Emotional, Traditional N Association meaning	.057	.158
Consumptive, Investment and Testing	.020	.363
A hunting trip can be successful to me even if no deer harvested	.155**	.003

Note: \* significant at .05 and \*\* significant at .01 alpha level.

## 5.0 MANAGEMENT IMPLICATIONS

The data reported here, along with a plethora of previous research, show an alarming trend in the decline of big-game hunting participation. To counter this, land and wildlife managers may need to develop strategies for retaining existing hunters and recruiting new hunters. Enhancing hunters' satisfaction by providing quality hunting experiences and reducing hunting constraints, especially site-related constraints, are very much within the control of wildlife managers and could be two major strategies for retaining existing hunters. Gigliotti (2005, 2010) observed that hunters' satisfaction is highly correlated with the number of deer seen (buck or doe) and harvesting success. This study found that although hunters gave high scores to the emotional and traditional meanings of hunting, their quality of experience depended largely on hunting success. In addition, seeing/finding big game animals was the biggest constraint for hunters in Oregon. Therefore, strategies designed to increase the chances of hunter-game encounters – for example, through programs like habitat extension and improvement, predator control, identifying and opening up more areas, and properly regulating the number of hunters related to available game – may prove successful. Regarding the recruitment of new hunters, additional research on existing hunters is needed in order to understand who and what encouraged or discouraged their first participation in hunting and what factors have encouraged or discouraged their continued participation. New extension programs could then be designed to generate greater public support for hunting, especially among youths.

## 6.0 LITERATURE CITED

- Anderson, M.W.; Reiling, S.D.; Criner, G.K. 1985. **Consumer demand theory and wildlife agency revenue structure.** *Wildlife Society Bulletin*. 13: 375-384.
- Brown, P. 2009. **Introduction: perspectives on the past and future of human dimension of fish and wildlife.** In: Manfredo, M.J.; Vaske, J.J.; Bown, P.J.; Decker, D.J.; Duke, E.A. eds. *Wildlife and Society: the science of human dimensions.* Washington, DC: Island Press.
- Brown, T.L.; Decker, D.J.; Enck, J.W. 1995. **Preliminary insights about the socio-cultural importance of hunting and trapping.** Human Dimensions Research Unit Series Report 95-2. Ithaca, NY: Cornell University. 90 pp.
- Brown, T.L.; Decker, D.J.; Siemer, W.F.; Enck, J.W. 2000. **Trends in hunting participation and implications for management of game species.** In: Gartner, W.C.; Lime, S.W. eds. *Trends in outdoor recreation, leisure and tourism.* New York, NY: CABI Publishing: 780-787.
- Burns, R.C.; Graefe, A.R. 2007. **Constraints to outdoor recreation: exploring the effects of disabilities on perceptions and participation.** *Journal of Leisure Research*. 39: 156-181.
- Dean Runyan Associates. 2009. **Fishing, hunting, wildlife viewing, and shellfishing in Oregon 2008: state and county expenditure estimates.** Report prepared for Oregon Department of Fish and Wildlife, Portland, Oregon.
- Floyd, M.F.; Lee, I. 2002. **Who buys fishing and hunting licenses in Texas? results from a statewide household survey.** *Human Dimensions of Wildlife*. 7: 91-106.
- Gigliotti, L.M. 2010. **2009 Black Hills deer hunter survey report.** Report ID number: HD-3-10.AMS. Pierre, SD: South Dakota Game, Fish, and Parks.
- Gigliotti, L.M. 2005. **2004 Black Hills deer hunter survey.** Report ID number: HD-3-05.AMS. Pierre, SD: South Dakota Game, Fish, and Parks. Available at <http://e.library.sd.gov/SodakLIVE-Docs/content/gfp/GFPdoc053.pdf>.
- Lauber, T.B.; Brown, T.L. 2000. **Deer hunting and deer hunting trends in New York State.** HDRU Series No 00-1. Human Dimensions Research Unit, Department Of Natural Resources. Ithaca, NY: Cornell University.
- NSSF (National Shooting Sports Foundation)/Southwick Associates. 2008. **Lifetime value from newly recruited hunters and target shooters.** Fernandina Beach, FL.

- Responsive Management. 2006a. **Sportsmen's attitudes.** Unpublished Survey about Various Hunting and Fishing Issues. Harrisonburg, VA: Responsive Management.
- Responsive Management. 2006b. **The public's attitudes toward and participation in the shooting sports.** Harrisonburg, VA: Responsive Management.
- Responsive Management. 2008. **Increasing hunting participation by investigating factors related to hunting license sales increases in 1992, 1999, and 2004 against 13 other years of hunting license sales decline between 1990 - 2005.** Harrisonburg, VA: Responsive Management.
- RM (Responsive Management)/NSSF (National Shooting Sports Foundation). 2008. **The Future of hunting and the shooting sports: research-based recruitment and retention strategies.** Final Report. Produced for U.S. Fish And Wildlife Service. Harrisonburg, Virginia: Responsive Management/National Shooting Sport Foundation.
- Shinew, K.J.; Floyd, M.F.; Parry, D. 2004. **Understanding the relationship between race and leisure activities and constraints: exploring an alternative framework.** Leisure Science. 26: 181-199.
- Southwick Associates. 2007. **Hunting in America: an economic engine and conservation powerhouse.** Fernandina Beach, FL.
- Sun, L.; Van Kooten, G.C.; Voss, G.M. 2005. **Demand for wildlife hunting in British Columbia.** Canadian Journal of Agricultural Economics. 53: 25-46.
- USDI and USDC (U.S. Department of the Interior, Fish and Wildlife Service, and U.S. Department of Commerce, U.S. Census Bureau). **2006 national survey of fishing, hunting, and wildlife-associated recreation.** Washington DC: U.S. Department of the Interior, Fish and Wildlife Service, and U.S. Department of Commerce, U.S. Census Bureau.

The content of this paper reflects the views of the author(s), who are responsible for the facts and accuracy of the information presented herein.

# DIFFERENCES IN REPORTED SATISFACTION RATINGS BY CONSUMPTIVE AND NONCONSUMPTIVE RECREATIONISTS: A COMPARATIVE ANALYSIS OF THREE DECADES OF RESEARCH

---

Jennifer M. Roemer  
Human Dimensions of Natural Resources  
Colorado State University  
jmroemer@rams.colostate.edu

Jerry J. Vaske  
Colorado State University

---

**Abstract.**—This paper updates a previous comparative analysis article (Vaske et al. 1982) by analyzing differences in satisfaction ratings reported by consumptive and nonconsumptive recreationists over a 30-year period. In the 1982 article, consumptive recreationists reported significantly lower satisfaction ratings than did nonconsumptive recreationists. Based on these findings, two hypotheses were advanced: (1) the pattern of findings between the two activity types will persist; and (2) the pattern will remain constant over study years. Data were obtained from published and unpublished sources. A total of 59 consumptive and 66 nonconsumptive recreation contexts (e.g., resident deer hunters in Colorado, kayakers on the Poudre River) were examined. Each study used the same 6-point satisfaction question (“Overall, how would you rate your day/trip/experience?”). Following Vaske et al. (1982), responses were collapsed into three categories (“poor/fair,” “good/very good,” “excellent/perfect”). The independent variables were activity type and study year. Consistent with hypothesis 1, consumptive recreationists reported lower satisfaction ratings than did nonconsumptive recreationists. With both activity type and study year included in the model, the pattern of the interactions provided support for hypothesis 2. Implications for theory, management, and future research are discussed.

---

## 1.0 INTRODUCTION

Analysis of multiple data sets using comparative analyses and/or meta-analyses highlights replication of research and generalization of results over different settings and time periods (Vaske and Manning 2008). Such analyses can demonstrate long-term patterns and trends, discern causal factors, and generate support for theories, which are not possible with a single data set or study. Comparative analyses have been reported for concepts such as crowding (Kuentzel and Heberlein 1992, Shelby and Vaske 2007, Vaske and Shelby 2008), norms (Donnelly et al. 2000, Laven et al. 2005, Vaske and Donnelly 2002), motivation (Manfredo et al. 1996), and satisfaction (Vaske et al. 1982). This paper replicated the Vaske et al. (1982) analyses comparing the satisfaction ratings reported by consumptive and nonconsumptive recreationists. By using data obtained over the last 30 years, we sought to generalize the original findings over a wider range of evaluation contexts and time periods.

## 1.1 Satisfaction

Satisfaction has been a focal point in the study of recreation behavior since the 1970s (Floyd 1997). The concept is commonly used as a measure of recreation quality, and satisfaction can be defined as “the congruence between expectations and outcomes” (Manning 1999, p. 10). Quality of and satisfaction from recreation experiences reflect management goals and visitor expectations. Individuals bring their own expectations to an experience, and these expectations influence the kinds of satisfaction they receive. The multiple satisfactions approach recognizes the diversity of experiences that visitors seek (Hendee 1974). Different types of satisfaction include communing with nature, testing skills, harvesting game, exercising, and relaxing (Manfredo et al. 2004).

Although widely accepted, the multiple satisfactions approach makes it difficult to compare satisfaction ratings among different individuals, activities, and time periods as is necessary for a comparative analysis. Similar to Vaske et al. (1982), we define satisfaction as “an overall rating of a recreation experience as good or bad. It is a composite of the particular expectations and needs, expressed as a single numerical rating. An average score can be calculated for all participants in an activity and the activities can be compared directly” (p. 198). Defined this way, satisfaction has been operationalized with a single question such as “Overall, how would you rate your day/trip/experience?” (Vaske 2008).

## **1.2 Consumptive vs. Nonconsumptive Recreation Activities**

Recreation activities can be organized along a consumptive to nonconsumptive continuum (Wagar 1969). Recreationists on the consumptive end of the continuum seek to catch or capture and consume an element of the environment (Vaske et al. 1982). The focus is on a commodity or product to be consumed. Examples of consumptive activities include hunting, angling, gold panning, and mushroom collecting. Nonconsumptive recreationists tend to focus on experiences (e.g., being with friends or experiencing nature) over commodities and products. Examples of nonconsumptive activities are viewing scenery, canoeing, hiking, backpacking, climbing, and camping. Viewing scenery, for example, is almost completely nonconsumptive, as “the viewer can often gain substantial benefits without any impact on the resource or the experience available to the next viewer” (Wagar 1969, p. 258).

Consumptive and nonconsumptive activities differ in at least two ways (Vaske et al. 1982). First, recreationists in the two activity types differ in the specificity of their goals. Consumptive recreation activities are generally dominated by one clear and specific goal: the acquisition of the commodity or product to be consumed. For instance, hunters seek to harvest game; anglers want to catch fish. Although

acquiring a specific product is the most important goal, consumptive recreationists have other goals that can influence a satisfying experience. For example, hunters, anglers, or mushroom collectors may also enjoy the solitude of being in nature if alone or the companionship offered by others if in a group. Despite these secondary goals, “seeing, shooting, and bagging game are still the most central evaluative criteria for the recreationist” and are “the strongest predictors of overall satisfaction” (Vaske et al. 1982, p. 197). Realization of the secondary goals is only a partial substitute if the chosen product is not acquired (Vaske 2008). In contrast, the goals of nonconsumptive recreationists are more general and less well-defined (Vaske et al. 1982). Backpackers or campers, for example, may be motivated to experience nature, test skills, experience solitude, or be with friends. These goals can be achieved throughout the entire experience, do not depend on acquiring a specific product, and are more easily substituted if one goal is not satisfied.

A second key difference between consumptive and nonconsumptive recreation activities is the amount of control participants have in fulfilling their goal(s) (Vaske et al. 1982). Consumptive recreationists generally have less control than nonconsumptive recreationists. Despite the best efforts of hunters or anglers to select an area that ensures successful acquisition of the desired game/fish, there is rarely a guarantee that their goal will be met. Without this control, overall satisfaction for this group is likely to be low. By comparison, nonconsumptive recreationists generally have greater control in achieving their goals than their consumptive counterparts. For the nonconsumptive recreationists, it is relatively easy to choose a location that guarantees goal achievement. Unexpected events (e.g., accidents, injuries, flat tires, forgotten equipment, and poor weather conditions) can disrupt the desired experience, but nonconsumptive recreationists usually have more control over their experience and goals, which is likely to result in higher levels of overall satisfaction (Vaske et al. 1982).

### 1.3 Hypotheses

Based on theory and prior research (Vaske et al. 1982), the following hypotheses were advanced:

- H<sub>1</sub>: Consumptive recreationists will report significantly lower levels of satisfaction than nonconsumptive recreationists.
- H<sub>2</sub>: The overall pattern of findings will remain constant over study years.

## 2.0 METHODS

### 2.1 Sampling Design

Data for this paper were obtained from journal articles, dissertations, theses, published and unpublished reports, and proceedings reported in the literature over a 30-year period (1975 to 2005). Satisfaction ratings were examined for 125 evaluation contexts (e.g., resident deer hunters in Colorado, kayakers on the Poudre River). A total of 59 consumptive recreation contexts and 66 nonconsumptive recreation contexts were examined. Consumptive activities included hunting (i.e., deer, elk, geese, turkey) and angling (i.e., salmon, trout); nonconsumptive activities included boating, rafting, canoeing, kayaking, climbing, biking, hiking, mountain biking, and sightseeing.

Including all evaluation contexts, the analysis represented 17 states and 2 Canadian provinces. Responses were obtained from 37,075 individuals. Response rates ranged from 39 percent to 100 percent, with an average response rate of 79 percent. Survey methodologies included onsite surveys (70 contexts), mailed surveys (45 contexts), phone surveys (3 contexts), or a combination of onsite and mailed surveys (6 contexts).

### 2.2 Variables

Two independent variables were analyzed: activity type and study year. Activity type was a dichotomous measure representing consumptive (n = 59) and nonconsumptive (n = 66) contexts. Study year was coded as three time periods: 1975-1984 (n = 33), 1985-1994 (n = 45), and 1995-2005 (n = 47).

Each study analyzed used the same satisfaction question: "Overall, how would you rate your day/trip/experience?" Responses were coded on a 6-point scale representing "poor," "fair," "good," "very good," "excellent," and "perfect." Following Vaske et al. (1982), responses were collapsed into three categories ("poor/fair," "good/very good," "excellent/perfect"). For each evaluation context per study, the percentage of participants choosing each of the three responses was calculated and analyzed as three separate dependent variables (potential range = 0 to 100 percent for each variable).

### 2.3 Analysis

The relationship between activity type (consumptive vs. nonconsumptive) and overall satisfaction ("poor/fair," "good/very good," "excellent/perfect") was examined using t-tests. Three 2-way ANOVAs were used to test for significant interactions between the two independent variables, activity type and study year. These 2-way ANOVAs tested the hypothesis that the overall pattern of findings would remain constant over study years).

A relationship was considered statistically significant at  $p < .05$ . Eta ( $\eta$ ) was used to indicate the strength of a relationship. An eta (or effect size) of .10 was considered a "minimal" relationship, .30 represented a "typical" relationship, and an  $\eta > .50$  reflected a "substantial" relationship (Vaske 2008).

## 3.0 RESULTS

The means for all three satisfaction variables differed significantly ( $p < .001$ ) between consumptive and nonconsumptive recreationists (Table 1). About 36 percent of consumptive recreationists and 4 percent of nonconsumptive recreationists gave a "poor/fair" rating,  $t = 11.59$ ,  $p < .001$ ,  $\eta = .737$ . On average, 41 percent of consumptive and 30 percent of nonconsumptive recreationists rated their overall satisfaction as "good" or "very good,"  $t = 4.19$ ,  $p < .001$ ,  $\eta = .348$ . Finally, 66 percent of the nonconsumptive recreationists (on average) rated their experience as "excellent" or "perfect," compared to only 24 percent of consumptive recreationists who

**Table 1.—Differences in reported satisfaction ratings by activity type**

Satisfaction Rating	Activity Type		t-value	p-value	η
	Consumptive <sup>1</sup>	Nonconsumptive <sup>1</sup>			
Poor/Fair	35.7	4.2	11.59	< .001	.737
Good/Very Good	40.7	29.7	4.19	< .001	.348
Excellent/Perfect	23.5	66.1	13.22	< .001	.762

<sup>1</sup> Values in cells denote mean percentage of consumptive and nonconsumptive recreationists giving each response.

gave this response,  $t = 13.22$ ,  $p < .001$ ,  $\eta = .762$ . These results support hypothesis 1 and illustrate that consumptive recreationists report significantly lower levels of satisfaction than nonconsumptive recreationists do.

To test the interaction effect proposed by hypothesis 2, three 2-way ANOVAs were analyzed (Table 2). When both activity type and study year were included in the model, significant interactions were observed for the “poor/fair” ( $p = .018$ ) and “excellent/perfect”

( $p = .012$ ) variables. The interaction between activity type and study year was not significant ( $p = .062$ ) for the “good/very good” variable. The general pattern of these interactions showed a higher percentage of consumptive recreationists reporting “poor/fair” and “good/very good” responses over time and a higher percentage of nonconsumptive recreationists reporting “excellent/perfect” responses over time. Figures 1 and 2 show the results for the “poor/fair” and “excellent/perfect” response categories. These patterns are consistent with hypothesis 2.

**Table 2.—Interaction between the effects of activity type<sup>1</sup> and study year<sup>2</sup> on reported satisfaction ratings**

Satisfaction Rating	df	MS	F-value	p-value	η <sup>2</sup>
Poor/Fair	2	743.63	4.16	.018	.066
Good/Very Good	2	571.71	2.85	.062	.046
Excellent/Perfect	2	1439.35	4.57	.012	.072

<sup>1</sup> Dichotomous variable measured as 0 “consumptive” and 1 “nonconsumptive.”

<sup>2</sup> Categorical variable measured as “1975-1984,” “1985-1994,” and “1995-2005.”

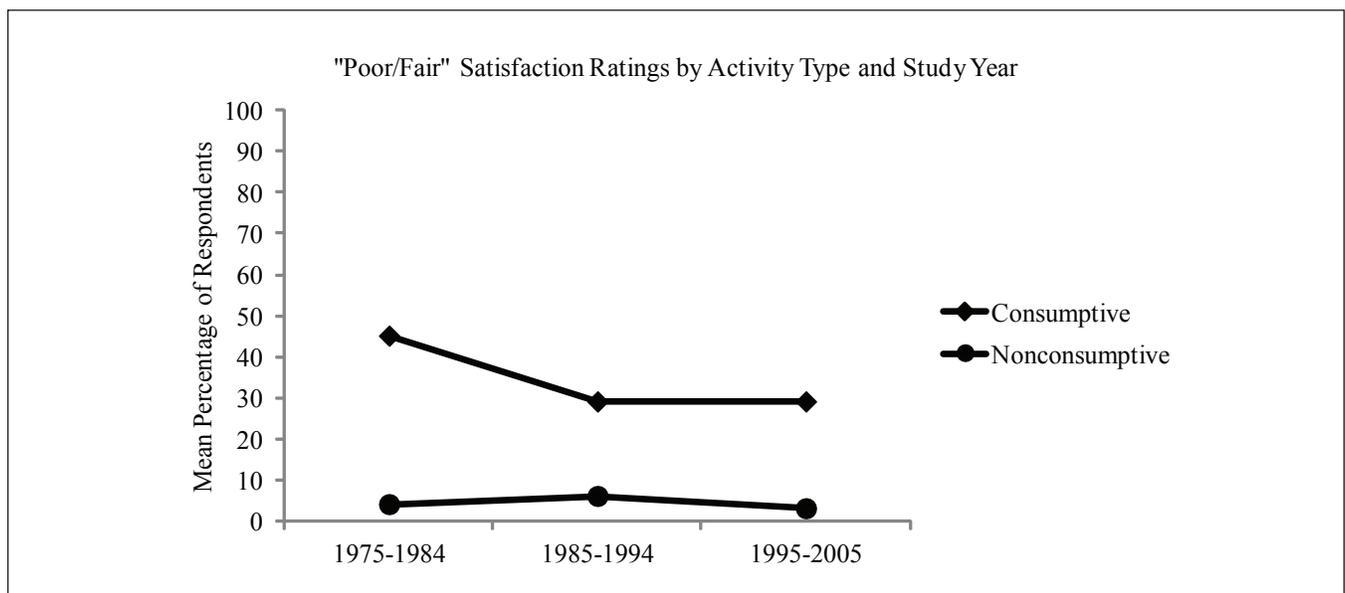


Figure 1.—Mean percentage of consumptive and nonconsumptive recreationists reporting “poor/fair” satisfaction ratings over time.

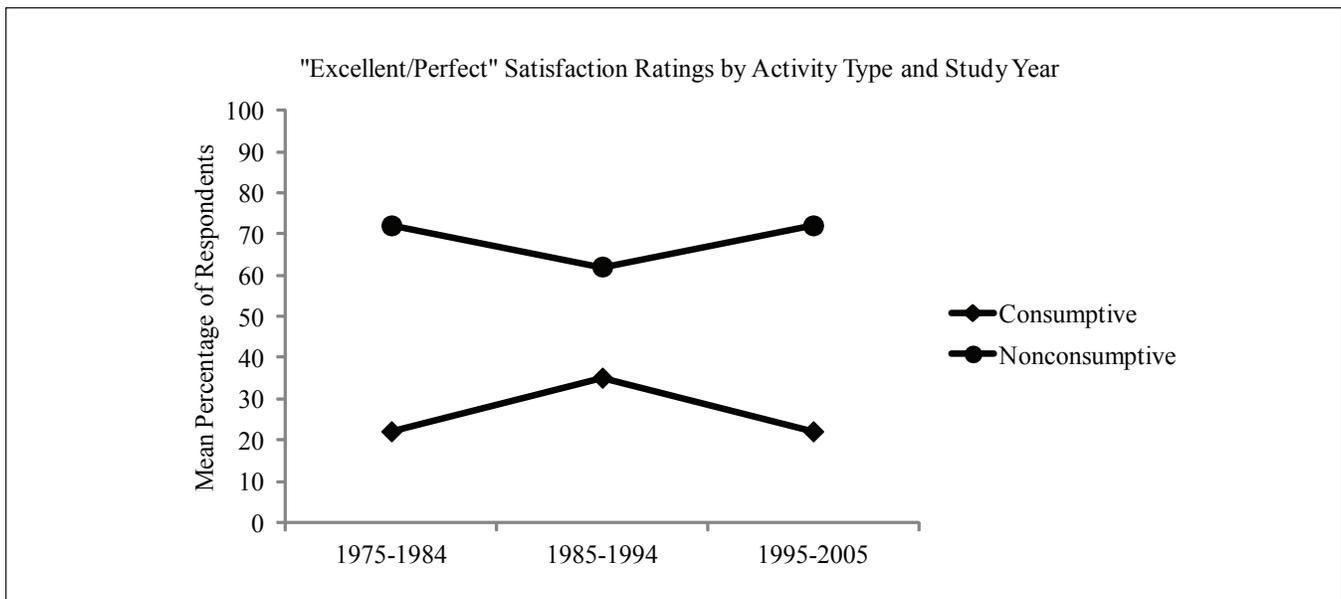


Figure 2.—Mean percentage of consumptive and nonconsumptive recreationists reporting “excellent/perfect” satisfaction ratings over time.

## 4.0 DISCUSSION

Overall, study findings supported the two hypotheses. First, the pattern of findings reported by Vaske et al. (1982) was replicated. Consumptive recreationists still reported significantly lower levels of satisfaction than did nonconsumptive recreationists. The 1982 comparative analysis was based on six consumptive and 11 nonconsumptive activities. Analyses reported in this article were based on 59 consumptive and 66 nonconsumptive evaluation contexts. With the increased sample size, we have more confidence in generalizing the findings. Second, when both activity type and study year were included in the model, the general patterns supported the second hypothesis; consumptive recreationists reported significantly lower levels of satisfaction levels than nonconsumptive recreationists did over time. These findings have theoretical implications for the concept of satisfaction and the differences between consumptive and nonconsumptive recreation activities. They also have managerial implications and present opportunities for future research.

### 4.1 Theoretical Implications

Results reported here enhance our understanding by demonstrating long-term trends in satisfaction

ratings reported by consumptive and nonconsumptive recreationists and by supporting theories regarding differences between the two activity types. The pattern of differences in reported satisfaction ratings by consumptive and nonconsumptive recreationists has remained constant over the study years. Consistent with prior theorizing (Vaske et al. 1982), the two main differences in these activity types—goal specificity and amount of control—appear to be influencing this pattern. With a smaller chance of successfully achieving their primary goal (bagging game/catching fish), consumptive recreationists reported lower levels of satisfaction than did nonconsumptive recreationists.

### 4.2 Managerial Implications

The results presented in this article also have managerial implications. First, findings from multiple data sets allow managers to compare data from their site against comparable locations and make more informed decisions (Vaske and Shelby 2008). Second, although satisfaction is still an important management objective, it should not be the only management criterion (Manning 1999). Our results show that while satisfaction is lower for consumptive recreationists, there are clear reasons for the findings.

### 4.3 Opportunities for Future Research

Despite its widespread application, there is still a need to further understand what influences satisfaction (the motivations and expectations that determine a person's evaluation of an experience). Managers are interested in the relationship between satisfaction and participation, which may not be a direct relationship. A person can have a dissatisfying experience but continue to participate in an activity and vice versa. Certain satisfactions may be more important and outweigh others. Future research should continue to examine the relative importance of different facets of satisfaction and the other factors that motivate behavior.

This article, as well as the 1982 comparative analysis, argued that consumptive and nonconsumptive recreationists differ in the specificity of their goals and their control in achieving these goals. However, there are some nonconsumptive activities like hunting and angling, which have goals that are more specific. The goal of mountain climbing is to reach the summit. The goal of bird watching and other wildlife viewing is to observe particular species of wildlife. For these activities, the recreationists may have more control in goal achievement by choosing climbing routes that match their skills and abilities, or by selecting habitats known to have populations of the desired wildlife species. Examination of the satisfaction ratings reported by individuals engaged in these goal-directed nonconsumptive activities who did and did not achieve their objective would shed additional light on the conceptual distinctions advanced here.

Finally, results reported here were based on a comparative analysis of consumptive and nonconsumptive recreationists. There are, however, other statistical techniques such as meta-analysis that could be used in future analyses. Because meta-analyses incorporate specific effect size measures, the magnitude of the difference between the activity types could be assessed more formally.

### 5.0 LITERATURE CITED

- Donnelly, M.P.; Vaske, J.J.; Whittaker, D.; Shelby, B. 2000. **Toward an understanding of norm prevalence: a comparative analysis of 20 years of research.** *Environmental Management*. 25(4): 403-414.
- Floyd, M. 1997. **Pleasure, arousal, and dominance: exploring affective determinants of recreation satisfaction.** *Leisure Sciences*. 19(2): 83-96.
- Hendee, J.C. 1974. **A multiple satisfaction approach to game management.** *Wildlife Society Bulletin*. 1(2): 24-47.
- Kuentzel, W.F.; Heberlein, T.A. 1992. **Cognitive and behavioral adaptations to perceived crowding: a panel study of coping and displacement.** *Journal of Leisure Research*. 24(4): 377-393.
- Laven, D.; Manning, R.; Krymkowski, D. 2005. **The relationship between visitor-based standards of quality and existing conditions in parks and outdoor recreation.** *Leisure Sciences*. 27(2): 157-173.
- Manfredo, M.J.; Driver, B.L.; Tarrant, M.A. 1996. **Measuring leisure motivation: A meta-analysis of the recreation experience preference scales.** *Journal of Leisure Research*. 28(3): 188-213.
- Manfredo, M.J.; Fix, P.J.; Teel, T.L.; Smeltzer, J.; Kahn, R. 2004. **Assessing demand for big-game hunting opportunities: applying the multiple satisfaction concept.** *Wildlife Society Bulletin*. 32(4): 1147-1155.
- Manning, R.E. 1999. **Studies in outdoor recreation: search and research for satisfaction.** Corvallis, OR: Oregon State University Press.
- Shelby, L.B.; Vaske, J.J. 2007. **Perceived crowding among hunters and anglers: A meta-analysis.** *Human Dimensions of Wildlife*. 12(4): 241-261.
- Vaske, J.J. 2008. **Survey research and analysis: application in parks, recreation, and human dimensions.** State College, PA: Venture Publishing, Inc.

- Vaske, J.J.; Donnelly, M.P. 2002. **Generalizing the encounter-norm-crowding relationship.** Leisure Sciences. 24(3-4): 255-269.
- Vaske, J.J.; Donnelly, M.P.; Heberlein, T.A.; Shelby, B. 1982. **Differences in reported satisfaction ratings by consumptive and nonconsumptive recreationists.** Journal of Leisure Research. 14(3): 195-206.
- Vaske, J.J.; Manning, R.E. 2008. **Analysis of multiple data sets in outdoor recreation research: introduction to the special issue.** Leisure Sciences. 30(2): 93-95.
- Vaske, J.J.; Shelby, L.B. 2008. **Crowding as a descriptive indicator and an evaluative standard: results from 30 years of research.** Leisure Sciences. 30: 111-126.
- Wagar, J.A. 1969. **Nonconsumptive uses of the coniferous forest, with special relation to consumptive uses.** Proceedings: 1968 Symposium Coniferous Forests of the Northern Rocky Mountains. Missoula, MT: University of Montana Foundation: 255-270.

The content of this paper reflects the views of the author(s), who are responsible for the facts and accuracy of the information presented herein.

*PLACE MEANINGS,  
ATTACHMENT, AND IDENTITY*

# PLACE ATTACHMENT AND RECREATION DEMAND ON THE WEST BRANCH OF THE FARMINGTON RIVER

---

Jordan W. Smith  
Dept. of Parks, Recreation and Tourism Management  
North Carolina State University  
jwsmit12@ncsu.edu

Roger L. Moore  
North Carolina State University

---

**Abstract.**—This paper analyzes the effect of place attachment on recreation demand for the West Branch of the Farmington River. Data were collected via on-site and optional mail-back questionnaires administered to river recreationists during the summer of 2001. A total of 247 respondents (51 percent response rate) returned complete questionnaires. Questions concerned respondents' functional and emotional attachments to the river, visit frequency, and trip expenditures. Confirmatory factor analysis was utilized to identify the two distinct constructs of place identity and place dependence. These variables were then incorporated into a travel cost model of recreation demand. Analyses revealed that individuals' emotional/affective dependence on the river was a significant and positive predictor of recreation visitation levels; their functional attachments, however, were not. These findings reaffirm previous studies reporting that place identity is a stronger influence on behavior than place attachment. Possible explanations for the findings are explored.

---

## 1.0 INTRODUCTION

During the past 20 years, a substantial body of literature has accumulated concerning recreationists' development of special bonds to the sites where they recreate. The majority of this literature has attempted to discern the various dimensions of individuals' attachments to recreation areas (e.g., Hammitt et al. 2009, Hammitt et al. 2006, Kyle et al. 2005). However, very few empirical studies have attempted

to examine how these bonds affect recreation behavior. Understanding this connection can be important for both recreation managers and scholars as it moves the place attachment literature out of theory-driven psychometric scale development to connect it with actual recreation behavior. As Hammitt et al. (2009) note, "a perfectly fitted scale measure to a theoretical model is quite limited in utility if the theoretical model is not related and/or predictive of recreational behavior" (p. 58).

In this paper, we address this gap in the literature by incorporating the place attachment construct into a travel-cost model of recreation demand. This analysis not only furthers the understanding of the relationship between recreation behavior and place attachment, but also expands the traditional use of the travel cost model to incorporate psychological measures. In sum, this paper makes unique contributions to both the place attachment literature and the travel-cost modeling approach.

## 2.0 RELATED LITERATURE

### 2.1 Models of Recreation Demand

Travel cost models of recreation demand are usually calculated by estimating demand functions at the level of the individual (Freeman III 2003). To estimate demand functions, researchers assume that an individual's utility depends on the total number of visits they take to the site and the monetary cost of those trips given socioeconomic constraints. These assumptions raise numerous questions about the determinants of recreation behavior. Several scholars have attempted to discern the impacts of directly measurable socio-economic attributes such as age, education, gender, and income on recreation demand (Ward and Beal 2000). Other, more recent research has argued that various social-psychological constructs like place attachment and motivations may significantly affect behavior (Hailu et al. 2005, Hammitt et al. 2009, Smith et al. 2009).

In this article, we explicitly incorporate place attachment into a model of recreation demand and contend that the theoretical robustness of the traditional travel cost model can be increased by incorporating the enduring psychological values that individuals attach to recreation areas.

## 2.2 Place Attachment

Place attachment is a social-psychological construct that originated in the fields of environmental psychology and human geography and concerns the complex functional and emotional connections that develop between people and geographically locatable spaces (Low and Altman 1992, Stokols and Shumaker 1981, Tuan 1980). Numerous scholars have argued that individuals become attached to specific places through a variety of mechanisms. As a result, place attachment is widely believed to be a multi-dimensional construct. While considerable debate has emerged over the exact number of dimensions in the place attachment construct (Hammit et al. 2009, Hammit et al. 2006, Kyle et al. 2005), the two nearly universally agreed-upon dimensions are place dependence and place identity.

### 2.2.1 Place Dependence

Place dependence is best described as the extent to which individuals perceive themselves to be associated with and dependent upon a particular place or a category of functionally similar places (Moore and Graefe 1994). Recreation settings can facilitate goal achievement in outdoor recreation by enabling individuals to participate in specific activities. Given this, place dependence is a function of how well a setting facilitates an individual's recreational goals (Williams et al. 1992). Previous research indicates that place dependence is not strongly, if at all, linked to recreation demand (Hailu et al. 2005, Smith et al. 2009). Given this, we expect no relationship between place dependence and recreation demand in this study.

### 2.2.2 Place Identity

While recreation settings can facilitate the attainment of personal goals, they can also be described as "special" because recreationists attach symbolic

and emotional meaning to them (Williams and Roggenbuck 1989). The emotional and symbolic attachments recreationists form with places are believed to play a unique role in shaping their personal identity. Given this, place identity refers to the dimensions of the self that define an individual's personal identity in relation to their physical environment (Proshansky 1978). Previous research has shown that place identity has consistently stronger predictive validity relative to other place concepts (Williams and Vaske 2003), and previous research linking place identity to recreation demand has yielded similar conclusions (Hailu et al. 2005, Smith et al. 2009). Given this, we expect place identity to be significantly and positively related to recreation demand in this study.

## 3.0 METHODS

Data for this study were collected along the West Branch of the Farmington River in northwestern Connecticut. River recreationists were contacted on the river during systematically determined sampling periods. A total of 516 contacts were made, and 433 people (90 percent) agreed to receive a mail-back questionnaire. Of these individuals, 247 (51 percent) returned a completed survey. Included in the survey was a 15 item place attachment scale designed to assess the strength of respondents' place identity and place dependence. The survey also solicited other information about the number of times the person had visited the river in the previous 12 months and information about their income, gender, and age.

Using data collected from the mail surveys, we conducted a confirmatory factor analysis (CFA) with a generalized least squares estimation procedure on the 15 place attachment items. The process of model reduction resulted in a measurement model which fit the data correlation covariance structure relatively well ( $\chi^2 = 56.325$ ,  $df = 19$ ,  $\chi^2/df = 2.964$ ,  $p = 0.000$ , RMR = 0.086, GFI = 0.942, AGFI = 0.889, NFI = 0.712, CFI = 0.778, RMSEA = 0.090)<sup>1</sup>. The CFA led to the concept of place dependence being composed of four

<sup>1</sup> Schumacker and Lomax (2004) suggest that a  $\chi^2/df$  value < 5.0 and GFI values near 0.95 indicates a good model fit.

items ( $\alpha = 0.89$ ) and the concept of place identity being composed of four items ( $\alpha = 0.88$ ). The CFA procedure also reveals the expected high correlation (0.77) between place dependence and place identity. Factor scores were calculated for each latent variable for use in the subsequent regression analysis. The reduced scales as well as basic descriptive statistics of the variables used in the analysis are shown in Table 1.

## 4.0 ANALYSIS AND RESULTS

The dependent variable in this analysis, recreation trips, is a nonnegative count variable, so the appropriate analysis is a Poisson regression. However, the frequency of trips to the study river are overdispersed ( $M = 31.3$ ,  $SD = 60.6$ ). Because of this, the negative binomial model was used as it allows for more variability in the probability distribution (Hilbe 2007). Since recreation surveys are prone to oversample frequent visitors, we also controlled for endogenous stratification by modifying the response from  $y$  to  $y-1$  (Englin and Shonkwiler 1995, Martinez-Espineira et al. 2006). The regression estimates proceeded with recreation demand modeled as a function of individuals' average trip costs, their income, age, gender, and their levels of place dependence and place identity.

Our first analysis included all of the variables in the model. However, gender was an insignificant predictor of recreation behavior and was subsequently dropped from the analysis. The regression coefficients from the final model are shown in Table 2. Our findings support previous research on recreation demand and place attachment. Similar to Hailu et al. (2005) and Smith et al. (2009), we found that place dependence is an insignificant predictor of recreation behavior. Our findings also support previous research efforts that have found that place identity is significantly and positively related to recreation behavior.

## 5.0 DISCUSSION

Given the paucity of research that has linked the construct of place attachment to recreation demand, this research represents a step toward gaining a more complete knowledge of how social-psychological factors influence behavior in outdoor recreation settings. The three existing studies that have linked place attachment and recreation demand have all come to the same conclusion regarding the apparent dominance of place identity in influencing behavior while place dependence appears to play a negligible role. We suggest there may be two distinct explanations for this pattern. First, place dependence

**Table 1.—Descriptive statistics**

Variable	<i>M</i>	<i>SD</i>	Factor Loading
Past Trips	31.30	60.60	—
Avg. Trip Cost <sup>a</sup>	\$128.20	\$311.00	—
Income (modal category)	\$40,000-\$50,000	—	—
Age	47.70	13.80	—
Gender (percent Female)	15.40	—	—
<b>Place Identity (<math>\alpha = 0.88</math>)</b>			
I identify strongly with this river	3.41	1.33	0.85
I am very attached to this river	3.51	1.35	0.89
I find that a lot of my life is organized around this river	2.44	1.27	0.72
This area means a lot to me	3.78	1.29	0.81
<b>Place Dependence (<math>\alpha = 0.89</math>)</b>			
This area is the best place for what I like to do	3.48	1.21	0.86
I enjoy doing the type of things I do here more than any other area	3.22	1.22	0.83
No other area can compare to this one	2.84	1.32	0.80
Doing what I do here is more important to me than doing it in any other place	2.90	1.24	0.84

<sup>a</sup> Avg. trip cost was derived as:  $P = [(d \times 0.145) + (w \times h \times 0.33)] \times 2 + f$ , where:  
 $d$  = One-way distance to the river in miles (as reported by the respondent) multiplied by \$0.145 per mile for fuel and upkeep (American Automobile Association 2009).  
 $w$  = Hourly wage rate, calculated as income divided by 2080 annual work hours. The fraction of the imputed wage rate to time value is 0.33.  
 $h$  = Hours spent traveling to the river (as reported by the respondent).  
 $f$  = Average personal costs per trip to the river over the past 12 months.

**Table 2.—Results of negative binomial regression analysis with endogenous stratification (n=170)**

Variable	Coefficient	Standard Error	Z-score
Place Identity	0.722***	0.158	4.58
Place Dependence	0.061	0.146	0.42
Average Trip Costs	-0.005***	0.001	-4.41
Income	-6.57e-06***	1.60e-06	-4.11
Age	0.026***	0.007	3.81
Summary Statistics: Wald chi2(5) = 128.27			

\*\*\* Significant at .001 level

reflects the ability of a site to meet the functional demands of recreationists' goals. Therefore, it is inherently related to the availability of other nearby areas that could fulfill recreationists' needs. In large river systems, recreationists may simply believe that there are adequate substitutes for the places they were on the day of the interview. The second plausible factor in explaining why place identity is such a strong predictor of recreation behavior is that it likely takes a long time to develop and is closely tied to an individuals' beliefs and values, and is therefore closely linked to their actual behavior. Moore and Graefe (1994) suggest that place identity may be such a strong indicator of individuals' preferences because "a person who participates in a recreation activity frequently at a particular site would tend to become dependent on that site and value it more highly" (p. 21). Given that our model controlled for endogenous stratification, one might expect that the highly significant influence of place identity would be somewhat assuaged; however, that was obviously not the case. It appears that just as place identity has a consistently high predictive validity when regressed on other constructs (Williams and Vaske 2003), it also has a significant influence on recreation behavior.

Given the findings of our analysis, future research should continue to explore the relationship between social-psychological constructs and recreation behavior. On this point, we offer several suggestions. First, our analysis employed only two place attachment dimensions; future research may find it beneficial to explore other dimensions already discussed in the literature. Second, there is a readily apparent

endogeneity issue when modeling recreation behavior and place attachment. Neither place attachment nor recreation behavior is likely to exist without the other; existence values are a notable exception. Future research could explicitly and empirically examine the causal structure behind various place constructs. Finally, while place attachment has come to dominate a large portion of the recreation literature, other concepts like motivations, constraints, or commitment also should be considered within the broad spectrum of social-psychological constructs that can theoretically and empirically be linked to recreation behavior through formal models of recreation demand.

## 6.0 LITERATURE CITED

- American Automobile Association. 2009. **Your driving costs**. Available at [www.aaaexchange.com/main/Default.asp?CategoryID=16&SubCategoryID=76&ContentID=353](http://www.aaaexchange.com/main/Default.asp?CategoryID=16&SubCategoryID=76&ContentID=353). (Accessed on January 20, 2009).
- Englin, J.; Shonkwiler, J. 1995. **Estimating social welfare using count data models: an application under conditions of endogenous stratification and truncation**. *Review of Economics and Statistics*. 77: 104-112.
- Freeman III, A.M. 2003. **The measurement of environmental and resource values**. 2nd ed. Washington, DC: Resources for the Future.
- Hailu, G.; Boxall, P.C.; McFarlane, B.L. 2005. **The influence of place attachment on recreation demand**. *Journal of Economic Psychology*. 26(4): 581-598.

- Hammitt, W.E.; Kyle, G.T.; Oh, C.-O. 2009. **Comparison of place bonding models in recreation resource management.** *Journal of Leisure Research.* 41(1): 57-72.
- Hammitt, W.E.; Backlund, E.A.; Bixler, R.D. 2006. **Place bonding for recreation places: conceptual and empirical development.** *Leisure Studies.* 25(1): 17.
- Hilbe, J.M. 2007. **Negative binomial regression.** Cambridge, UK: Cambridge University Press.
- Kyle, G.; Graefe, A.; Manning, R. 2005. **Testing the dimensionality of place attachment in recreational settings.** *Environment & Behavior.* 37(2): 153-177.
- Low, S.M.; Altman, I. 1992. **Place attachment: a conceptual inquiry.** In: Low, S.M.; Altman, I. *Place Attachment.* New York: Plenum: 1-12.
- Martinez-Espineira, R.; Amoako-Tuffour, J.; Hilbe, J.M. 2006. **Travel cost demand model based river recreation benefit estimates with on-site and household surveys: comparative results and correlation procedure—reevaluation.** *Water Resources Research.* 42: W10418.
- Moore, R.L.; Graefe, A.R. 1994. **Attachments to recreation settings: the case of rail-trail users.** *Leisure Sciences.* 16(1): 17-31.
- Proshansky, H.M. 1978. **The city and self-identity.** *Environment and Behavior.* 10: 147-169.
- Smith, J.W.; Siderelis, C.; Moore, R.L. 2009. **The effects of place attachment, hypothetical site modifications, and use levels on recreation behavior.** Paper presented at the 15th International Symposium for Sustainable Resource Management, Vienna, Austria.
- Stokols, D.; Shumaker, S.A. 1981. **People in places: a transactional view of settings.** In: Harvey, J.H. ed. *Cognition, social behavior, and the environment.* Hillsdale, NJ: Lawrence Erlbaum: 441-488.
- Tuan, Y.F. 1980. **Rootedness versus sense of place.** *Landscape.* 24: 3-8.
- Ward, F.A.; Beal, D. 2000. **Valuing nature with travel cost models: a manual.** Northampton, MA: Edward Elgar Publishing Limited.
- Williams, D.; Roggenbuck, J.W. 1989. **Measuring place attachment: some preliminary results.** Paper presented at the Symposium on Outdoor Recreation Planning and Management, National Recreation and Park Association Research Symposium on Leisure Research, San Antonio, TX.
- Williams, D.R.; Patterson, M.E.; Roggenbuck, J.W.; Watson, A.E. 1992. **Beyond the commodity metaphor: examining emotional and symbolic attachment to place.** *Leisure Sciences.* 14(1): 29-46.
- Williams, D.; Vaske, J. 2003. **The measurement of place attachment: validity and generalizability of a psychometric approach.** *Forest Science.* 49: 830-840.

The content of this paper reflects the views of the author(s), who are responsible for the facts and accuracy of the information presented herein.

# *LEISURE RESEARCH*

# MOTIVATIONS AND SENSATION SEEKING CHARACTERISTICS OF RECREATIONAL STORM CHASERS

---

Shuangyu Xu  
Department of Parks, Recreation and Tourism  
University of Missouri  
sxdzb@mail.missouri.edu

Sonja Wilhelm Stanis, Ph.D.  
University of Missouri

Carla Barbieri, Ph.D.  
University of Missouri

Jiawen Chen  
University of Missouri

---

**Abstract.**—Little is known about recreational storm chasing, a type of risk recreation that has increased in popularity since the 1990s. This study was conducted to understand factors associated with participation in recreational storm chasing in the United States. Particularly, this study assessed the motivations and sensation seeking attributes of recreational storm chasers, as well as the relationship between both constructs. Results showed that recreational storm chasers were mostly motivated by enjoying nature and learning, while least motivated by sense of achievement and risk taking. Regarding sensation seeking, respondents scored highest on experience seeking and lowest on boredom susceptibility. Results also showed some significant correlations between motivational dimensions and sensation seeking dimensions. Study results suggest that additional research is needed to further analyze the relationship between both constructs.

---

## 1.0 INTRODUCTION

Storm chasing is considered a new form of risk tourism and recreation, gaining popularity since the release of the movie “Twister” in 1996 (Cantillon and Bristow 2001) and the television series “Storm

Chasers”, on air since 2007. Subsequently, storm chasing tour agencies were established to provide guidance and assistance (e.g., experienced tour guides, knowledge and safety trainings, technical support, and transportation) for this emerging market (Cantillon and Bristow 2001). However, little is known about this activity. Therefore, the purpose of this study was to examine the factors associated with participation in recreational storm chasing tours in the United States. Specifically, this study had the following three objectives: (1) to examine the motivations of recreational storm chasers; (2) to assess the sensation seeking attributes of recreational storm chasers; and (3) to analyze the relationships between motivations and sensation seeking attributes of recreational storm chasers.

## 2.0 LITERATURE REVIEW

Numerous studies examining the decision to participate in risk recreation have suggested that motivations and personality traits are central constructs in understanding participation in risk recreation (Cronin 1991, Diehm and Armatas 2004, Meyer et al. 2002). The recreation experience preference (REP) scales developed by Driver (1983) are among the best-known and tested inventories to measure leisure motivations (Mannell and Kleiber 1997). The REP scales have been employed in numerous risk recreation settings, such as whitewater kayaking (Schuett 1993) and scuba diving (Meyer et al. 2002).

Beyond motivations, sensation seeking has also been used to explain differences in people’s willingness to participate in risky recreational activities. Proposed by Zuckerman (1979), sensation seeking is “a trait defined by the seeking of varied, novel, complex and intense sensations and experiences, and the willingness to take physical, social, legal and financial risks for the sake of such experience” (Zuckerman 1994, p. 27). Among the multiple scales developed to measure sensation seeking attributes, the sensation seeking scale, form

V (SSS-V) is most commonly used. It consists of four sub-scales: (1) thrill and adventure seeking; (2) experience seeking; (3) boredom susceptibility; and (4) disinhibition (Zuckerman 1979). Although it has been widely used, criticism of the SSS-V scale has led to the development of modified scales such as brief sensation seeking scale (BSSS), in which a five-point Likert format (from strongly agree to strongly disagree) replaced the forced-choice format and the number of items in each of the four sub-scales were reduced to two (Hoyle et al. 2002). In turn, various recreation studies have adapted either SSS-V or BSSS to understand their study participants (e.g., Diehm and Armatasm 2004, Jack and Ronan 1998).

Although previous studies have examined both motivations and sensation seeking in connection with various risk recreation activities, no studies to date have examined these traits among recreational storm chasers. In addition, few studies have examined the relationship between sensation seeking and motivations (Babbitt et al. 1990). Hence, this study aims to examine the relationships between the two constructs among recreational storm chasers.

### 3.0 METHODS

Storm chasing tour agencies were approached to help with questionnaire distribution at the end of each storm chasing tour. Five storm chasing tour agencies participated in the study. Survey packages were sent to partnering tour operators in early April 2009. Participants placed their completed questionnaires in individual sealed envelopes, which tour operators collected to put in the mail. Of 115 people who participated in storm chasing tours during the study period, 50 valid questionnaires were returned for a 43.5 percent response rate.

Information on participants' motivations was gathered using 21 items from the REP scale (Driver 1983, Manfreda et al. 1996) representing six motivational dimensions: achievement, stimulation, risk taking, similar people, learning, and enjoy nature.

Respondents rated the importance of each item on a five-point Likert scale (1=very unimportant to 5=very important). To measure sensation seeking, we adapted the SSS-V by removing unrelated items, combining items that tested the same category, and updating the language. The new SSS-V modified scale used in this study included 16 statements (4 under each dimension) and used a five-point Likert scale (1=strongly disagree to 5=strongly agree) following the format of the BSSS. Socio-demographic information of recreational storm chasers was also collected.

Descriptive statistics were examined to assess the motivations and sensation seeking attributes of recreational storm chasers. Cronbach's alphas were computed to assess each factor's internal reliability. A series of Pearson *r* correlations were conducted to analyze the relationships between motivations and the sensation seeking attributes of recreational storm chasers.

## 4.0 RESULTS

### 4.1 Socio-economic Profile of Recreational Storm Chasers

The majority of recreational storm chasers that responded to the survey were male (62.0 percent), White (95.8 percent), or non-Hispanic (92.5 percent). On average, study participants were in their early 40s ( $M=41.9$ ) and 68.8 percent were over 35 years old. A total of 60.5 percent of respondents had at least a college degree, and over one quarter (25.6 percent) had an advanced degree. The majority (61.0 percent) made at least \$50,000 of annual household income; nearly a third (29.3 percent) made at least \$75,000. Most participants (71.7 percent) were employed full-time; about a fifth (15.2 percent) were retired. More than half (56.4 percent) of the tour participants came from North America (56.4 percent), either from the United States (43.5 percent) or Canada (13.0 percent). About a third of respondents were from Europe (30.5 percent) including the United Kingdom, Netherlands, Belgium, and France.

## 4.2 Motivations of Recreational Storm Chasers

The most important motivations for participating in storm chasing (Table 1) were: “To enjoy the sights of nature” ( $M=4.46$ ), “to experience the power of nature” ( $M=4.44$ ), and “to learn more about tornados/storms” ( $M=4.39$ ). In turn, the least important motivations were “To show others I can do it” ( $M=2.37$ ), “to be recognized for doing it” ( $M=2.50$ ), and “to do something impressive” ( $M=2.68$ ).

Each of the six motivational dimensions displayed high internal reliability. Composite means of each motivational dimension show that respondents perceived enjoy nature ( $M=4.37$ ;  $\alpha=0.844$ ) as the most important motivation to participating in recreational

storm chasing, followed closely by learning ( $M=4.25$ ;  $\alpha=0.867$ ). Sense of achievement ( $M=2.77$ ;  $\alpha=0.813$ ) was the least important motivational dimension for storm chasers.

## 4.3 Sensation Seeking of Recreational Storm Chasers

Overall, respondents tended to be neutral on sensation seeking attributes, with 12 of the 16 sensation seeking items ranked as either neutral or low (Table 2).

Respondents scored lowest on “I don’t mind watching a movie I have seen before” ( $M=2.12$ ), followed by “I prefer quiet parties with good conversation” ( $M=2.70$ ), and “I prefer not to use a guide even in a place I don’t know” ( $M=2.76$ ). Respondents did show a preference to explore strange places ( $M=4.32$ ) and “to have

**Table 1.—Motivation dimensions and statements**

Motivation Dimensions and Items	n	$M^1$	$SD$
Enjoying Nature ( $\alpha=0.844$ )	50	4.37	0.81
To enjoy the sights of nature	50	4.46	0.99
To experience the power of nature	50	4.44	0.93
To be close to nature	50	4.22	0.86
Learning ( $\alpha=0.867$ )	50	4.24	0.81
To learn more about tornados/storms	49	4.39	0.93
To develop my knowledge of tornados/storms	50	4.28	0.88
To experience new and different things	48	4.06	0.95
Stimulation ( $\alpha=0.721$ )	50	3.87	0.83
To have thrills and excitement	49	3.96	1.04
To feel exhilaration	47	3.89	1.03
To experience a lot of action	50	3.76	0.82
Similar People ( $\alpha=0.734$ )	50	3.83	0.68
To be with people who have similar interests	49	4.20	0.68
To be with others who enjoy the same things I do	50	3.90	0.84
To be with members of my group	50	3.40	0.99
Risk Taking ( $\alpha=0.836$ ) <sup>2</sup>	50	3.26	0.91
To take risks	50	3.12	0.98
To be in dangerous situations	50	3.02	0.98
Sense of Achievement ( $\alpha=0.813$ )	50	2.78	0.75
To challenge myself	50	3.30	1.06
To gain a sense of self-confidence	48	2.96	0.97
To show myself I can do it	50	2.84	1.08
To do something impressive	50	2.68	1.00
To be recognized for doing it	50	2.50	1.02
To show others I can do it	49	2.37	1.17

<sup>1</sup> Measured on a five-point scale ranging from (1) Very Unimportant to (5) Very Important.

<sup>2</sup> “To experience not knowing what will happen” was removed to improve scale reliability ( $\alpha=0.542$ )

**Table 2.—Sensation seeking dimensions and statements**

Sensation Seeking Dimensions and Items (n=50) <sup>1</sup>	n	M <sup>2</sup>	SD
Experience Seeking ( $\alpha=0.529$ ) <sup>3</sup>	50	3.77	0.69
I like to explore strange places	50	4.32	0.77
I may change my itinerary on impulse when I travel	50	3.22	0.91
Thrill and Adventure Seeking ( $\alpha=0.789$ ) <sup>4</sup>	50	3.02	1.10
I prefer safe sports/activities (e.g., yoga)	50	3.14 <sup>6</sup>	1.23
I like to do frightening things	50	3.14	1.23
I like to try risky sports	50	2.78	1.45
Boredom Susceptibility ( $\alpha=0.680$ ) <sup>5</sup>	50	3.15	0.85
I get restless when I spend too much time at home	50	3.46	1.20
I prefer friends who are excitingly unpredictable	50	3.04	1.07
I like the comfortable familiarity of my usual environment	50	2.94 <sup>6</sup>	1.00

<sup>1</sup> Disinhibition dimension was removed due to unacceptable scale reliability ( $\alpha=0.249$ ) with four items (i.e., “I like to have unconventional exciting experiences,” “I like friends that are different than me,” “Stimulants make me uncomfortable,” and “I prefer quiet parties with good conversation”).

<sup>2</sup> Measured on a 5 point scale from (1) Strongly Disagree to (5) Strongly Agree.

<sup>3</sup> “I like to try new foods that I have never tasted before” and “I prefer not to use a guide even in a place I don’t know” were removed to improve scale reliability ( $\alpha=0.195$ )

<sup>4</sup> “Relaxation is my most important goal for recreation” was removed to improve scale reliability ( $\alpha=0.628$ ).

<sup>5</sup> “I don’t mind watching a movie I have seen before” was removed to improve scale reliability ( $\alpha=0.616$ ).

<sup>6</sup> Scale item means were reverse-coded.

unconventional exciting experiences” ( $M=4.10$ ).

Likewise, respondents scored relatively high on “I like to try new foods that I have never tasted before” ( $M=3.69$ ) and “I like friends that are different than me” ( $M=3.60$ ).

After the removal of several items, Cronbach’s tests indicated acceptable levels of internal reliability for three out of four sensation seeking dimensions: experience seeking ( $\alpha=0.529$ ), thrill and adventure seeking ( $\alpha=0.789$ ), and boredom susceptibility ( $\alpha=0.680$ ). The disinhibition dimension was removed from further analysis because correction measures did not result in an acceptable alpha coefficient, even after several items were removed. In sum, eight statements representing three of the four original dimensions were retained. Of these three dimensions, respondents had moderately high scores for the experience seeking dimension ( $M=3.77$ ). However, storm chasers did not show signs of having high sensation-seeking traits on the thrill and adventure seeking ( $m=3.02$ ) or boredom susceptibility dimensions ( $m=3.15$ ).

#### 4.4 Association between Motivation and Sensation Seeking

Pearson r correlations conducted between the two constructs showed some statistically significant correlations (Table 3). Experience seeking was positively associated with similar people ( $r=0.282$ ;  $p=0.047$ ) and learning ( $r=0.332$ ;  $p=0.018$ ). However, analysis showed that there was no significant correlation between experience seeking and the other motivational dimensions. Thrill and adventure seeking was found to be positively correlated with the risk taking motivational dimension ( $r=0.491$ ;  $p<0.001$ ). There were no significant correlations between thrill and adventure seeking and the other five dimensions of motivations. There was no significant correlation between boredom susceptibility and any of the six motivation dimensions examined in this study.

#### 5.0 CONCLUSION

Enjoy nature, learning, and stimulation were found to be the top three motivations for engaging in recreational storm chasing, while sense of achievement

**Table 3.—Correlations between sensation seeking and motivation dimensions**

Sensation Seeking	Motivations	Pearson <i>r</i>	<i>p</i> value
Experience Seeking	Sense of Achievement	.060	.679
	Risk Taking	-.014	.921
	Similar People	.282*	.047
	Enjoy Nature	.210	.144
	Learning	.332*	.018
	Stimulation	.100	.489
Thrill and Adventure Seeking	Sense of Achievement	.222	.122
	Risk Taking	.491**	.000
	Similar People	.076	.600
	Enjoy Nature	-.065	.656
	Learning	-.058	.687
	Stimulation	.218	.128
Boredom Susceptibility	Sense of Achievement	.208	.148
	Risk Taking	.241	.092
	Similar People	.200	.164
	Enjoy Nature	.175	.225
	Learning	.076	.601
	Stimulation	.204	.156

\* $p < 0.05$       \*\* $p < 0.001$

and risk taking were the least important. A low score on risk taking has also been found in previous studies (Ewert 1985, Meyer et al. 2002). The finding that recreational storm chasers were mostly motivated by enjoying nature and learning can be used as a marketing tool to combat the stereotype that recreational storm chasers are simply reckless thrill seekers and to shift the general public's perception of this type of risk recreation activity. It also indicates that participants in various risk recreation activities do not pursue risks as their ultimate goals, but primarily seek challenging experiences.

Study results show that responding storm chasers overall are neutral in various sensation seeking attributes, contradicting previous studies showing high scores in every sensation-seeking dimension (e.g., Cronin 1991, Slinger and Rudestam 1997). These results may suggest that recreational storm chasers are different from other risk recreation activity participants, especially because their personalities seem to be more drawn to new experiences rather

than the risks involved. This is also in line with storm chasers being strongly motivated by the enjoyment of nature and learning.

The relatively high score on experience seeking combined with lower scores in other sensation seeking dimensions in this study has also been previously reported in the literature (e.g., Diehm and Armatas 2004, Cronin 1991). These results may be associated with participants in organized tours with experienced guides, indicating that the risk perceived or sought may be reduced compared to those that chase storms on their own. Likewise, tour operators offered various activities and programs during the nonaction time, which may have lowered boredom susceptibility scores.

Overall, there were few correlations between storm chasing motivations and sensation seeking dimensions indicating that they are distinct and independent constructs that measure different factors related to participation. However, there was a significant positive

correlation between experience seeking and two motivational dimensions, similar people and learning. This suggests that storm chasers may consider learning from the activity, and being with similar people who share their interests as an important component of the overall storm chasing experience. The positive correlation between thrill and adventure seeking and risk taking is not surprising because both constructs are similar. However, overall these results suggest that further inquiry is needed regarding sensation seeking.

The dispersed nature of recreational storm chasers, few severe weather conditions during the 2009 season, and the weak 2009 national/global economic situation led to a small sample size in this study. Therefore, future research is recommended to better understand recreational storm chasing as well as the relationship between motivations and sensation seeking. Furthermore, future research should replicate this study in other types of risk recreation activities to examine the extent to which the Disinhibition dimension is a valid descriptor of a personality trait (i.e., sensation seeking) or an attribute associated with certain types of recreational activities.

## 6.0 ACKNOWLEDGMENTS

Our gratitude to Dr. Patrick Market at the University of Missouri for his suggestions.

## 7.0 LITERATURE CITED

- Babbitt, T.; Rowland, G.; Franken, R. 1990. **Sensation seeking and participation in aerobic exercise classes.** *Personality and Individual Differences*. 11: 181-183.
- Cantillon, H.; Bristow, R. 2001. **Tornado chasing: an introduction to risk tourism opportunities.** In: Kyle, G., comp., ed. 2000 Northeastern Recreation Research Symposium. Gen. Tech. Rep. NE-276. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northeastern Research Station.: 234-239.
- Cronin, C. 1991. **Sensation seeking among mountain climbers.** *Personality and Individual Differences*. 12(6): 653-654.

- Diehm, R.; Armatas, C. 2004. **Surfing: an avenue for socially acceptable risk-taking, satisfying needs for sensation seeking and experience seeking.** *Personality and Individual Differences*. 36: 663-677.
- Driver, B. 1983. **Master list of items for recreation experience preference scales and domains.** Unpublished document. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station.
- Ewert, A. 1985. **Why People climb: the relationship of participant motives and experience level to mountaineering.** *Journal of Leisure Research*. 17(3): 241-250.
- Hoyle, R.; Stephenson, M.; Palmgreen, P.; Lorch, E.; Donohew, R. 2002. **Reliability and validity of a brief measure of sensation seeking.** *Personality and Individual Differences*. 32: 401-414.
- Jack, S.; Ronan, K. 1998. **Sensation seeking among high- and low-risk sports participants.** *Personality and Individual Differences*. 25: 1063-1083.
- Manfredo, M.; Driver, B.; Tarrant, M. 1996. **Measuring leisure motivation: a meta-analysis of the recreation experience preference scales.** *Journal of Leisure Research*. 28: 188-213.
- Mannell, R.; Kleiber, D. 1997. **A social psychology of leisure.** New York: Venture Publishing Co.
- Meyer, L.; Thapa, B.; Pennington-Gray, L. 2003. **An exploration of motivations among scuba divers in North Central Florida.** In: Schuster, R., comp., ed. Proceedings of the 2002 Northeastern Recreation Research Symposium. Gen. Tech. Rep. NE-302. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northeastern Research Station: 292-295. Available at <http://www.treesearch.fs.fed.us/pubs/12284>.
- Schuett, M. 1993. **Refining measures of adventure recreation involvement.** *Leisure Sciences*. 15(3): 205-216.

Slanger, E.; Rudestam, K. 1997. **Motivation and disinhibition in high risk sports: sensation seeking and self-efficacy.** Journal of Research in Personality. 31: 355-374.

Zuckerman, M. 1979. **Sensation seeking: beyond the optimal level of arousal.** Hilldale, NJ: Lawrence Erlbaum Associates.

Zuckerman, M. 1994. **Behavioral expressions and biosocial bases of sensation seeking.** Cambridge: Cambridge University Press.

The content of this paper reflects the views of the author(s), who are responsible for the facts and accuracy of the information presented herein.

# KOREAN AMERICAN MALES' INTERRACIAL CONTACT EXPERIENCES DURING SERIOUS LEISURE ACTIVITY

---

KangJae Jerry Lee  
Department of Recreation, Park and Tourism Sciences  
Texas A&M University  
kangjae@tamu.edu

David Scott  
Texas A&M University

---

**Abstract.**—This study investigated serious leisure among Korean Americans and examined the ways in which Koreans' marginalized status impact their pursuit of serious leisure and participation patterns in the context of recreational sports. Face-to-face, in-depth, and semi-structured interviews were conducted with 11 Korean basketball players and 4 soccer players. A key finding was that informants recognized different styles of play between Korean Americans and Americans. The styles were different enough that many informants preferred playing basketball with other Korean Americans rather than Americans. Other informants, however, cared little about other players' race and ethnicity because their primary concern was playing with people who had similar or superior skills. The study found that Korean Americans preserved or promoted their ethnic identity through serious leisure participation in sports. Our findings suggest that self-identification may be a durable benefit of serious leisure, at least among ethnic and/or racial minorities.

---

## 1.0 INTRODUCTION

The quantity of leisure research on marginalized people has increased significantly in the past two decades. To date, researchers have identified clearly different leisure constraints (Scott et al. 2006, Shinew et al. 2004, Stodolska 1998), preferences for leisure activities (Ho et al. 2005), park usage patterns (Floyd et al. 1993), and leisure participation patterns (Gobster 2002, Tinsley et al. 2002) between Anglo Americans

and people of color. By illustrating the unique leisure behavior characteristics of marginalized populations, these studies have extended our understanding of leisure.

However, only a few studies have focused on serious leisure activity (Stebbins 2008) among minorities. Serious leisure is defined as "the systematic pursuit of an amateur, hobbyist, or volunteer core activity that people find so substantial, interesting, and fulfilling that, in the typical case, they launch themselves on a (leisure) career centered on acquiring and expressing a combination of its special skills, knowledge, and experience" (Stebbins 1982, p.5).

Given the interracial variations that previous studies have identified, aspects of serious leisure among minorities are expected to differ from those of mainstream White Americans. Therefore, research on serious leisure among people of color is expected to foster conceptual clarification and provide a more complete picture of serious leisure. Thus, the purpose of this study was to explore the experience of serious leisure among Korean Americans. More specifically, this study investigated Korean Americans' interracial contact experiences during pickup basketball and organized soccer and the way in which such experiences shape their participation patterns and orientations to the activity.

## 2.0 METHODS

This study used a qualitative research method with a phenomenological approach. Moustakas (1994) stated that the phenomenological approach aims to "determine what an experience means for the person who has had the experience and be able to provide a comprehensive description of it" (p. 13). In other words, its aim is to explore the details of certain experiences and understand "the meaning for several individuals of their lived experiences of a concept

or a phenomenon” (Creswell 2007, p. 57). The phenomenological approach allows informants to tell their stories, share their experiences, and explain their perceptions of particular occurrences. This approach was chosen because our goal was to gain richer insight into Korean Americans’ serious leisure experiences and understand how informants’ marginalized status influenced their pursuit of serious leisure.

A purposive sampling strategy was employed to recruit Korean Americans who participated in recreational sports with unusual passion. All names used in this article are pseudonyms. Ten informants were born in Korea and the rest were born in the United States. Eleven of the informants were basketball players, while four played soccer. Informants’ ages ranged from 19 to 36 years. They had lived in the United States for an average of about 11 years. All informants were enrolled in college or had at least a bachelor’s degree. The informants also varied in their degree of commitment toward, frequency of involvement in, and passion about their activity. Based on Stebbins’ (1982, 1997) conceptualization, the majority of informants were believed to be serious leisure participants, although three informants might be better categorized as casual leisure participants or dabblers.

In-depth, semi-structured interviews were conducted with informants in August and September of 2008. Because the first author’s native language is Korean and he is fluent in English, the interviews were conducted in English, Korean, or a mix of both languages based on each interviewee’s preference. Interviews were conducted at the interviewer’s house and office, and local coffee shops. Interviewees were asked about a list of topics related to serious leisure and their leisure participation patterns. Once interviews were completed, the data were transcribed into English.

The data were analyzed with the phenomenological data analysis method suggested by Colaizzi (1978). This analysis method consists of six steps. First, we read all interview transcripts several times to become familiar with the contents. Second, we extracted

significant statements or “the phrases or sentences that directly pertain to the investigated phenomenon” (Colaizzi 1978). Third, we coded each significant statement with the designation of interview location, characteristic of interviewee, and particular events during the interview. By doing this, we were able to organize the data systematically. Fourth, we interpreted the meanings embedded in significant statements and clustered the identified meanings into themes. We compared the clusters of themes to the original transcripts in order to validate them and to check for consistency of meaning. If the original transcripts were inconsistent with the clusters of themes or vice versa, we re-conducted the data analysis. Fifth, we integrated the themes into an exhaustive description of the investigated topics. Finally, once we had obtained the themes and descriptions, we returned to the interviewees in order to validate the data and outcomes from the data analysis.

### **3.0 FINDINGS**

Four central themes emerged from the data analysis. First, informants described the perseverance and effort they put forth when participating in recreational sports. Second, informants identified different styles of playing recreational sports based on players’ race and ethnicity. Third, informants belonged to two groups based on their preferred play styles and teammates. Finally, informants deliberately socialized with other Koreans via serious leisure activities, which reinforced their ethnic identity.

#### **3.1. Perseverance and Effort**

Among the six qualities of serious leisure, informants explicitly expressed their perseverance and effort in sport activities. Taewon articulated that he always wanted to play basketball whenever he had spare time. He continued playing basketball even though he had had knee surgery and had not completely recovered from it. His perseverance in basketball is reflected as follows:

*I felt a sharp pain at my left knee after playing basketball... Then I took MRI and we found that a cartilage at my knee was torn. I received*

*surgery. I started to play basketball again last month even though I feel minor pain after games because I like it so much.*

Chulsoo also described his commitment to basketball. Upon his arrival in the United States as a graduate student, Chulsoo first purchased a recreation center membership so he could play basketball. Although Chulsoo was not confident in his English skills and did not have any friends or acquaintances at that time, he went to the recreation center by himself and played basketball with strangers:

*Before I contacted my academic advisor, the first thing I did [after I came to the United States] was purchased a gym membership and played basketball... You can usually find a group of people at a basketball court. So at the beginning, I only played with Americans. I couldn't speak English and didn't know anything about rules in here but I wanted to play.*

While some studies identify lack of English skills as one of the biggest leisure constraints that immigrants experience (e.g., Juniu 2000, Rublee and Shaw 1991), Chulsoo refused to let this get in the way of playing basketball.

Similarly, informants stressed their commitment to improving their skills in order to become better players. Jeehun stated that he had played basketball “almost every day for a couple of years” when he was an undergraduate student. He emphasized that he played not just to have fun but also to “practice and work on certain skill sets.”

### **3.2 Different Play Styles**

Informants recognized that different racial and ethnic groups have unique styles of playing sports. Taehyon, the leader of a Korean basketball club and an enthusiastic basketball player in his early 30s, described the individualistic play style of American basketball:

*If I play with Americans in the same team, it's not fun...it is about style. Individual play style is so prevalent among Americans compared to*

*Koreans. We can communicate and ask them to do team play and pass the ball more frequently but it is inappropriate to telling what to do to people that I first meet.*

Informants also perceived that Americans focused more on one-on-one match ups, whereas Koreans cared more about the overall performance of the team. Minsoo made the following point:

*American players' individualistic play style is one of negative things that you have to take into account when you play with them. Americans only care about their match-ups. As long as you can defend your match-up player well, you are okay and they don't care what you do. However, one-on-one match-up is not everything about basketball. You must do some team play.*

Moreover, some informants stated that American players were openly verbal and aggressive in their exhortations toward other players. Korean informants considered this behavior rude and inappropriate.

Some informants pointed out different degrees of intensity that Americans engaged in while playing sports. Taewon noted:

*What I realized when I played with Americans is...I think Americans are physically very strong regardless of their basketball skills. They do a lot of hustle plays...I think Americans are better than Koreans, in average. Usually they are physically stronger than us and defense is, I don't know about offense but their defense is much intense and tougher than us.*

Korean soccer players also perceived different degrees of intensity when they played with others, particularly Hispanics. David felt that Hispanics soccer players displayed a harsh manner and he regarded them as “rough and dirty” players. The interview excerpt below provides a glimpse of his experience:

*David: Recently, last Sunday, when we played our last [intramural] game, the majority of teams were Hispanics. Right before the game,*

*our coach which was my friend, she was like "ok, there is a bunch of Hispanic people. It would be a tough game." It's like an immediate response that just comes to people. But if you actually watch Mexican soccer, like Mexican soccer club league, that's generally how they play.*

Researcher: *Really?*

David: *Yeah, they play really rough, they tend to nothing really happen but they fall, they said they hurt.*

Researcher: *Interesting. So I guess there is some kind of difference.*

David: *Yeah, different culture. You can say it's a stereotype but you see it quite often enough to where you can just pick it up immediately.*

David's case showed that his experience of playing soccer with Hispanics had shaped his perception toward Hispanic soccer players in general. Similar to other informants, he mentioned the existence of different play styles based on players' race and ethnicity.

Some informants even described the existence of different rules among different ethnic groups. Minsoo noted that he was surprised when he first started playing basketball with Americans. He noticed different sets of rules pertaining to foul calls and the manner in which a game resumes. In pickup basketball in the United States, the player who receives a foul typically calls it. However, in Korea, the player who commits the foul usually makes the foul call. Similarly, in the United States, the offensive team has to pass the ball to the defensive team and conduct a "check" when the game stops temporarily due to a foul or out-of-bounds play. The check is to confirm that the defensive team is ready to resume play. However, in Korea, checks do not exist and people resume a game without any confirmation.

### **3.3 Different Preferences for Other Players**

Recognition of different play styles across different racial and ethnic groups affected some informants'

participation patterns and preferences for other players. We found that informants could be grouped into three groups based on their preferences for other players.

The first group consisted of informants who did not have a specific race or ethnicity preference for their teammates and opponent players. In fact, these informants said they did not consider race or ethnicity of other players as an important factor when they participated in recreational sports. Rather, they insisted that participants' skill levels were the most critical criteria when selecting partners and games in which to play. Chulsoo's comments neatly captured this group's mentality:

*It's just about one's ability. Although we might evaluate others through their appearance at the first time, after we play one or two games together, I think one's skill level tells you everything. I like to play basketball with people who have similar level of skills with me. Color is not an issue [when I choose my teammates].*

Jeehun also believed opponents' skill levels were more important than their race and ethnicity as a basis for enjoying basketball:

*[Who I play basketball with] has nothing to do with racial side of it. That has to do with skill sets. I remember the last time that I went out there [to play basketball]. There was just one team primary Chinese. There are many Asian teams but [that Chinese team] played really well and they were winning a lot of games. I really wanted play with them not because they were Chinese and not because they were Asians. I wanted to challenge them because they seemed like, they were good enough. So it has more to do with truly their competition level than racial diversity.*

The second group consisted of informants who preferred Korean teammates when they participated in recreational sports. Informants in this group felt that Americans' play style is not enjoyable. Taehyon described his experience of having American teammates when playing basketball:

*I mean, there are pros and cons when I play with Americans in the same team. But, I do not enjoy playing with Americans. People usually say Americans are better players but, I think, it's not the matter of skill levels. It's about difference in styles. American players tend to do a lot more individualistic plays. You know? They don't do team play and pass as much as us...it's not fun. It's not fun at all.*

Informants like Taehyon believed that having Korean teammates made their participation in recreational sports more enjoyable than when they played alongside Americans.

A third group of informants favored Koreans not only as teammates but as opponents as well. These informants stated that playing exclusively with Koreans was more comfortable than playing with other races because Koreans share a common language and cultural practices. Moreover, these informants believed that there was a greater possibility of injury when playing with Americans due to their aggressive and intense style of play. Taewon stated this sentiment as follows:

*The main reason why I only play basketball with Koreans is that it's more comfortable. We speak same language and share same culture so it's much easier for me to communicate and interact with other players. And, the game with Americans is too intense and dangerous. I don't wanna get hurt.*

This group of informants also disliked mixed racial games because of the amount of verbal abuse they had witnessed and/or experienced. Kevin noted:

*I think Americans tend to express their opinion and feeling without any hesitation. They tell other players what to do and stuff like that. That sometimes offends me. I guess it's because of different culture, and Americans are straightforward, and, you know, don't care about age gap that much. But, in Korean culture, it's very unusual that people directly tell what to do to total strangers. Especially, it's unimaginable*

*that younger people say such things to older people. But Americans do.*

In sum, these informants felt that playing with Koreans only was safe and more conducive to fully enjoying their participation in recreational sports.

### **3.4 Maintaining and Learning Korean Culture**

Some informants suggested that serious leisure activity was a means for maintaining their ethnic identity. This was particularly evident among informants who were associated with Korean basketball or soccer clubs.

Taehyon noted:

*I believe that my club has unique characteristics simply because of the fact that we are all Koreans. It would be a challenging task to embrace Americans to our team while we maintain our unique characteristics...I think going to a travel with club members or going out and having a drink with club members are very Korean-like socialization. I like this Korean color in my team and wish that this club maintains such Korean characteristics.*

Taehyon's comments suggested that he did not have a strong intention to adopt American members and culture into his club and wanted to preserve the club's Korean culture. In this case, the club functioned as a social outlet for its members. The club members were able to socialize with other Koreans and maintain their social network with Korean friends through the club activities. In other words, being involved in a Korean sports club was one way that they could preserve their cultural and ethnic identity after they came to the United States.

Being involved in a Korean sport club also helped Americanized Korean immigrants to reconnect with their Korean identity. Jeehun came to the United States when he was 4 years old, and was in his early thirties at the time of interview. He said he had had limited contacts with other Koreans and his friends were all Whites and African Americans. He had been Americanized and felt more comfortable

communicating in English. He stressed that his knowledge of Korean culture and the language had been greatly improved as a result of his involvement in a Korean basketball club:

*I mean [playing basketball with Koreans] helps me to better understanding my culture and the country where I came from. Getting associated with Korean culture and Koreans in general, that happened to me later in my life. It's very recent thing. So before I play basketball with this Korean team, all my friends were Americans (White and African Americans).*

Hence, some informants' serious leisure context was imbued with Korean culture. This allowed the informants to meet with people who shared the same culture and language and distance themselves from mainstream American culture. Moreover, in the case of Jeehun, who had been Americanized and had lost much of his Korean identity, participating in serious leisure activity with other Korean Americans was a way to reclaim his Korean ancestry and identity.

#### **4.0 DISCUSSION**

The purpose of this study was to gain a richer insight into the serious leisure of Korean Americans and the ways in which their marginalized status in the United States impacts their pursuit of serious leisure and participation patterns. This research reported a unique finding that previous serious leisure studies have glossed over. Korean Americans saw their style of play in recreational sports as quite different from that of their American counterparts. Korean basketball players asserted that they emphasized team play while Americans usually focused on one-on-one match ups and individual play. Although leisure researchers have revealed that people have different orientations toward their leisure activities (Brown 2007, Scott and Godbey 1992, Snyder 1986) and recreational sports preference varies some by race and ethnicity (Gobster 2002, Shinew et al. 2004, Tinsley et al. 2002), this kind of interracial variation within one leisure activity has been documented by only a few studies (Irwin et al. 1990, Tirone and Pedlar 2000).

This interracial dynamic within the same leisure activity provides an important insight for leisure service organizations and recreation program planners and managers. Scott (2000) asserted that leisure and recreation agencies have failed to meet the leisure and recreation needs of disenfranchised people in our society, including ethnic and racial minorities. He contended that marginalized people's access to leisure services and resources may have been discouraged by taken-for-granted agency practices. By taking into account racial groups' different styles of leisure activity, leisure service organizations and practitioners may better understand the leisure needs of disfranchised people and create effective recreation programs or marketing strategies to entice diverse populations to their program and resources.

Differences in perceived styles of play resulted in many Korean basketball players purposely avoiding playing recreational sports with non-Koreans. It is important to emphasize that informants felt that many of the non-Koreans with whom they had played basketball or soccer were ill-mannered and overly competitive, qualities that are antithetical to Korean culture.

Our results are consistent with studies that indicate that leisure can be used for ethnic boundary maintenance. Barth (1969) posited that immigrants to the United States do not always adopt American culture but retain their cultural heritages and traditions. Importantly, they may use leisure to highlight how they are culturally different from non-immigrant groups. This explanation is consistent with the notion of selective acculturation. Keefe and Padilla (1987) explained that immigrant groups sustain their cultural cues while selectively accepting some traits from American culture. Leisure served as a context through which Korean immigrants could communicate in their native language and play recreational sports according to valued cultural norms and customs. Thus, Korean Americans' serious leisure was a form of ethnic enclosure, the "tendency of minorities to maintain social networks primarily within their ethnic group" (Stodolska et al. 2007, p. 2). This allowed Korean Americans to maintain or promote

their own ethnic values and distance themselves from American culture (Cheska 1984, Stodolska and Alexandris 2004, Stodolska et al. 2007).

There is another unique finding from this study that has not been previously reported in the serious leisure literature. While Stebbins (2008) explained that there are eight durable benefits and several personal/social rewards from serious leisure, our study illustrated that self-identification is another durable benefit of serious leisure activity. The members of Korean basketball clubs were able to immerse themselves in Korean culture and the Korean language by participating in serious leisure with other Koreans. Importantly, this serious leisure context was an occasion for Americanized Koreans to rediscover their Korean roots and ancestry. Thus, the serious leisure setting allowed informants to sustain their Korean identity and insulate themselves from the dominant culture.

This study contains several limitations, all of which are linked to suggestions for future research. First, this research was focused on Korean Americans only. Expanding the study to other people of color could deepen our understanding of serious leisure among minority groups. Second, although the research interviews yielded rich insight into Korean Americans' experiences of serious leisure, it only represents males' perspectives. Future study can investigate a more heterogeneous gender group and examine minority women's experiences of serious leisure. Third, this study investigated the case of recreational team sports that are intrinsically competitive in nature. Researchers can also investigate serious leisure activities of minorities through recreational sports that do not require competition such as running and weight lifting. Finally, this study was conducted at two southern cities. Acquiring study samples from more diverse locations will help to see whether the findings are regionally biased.

## 5.0 LITERATURE CITED

- Barth, F. 1969. **Ethnic groups and boundaries.** Boston: Little Brown.
- Brown, C. 2007. **The Carolina shaggers: dance as serious leisure.** *Journal of Leisure Research.* 39: 623-647.
- Cheska, A. 1984. **Sport as ethnic boundary maintenance: a case of the American Indian.** *International Review for the Sociology of Sport.* 19: 241-255.
- Colaizzi, P.F. 1978. **Psychological research as the phenomenologist views it.** In: Vaile, R.; King, M., eds. *Existential phenomenological alternatives for psychology.* New York: Oxford University Press: 48-71.
- Creswell, J.W. 2007. **Qualitative inquiry & research design: choosing among five approaches.** Thousand Oaks, CA: Sage Publication.
- Floyd, M.; Gramann, J.; Saenz, R. 1993. **Ethnic factors and the use of public outdoor recreation areas: the case of Mexican Americans.** *Leisure Sciences.* 15: 83-98.
- Gobster, P. 2002. **Managing urban parks for a racially and ethnically diverse clientele.** *Leisure Sciences.* 24: 143-159.
- Ho, C.; Sasidharan, V.; Elmendorf, W.; Willits, F.; Graefe, A.; Godbey, G. 2005. **Gender and ethnic variations in urban park preferences, visitation, and perceived benefits.** *Journal of Leisure Research.* 37: 281-307.
- Irwin, P.; Gartner, W.; Phelps, C. 1990. **Mexican-American/Anglo cultural differences as recreation style determinants.** *Leisure Sciences.* 12: 335-348.
- Juniu, S. 2000. **The impact of immigration: leisure experience in the lives of South American immigrants.** *Journal of Leisure Research.* 32(3): 358-381.

- Keefe, S.; Padilla, A. 1987. **Chicano ethnicity**. Albuquerque, NM: University of New Mexico Press.
- Moustakas, C. 1994. **Phenomenological research methods**. Thousand Oaks, CA: Sage Publication.
- Rublee, C.B.; Shaw, S.M. 1991. **Constraints on the leisure and community participation of immigrant women: implications for social integration**. *Society and Leisure*. 14: 133-150.
- Scott, D. 2000. **Tic, toe, the game is locked and nobody else can play!** *Journal of Leisure Research*. 32: 133-137.
- Scott, D.; Godbey, G. 1992. **An analysis of adult play groups: social versus serious participation in contract bridge**. *Leisure Sciences*. 14: 47-67.
- Scott, D.; Lee, S.; Lee, J.; Kim, C. 2006. **Leisure constraints and acculturation among Korean immigrants**. *Journal of Park and Recreation Administration*. 24: 63-86.
- Shinew, K. Floyd, M.; Parry, D. 2004. **Understanding the relationship between race and leisure activities and constraints: exploring an alternative framework**. *Leisure Sciences*. 26: 181-199.
- Snyder, E. 1986. **The social world of shuffleboard: participation by senior citizens**. *Journal of Contemporary Ethnography*. 15: 237-253.
- Stebbins, R. 1982. **Serious leisure: a conceptual statement**. *Pacific Sociological Review*. 25: 251-272.
- Stebbins, R. 1997. **Casual leisure: a conceptual statement**. *Leisure Studies*. 16: 17-25.
- Stebbins, R. 2008. **Serious leisure**. New Brunswick, NJ: Transaction Publishers.
- Stodolska, M. 1998. **Assimilation and leisure constraints: dynamics of constraints on leisure in immigrant populations**. *Journal of Leisure Research*. 30: 521-524.
- Stodolska, M.; Alexandris, K. 2004. **The role of recreational sport in the adaptation of first generation immigrants in the United States**. *Journal of Leisure Research*. 36: 379-413.
- Stodolska, M.; Marcinkowski, M.; Yi-Kook, J. 2007. **The role of ethnic enclosure in leisure in the economic achievement of Korean immigrants**. *Journal of Leisure Research*. 39: 1-27.
- Tinsley, H.; Tinsley, D.; Croskeys, C. 2002. **Park usage, social milieu, and psychosocial benefits of park use reported by older urban park users from four ethnic groups**. *Leisure Sciences*. 24: 199-218.
- Tirone, S.; Pedlar, A. 2000. **Understanding the leisure experiences of a minority ethnic group: South Asian teens and young adults in Canada**. *Society and Leisure*. 23(1): 145-170.

The content of this paper reflects the views of the author(s), who are responsible for the facts and accuracy of the information presented herein.

# THE MULTIPLE MEANINGS ASSOCIATED WITH THE FOOTBALL TAILGATING RITUAL

---

Deborah Kerstetter, Ph.D.  
Department of Recreation, Park and Tourism  
Management  
The Pennsylvania State University  
debk@psu.edu

Mary Stansfield  
The Pennsylvania State University

Phileschia Dombroski  
Keystone College

So Young Bae  
The Pennsylvania State University

Lindsay Usher  
The Pennsylvania State University

Matthew McKinney  
The Pennsylvania State University

---

**Abstract.**—The purpose of this study was to document the meanings that individuals associate with the football tailgating experience. Data were collected via photo-elicitation and follow-up interviews with 30 adults. The results indicate that individuals associate a variety of meanings with tailgating: togetherness, food, fun, drinking, Penn State pride, tradition, and football. These meanings, however, are not discrete. Togetherness, for example, represents time with family, friends, other people, and more. Further, people do not assign a single meaning to the tailgating experience. Instead, they recognize that tailgating is rich with meaning and provides multiple benefits to the tailgater. Implications of these findings for theory and event marketing are discussed.

---

## 1.0 INTRODUCTION

In existence since 1869, tailgating has become a pregame ritual associated with American sporting events (Drozda 1996). For a few entrepreneurs, tailgating is also a successful business. On the Internet, one can find sites dedicated to the Tailgate America Tour ([www.tailgateus.com](http://www.tailgateus.com)); tailgating recipes (e.g., [www.celebrations.com/tailgating](http://www.celebrations.com/tailgating)); tailgating gear (e.g., [www.AmericanTailgater.com](http://www.AmericanTailgater.com), [www.mytailgater.com](http://www.mytailgater.com)); and the Tailgating Institute ([www.tailgatinginstitute.com](http://www.tailgatinginstitute.com)). Not to be outdone, the American Tailgaters Association ([www.americantailgaterassociation.org](http://www.americantailgaterassociation.org)) has created a networking site for devoted tailgaters.

Why has tailgating become so popular? James et al. (2001) suggest that tailgating's popularity may be based on an individual's need to escape from their normal routines and/or need for socialization. Drenten et al. (2009) believe that the answer is more complicated. They argue that tailgating encompasses a duality of motives. Take, for example, the motive of "social interaction." Individuals may seek camaraderie as well as the opposite (i.e., competition) through their interactions with other tailgaters. The differences of opinion between these researchers as well as the apparent viability of tailgating as a leisure experience suggest that additional research is warranted. Thus, the purpose of this study was to document the multiple meanings that individuals associate with the football tailgating experience.

## 1.1 Tailgating as a Meaningful Activity

Tailgating, which has been defined as "...a picnic that is served from the tailgate of a vehicle, as before a sports event" (American Century Dictionary 1995), is a well-honed pastime in the United States. It began more than 140 years ago at a football game between Rutgers and Princeton. Boosted by the introduction of the automobile and the industrial revolution, tailgating

grew exponentially, especially in the 1980s and 1990s when it “turned into a social movement of its own sort” (American Heritage 2010, paragraph 5).

Today, tailgating has become a routinized social activity, complete with portable grills and coolers, foods created especially for the experience, flags representing the affiliations of the tailgating group, and tailgaters ready to share their tailgating history. In research conducted by the Tailgating Institute (2010), the average tailgater is defined as a college-educated male between the ages of 35 and 44. He travels less than 1 hour to get to a tailgate about 3 to 4 hours before the sporting event, and he does this about 6 to 10 times per year.

While tailgating is an important leisure activity, few researchers have conducted studies to better understand why individuals tailgate and what meanings or benefits the activity holds for them. In 2001, James et al. addressed why individuals at the University of Illinois begin tailgating, how often they tailgate during the football season, and why they continue to tailgate over time. They found that, regardless of whether tailgating was a new or continuing leisure activity, spending time with friends and having fun were important motivations for tailgating. Other motives included, but were not limited to: spending time with family, wanting to be outside, and enjoying food and drink.

Building upon Stebbins’ (1999, 2001) serious leisure framework, Gibson et al. (2002) found that University of Florida tailgaters exhibited six forms of serious leisure: perseverance, long-term careers, significant personal effort, durable self-benefits, a unique ethos, and identification. In particular, University of Florida football fans: persist in their support of the football team regardless of whether the team is winning or losing, and their persistence is long lived (e.g., some tailgaters had been attending games since they were babies); have developed labor-intensive tailgating rituals and knowledge about the intricacies of tailgating outside the football stadium; describe the time they spend tailgating with family and friends

as “special”; recognize that they are part of a unique social world that has distinct values, attitudes, and norms; and, identify with and have pride in the football team.

More recently, believing that the tailgating ritual is driven by multiple motives, Drenten et al. (2009) conducted an ethnographic study with tailgaters at a large university in the southeast United States. Their data revealed “...four motivations with a dual nature that motivate long-term tailgating behavior: involvement (preparation and participation), social interaction (camaraderie and competition), inter-temporal sentiment (retrospection and propection), and identity (collectivism and individualism)” (p. 103). In addition, tailgaters are committed to the ritual (i.e., established and unchanging pattern of formal behavior) of tailgating and assign meaning to the experience. It is not clear from their findings, however, what meanings individuals assign to tailgating at a football game. Thus, Drenten et al. suggest that additional research is needed in order to expand our understanding of “...the deeper meanings underlying the tailgating ritual” (p. 105) and, on a translational level, provide marketers with information that can be used to create meaningful tailgating experiences.

## **2.0 METHODS**

### **2.1 Data Collection**

Six interviewers collected data from a convenience sample of 30 individuals tailgating outside the Penn State football stadium in October and November 2009. Each interviewer approached a group of tailgaters, introduced him/herself, and asked a member of the group whether he or she would participate in a study about tailgating. If the individual agreed, the interviewer commenced with a two-step photo elicitation approach. First, study participants were given a digital camera and asked to take pictures of “what tailgating means to them.” Second, when they finished taking pictures, they participated in an on-site follow-up interview during which they were asked to “interpret” their pictures. Their interpretation was documented verbatim.

## 2.2 Photo Elicitation as a Research Method

According to Rose (2000), photographs are "...cultural dimensions offering evidence of historically, culturally and socially specific ways of seeing the world" (p. 556). Photo elicitation research can use photographs taken by the researcher or photographs taken by interviewees who make their own decisions about what to photograph (Banks 1995, Harper 2002).

There are multiple approaches to photo elicitation, but the two most common are reflexive photography and photo novella/photo voice. In the reflexive approach, the interviewee takes photographs and then reflects upon the deeper meaning(s) of the photographs in an interview. In the photo novella/photo voice approach, interviewees are asked to photograph their daily routines and common events. They are then asked to talk about the significance and meaning of the routines and events they photographed. This approach is particularly suitable in situations where the researcher wants individuals to create visual images and use the results to reveal their feelings about the everyday social, cultural, political and economic realities that influence their lives (Clark-Ibanez 2004).

## 2.3 Data Analysis

The data analysis process was based on the work of Patton (1990) and Stedman et al. (2004). Initially, data analysis was conducted independently by each of the authors, who generated broad categories (n=42) of the meanings study participants verbalized when describing their photos. Next, in an effort to verify the categories developed during the first phase, the authors were divided into three teams. Each team reviewed the data a second time and then met to compare and reduce the number of codes. This action resulted in 72 percent agreement on 33 codes between the teams. Then a third round of coding took place. Again, the teams met separately and then came together to compare codes. The teams agreed on 90 percent of the codes and further reduced them into a smaller number of themes.

## 3.0 RESULTS

Respondents took a total of 125 photos to portray the tailgating experience. The meanings they assigned to the photos resulted in 178 separate statements/lines of text. After analysis of the text, 15 themes emerged. However, only 7 of the 15 themes included at least 5 percent or more of the responses, which was considered the minimum acceptable level. The seven themes were labeled: Togetherness, Food, Fun, Drinking, Penn State Pride, Tradition, and Football. Photos were used solely as supplemental evidence of the meanings individuals assigned to the tailgating experience.

"Togetherness" was the most important meaning associated with tailgating. Respondents indicated that tailgating for them was being with other people. They described their photos of groups of tailgaters as, for example, "People. Everybody is here having a good time..." and "Tailgating is all about the people, people, people." Family and friends were the most commonly referenced people. As one tailgater said, "This is just amazing being here with our friends and family." Another indicated, "[This is a picture of] my niece... it's family. We do this to get together. We've been doing this for the last 35 years." When describing their pictures of friends, study participants suggested, "[This picture is of a] circle of friends socializing. Socializing is the most important thing when it comes to tailgating" and "[This is a picture of] sharing food and beer with friends."

Individuals associated food with tailgating by referencing food equipment and food. For example, respondents' pictures were of the "food table [which] is a big part of tailgating" and the grill. As one respondent stated, "How can I say tailgating without grill and food?" Individuals also mentioned that "Food. Lots of food" "...is the reason [they tailgate]." Yet, the amount of food was not the dominant issue. To many, specific types of food are just as important: "Nothing like waking up early to pork roll. Can't get it here, further east, [it is] vital tailgate food."

While being together with family and friends and eating were integral to the tailgating ritual, so too was having fun. Study participants took pictures of “everybody... having a good time,” of traditional games—“This is corn hole, the classic game for tailgating”—and people who were simply having a good time tailgating. Individuals having fun was, according to one respondent, “...[an] important aspect of tailgating.”

The fourth theme was drinking. Beer, pictured as a lone can or as a cooler full of beers was, according to one respondent, “...the essence of tailgating.” It “makes everything more fun. It’s tradition. It’s a man’s drink.” But drinking is not limited to beer. For some, it’s simply about alcoholic beverages that “[they] just have to have...”

Pride in the University and the football team was also an important meaning associated with tailgating. Pictures of flags waving in the wind under darkened skies represented for a few tailgaters, “dedication and loyalty to the team in good and bad weather.” A respondent described a picture of a fellow tailgater decked out in the team colors as “...a tailgating man. He just loves tailgating. It’s all about Penn State pride...”

The notion of tradition was linked closely to pride and was represented by pictures of the team, the spot where groups tailgate every season, and symbols such as the tailgating flag. Referring to a picture of the team, one respondent said, “Before every game... we welcome the Penn State team.” This tradition extends to the area in which groups tailgate. They enjoy “...the tailgating atmosphere” that has developed over time. And, in an effort to make the tailgating spot visible to new and old friends, one group flies “the Jell-O flag... [which has] become a tradition...”

The last theme, “football,” was represented through pictures of the stadium and the game of football. As one respondent suggested, “Without football and our great stadium we would not have a need for tailgating.” Football for other tailgaters “...is the reason we do this” and “...is the meaning of life.”

## 4.0 DISCUSSION

Our results suggest that individuals assign multiple meanings to the football tailgating experience. The ritual of tailgating brings with it a sense of pride in the team as well as an opportunity to share the social experience of tailgating. Food and the associated beverages also contribute to what appears for many to be an incredibly meaningful experience that, as one respondent suggested, is about a “...spirit of belief in something that is at the heart (or should be) of not only college athletics, but of life generally.”

The theme with the greatest number of responses was related to being together with family and friends, and socializing. This finding supports research by Drenten et al. (2009) and Gibson et al. (2002) which documented that some of the major benefits of being a sport consumer or tailgating were the friendships made and the time spent with family. Surprisingly, respondents did not directly associate time spent with friends and family with their pride in the university. Instead, they talked about the two meanings separately. According to Dunning (1999), “Identification with a sports team can provide people with... a source of ‘we feelings’ and a sense of belonging in what would otherwise be an isolated existence” (p. 6).

In a few cases, respondents expressed the meaning they associate with tailgating through photos of family and friends and linking these photos to past experiences. This, according to Fairley (2003) should be considered “nostalgia.” She suggests that “...nostalgia can arise in relation to identification with a relatively small social group... that uses sport as a context through which to create liminoid space in which to celebrate their identity as a group” (p. 298). Further, the memories that generate nostalgia are derived from the group and the camaraderie members share. As one respondent suggested, “[This picture is of my friends] playing a game—drinking game. These are all good memories, you know?” Another respondent’s memories were linked to what the tailgating area was like in the past: “When I was a student here, this was just fields we had to walk across to get to class...”

According to Green and Chalip (1998), people participate in activities to affirm the identity they desire: "Meeting and socializing with other [tailgaters] makes that identity and the [tailgating] context salient" (p. 283). Tailgating becomes much more than a time to socialize, it provides individuals with an opportunity to "...relish the components of their identity that they share through [a unique tailgating subculture.] The subculture provides the common language and motifs required for expression and exhibition of identity" (Green and Chalip 1998, p. 282). While our focus was on establishing meanings linked to the tailgating experience, respondents' pictures did highlight a unique identity that has been developed through the clothes fellow tailgaters wore, the blue and white paraphernalia located throughout the tailgating site, cars hosting Penn State flags and decals, and tailgating rituals (e.g., corn hole game, grilling) that had developed over time.

Additionally, fun was important to tailgaters. Indeed, sport consumers most often refer to fun when asked why they attend sporting events (Weiss and Chaumont 1992). Fun was represented through pictures of games, socializing, sharing food and drinks with friends, and more. Thus, it was not a discrete meaning. In other words, having fun is important, but so too, for example, is being with friends and family, eating, drinking, and showing pride in the team. Thus, our results support Drenten et al.'s (2009) research, which showed that individuals express multiple motives for tailgating, and through negotiation of these motives assign meaning to the tailgating experience over time.

## 5.0 IMPLICATIONS AND CONCLUSION

Tailgating appears to be a meaningful part of the football experience. The university athletics marketing team could attempt to fill stadium seats by developing initiatives that facilitate and enhance the tailgating experience. For example, promotions could focus on the fun of tailgating and how it enhances the overall game day experience. Promotions could involve: Web sites and blogs that post pictures and stories from

current tailgaters; on-line interactive communities where tailgaters can post their favorite recipes; contests between "tailgating families"; and more.

Additionally, programs could be developed that build upon the meanings people associate with tailgating (e.g., socialization, fun, food, tradition). At Penn State, this has been partially accomplished by hosting activities that promote fun and food at an entertainment venue located next to the stadium. Supplemental opportunities to promote fun and food could be developed in concert with local suppliers (e.g., caterers, grocery stores) who could develop tailgating packages inclusive of local products associated with the football team/experience. Further, promoting Penn State pride could be accomplished by introducing events on game days at the University's branch campuses. These types of initiatives would not only tie in to the needs of tailgaters, but would support the "town and gown" relationship that is critical to colleges and universities.

There are some good economic reasons for universities to support and encourage tailgating (Drenten et al. 2009). Interestingly, many universities are doing the opposite by attempting to control tailgating (e.g., limiting its duration, forcing individuals into smaller spaces, limiting access to alcohol). As a result, universities may see a reduction in the number of tailgaters, which could have an adverse impact on support for sports, the economic impact to the university and surrounding area, and more.

The results of this study provide, to the best of our knowledge, the first glimpse into the meanings individuals associate with the football tailgating experience. It should be noted, however, that this study did have limitations. First, data collection was not systematic. In the future, researchers should adopt a more systematic approach to account for the variety of tailgaters who attend football games. Second, we did not document refusals. It is conceivable that individuals who refused to participate in our study attach different meanings to the football tailgating

experience. Third, we focused only on tailgating at a football game. Comparing the meanings individuals attach to various sporting events (e.g., baseball, NASCAR, soccer) at the high school, college, and professional levels would expand this line of research.

Future research is needed at other universities to determine if meanings associated with tailgating are similar across different types of universities in different locations. Further, Davidson (1996) and Shaw (1992) have found that men and women experience family events differently. Thus, further research could document the ways that women and men articulate the meanings they associate with tailgating to determine whether differences exist. In addition, this research could be extended to address differences across the life cycle. Various authors (e.g., Dupuis and Smale 1995, Gibson et al. 2002, Kelly 1987) have suggested that high investment activities like tailgating may be linked to higher levels of life satisfaction amongst older adults. Finally, we did not ask respondents if they were planning to attend the football game. In the future, it would be interesting to examine why some people choose to tailgate if they are not attending the game, and examine the meanings these individuals ascribe to the tailgating experience.

## 6.0 LITERATURE CITED

- American Heritage. 2010. **Tailgating: the history.** Available at: <http://www.americanheritage.com/articles/magazine/ah/2005/5>. (Accessed May 9, 2010).
- Banks, M. 1995. **Visual research methods.** Social Research Update. 11: 1-6.
- Clark-Ibanez, M. 2004. **Framing the social world with photo-elicitation interviews.** American Behavioral Scientist. 47: 1507-1527.
- Davidson, P. 1996. **The holiday and work experiences of women with young children.** Leisure Studies. 15: 89-103.
- Drenten, J.; Peters, C.; Leigh, T.; Hollenbeck, C. 2009. **Not just a party in the parking lot: an exploratory investigation of the motives underlying the ritual commitment of football tailgaters.** Sport Marketing Quarterly. 18(2): 92-106.
- Drozda, J. 1996. **The tailgater's handbook.** Knoxville, TN: Masters Press.
- Dunning, E. 1999. **Sport matters: sociological studies of sport, violence, and civilization.** London: Routledge.
- Dupuis, S.; Smale, B. 1995. **An examination of relationships between psychological well-being and depression and leisure activity participation among older adults.** Society and Leisure. 18: 67-92.
- Fairley, S. 2003. **In search of relived social experience: group-based nostalgia sport tourism.** Journal of Sport Management. 17(3): 284-304.
- Gibson, H.; Willming, C.; Holdnak, A. 2002. **We're gators... not just gator fans: serious leisure and University of Florida football.** Journal of Leisure Research. 34(4): 397-425.
- Green, B. C.; Chalip, L. 1998. **Sport tourism as the celebration of subculture.** Annals of Tourism Research. 25(2): 275-291.
- Harper, D. 2002. **Talking about pictures: a case for photo elicitation.** Visual Studies. 17(1): 13- 26.
- James, J.; Breezeel, G.S.; Ross, S. 2001. **A two-stage study of the reasons to begin and continue tailgating.** Sport Marketing Quarterly. 10(4): 212-222.
- Kelly, J. 1987. **Peoria winter: styles and resources in later life.** Lexington, MA: Lexington Books.
- Patton, M.Q. 1990. **Qualitative evaluation and research methods.** Newbury Park, CA: Sage Publications.

- Rose, G. 2000. **Visual methodologies**. London: Sage.
- Shaw, S. 1992. **Dereifying family leisure: An examination of women's and men's everyday experiences and perceptions of family time**. *Leisure Sciences*. 14: 271-286.
- Stebbins, R. 1999. **Serious leisure**. In: Jackson, E.; Burton, T., eds. *Leisure studies: prospects for the 21st century*. State College, PA: Venture Publishing, Inc.: 69-79.
- Stebbins, R. 2001. **New directions in theory and research of serious leisure**. Lewiston, NY: Edwin Mellen Press.
- Stedman, R.; Beckley, T.; Ambard, M. 2004. **A picture and 1000 words: using resident-employed photography to understand attachment to high amenity places**. *Journal of Leisure Research*. 16: 580-606.
- Tailgating Institute. 2010. **Tailgating Institute research study**. Available at: <http://www.tailgating.com/index.php/tailgating-institute/research-and-development>. (Accessed May 9, 2010).
- Urdang, L. 1995. **American Century Dictionary**. Oxford: Oxford University Press.
- Weiss, M.; Chaumeton, N. 1992. **Motivational orientations in sport**. In: Horn, T., ed. *Advances in sport psychology*. Champaign, IL: Human Kinetics: 61-99.

The content of this paper reflects the views of the author(s), who are responsible for the facts and accuracy of the information presented herein.

# AN APPLICATION OF IMPORTANCE-PERFORMANCE ANALYSIS TO RECREATIONAL STORM CHASING

---

Jiawen Chen  
Department of Parks, Recreation & Tourism  
University of Missouri  
Jcwr2@mail.missouri.edu

Sonja Wilhelm Stanis, Ph.D.  
University of Missouri

Carla Barbieri, Ph.D.  
University of Missouri

Shuangyu Xu  
University of Missouri

---

**Abstract.**—Since the release of the movie “Twister” in 1996, storm chasing has become an increasingly popular form of recreation. Storm chasing tour agencies have emerged to provide technical assistance and guidance to individuals wishing to participate in this activity. However, little is known about the participants’ perceptions of their storm chasing tours. Therefore, an Importance-Performance Analysis (IPA) was conducted to examine recreational storm chasers’ perceptions of 22 tour operational attributes. Results can be used by recreational storm chasing tour agencies to improve their service and to address participants’ needs for increased enjoyment and satisfaction. Future research is recommended to analyze results based on individual tour agencies as well as storm chasers’ demographic profiles.

---

## 1.0 INTRODUCTION

By definition, risk recreation activities (e.g., skydiving, mountaineering) include a certain level of danger for participants. Storm chasing is a relatively new form of risk recreation (Cantillon and Bristow 2001). Since the release of the movie “Twister” in 1996, storm chasing has become an increasingly popular

recreational activity for many individuals (Bristow and Cantillon 2000, Cantillon and Bristow 2001). Indeed, there was an explosion of storm chasing articles, books, television features, and even home video footage starting in 1996 (Robertson 1999). In 2007, the Discovery Channel launched the television documentary series “Storm Chasers”.

As storm chasing increased in popularity, some people began to participate in this activity without the proper equipment or knowledge. Storm chasing tour agencies emerged to provide technical assistance and guidance to individuals wishing to participate in this activity (Cantillon and Bristow 2001). These tour agencies provide transportation, storm chasing equipment, safety training, education, as well as meteorologists and experienced storm chasers as tour guides. However, due to the relatively recent emergence of recreational storm chasing, few studies have examined this activity. Further, the limited amount of previous research on recreational storm chasing (i.e., Bristow and Cantillon 2000, Cantillon and Bristow 2001) focuses just on the tour agencies (e.g., length of tour, tour packages), rather than participants’ perceptions of this activity. Thus, examining tour participants is critical in order to better understand recreational storm chasing.

One method for evaluating customer satisfaction and service quality in tourism and outdoor recreation is the Importance-Performance Analysis (IPA) (Deng 2007, Oh 2001). Developed by Martilla and James (1977) to assist with comparing performance and satisfaction for management decisions, IPA examines two facets of expectations in parallel: the importance and performance of particular attributes (Hollenhorst et al. 1992). Because of its simplicity and understandability, IPA has become increasingly popular among researchers (Oh 2001). It has frequently been administered as an evaluation tool for

market research, including various outdoor recreation and tourism studies (e.g., Deng 2007, Hollenhorst et al. 1992, Sanders et al. 2001, Scott 1993, Wade and Eagles 2003). Therefore, an IPA was conducted to examine recreational storm chasers' perceptions of the operational attributes of their tours.

## 2.0 METHODS

Subjects in this study were participants of organized recreational storm chasing tours in the United States. Storm chasing tour agencies were asked to distribute questionnaires at the end of each tour during the 2009 peak storm-chasing season (April through August). To protect the privacy of respondents, participants were asked to return their completed questionnaires to the tour operators in sealed envelopes to be mailed. Five partnering tour operators distributed 115 questionnaires to tour participants; 50 valid questionnaires were returned for a 43.5 percent response rate (50/115).

The three-page, self-administered questionnaire gathered information on the importance and performance of tour operational attributes, as well as motivations, storm chasing experience, and socio-demographic characteristics. Twenty-one items from the Recreation Experience Preference scales (Driver 1983) were selected, representing six motivational dimensions: *Enjoying Nature*, *Learning*, *Stimulation*, *Similar People*, *Taking Risks*, and *Achievement*. Respondents rated the importance of each item on a five-point Likert Scale ranging from 1 = "very unimportant" to 5 = "very important". The perceived importance and performance of tour operational attributes were examined with 22 items representing four business components: *Tour Operator*, *Tour Package*, *Logistics*, and *Education and Information*. Recreational storm chasers were asked to rate the importance of each attribute as well as the performance of their tour operator on five-point scales ranging from 1 (very unimportant/very unsatisfied) to 5 (very important/very satisfied).

An IPA matrix was constructed by combining the ratings of importance and satisfaction (as a

performance indicator) of 22 tour operational attributes on a two-dimensional grid. Following Martilla and James (1977), the x-axis reports the performance and the y-axis reports the importance mean on each item and factor. The overall means of both attributes were used to position the cross-hairs, a standard procedure for creating the four matrix quadrants: "*Keep up the good work*," "*Low priority*," "*Concentrate here*," and "*Possible overkill*" (Oh 2001). Finally, the importance and performance mean scores of each item and factor were plotted on the IPA matrix.

## 3.0 RESULTS AND DISCUSSION

### 3.1 Recreational Storm Chasing Behaviors

The majority of respondents were more than 35 years old (68.8 percent), male (62.0 percent), White (95.8 percent), or non-Hispanic (92.5 percent). Although respondents were middle aged, more than half were single without children (55.1 percent), suggesting that family obligations may limit participation in recreational storm chasing. At least 61.0 percent had an annual household income of \$50,000 or more, which was relatively high considering that the majority of respondents were single. More than half of the respondents were from North America (56.4 percent) followed by about a third from Europe (30.5 percent). Specifically, respondents were from the United States (43.4 percent), United Kingdom (15.2 percent), Canada (13.0 percent), Australia (10.9 percent), and the Netherlands (10.9 percent).

The two most common ways storm chasers learned about the tour operators were through an Internet search (63.3 percent) and from friends and relatives (22.4 percent). As many as 90 percent of the participants would take another tour with the same company, and even more (94.0 percent) would recommend their tour company to others. Therefore, satisfying and following up with present customers might be particularly important strategies for increasing the potential for word-of-mouth promotion. Advertising on specialized weather channels would be another choice since about a third (30.0 percent) of respondents were members of at least one type of weather-related organization and 24 percent subscribed

to at least one weather related magazine. When asked about their future involvement with recreational storm chasing, over two thirds (68.0 percent) said they were willing to spend more time and money on this activity in the future.

Recreational storm chasers were most motivated by *Enjoying Nature* ( $M=4.37$ ;  $\alpha=.844$ ), followed by *Learning* ( $M=4.25$ ;  $\alpha=.867$ ), *Stimulation* ( $M=3.84$ ;  $\alpha=.721$ ), socializing with *Similar People* ( $M=3.83$ ;  $\alpha=.734$ ), *Taking Risks* ( $M=3.25$ ;  $\alpha=.542$ ) and sense of *Achievement* ( $M=2.77$ ;  $\alpha=.813$ ). Previous studies in risk recreation have also found the motivations of enjoying nature and learning to be particularly important (Meyer et al. 2002, Weber 2001).

### 3.2 Perceived Importance and Performance of Tour Operational Attributes

Recreational storm chasers reported that they placed high importance on tour operational attributes. Most respondents agreed that “Experience of guide” ( $M=4.88$ ), “Knowledge of guide” ( $M=4.83$ ) and “Friendly attitude of guide/staff” ( $M=4.71$ ) were the most important tour attributes (Table 1). Respondents ranked “Souvenir and memorabilia offerings” ( $M=3.14$ ), “Provision of snacks and drinks” ( $M=3.56$ ), and “Program activities during ‘non-action’ time” ( $M=3.80$ ) as the least important attributes, although these were still somewhat important. Four factors were created from the 22 tour attribute items: *Tour Operator* ( $M=4.64$ ;  $\alpha=.929$ ), *Tour Package* ( $M=4.34$ ;  $\alpha=.729$ ), *Education and Information* ( $M=4.28$ ;  $\alpha=.803$ ), and *Logistics* ( $M=3.94$ ;  $\alpha=.792$ ).

**Table 1.—Importance and performance of tour operator attributes**

Operational Attributes (n=50)	Importance <sup>1</sup>		Performance <sup>2</sup>	
	M	SD	M	SD
<b>Tour Operator (<math>\alpha=0.929</math>)</b>	<b>4.64</b>	<b>0.60</b>	<b>4.68</b>	<b>0.41</b>
Experience of guides	4.88	0.60	4.82	0.39
Knowledge of guides	4.83	0.63	4.82	0.39
Friendly attitude of guide/staff	4.71	0.71	4.76	0.43
Driving skills of guides/staff	4.69	0.78	4.65	0.63
Responsiveness of tour operator	4.67	0.63	4.60	0.61
Ease to contact/reach the tour operator	4.40	0.87	4.65	0.60
Ease of booking/registration	4.29	0.84	4.52	0.74
<b>Tour Package (<math>\alpha=0.729</math>)</b>	<b>4.34</b>	<b>0.60</b>	<b>4.36</b>	<b>0.59</b>
Price of tour	4.47	0.71	4.04	0.90
Length of tour	4.40	0.82	4.76	0.43
Number of people per group	4.29	0.91	4.34	0.85
Tour design and itinerary	4.19	0.82	4.33	0.85
<b>Education and Information (<math>\alpha=0.803</math>)</b>	<b>4.28</b>	<b>0.69</b>	<b>4.48</b>	<b>0.54</b>
Learning during the trip	4.37	0.86	4.34	0.90
Safety instructions during the chase	4.37	0.86	4.64	0.53
Web site information	4.24	0.88	4.52	0.61
User friendly Web site	4.12	0.88	4.40	0.64
<b>Logistics (<math>\alpha=0.792</math>)</b>	<b>3.94</b>	<b>0.63</b>	<b>4.25</b>	<b>0.59</b>
Weather forecasting equipment	4.59	0.79	4.58	0.67
Vehicle comfort and reliability	4.51	0.82	4.48	0.71
Lodging and accommodations	4.13	0.73	4.30	0.84
Provision of meals	3.81	0.92	4.04	0.91
Activities during “non-action” time	3.80	1.08	4.26	0.94
Provision of snacks and drinks	3.56	0.97	4.02	0.84
Souvenir and memorabilia offerings	3.14	1.16	4.00	0.78

<sup>1</sup> Measured on a 5 point scale from (1) Very Unimportant to (5) Very Important.

<sup>2</sup> Measured on a 5 point scale from (1) Very Unsatisfied to (5) Very Satisfied.

Similar to the importance of tour operational attributes, recreational storm chasers reported high satisfaction with the performance of tour operators. Respondents were most satisfied with the following attributes: “Experience of guide” ( $M=4.82$ ), “Knowledge of guide” ( $M=4.82$ ) and “Friendly attitude of guide/staff” ( $M=4.76$ ). Although still highly satisfied, respondents were least satisfied with the performance of “Souvenir and memorabilia offerings” ( $M=4.00$ ), “Provision of snacks and drinks” ( $M=4.02$ ), “Provision of meals” ( $M=4.04$ ) and “Price of tour” ( $M=4.04$ ). The 22 performance items were also examined by business component factors. Respondents were most satisfied with *Tour Operator* ( $M=4.69$ ), followed by *Education and Information* ( $M=4.48$ ), and *Tour Package* ( $M=4.36$ ).

### 3.3 Importance-Performance Analysis

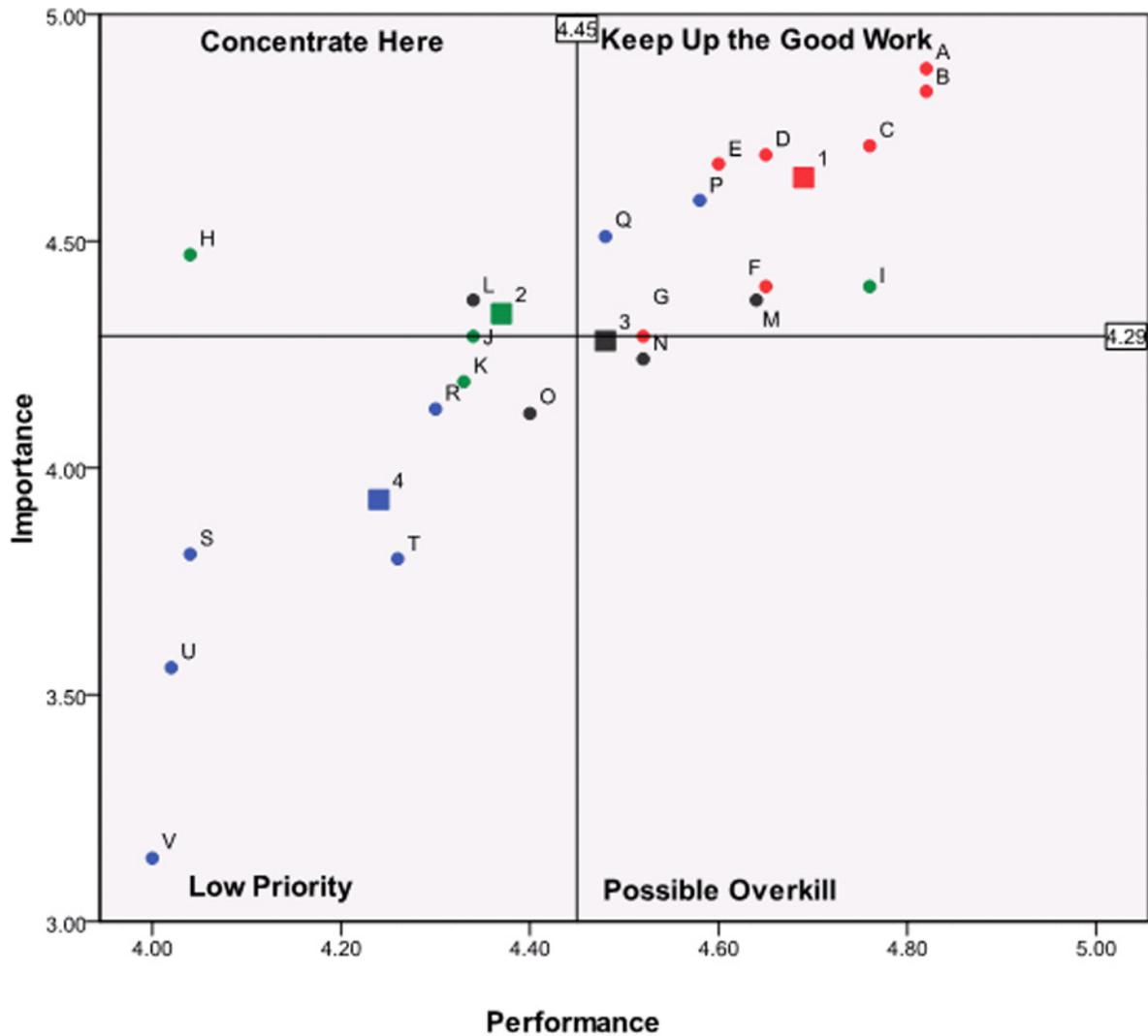
The four-quadrant Importance-Performance matrix was defined by the two axes based on the overall mean of importance (4.29) and performance (4.45) of the 22 operational tour attributes (Figure 1). Half (11) of the attributes were located in the “*Keep up the good work*” quadrant and seven of them appeared in the “*Low priority*” quadrant. Three attributes positioned in “*Concentrate here*” quadrant and only one attribute fell into the “*Possible overkill*” quadrant.

IPA results indicate that storm chasing tour agencies are doing well with the *Tour Operator* component and items, as respondents were very satisfied with the service offered by tour operators and considered these factors very important; thus these efforts should be sustained in the future. In particular, items in the “*Keep up the good work*” quadrant suggest that tour operators are doing well regarding customers’ ability to contact the operator and the process of registering for the tours. In addition, respondents regarded tour guides as experienced, knowledgeable, friendly, and having good driving skills. Respondents also considered logistic attributes such as “weather forecasting equipment” and “vehicle reliability” as highly important, and they were highly satisfied with these items on their tours.

Respondents were least concerned about *Logistics* compared to other factors; these attributes (e.g., provision of meals, snacks and drinks; activities during “non-action” time; and souvenir offerings) fell into the “*Low Priority*” quadrant, indicating that tour operators are doing fine given the relative importance of these attributes. Given that respondents were mostly motivated by enjoying nature and learning, they may not have been as concerned with some of the logistic attributes such as souvenirs, meals, and drinks in comparison to other tour attributes such as knowledge and experience of the guides.

Although IPA indicated that *Education and Information* fell within the “*Possible overkill*” quadrant, suggesting that perhaps too much effort is placed in this area, this finding needs to be interpreted with caution. In particular, Web sites are important communication and marketing tools, particularly for niche markets with dispersed clientele such as recreational storm chasers. Indeed, most respondents reported that they learned of their tour operator through an Internet search. Therefore, it is not recommended that operators reduce their Web site information but instead continue to use this tool to reach and communicate with customers. In addition, even though learning during the trip also fell within the *Education and Information* component, it is important to recognize that this attribute was not considered to be overkill. Similar to other risk recreation activities (e.g., scuba divers; Meyer et al. 2002), learning was a highly important motivation for tour participants, and therefore should be a continued emphasis for tour operators.

The IPA analysis indicated that to improve satisfaction for recreational storm chasers, tour agencies could place more effort on their *Tour Packages*, which fell into the “*Concentrate here*” quadrant. In particular, respondents perceived price of tour, number of people per group, and learning during the tour as the attributes with lower satisfaction scores relative to high importance. Respondents’ were not as satisfied with learning during the trip relative to the importance



**Legend**

**Operational Components**

- 1: Operator (A, B, C, D, E, F, G)
- 2: Tour Package (H, I, J, K)
- 3: Education and information (L, M, N, O)
- 4: Logistics (P, Q, R, S, T, U, V)

**Operational Items**

- A: Experience of guides
- B: Knowledge of guides
- C: Friendly attitude of guide/staff
- D: Driving skills of guides/staff
- E: Responsiveness of tour operator
- F: Ease to contact/reach the tour operator
- G: Ease of booking/registration
- H: Price of tour

- I: Length of tour
- J: Number of people per group
- K: Tour design and itinerary
- L: Learning during the trip
- M: Safety instructions during the chase
- N: Web site information
- O: User friendly Web site
- P: Weather forecasting equipment
- Q: Vehicle comfort and reliability
- R: Lodging and accommodations
- S: Provision of meals
- T: Activities during "non-action" time
- U: Provision of snacks and drinks
- V: Souvenir and memorabilia offerings

Figure 1.—Importance performance analysis of tour operational attributes.

they placed on learning. Therefore, as discussed previously, reflecting the finding that learning was a high motivation for participation, educational opportunities on the tours should be a continued area of focus. Regarding the number of people per group, it is likely that individuals prefer smaller group sizes, yet some may also enjoy socializing with people with similar interests, as this was an important motivation for respondents. Therefore, additional research could help provide insight into the optimal group size.

Finally, because of the high cost of scientific equipment and experienced staff, it is not likely that tour operators can lower the price of the tours. Further, lowering prices may not be advisable, as respondents indicated their willingness to spend more money on the activity in the future, and storm-chasing tours are booked well in advance. However, as price was one of the lowest items on performance scores, yet perceived as highly important, one suggestion is to offer a discounted price for returning customers to help build loyalty and help improve tour price satisfaction. Another possibility could be to offer discounts to returning customers for new referrals. As customers were highly satisfied with the tour, and word-of-mouth was the second highest method of acquiring information about the tours, this may be a particularly effective way of reducing the price for returning customers while promoting more participation in the tours.

#### 4.0 CONCLUSION

Given that respondents rated tour operational attributes highly in both importance and performance indicators, examining these scores alone does not provide much guidance in where to place future efforts. However, using IPA to contrast both the importance and performance of the tour operational attributes identifies both strengths and areas to focus on for improvement. Therefore, this study builds on previous literature demonstrating the utility of IPA in outdoor recreation applications (Hollenhorst et al. 1992, Sanders et al. 2001, Scott 1993, Wade and Eagles 2003). Given that responses to the importance and performance questions would likely vary across different tour

operators, future research could examine findings specific to each individual agency as the small sample size in the present study prevented this analysis. In addition, future research could also examine differences and influences of socio-demographic characteristics such as age, gender, or income on responses to the importance and performance of tour operational attributes.

#### 5.0 ACKNOWLEDGMENT

The authors wish to express our gratitude to Dr. Mark Morgan, University of Missouri, for his suggestions.

#### 6.0 LITERATURE CITED

- Bristow, R.S.; Cantillon, H. 2000. **Tornado chasing: the ultimate risk tourism.** Parks & Recreation. 35: 98-107.
- Cantillon, H.; Bristow, R.S. 2001 **Tornado chasing: an introduction to risk tourism opportunities.** In: Kyle, G., comp., ed. Proceedings of the 2000 Northeastern Recreation Research Symposium. Gen. Tech. Report NE-276. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northeastern Research Station: 234-239.
- Deng, W. 2007. **Using a revised Importance-Performance Analysis approach: the case of Taiwanese hot springs tourism.** Tourism Management. 28(5): 1274-1284.
- Driver, B.L. 1983. **Master list of items for recreation experience preference scales and domains.** Unpublished document. U.S. Forest Service, Fort Collins, CO: Rocky Mountain Forest and Range Experiment Station.
- Hollenhorst, S.; Olson, D.; Fortney, R. 1992. **Use of Importance-Performance Analysis to evaluate state park cabins: the case of the West Virginia State Park system.** Journal of Park and Recreation Administration. 10(1): 1-11.
- Martilla, J.A.; James, J.C. 1977. **Importance-performance analysis.** The Journal of Marketing. 41(1): 77-79.

- Meyer, L.; Thapa, B.; Pennington-Gray, L. 2002. **An exploration of motivations among scuba divers in north central Florida.** In: Schuster, R., comp., ed. Proceedings of the 2002 Northeastern Recreation Research Symposium. Gen. Tech. Rep. NE-302. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northeastern Research Station: 292-295.
- Oh, H. 2001. **Revisiting Importance-Performance Analysis.** *Tourism Management*. 22(6): 617-627.
- Robertson, D. 1999. **Beyond Twister: a geography of recreational storm chasing on the southern plains.** *Geographical Review*. 89(4): 533-553.
- Sanders, G.; White, E.; Pennington-Gray, L. 2001. **Importance-Performance Analysis: An application to Michigan's natural resources.** In: Kyle, G., comp., ed. Proceedings of the 2000 Northeastern Recreation Research Symposium. Gen. Tech. Rep. NE-276. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northeastern Research Station: 207-210.
- Scott, D. 1993. **An Importance-Performance appraisal of Cleveland Metroparks Zoo.** *Visitor Behavior*. 4(4): 4-6.
- Wade, D.J.; Eagles, P.F.J. 2003. **The use of Importance-Performance Analysis and market segmentation for tourism management in parks and protected areas: an application to Tanzania's National Parks.** *Journal of Ecotourism*. 2(3): 196-212.
- Weber, K. 2001. **Outdoor adventure tourism: a review of research approaches.** *Annals of Tourism Research*. 28(2): 360-377.

The content of this paper reflects the views of the author(s), who are responsible for the facts and accuracy of the information presented herein.

*ENGAGING DIVERSE  
POPULATIONS*

# PHYSICAL ACTIVITY IN GEORGIA STATE PARKS: A PILOT STUDY

---

Lincoln R. Larson  
Warnell School of Forestry & Natural Resources  
University of Georgia  
LarsonL@warnell.uga.edu

Jason W. Whiting  
University of Georgia

Gary T. Green  
University of Georgia

---

**Abstract.**—This pilot study assessed the role of Georgia State Parks in the promotion of physical activity among different racial/ethnic and age groups. Data were collected at three state parks in north Georgia during the summer of 2009 using two research methods: behavior observations (N=2281) and intercept surveys (N=473). Observational data showed that African Americans and children were the most active demographic groups. Surveys revealed that almost 80 percent of adults and 95 percent of children engaged in some physical activity during their state park visit. Relative to other sites, state parks appeared to be an especially important physical activity destination for Hispanic/Latinos. Although white, African American, and Latino children engaged in land and water activities at approximately equal rates, white children participated in more nature-based activities and minority children spent more time outside interacting with electronics. Participant comments suggested that higher levels of physical activity could be encouraged through an expansion of open green space, construction of kid-friendly trails near picnic areas, and better advertising and information. Results of this study should provide Georgia state park managers with insightful strategies for promoting and sustaining park-based physical activity across diverse populations.

---

## 1.0 INTRODUCTION

The negative health effects associated with physical inactivity have become a major problem for the United States population, especially for children and low-income minority groups (Ogden et al. 2006, Pratt 2008). In Georgia, for example, less than 50 percent of all adults are regularly active; the percentages of regularly active African American (38 percent) and Hispanic/Latino adults (28 percent) in the state are particularly low (CDC 2009a).

By providing multiple opportunities for increasing physical activity levels, public parks represent a potential solution to this problem (Mowen et al. 2008). In fact, outdoor recreation planners acknowledge the physical health benefits often associated with park visitation (Georgia SCORP 2008). Researchers have also recognized a need for more studies that examine relationships between park use and physical activity, including the identification of park attributes that encourage activity in minority and low socio-economic populations (Flores 2008, Kaczynski and Henderson 2007). Investigations of park-based physical activity should also examine factors influencing the outdoor activities of children, another high-risk population (Roemmich et al. 2006). Therefore, the purpose of this pilot study was to assess the role that state parks play in the promotion of physical activity among diverse racial/ethnic and age groups in Georgia.

## 2.0 METHODS

Data were collected at three state parks in north Georgia (Fort Mountain, Fort Yargo, and Red Top Mountain) during the summer of 2009 using two research methods: behavior observations (N=2281) and intercept surveys (N=473). The three state parks were selected as study sites based on annual visitation rates and anecdotal reports from park managers regarding the ethnic, racial, and cultural

diversity of visitors. Data collection focused on concentrated centers of recreation activity with high visitor densities, or recreation hotspots, within each park. Examples of recreation hotspots included campgrounds, swimming beaches, and other grassy play and picnic areas ideally suited for fitness and/or sports activities.

Observations of park visitors in designated recreation hotspots were conducted using a modified version of the System for Observing Play and Recreation in Communities (SOPARC). SOPARC is a reliable and feasible strategy for assessing physical activity in community settings, and has been used to examine park activity in multiple contexts (McKenzie et al. 2006). During SOPARC sessions, a researcher began at one end of a target area and slowly walked across the zone, documenting the age, ethnicity, and physical activity level (sedentary, moderate, or vigorous) of recreation participants. If visitors were engaged in either moderate or vigorous physical activity when they were observed, the activity type was also noted.

Intercept surveys administered in the recreation hotspots focused on physical activity in parks. During intercept survey sessions, researchers and trained volunteers approached every third visitor age 18 or older and asked if he/she would be willing to participate in a ten-minute survey about state park use. After a survey was distributed, researchers remained in the area and responded to questions as necessary, allowing ample time (approximately 10-15 minutes) for survey completion. Surveys were available in Spanish, and the Spanish language proficiency of all survey administrators was verified prior to field work.

Self-reported physical activity questions reflected those used in international and national lifestyle surveys such as the International Physical Activity Questionnaire and the Behavioral Risk Factor Surveillance System (CDC 2009b, Craig et al. 2003). Items distinguished between moderate physical activity, which causes some increase in breathing and heart rates for at least ten minutes at a time, and

vigorous physical activity, which produces a large increase in breathing and heart rates for at least ten minutes at a time (CDC 2009b).

In addition to self-reported estimates of physical activity, respondents were asked to assess their use of state parks relative to other possible settings during their daily physical activity pursuits. Participants also rated the value of different park features and facilities in promoting physical activity. Additional open-ended items allowed visitors to offer suggestions for increasing park-based physical activity. If survey participants were in groups with children, they were given a supplemental survey page with additional questions about children's outdoor activities adapted from the National Kids Survey (Cordell et al. 2009). The intercept survey response rate was approximately 83 percent.

Data were analyzed using SPSS Version 17.0. Inter-rater reliability of the SOPARC observations was assessed using bivariate and intra-class correlations. Pearson's chi-square tests were used to examine associations between physical activity observations and demographic variables. Descriptive statistics describing physical activity levels and location preferences were obtained for the overall population and specific demographic groups, and analysis of variance was used to compare group means when distribution assumptions were satisfied.

### 3.0 RESULTS

Inter-rater reliability of the SOPARC observation counts for specific demographic and activity categories was high (Pearson's  $r$  and intra-class correlation coefficients  $\geq 0.939$ ) and comparable to inter-observer agreement in similar studies (Floyd et al. 2008). The SOPARC sampling showed that 56.9 percent of park visitors were sedentary, 39.4 percent were engaged in moderate activity, and 3.8 percent were engaged in vigorous activity. The activity levels of state park visitors differed by ethnicity ( $\chi^2_{6,N=2281} = 61.1$ ,  $p \leq 0.001$ ) and age ( $\chi^2_{6,N=2281} = 281.1$ ,  $p \leq 0.001$ ), with African Americans being more active than other

racial/ethnic groups and children being more active than other age groups (Tables 1 and 2). African American children were also more active than children from other racial/ethnic groups ( $\chi^2_{6,N=703} = 20.0$ ,  $p = 0.003$ ). Swimming was the most popular activity in recreation hotspots, especially among Hispanic/Latinos and children.

Almost 80 percent of visitors reported some physical activity during their state park visit, with mean levels of self-reported moderate (83.7 minutes) and vigorous (35.9 minutes) physical activity exceeding average recommended daily values (without a state park visit) by at least 120 percent. Approximately 95 percent of children were active during their visits, engaging in an average of 166.3 minutes of moderate and 63.2 minutes of vigorous physical activity per visit.

Picnic areas, swimming areas, and hiking trails were the most popular physical activity locations within state parks, followed by open green space and playgrounds. Visitors reported personal homes/backyards as the most frequently used location for physical activity across all ethnic groups. Statistically significant differences in use levels were not observed among state parks, neighborhood parks, and streets and sidewalks during physical activity pursuits. State parks [ $F(2,428)=10.04$ ,  $p < 0.001$ ] and neighborhood parks [ $F(2,430)=10.11$ ,  $p < 0.001$ ] were more important physical activity locations for Hispanic/Latinos than whites or African Americans (Figure 1). Homes/backyards were a more important physical activity location for whites than ethnic minorities [ $F(2,410)=3.98$ ,  $p = 0.019$ ].

Swimming (approximately 69.9 percent of child visitors) and walking/hiking (39.3 percent) were the most popular activities for children in state parks. Children's outdoor activity participation varied by ethnicity. Based on parents' reports, white children and minority children engaged in land (walking, running, biking) and water (swimming, canoeing) activities at approximately equal rates [ $F(2,344)=0.09$ ,  $p = 0.915$  for land;  $F(2,331)=0.99$ ,  $p=0.0374$  for water]. However, white children participated in more

**Table 1.—Percent of Georgia State Park visitors by racial/ethnic group participating in different levels of physical activity during moment-in-time behavior observations at recreation hotspots, summer 2009 (N=2281)**

Racial/Ethnic Group	Physical Activity Level		
	Sedentary	Moderate	Vigorous
White	58%	38%	4%
African American	38%	56%	6%
Hispanic/Latino	58%	40%	2%
Other	65%	24%	11%

**Table 2.—Percent of Georgia State Park visitors by age group participating in different levels of physical activity during moment-in-time behavior observations at recreation hotspots, summer 2009 (N=2281)**

Age Group	Physical Activity Level		
	Sedentary	Moderate	Vigorous
Children	36%	58%	6%
Teens	54%	41%	5%
Adults	73%	25%	2%
Seniors	83%	16%	1%

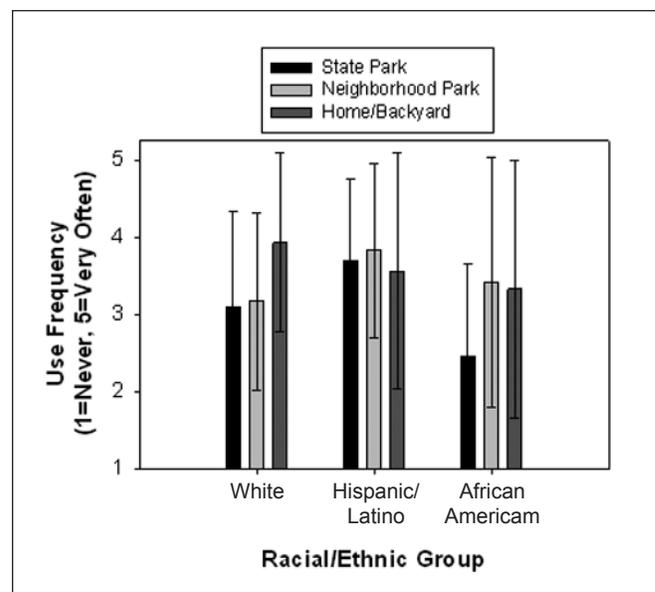


Figure 1.—Frequency of use rating (with standard deviations) for potential physical activity destinations among different racial ethnic groups in North Georgia (N=473).

nature-based activities and wildlife viewing than minority children [ $F(2,330)=8.14, p < 0.000$ ], who spent more time interacting with electronics outdoors [ $F(2,333)=10.03, p < 0.000$ ].

Many respondents provided suggestions for encouraging physical activity in state parks for adults ( $n=150$ ) and children ( $n=200$ ). The most common ideas for promoting adult park-based activities included: lower entrance fees (16); better advertising/information (16); better areas for children (13); easier trails (7); and more open green space (7). The most common recommendations for promoting children's park-based activity included: larger playgrounds (24); more guided walks and ranger programs (20); more events and camps (19); more open green space (16); better advertising/information (16); cleaner/safer recreation areas (15); and easier trails (14).

#### 4.0 DISCUSSION AND IMPLICATIONS

This study emphasized the increasing importance of physical health-related issues in outdoor recreation management and addressed a growing need to identify and inventory physical activity offerings in public parks (Wilhelm Stanis et al. 2008). The mixed method data collection approach involving self-reported and observed behavior measures yielded a comprehensive overview of physical activity superior to that of many single metrics. The SOPARC observations indicated that two high-risk groups, children and African Americans, were especially active in state park recreation hotspots. Intercept surveys also revealed surprisingly high levels of park-based physical activity across all racial/ethnic groups. Although these findings were encouraging, refined survey questions and innovative, objective data collection strategies may be needed to validate the high physical activity levels reported by participants in this study.

Preliminary results of this pilot study suggested that state parks already play an important role in supporting physical activity in the lives of many Georgia residents. Public parks, including state parks, appeared to be an especially important physical activity destination for Hispanic/Latinos. Additional

examinations of correlations between park visitation frequency and park-based physical activity could yield more information about the specific capacity of state parks to promote healthy, active lifestyles. Future research efforts should also expand to incorporate information regarding the physical activity of nonusers in racially/ethnically diverse communities surrounding focal parks.

Finally, this study revealed several ways to improve parks and increase opportunities for physical activity. Participant comments suggested that higher levels of physical activity could be encouraged through expansion of open green space, construction of kid-friendly biking and hiking trails near picnic areas, and more aggressive advertising campaigns. Continued efforts to attract and engage new visitors by incorporating these suggestions could especially benefit minority children, who typically have fewer opportunities to experience outdoor nature activities (Larson et al. 2009). Overall, this pilot study created a functional framework for future park-based physical activity assessments and provided a foundation for additional research to help park managers promote and sustain park-based physical activity across diverse populations.

#### 5.0 LITERATURE CITED

- Centers for Disease Control and Prevention. 2009a. **Behavioral Risk Factor Surveillance System survey data**. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention.
- Centers for Disease Control and Prevention. 2009b. **Behavioral Risk Factor Surveillance System questionnaire**. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention.
- Cordell, H.K.; Betz, C.J.; Green, G.T. 2009. **National Kids Survey - Part II: What do kids do outdoors?** 5 p. Internet Research Information Series (IRIS) Report. Available at <http://warnell.forestry.uga.edu/nrrt/nsre/IRISRec/IRISRec11rpt.pdf>. (Accessed March 8, 2010).

- Craig, C.L.; Marshall, A.L.; Sjostrom, M.; et al. 2003. **International physical activity questionnaire: 12-country reliability and validity.** *Medicine and Science in Sports and Exercise.* 35(8): 1381-1395.
- Flores, G.R. 2008. **Active living in Latino communities.** *American Journal of Preventive Medicine.* 34(4): 369-370.
- Floyd, M.F.; Spengler, J.O.; Maddock, J.E.; Gobster, P.H.; Suau, L.J. 2008. **Park-based physical activity in diverse communities of two U.S. cities: an observational study.** *American Journal of Preventive Medicine.* 34(4): 299-305.
- Georgia Statewide Comprehensive Outdoor Recreation Plan (SCORP). 2008. **Georgia Statewide Comprehensive Outdoor Recreation Plan 2008-2013.** Atlanta, GA: Georgia Department of Natural Resources, Parks, Recreation, and Historic Sites Division.
- Kaczynski, A.T.; Henderson, K.A. 2007. **Environmental correlates of physical activity: a review of evidence about parks and recreation.** *Leisure Sciences.* 29(4): 315-354.
- Larson, L.R.; Green, G.T.; Castleberry, S.B. 2009. **The impact of a summer education program on the environmental attitudes and awareness of minority children.** In: Klenosky, D.B.; Fisher, C.L., eds. *Proceedings of the 2008 Northeastern Recreation Research Symposium.* Gen. Tech. Rep. NRS-P-42. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northern Research Station: 1-7.
- McKenzie, T.L.; Cohen, D.A.; Sehgal, A.; Williamson, S.; Golinelli, D. 2006. **System for observing play and recreation in communities (SOPARC): reliability and feasibility measures.** *Journal of Physical Activity and Health.* 3(S1): S208-S222.
- Mowen, A.; Kaczynski, A.; Cohen, D. 2008. **The potential of parks and recreation in addressing physical activity and fitness.** In: *Research Digest.* Washington, DC: President's Council on Physical Fitness and Sports. 9(1): 1-8.
- Ogden, C.L.; Carroll, M.D.; Curtin, L.R.; McDowell, M.A.; Tabak, C.J.; Flegal, K.M. 2006. **Prevalence of overweight and obesity in the U.S., 1999-2004.** *Journal of the American Medical Association.* 295: 1549-1555.
- Pratt, C.A. 2008. **Findings from the 2007 active living research conference: implications for future research.** *American Journal of Preventive Medicine.* 34(4): 366-368.
- Roemmich, J.N.; Epstein, L.H.; Raja, S.; Yin, L.; Robinson, J.; Winiewicz, D. 2006. **Association of access to parks and recreational facilities with the physical activity of young children.** *Preventive Medicine.* 43: 437-441.
- Wilhelm Stanis, S.A.; Schneider, I.E.; Shinew, K.J.; Chavez, D.J.; Vogel, M.C. 2008. **Physical activity among Hispanic/Latino and non-Hispanic/Latino white visitors on urban-proximate public lands.** In: Chavez, D.J.; Winter, P.L.; Absher, J.D., eds. *Recreation visitor research: studies of diversity.* Gen. Tech. Rep. PSW-GTR-210. Albany, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station: 113-122.

The content of this paper reflects the views of the author(s), who are responsible for the facts and accuracy of the information presented herein.

# VALUING STATE PARKS: ACCOUNTING FOR DIVERSE VISITOR PERSPECTIVES

---

Jason W. Whiting  
Warnell School of Forestry and Natural Resources  
University of Georgia  
whitingj@uga.edu

Lincoln R. Larson  
University of Georgia

Gary T. Green  
University of Georgia

---

**Abstract.**—Current and estimated future changes in the United States population suggest that racial and ethnic minority groups are growing rapidly. Minority groups, however, continue to be underrepresented in visitation to state parks. It is also unclear how minority groups value natural settings, such as state parks. The lack of visitation and lack of information pertaining to minorities create a problem for park managers who are actively striving to meet the needs of all their constituents. To better understand these issues, a pilot study focusing mainly on minorities' use of state parks was conducted during the summer of 2009 at three parks in north Georgia. Intercept surveys were administered to 415 park visitors, and contained questions pertaining to how visitors valued and were attached to state parks. Preliminary results of an exploratory factor analysis identified underlying factors among several items related to place identity and place dependency. Results of this study may provide Georgia state park managers with a better understanding of how visitors, in particular minorities, value state parks.

---

## 1.0 INTRODUCTION

The United States population is expected to increase from 282.1 to 419.9 million between 2000 and 2050 and to become increasingly diverse in terms of race

and ethnicity (U.S. Bureau of the Census 2009). Many areas once populated homogeneously with Whites are now becoming more racially diverse. In fact, trends in Census data suggest that the population growth rates of ethnically diverse groups will exceed the overall growth rate of the U.S. population over the next fifty years. In the past, African-Americans were viewed as the dominant ethnic group after Caucasians. However, Hispanics are now the fastest growing group in the nation; in 2008, the Hispanic population surpassed 45 million and comprised 15 percent of the U.S. population (U.S. Census Bureau 2009).

These impending changes in population demographics present a significant challenge for the management of public lands. It is of particular concern that public land managers might not be able to meet the recreational needs and expectations of a rapidly diversifying population whose preferences are not well understood or well served. At present, ethnic and racial minority groups are significantly underrepresented in terms of overall visitation to natural resource areas, specifically public parks. Public land managers are also concerned about where the next generation of natural resource and environmental stewards will come from.

Most national parks, state parks, and other public lands that provide outdoor recreation opportunities have experienced declining visitation and funding in the past five years (Mowen et al. 2005, Pergams and Zaradic 2006). Due to additional budget cuts in 2008-2009, many public land agencies are choosing to close or outsource the running of some parks that are already operating with reduced staff and limited resources (Friends 2009). In Georgia, visitation and funding for state parks have mirrored many of the trends that outdoor recreation venues face on a national level. However, despite the fiscal challenges, state parks continually strive to be relevant and to provide quality recreation opportunities for their visitors. Therefore,

it is more crucial than ever that state park managers understand the cultural needs, preferences, and expectations of their diverse visitors (Li et al. 2008).

Many people are motivated in their recreational pursuits by the meaning(s) that they attach to a particular natural setting (Brooks et al. 2006). Attachments of this kind can significantly affect visitation and visitor experiences. In fact, bonds between visitors and places are both complex and multidimensional. Visitors often demonstrate varying levels of commitment or hold different values for a particular setting (Smaldone et al. 2008). Understanding how different racial and ethnic minority groups attach meaning and value to specific places is crucial to the future planning and management of many natural resource-dependent recreational opportunities (Kyle et al. 2005). By examining how people recreate in natural areas, public land managers may be able to improve the facilities and services under their direction to better meet the needs of their existing visitors (Abercrombie et al. 2008, Gobster 2002, Moore et al. 2008).

## 2.0 THEORETICAL BACKGROUND

The attachment that individuals feel when recreating in natural areas often represents an emotional bond between themselves and the place (Kyle et al. 2003, Williams and Patterson 1999) and is known as place attachment (Schreyer et al. 1981). Place attachment (also referred to as place bonding, sense of place, and place preferences) may be broken into the two components: place identity and place dependence.

Place identity is “Those dimensions of the self that define the individuals’ 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” (Proshanky 1978, p. 155). Place identity can be seen as the way an individual emotionally identifies or connects with a particular location. According to Kyle et al. (2003, p. 251), “a place can be viewed as an essential part of one’s self, resulting in strong

emotional attachment to places.” The more an individual visits a particular location, the more likely they are to form a connection. Jorgensen and Stedman (2001) suggested that this connection is a cognitive process, similar to identity roles. An individual chooses how they feel in regards to certain locations through experiences relating to those locations. These feelings are then reflected in individual recreation behaviors (Jorgensen and Stedman 2001).

The other concept of place attachment, place dependence, relates more to the resources found at a particular location than the emotional connections people form. Individuals rely on locations with particular physical or geographic features and conditions that they need for recreation (Stokols and Shumaker 1981, Williams and Roggenbuck 1989). According to Kyle et al. (2003, p. 251), “the value of a setting to the individual is based on specificity, functionality, and satisfaction of a place and its ‘goodness’ for hiking, fishing, camping, scenic enjoyment and so forth.” This reliance on a location to provide certain recreation outcomes effectively links individuals to specific natural areas.

Visitors to natural areas interact with the environment for different physiological, psychological, and social reasons, all of which compose place attachment. In an attempt to classify trout anglers, Hammitt et al. (2004) developed a model with place identity and place dependency items that reflected anglers’ level of attachment. Hammitt et al. (2004) also compared levels of place belonging to experience use history. They found that the longer an individual chooses to recreate at a particular place, the more attached the person becomes to that place. However, one limitation of this and other research examining place attachment, place bonding, and place dependence is that the majority have focused exclusively or predominantly on Caucasian populations.

## 3.0 RESEARCH OBJECTIVE

This study examined the outdoor recreation values and place attachment of visitors to three Georgia state parks. Specifically, the objective of the research was

to examine the relationship between state park users' and nonusers' level of place attachment (i.e., place identity and place dependence) and their ethnicity, race, gender, age, education, and income levels. The research hypothesis was that there would be statistically significant differences within or between levels of place attachment for state park users and nonusers of different ethnicities, races, genders, ages, education levels, and income levels.

## 4.0 METHODS

Three state parks in northern Georgia with racially diverse visitor clienteles were selected for this study: Fort Yargo, Red Top Mountain, and Fort Mountain. At multiple meetings with on-site managers, the researchers identified areas of the parks that were best suited for capturing the greatest number of park visitors at any given time. These included recreation hotspots, or areas where recreation demands were greatest (Cordell and Green 2001). Facilities at each park include: beach and swimming areas, boat launches, campgrounds, cycling and hiking trails, and picnic areas. Fort Mountain State Park is located in the north Georgia mountains and is further away from urban areas than Red Top Mountain and Fort Yargo Parks. Each park had diverse topography.

This study was conducted between Memorial Day and Labor Day 2009. Every third park user who was believed to be over the age of 18 was approached and asked if they would be willing to fill out a 10-15 minute self-administrated survey. All researchers were bilingual and surveys were available in both English and Spanish. A total of 415 surveys were completed. In addition to completed surveys, refusal rates were recorded and used to calculate the response rate of 83 percent.

The survey instrument included items designed to examine place attachment and how visitors value state parks. General visitation questions were used to capture the number of visits and duration of recreation activities, incorporating important elements of experience use history (Hammitt et al. 2004). To minimize the time burden on participants, items related

to how visitors valued parks were condensed and simplified using broad categories identified by larger response sets in previous studies (Cronan et al. 2008).

Park visitors were asked to rate how they valued state parks using 12 items which were rated on a five-point Likert scale ranging from one (strongly disagree) to five (strongly agree). Preliminary data from these questions were analyzed using descriptive statistics and frequencies.

The place attachment of visitors was assessed using scales developed in previous studies (Hammitt et al. 2004, Kyle et al. 2005, Williams et al. 1992). Place attachment was measured with 10 items designed to capture an individual's personal connection to a particular park. These items were also rated on a five-point Likert scale ranging from one (strongly disagree) to five (strongly agree) and focused on two latent place attachment factors identified as place identify and place dependence.

An exploratory factor analysis (EFA) was used to assess the dimensionality of the place attachment items. The Kaiser-Meyer-Olkin measure of sampling adequacy and Bartlett's test of sphericity were conducted to determine if factor analysis of the data was appropriate. Construct and content validity were then assessed using Catell's scree test and principal axis factoring. Principal axis factoring with an oblique rotation was used to account for anticipated inter-dimensional correlations between the two factors (Widaman 1993). Reliability estimates of internal consistency for the hypothesized latent factors were also measured using Cronbach's alpha.

## 5.0 RESULTS

Visitors reported valuing parks for protecting nature ( $M = 1.38$ ,  $SD = 1.258$ ), providing opportunities for outdoor recreation ( $M = 4.84$ ,  $SD = 1.258$ ), and generating money ( $M = 3.02$ ,  $SD = 2.038$ ). Visitors reported means greater than 3.44 for all place attachment items, suggesting some level of personal attachment to state parks within the sample population (Table 1).

**Table 1.—Pattern and structure matrix coefficients for data obtained via surveys of state park visitors in Georgia during summer 2009 (N=415)**

Hypothesized Factor (with Items)	Mean	SD	Pattern Matrix		Structure Matrix	
			A	B	A	B
<b>A. Place Identity*</b>						
1. XXX is very special to me.	4.01	0.91	0.053	<b>0.856</b>	<b>0.707</b>	<b>0.896</b>
2. I am very attached to XXX.	3.82	0.96	0.031	<b>0.886</b>	<b>0.708</b>	<b>0.909</b>
8. XXX means a great deal to me.	3.76	0.98	<b>0.568</b>	0.361	<b>0.844</b>	<b>0.795</b>
10. I identify strongly with XXX.	3.67	1.00	<b>0.640</b>	0.267	<b>0.845</b>	<b>0.757</b>
5. I feel like XXX is a part of me.	3.42	1.02	<b>0.750</b>	0.166	<b>0.877</b>	<b>0.739</b>
<b>B. Place Dependence**</b>						
6. XXX is the best place for me to recreate.	3.61	1.00	<b>0.888</b>	-0.006	<b>0.884</b>	<b>0.673</b>
4. I get more satisfaction out of visiting XXX than visiting any other area.	3.60	0.95	<b>0.841</b>	-0.003	<b>0.839</b>	<b>0.640</b>
7. I wouldn't substitute any other area for what I do at XXX.	3.49	1.04	<b>0.967</b>	-0.101	<b>0.889</b>	<b>0.638</b>
9. Recreation at XXX is more important to me than recreation at any other location.	3.45	1.03	<b>1.017</b>	-0.109	<b>0.934</b>	<b>0.669</b>
3. No other place can compare to XXX.	3.44	1.02	<b>0.690</b>	0.118	<b>0.781</b>	<b>0.646</b>

Note: Major loading coefficients (> 0.400) for each item are in **bold**.

\* Cronbach's Alpha for five hypothesized place identity items was 0.927.

\*\* Cronbach's Alpha for five hypothesized place dependence items was 0.939.

Bartlett's test of sphericity [ $\chi^2(df=45) = 4323.3, p < 0.001$ ] and the Kaiser-Meyer-Olkin measure of sampling adequacy (0.944) indicated that EFA was appropriate. Catell's scree test and principal axis factoring showed a single factor (eigenvalue = 7.39) that accounted for 71.1 percent of the total scale variance. All 10 items loaded strongly on the single factor (> 0.77). In the examination of a two-factor solution, discriminant validity was not evident and the factors were highly correlated ( $r = 0.764$ ). The reliability of the single-factor, ten-item scale was high (Cronbach alpha = 0.961).

## 6.0 DISCUSSION

The EFA of the 10-item scale did not find two distinct components of place attachment (i.e., place identity and place dependence) as in previous studies. Instead, all items appeared to reflect a single place attachment

construct. Therefore, all items were represented as a single factor (i.e., place attachment). The multidimensionality of the place attachment scale may have been affected by the somewhat generic recreation opportunities available at the parks in the study. To better understand the relative importance of state parks as recreation destinations for north Georgia residents, the place dependence scale may be the most relevant since many visitors reported not having alternative natural areas for participating in outdoor recreation activities. Furthermore, a concise subset of place dependence might be more relevant for use in intercept surveys to examine how state parks fit into the greater context of recreational pursuits in other areas. Hence, additional research could emphasize the influence of place dependence on the relationship between ethnically diverse visitors and public lands in Georgia.

## 7.0 LITERATURE CITED

- Abercrombie, L.C.; Sallis, J.F.; Conway, T.L.; Frank, L.D.; Saelens, B.E.; Chapman, J.E. 2008. **Income and racial disparities in access to public parks and private recreation facilities.** *American Journal of Preventive Medicine.* 34(1): 9-15.
- Brooks, J.; Wallace, G.; Williams, D. 2006. **Place as relationship partner: an alternative metaphor for understanding the quality of visitor experience in a backcountry setting.** *Leisure Sciences.* 28(4): 331-349.
- Cordell, H.K.; Green, G.T. 2001. **Sustaining outdoor recreation and forests in the United States.** In: Palo, M.; Uusivuori, J.; Mery, G., eds. *World forests, markets and policies.* 3rd ed. Dordrecht, The Netherlands: Kluwer Academic Publishers: 395-406.
- Cronan, M.K.; Shinew, K.J.; Stodolska, M. 2008. **Trail use among Latinos: recognizing diverse uses among a specific population.** *Journal of Park and Recreation Administration.* 26(1): 62-86.
- Friends of Georgia State Parks and Historical Sites. 2009. **The fact about Georgia State Parks and Historical Sites.** Available at <http://www.friendsofgastateparks.org/friends/?q=ActionCenter/Fact>. (Accessed June 26, 2009).
- Gobster, P.H. 2002. **Managing urban parks for a racially and ethnically diverse clientele.** *Leisure Sciences.* 24(2): 143-159.
- Hammitt, W.E.; Backlund, E.A.; Bixler, R.D. 2004. **Experience use history, place bonding and resource substitution of trout anglers during recreation engagements.** *Journal of Leisure Research.* 36: 356-378.
- Jorgensen, B.S.; Stedman, R.C. 2001. **Sense of place as an attitude: lakeshore owners' attitudes toward their properties.** *Journal of Environmental Psychology.* 21(3): 233-248.
- Kyle, G.; Graefe, A.; Manning, R. 2005. **Testing the dimensionality of place attachment in recreational settings.** *Environment and Behavior.* 37(2): 153.
- Kyle, G.; Graefe, A.; Manning, R.; Bacon, J. 2003. **An examination of the relationship between leisure activity involvement and place attachment among hikers along the Appalachian Trail.** *Journal of Leisure Research.* 35(3): 249-274.
- Li, C.; Absher, J.D.; Graefe, A.R.; Hsu, Y. 2008. **Research reflections—services for culturally diverse customers in parks and recreation.** *Leisure Sciences.* 30(1): 1-6.
- Moore, L.V.; Diaz Roux, A.V.; Evenson, K.R.; McGinn, A.P.; Brines, S.J. 2008. **Availability of recreational resources in minority and low socioeconomic status areas.** *American Journal of Preventive Medicine.* 34(1): 16-22.
- Mowen, A.J.; Payne, L.L.; Scott, D. 2005. **Change and stability in park visitation constraints revisited.** *Leisure Sciences.* 27(2): 191-204.
- Pergams, O.R.W.; Zaradic, P.A. 2006. **Is love of nature in the US becoming love of electronic media? 16-year downtrend in national park visits explained by watching movies, playing video games, Internet use, and oil prices.** *Journal of Environmental Management.* 80(4): 387-393.
- Proshansky, H.M. 1978. **The city and self-identity.** *Environment and Behavior.* 10(2): 147.
- Schreyer, R.; Jacob, G.; White, R. 1981. **Environmental meaning as a determinant of spatial behavior in recreation.** In: Frazier, J.; Epstein, B., eds. *Proceedings of Applied Geography Conferences, Vol. 4.*
- Smaldone, D.; Harris, C.; Sanyal, N. 2008. **The role of time in developing place meanings.** *Journal of Leisure Research.* 40(4): 479-504.
- Stokols, D.; Shumaker, S.A. 1981. **People in places: A transactional view of settings.** In: Harvey, J.H., ed. *Cognition, Social Behavior and the Environment.* Newark, New Jersey: Erlbaum: 441-488.

- U.S. Census Bureau. 2009. **An older and more diverse population by century.** Available at <http://www.census.gov/PressRelease/www/releases/archives/population/012496.html>. (Accessed January 31, 2009).
- Widaman, K.F. 1993. **Common factor analysis versus principal component analysis: differential bias in representing model parameters?** *Multivariate Behavioral Research*. 28(3): 263-311.
- Williams, D.R.; Patterson, M.E.; Roggenbuck, J.W.; Watson, A.E. 1992. **Beyond the commodity metaphor: examining emotional and symbolic attachment to place.** *Leisure Sciences*. 14(1): 29-46.
- Williams, D.R.; Patterson, M.E. 1999. **Environmental psychology: mapping landscape meanings for ecosystem management.** In: Cordell, H.K.; Bergstrom, J.C., eds. *Integrating social sciences and ecosystem management: Human dimensions in assessment, policy and management.* Champaign, IL: Sagamore Press: 141-160.
- Williams, D.R.; Roggenbuck, J.W. 1989. **Measuring place attachment: some preliminary results.** In: Gramann, J., comp. *Proceedings of the third symposium on social science in resource management.* College Station, TX: Texas A&M University: 70-72.

The content of this paper reflects the views of the author(s), who are responsible for the facts and accuracy of the information presented herein.

# *POSTER SESSION*

# AGRILEISURE: EXPLORING THE “FUN” OF LOCAL FOOD

Ben Amsden, Ph.D.  
The Center for Rural Partnerships  
Plymouth State University  
blamsden@plymouth.edu

Jesse McEntee  
Cardiff University

---

**Abstract.**—Farm-based agri-tourism, home-based hobby farming, rural/urban farmers markets, and community-supported agriculture (CSA) are all examples of agriculturally themed activities that, for many, include a measure of leisure and recreation. While people once saw the farm primarily as a space for work and production, a new generation is beginning to see farms as family-oriented places to visit, experience, and learn. This suggests the emergence of a theoretical concept called “agrileisure” with roots in leisure studies, sociology, social psychology, and geography. This brief conceptual paper will explore the theoretical emergence of agrileisure. With an eye toward future research, we will go beyond this conceptualization to propose a number of research areas critical to a better understanding of the “fun” of local food.

---

## 1.0 INTRODUCTION: THE “FUN” OF AGRICULTURAL SPACES

Farm-based agri-tourism, home-based hobby farming, rural/urban farmers markets, and community-supported agriculture (CSA) are all examples of agriculturally-themed activities that, for many, include a measure of leisure and recreation. While people once saw the farm primarily as a space for work and production, a new generation is beginning to see farms as family-oriented places to visit, experience, and learn. This suggests the emergence of a theoretical concept called “agrileisure” with theoretical roots in leisure studies, sociology, social psychology, and geography.

In addition to serving as an organizing feature of recreation activities in agricultural settings, we feel that agrileisure can serve as a lens through which to view agriculture-related social change. One example is the “local food” movement. Local food is often situated in the contexts of healthy living, environmental sustainability, and community well-being. An agrileisure perspective adds the “fun” of local food to this mix, allowing us to explore the relationships between agriculture-themed recreation and changing social responses to the production, procurement, and consumption of food. To this end, this brief conceptual paper will explore the theoretical emergence of agrileisure and propose future areas of inquiry and exploration critical to a better understanding of the “fun” of local food.

## 2.0 WHAT IS AGRILEISURE?

Agrileisure is a conceptual framework that highlights and organizes the roles of recreation, tourism, and leisure in an agricultural context. As a concept, agrileisure emerges from an intersection of regional sustainability, farm-based recreation, and rural economic development. In practice, agrileisure is the glue that binds the disparate issues of agricultural business, development, and sustainability with a large measure of fun. Figure 1 provides a visual representation of the concept of agrileisure.

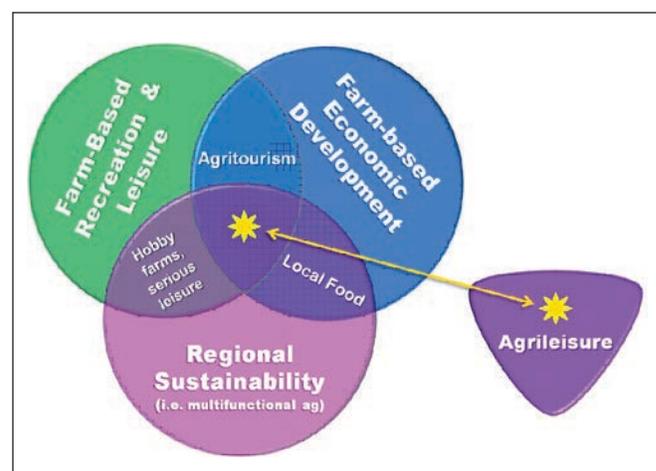


Figure 1.—Theoretical context of agrileisure.

Each of the overlapping areas contains theoretical examples that can be used to describe the emergence of agrileisure. To begin, one example of regional sustainability in an agricultural context is multifunctional agriculture, a concept suggesting that farming produces social benefits beyond the simple production of food (Wilson 2007). These benefits can be both environmental (improvements to land, water) and social (rural employment, community preservation). The benefits of multifunctional agriculture, however, tend to accrue at the national or global scale, and little research has explored the concept at the local level (Lenihan et al. 2009).

Multifunctional agriculture at the local level is comparable in some ways to the concept of serious leisure (Stebbins 1992). Serious leisure is distinguished from other types of leisure by the level of personal investment—the need to participate in a unique subculture, acquire special skills and knowledge, and strongly identify with the chosen pursuit (Stebbins 1992). An example of serious leisure in an agricultural context is hobby farming, which is commonly defined as the act of farming for little or no income. Hobby farmers must acquire skills similar to those of professional farmers and the act of farming requires a commitment of time and resources that exceed many other hobbies. Hobby farming is a local-level manifestation of the social and economic impact (both positive and negative) of farming within the rural-urban fringe. Hobby farms are making important contributions to regional sustainability by selling products at farm markets, engaging in education, and serving as training grounds for beginning farmers.

Farm-based recreation also intersects with rural economic development. Many rural areas are undergoing rapid social and economic change, usually in the form of transition toward a recreation- and tourism-based economy. Farms play an important role in this transition as evidenced by the growth of agritourism. In Vermont, a traditional dairy state, agritourism added \$10.5 million to statewide farm income in 2001, an average of \$5,000 per farm (Aldous 2001). In neighboring New Hampshire,

agricultural tourists spent an estimated \$201 million in 2002, including \$26 million for farm products; this spending resulted in 2,556 full time equivalent jobs, household incomes of \$59.2 million, and \$19.2 million in state and local government revenues (Goss 2003). Expanding the discussion to local foods, the impacts remain important—New Hampshire’s local food system is a \$3.3 billion industry that employs 81,000 people statewide, contributing 5.7 percent of the state’s \$58 billion economy (Magnusson and Gittell 2010).

Completing the cycle is the relationship between farm-based economic development and regional sustainability. An example of this overlap is the local food movement. Recent research in this area (Born and Purcell 2006, Coley et al. 2009, DuPuis and Goodman 2005, Hinrichs 2003, Jarosz 2008) includes efforts to quantify local food consumption/production capacity (Peters et al. 2008, Timmons et al. 2008), attempts to link local food to health outcomes (Gustafson et al. 2007, Nanney et al. 2007), empirical critiques of whether or not locally produced goods use or more less energy than conventionally grown (Coley et al. 2009, Cowell and Parkinson 2003), and efforts to determine the equity and sustainability of local foods (Allen 2008, Allen and Hinrichs 2007, Born and Purcell 2006, Hinrichs 2003, Jarosz 2008, Mariola 2008). Missing, however, are the perspectives of leisure, recreation, and tourism.

### **3.0 SITUATING AGRILEISURE**

Agrileisure, at its core, is about recreation in place. Therefore, it is necessary to situate agrileisure in terms of two oft-invoked theoretical constructs: community and sense of place. To begin, the term community is often broadly conceptualized, from loose affiliations of spatial, social, and normative components (Agrawal and Gibson 1999) to clear distinctions between “territory-free” communities (made up of groups of people, such as “the Internet community” or “the Latino community”) and “territory-based” communities (Theodori 2005). Most relevant to agriculture and leisure, however, is the place-based interactional approach of Wilkinson (1991). His model of community theory suggests that community is

a geographically bounded space in which there are “collective organizations through which residents of a small territory meet their daily needs” (Wilkinson 1991, p.3). Farms are a critical feature of these collective organizations, serving as shared space and territorial referent. Local residents view the farm as a community asset which, in addition to providing food or employment, provides a shared rural identity.

The concept of sense of place is important to the policy implications of agrileisure; it parallels community in terms of how people interact with rural landscapes and each other. Tuan (1977) defined “sense of place” as meanings applied to geographic space. Specifically, sense of place describes what a place means to an individual, rather than how much it means (Stedman et al. 2004). Most definitions of sense of place encompass place attachment (the extent to which people identify with a setting) and satisfaction (how they feel about the condition of the setting) (Brandenburg and Carroll 1995, Relph 1976, Stedman et al. 2004). Researchers have even suggested a biological component (Altman and Low 1992). Given their complexity, place factors are difficult to discern. While sense of place is intricate, fluid, and without boundaries, it is reasonable to assume that local farms—with their history, natural beauty, and contribution to rural regional identities—substantially influence the creation of place-based meanings and attachment.

How, then, is agrileisure related to these notions of community and place? Possible examples include the areas of equity and food justice. Much has been made of the evolution of farmers markets into places that are not welcoming to low-income audiences. Perhaps agrileisure development could include creating community-based outreach materials that appeal to a different (low-income) audience to ensure that people of all incomes feel welcome at farmers markets. A second example is local control. Many farmers markets are relatively unregulated and are therefore free to evolve from simple food venues into more complex social gatherings with music, value-added items, and non-food products. Third, farmers

markets do not just represent nostalgia-based tourism; they have become the ‘village common,’ offering the physical space to gather as well as the opportunity to experience a shared emotional space. This shared emotional space vivifies common values that are perceived as waning in an overbusy and disconnected society. For many, farmer’s markets are a respite and a comfort, serving as a salve to hyper-individualism.

#### **4.0 FUTURE EXPLORATIONS OF AGRILEISURE**

Additional scholarship is needed to explore the contribution of agrileisure to agricultural and recreation research, especially in terms of the relocalization of rural food networks. There is little or no existing data in these areas, and few studies have attempted to investigate how the local food movement is influenced by recreation and leisure. A new approach to local food research is needed, one that includes an agrileisure perspective. Knowing more about the “fun” of local food can be an important contribution to the dialogue surrounding agriculture, leisure, and social change.

Fortunately, many of the theoretical contexts from which agrileisure emerges (see Figure 1) provide angles that are relevant to the emerging relationships between agrileisure and relocalization as a form of social change. To begin, agritourism has deep roots in economic development and revenue diversification, two important issues affecting farm sustainability in the long run. Possible areas of exploration include points of entry into emerging food networks, or the role of agritourism in food security. Sample questions include: can agritourism ventures such as pick-your-own orchards or maple sugar operations be springboards into a local food network? Can agritourism, as a community and economic development strategy, promote food security?

A deeper investigation of hobby farms and recreational farming will also provide insight into the relocalization of rural food networks. Work in this area must involve the farmer directly and examine hobby and recreational farmers’ connections to the food

network itself. Specifically, this connection could be financial (in which case it may be moving away from strict “hobby” farming) or it could be related to the enhanced skill development that accompanies serious leisure. Examples of possible questions in this area include: What role, if any, do hobby farmers play in a local food network? Should local food networks contribute to the economic viability of hobby farmers who grow for fun?

A social-psychological lens will also sharpen future agrileisure inquiry. This approach could question the leisure identity and motivation of both producers and consumers: Why do people really visit farmers markets? What would increase visitation? Can markets serve as both community resources and tourist destinations? Do tourism and recreation threaten or contribute to traditional ideas of farm-based sustainability and identity? Inherent in these questions is the idea that some people are motivated to participate in agrileisure out of a sense of tradition, while others are simply exploring the newest fad in healthy eating. Likewise, there may be a measure of fun informing whether local food participants are trying on identities as food activists or simply seeking the most affordable food source. Hinrichs and Kremer (2002) provide a relevant example when they describe a variety of reasons why people participate in community-supported agriculture.

Finally, agrileisure has overlapping implications for public health and place-based education. In addition to the obvious benefits of exercise and fresh air from participation in agricultural activities, there is potential for agrileisure-themed work to teach young people about local food. Knowledge of food origins and preparation is decreasing, to the detriment of our collective health. Embedded in this is the role of place. For example, educators can ask young people to consider their sense of place, their experiences, and their perspectives as they think in new ways about the conditions that lead to conflict, cooperation, and interdependence in the contexts of recreation policy, community development, and environmental sustainability.

## 5.0 CONCLUSION

The theoretical concept of agrileisure has applied implications for public policy, research, outreach, and collaboration. In terms of policy, an agrileisure perspective reveals new ways of thinking about farm-based rural economic diversification and food distribution, and can be used to promote local food as a strategy for rural development and community sustainability. It can also shed light on visitor/ community conflict, position farmer response to risk management, and inform local planning and zoning. In terms of collaboration and outreach, this approach can provide practitioners, researchers, and the public with richer understandings of farmers markets (through tools such as rapid market assessments, focus groups, and/or key informant interviews), quantification of the economic impacts of food tourism, or a means to effectively market the recreational aspects of local food. Examples could include tourism marketing partnerships between recreation/hospitality providers and farmers, or workshops fostering entrepreneurship and innovation in leisure contexts.

Agrileisure could also be used to explore the parallel relationship between place and community. Specifically, agrileisure, in both community and place-based contexts, could be a lens through which to view community development. Agrileisure could also be a factor in the development of “community,” defined as a heightened engagement in the collective actions that help people meet their day-to-day needs. Agrileisure could factor into a more personal, individual type of development in community, predicated on behaviors that not only affect how people participate in communities, but also potentially change their positions within them. Future research as described above may shed light on this possible interaction.

## 6.0 LITERATURE CITED

- Agrawal, A.; Gibson, C.C. 1999. **Enchantment and disenchantment: the role of community in natural resource conservation.** *World Development.* 27(4): 629-649.
- Aldous, J. 2001. **Survey shows that agritourism added \$10.5 million to Vermont farm incomes in 2000.** In: Vermont Department of Agriculture. 65(18): 1,6. Available at <http://www.vermontagriculture.com/Agriview/2001/agriv091501.pdf>. (Accessed November 11, 2009).
- Allen, P. 2008. **Mining for justice in the food system: perceptions, practices, and possibilities.** *Agriculture and Human Values.* 25(2): 157-161.
- Allen, P.; Hinrichs, C. 2007. **Buying into 'buy local': engagements of United States local food initiatives.** In: Holloway, L.; Maye, D.; Kneafsy, M., eds. *Constructing alternative food geographies: representation and practice.* Oxford, UK: Elsevier Press: 255-272.
- Altman, I.; Low, S., eds. 1992. **Place attachment.** New York: Plenum Press.
- Born, B.; Purcell, M. 2006. **Avoiding the local trap: scale and food systems in planning research.** *Journal of Planning Education and Research.* 26: 195-207.
- Brandenburg, A.M.; Carroll, M.S. 1995. **Your place or mine?: The effect of place creation on environmental values and landscape meanings.** *Society and Natural Resources.* 8: 381-398.
- Coley, D.; Howard, M.; Winter, M. 2009. **Local food, food miles and carbon emissions: a comparison of farm shop and mass distribution approaches.** *Food Policy.* 34(2): 150-155.
- Cowell, S.J.; Parkinson, S. 2003. **Localisation of UK food production: an analysis using land area and energy as indicators.** *Agriculture, Ecosystems and Environment.* 94(2): 221-236.
- Dupuis, E.M.; Goodman, D. 2005. **Should we go "home" to eat?: Toward a reflexive politics of localism.** *Journal of Rural Studies.* 21: 359-371.
- Goss, L. 2003. **The impact of agriculture of New Hampshire's economy in fiscal year 2002.** Available at [http://www.nh.gov/agric/divisions/agricultural\\_development/documents/econimpact.pdf](http://www.nh.gov/agric/divisions/agricultural_development/documents/econimpact.pdf). (Accessed November 11, 2009).
- Gustafson, A.; Cavallo, D.; Paxton, A. 2007. **Linking homegrown and locally produced fruits and vegetables to improving access and intake in communities through policy and environmental change.** *Journal of the American Dietetic Association.* 107(4): 584-585.
- Hinrichs, C.C. 2003. **The practice and politics of food system localization.** *Journal of Rural Studies.* 19: 33-45.
- Hinrichs, C.C.; Kremer, K.S. 2002. **Social inclusion in a Midwest local food system project.** *Journal of Poverty.* 6(1): 65-90.
- Jarosz, L. 2008. **The city in the country: growing alternative food networks in metropolitan areas.** *Journal of Rural Studies.* 24: 231-244.
- Lenihan, M.; Braiser, K.; Stedman, R. 2009. **Perceptions of agriculture's multifunctional role among rural Pennsylvanians.** In: Andersson, M.; Eklund, E.; Lehtola, M.; Salmi, P., eds. *Beyond the rural-urban divide: cross-continental perspectives on the differentiated countryside and its regulation.* Research in Rural Sociology and Development, Volume 14. Bingley, UK: Emerald Group Publishing Limited: 127-149.
- Magnusson, M.; Gittel, R. 2010. **Home grown: the economic impacts of local food in New Hampshire.** Durham, NH: Food Solutions New England. Report; 21 p.
- Mariola, M.J. 2008. **The local industrial complex? Questioning the link between local foods and energy use.** *Agriculture and Human Values.* 25: 193-196.

- Nanney, M.S.; Johnson, S.; Elliott, M.; Haire-Joshu, D. 2007. **Frequency of eating homegrown produce is associated with higher intake among parents and their preschool-aged children in rural Missouri.** *Journal of the American Dietetic Association.* 107(4): 577-584.
- Peters, C.J.; Bills, N.L.; Lembo, A.J.; Wilkins, J.L.; Fick, G.W. 2008. **Mapping potential foodsheds in New York State: a spatial model for evaluating the capacity to localize food production.** *Renewable Agriculture and Food Systems.* 24(1): 72-84.
- Relph, E. 1976. **Place and placelessness.** London: Pion, Ltd.
- Stebbins, R.A. 1992. **Amateurs, professionals, and serious leisure.** London: McGill-Queen's University Press.
- Stedman, R.; Beckley, T.; Wallace, S.; Ambard, M. 2004. **A picture and 1000 words: using resident-employed photography to understand attachment to high amenity places.** *Journal of Leisure Research.* 36(4): 580-606.
- Theodori, G. 2005. **Community and community development in resource-based areas: operational definitions rooted in an interactional perspective.** *Society and Natural Resources.* 18(7): 661-669.
- Timmons, D.; Wang, Q.; Lass, D. 2008. **Local foods: estimating capacity.** *Journal of Extension.* 46(5): 5FEA7.
- Tuan, Y.-F. 1977. **Space and place: The perspective of experience.** Minneapolis, MN: University of Minnesota Press.
- Wilkinson, K.P. 1991. **The community in rural America.** Middleton, WI: Social Ecology Press.
- Wilson, G.A. 2007. **Multifunctional agriculture: a transition theory perspective.** Cambridge, MA: CABI Press.

The content of this paper reflects the views of the author(s), who are responsible for the facts and accuracy of the information presented herein.

# A NATURALISTIC INQUIRY INTO THE SOCIAL WORLD OF WHITEWATER KAYAKERS

---

Jason W. Whiting  
Warnell School of Forestry and Natural Resources  
University of Georgia  
whitingj@uga.edu

Katharine A. Pawelko  
Western Illinois University

---

**Abstract.**—This exploratory research focused on kayakers at whitewater kayaking parks; the social and recreational characteristics of this specific user group had not previously been studied from a managerial and theoretical standpoint. Twelve kayakers were interviewed at whitewater kayaking parks in Colorado and Utah. The interviewers utilized naturalistic methodology with a concentration on grounded theory techniques. Constant Comparative Methodology (CCM) was used during the data collection and analysis process. Triangulation permitted the identification of thematic findings across participants and sites to determine the relevant meanings and practical applications associated with this leisure endeavor. Findings showed that whitewater kayakers at community whitewater parks were motivated by and benefited from the physical experience more than from their social interactions with other kayakers. Recommendations include assessing the carrying capacity of whitewater parks and providing specific programs to target user groups.

---

## 1.0 INTRODUCTION

Participation in outdoor recreation has been shown to be both physically and psychologically beneficial for participants (Driver et al. 1991). In light of increasing technological influences on younger populations in the United States along with decreasing health and physical activity, recreational programmers and public land managers are especially interested in the benefits of engaging in physical activity and outdoor recreation

(Pergams and Zaradic 2006). Studies have shown that the benefits of participation can be realized and experienced on different levels including the physical, physiological, spiritual, and social domains (Driver et al. 1991).

Despite research highlighting the benefits of engaging in outdoor recreation, participation has declined slightly over the past decade (Pigram and Jenkins 2006). Several studies have described demographic changes in the population of the United States such as increasing diversity, an increasing percentage of older adults, and fewer children participating in outdoor recreation (Floyd 1998, Louv 2008). However, countering this decline, participation in whitewater kayaking continues to increase (Jennings 2007). Some research has suggested that this type of aquatic-based recreation will continue to increase in the future, accounting for a larger percentage of general outdoor recreation in the United States (Leatherberry et al. 1980).

While the benefits of general outdoor recreation participation have been studied, the benefits of whitewater kayaking (WWK) remain somewhat unknown. Furthermore, the unique social world, or the social environment or culture in which WWK participation takes place has not previously been studied, and it is not known how the social world of WWK may influence people's growing participation in WWK. Understanding the social world of whitewater kayaking including how whitewater kayakers recreate and interact with each other and those around them, may help public land managers determine the needs and recreational preferences of this specialized, natural resource-dependent user group. Furthermore, a better understanding of WWK participants may help public land managers plan more effectively and limit conflicts between whitewater kayakers and other user groups that depend on similar or nearby natural resources.

## 2.0 STATEMENT OF PURPOSE AND RESEARCH OBJECTIVES

The purpose of this study was to investigate whitewater kayaking as a subculture and to identify the salient factors associated with participation in this outdoor recreational pursuit. Given the lack of previous research in this area, this study was exploratory in nature, used a grounded theory approach, and attempted to present a descriptive and interpretive point of view to address these questions:

1. What factors are associated with the social world of whitewater kayaking?
2. What motivations compel whitewater kayakers to seek and participate in this leisure pursuit?
3. What benefits do whitewater kayakers receive from their participation?
4. What social norms have whitewater kayakers established, either directly or indirectly?

## 3.0 THEORETICAL BACKGROUND

By examining the interactions between members of a group through the social-based lens, researchers can learn about participation in recreational endeavors (Scott 1990). In addition, public land managers can better understand and meet the needs of particular user groups by examining certain phenomena in the context of a social world. A social world provides the structure of an alternative value system with its own rules and systems (Longhurst 1995). Social worlds have no central authority; therefore, they have no defined boundaries. Within the realm of adventure recreation, new topics of research continually arise as adventure enthusiasts continue to stretch traditional boundaries. New social environments also continue to evolve with the growing interest in a myriad of adventure recreation pursuits.

There have been different views on how to study social worlds (Ditton and Loomis 1992). Some past research suggests that studies should focus on communication and symbolization associated with social worlds (Shibutani 1955). Others suggest that studies should focus on more concrete matters such as sites, technologies, activities, and organizations

that deal with social groups (Strauss 1978). Strauss (1978) suggested that groups may be studied by examining the jargon and body language of their members. Expressive language has long been regarded as a constructive element in social worlds. Terms and language used in outdoor adventure pursuits are often esoteric to the uninvolved layperson (Ewert 1989). Understanding the phrases, jargon, and expressions used by participants can allow researchers to gain valuable insight into the social interactions between group members (Scott 1990).

Research suggests that kayaking is increasingly popular because it is social in nature (Hudson and Beedie 2007) and has the potential to unite people with similar interests. Another possible reason for the increased interest in WWK may be that individual kayakers receive physical, psychological, emotional, spiritual, and social benefits from participating (Driver et al. 1991).

Recreational pursuits such as WWK are largely oriented toward the concepts of personal challenge and personal competition and are less oriented to formal competition. WWK tends to focus on individual performance and is less of a group-oriented sport. Participants derive self-satisfaction by overcoming personal challenges during paddling outings. Selin and Howard (1988) developed the concept of ego-involvement to explain why recreational enthusiasts participate in certain activities. They theorized that level of involvement is tied to self-expression and enjoyment derived from the recreational pursuit. Thus, the level of psychological attachment between the individual and the leisure pursuit is significant and noteworthy.

The environmental setting in which most adventure recreation takes place is conducive to self-improvement. Gibson (1998), for example, described the personal benefits that individuals may encounter in a riparian wilderness landscape:

*The river environment provides a setting where the social construction and interpretation of multiple-realities unfold revealing profound discoveries to seemingly ineffable occurrences.*

*The experience of moving water provides an environment where self-discovery, personal and environmental challenge, interpersonal relationships, group cohesion, peak experiences, and extraordinary experiences, psychological flow states, and a plethora of other benefits are realized (p. 36).*

By identifying social groups who use certain resources and receive certain perceived benefits, public land managers may be better able to meet the needs of a growing subset of the population interested in outdoor recreation. This may be particularly true of whitewater kayaking because of the finite connection to a limited resource.

#### **4.0 METHODS**

Naturalistic research methods allow meaningful information to be collected about the lives, stories, behaviors, and relationships of whitewater kayakers (Strauss and Corbin 1990). Instead of focusing on one methodological approach, this research used several methods. Denzin and Lincoln (1994) suggest that qualitative research could be multi-method in focus, involving an interpretive, naturalistic approach to its subject matter. "This means that qualitative researchers study things in their natural settings, attempting to make sense of, or interpret phenomena in terms of the meanings people bring to them...accordingly, qualitative researchers deploy a wide range of interconnected methods, hoping always to get a better fix on the subject matter at hand" (p. 2). Hence, this study employed a naturalistic methodology with a concentration on grounded theory techniques as developed by Glaser and Strauss (1967). The fieldwork attempted to discover and describe social networks that exist between and among whitewater kayakers.

The study was conducted on two separate rivers, the Clear Creek River in Golden, Colorado, and the Weber River in Ogden, Utah, during May and June of 2007. This time of year was chosen because of the spring run-off, which attracts large numbers of national and international whitewater kayakers. The study rivers were chosen because they had

whitewater kayaking parks. Community whitewater parks are excellent locations for field observations of recreationists because they are conducive to social interactions between user groups, mainly kayakers. The social atmosphere among whitewater kayakers who understand the codes and etiquette of the activity makes whitewater parks particularly popular (Hudson and Beedie 2007). WWK runs in the parks ranged in difficulty from Class I to Class III. In observations of two similar cohort groups in different geographic locations, certain patterns and themes emerged.

To ensure the credibility and dependability of this study, triangulation was used during data collection, which included semi-structured interviews with the initial key informants, naturalistic field observations, and reflexive journaling. Purposeful and snowball sampling techniques were used by focusing on settings and groups frequented by whitewater kayakers. The researcher selected key informants after evaluating the skill set of individual kayakers.

While conducting field observations and interviews, the researcher served in the role of a participant-observer. Specific observations were made at the beginning of each session. Field observations included the weather at the beginning of observations, river flow volume (in cubic feet per second), time, date, and location. Observations were made in areas throughout the parks where participants engaged in social interactions before, during, and after spending time on the river. All observations were noted near the time of their occurrence. To insure efficiency while collecting data, rough field notes were used to create detailed summaries, which were word processed within 24 hours (Huberman and Miles 1994). By reflecting on the observations made throughout the day, the researcher was able to gain interpretive insights into the recorded observations and notes. The researcher kept a reflexive journal to record events and details each day.

Semi-structured interviews and questions were developed to uncover the whitewater kayakers' behavioral patterns and traits. Using an inductive

theory-building approach, questions were created for semi-structured, in-depth interviews. The questions were designed to help the researcher identify the conditions that gave rise to specific social actions and interactions between kayakers (Strauss and Corbin 1990). Key informants were interviewed in the field. With the permission of the informants, interviews were digitally recorded. Handwritten field notes were taken simultaneously to capture the researcher's personal thoughts or insights during the interview, or to note interviewees' gestures. Interview notes were used to refine the sampling plan and continued direction of the study. Social and behavioral trends were assessed throughout the study in order to generate grounded propositions leading to grounded theory about observations and interviews.

Data gathered by field observations and participant-observer interviews included rich, meaningful descriptions from the whitewater kayakers' perspectives. The researcher used Constant Comparative Methodology (CCM) during the data analysis process and throughout theory construction (Glaser and Strauss 1967). Grounded Theory was used primarily for theory induction. The CCM allowed the researcher to continually compare study results during the data analysis process. Hence, the results were analyzed throughout the full course of the study to ensure proper rigor. All data were transcribed or word processed during the data analysis process. Following transcription, open and axial coding was performed by developing links or keywords that identified themes and topics. Themes were used to develop conceptual maps, which assisted in theory induction (Strauss and Corbin 1990).

## 5.0 THEMATIC FINDINGS

Four themes emerged that referred back to the original research questions: social aspects, motivations and benefits, social mores, and commitment. Related sub-categories for each theme were identified in the data as well (Table 1). Sub-categories included camaraderie, social networking, environment and perceived challenge, river etiquette and norms, skill level, and recreation specialization.

**Table 1.—Themes and sub-categories identified in the data**

Themes	Sub-categories
1. Social Aspects	Camaraderie, Social Networking
2. Motivations and Benefits	Environment and Perceived Challenge
3. Social Mores	River Etiquette and Norms
4. Commitment	Skill Level and Recreation Specialization

## 6.0 DISCUSSION

This research found that whitewater kayakers are typically motivated by and benefit from the recreational experience itself rather than the social interactions between participants. Social norms served to reinforce this idea. For example, participants reported buying equipment solely for its functionality, not to impress others. This is not to say that the social aspect of kayaking was not important or meaningful; on the contrary, it was very significant. However, it was not the main motivation for or benefit from kayaking participation.

The idea that the recreation experience was more important to whitewater kayakers than the social experience was reinforced in comments they made about their experiences on the river. Participants emphasized the importance of spacing while on the water and of staying out of the way when someone was performing. Some also described a sense of spirituality that they experienced while on the water.

Another major finding was about the relationships formed through the mentoring process. One firm, dependable guiding principle among whitewater kayakers was the need to assist novice kayakers as they learned. Because of the complexity of the sport and the variety of specific attributes and river features at different locations, it would be nearly impossible for novice kayakers to learn the fundamental kayaking skills without receiving some basic instruction. Kayakers described experiencing a sense of bonding with the individual(s) who passed on knowledge to

them and expressed sincere appreciation for the people who introduced them to kayaking. This bonding also encourages kayakers to help other beginners in turn; the cycle of being mentored and mentoring was evident throughout the study. Several kayakers were able to trace their mentoring lineage from one mentor to another. The rich, meaningful relationships that are formed through the mentoring process are one prominent reason why whitewater kayakers share such a close community.

Due to the strong tie between kayaking participation and the physical environment in which kayaking takes place, kayakers reported developing a sense of responsibility for the rivers and creeks they paddled. They expressed an inclination to take action against misuse and abuse of the aquatic environment and the riparian zones by other kayakers, other recreationists, and even nonrecreationists. For example, paddlers often will protest the construction of new dams and other agricultural improvements in an effort to ensure that waterways remain in their free-flowing natural states. In addition, many kayakers expressed a preference for natural, rural rivers over rivers located within industrial waterways where the water quality may not be as pristine. Overall, most kayakers expressed a vested interest in the condition of the environment where they kayak.

Finally, for this study, kayakers' commitment to the sport was assessed along a numerical scale. At one end of the scale, participants who were passively engaged lacked a serious commitment of time, equipment, and overall involvement in kayaking. Passive participants did not give much merit to the underlying norms of the activity, either through ignorance or through lack of perception. For example, the kayakers on the lower end of the spectrum were less concerned with safety or river ethics.

### 6.1 Recommendations

Public land managers continually strive to understand the needs of their constituents. Manning (1986) suggests that resource management must differentiate users into segments or sub-groups seeking different

recreational experiences. This study identified and distinguished whitewater kayakers as a quickly growing sub-population of recreationists and a unique, prominent user group that must be understood in order to meet the needs of the participants. By obtaining more data and seeking to further understand this user group, management agencies can avoid user group conflicts, depletion of waterways and riparian zones, and mishaps and injuries that occur as a result of crowding and mismanagement.

Additional research is needed to investigate the hypothesis that whitewater kayakers' participation is strongly linked to the recreational experience and linked less strongly to the social interactions between participants. Whitewater kayakers could be compared to other user groups such as windsurfers, water skiers, or other aquatic-based recreational users to see if there are differences among participants' motivations and benefits among different user groups.

## 7.0 LITERATURE CITED

- Denzin, N.K.; Lincoln, Y.S. 1994. **Handbook of qualitative research**. Thousand Oaks, CA: Sage Publications.
- Ditton, R.B.; Loomis, D.K. 1992. **Recreation specialization: re-conceptualization from a social worlds perspective**. *Journal of Leisure Research*. 24: 33-51.
- Driver, B.L.; Brown, P.J.; Peterson, G.L. 1991. **Benefits of leisure**. State College, PA: Venture Publishing.
- Ewert, A.W. 1989. **Outdoor adventure pursuits: foundations, models, and theories**. Columbus, OH: Publishing Horizons, Inc.
- Floyd, M.F. 1998. **Getting beyond marginality and ethnicity: the challenge for race and ethnic studies in leisure research**. *Journal of Leisure Research*. 30: 3-22.

- Gibson, M.A. 1998. **A qualitative investigation of river rafting expeditions: the guide's perspective.** Greeley, CO: University of Northern Colorado. Dissertation Abstracts International. 60/04: 1326. Ph.D. dissertation.
- Glaser, B.G.; Strauss, A.L. 1967. **The discovery grounded theory: strategies for qualitative research.** Chicago, IL: Aldine De Gruyter.
- Huberman, A.M.; Miles, M.B. 1994. **Data management and analysis methods.** In: Denzin, N.K.; Lincoln, Y.S., eds. Handbook of qualitative research. Thousand Oaks, CA: Sage Publications Inc.: 428-444.
- Hudson, S.; Beedie, P. 2007. **Kayaking.** In: Jennings, G., ed. Water-based tourism, sport, leisure, and recreation experiences. Burlington, MA: Elsevier: 171-186.
- Jennings, G. 2007. **Water-based tourism, sport, leisure, and recreation experiences.** Burlington, MA: Elsevier.
- Leatherberry, E.C.; Lime, D.W.; Thompson, J.L. 1980. **Trends in river recreation.** In: LaPage, W.F., ed. Proceedings: 1980 National Outdoor Recreation Trends Symposium. Gen. Tech. Rep. NE-57. Vols. I and II. Broomall, PA: U.S. Department of Agriculture, Forest Service, Northeastern Forest Experimental Station: 147-164.
- Longhurst, B. 1995. **Popular music and society.** Cambridge, UK: Polity Press.
- Louv, R. 2008. **Last child in the woods: saving our children from nature-deficit disorder.** Chapel Hill, NC: Algonquin Books. 380 p.
- Manning, R.E. 1986. **Studies in outdoor recreation.** Corvallis, OR: Oregon State University Press.
- Pergams, O.R.W.; Zaradic, P.A. 2006. **Is love of nature in the U.S. becoming love of electronic media? 16-year downtrend in national park visits explained by watching movies, playing video games, Internet use, and oil prices.** Journal of Environmental Management. 80(4): 387-393.
- Pigram, J.J.; Jenkins, J.M. 2006. **Outdoor recreation management.** New York: Routledge.
- Scott, D. 1990. **An analysis of adult play groups: theoretical and empirical considerations.** University Park, PA: The Pennsylvania State University. Dissertation Abstracts International. 52/01: 296. Ph.D. dissertation.
- Selin, S.W.; Howard, D.R. 1988. **Ego involvement and leisure behavior: a conceptual specification.** Journal of Leisure Research. 20: 237-244.
- Shibutani, T. 1955. **Reference groups as perspectives.** American Journal of Sociology. 60: 562-569.
- Strauss, A. 1978. **A social world perspective.** In: Denzin, N.K., ed. Studies in symbolic interaction. Greenwich, CT: JAI Press: 119-128.
- Strauss, A.; Corbin, J. 1990. **Basics of qualitative research.** Newbury Park, CA: Sage Publications.

The content of this paper reflects the views of the author(s), who are responsible for the facts and accuracy of the information presented herein.

***TOURISM***

# AN EXPLORATORY STUDY OF THE APPLICATION OF SENSE OF COMMUNITY IN A LOCAL FESTIVAL

---

Alvin H. Yu  
St. Cloud State University  
hyu@stcloudstate.edu

Fengfeng Ke  
The University of New Mexico

---

**Abstract.**—The purpose of this study was to identify and measure the empirical relationships between a festival and one of its possible social effects: residents' perceptions of a sense of community (SOC). A mixed research method was utilized to explore how a multicultural festival in Harrisburg, Pennsylvania affected residents' perceived SOC. Survey questionnaires were collected from 154 local residents and analyzed using Factor Analysis, Multivariate Analysis of Variance, post-hoc analyses, and content analysis. Education and ethnicity were significant predictors of a SOC, while gender and length of residency were not. These and other findings suggest that festival sponsors may wish to consider utilizing festivals not only to revitalize local economies but also to boost SOC among residents.

---

## 1.0 INTRODUCTION

Festivals have become one of the fastest growing tourism attractions in the United States (Compton and McKay 1997, Getz 1997, Mayfield and Crompton 1995, Thrane 2002). From a community perspective, festivals provide visitors and locals with an outlet for spending money, and they often serve as an opportunity for building the image of the local community (Getz 1997). The effects of festivals on communities are often considered in terms of economic benefits since festivals can create revenue and attract business (Crompton and McKay 1997, Frey 1994, Thrane 2002, Tyrrell and Johnston 2001, Uysal and Gitelson 1994).

However, studies that focus only on economic benefits of festivals fail to account for the possible social and cultural effects on local communities (Delamere et al. 2001, Derrett 2003, Dwyer et al. 2000, Wood 2005). Delamere et al. (2001) suggest that a community-based festival can provide a platform for a sense of togetherness, social interactions, a sense of community pride, and intergroup cooperation. Bres and Davis (2001) studied a local community festival in the Midwest and suggested that festivals can enhance local/group identity and sense of togetherness.

This study aimed to identify and measure the empirical relationships between a festival and one of its social effects: residents' perceptions of sense of community (SOC). McMillan and Chavis (1986) described SOC as a kind of emotional attachment or social bonding between members. The SOC concept has been widely applied in both geographic and relational community research to understand the dynamics of community development and the means through which members influence each other via daily activities (Chipuer and Pretty 1999). This concept has previously been utilized in the field of education to understand the sense of community in a classroom (Rovai 2002).

The wide body of SOC research indicates that sense of community can emerge in many different social contexts including festivals. Derrett (2003) in particular analyzed four different community festivals in Australia and found a significant relationship between SOC and festivals. Rao (2001) found that festivals could serve as a venue for building trust and establishing strong reciprocal relationships among community members. Chwe (1998) noted that residents who participated in festivals also reported greater involvement in community-related activities following the event. Gursoy et al. (2004) found that festivals promote a sense of togetherness and cohesiveness.

## 2.0 METHODS

### 2.1 Setting and Sampling

Study participants were surveyed in 2005 during a local multicultural festival in the Southern Allison Hill community of Harrisburg, Pennsylvania. The festival was part of the community's revitalization effort and was connected to an anti-crime strategy funded by the Pennsylvania Commission on Crime and Delinquency. According to festival staff, the purpose of the festival was to increase general civic involvement by encouraging people to participate in community events. Approximately 1500 adults and children attended the one-day festival. One hundred and sixty-one participants were recruited through on-site intercept. The sample size was large enough to satisfy the goal of having a ratio of participants to variables greater than 5:1 (Hair et al. 2006).

### 2.2 Instrument

The questionnaire used in this study included 12 items modified from the Sense of Community Index (SCI) (McMillan and Chavis 1986). The three parts to the questionnaire focused on socio-demographic information, a modified festival SCI, and an open-ended question about participants' favorite aspect of the festival. There were four variables in socio-demographic information: gender (Gursoy et al. 2004), education status (Brodsky et al. 1999), ethnicity (Floyd 1998), and residency length (Perkins et al. 1990). The education status variable was categorized into two levels: 1) high school education or less, and 2) college education or above. The ethnicity question offered four response categories: Caucasian, African American, Asian, and Latino/a. The length of residency question had three response categories: 1) 10 years or less, 2) 11 to 20 years, and 3) 21 years or more. Subject matter experts examined all questions and items for validity.

### 2.3 Data Analysis

This study employed both quantitative and qualitative approaches to understanding SOC effects. For the quantitative section, 19 items were generated from the SCI and entered into an exploratory factor analysis (EFA). The factors extracted from the analysis served

as dependent variables in MANOVA and subsequent post-hoc tests, including Descriptive Discriminate Analysis (DDA) (Field 2005) and the Scheffé test (Tabachnick and Fidell 2007). The Scheffé test was used to investigate how the groups differed from one another. DDA was utilized as another follow-up approach to identify the group difference across the levels of predictor categories. Unless otherwise noted, the threshold for statistical significance was set at .05 for these analyses. Finally, for the qualitative section, content analysis was used on responses to the open-ended question about participants' favorite part of the festival.

## 3.0 RESULTS

A total of 161 residents volunteered for the on-site interviews, but seven surveys were incomplete so the valid sample size was 154. Table 1 lists the study participants' socio-demographic characteristics.

A value of over .60 levels in the KMO (Kaiser-Meyer-Olkin) measurement and a significant Bartlett's test of sphericity suggested that this dataset was suitable for exploratory factor analysis (Tabachnick and Fidell 2007). Factors were evaluated based on three criteria: eigenvalues, loading values, and scree plot (Mertler and Vannatta 2002). About 52 percent of the total

**Table 1.—Study participants' characteristics**

Demographic Characteristics	Frequency	Percentage
Gender, N=154		
Male	55	36
Female	97	64
Education Status, N=152		
High School Graduate and less	59	39
College and Above	93	61
Ethnicity, N=152		
African American	45	30
Asia Islander and Native American	14	9
Caucasian	39	26
Hispanic	54	35
Residency Length, N=153		
Less than 10 years	70	46
11-20 years	46	30
21 years and more	37	24

variance was explained in the analysis. Reliability analyses found that three factors (harmony, sense of attachment, and caring) were below the standard  $\alpha$  cutoff of .70 (Nunnally 1994). Due to the exploratory nature of this study, these three factors were retained even though their reliability coefficients were below the standard cutoff. This study used a four-factor solution, and factors were named acquaintance, harmony, sense of attachment, and caring (see Table 2). These factors also served as dependent variables for future statistical tests.

Based on MANOVA testing, there was no evidence to suggest a significant association between participants' gender or length of residency and the combined four SOC factors. However, education status and ethnicity were significant predictors for the combined SOC factors. For education status, MANOVA results revealed significant SOC effect differences in the two education categories, Pillai's Trace=.68,  $F(4, 164)=2.64, p<.05, \eta_p^2=.062$ . DDA showed that one out of two generated functions was significant, Wilkes'  $\Lambda=0.93, \chi^2(4, N=154)=10.27, p<.05$ . The Scheffé test results (see Table 3) also indicated that education level affected the acquaintance factor ( $F(1, 148)=9.98, p<.05, \eta_p^2=.071$ ). This suggests that participants with high school education or less

were more likely to agree that the festival had some influence on the items in the acquaintance factor than those participants who had some college education or above (3.80 vs. 3.48, respectively).

MANOVA results suggested a significant difference in the festival's effects on SOC across the four ethnic categories (Table 4), Wilkes'  $\Lambda = .87, F(12, 379)=1.80, p<.05, \eta_p^2=.049$ . DDA found that the items in the harmony factor were most likely to separate the four combined SOC effects ( $\Lambda=.87, \chi^2(12, N=154)=19.82, p<.05$ ). The Scheffé test indicated that ethnicity differences were significant for harmony,  $F(3, 146)=3.04, p<.05, \eta_p^2=.050$ . Latinos were more likely than African Americans to agree that festivals increase harmony among neighbors (4.00 vs. 3.62, respectively).

In the final part of the survey, assessing the favorite part of festival, over 50 percent of participants highlighted the importance of the social aspects of the festival with comments such as "I came here to meet people." Some participants indicated that the festival helped them to socialize with people from the neighborhood. Overall, meeting people was the most important motivation for attending this festival.

**Table 2.—Factor Loadings, and Cronbach's Alpha Values of Factors in Festival SOC Index**

Factor Names and Items	Loading	$\alpha$
<b>Factor 1: Acquaintance</b>		
Many of my neighbors know me because of the festival.	.82	.71
I can recognize most of the people who live on my block because of this festival.	.79	
This festival makes my neighbors and I want the same things from this community.	.52	
This festival helps people living in this community share the same values.	.40	
<b>Factor 2: Harmony</b>		
This festival makes people get along with each other better than before.	.75	.60
This festival can make problems in this community easier to solve than before.	.73	
The festival helps me have influence over what this community is like.	.60	
<b>Factor 3: Sense of Attachment</b>		
This festival makes me feel the South Allison Hill community is a good place to live.	.81	.58
This festival makes me want to live in this community for a long time.	.68	
This festival makes me feel proud to live in this community.	.57	
<b>Factor 4: Caring</b>		
This festival gives me more chances to talk with my neighbors in this community than before.	.82	.54
This festival makes me feel at home on this block.	.59	
This festival makes me care about what my neighbors think of my actions.	.45	

**Table 3.—Multivariate Analysis of Variance of SOC Factors by Education Status**

SOC	Overall Mean	Education Status		F-value
		High School and Less	College and Above	
		————— Mean Agreement Score —————		
Acquaintance	3.61	3.80 <sub>a</sub>	3.48 <sub>a</sub>	9.98*
Harmony	3.81	3.93	3.73	3.18
Sense of attaching	3.88	3.89	3.86	0.50
Caring	3.86	3.92	3.82	0.83

Note: Overall agreement score was measured on a 5-point scale of 1 = strongly disagree to 5 = strongly agree. Means sharing the same subscript differ at  $p < 0.05$  in the Scheffé comparison, two-tailed.

\*  $p < .05$

**Table 4.—Multivariate Analysis of Variance of SOC Factors by Ethnicity**

SOC	Overall Mean	Ethnicity				F-value
		African American	Asia and Native	Caucasian	Hispanic	
		————— Mean Agreement Score —————				
Acquaintance	3.62	3.63	3.75	3.37	3.71	2.65
Harmony	3.80	3.62 <sub>a</sub>	3.88	3.73	4.00 <sub>a</sub>	3.04*
Sense of attaching	3.87	3.89	4.06	3.80	3.87	0.58
Caring	3.85	3.77	3.71	3.81	3.99	1.37

Note: Overall agreement score was measured on a 5-point scale of 1 = strongly disagree to 5 = strongly agree. Means sharing the same subscript differ at  $p < 0.05$  in the Scheffé comparison, two-tailed.

\*  $p < .05$

#### 4.0 DISCUSSION AND CONCLUSIONS

Like the Sense of Community Index (SCI), this study found a four-factor solution to the relationship between attendance at a festival and sense of community (SOC). However, the four factors in this study have different factor loadings and names than the SCI factors due to the different settings (Chipuer and Pretty 1999). SOC effects varied according to residents' socio-demographic backgrounds. Specifically, people with less education tended to put more emphasis on the importance of meeting people at the festival than participants with more education. One of the possible reasons for this finding is that different education status might affect attitudes toward SOC at a festival. The findings also revealed that different ethnicities held different opinions regarding SOC effects during festivals.

From a community development perspective, some findings have suggested that SOC is positively associated with the degree of social involvement in activities like voting (Brodsky et al. 1999). Pro-social behaviors are more likely if there is a strong SOC, and different activities may increase the sense of community, especially in those communities with low income and diverse ethnicity characteristics. From this perspective, community-based festivals or events could increase residents' sense of togetherness and help them get to know their neighbors in ethnically diverse communities (Shinew et al. 2006). The management implications of this study are that festivals can serve not only as an outlet for spending and a tool for increasing a community's economic revenue, but also as a venue to unite residents in local communities. Based on this study, the social/cultural effects of festivals should be carefully considered by city officials and festival sponsors.

## 5.0 LITERATURE CITED

- Bres, D.K.; Davis, J. 2001. **Celebrating group and place identity: a case study of a new regional festival.** *Tourism Geographies.* 3: 326-337.
- Brodsky, A.E.; O'Campo, P.; Aronson, R.A. 1999. **PSOC in community context: multi-level correlates of a measure of psychological sense of community in low-income, urban neighborhoods.** *Journal of Community Psychology.* 27: 659-680.
- Chipuer, H.; Pretty, G. 1999. **A review of the sense of community index: current uses, factor structure, reliability and further development.** *Journal of Community Psychology.* 27: 643-659.
- Chwe, M.S.Y. 1998. **Culture, circles and commercials: publicity, common knowledge and social coordination.** *Rationality and Society.* 10: 47-75.
- Crompton, J.L.; McKay, S.L. 1997. **Motives of visitors attending festival events.** *Annals of Tourism Research.* 24: 425-493.
- Delamere, T.A.; Wankel, L.M.; Hinch, T.D. 2001. **Development of a scale to measure resident attitudes toward the social impacts of community festivals, part I: item generation and purification of the measure.** *Event Management.* 7: 11-24.
- Derrett, R. 2003. **Making sense of how festivals demonstrate a community's sense of place.** *Event Management.* 8: 49-58.
- Dwyer, L.; Mellor, R.; Mistilis, N.; Mules, T. 2000. **A framework for assessing "tangible" and "intangible" impacts of events and conventions.** *Event Management.* 6: 175-189.
- Field, A. 2005. **Discovering statistics using SPSS.** 2nd ed. London, England: Sage Publications.
- Floyd, M.F. 1998. **Getting beyond marginality and ethnicity: the challenge for race and ethnic studies in leisure research.** *Journal of Leisure Research.* 30: 1-22.
- Frey, B.S. 1994. **The economics of musical festivals.** *Journal of Cultural Economics.* 18: 29-39.
- Getz, D. 1997. **Event management and event tourism.** New York, NY: Cognizant Communication.
- Gursoy, D.; Kim, K.; Uysal, M. 2004. **Perceived impacts of festivals and social events by organizers: an extension and validation.** *Tourism Management.* 25: 171-181.
- Hair, J.F.; Black, W.C.; Babin, B.J.; Anderson, R.E.; Tatham, R.L. 2006. **Multivariate data analysis.** 6th ed. Upper Saddle River, NJ: Pearson.
- Mayfield, T.L.; Crompton, J.L. 1995. **The status of the marketing concept among festival organizers.** *Journal of Travel Research.* 33(4): 14-22.
- McMillan, D.W.; Chavis, D.M. 1986. **Sense of community: a definition and theory.** *American Journal of Community Psychology.* 14: 6-23.
- Mertler, C.A.; Vannatta, R.A. 2002. **Advanced and Multivariate statistical methods: practical application and interpretation.** 2nd ed. Los Angeles, CA: Pyrczak.
- Nunnally, J.C. 1994. **Psychometry theory.** New York, NY: McGraw-Hill.
- Perkins, D.; Florin, P.; Rich, R.; Wandersman, A.; Chavis, D. 1990. **Participation and the social and physical environment of residential blocks: crime and community context.** *American Journal of Community Psychology.* 18: 83-115.
- Rao, V. 2001. **Celebrations as social investments: festival expenditures, unit price variation and social status in rural India.** *The Journal of Development Studies.* 38: 71-97.
- Rovai, A.P. 2002. **Development of an instrument to measure classroom community.** *Internet and Higher Education.* 5: 192-211.

- Shinew, K.J.; Stodolska, M.; Floyd, M.; Hibbler, D.; Allison, M.; Johnson, C.; Santos, C. 2006. **Race and ethnicity in leisure behavior: Where have we been and where do we need to go?** Leisure Sciences. 28: 403-408.
- Tabachnick, B.G.; Fidell, L.S. 2007. **Using multivariate statistics.** 5th ed. Boston, MA: Allyn and Bacon.
- Thrane, C. 2002. **Jazz festival visitors and their expenditures: linking spending patterns to musical interest.** Journal of Travel Research. 40: 281-286.
- Tyrrell, T.J.; Johnson, R.J. 2001. **A framework for assessing direct economic impacts of tourist events: distinguishing origins, destinations, and causes of expenditures.** Journal of Travel Research. 40: 94-100.
- Uysal, M.; Gitelson, R. 1994. **Assessment of economic impacts: festivals and special events.** Festival Management and Event Tourism. 2: 3-10.
- Wood, E.H. 2005. **Measuring the economic and social impacts of local authority events.** The International Journal of Public Sector Management. 18: 37-53.

The content of this paper reflects the views of the author(s), who are responsible for the facts and accuracy of the information presented herein.

*FISH AND WILDLIFE  
MANAGEMENT II*

# CONSTRAINTS AND MOTIVATIONS RELATED TO FISHING ALONG THE LAKE ONTARIO COAST

---

Matthew P. Brincka, Jr.  
Department of Forest and Natural Resource  
Management  
SUNY College of Environmental Science and Forestry

Diane M. Kuehn  
SUNY College of Environmental Science and Forestry

Valerie Luzadis  
SUNY College of Environmental Science and Forestry

---

**Abstract.**—The number of nonresident anglers along the Lake Ontario coast has decreased over the past 15 years. Therefore, in order to sustain a strong sport fishing industry, local businesses and tourism promoters might want to tap into the large resident angler market group. This study examines resident anglers' social, environmental, and economic constraints/facilitators and motivations related to fishing on Lake Ontario and its tributaries. A survey was sent to 7,000 resident landowners in the seven New York counties bordering Lake Ontario (1,000 surveys per county). Two separate exploratory factor analyses (on motivations and constraints/facilitators) were conducted on the responses in order to better understand fishing by resident anglers. The analyses found eight motivational factors including family-orientation, escape, and nature appreciation. Four constraints/facilitators factors were also identified, including perception of the Lake Ontario environment and level of knowledge. Management implications of the findings are discussed.

---

## 1.0 INTRODUCTION

Many local businesses, boat and tour charter companies, and tourism agencies have been built around annual salmonid runs in Lake Ontario's tributaries that attract anglers from all over the world (Connelly et al. 1997). However, the number of

nonresident anglers fishing along Lake Ontario has decreased in the past 15 years, and this decline is expected to intensify as fuel prices continue to rise (Jackson 2008). In order to offset the declining market of visiting anglers, Lake Ontario businesses may want to focus more on the somewhat overlooked market of resident anglers.

In 1996, local resident anglers fishing on Lake Ontario outnumbered nonresident anglers 144,610 to 43,600, respectively (Connelly et al. 1997). This large group of resident anglers may be the best target market for local businesses that wish to recover revenues lost to the declining nonresident angler population.

The main objective of this study was to identify the internal motivations and constraints/facilitators of local residents who fish along Lake Ontario. The results from this study will be provided to local businesses that wish to promote environmentally sustainable and economically stable tourism markets in the Lake Ontario region.

### 1.1 Theoretical/Conceptual Background

Motivations are commonly defined as "cognitive forces that drive people to achieve particular goal states" (Decker et al. 2001, p. 47). People choose and participate in different recreational activities in order to accomplish goals or satisfy individual needs. Meta-analysis of research on leisure motivations has identified 19 motivational areas (Manfredo et al. 1996). A few of these concepts are applicable to fishing, such as enjoying nature and achievement. Other studies have examined some of the motivations specifically related to fishing such as escape and achievement (Siemer et al. 1989) and the expectations of others (Kuehn et al. 2006).

Constraints are commonly defined as aspects of leisure that influence preferences and can prevent participation (Crawford and Godbey 1987, Henderson

et al. 1988). Facilitators are factors that individuals perceive as encouraging participation and enabling or promoting the formation of leisure preferences (Raymore 2002). Factors like time, opportunity, and economics can be both constraints and facilitators; whether they are a hindrance or catalyst to leisure participation varies by individual.

Researchers have identified three types of constraints that an individual can experience: structural, intrapersonal, and interpersonal. Structural constraints like lack of equipment or limited access to a site tend to hinder physical participation; intrapersonal constraints are imposed by an individual on him/herself; interpersonal constraints are imposed on an individual by society or other individuals (Crawford and Godbey 1987).

## 2.0 METHODS

Multiple steps were used to create and distribute a mail survey for this study. Motivations and constraints/facilitators identified in previous studies were the foundation for the survey. The Lake Ontario Fisheries Coalition (LOFC) participated in a brainstorming exercise to identify possible motivations and constraints/facilitators specifically associated with fishing along Lake Ontario.

While previous studies had used fishing license sales to target anglers, this study used mailing addresses from geographical information system (GIS) property tax records in order to understand the resident fishing population as a whole. Addresses were obtained for the seven counties in New York State bordering Lake Ontario (Niagara, Orleans, Monroe, Wayne, Cayuga, Oswego and Jefferson). Because most of Cayuga County is adjacent to two of the Finger Lakes rather than Lake Ontario, only Cayuga addresses that were located within 30 miles of Lake Ontario were used. In order to create a feasible sample, 1,000 addresses were extracted in systematic design from each of the seven counties. These addresses were extracted by looking at the total number of property parcels, then dividing this number by the desired amount of addresses (1000). Duplicate owners and businesses were not included in the sample.

The survey was distributed using a modified Tailored Design Method (Dillman 2007). An online version of the survey, identical to the paper version, was also made available to residents. Following completion of the mail/Internet survey, a nonresponse survey containing a short, one-page version of the original survey was sent to all individuals who did not participate in the full survey.

The questionnaire requested information on household composition, fish species preference, fishing participation, motivations, constraints/facilitators, and demographics. A screening question was asked to determine whether at least one adult member of respondents' households had fished since 2005. Respondents who answered "yes" were asked to complete the remainder of the survey. Motivational statements began with a generalized statement, "I go fishing..." followed by a specific motivation (i.e., to relax). Respondents were then asked to answer on a five-point scale of importance (-2 = very unimportant, -1 = unimportant, 0 = neutral, 1 = important, 2 = very important; based on Manfredo et al. 1996). For constraints/facilitators, respondents were asked, "Does this factor limit or enable your participation in fishing?" From this, respondents were given a series of factors (e.g., My fishing skills and/or abilities) that they ranked on a five-point scale as follows: -2 = greatly limits participation, -1 = limits participation, 0 = neither limits nor enables participation, 1 = enables participation, 2 = greatly enables participation.

Basic demographics included age, gender, income, education level, participation, fish species preference, location of residence, and amount of free time. Location of residence was defined as (1) rural: under 5,000 resident; (2) suburban: 5,000 to 24,999 residents; (3) medium city: 25,000 to 99,999 residents; and (4) large city: over 100,000 residents (Connelly et al. 1997). Free time was defined as leisure time that does not include activities necessary for your health (i.e., eating), taking care of children or relatives, working for paid or volunteer job, maintaining a home or motor vehicle, attending college or vocational training.

Data was put into SPSS. Exploratory factor analyses (conducted separately for motivations and constraints/facilitators) and descriptive statistics were calculated. The reliability of each factor was checked using Cronbach's alpha; an alpha level of 0.7 or greater was used to identify factors suitable for further analysis. Basic descriptive statistics were conducted for each factor to identify the mean score and standard error of mean. Descriptive statistics were also calculated for the number of anglers and the percent of time spent fishing for each identified species of fish.

### 3.0 RESULTS

Of the 7000 surveys sent out, 1405 were deemed undeliverable due to incomplete addresses or address changes, leaving a qualified sample size of 5595 surveys. Of these, 1320 were returned for a 23.5 percent response rate. Of the 1320 respondents, 691 indicated that at least one adult in their household had fished since 2005.

#### 3.1 Demographics

The basic demographic overview of the responding anglers shows a somewhat diverse population. The gender distribution of the sample of responding anglers was 575 males and 75 females, with a mean age of 57 years (range of 20 to 90 years). The mean education was 14 years, meaning that the average responding angler had had 2 years of college education or vocational training (N=642). About 10 percent reported an annual income of \$0 to \$25,000, 21 percent reported making \$26,000 to \$50,000, 30 percent reported making \$51,000 to \$75,000, 17 percent reported making \$76,000 to \$100,000, 11 percent reported making \$101,000 to \$125,000, 5 percent reported making \$126,000 to \$150,000 and 6 percent reported making over \$150,000 (N=529). The area of residency was 70 percent rural, 17 percent suburban, 9 percent medium city, and 4 percent large city (N=640). The average free time per week was roughly 22.3 hours (N=589).

#### 3.2 Species Preference

The two largest categories of species preferences among resident anglers were bass (133 anglers; 21.69 percent of angler trips) and no preference (143 anglers; 43.81 percent of angler trips). Other species that resident anglers fished for were: panfish (40 anglers; 10 percent of angler trips), walleye (37 anglers; 5.83 percent of angler trips), rainbow trout/steelhead (30 anglers; 4.73 percent of angler trips), Coho and Chinook salmon (18 anglers; 4.62 percent of angler trips), brown trout (9 anglers; 3.29 percent of angler trips), and other species such as Northern pike and bullhead (15 anglers; 4.9 percent of angler trips).

#### 3.3 Motivations and Constraints/Facilitators

The results of the first exploratory factor analysis revealed eight motivational factors (Table 1) for resident anglers. These motivations (and examples) are:

1. **Family/Friend Oriented:** Spending time with family and/or friends; Sharing experiences with family and/or friends;
2. **Trying Something New:** Learning new skills and techniques; Exploring new fishing locations;
3. **Nurturing Others:** Passing knowledge to younger generations; Teaching others (youth and adult) how to fish;
4. **Success:** Success of catching a big fish; Success of catching many fish; Because I expect to catch many fish;
5. **Escape:** To be alone; To escape from daily obligations (work, errands, etc); For peace and quiet;
6. **Nature Appreciation:** To be surrounded by nature; Because I appreciate the beauty of the fish/nature;
7. **Enjoyment:** Because I enjoy the experience of fishing; Because I enjoy the excitement of fishing;
8. **Satisfaction of Experience:** Satisfied with the number of fish I normally catch; Satisfied with the quality of fishing.

**Table 1.—Motivations for Lake Ontario fishing**

Motivation	N	Standard Error	Mean Score	Cronbach's alpha
Enjoyment	634	0.021	1.34	0.783
Family	637	0.026	1.22	0.831
Nature Appreciation	633	0.024	1.21	0.807
Trying New	634	0.029	0.85	0.841
Nurture	629	0.036	0.69	0.902
Escape	632	0.035	0.64	0.748
Satisfaction	633	0.032	0.53	0.786
Success	631	0.029	0.49	0.700

Note: Motivations were measured on a 5-point scale of importance (-2 = very unimportant, -1 = unimportant, 0 = neutral, 1 = important, 2 = very important; based on Manfredi et al. 1996).

All motivation factors showed a positive mean score, meaning anglers agree that these eight factors motivate them to fish in Lake Ontario's waters. Family oriented, nature appreciation, and enjoyment were the factors with the highest mean scores at 1.22, 1.21, and 1.34, respectively, indicating that, on average anglers, find these motivations important in influencing their participation.

The results of the second exploratory factor analysis revealed that there are four constraints/facilitators (Table 2). The four constraints/facilitator factors of fishing experience (and examples) were:

1. **Level of Knowledge:** Knowledge of fishing techniques; Knowledge of access and/or shoreline fishing sites;
2. **Level of Commitment:** Dedication to the sport of fishing; Participation in other recreational activities;

3. **Perceptions of Environment:** Lake Ontario's water quality; Eating fish from Lake Ontario;
4. **Perceptions of Other Anglers:** Number of anglers normally at my fishing spots; Behavior of other anglers.

Two factors showed a negative mean score: perceptions of the environment (-0.35) and perceptions of other anglers (-0.22). The negative means suggest that these factors may limit participation. The other two factors, level of knowledge and level of commitment, had positive mean scores of 0.42 and 0.41 respectively, indicating that they likely enable participation.

#### 4.0 DISCUSSION

Some motivations such as family/friend oriented, nature appreciation, and enjoyment were more important in influencing an individual's participation. Enjoyment had the highest mean score, suggesting that even when anglers are motivated by other factors, they are more motivated to seek an enjoyable experience. Nature appreciation and the family/friend-oriented factor means also suggest that these factors have a higher motivational value in an individual's participation. Research by Kuehn et al. (2006) also found that enjoyment is an important motivational factor in fishing, and Manfredi et al. (1996) found that nature appreciation is an important motivational factor.

Angler respondents indicated that their level of knowledge and overall commitment acted more like facilitators than constraints; however these factors were not strong compared to others. This suggests

**Table 2.—Constraints/Facilitators behind Lake Ontario fishing**

Constraint/Facilitator	N	Standard Error	Mean Score	Cronbach's alpha
Level of Knowledge	599	0.026	0.42	0.849
Level of Commitment	596	0.025	0.41	0.837
Perceptions of other anglers	595	0.027	-0.28	0.782
Perceptions of Environment	598	0.03	-0.35	0.917

Note: Motivations were measured on a 5-point scale as follows: -2 = greatly limits participation, -1 = limits participation, 0 = neither limits nor enables participation, 1 = enables participation, 2 = greatly enables participation.

that individuals are committed to fishing in the sense that they intend to come back and fish more and they have enough knowledge about how and where to fish. Respondents indicated that their perceptions of the Lake Ontario environment and perceptions of other anglers acted more as constraints than as facilitators, but they were not statistically strong constraints. An individual's important motivations (e.g., nature appreciation) could outweigh weak constraints through a series of coping mechanisms, allowing the individual to continue to fish but perhaps at a cost to overall satisfaction.

## 5.0 CONCLUSION AND MANAGEMENT IMPLICATIONS

These findings suggest that managers and businesses can use multiple techniques to help create a positive experience for resident anglers. Two major constraints for residential anglers are their perceptions of the Lake Ontario environment and their perceptions of other anglers. One possible management strategy to address these constraints would be providing information to the public about proper fishing etiquette and environmental stewardship. This could be accomplished with educational signs, education programs, and/or flyer or brochure distribution. Another way to provide this information is through direct contact with New York State Department of Environmental Conservation officers or volunteers at popular fishing areas. Officers or volunteers could approach both anglers who are breaching proper etiquette and anglers whose behaviors meet etiquette standards.

One way to portray positive imagery of the Lake Ontario environment to the general public is through positive media reinforcement. Volunteer cleanup projects sponsored by local businesses and/or managers could help develop a positive image of Lake Ontario and help foster a stewardship ethic among local anglers. Successful cleanup or other stewardship events could also help spread information about angling etiquette and ultimately help create positive angling experiences for all.

One way to enhance an individual's angling experiences is to provide more opportunities that cater to important motivation factors. Organizing family-oriented fishing events, for example, could open up opportunities for parents to bring their children, allowing children to experience fishing. Fishing clinics could allow new anglers to learn about and experience fishing while experienced anglers could learn new techniques. Information in the form of brochures, emails, or local postings could be distributed during license sales or at the beginning of specific fishing seasons. This information could cover multiple topics catering to different audiences within the resident angler population such as a schedule of local angling events, lake-related volunteer opportunities, promotion of underused fishing locations to reduce crowding at popular spots, and promotion of proper fishing etiquette.

With this study, we were able to gather information about the intrapersonal motivations and constraints/facilitators of the local angler population. The findings provide a base of knowledge for tourism agencies, fisheries managers, local businesses, and others that want to provide more and improved angling opportunities for the local population, not only nonresident anglers. We also now have information about the entire residential angling population, not just those represented through fishing license sales.

## 6.0 ACKNOWLEDGMENTS

Special thanks to NY Sea Grant for funding this study.

## 7.0 LITERATURE CITED

- Connelly, N.A.; Brown, T.L.; Knuth, B.A. 1997. **New York Statewide Angler Survey. Report 1: Angler effort and expenditures.** 109 p. On file with: New York State Department of Environmental Conservation. Bureau of Fisheries, 625 Broadway, Albany, NY 12233.
- Crawford, D.W.; Godbey, G. 1987. **Reconceptualizing barriers to family leisure.** *Leisure Sciences*. 9: 119-127.

- Decker, D.T.; Brown, T.L.; Siemer, W.F. 2001. **Human dimensions of wildlife management in North America.** Bethesda, MD: The Wildlife Society.
- Dillman, D. 2007. **Mail and Internet surveys: the tailored design method 2nd ed.** New York: John Wiley.
- Henderson, K.A.; Stalnaker, D.; Taylor, G. 1988. **The relationship between barriers to recreation and gender-role personality traits for women.** Journal of Leisure Research. 20: 69-80.
- Kuehn, D.M.; Dawson, C.P.; Hoffman, R. 2006. **Exploring fishing socialization among male and female anglers in New York's eastern Lake Ontario area.** Human Dimension of Wildlife. 11: 115-127.
- Jackson, C. 2008. **The subprime summer vacation.** The Wall Street Journal. April 26; Sect. W: 1.
- Manfredo, M.J.; Driver, B.L.; Tarrant M.L. 1996. **Measuring leisure motivation: a meta-analysis of the recreation experiences preference scales.** Journal of Leisure Research. 28(3): 188-213.
- Raymore, L.A. 2002. **Facilitators to leisure.** Journal of Leisure Research. 34(1): 37-51.
- Siemer, W.F.; Brown, T.L.; Decker, D.J. 1989. **An exploratory study of Lake Ontario's boating salmonid anglers: implications for research on fishing involvement.** Human Dimensions Research Unit Series No. 89-4. Ithaca, NY: Cornell University.

The content of this paper reflects the views of the author(s), who are responsible for the facts and accuracy of the information presented herein.

# CONFLICT AND NORMATIVE SANCTIONS AMONG GALAPAGOS FISHERMEN

---

Arren Mendezona Allegretti  
Human Dimensions of Natural Resources  
Colorado State University  
amendezona@gmail.com

Jerry J. Vaske  
Colorado State University

Ryan Finchum  
Colorado State University

---

**Abstract.**—At the start of this century, aggressive fishermen retaliated against changes in fishing regulations in the Galapagos. To understand this conflict, we examined fishermen’s norms regarding sanctions that the Galapagos National Park Service should use for: (a) fishing regulation violations, and (b) aggressive behavior by fishermen. The level of consensus for natural resource and aggressive behavior norms was explored using the Potential for Conflict Index (PCI<sub>2</sub>). We hypothesized that the mean normative sanctions and the level of consensus would vary among respondents from three islands in the Galapagos (San Cristobal, Isabela, Santa Cruz). Data were obtained from a sample of Galapagos fishermen ( $n = 510$ , response rate = 75 percent of the population). Results revealed statistical differences among fishermen from the three islands in their norms for fishing regulation sanctions ( $F > 28.4$ ,  $p < .001$ ,  $eta < .335$ , in all cases). Fewer differences among the islands were observed for suggested behavior sanctions against aggressive fishermen.

---

## 1.0 INTRODUCTION

The Galapagos Islands have been recognized as a National Park (1959), a World Heritage Site (1979), a Biosphere Reserve (1984), a Marine Resource Reserve (1986), and an International Whale Sanctuary (1990). The fragile nature of the Galapagos archipelago

ecosystem poses natural resource and social management challenges (Finchum 2002). For example, fishermen must comply with regulations that are set by the Galapagos National Park Service (GNPS) and standards (norms) established by both GNPS and their local fishing cooperatives. Acceptance into a fishing cooperative is required to fish in the Galapagos. After an early closure of the 3-month sea cucumber season by GNPS managers in 1995, local fishermen protested by killing endangered giant tortoises, blocking access to the Charles Darwin Research Station, burning effigies of park officials, and threatening managers. It was primarily fishing cooperatives that orchestrated these aggressive behaviors.

To understand this conflict between fishermen and the GNPS, this article examines fishermen’s norms regarding sanctions that GNPS should enforce for: (a) fishing regulation violations (e.g., fishing in non-fishing zones, harvesting lobster out of season), and (b) aggressive behavior (e.g., verbal or physical threats against GNPS officials). The level of consensus for both natural resource and aggressive behavior norms was also explored using the Potential for Conflict Index (PCI<sub>2</sub>). We hypothesized that the mean support for normative sanctions and the level of consensus would vary among respondents from three islands in the Galapagos (San Cristobal, Isabela, and Santa Cruz). San Cristobal and Isabela have communities whose economy is largely dependent on fishing. Santa Cruz is an international tourism center and headquarters for the GNPS and the Charles Darwin Research Center (now the Charles Darwin Foundation).

## 1.1 Norms

Norms can refer to what most people are doing (a descriptive norm) or to what people should or ought to do (an injunctive norm) in a given situation (Cialdini et al. 1991). Social norms are defined as “standards shared by the members of a social group” and personal

norms are defined as an individual's own expectations, learned from experience, and modified through interaction (Blake and Davis 1964).

Norms are also intimately tied to the concept of sanctions—punishment for people who break norms or rewards for compliance with norms. Norms that are widely shared by most members of society often become legal mandates complete with formal sanctions (e.g., fines) for noncompliance. Such norms are also likely to be internalized—viewed as being right, legitimate, and hence obligatory. When there is less agreement or the norms are emerging, informal sanctions may be used to encourage acceptable behavior (Heywood 1996).

Different social psychologists define and use the concept of norms differently (see Vaske and Whittaker 2004 for a review). Some concentrate on the variables that serve to focus or activate a norm, while others address how social pressure can influence behavior or aid in the diffusion of ideas. Norm theories also differ in how they measure the concept of norms. Norm focus/activation theories measure norms at the individual level (i.e., personal norms) and then aggregate the data to derive social norms. The theory of reasoned action (Fishbein and Ajzen 1975), in contrast, focuses primarily on perceived social norms (i.e., subjective norms). Under this paradigm, subjective norms refer to what you think others would want you to do.

Galapagos fishermen's aggressive behavior towards marine reserve policies might be explained by the concepts of personal, social, and subjective norms. For example, aggressive fishermen's behavior reflects the social norms of fishing cooperatives that expect their members to aggressively retaliate against park service officials. The role of sanctions applied to fishing violations (e.g., confiscation of fishing permits) can influence fishermen's behavior and evaluations of marine reserve policies. Fishermen's evaluations of appropriate sanctions in regard to fishing violations also reflect fishermen's personal and perceived social norms.

## 1.2 Measuring Conflict/Consensus

Although norms help to clarify fishermen's evaluations of GNPS enforced sanctions, they do not illustrate consensus for these actions. This paper applied the second generation of the Potential for Conflict Index ( $PCI_2$ ) (Vaske et al. 2010) to display consensus among fishermen's norms for appropriate sanctions regarding violations of marine reserve fishing policies and aggressive fishermen behavior.

The Potential for Conflict Index (PCI) was developed to aid the understanding of human dimensions findings to natural resource management concerns (Manfredo et al. 2003, Vaske et al. 2006). The second generation of this statistic ( $PCI_2$ ) ranges from 0 to 1. A  $PCI_2$  of 1 corresponds to a scenario with the least amount of consensus and the greatest potential for conflict. This occurs when responses are equally divided between the two extreme values on a response scale. A  $PCI_2$  of 0 illustrates a distribution with 100 percent at any one point on the response scale, suggesting complete consensus and no potential for conflict (Vaske et al. 2010).

$PCI_2$  results are displayed as bubble graphs reflecting the amount of consensus for a given management scenario. Consensus is displayed by bubble size depicting the magnitude of  $PCI_2$  and indicating the extent of potential conflict (or consensus) regarding the acceptability of a particular topic (i.e., degree of dispersion). A small bubble represents little potential for conflict, or high consensus, and a larger bubble represents greater potential for conflict, or less consensus. The center of the bubble represents the mean rating as plotted on the y-axis (i.e., central tendency).

By using  $PCI_2$ , in combination with the concept of norms, this paper examined fishermen's evaluations of appropriate GNPS sanctions for: (a) fishing violations of Galapagos marine reserve policies and (b) aggressive fishermen behavior toward park service officials. To understand norms and consensus for marine reserve policies, we compared fishermen's evaluations among the three Galapagos Islands of San Cristobal, Santa

Cruz, and Isabela. The following hypotheses were advanced:

- H<sub>1</sub>: Norms regarding sanctions for fishing violations will vary among the three Galapagos Islands.
- H<sub>2</sub>: Norms regarding sanctions for aggressive fishermen behavior will vary among the three Galapagos Islands.
- H<sub>3</sub>: The amount of consensus for sanctions applied to fishing violations will vary among the three Galapagos Islands.
- H<sub>4</sub>: The amount of consensus for sanctions applied to aggressive fishermen behavior will vary among the three Galapagos Islands.

## 2.0 METHODS

The study population included all registered fishermen ( $N = 682$ ) on the three islands. Data were obtained from onsite surveys conducted in 2001. A total of 510 surveys were completed (75 percent response rate) by all local fishermen who could be contacted and were willing to participate in the study. The sample sizes and percent of the fishermen population sampled for each island were: San Cristobal ( $n = 269$ , response rate = 79 percent); Isabela ( $n = 132$ , response rate = 75 percent); and Santa Cruz ( $n = 109$ , response rate = 67 percent).

### 2.1 Variables Measured

Independent variable: Island residence (i.e., San Cristobal, Santa Cruz, Isabela) served as the independent variable.

Dependent variables: The stem to one survey question stated: "To ensure that fishing continues for everyone, the officials should enforce rules. Tell us how you feel the officials for the marine reserve should deal with fishermen that do the following things." Specific items reflected five fishing regulation violations and four aggressive fishermen behaviors. Fishing violations included: (a) fishing in the no-take fishing zone; (b) illegal fishing methods; (c) shark harvest; (d) off-season sea cucumber harvest; and (e) off-season lobster harvest. The aggressive fishermen

behaviors included: (a) verbal threats; (b) physical threats; (c) building damage or stealing property; and (d) physical injury to individuals. For each set of dependent variables, respondents indicated the level of punitive action (sanction) that should be taken by the park service. The sanctions were coded on a unipolar scale and included: 0="do nothing"; 1="give a fine"; 2="take away permit for 15 days"; and 3="take away permit for the rest of the year".

### 2.2 Analysis Strategy

One-way Analysis of Variance and post hoc tests (Tamhanes, LSD) were used to compare the mean normative sanctions among fishermen from the three Galapagos Islands. Eta ( $\eta$ ) served as the effect size measure and was interpreted as: .1 (minimal), .3 (typical), and .5 (substantial) relationship (Vaske 2008). The  $PCI_2$  was used to compare the amount of consensus for fishing violations and aggressive fishermen behavior sanctions among the three Galapagos Islands.  $PCI_2$  is a distance-based measure that allows for different distance (i.e.,  $D_1$ ,  $D_2$ ,  $D_3$ ) functions (see Vaske et al. 2010 for details). For a unipolar scale (i.e., 0, 1, 2, 3),  $D_3$  is the recommended distance function. Statistical differences between the observed  $PCI_2$  values were calculated using the software available from <http://welcome.warnercnr.colostate.edu/~jerryv>.

### 3.0 RESULTS

The mean normative sanctions for fishing regulation violations such as fishing in a no fishing zone varied significantly among San Cristobal, Santa Cruz, and Isabela fishermen for all five dependent variables ( $F > 28.4$ ,  $p < .001$ , in all cases, Table 1). Effect sizes ranged from  $\eta$  equals .335 to .405. Post hoc analyses revealed that Isabela fishermen were consistently less likely to agree with punitive sanctions than respondents from San Cristobal or Santa Cruz. Fishermen from these latter two islands did not differ statistically on sanctions for fishing in the no-take zone, illegal fishing methods, and off-season sea cucumber harvesting. The average sanctions for San Cristobal and Santa Cruz respondents were between "give a fine" and "take the permit away for 15 days."

**Table 1.—Island differences on fishing violation sanctions**

	Island <sup>1</sup>			<i>F</i>	<i>p</i> -value	$\eta$
	San Cristobal	Santa Cruz	Isabela			
No take fishing zone	1.29 <sup>a</sup>	1.07 <sup>a</sup>	0.65 <sup>b</sup>	35.98	<.001	.375
Illegal fishing method	1.32 <sup>a</sup>	1.09 <sup>a</sup>	0.63 <sup>b</sup>	42.89	<.001	.405
Off-season lobster harvest	1.57 <sup>a</sup>	1.43 <sup>a</sup>	0.94 <sup>b</sup>	28.47	<.001	.335
Off-season sea cucumber harvest	1.67 <sup>a</sup>	1.59 <sup>a</sup>	0.97 <sup>b</sup>	33.95	<.001	.362
Shark harvest	1.94 <sup>b</sup>	1.34 <sup>a</sup>	1.03 <sup>a</sup>	42.29	<.001	.401

<sup>1</sup> Variables coded on a 4-point scale where 0 = “do nothing,” 1 = “give a fine,” 2 = “take away permit for 15 days,” and 3 = “take away permit for the rest of the year.”

Means with different superscripts differ significantly at  $p < .05$  based on the Tamhanes post hoc analysis.

Three of the four normative sanctions for aggressive fishermen behavior (i.e., verbal threats, physical threats, damaging property) did not significantly differ among the islands ( $F < 2.59$ ,  $p > .077$ , Table 2). The effect sizes for these relationships ranged from .049 to .114, and the mean sanctions were between “give a fine” and “take the permit away for 15 days.” Fishermen from the three islands did differ in their support for sanctions when physical injury was involved ( $F = 3.12$ ,  $p = .045$ ), but the effect size was minimal ( $\eta = .133$ ). Similar to the fishing violation sanctions, Isabela respondents were less likely to support punitive actions by the park service. Fishermen from the other two islands did not differ significantly on the physical threat variable.

Consensus regarding these normative sanctions was measured using  $PCI_2$  (Figures 1 and 2). A  $PCI_2$  value of 0 implies total consensus (i.e., no conflict) and a value of 1 indicates maximum conflict (i.e., no consensus). Across the three islands and all five fishing violation sanctions (Figure 1), the  $PCI_2$  values ranged

from .34 (i.e., San Cristobal—illegal fishing methods) to .74 (i.e., Santa Cruz and Isabela—shark harvesting). These relatively high  $PCI_2$  values (Mean  $PCI_2 = .57$ ) highlight the controversy that existed among the fishermen/fishing cooperatives and the GNPS regulations.

Difference tests for these  $PCI_2$  values indicated that there was more consensus among San Cristobal fishermen than among Santa Cruz and Isabela respondents for sanctions regarding fishing in the no-take fishing zone, illegal fishing methods, and shark harvest (Figure 1). Santa Cristobal differed significantly from Isabela on the amount of consensus for off-season lobster and sea cucumber harvest sanctions.

In general, there was little consensus for aggressive fishermen behavior sanctions (Figure 2). Across the three islands and four behaviors, the  $PCI_2$  values were greater than .70 in 10 of the 12 calculations (Mean  $PCI_2 = .75$ ). The only two exceptions were

**Table 2.—Island differences for aggressive fishermen behavior sanctions**

	Island <sup>1</sup>			<i>F</i>	<i>p</i> -value	$\eta$
	San Cristobal	Santa Cruz	Isabela			
Verbal threats	1.05	1.31	1.01	2.59	.077	.114
Physical threats	1.23	1.40	1.16	1.25	.289	.080
Damaging property	1.75	1.90	1.79	0.40	.674	.049
Physical injury <sup>2</sup>	1.69 <sup>a</sup>	1.44 <sup>a</sup>	1.37 <sup>b</sup>	3.12	.045	.133

<sup>1</sup> Variables coded on a 4-point scale where 0 = “do nothing,” 1 = “give a fine,” 2 = “take away permit for 15 days,” and 3 = “take away permit for the rest of the year.”

<sup>2</sup> Means with different superscripts differ significant at  $p < .05$  based on the LSD post hoc analysis.

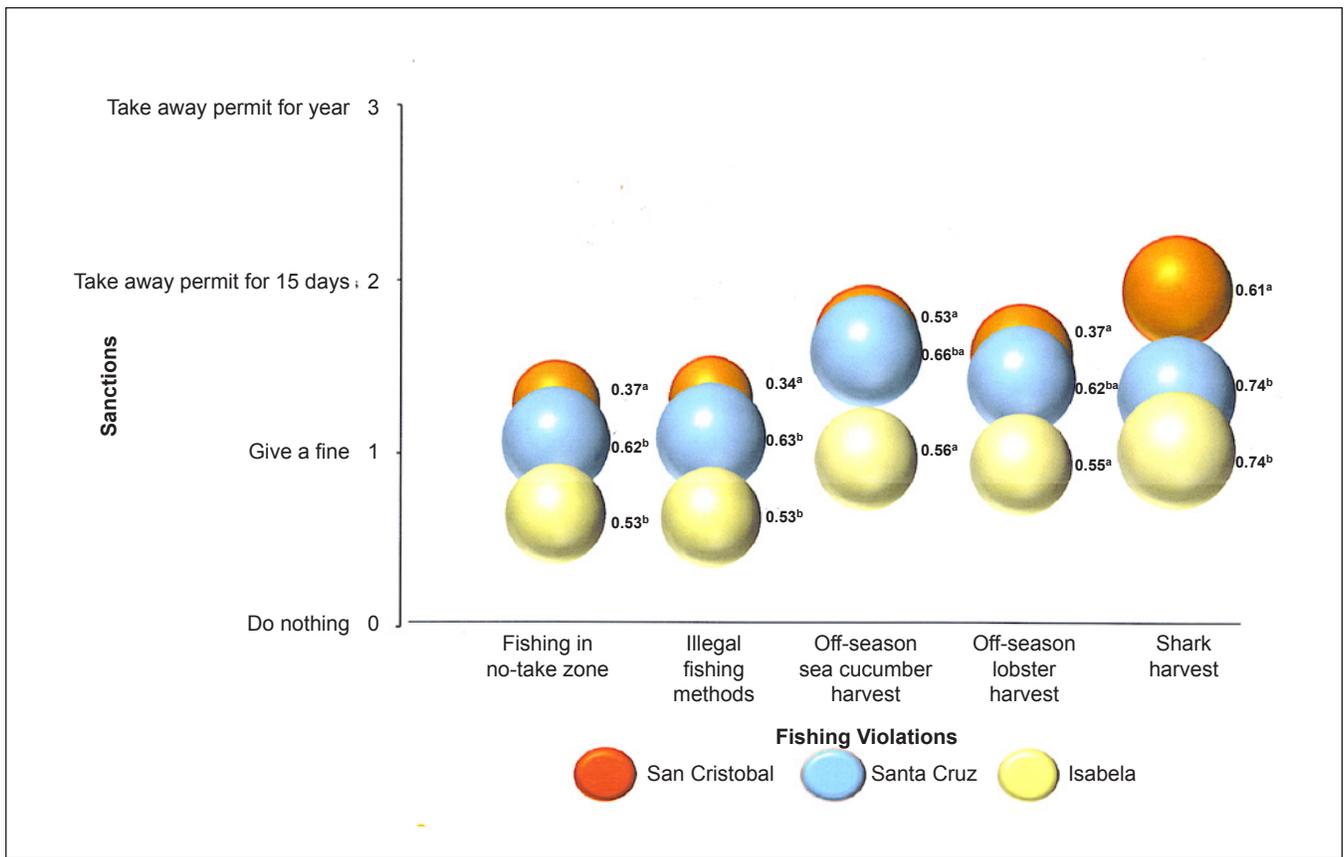


Figure 1.—The amount of consensus for fishing regulation violation sanctions. Different superscripts correspond to significant differences in  $PCI_2$  values at  $p < .05$ .

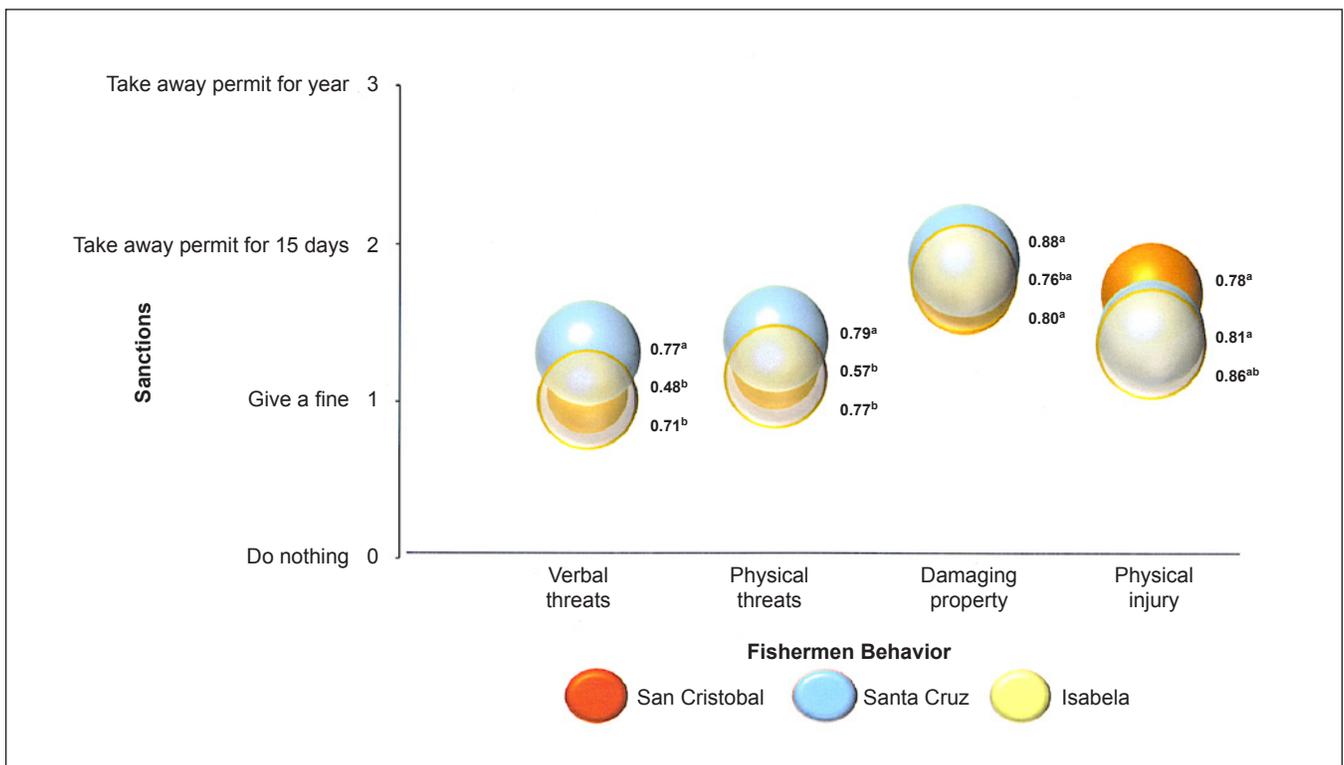


Figure 2.—The amount of consensus for aggressive fishermen behavior sanctions. Different superscripts correspond to significant differences in  $PCI_2$  values at  $p < .05$ .

San Cristobal fishermen's evaluations of verbal ( $PCI_2 = .48$ ) and physical ( $PCI_2 = .57$ ) threats against the GNPS. For these two variables, San Cristobal differed significantly from Santa Cruz ( $PCI_2 = .77$  and  $.79$ , respectively) and Isabela ( $PCI_2 = .71$  and  $.79$ , respectively). Significant differences were also noted between: (a) San Cristobal and Santa Cruz for damaging property ( $PCI_2 = .76$  vs.  $.88$ , respectively) and (b) San Cristobal and Isabela for physical injury ( $PCI_2 = .78$  vs.  $.86$ , respectively). Given the magnitude of these  $PCI_2$  values, however, these findings highlight the potential for a high level of conflict between the fishermen and the Galapagos National Park.

## 4.0 DISCUSSION

Results support the predicted mean differences among the three islands for fishing regulation violations ( $H_1$ ), but generally not for average island differences in aggressive fishermen behavior ( $H_2$ ). The exception for these latter comparisons was physical injury to park service personnel, where Isabela fishermen were statistically less likely to agree with the normative sanctions than those from San Cristobal or Santa Cruz. Some differences were observed in the levels of consensus for acceptable sanctions for fishing violations ( $H_3$ ) and aggressive fishermen behavior (Hypothesis 4) among the islands. However, the average  $PCI_2$  values for both fishing regulation violations ( $M = .57$ ) and aggressive behavior ( $M = .75$ ) were large and consistent with the actual violent behaviors that existed at the time the study was conducted; these results provide a partial validation of  $PCI_2$ . These findings also have managerial and theoretical implications.

### 4.1 Managerial Implications

Fishermen's acceptance of normative sanctions and the amount of consensus for those sanctions illustrate the potential for conflict that existed for current regulations. For example, San Cristobal favored the highest level of punitive actions for fishing in no-take fishing zones and illegal fishing methods. San Cristobal also had the highest amount of consensus for these sanctions. Isabela, on the other hand, generally favored the lowest level of punitive action and

exhibited less consensus about these fishing violations. The differences among these islands could imply that Isabela fishermen would be less likely to comply with current and future regulatory scenarios, particularly those that deal with taking fishing permits away for the rest of the year. San Cristobal findings indicate a relatively high likelihood for compliance with current and future regulatory scenarios. Santa Cruz favored a lower level of punitive action than San Cristobal, and there was less consensus regarding sanctions given to fishing violations. Such findings suggest a relatively high likelihood for conflict to occur in Santa Cruz. The presence of park headquarters in Santa Cruz could have influenced the findings, as some fishermen worked for the park service and tourism related businesses. Whether these findings would generalize to the current situation in the Galapagos is a topic for future research.

### 4.2 Theoretical Implications

Although numerous studies of recreation norms have been published, relatively few have explicitly incorporated the concept of sanctions. An understanding of the acceptability of sanctions for different behaviors, however, can illustrate the extent to which people are willing to have their personal and social norms enforced. Future researchers are encouraged to incorporate normative sanctions into their studies when appropriate.

The second generation of PCI ( $PCI_2$ ) is a new statistic (Vaske et al. 2010). This article represents the first application of  $PCI_2$  to a unipolar scale (i.e., "do nothing" to "take away a permit for a year"). Similar to other studies that have used PCI with bipolar scales (e.g., strongly agree to strongly disagree), presenting findings as bubbles provides a convenient and manager-friendly technique for illustrating the amount (or lack thereof) of consensus regarding a given topic. Tools for calculating, graphing and comparing  $PCI_2$  values, as well as an explanation of and previous applications of the statistic, are available at <http://welcome.warnercnr.colostate.edu/~jerryv>. Researchers are encouraged to use  $PCI_2$  when communicating with statistically challenged audiences.

## 5.0 LITERATURE CITED

- Blake, J.; Davis, K. 1964. **Norms, values, and sanctions.** In: Faris, R.E.L., ed. Handbook of modern Sociology. Chicago, IL: Rand McNally: 456-484.
- Cialdini, R.B.; Kallgren, C.A.; Reno, R.R. 1991. **A focus theory of normative conduct: a theoretical refinement and reevaluation of the role of norms in human behavior.** Advances in Experimental Social Psychology. 24: 201-34.
- Finchum, R. 2002. **The beliefs and perceptions of fishermen regarding management actions, regulations, and the protection of the Galapagos Marine Reserve, Ecuador.** Fort Collins, CO: Colorado State University. M.S. thesis.
- Fishbein, M.; Ajzen, I. 1975. **Belief, attitude, intention, and behavior: an introduction to theory and research.** Reading, MA: Addison-Wesley.
- Heywood, J.L. 1996. **Conventions, emerging norms, and norms in outdoor recreation.** Leisure Sciences. 18: 355-364.
- Manfredo, M.J.; Vaske, J.J.; Teel, T.L. 2003. **The potential for conflict index: a graphic approach to practical significance of human dimensions research.** Human Dimensions of Wildlife. 8: 219-228.
- Vaske, J.J. 2008. **Survey research and analysis: applications in parks, recreation and human dimensions.** State College, Pennsylvania: Venture Publishing. 658 p.
- Vaske, J.J.; Beaman, J.; Barreto, H.; Shelby, L.B. 2010. **An extension and further validation of the potential for conflict index.** Leisure Sciences. 32: 240-254.
- Vaske, J.J.; Needham, M.D.; Newman, P.; Manfredo, M.J.; Petchenick, J. 2006. **Potential for conflict index: hunters' responses to chronic wasting disease.** Wildlife Society Bulletin. 34(1): 44-50.
- Vaske, J.J.; Whittaker, D. 2004. **Normative approaches to natural resources.** In: Manfredo, M.J.; Vaske, J.J.; Bruyere, B.L.; Field, D.R.; Brown, P.J., eds. Society and natural resources. Jefferson, MO: Modern Litho: 238-294.

The content of this paper reflects the views of the author(s), who are responsible for the facts and accuracy of the information presented herein.

# ANGLER SEGMENTATION USING PERCEPTIONS OF EXPERIENTIAL QUALITY IN THE GREAT BARRIER REEF MARINE PARK

---

William Smith  
Department of Recreation, Park & Tourism Sciences  
Texas A&M University  
wesmith@tamu.edu

Gerard Kyle  
Texas A&M University

Stephen G. Sutton  
James Cook University

---

**Abstract.**—This study investigated the efficacy of segmenting anglers using their perceptions of trip quality in the Great Barrier Reef Marine Park (GBRMP). Analysis revealed five segments of anglers whose perceptions differed on trip quality. We named the segments: slow action, plenty of action, weather sensitive, gloomy gusses, and ok corral and assessed variation among them with respect to gender, fishing experience, targeting particular fish species, motivations, and satisfaction. There were limited significant differences across the motivation dimensions while the satisfaction dimensions had the largest variation. Despite insignificant differences among catch propensity motivations and overall lower mean values, catch-related outcomes had the greatest variance among segments in the satisfaction dimension. This kind of information can be useful for marine park fisheries managers who need to take into account both generalized angler data and local baseline data that reflects the specific geographic context when creating fisheries policies.

---

## 1.0 INTRODUCTION

One of the major challenges of managing recreational fisheries in marine protected areas is facilitating satisfactory experiences across a broad spectrum of anglers (Fisher 1997). Identification and integration of stakeholders' needs can help generate management

strategies that increase participant adoption, reciprocity, and resource stewardship.

Providing quality outdoor recreation opportunities that ultimately lead to satisfying experiences has long been recognized as natural resource managers' primary goal (Manning 1999). Provision of quality experiences is a fundamental goal for the Great Barrier Reef Marine Park Authority (GBRMPA) and an obligation laden with economic, legal, and managerial implications. Recreational anglers are important stakeholders for fishery resource management agencies and are contributors to the local, regional, and national economies (Finn and Loomis 2001). As part of a \$4.2 billion Australian dollar tourism industry, an estimated 800,000 recreational fishers contribute more than \$240 million annually to the Great Barrier Reef Marine Park (GBRMPA 2010). The GBRMPA is mandated under federal law to conserve and protect the biodiversity of the Great Barrier Reef (GBR) ecosystems and to provide opportunities and access for current and future generations to engage in ecologically sustainable use of the GBRMP (Day 2002). Failure to provide quality angling experiences will likely lead to a decrease in angling participation (and related expenditures), and, eventually, loss of support for fishery management programs (Finn and Loomis 2001).

Research investigating the quality of angling excursions can engage the angling community as a policy partner, customer, and valued resource. Such research also helps build a sense of community, reciprocity, and stakeholder ownership that is necessary for successful fisheries management. The purposes of this study are: 1) to assess using perceptions of experiential trip quality as a method for differentiating homogeneous angler groups from a larger heterogeneous population; and 2) to examine variation across these groups with respect to gender, fishing experience, tendency to target particular fish species, motivations, and satisfaction.

## 1.1 Background

The Great Barrier Reef Marine Park (GBRMP) was established by an Australian federal act in 1975 and is managed by the GBRMPA to provide for the protection, wise use, understanding, and enjoyment of the Great Barrier Reef in perpetuity (Day 2002). The GBR, a World Heritage Area, is the largest coral reef ecosystem in the world, comprised of over 2,900 individual reefs and nearly 1,000 islands and caves that extend for 2,000 kilometers along the northeastern Australian coast (GBRMPA 2010). Regarded worldwide as the gold standard in ecosystem-based management (Norse 2010), the GBRMPA manages a wide range of recreational and commercial activities within the marine park and is responsible for ensuring the ecological integrity of over 347,800 km<sup>2</sup> of marine habitat.

The GBRMPA's core management ideology underscores the valuable contribution of public participation and community involvement. Research has shown that anglers can be strong supporters of fisheries management initiatives if they are engaged in the decision making process and if policies reflect anglers' values (Sutton and Tobin 2009). A successful multi-use marine zoning approach must recognize the dynamic nature of angler populations and perceptions of quality regarding angling experiences (Wagar 1964).

## 1.2 Background Literature

Perceptions of experiential quality are subjective (Graefe and Fedler 1986) and multi-dimensional (Driver and Knoff 1976, Hendee 1974) and are the product of individuals' socio-demographic (Fedler and Ditton 1986) and psychological perspectives (Driver and Cooksey 1977). Previous research has revealed that recreationists have a range of views about what constitutes a quality experience and that the "average angler" does not exist (Bryan 1977, Fedler and Ditton 1986, Shafer 1969). Fisheries management policies that fail to take this into account may satisfy no one (Fisher 1997). In order to successfully serve a large angler constituency, fisheries management

must provide satisfying fishing opportunities and experiences (Schramm 2003) to multiple subgroups within a larger angler population (Bryan 1979). However, in order to do this, marine managers must identify the various angler constituencies, their interests, and the associated determinants of quality experiences (Fisher 1997).

Segmentation facilitates identifying distinct segments of a population with like preferences, which provides the potential for targeted management via policy development, marketing, or education (Kyle et al. 2007). Researchers have segmented anglers on a wide range of constructs, characteristics, and orientations including socio-demographic characteristics (Ditton 1985, McGurrin 1988, Sutton 2005), specialization (Bryan 1977, Chipman and Helfrich 1988, Ditton et al. 1992), consumptive orientation (Aas and Kaltenborn 1995, Fedler and Ditton 1986, Kyle et al. 2007), participation (Bryan 1977, Graefe 1980), motivations (Driver and Cooksey 1977, Fedler and Ditton 1994, Moeller and Engelken 1972, Spencer 1993), satisfaction (Holland and Ditton 1992, Schramm 2003), and trip quality (Sutton 2005), and examined each of these using indicators across multiple dimensions.

Identification of attributes that add to or detract from the quality of a fishing trip informs decisions makers about the degree to which they can positively influence satisfying fishing experiences via management strategies. Quality has been defined in outdoor recreation as the "relationship between satisfactions anticipated in an outdoor experience and the satisfactions realized" (Hendee 1974); measurements of quality can be used to assess the importance of various attributes and determinants of recreation experiences (Hammitt et al. 1993, Sutton 2005). This study uses quality of experience, defined as the quality of service attributes that are under the control of the provider, as well as the recreationist's psychological outcomes (Crompton and Love 1995), to assess which attributes add to or detract from the quality of a fishing trip.

## 2.0 METHODS

The study site was the Townsville public boat ramp in Queensland, Australia, which lies near the latitudinal midpoint of the GBRMP. Data were collected during the spring (September-November) of 2006 and fall (April-June) of 2007 between the hours of 10 a.m. and 6 p.m. Over the course of 24 sampling days, 257 interviews were conducted with recreational anglers at the boat ramp as they returned from fishing excursions. An individual from each fishing party was randomly selected and approached to participate in the fishing study. Interview days were selected based on favorable weather conditions (e.g., when the wind was less than 15 knots) in hopes of encountering more offshore anglers.

## 3.0 DATA ANALYSIS AND RESULTS

### 3.1 Survey Participants

Most of the survey participants fished the inshore islands and reefs with only 14.4 percent venturing to the outer reef. The sample was predominantly male (82.6 percent), and 94.6 percent of the fishing trips lasted less than 24 hours. About 86 percent of participants were fishing in small groups of two to four people. Survey participants were experienced anglers overall, on average reporting 25.4 years of fishing experience.

### 3.2 Quality of Angler Experiences

Principle Components Analysis (PCA) was used to group 14 items on perceptions of experiential quality into latent dimensions. Respondents were asked to evaluate the quality of the fishing trip's attributes on a 5-point scale ranging from 1 (detracted greatly) to 5 (added greatly). Five new representative quality variables were created: fishing (number caught, size, species, number of bites), weather (weather, scenery, sea conditions), equipment (tackle, boat), surrounding (other activities engaged in beside fishing, cleanliness of environment, facilities), and other life (people, wildlife) (Table 1).

### 3.3 Angler Segmentation

PCA dimensions (K-means cluster procedure) were then used to cluster respondents into homogeneous groups based on their experiential quality profiles. After examining several cluster solutions based on cluster size and distinctness (Payne 1992), we selected a five cluster solution: Slow Action, Plenty of Action, Weather Sensitive, Gloomy Gusses, and OK Corral (Table 2). Emergent clusters were examined using indicators of gender, fishing experience, targeting particular fish species, motivations and satisfaction, and overall satisfaction.

**Table 1.—Principle components analysis of experiential quality items**

Dimension	Quality Item <sup>a</sup>	<i>M</i> <sup>b</sup>	<i>SD</i>	Loadings	Cronbach's <sup>c</sup>
Fishing	The number of fish you caught	2.97	0.99	0.84	0.85
	The size of the fish you caught	2.96	0.98	0.91	
	Species of the fish you caught	3.03	0.98	0.87	
	The number of bites you had	3.17	0.99	0.67	
Weather	The weather	3.66	1.30	0.93	0.80
	The scenery	4.16	0.76	0.61	
	The sea conditions	3.56	1.31	0.92	
Equipment	The boat you used	4.26	0.75	0.83	0.71
	The fishing equipment you used	4.14	0.79	0.85	
Surroundings	Other activities beside fishing	3.60	0.79	0.79	0.53
	Cleanliness of the environment	3.99	0.77	0.65	
	The facilities you used	3.51	1.01	0.64	
Others	The other people you encountered	3.26	0.69	0.82	0.43
	The wildlife you saw	3.74	0.79	0.69	

<sup>a</sup> How did each of the following factors add to or detract from the quality of your fishing trip today?

<sup>b</sup> Measured on a 5 point scale ranging from 1 (detracted greatly) to 5 (added greatly).

<sup>c</sup> Cronbach's Alpha values of less than 0.7 are not uncommon with scales containing less than 10 items (Pallant 2001).

**Table 2.—Principle components analysis of experiential quality items**

	Slow Action		Plenty of Action		Weather Sensitive		Gloomy Gusses		OK Corral		F
	<i>M<sup>a</sup></i>	<i>SD</i>									
Fishing	2.60	0.60	3.96	0.59	3.39	0.63	2.01	0.62	3.13	0.39	75.38 ***
Weather	4.64	0.40	4.72	0.31	2.93	0.54	2.42	0.60	3.52	0.57	186.20 ***
Equipment	4.58	0.51	4.29	0.69	4.70	0.40	3.88	0.73	3.70	0.47	33.66 ***
Surrounds	3.67	0.57	3.99	0.56	4.13	0.67	3.46	0.59	3.43	0.48	14.08 ***
Others	3.63	0.60	3.65	0.54	3.85	0.59	3.35	0.67	3.18	0.39	12.81 ***
n	66		46		37		33		75		

\*\*\* =  $p < 0.001$

<sup>a</sup> Measured on a 5 point scale ranging from 1 (deducted greatly) to 5 (added greatly).

Cross tabulation analysis using Pearson's Chi Square revealed no significant differences between angler segments by gender. Although females were only 16 percent of the respondents, they were evenly distributed across the five quality segments. Additionally, there were no significant differences across the five angler segments between those targeting a particular fish species or between those with different levels of fishing experience.

### 3.4 Angler Motivation

Motivation was assessed by asking participants to evaluate the importance of 12 different attributes using a 5-point scale ranging from 1 (not at all important) to 5 (extremely important). PCA analysis of the twelve motivation items produced three latent dimensions: nature-solitude (desired proximity to outdoors/nature and peace/tranquility), social escape (wanted to get away from others and routine), and catch propensity (desire for goal oriented catch outcomes) (Table 3). Analysis of variance revealed significant differences between the slow action group and the ok corral group

with respect to the nature-solitude dimension. Social-escape motivations for slow action, plenty of action, and weather sensitive were similar in mean scores, and all were significantly different from the ok corral group.

### 3.5 Angler Satisfaction

Participants were asked to assess their level of agreement with 11 satisfaction items using a 5-point scale ranging from 1 (strongly disagree) to 5 (strongly agree). Overall satisfaction was evaluated by inquiring how satisfied they were overall with the day's fishing trip using a 5-point scale ranging from 1 (not at all satisfied) to 5 (extremely satisfied). PCA analysis of the 11 satisfaction items produced three latent dimensions: catch-experience (caught desired fish species, caught desired fish size, and had fun), outdoors-relax (good to be outdoors, relaxing), and escape-nature (get away from demands, connected with nature) (Table 4). Analysis of variance revealed significant differences with regard to catch-experience among all groups. The plenty of action group

**Table 3.—Analysis of variance – motivation dimensions**

	Slow Action		Plenty of Action		Weather Sensitive		Gloomy Gusses		OK Corral		F	df
	<i>M<sup>a</sup></i>	<i>SD</i>										
Nature-solitude	4.09 <sup>AE</sup>	1.90	3.96	0.69	3.90	0.72	3.57	0.96	3.55 <sup>AE</sup>	0.71	2.50*	4
Social-escape	4.28 <sup>AE</sup>	0.71	4.25 <sup>BE</sup>	0.58	4.26 <sup>CE</sup>	0.57	4.03	0.62	3.90 <sup>ABCE</sup>	0.67	4.28**	4
Catch propensity	2.85	1.16	2.91	1.18	3.23	1.07	3.41	3.34	2.76	0.83	1.39	4
n	66		46		37		33		75			66

\* =  $p < 0.05$ , \*\* =  $p < 0.01$ , \*\*\* =  $p < 0.001$

<sup>a</sup> Measured on a 5 point scale ranging from 1 (not at all important) to 5 (extremely important).

Like uppercase superscripts indicate significant difference using Tukey's HSD Test at 0.05 level.

**Table 4.—Analysis of variance – satisfaction dimensions**

	Slow Action		Plenty of Action		Weather Sensitive		Gloomy Gusses		OK Corral		F	df
	<i>M</i> <sup>a</sup>	<i>SD</i>										
Catch-Experience	2.44 <sup>ABCD</sup>	0.77	3.35 <sup>ABDE</sup>	1.07	3.05 <sup>ACD</sup>	0.98	1.91 <sup>ABCDE</sup>	0.63	2.65 <sup>BDE</sup>	0.83	16.40 <sup>***</sup>	4
Relax-Outdoors	4.51 <sup>ADE</sup>	0.53	4.59 <sup>BDE</sup>	0.46	4.48 <sup>CD</sup>	0.46	4.08 <sup>ABCD</sup>	0.82	4.22 <sup>ABE</sup>	0.50	7.07 <sup>***</sup>	4
Escape-Nature	3.96	0.84	4.34	0.61	4.20	0.69	4.19	2.51	3.86	0.64	1.74	4
n	66		46		37		33		75		66	

\*\*\* =  $p < 0.001$

<sup>a</sup> Measured on a 5 point scale ranging from 1 (not at all important) to 5 (extremely important).

Like uppercase superscripts indicate significant difference using Tukey's HSD Test at 0.05 level.

expressed the greatest satisfaction in the catch-experience dimension and gloomy gusses experienced the least satisfaction. There were significant differences with regard to the relax-outdoor dimension, with all groups reporting relatively high satisfaction. Again, slow action, plenty of action, and weather sensitive expressed similar levels of satisfaction, and all were significantly different from the gloomy gusses. There was no significant variation for the escape-nature dimension across the five experiential quality segments.

Lastly, overall satisfaction varied significantly across the dimensions, with plenty of action having the highest overall satisfaction and gloomy gusses experiencing the lowest overall satisfaction (Table 5).

#### 4.0 DISCUSSION

Research suggests that satisfaction is a multi-dimensional construct. Anglers go fishing for a variety of reasons besides just catching fish (Graefe and Fedler 1986, Moeller and Engelken 1972) and non-catch motives are often more important to anglers than catch motives (Driver and Knoff 1976, Fedler and Ditton 1994). Motives have also been shown to be inextricably linked to the expected outcomes or satisfaction derived from the angler experience

(Graefe and Fedler 1986). However, there is often a disconnect between anglers' reported motivations for going fishing and the attributes of the fishing trip that contribute to a satisfying experience (Arlinghaus and Cooke 2005).

In this study, catch propensity motivations were comparatively low across the quality segments and there were no significant differences between anglers in different segments. However, satisfaction as part of the catch-experience dimension of the quality clusters was significantly different across angler segments and proved to be the most salient factor for identifying variation. This suggests that catch was an important factor in the perceived quality of the fishing trip. It also confirms the multi-dimensional nature of fishing satisfaction and suggests that anglers most enjoy just getting away and relaxing.

Graefe (1980) suggests that management policies must be tailored for particular fisheries and perhaps specific anglers. Research can inform fisheries management policies, and managers can influence attributes that add to or detract from the quality of a fishing trip. This study suggests that catch outcomes (activity-specific attributes unique to fishing) are important for Townsville area anglers; some of these attributes

**Table 5.—Analysis of variance – overall satisfaction dimensions**

	Slow Action		Plenty of Action		Weather Sensitive		Gloomy Gusses		OK Corral		F	df
	<i>M</i> <sup>a</sup>	<i>SD</i>										
Overall Satisfaction	3.62 <sup>ABD</sup>	0.87	4.09 <sup>ABDE</sup>	0.84	3.81 <sup>CD</sup>	0.78	2.85 <sup>ABCDE</sup>	0.87	3.37 <sup>BDE</sup>	0.77	12.80 <sup>***</sup>	4

<sup>a</sup> Measured on a 5 point scale ranging from 1 (not at all important) to 5 (extremely important).

Like uppercase superscripts indicate significant difference using Tukey's HSD Test at 0.05 level.

are under managers' control to some degree (Fisher 1997). It may be useful for managers to concentrate on identifying attributes that contributed to poor quality fishing experiences among anglers in the OK Corral group since this was the largest angler segment in the study (75 respondents). It was surprising that years of fishing experience was not significantly different among the five angler segments; the specialization construct suggests that individuals with more experience would place less value on catch-related trip qualities and more on non-catch qualities with regard to satisfaction. Perhaps the participants in this study constituted a fairly homogeneous group overall.

## 5.0 LITERATURE CITED

- Aas, O.; Kaltenborn, B.P. 1995. **Consumptive orientation of anglers in Engerdal, Norway.** *Environmental Management*. 19(5): 751-761.
- Arlinghaus, R.; Cooke, S.J. 2005. **Global impact of recreation fisheries.** *Science*. 307: 1561-1562.
- Bryan, H. 1977. **Leisure value systems and recreational specialization: the case of trout fishermen.** *Journal of Leisure Research*. 9: 174-187.
- Bryan, H. 1979. **Conflict in the great outdoors: toward understanding and managing for diverse sportsmen preferences.** Tuscaloosa, AL: University of Alabama Press.
- Chipman, B.D.; Helfrich, L.A. 1988. **Recreational specialization and motivations of Virginia river anglers.** *North American Journal of Fisheries Management*. 8: 390-398.
- Crompton, J. L.; Love, L.L. 1995. **The predictive validity of alternative approaches to evaluating quality of a festival.** *Journal of Travel Research*. 34(1): 11-24.
- Day, J.C. 2002. **Zoning - lessons from the Great Barrier Reef Marine Park.** *Ocean & Coastal Management*. 45: 139-156.
- Ditton, R.B. 1985. **Understanding the diversity among recreational fishermen.** Paper presented at the International Game Fish Association, Fort Lauderdale, FL.
- Ditton, R.B.; Loomis, D.K.; Choi, S. 1992. **Recreation specialization: re-conceptualization from a social worlds perspective.** *Journal of Leisure Research*. 24(1): 33-51.
- Driver, B.L.; Cooksey, R.W. 1977. **Preferred psychological outcomes of recreational fishing.** Paper presented at the Catch and release fishing as a management tool: A national sportfishing symposium. Arcata, CA: Humbolt State University.
- Driver, B.L.; Knoff, R.C. 1976. **Temporary escape: one product of sport fisheries management.** *Fisheries*. 1: 21-29.
- Fedler, A.J.; Ditton, R.B. 1986. **A framework for understanding the consumptive orientation of recreational fishermen.** *Environmental Management*. 10(2): 221-227.
- Fedler, A.J.; Ditton, R.B. 1994. **Understanding angler motivations in fisheries management.** *Fisheries*. 19(4): 6-13.
- Finn, K.L.; Loomis, D.K. 2001. **The importance of catch motives to recreational anglers: the effects of catch satiation and deprivation.** *Human Dimensions of Wildlife*. 6: 173-187.
- Fisher, M.R. 1997. **Segmentation of the angler population by catch preference, participation and experience: a management-oriented application of recreation specialization.** *North American Journal of Fisheries Management*. 17(1): 1-10.
- GBRMPA 2010. **Management status: tourism & recreation.** Available at [http://www.gbrmpa.gov.au/corp\\_site/info\\_services/publications/sotr/latest\\_updates/tourec](http://www.gbrmpa.gov.au/corp_site/info_services/publications/sotr/latest_updates/tourec). (Accessed April 12, 2010).

- Graefe, A. 1980. **The relationship between level of participation and selected aspects of specialization in recreational fishing.** College Station, TX: Texas A&M University. Ph.D. dissertation.
- Graefe, A.R.; Fedler, A.J. 1986. **Situational and subjective determinants of satisfaction in marine recreational fishing.** *Leisure Sciences*. 8(3): 275-294.
- Hammitt, W.E.; Dulin, J.N.; Wells, G.R. 1993. **Determinants of quality wildlife viewing in Great Smoky Mountains National Park.** *Wildlife Society Bulletin*. 21: 21-30.
- Hendee, J.D. 1974. **A multiple satisfaction approach to game management.** *Wildlife Society Bulletin*. 2: 104-113.
- Holland, S.M.; Ditton, R.B. 1992. **Fishing trip satisfaction: a typology of anglers.** *North American Journal of Fisheries Management*. 12: 28-33.
- Kyle, G.; Norman, W.; Jodice, L.; Graefe, A.; Marsinko, A. 2007. **Segmenting anglers using their consumptive orientation profiles.** *Human Dimensions of Wildlife*. 12: 115-132.
- Manning, R.E. 1999. **Studies in outdoor recreation. 2nd ed.** Corvallis, OR: Oregon State University Press.
- McGurrin, J.M. 1988. **Diversity in Gunpowder River trout anglers and implications for management.** In: Eversole, A.G., ed. *Proceedings of the 42nd Annual Conference Southeastern Association of Fish and Wildlife Agencies*.
- Moeller, G.H.; Engelken, J.H. 1972. **What fishermen look for in a fishing experience.** *Journal of Wildlife Management*. 36(4): 1253-1257.
- Norse, E.A. 2010. **Ecosystem-based spatial planning and management of marine fisheries: Why and how?** *Bulletin of Marine Science*. 86(2): 1-17.
- Pallant, J. 2001. **SPSS survival guide: A step by step guide to data analysis using SPSS.** Crows Nest, NSW: Allen & Unwin.
- Payne, A. 1992. **The essence of services marketing.** New York: Prentice-Hall.
- Schramm, H.L. 2003. **The importance of environmental quality and catch potential to fishing site selection by freshwater anglers in Mississippi.** *North American Journal of Fisheries Management*. 23: 512-522.
- Shafer, E.L. 1969. **The average camper who doesn't exist.** Res. Pap. NE-142. Upper Darby, PA: U.S. Department of Agriculture, Forest Service, Northeastern Forest Experiment Station. 27 p.
- Spencer, P.D. 1993. **Factors influencing satisfaction of anglers on Lake Miltona, Minnesota.** *North American Journal of Fisheries Management*. 13(2): 201-209.
- Sutton, S.G. 2005. **Factors influencing boater satisfaction in Australia's Great Barrier Reef Marine Park.** *Tourism in Marine Environments*. 2(1): 13-22.
- Sutton, S.G.; Tobin, R. C. 2009. **Recreational fishers' attitudes towards the 2004 rezoning of the Great Barrier Reef Marine Park.** *Environmental Conservation*. 36(3): 245-252.
- Wagar, J.A. 1964. **The carrying capacity of wildlands for recreation.** *Forest Science*. Monograph 7, Washington, DC: Society of American Foresters.

The content of this paper reflects the views of the author(s), who are responsible for the facts and accuracy of the information presented herein.

*MANAGEMENT  
APPLICATIONS*

# PERCEPTIONS OF RELATIVE ATTRACTIVENESS OF NATURE-BASED TOURISM ASSETS: A COMPARISON BETWEEN CVB DIRECTORS AND VISITORS

---

Jinyang Deng, Ph.D.  
Recreation, Parks, and Tourism Resources Program  
West Virginia University  
jinyang.deng@mail.wvu.edu

David Dyre  
West Virginia University

Jing Wang  
Soochow University

---

**Abstract.**—This study uses the Analytic Hierarchy Process (AHP) to examine the similarities and differences between directors of Convention and Visitors Bureaus (CVB) and the general travelling public in their perceptions of the attractiveness of nature-based tourism resources in the state of West Virginia. Results indicate that the two groups are significantly different in their perceptions of the resource assets in question. Specifically, the top five most attractive nature-based tourism resources, from the perspective of CVB directors, are golf courses, rivers, state parks, cabins, and lakes. In contrast, the top five nature-based tourism resources ranked by visitors are state parks, national forests, wildlife management areas, state forests, and national parks. Research implications and future research needs are discussed.

---

## 1.0 INTRODUCTION

Previous studies have indicated that visitors and resource managers have varying perceptions of the same resources in terms of their management practices and the status of ecological integrity (Swinnerton 2002). However, few studies, if any, have examined the similarities and differences between Convention and Visitors Bureau (CVB) directors and the general

travelling public in the attractiveness of nature-based tourism assets. To this end, this study examines and compares the perceptions of nature-based tourism assets in West Virginia from the perspectives of CVB directors and visitors. This comparison was conducted using the Analytic Hierarchy Process (AHP) (Saaty 1980).

## 2.0 LITERATURE REVIEW

Given the limited literature on the perceptions of tourism resources by CVB directors and visitors, this literature review draws upon findings from other related study fields.

In the field of parks and recreation, a number of studies have looked at visitors' perceptions of campsite, wilderness area, and trail impacts (Dorwart et al. 2004). These studies suggest that managers often differ from visitors in their perception and their evaluation or interpretation of impacts on recreational resources (Dorwart et al. 2004). For example, White et al. (2001) found that visitors perceive open areas with less vegetation as desirable, whereas managers perceive vegetation loss as a negative impact and detrimental to the viability of the natural resources. Similarly, Farrell et al. (2001) also found that campers' perceptions of ecological impacts differed from managers' perceptions, in that campers did not rate the impacts negatively as managers did (as cited in Dorwart et al. 2004). These two studies suggest that visitors tend to pay more attention to the functional benefits of the ecosystem than the ecological integrity of the ecosystem. The following two studies report similar findings.

Anderson et al. (2000) found that many Asian-Americans (mostly Koreans and Japanese) picked young bracken fern fiddleheads for use in holiday and everyday meals. They thought that ecologically,

“picking bracken fern does not endanger the ferns” (p. 759) but this contradicts managers’ perceptions. The second study focused on Canadian national parks, which generally convey a sense of wildness and naturalness. Swinnerton (2002) found that the majority of visitors perceived the landscape as being ecologically healthy even though the parks were actually ecologically degraded.

As stated in Manning (1999, p. 281), “research indicates that managers’ perceptions of outdoor recreation may differ from those of visitors. If a basic purpose of managing outdoor recreation is to provide satisfying experiences to visitors, then objective and systematically collected information is needed from visitors about what defines satisfying recreation experiences.” Therefore, it is important, though challenging, for managers to learn how to reconcile their perceptions with those of visitors and to design management strategies that best serve the common good (Dorwart et al. 2004).

### 3.0 METHODS

This study examines whether or not CVB directors and visitors have similar perceptions of nature-based tourism attractions in West Virginia. A questionnaire was designed based on findings from the literature (i.e., Deng et al. 2002, Strager and Rosenberger 2006) and input from participating CVB directors. This questionnaire contains pairwise comparisons of 21 categories of nature-based tourism assets in the state using the AHP. The AHP criteria are presented in Table 1. Data from CVB directors was collected using mail questionnaires while intercept surveys were used to collect data from visitors at the I-68 West Virginia

welcome center. Following Dillman’s (2000) Total Design Method, a package containing a cover letter, a copy of the questionnaire, and a stamped and self-addressed envelope was mailed to the directors in May 2008. Field trips were also made to meet with some of the directors in May and June 2008. Convenience sampling was used for visitor surveys between April and June 2009. Visitors who were first timers or not familiar with the state’s natural tourism resources were excluded from the survey.

Pairwise comparisons were conducted using the software Expert Choice, which created a ranking order of weights for 21 types of assets (see Table 1). The ranking order was then statistically compared by the Spearman rank-order correlation coefficient (Spearman’s rho), a technique for determining the correlation between two ordinal variables.

### 4.0 RESULTS

Fourteen of 26 CVB directors approached participated in the study, resulting in a response rate of 53.8 percent, while 191 of 360 eligible visitors approached were willing to take part in the survey, resulting in a response rate of 53.1 percent. Figures 1 and 2 present the ranking orders of weights determined by the AHP for directors and visitors, respectively. The normalized ranking orders are presented in Figures 3 and 4. According to CVB directors, the top five most attractive nature-based tourism resources are golf courses, rivers, state parks, cabins and lakes. In contrast, the top five nature-based tourism resources ranked by visitors are state parks, national forests, wildlife management areas, state forests, and national parks. The normalized ranking of CVB directors’

**Table 1.—The application of paired comparisons using the AHP Scale (Adapted from Saaty 1987)**

Intensity of Importance	Determination and Explanation
1	Two attributes are equally important
3	One attribute is slightly more important than the other
5	One attribute is moderately important than the other
7	One attribute is very important over the other
9	One attribute is extremely important over the other

responses indicates that rivers, state parks, cabins, and lakes are about 87 percent, 75 percent, 67 percent, and 66 percent as attractive as golf courses, while for visitors, national forests, state forests, wildlife

management areas, and national parks are about 74 percent, 71 percent, 69 percent, and 67 percent as attractive as state parks.

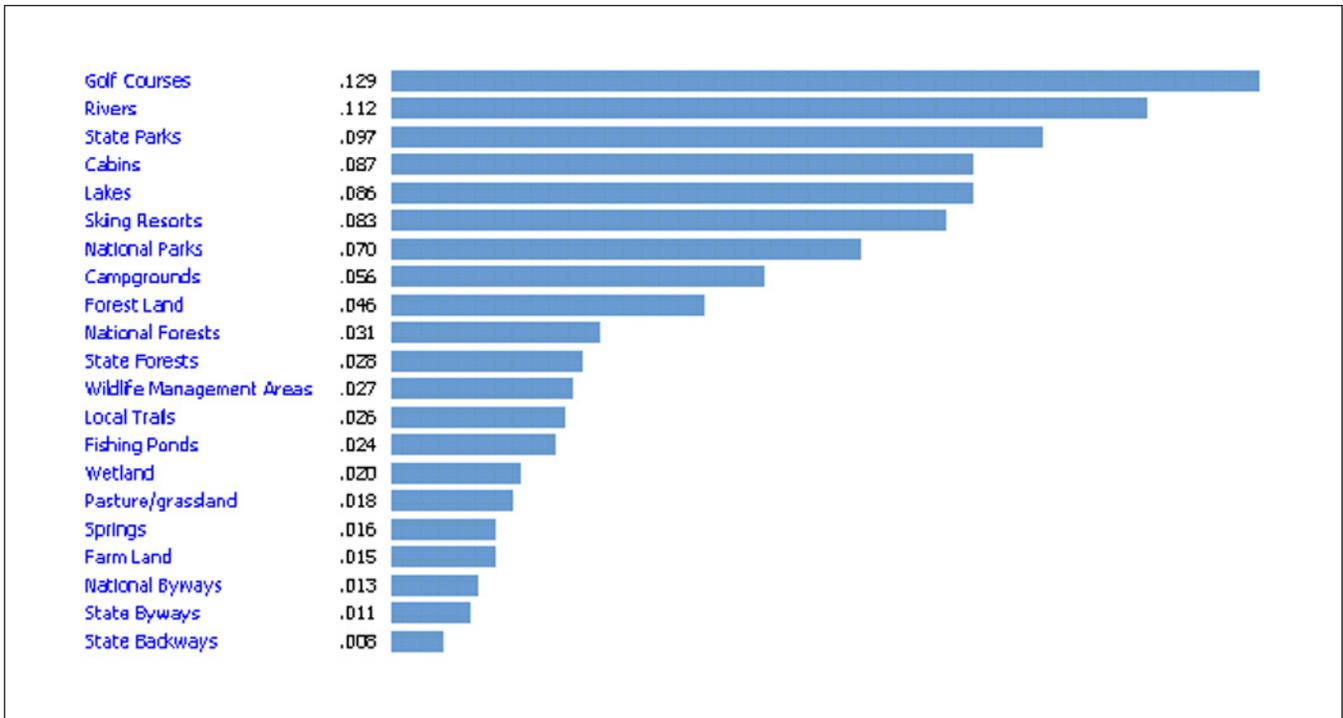


Figure 1.—Ranking order of weights for Convention and Visitor Bureaus (CVB) directors.

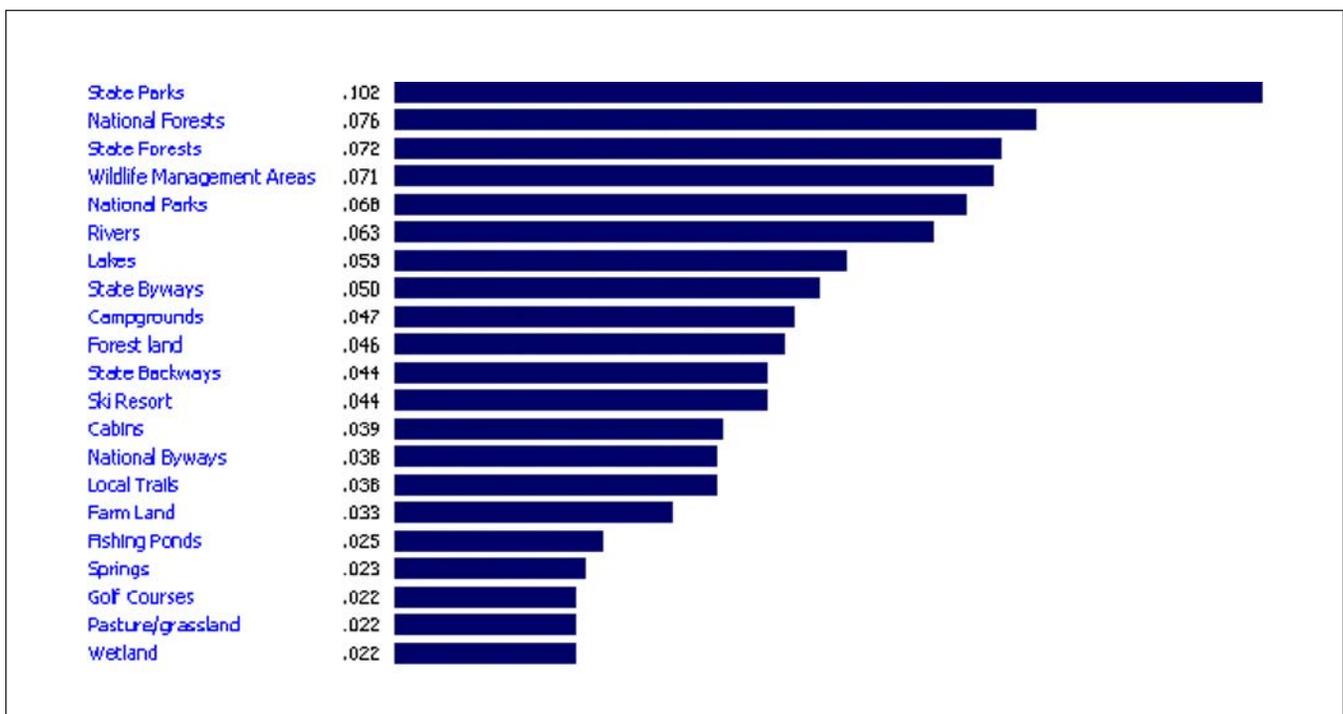


Figure 2.—Ranking order of weights for visitors (Overall Inconsistency = .02).

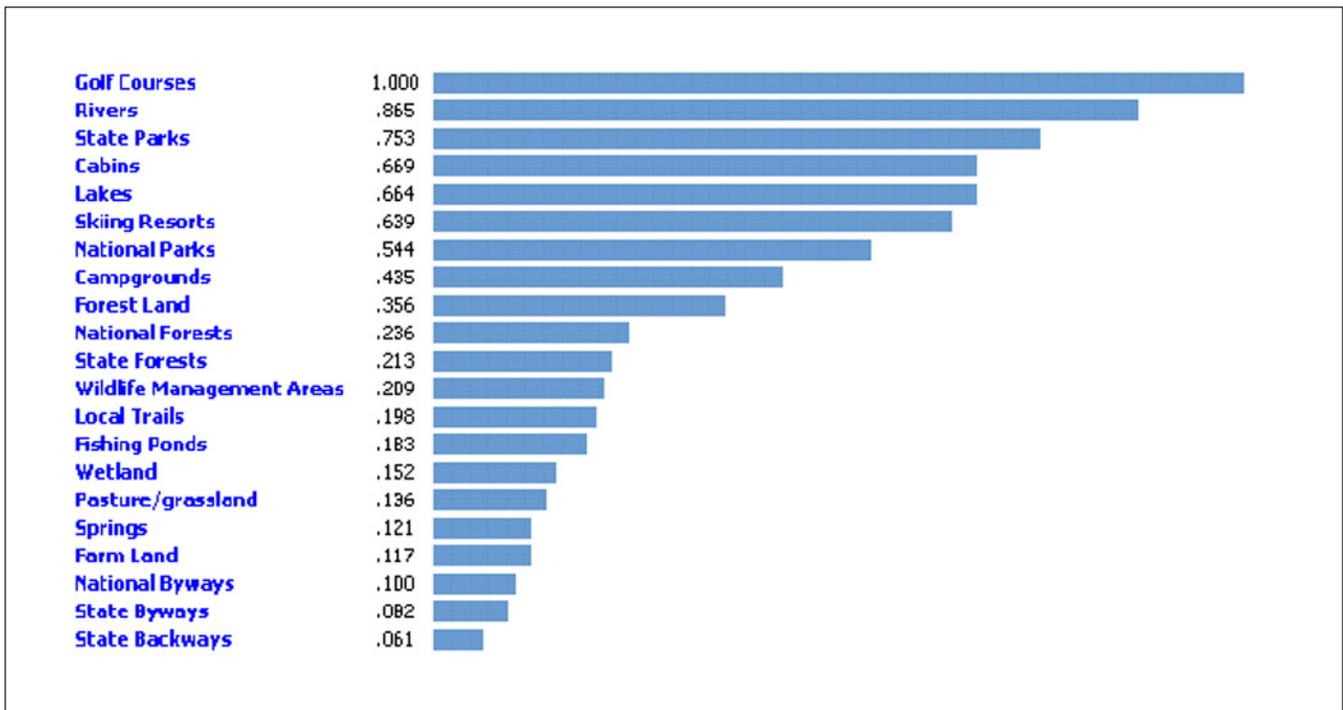


Figure 3.—Normalized ranking order of weights for Convention and Visitors Bureaus (CVB) directors (Overall Inconsistency = .02).

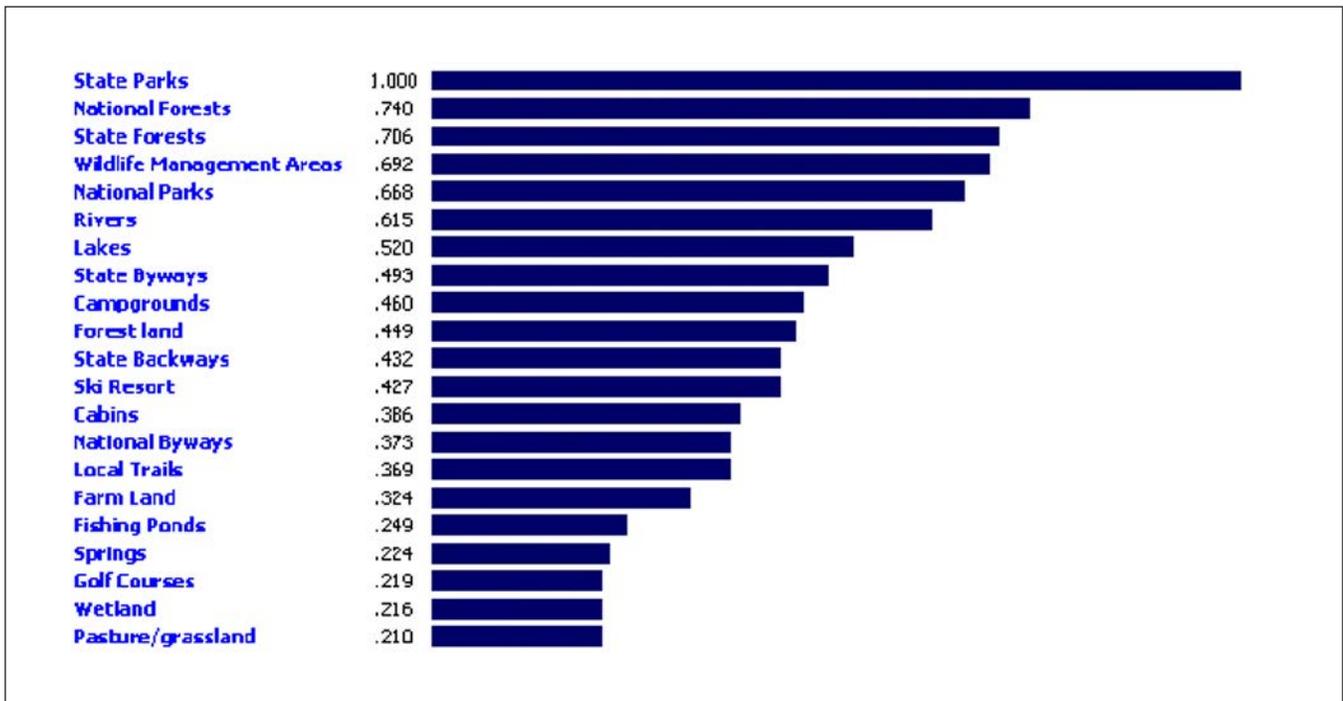


Figure 4.—Normalized ranking order of weights for visitors (Overall Inconsistency = .02).

Table 2 presents the comparison of visitors' and CVB directors' ranking orders of the 21 types of nature-based tourism resources. As shown, state parks were ranked no. 1 by visitors and no. 3 by directors. In contrast, golf courses were ranked no. 1 by directors and no. 20 by visitors. The correlation analysis shows that both groups' perceptions of those resource assets are not significantly correlated ( $p > .05$ ). That is, the ranking order by visitors is significantly different from that by CVB directors.

## 5.0 DISCUSSION AND CONCLUSION

Visitors' perceptions of resource attractiveness in this study are comparable with a previous study by Longwoods International (2004), which found that forest, lakes/streams, and farms were among the most frequently reported attractions experienced by visitors to West Virginia in 2004. As in the present study, forest-based attractions (i.e., state parks/forests,

national parks/forests, wildlife management areas), farms, lakes, and rivers were also ranked higher than other tourism assets by visitors. In addition, the finding from the present study that state parks were ranked the highest by visitors and third by CVB directors is also comparable to a previous study by Deng and McHenry (2007) that focused on "Wonderful West Virginia" magazine users' perceptions of the magazine and topics of interest covered in the magazine. In that study, state parks were ranked as the first, third, and second most interesting topics, respectively, by former subscribers, current subscribers, and those who have never subscribed to the magazine.

In this study, the top five assets as ranked by visitors were all public lands managed by federal or state agencies. These public lands provide a wide array of opportunities for outdoor recreation activities. In contrast, two of the top five assets ranked by directors are private properties (i.e., golf courses and cabins, although some golf courses are public). It should be noted that another type of private business, ski resorts, was ranked 6th by CVB directors but 13th by visitors. This finding implies that CVB directors may have paid more attention to those tourism assets whose owners may be CVB members. This has some important implications for state tourism development. First, the marketing effort may want to target the resources that visitors perceive as the most attractive rather than those favored by CVB managers. Second, this finding suggests that the future of West Virginia's tourism depends on the authenticity of natural features and rural character of the state. As a result, the state should pay more attention to protecting these assets from degradation by other commercial activities such as mining and timbering to keep the state "wild and wonderful" ("Wild and Wonderful" is the West Virginia Division of Tourism's advertising campaign tagline).

This study is not without limitations. First, visitor surveys were only conducted at one welcome center. In future studies, surveys should be conducted at other welcome centers and/or destinations. Second, visitors' perception of the attractiveness of nature-based tourism assets was compared with that of only

**Table 2.—Ranking comparison of 21 outdoor recreation resources between visitors and Convention and Visitors Bureaus (CVB) directors.**

Outdoor Recreation Resources	Ranking by visitors	Ranking by CVB directors
State Parks	1	3
National Forests	2	10
Wildlife Management Areas	3	12
State Forests	4	11
National Parks	5	7
Rivers	6	2
Lakes	7	5
State Byways	8	20
Forest Lands	9	9
Cabins	10	4
Campgrounds	11	8
State Backways	12	21
Ski Resorts	13	6
National Byways	14	19
Farm Land	15	18
Local Trails	16	13
Springs	17	17
Fishing Ponds	18	14
Pasture/Grasslands	19	16
Golf Courses	20	1
Wetland	21	15

one group, CVB directors. Future studies may need to include other groups such as tourism planners, staff with relevant state agencies such as West Virginia Division of Tourism, and West Virginia Division of Natural Resources, among others.

## 6.0 ACKNOWLEDGMENTS

This study was funded by West Virginia University Senate Research Grant. Thanks to participating CVB directors and visitors.

## 7.0 LITERATURE CITED

- Anderson, J.A.; Blahna, D.; Chavez, D. 2000. **Fern gathering on the San Bernardino National Forest: cultural versus commercial values among Korean and Japanese participants.** Society and Natural Resources. 13: 747-762.
- Deng, J.; King, B.; Bauer, T. 2002. **Evaluating natural attractions for tourism.** Annals of Tourism Research. 29(2): 422-438.
- Deng, J.; McHenry, K. 2007. **Wonderful West Virginia magazine survey report.** Technical report prepared for WV Department of Commerce.
- Dillman, D. A. 2000. **Mail and telephone surveys: the total design method.** 2nd ed. New York: John Wiley & Sons.
- Dorwart, C.; Leung, Y.-F.; Moore, R. 2004. **Managing visitors' perceptions.** Parks and Recreation. 39(5): 24-31.
- Farrell, T.; Hall, T.; White, D. 2001. **Wilderness campers' perception and evaluation of campsite impacts.** Journal of Leisure Research. 33(3): 229-250.
- Longwoods International. 2004. **West Virginia day trip study.** West Virginia Division of Tourism.
- Saaty, R.W. 1987. **The analytic hierarchy process: what it is and how it is used.** Mathematical Modeling. 9: 161-176.
- Saaty, T.L. 1980. **The analytic hierarchy process.** New York: McGraw-Hill.
- Strager, M.P.; Rosenberger, R.S. 2006. **Incorporating stakeholder preferences for land conservation: weights and measures in spatial MCA.** Ecological Economics. 58: 79-92.
- Swinerton, G.S. 2002. **Case study: Banff and the Bow Valley.** In: Dearden, P.; Rollins, R., eds. Parks and protected areas in Canada: planning and management. 2nd ed. Don Mills, ON: Oxford University Press: 240-264.
- White, D.; Hall, T.; Farrell, T. 2001. **Influence of ecological impacts and other campsite characteristics on wilderness visitors' campsite choices.** Journal of Park and Recreation Administration. 19(2): 83-97.

The content of this paper reflects the views of the author(s), who are responsible for the facts and accuracy of the information presented herein.

*RECREATION RESOURCE  
MANAGEMENT I*

# PERCEPTIONS OF PUBLIC FOREST MANAGERS CONCERNING TRAIL USE BY OFF-HIGHWAY VEHICLE RIDERS IN THE NORTHEAST UNITED STATES

---

Diane M. Kuehn  
SUNY College of Environmental Science and Forestry

Valerie A. Luzadis  
SUNY College of Environmental Science and Forestry

Robert W. Malsheimer  
SUNY College of Environmental Science and Forestry

Rudolph M. Schuster  
U.S. Geological Survey

---

**Abstract.**—This research provides information about natural resource managers' perceptions of off-highway vehicle (OHV) riders' attitudes towards two OHV riding behaviors: (1) the use of trails on which OHVs are prohibited; and (2) the development and/or use of unauthorized trails (i.e., trails not authorized or created by a public land management agency). In the spring of 2006, we surveyed 498 managers of state and federal forestlands in the northeast; 168 (34 percent) managers completed and returned a questionnaire. Results indicate moderate relationships between managers' perceptions of OHV riders' attitudes and intentions. Managers thought that the most effective strategies for influencing rider behaviors were listing trail use regulations at access areas and educating riders about fines related to breaking the regulations.

---

## 1.0 INTRODUCTION

Between 1999 and 2004, an estimated 13.4 million people (age 16 or older) used off-highway vehicles (OHV) in the northern United States (i.e., New England, Mid Atlantic and Great Lakes states; Cordell et al. 2005). OHV use increased nearly 42 percent during this timeframe in the United States overall. This trend holds particular significance for public forests in the northeast United States (i.e., Maine, New Hampshire, Vermont, New York, New Jersey,

Connecticut, Rhode Island, and Massachusetts), where high population density and limited available acres of public land tend to magnify issues related to outdoor recreation.

In 2006, we surveyed forest managers about their perceptions of OHV riders' attitudes and intentions concerning two trail-use behaviors: (1) the use of trails on which OHVs are prohibited; and (2) the development and/or use of unauthorized trails (i.e., trails not authorized or created by the land management agency in charge of the property). The objective of the study was to identify the relationship between managers' years of work experience and personal riding experience, and their perceptions of riders' attitudes and intentions. We also examined the perceived effectiveness of management strategies for addressing both behaviors. For this study, OHVs included four-wheel drive jeeps or sport utility vehicles (SUVs) that are used off-highway for recreational purposes, motorcycles designed for off-highway use (i.e., off-highway motorcycles (OHMs) or dirt bikes), and all-terrain vehicles (ATVs) designed for off-highway use including 4- and 6-wheelers. We excluded snowmobiles from this study due to differences in the perceived impacts of snowmobiles on trail erosion as compared to other OHVs.

This study uses the Theory of Planned Behavior (Ajzen 1991, Hrubes et al. 2001) as a framework for examining managers' perceptions of OHV riders' attitudes and intentions towards the two trail-use behaviors. The Theory of Planned Behavior suggests that attitudes and beliefs influence intentions towards specific behaviors, which in turn influence the actual behaviors. Ajzen (1991) describes three types of beliefs (i.e., behavioral, control, and normative) as well as attitudes towards the behavior, subjective norms, and perceived behavioral controls as antecedents of intended behaviors. Our study focuses on the relationship between attitudes towards the

behavior (i.e., an individual's positive or negative evaluations of performing a specific behavior; Ajzen and Fishbein 1980) and intentions.

## 2.0 METHODS

In 2006, a census of state and federal forest managers and rangers was compiled from U.S. Forest Service lists, state natural resource agency lists, and Internet sources for the states of New York, Connecticut, Vermont, New Hampshire, Rhode Island, and Massachusetts, Maine, New Jersey, and Pennsylvania. The final mailing list included 509 managers and rangers throughout the northeast in 161 state and federal agency offices.

The survey consisted of four separate mailings to managers using a modified Tailored Design Method (Dillman 2000). The questionnaire included 112 questions about managers' work experience and use of OHVs, management strategies implemented at the sites they managed/patrolled, and their perceptions of OHV riders' attitudes, and intended behaviors. Questions used to obtain information about management, attitudes, and intended behaviors were based on prior works (Ajzen 2001, Ajzen and Driver 1992, Bright and Manfredi 1996, Rogers 1985). Respondents were asked to indicate their agreement or disagreement with statements related to their perceptions of OHV riders' attitudes and intended behaviors towards the two trail use behaviors. Attitudes were conceptualized as managers' perceptions of riders' evaluations of the two behaviors as positive/good, neutral or negative/bad. Three attitude questions were included for each behavior using a five-point scale (-2 = very negative, -1 = negative, 0 = neutral, 1 = positive, 2 = very positive). Questions on intentions towards the two behaviors were stated in the positive (e.g., most OHV riders do NOT intend to [trail use behavior]). Three intention questions were included for each behavior and five-point scales (-2 = strongly disagree, -1 = disagree, 0 = neutral, 1 = agree, 2 = strongly agree) were used. Responses to intention questions were reverse coded during analysis to match the direction of response for the attitude questions.

Managers were also asked to identify how frequently they used different management strategies on a five-point scale (0 = never used, 1 = used for 1 to 25 percent of riders or trail system, 2 = used for 26 percent to 50 percent of riders or trail system, 3 = used for 51 percent to 75 percent of riders or trail system, and 4 = used for over 75 percent of riders or trails). Managers identified which management strategies they used and the perceived effectiveness of each strategy on a scale of 0 to 4 (0 = not effective for any riders, 1 = effective for 1 percent to 25 percent of riders, 2 = effective for 26 percent to 50 percent of riders, 3 = effective for 51 percent to 75 percent of riders, 4 = effective for over 75 percent of riders). Information about the year the manager was first employed by the agency and their use of OHVs for work and recreation was also requested.

Following data entry, descriptive statistics were used to quantify manager characteristics. Variables related to the attitudes, intentions, and management strategies concerning the two trail-use behaviors were combined into factors based on previous research (Ajzen and Driver 1992, Bright and Manfredi 1996, Rogers 1985). We quantified the attitudes and intentions in SPSS by averaging the variables comprising each factor for each behavior. A Cronbach's alpha of 0.7 or greater was used to establish the reliability of factors (Hair et al. 1998, p. 118). A step-wise regression analysis for each behavior was conducted to identify relationships between intentions (dependent variable; reverse coded for the regression analysis) and the independent variables of attitude, years of employment, and days spent riding an OHV for work and recreation in 2006.

## 3.0 RESULTS

Of the 509 managers identified in the census, a qualified sample of 498 was obtained after removing undeliverable mail. From the qualified sample, we received 168 responses (34 percent response rate) from 134 offices (83 percent of the offices).

Managers had been employed by the agency for which they currently worked for an average of 17 years. A total of 77 percent of the responding managers used an OHV for work or recreation. Sixty-seven percent rode an ATV—76 percent for work only and 24 percent for work and recreational purposes. Sixty-three percent rode a four-wheel drive vehicle off-road—52 percent for work only, 5 percent for recreation only, and 43 percent for both work and recreation. The smallest percent of respondents (7 percent) rode a dirt bike—46 percent for work only and 54 percent for recreation only.

Several management strategies were commonly used by managers (Table 1). The most commonly used strategies were posting trail markers to identify where OHVs were permitted, requiring that riders be registered with the Department of Motor Vehicles (DMV), posting OHV regulation information on

agency Web sites and at trailheads, and talking about OHV regulations with riders. The most used strategy (posting trail markers) received an average response of 2.8 on a scale of 0 to 4, indicating that it was used for nearly 51 percent to 75 percent of trails on average.

Managers were also asked to identify if they thought different management strategies were effective at influencing OHV rider behaviors (Table 2). Most strategies were identified as moderately effective (i.e., effective for 26 percent to 50 percent of all riders) by those managers who used them; effectiveness ratings by managers who did not use specific strategies were lower. The most effective measures were perceived to be listing trail use regulations at access areas and informing OHV riders of the dollar amount of the fine they would receive if they broke regulations.

**Table 1.—Management strategy use**

Management strategy	Number of responses (n)	Strategy use <sup>a</sup>
Posting trail markers along trails to identify if OHVs are permitted or not.	160	2.8
Requiring that OHV riders be registered with the state's DMV in order to ride on agency lands.	155	2.5
Posting information about OHV-related regulations on the agency's Web site.	150	2.2
Posting information about OHV-related regulations at trailheads or other access points.	160	2.1
Talking with OHV riders about the OHV-related regulations for the area in which they are riding.	160	2.0
Talking with OHV riders about the potential positive and negative social and environmental impacts associated with OHV use.	158	1.6
Posting educational information on the agency's Web site that discusses the potential positive and negative social and environmental impacts associated with OHV use.	151	1.6
Providing maps to OHV riders that clearly identify trails designated for OHV use.	159	1.3
Posting educational information at trailheads that discusses the potential positive and negative social and environmental impacts associated with OHV use.	157	1.3
Providing educational brochures to OHV riders that discuss potential positive and negative social and environmental impacts associated with OHV use.	159	1.1
Requiring that OHV riders obtain a permit before riding on agency lands.	156	0.8
Requiring that OHV riders pay a user fee before riding on agency lands.	156	0.2

<sup>a</sup> Average use is based on a five point scale of 0 = never used, 1 = used for 1 to 25 percent of riders or trail system, 2 = used for 26 percent to 50 percent of riders or trail system, 3 = used for 51 percent to 75 percent of riders or trail system, and 4 = used for over 75 percent of riders or trails.

**Table 2.—Perceptions concerning the effectiveness of management strategies when used and not used**

Behavior to which strategy applies	Management strategy	Number of responses (n)	Strategy used (%)	Average effectiveness when used <sup>a</sup>	Perceived effectiveness when not used <sup>a</sup>
Both behaviors	Educating OHV riders about how they can reduce negative impacts (e.g., stay on OHV trails only, slow down when passing others).	127	57	1.7	1.3
	Educating OHV riders about how easy it is to make minor changes in their actions during a ride that can reduce negative impacts.	124	52	1.7	1.4
	Listing trail-use regulations at all or most access areas so that riders are informed about the official trails on which they can legally ride.	128	69	2.1	1.6
Riding on trails on which OHVs are prohibited	Educating OHV riders about the amount of negative environmental and social impacts that will occur if they use an official trails on which OHV use is prohibited.	138	73	1.8	1.2
	Informing OHV riders of the dollar amount of the fine they will receive if they break regulations that prohibit riding on certain official trails.	140	77	2.0	1.7
Creating and/or using unauthorized trails	Educating OHV riders about the amount of damage to natural resources that is caused by the development and/or use of unauthorized trails.	132	72	1.5	1.5
	Informing OHV riders of the dollar amount of the fine they will receive if they break regulations concerning the development and/or use of unauthorized trails.	136	78	1.8	1.4

<sup>a</sup> Average effectiveness is based on a five point scale of 0 = not effective for any riders, 1 = effective for 1 to 25 percent of all riders, 2 = effective for 26 percent to 50 percent of all riders, 3 = effective for 51 percent to 75 percent of all riders, and 4 = effective for over 75 percent of all riders. Effectiveness is averaged only for managers who utilized the strategy.

Managers' perceptions of OHV riders' attitudes towards both behaviors were neutral, while their perceptions of OHV rider intentions were moderately positive (0.42 for riding on trails where OHVs are prohibited and 0.51 for creating and/or using unauthorized trails; Table 3). Regression analyses revealed significant relationships between managers' perceptions of OHV rider attitudes and intentions, but low R<sup>2</sup> values (0.181 for riding on trails where OHVs are prohibited and 0.276 for creating and/or using unauthorized trails; Table 4). There were no significant relationships between managers' years of employment or days spent riding an OHV in 2006, and perceptions of OHV riders' intentions.

#### 4.0 DISCUSSION AND CONCLUSION

The objective of this study was to examine the relationship between manager's perceptions of OHV rider attitudes and intentions for two trail use behaviors. While significant relationships were identified between these two constructs for both behaviors, the R<sup>2</sup> of both regressions was low. In addition, no significant relationships were identified between OHV use or years on job and perceptions of riders' intentions. The results do, however, support the attitude-intention relationship identified in the Theory of Planned Behavior. Using additional constructs included in the Theory such as subjective norms and behavioral controls could possibly lead to improved results in future OHV studies.

**Table 3.—OHV rider attitudes and intentions as perceived by managers**

Behavior	Factor	Number of responses (n)	Factor mean (Cronbach's alpha)
OHV rider use of trails on which OHVs are prohibited.	Attitude <sup>a</sup>	156	0.01 (0.748)
	Intention <sup>b</sup>	160	0.42 <sup>c</sup> (0.834)
The development/use of unauthorized trails by OHV riders.	Attitude <sup>a</sup>	156	0.08 (0.836)
	Intention <sup>b</sup>	159	0.51 <sup>c</sup> (0.826)

<sup>a</sup> Average is based on a five point scale of -2 (strongly negative) to 0 (neutral) to 2 (strongly positive).

<sup>b</sup> Average is based on a five point scale of -2 (strongly disagree) to 0 (neutral) to 2 (strongly agree).

<sup>c</sup> Reverse coded from original survey question.

**Table 4.—Regression analysis results for managers' perceptions of two trail use behaviors**

Behavior	Overall	Dependent variable	Independent variables	Beta	p-value
Riding on trails on which OHVs are prohibited	F = 32.059 p = 0.001 R <sup>2</sup> = 0.181	Intended behavior <sup>a</sup>	Attitude	0.628	0.001
Creating and/or using unauthorized trails	F = 54.137 p = 0.001 R <sup>2</sup> = 0.276	Intended behavior <sup>a</sup>	Attitude	0.677	0.001

<sup>a</sup> Reverse coded.

This study also examined management strategies and their perceived effectiveness for influencing trail-related behaviors. Listing regulations at access areas and informing OHV riders of fines for breaking regulations were believed to be the most effective management strategies. Educating users about the social and environmental impacts of trail use behaviors was also somewhat effective. None of the management strategies were considered to be strongly effective alone; however, this result may indicate that obtaining a high effectiveness rating for management strategies may involve using a diversity of strategies rather than relying on one strategy alone. Interestingly, two of the management strategies not based on education (i.e., requiring that OHV riders obtain a permit before riding on agency lands, and requiring that OHV riders pay a user fee before riding on agency lands) were ranked the lowest in use by managers (see Table 1).

A comparison of the results of this study with previous research examining riders' perceptions of these two trail use-related behaviors (Kuehn et al. 2011) reveals similar preferences for information-based strategies. For example, riders had strong preferences for having regulations listed at access areas and for educating riders about how they can reduce social and environmental impacts of OHV riding. Comparisons of riders' attitudes with managers' perceptions of riders' attitudes, however, revealed differences. While managers' perceptions of riders' attitudes were near neutral, riders' attitudes were moderately negative towards the two behaviors. Similarly, managers perceived moderately positive intentions by riders towards the two behaviors, while the intentions reported by riders were moderately negative. It is important to note, however, that because all riders surveyed were members of an OHV association, these respondents may have different perceptions of the two behaviors than would riders not affiliated with OHV clubs or associations.

In summary, the Theory of Planned Behavior was a useful framework for studying the relationships between managers' perceptions of OHV rider attitudes and intentions. While this study provides information that will be useful to forest managers and OHV associations interested in collaborative efforts towards trail development and maintenance, additional research is needed concerning other potential antecedents of intentions. Collaboration between riders and managers is essential for limiting OHV-related social and environmental impacts and providing quality OHV riding experiences in the future.

## 5.0 ACKNOWLEDGMENTS

The authors wish to thank the many managers across the northeast who participated in this study; Peter D'Luhosch for coordinating the mail survey; and to the USDA McIntire Stennis Program (administered through SUNY College of Environmental Science and Forestry) for funding this study.

## 6.0 LITERATURE CITED

- Ajzen, I. 1991. **The theory of planned behavior.** Organizational Behavior and Human Decision Processes. 50: 179-211.
- Ajzen, I. 2001. **Nature and operation of attitudes.** Annual Review of Psychology. 52: 27-58.
- Ajzen, I.; Driver, B.L. 1992. **Application of the theory of planned behavior to leisure choice.** Journal of Leisure Research. 24(3): 207-224.
- Ajzen, I.; Fishbein, M. 1980. **Understanding attitudes and predicting social behavior.** Englewood Cliffs, NJ: Prentice Hall.
- Bright, A.D.; Manfredi, M.J. 1996. **A conceptual model of attitudes toward natural resources issues: a case study of wolf reintroduction.** Human Dimensions of Wildlife. 1(1): 1-21.
- Cordell, H.K.; Betz, C.J.; Green, G.; Owens, M. 2005. **Off-highway vehicle recreation in the United States, regions, and states: a national report from the National Survey on Recreation and the Environment (NSRE).** Athens, GA: U.S. Department of Agriculture, Forest Service, Southern Research Station. Final Report. Available at: [http://www.fs.fed.us/recreation/programs/ohv/OHV\\_final\\_report.pdf](http://www.fs.fed.us/recreation/programs/ohv/OHV_final_report.pdf).
- Dillman, D.A. 2000. **Mail and Internet surveys: the tailored design method.** Hoboken, NJ: John Wiley and Sons.
- Hair, J.F.; Anderson, R.E.; Tatham, R.L.; Black, W.C. 1998. **Multivariate data analysis.** 5th ed. Upper Saddle River, NJ: Prentice Hall. 768 p.
- Hrubes, D.; Ajzen, I.; Daigle, J. 2001. **Predicting hunting intentions and behavior: an application of the theory of planned behavior.** Leisure Sciences. 23: 165-178.
- Kuehn, D.; D'Luhosch, P.; Luzadis, V.A.; Malmsheimer, R.W.; Schuster, R.M. 2011. **Attitudes and intentions of off-highway vehicle riders towards trail use: implications for forest managers.** Journal of Forestry 109(5): 281-287.
- Rogers, R.W. 1985. **Attitude change and information integration in fear appeals.** Psychological Reports. 56: 179-182.

The content of this paper reflects the views of the author(s), who are responsible for the facts and accuracy of the information presented herein.

*RURAL RECREATION  
AND TOURISM*

# A VISITATION-BASED PROFILE OF AGRITOURISM FARMS IN MISSOURI

---

Christine Tew  
Department of Parks, Recreation and Tourism  
University of Missouri  
cet337@mail.missouri.edu

Carla Barbieri, Ph.D.  
University of Missouri

---

**Abstract.**—We conducted a survey in 2008 to examine the farmland physical characteristics, operator attributes, agritourism offerings, and business operations associated with different levels of visitation on agritourism farms. Responses from 164 agritourism farms show that the majority are family-owned and family-operated and are located in rural areas. In addition to providing for visitors, agricultural production remains a priority on most farms. Chi-square and ANOVA tests show that larger numbers of visitors are associated with increased farm sales and profits, and that the targeted number of visitors is a management option not related to characteristics of the farmland or operator.

---

## 1.0 INTRODUCTION

As the agricultural context in the United States changes, farmers' attention is increasingly turning toward agritourism (Veeck et al. 2006, Nickerson et al. 2001). Family farms are facing challenges related to price instability, increasing land values, increasing agricultural input costs, reduced government support, and the economics of large-scale commodity production (Salamon 2003, Busby and Rendle 2000, Ilbery 1991). Coping strategies vary among farmers but include taking off-farm employment, abandoning farming, and developing non-farming enterprises.

On-farm entrepreneurial diversification, especially in the form of agritourism, is another way of responding to changes in the agriculture industry. Some have

suggested that agritourism can create a more stable, and often higher, income for the producer and can supplement farm incomes in times of economic distress, such as a poor harvest or depressed prices (Barbieri et al. 2008, Brandth and Haugen 2007, Fisher 2006, McGehee and Kim 2004, Nickerson et al. 2001). Although agritourism may increase farm revenues (Che 2007, Veeck et al. 2006), the impact of the number of visitors on farm profits remains poorly understood. Further, little information is available about different farm attributes associated with various levels of visitation.

The purpose of this study was to examine differences in farmland physical characteristics, operator attributes, agritourism offerings, and business operations (i.e., economic performance, marketing strategies and management indicators) among agritourism farms in Missouri receiving different levels of visitation. It is important to understand the influence of farm attributes on farm visitation and the effect of visitor numbers on farm profits since there is growing interest in agritourism among Missouri farms and within the state agriculture agency.

## 2.0 LITERATURE REVIEW

Agritourism is usually defined as any recreational or leisure activity programmed on a working farm or other agricultural operation with the purpose of attracting visitors (Che et al. 2005, Ollenburg and Buckley 2007). Diversifying via agritourism can help farms expand their business and increase economic gains either directly through the generation of revenues or indirectly through the sales and branding of other farm products/services (e.g., value-added products) and increased business awareness (Barbieri and Mahoney 2009, Ilbery 1991, Nickerson et al. 2001).

Some farm attributes, such as low fixed costs, length of time in business, number of employees, and farm acreage may contribute to increased agritourism farm

profitability (Barbieri and Mshenga 2008, Barbieri et al. 2008, Che 2007, Veeck et al. 2006). Veeck et al. 2006 suggested that a higher numbers of farm visitors will directly generate greater revenues and Che (2007) found a positive association between number of visitors and the overall farm sales. However, the specific relationship between visitor numbers and farm profits has received little attention in past research.

### 3.0 METHODS

In 2008, we conducted a survey of Missouri farmers with diversified enterprises including agritourism, using both printed and electronic questionnaires. The survey collected information on the characteristics of responding farmers and their land, types of agritourism offerings, and different business indicators (i.e., economic performance, marketing strategies, and management resources). The study sample of 564 was drawn from farms affiliated with Missouri Department of Agriculture marketing programs and a keyword Internet search. In addition, a snowball sampling technique was employed to capture those not included on formal lists. A total of 260 farm operators completed the questionnaire (43.6 percent response rate). This paper presents data from the 164 respondents involved in agritourism.

Responding farms were divided into three groups based on the number of visitors they had between January and December 2008. The first group (n=77; 50.7 percent), labeled “Low Visitation” farms, received less than 500 visitors during the year. “Moderate Visitation” farms (n=40; 26.3 percent), received 500-2,999 visitors, while “High Visitation” farms (n=35; 23.0 percent) reported 3,000 or more visitors that year. This study utilized chi-square and analysis of variance (ANOVA) to compare the three groups regarding the attributes of their farmland, operators, agritourism offerings, and business operations. Subsequent pairwise comparisons (including Tukey post-hoc) were conducted to examine differences between groups.

## 4.0 RESULTS

### 4.1 Profile of Responding Agritourism Farms and their Operators

Responding agritourism farms had, on average, 333.1 acres. About two-thirds (67.3 percent) were located at least 30 miles away from an urbanized area with at least 50,000 population, and 85.2 percent were still in the business of farming, mainly growing specialty crops (58.4 percent). The majority were owned and operated by an individual (32.5 percent) or a non-corporate family (32.5 percent), which are the traditional family farm structures. There was an even distribution between first-generation (48.8 percent) and multi-generational farmers (50.6 percent). Although they had diverse educational backgrounds, over a quarter (26.1 percent) had formal education in both agriculture and business. A total of 53.4 percent of the respondents (53.4 percent) were at least 55 years old and 32.9 percent were retired from a previous job or profession.

About one-fifth (19.6 percent) of the respondents had entered into the agritourism market within the past two years, while 40.6 percent had been receiving visitors for more than ten years. This shows the co-existence of new entrants and well-established agritourism farms in Missouri. Respondents were generally very proactive in their marketing strategies, using about five marketing methods on average ( $M=4.6$ ). Nearly all (90.8 percent) reported at least one membership in agriculture, business, and/or tourism associations.

Responding agritourism farms received more than 1.2 million visitors in 2008, mostly seniors (73.5 percent), families with young children (73.5 percent) and couples without children (72.2 percent). Farms that participated in this study offered a variety of recreational activities, the most prevalent of which were education and leisure tours (62.8 percent), recreational self-harvest crops (37.7 percent), and observation of agricultural processes (34.6 percent). On average, farms offered four different recreational activities ( $M=3.7$ ) to visitors, with 64.6 percent also offering at least one type of hospitality service, most frequently related to food and beverages (53.0 percent).

## 4.2 Comparison of Farmland and Operator Attributes among Visitor Classes

Statistical analysis showed no significant differences among the three farm groups in their physical farmland characteristics including total acreage, acreage farmed, and proximity to an urban area (Table 1). There were no significant differences among groups regarding the operator's retirement status or educational background or the number of family generations involved in farming.

There were significant differences between farms in the low, medium, and high visitation groups in terms of recreational and hospitality offerings, the types of visitors they received, and the marketing strategies they used to promote farm offerings and services (Table 2). Farms with the highest numbers of visitors offered a significantly greater number of recreational activities and food services on average ( $M=5.3$  activities/services) than did farms in the "Moderate" ( $M=3.8$  activities) and "Low" ( $M=3.2$  activities) visitation groups ( $F=11.065$ ,  $p<0.001$ ). Offerings of specific activities also varied; recreational self-harvest activities were more often available on

"Low Visitation" farms ( $x^2=11.210$ ,  $p=0.004$ ), while field or hay rides ( $x^2=10.372$ ,  $p=0.006$ ) and pumpkin patches ( $x^2=17.090$ ,  $p<0.001$ ) were more likely to be offered on "High Visitation" farms. There were no significant differences between the visitation level groups regarding leisure and educational tours. Farms receiving more than 3,000 visitors per year received a more diverse clientele in terms of party composition ( $F=10.214$ ,  $p<0.001$ ). Seniors and families with young children were the most common visitor types reported, with seniors varying significantly across the three study groups ( $x^2=16.376$ ,  $p<0.001$ ).

Farms with a higher number of visitors were more proactive in their marketing strategies, which included blogs and Web sites, paid advertisements, and memberships in professional or trade associations. Three-quarters of "Moderate Visitation" farms (75.0 percent) and 85.7 percent of "High Visitation" farms but only 43.8 percent of "Low Visitation" farms placed paid advertisements in mass media ( $x^2=21.481$ ,  $p<0.001$ ). There were no differences among the three segments in their use of blogs and Web sites (Table 3). Membership in agricultural,

**Table 1.—Farmland physical characteristics and operator attributes associated with different levels of farm visitation**

Farmland and Operator Attributes	Low Visitation (n=77)	Moderate Visitation (n=40)	High Visitation (n=35)	Test Statistics*
<b>Farm Size (n=144)</b>				
Number of farmland acres	293	248	562	$F=1.192$
Number of acres in production	267	183	523	$F=1.171$
<b>Distance from an Urban Area (n=150)</b>				
Less than 10 miles	10.5%	17.5%	14.7%	$F=0.627$
10-29 miles	18.4%	15.0%	20.6%	
30-59 miles	30.3%	35.0%	29.4%	
60 miles or more	40.8%	32.5%	35.3%	
<b>Retirement Status of Farm Operator (n=144)</b>				
Retired from previous career	23.9%	46.2%	32.4%	$x^2=5.715$
Not retired from previous career	76.1%	53.8%	67.6%	
<b>Farmer Educational Background (n=144)</b>				
Agriculture	20.0%	12.8%	14.3%	$x^2=7.175$
Business	17.1%	23.1%	17.1%	
Agriculture and business	18.6%	28.2%	40.0%	
Other educational background	44.3%	35.9%	28.6%	
<b>Generations in Farming (n=146)</b>				
First generation farmers	48.6%	51.3%	45.5%	$x^2=0.243$
At least 2nd generation farmers	51.4%	48.7%	54.5%	

\* No significant differences were found ( $p<.05$ ).

**Table 2.—Agritourism offerings and visitor types associated with different levels of farm visitation**

Agritourism Indicators	Low Visitation (n=77)	Moderate Visitation (n=40)	High Visitation (n=35)	Test Statistics
<b>Recreation Activities Available on Farm (n=152)</b>				
U-pick or U-harvest items	23.4% <sup>a</sup>	47.5% <sup>b</sup>	51.4% <sup>b</sup>	$\chi^2=11.210$ **
Festivals	15.6% <sup>a</sup>	32.5% <sup>b</sup>	57.1% <sup>c</sup>	$\chi^2=20.159$ ***
Field or hay rides	19.5% <sup>a</sup>	25.0% <sup>a</sup>	48.6% <sup>b</sup>	$\chi^2=10.372$ **
Winery	5.2% <sup>a</sup>	37.5% <sup>b</sup>	22.9% <sup>b</sup>	$\chi^2=19.615$ ***
Pumpkin patch	7.8% <sup>a</sup>	17.5% <sup>a</sup>	40.0% <sup>b</sup>	$\chi^2=17.090$ ***
Number of available activities <sup>1</sup>	3.2 <sup>a</sup>	3.8 <sup>a</sup>	5.3 <sup>b</sup>	$F=11.065$ ***
<b>Hospitality and Hosting Services Available on Farm (n=152)</b>				
Tasting rooms	11.7% <sup>a</sup>	37.5% <sup>b</sup>	37.1% <sup>b</sup>	$\chi^2=13.569$ **
Food stand	14.3% <sup>a</sup>	12.5% <sup>a</sup>	48.6% <sup>b</sup>	$\chi^2=19.351$ ***
Cookouts, barbecues, picnics	15.6% <sup>a</sup>	20.0% <sup>a</sup>	42.9% <sup>b</sup>	$\chi^2=10.378$ **
Catering or customized meals	5.2% <sup>a</sup>	20.0% <sup>b</sup>	34.3% <sup>b</sup>	$\chi^2=16.039$ ***
Weddings or private parties	22.1% <sup>a</sup>	50.0% <sup>b</sup>	45.7% <sup>b</sup>	$\chi^2=11.392$ **
<b>Types of Farm Visitors (n=152)</b>				
School groups	42.9% <sup>a</sup>	40.0% <sup>a</sup>	68.8% <sup>b</sup>	$\chi^2=7.775$ *
Families with young children	67.5%	80.0%	85.7%	$\chi^2=4.966$
Families with older children	61.0%	75.0%	71.4%	$\chi^2=2.709$
Couples without children	64.9% <sup>a</sup>	82.5% <sup>b</sup>	82.9% <sup>b</sup>	$\chi^2=6.162$ *
Seniors	61.0% <sup>a</sup>	87.5% <sup>b</sup>	91.4% <sup>b</sup>	$\chi^2=16.376$ ***
Organization groups	46.8% <sup>a</sup>	67.5% <sup>b</sup>	88.6% <sup>c</sup>	$\chi^2=18.569$ ***
Others	18.2%	10.0%	14.3%	$\chi^2=1.398$
Number of visitor types	3.6 <sup>a</sup>	4.4 <sup>b</sup>	5.0 <sup>b</sup>	$F=10.214$ ***

<sup>1</sup> The index of available farm activities (1-18) excludes wineries and festivals.

a,b,c Any two values that do not share a superscript are significantly different in pairwise comparisons and Tukey's HSD ( $p<.05$ ).

\*  $p<.05$  \*\*  $p<.01$  \*\*\*  $p<.001$

**Table 3.—Farm marketing and management attributes associated with different levels of farm visitation**

Marketing and Management Indicators	Low Visitation (n=77)	Moderate Visitation (n=40)	High Visitation (n=35)	Test Statistics
<b>Types of Marketing Methods (n=148)</b>				
Blogs	84.9%	90.0%	94.3%	$\chi^2=2.155$
Specialized directories	37.0% <sup>a</sup>	50.0% <sup>b</sup>	80.0% <sup>c</sup>	$\chi^2=17.521$ **
Ads in media	43.8% <sup>a</sup>	75.0% <sup>b</sup>	85.7% <sup>b</sup>	$\chi^2=21.481$ ***
Printed materials	58.9% <sup>a</sup>	70.0% <sup>b</sup>	91.4% <sup>c</sup>	$\chi^2=11.831$ **
Personal selling	54.8%	62.5%	71.4%	$\chi^2=2.812$
Number of methods	3.8 <sup>a</sup>	4.8 <sup>b</sup>	6.1 <sup>c</sup>	$F=16.205$ ***
<b>Involvement with Business-related Associations (n=137)</b>				
Number of memberships	2.1 <sup>a</sup>	2.9 <sup>b</sup>	3.7 <sup>c</sup>	$F=15.891$ ***
<b>Years Receiving Visitors to the Farm (n=152)</b>				
Less than 1 year	7.8% <sup>a</sup>	5.0% <sup>b</sup>	0.0% <sup>a</sup>	$\chi^2=24.821$ **
1-2 years	23.4%	10.0%	0.0%	
3-5 years	23.4%	25.0%	11.4%	
6-9 years	18.2%	17.5%	20.0%	
10 years or more	27.2%	42.5%	68.6%	
<b>Charging for Farm Activities (n=149)</b>				
Fees charged at farm	45.3% <sup>a</sup>	69.2% <sup>b</sup>	85.7% <sup>c</sup>	$\chi^2=17.846$ **
Fees not charged	54.7%	30.8%	14.3%	
<b>Average Number of Farm Employees (n=131)</b>				
Total farm employees	6.2 <sup>a</sup>	6.0 <sup>a</sup>	29.1 <sup>b</sup>	$F=14.287$ ***
Agritourism employees	1.8 <sup>a</sup>	5.0 <sup>a</sup>	16.8 <sup>b</sup>	$F=17.828$ ***

a,b,c Any two values that do not share a superscript are significantly different in pairwise comparisons and Tukey's HSD ( $p<.05$ ).

\*  $p<.05$  \*\*  $p<.01$  \*\*\*  $p<.001$

tourism, and other professional organizations was also associated with visitor numbers ( $F=15.891$ ,  $p<.001$ ). Farms with greater longevity in agritourism were likely to be receiving more visitors ( $\chi^2=24.821$ ,  $p=0.002$ ), and a significantly larger proportion of “High Visitation” farms (85.7 percent) charged some type of fees for participating in agritourism activities compared to “Moderate Visitation” (69.2 percent) and “Low Visitation” (45.3 percent) farms ( $\chi^2=17.846$ ,  $p=0.004$ ). “High Visitation” farms were likely to employ more people overall ( $M=29.1$ ) and more employees dedicated specifically to agritourism activities ( $M=16.8$ ) than “Moderate Visitation” ( $M=6.0$  and  $M=5.0$ ) and “Low Visitation” ( $M=6.2$  and  $M=1.8$ ) farms ( $F=14.287$ ,  $p=0.001$  and  $F=17.828$ ,  $p<0.001$ ).

There were significant differences in economic situations among farms in the different visitation categories. “High Visitation” farms were most likely to perceive their agritourism operation as profitable (33.3 percent) or generating some profits (48.5 percent). In contrast, only a small proportion of “Moderate Visitation” farms (15.8 percent) and “Low Visitation” farms (18.4 percent) perceived themselves as profitable ( $\chi^2=15.319$ ,  $p=0.018$ ; Table 4). Furthermore, farms with greater numbers of visitors had higher gross farm sales across all three visitor number segments ( $\chi^2=36.313$ ,  $p<0.001$ ). Finally, the “High Visitation” (37.3 percent) and “Moderate Visitation” (27.2 percent) farms received a greater percentage of their

farm sales from recreational activities than did “Low Visitation” (11.0 percent) farms ( $F=9.500$ ,  $p<0.001$ ).

## 5.0 CONCLUSIONS

This study revealed that agritourism operations can be managed to attract a high number of visitors, regardless of the farm’s specific physical or operator characteristics. The lack of significant differences in visitor levels between farms of different sizes and different urban proximity statuses suggests that such characteristics are neither incentives nor barriers to increasing farm visitor numbers. Likewise, results suggest that agritourism is a viable option for both new entrants and those rooted in the agriculture industry no matter their educational background. This is critical since the current agricultural context is attracting hobby or part-time farmers seeking a rural lifestyle, while also pushing established farmers to seek alternative ways to manage the economic challenges associated with farming.

While the number of farm visitors is related to management decisions about outreach and programming, the study results also suggest that farm sales and profit levels are dependent upon those management decisions, rather than on farm attributes. In addition, a larger number of visitors is associated with increased farm sales and increased farm profits. Therefore, farm operators who are willing to make greater investments in their agritourism activities,

**Table 4.—Economic indicators of the farm business associated with different levels of farm visitation**

Economic Indicators	Low Visitation (n=77)	Moderate Visitation (n=40)	High Visitation (n=35)	Test Statistics
<b>Farm Economic Situation (n=147)</b>				
Profitable business	18.4% <sup>a</sup>	15.8% <sup>a</sup>	33.3% <sup>b</sup>	$\chi^2=15.319$ *
Generates some profit	25.0%	42.1%	48.5%	
Breaking even	21.1%	15.8%	6.1%	
Operating at a loss	35.5%	26.3%	12.1%	
<b>Gross Farm Sales in 2008 (n=143)</b>				
Less than \$49,999	63.2% <sup>a</sup>	65.7% <sup>b</sup>	6.3% <sup>c</sup>	$\chi^2=36.313$ ***
\$50,000 to \$499,999	25.0%	31.4%	59.3%	
\$500,000 or more	11.8%	2.9%	34.4%	
<b>Recreation Related Farm Sales (n=143)</b>				
Recreation percentage of sales	11.0% <sup>a</sup>	27.2% <sup>b</sup>	37.3% <sup>b</sup>	$F=9.500$ ***

<sup>a,b,c</sup> Any two values that do not share a superscript are significantly different in pairwise comparisons and Tukey’s HSD ( $p<.05$ ).

\*  $p<.05$  \*\*  $p<.01$  \*\*\*  $p<.001$

such as by providing more activities, promoting the business with paid advertisements, or devoting more time to the farm business during retirement, may improve their economic situation. These results also suggest that marketing efforts directed toward entrepreneurs involved with agritourism may be tailored to their desired visitation level, rather than limited to their personal characteristics and those of their farmland.

## 6.0 LITERATURE CITED

- Barbieri, C.; Mahoney, E. 2009. **Why is diversification an attractive farm adjustment strategy? Insights from Texas farmers and ranchers.** *Journal of Rural Studies*. 25(1): 58-66.
- Barbieri, C.; Mahoney, E.; Butler, L. 2008. **Understanding the nature and extent of farm and ranch diversification in North America.** *Rural Sociology*. 73(2): 205-229.
- Barbieri, C.; Mshenga, P. 2008. **The role of firm and owner characteristics on the performance of agritourism farms.** *Sociologia Ruralis*. 48(2): 166-183.
- Brandth, B.; Haugen, M.S. 2007. **Gendered work in family farm tourism.** *Journal of Comparative Family Studies*. 38(3): 379-393.
- Busby, G.; Rendle, S. 2000. **The transition from tourism on farms to farm tourism.** *Tourism Management*. 21(8): 635-642.
- Che, D. 2007. **Agritourism and its potential contributions to the agricultural economy.** CAB Reviews: Perspectives in Agriculture, Veterinary Science, Nutrition and Natural Resources. 63(2): 1-7.
- Che, D.; Veeck, A.; Veeck, G. 2005. **Sustaining production and strengthening the agritourism product: linkages among Michigan agritourism destinations.** *Agriculture and Human Values*. 22(2): 225-234.
- Fisher, D. 2006. **The potential for rural heritage tourism in the Clarence Valley of Northern New South Wales.** *Australian Geographer*. 37(3): 411-424.
- Ilbery, B. 1991. **Farm diversification as an adjustment strategy on the urban fringe of the West Midlands.** *Journal of Rural Studies*. 7(3): 207-218.
- McGehee, N.; Kim, K. 2004. **Motivation for agritourism entrepreneurship.** *Journal of Travel Research*. 43(2): 161-170.
- Nickerson, N.; Black, R.; McCool, S. 2001. **Agritourism: motivations behind farm/ranch business diversification.** *Journal of Travel Research*. 40(1): 19-26.
- Ollenburg, C.; Buckley, R. 2007. **Stated economic and social motivations of farm tourism operators.** *Journal of Travel Research*. 45(4): 444-452.
- Salamon, S. 2003. **From hometown to nontown: rural community effects of suburbanization.** *Rural Sociology*. 68(1): 1-24.
- Veeck, G.; Che, D.; Veeck, J. 2006. **America's changing farmscape: a study of agricultural tourism in Michigan.** *The Professional Geographer*. 58(3): 235-248.

The content of this paper reflects the views of the author(s), who are responsible for the facts and accuracy of the information presented herein.

# THE LEISURE STYLE OF CANADIAN RURAL RECREATION PARTICIPANTS: AN ANALYSIS BASED ON THREE DIFFERENT RURAL LEISURE SETTINGS

---

Paul Heintzman  
Leisure Studies  
University of Ottawa  
pheintzm@uottawa.ca

Don Dawson  
University of Ottawa

---

**Abstract.**—This study was a secondary analysis of data from a previous study of 248 Canadians on four dimensions of leisure style: time use, leisure setting, leisure activity participation, and leisure motivation. Correlation analyses were conducted to determine if frequency of participation in three rural leisure settings were related to other leisure style dimensions. Three resulting leisure styles were identified. Nonurban natural area visitors were characterized by participation in outdoor, cultural, social, and travel and tourism activities, and had stimulus-avoidance motivations. Pastoral/rural visitors were characterized by participation in outdoor, cultural, social, hobby, and personal development activities, and had intellectual and competence-mastery motivations. Cottage and lodge setting visitors were characterized by participation in outdoor, cultural, social, sports, and travel and tourism activities, and had competence-mastery and social motivations.

---

## 1.0 INTRODUCTION

In 1991, Markham observed, “One of the most important, but least analyzed, segments of the [Canadian] recreation delivery system is ‘rural recreation’ ” (p. 12). More recently, Halseth (2004) wrote that “A better understanding of the rural recreation countryside has some urgency, given the shifting economic, social, and demographic characteristics of this part of Canada” (p. 54). In an attempt to increase our knowledge of rural recreation

in Canada, this paper investigated the leisure styles of rural recreationists. This knowledge is essential for developing, marketing, and providing recreation and tourism services in rural areas.

## 2.0 LITERATURE REVIEW

There is a paucity of empirical research on the leisure style of rural recreationists. While some European studies have investigated specific leisure activities or motivations (e.g., Müderrisoğlu et al. 2005, Mulder et al. 2005, a whole range of visitor characteristics and behaviors need to be considered when examining rural recreationists. Studies such as Warnick’s (2002) U.S. study which used the concept of rural recreation lifestyle, and the Finnish study by Sievänen et al.’s (2007) which used the way of life or lifestyle perspective, have recognized the importance of taking a more holistic approach to studying rural recreation.

Some research exists on Canadian cottage owners and users. In a study of the rural recreation countryside, Halseth (2004) discovered that “cottage ownership is strongly identified with socio-economic status and cottage landscapes are increasingly elite landscapes” (p. 49). However, a study of Canadian cottaging by Svenson (2004) claims that when cottage users, as opposed to cottage owners, are considered, Canadians with modest incomes participate in cottaging, and thus it is less of an elitist activity than Halseth claims. In terms of recreation activities, based on studies of Muskokan cottage trips, Svenson found that visiting with family and friends along with sports participation, especially water sports, were the “two defining characteristics of cottage life” (p. 69).

## 3.0 METHOD

This study investigated the research question: What is the leisure style of Canadians who participate in leisure activities in a rural setting? The study involved analysis of data from a previous Canadian

study that used survey questionnaires to examine leisure style. This previous study included a question that asked participants to indicate the frequency of their recreation participation in eight different leisure settings, three of which were rural recreation settings. Secondary analysis of this data set explored the relationship between Canadian rural recreation participation and leisure style.

### **3.1 Sample**

The original study used a purposive sample to select participants from a variety of sources, primarily in Ontario, but also throughout Canada. Although the questionnaire did not ask for place of residence, based on where the survey was distributed, it is likely that the majority of the participants were urban rather than rural residents. A total of 436 survey questionnaires were distributed, and 248 (57 percent of the sample) had been returned by the time the data analysis began. While this sample was selected to gather information for a different research question, the sample approximates the general population.

### **3.2 Variables and Instrumentation**

Leisure style, defined as “overall patterns of leisure activity engagement and time usage” (Mannell and Kleiber 1997, p. 59), includes four dimensions. Leisure participation was measured with a leisure activity participation scale adapted from Ragheb (1980) which included eight categories of leisure activities. Leisure motivation was measured with the short form of the Leisure Motivation Scale (Beard and Ragheb 1983) that includes four components of leisure motivation: Intellectual, Social, Competence-Mastery, and Stimulus-Avoidance. The Leisure Setting Scale included eight settings: primitive wilderness areas (e.g., canoe trip in Algonquin Park); nonurban natural areas (e.g., Provincial and National Park campgrounds); cottage or lodge settings (e.g., locations on the Great Lakes or Muskoka Lakes); pastoral/rural areas (e.g., farms); urban or near-urban areas (e.g., conservation areas, city parks); quiet urban recreation areas (e.g., libraries, museums, art galleries, retreat centres); busy urban recreation areas (e.g., amusement parks, shopping malls, dance halls, sports stadiums,

community centres); and own home. Perceived time use referred to a person’s subjective assessment of his/her experience and use of time in daily life. This variable was measured using 10 questions adapted primarily from Statistics Canada’s General Social Survey (1986), which asked about working hours, free time, feeling rushed, having time on one’s hands, balance in life, and related topics.

### **3.3 Data Analysis**

Correlation analyses were conducted on the data to examine the relationships between leisure style dimensions (leisure activity, leisure motivation, leisure setting, and leisure time) and rural recreation participation.

## **4.0 RESULTS**

### **4.1 Socio-Demographic Characteristics of Sample**

The mean age of the sample population was 43.5 years, and the range was 14 to 86 years. There was a range of educational and income levels. There were no significant relationships between frequency of participation in rural leisure settings and socio-demographic variables (age, sex, education, income) with the exception of a negative correlation between age and frequency of participation in nonurban natural areas.

### **4.2 Leisure Settings**

Frequency of participation in the three rural recreation settings (nonurban natural areas, cottage or lodge settings, pastoral/rural areas) had lower means than the leisure settings of own home, urban and near-urban natural areas, quiet urban recreation areas, and busy urban recreation areas, but had higher means than primitive wilderness areas. In general, frequency of participation decreased with an increase in distance from one’s own home (see Table 1).

### **4.3 Rural Recreation Participation and Time Use**

There were no significant relationships between scores of perceived time use and frequency of participation in any of the three rural leisure settings.

**Table 1.—Frequency of participation in leisure settings (n=248)**

	Mean	S.D.
Own home	4.32	.923
Urban and near-urban natural areas	3.22	.953
Quiet urban recreation areas	2.85	1.003
Busy urban recreation areas	2.79	1.071
Nonurban natural areas	2.78	1.002
Cottage or lodge settings	2.61	1.111
Pastoral/rural areas	2.53	1.183
Primitive wilderness area	2.14	1.141

Note: Mean score based on scale (1=Never, 5=Very Often).

#### 4.4 Rural Recreation Participation and Leisure Settings

Frequency of participation in nonurban natural areas was significantly correlated at the .01 level with frequency of participation in three other leisure settings: primitive wilderness area, pastoral/rural areas, and urban and near-urban natural areas. Frequency of participation in cottage or lodge settings was significantly correlated at the .01 level with frequency of participation in the pastoral/rural leisure setting. Frequency of participation in pastoral/rural setting was significantly correlated at the .01 level with frequency of participation in the two other rural recreation settings and the urban or near-urban natural areas setting (see Table 2).

#### 4.5 Rural Recreation Participation and Leisure Activity Participation

Frequency of participation in all three rural leisure settings was significantly correlated at the .01 level with frequency of participation in three leisure activity categories: outdoor activities, cultural activities and social activities. For all three rural settings, the strongest correlation was with outdoor activities. There were also significant relationships between: frequency of participation in nonurban nature areas and frequency of participation in travel and tourism activities; frequency of participation in cottage and lodge settings with frequency of participation in sports activities as well as travel and tourism activities; and frequency of participation in pastoral/rural areas and frequency of participation in hobbies and personal development activities (see Table 3).

#### 4.6 Rural Recreation Participation and Leisure Motivations

Concerning leisure motivations, there were no significant correlations at the .01 level but there were positive correlations at the .05 level between: frequency of participation in nonurban natural areas and stimulus-avoidance motivations; frequency of participation in cottage and lodge settings and both competence-mastery motivations and social motivations; and frequency of participation in pastoral/rural settings and both competence-mastery motivations and intellectual motivations (see Table 4).

**Table 2.—Spearman's rank order correlation coefficients for relationship between frequency of participation in rural leisure settings and frequency of participation in other leisure settings (n=248)**

	Nonurban Natural Areas		Cottage or Lodge Settings		Pastoral/Rural Areas	
	<i>rho</i>	<i>P</i>	<i>rho</i>	<i>p</i>	<i>rho</i>	<i>p</i>
Primitive wilderness area	.458**	.000	.157	.013	.074	.243
Nonurban natural areas	1.0		.042	.506	.281**	.000
Cottage or lodge settings	.042	.506	1.0	1.0	.204**	.001
Pastoral/rural areas	.281**	.000	.204**	.001	1.0	
Urban and near-urban natural areas	.287**	.000	.132	.038	.211**	.001
Quiet urban recreation areas	.043	.500	.071	.264	.174**	.006
Busy urban recreation areas	-.147	.020	.055	.393	-.062	.327
Own home	-.012	.854	.20	.752	.008	.906

\*\* Correlation is significant at the 0.01 level (2-tailed)

**Table 3.—Spearman’s rank order correlation coefficients for relationship between frequency of participation in leisure activity categories and frequency of rural recreation participation (n=248)**

	Nonurban Natural Areas		Cottage or Lodge Settings		Pastoral/Rural Areas	
	<i>rho</i>	<i>P</i>	<i>rho</i>	<i>p</i>	<i>rho</i>	<i>p</i>
Outdoor activities	.409**	.000	.246**	.000	.274**	.000
Hobbies	.096	.133	.046	.473	.254**	.000
Cultural activities	.186**	.003	.169**	.008	.211**	.001
Social activities	.220**	.000	.168**	.008	.203**	.001
Personal development activities	.125	.049	.019	.766	.171**	.007
Sports activities	.133	.037	.203**	.001	.160	.012
Travel and tourism activities	.182**	.004	.182**	.004	.115	.072
Mass Media activities	.075	.241	.021	.740	-.124	.050

\*\* Correlation is significant at the 0.01 level (2-tailed).

**Table 4.—Spearman’s rank order correlation coefficients for relationship between leisure motivation scale component scores and frequency of rural recreation participation (n=248)**

	Nonurban Natural Areas		Cottage or Lodge Settings		Pastoral/Rural Areas	
	<i>rho</i>	<i>p</i>	<i>rho</i>	<i>p</i>	<i>rho</i>	<i>P</i>
Intellectual motivations	.044	.493	.015	.818	.160*	.012
Competence-mastery motivations	.054	.401	.136*	.033	.152*	.017
Social motivations	.041	.518	.148*	.020	.119	.060
Stimulus-avoidance motivations	.129*	.042	.029	.651	.087	.174

\* Correlation is significant at the 0.05 level (2-tailed).

## 5.0 DISCUSSION

Based on the results of this study, the three rural recreation leisure styles were characterized as follows:

**Nonurban natural area visitors** participated in outdoor, cultural, social, and travel and tourism activities, were motivated by stimulus-avoidance motivations, and preferred other natural leisure settings (primitive wilderness areas, pastoral/rural areas and urban and near-urban natural areas) in addition to nonurban natural areas.

**Cottage and lodge setting visitors** participated in outdoor, cultural, social, sports, and travel and tourism activities, were motivated by competence-mastery and social motivations, and preferred pastoral/rural areas in addition to cottage and lodge settings.

**Pastoral/rural visitors** participated in outdoor, cultural, social, hobby, and personal development activities, were motivated by intellectual and

competence-mastery motivations, and preferred nonurban natural areas, cottage or lodge settings, urban and near-urban natural areas, and quiet urban recreation areas in addition to pastoral/rural areas.

The current study found no significant relationships between socio-demographic variables and rural recreation participation with the exception that older people tended to participate less frequently in nonurban natural areas. This result is to be expected as the physical demands of recreation in nonurban natural areas such as provincial and natural parks are often greater than in the other two rural recreation settings and in more urban-based settings. The general lack of relationships between socio-demographic variables and the leisure style of rural recreation participants in the current study is not consistent with a number of empirical studies that found that rural recreation participation was related to socio-demographic

variables (Halseth 2004, Müderrisoğlu et al. 2005, Mulder et al. 2005, Sievänen et al. 2007).

In general, those who participated in the three rural recreation settings tended to participate in other leisure settings that were most like rural recreation settings. None of the three rural recreation settings was correlated with frequency of participation in the leisure settings of busy urban recreation areas or one's own home. The findings suggest a continuum of rural recreation settings with nonurban natural areas at one end and pastoral/rural areas and cottage/lodge settings at the other end. Thus, the nonurban natural area visitors were most like primitive wilderness area visitors while the other rural recreationists were more like urban area visitors. As Sievänen et al. (2007) have observed, "the recreational home is a symbol of closeness to nature. . . . But, on the other hand, a trend of today is also to build modern-style houses with all the technical comforts of urban dwellings, far from the style of nostalgic rural style" (p. 227). Or, as Svenson (2004) has documented, Canadian "cottaging has become urban" (p. 63).

It is not surprising that the strongest correlation between frequency of participation in a leisure activity category and the three rural recreation settings was related to outdoor activities since all three rural recreation settings are nature-oriented and provide plenty of opportunity for outdoor recreation as has been previously documented (Sievänen et al. 2007, Warnick 2002). The correlation between frequency of participation in cottage/lodge settings and frequency of participation in sports activities is consistent with Sievänen et al.'s (2007) and Svenson's (2004) findings.

Participation in each of the rural recreation leisure settings was correlated with different leisure motivation components consistent with Müderrisoğlu et al.'s (2005) findings. The correlation of frequency of participation in non-urban natural areas with stimulus-avoidance motivations may reflect elements of the Restorative Environments Theory (Kaplan 1995), while the correlation between frequency of participation in cottage and lodge settings with social motivations may reflect the opportunity that

cottages and lodges provide to socialize with family and friends (Sievänen et al. 2007, Svenson 2004). The correlation of frequency of participation in cottage and lodge settings with competence-mastery motivations may reflect the need to learn and master certain skills in order to maintain a cottage as well as to live even temporarily in a rural setting (Sievänen et al. 2007, Svenson 2004, Williams and Kaltborn 1999). A similar argument could be made to explain why competence-mastery and intellectual leisure motivations are associated with frequency of participation in rural/pastoral settings. These motivations may reflect the need to master certain skills and learn specific information to experience leisure in a rural/pastoral setting—for example, hobby farming.

## 6.0 CONCLUSIONS

Several conclusions that may be helpful to agencies that provide rural recreation services can be drawn from this study. First, the concept of leisure style, which incorporates leisure motivations, leisure setting preferences, and perceived time use, in addition to recreation activity participation, appears to be a more complete approach to understanding the characteristics of rural recreationists than recreation activity profiles. Recreation providers need to have a thorough understanding of the rural recreationists in their community rather than using only activity classifications. Second, although the three rural recreation groups shared some of the same leisure style characteristics that distinguished them from those who had a higher frequency of participation in primitive wilderness or urban leisure settings, rural recreationists are not all alike and may be classified into different leisure styles. This study found differences in leisure style—in terms of leisure activities participated in, leisure motivations, and preferences for leisure settings—according to the leisure setting classifications of nonurban natural areas, rural/pastoral settings, and cottage and lodge settings. If a particular rural community is characterized primarily by one leisure setting classification (e.g., cottage and lodge settings), then the provision of recreation services should reflect the leisure activities, leisure

motivations, and leisure setting preferences of this specific group. If there is a mix of all three groups, then recreation services would become more complex and strategies need to be put in place to cater to the needs and interests of the diverse groups. Third, leisure activity participation and leisure motivation appear to be the most important dimensions in determining the leisure style of rural recreationists. Fourth, the current study, unlike other studies, found only one significant relationship between socio-demographic variables and the leisure style of rural recreationists. Thus, these assumptions should not be made unless a rural community has data to indicate that their rural recreation participants reflect certain socio-demographic characteristics.

Limitations of this study should be addressed in future research. First, the study was based on secondary analysis of data from a different study that used a purposive sample. To better understand the leisure styles of rural recreationists, a specific study on this research question with a representative sample is recommended. Second, this study's sample was primarily from central Canada. A representative sample from the entire Canadian population would provide a better picture of the leisure style of Canadian rural recreationists. Alternatively, regional studies (e.g., the Maritime Provinces) would be beneficial in determining the unique characteristics of rural recreationists in specific regions of Canada. Third, the current study did not ask whether the respondents were rural or urban residents but looked at rural recreation participation regardless of the place of residence. This data would provide the opportunity to compare the rural recreation of rural versus urban Canadians as in Warnick's (2002) U.S. study. Fourth, research could be conducted to determine if there are sub-categories in each of the main rural leisure styles. For example, based on interviews with Canadian cottagers, Svenson (2004) has suggested four cottager ideal types (cottager, suburbanite, wanderer, and homecomer). Further researcher as suggested in this paragraph would help address Markham's (1991) and Halseth's (2004) concerns about a lack of research knowledge concerning rural recreation.

## 7.0 LITERATURE CITED

- Beard, J.G.; Ragheb, M.G. 1983. **Measuring leisure motivation.** *Journal of Leisure Research.* 15: 219-228.
- Halseth, G. 2004. **The "cottage" privilege: increasing elite landscapes of second homes in Canada.** In: Hall, C.M.; Müller, D.K., eds. *Tourism, mobility and second homes: between elite landscape and common ground.* Aspects of tourism 15. Clevedon, England: Channel View Publications: 35-54.
- Kaplan, S. 1995. **The restorative benefits of nature: toward an integrative framework.** *Journal of Environmental Psychology.* 15: 169-182.
- Mannell, R.C.; Kleiber, D.A. 1997. **A social psychology of leisure.** State College, PA: Venture.
- Markham, S. 1991. **Rural recreation: the quintessential partnership.** *Recreation Canada.* 49(4): 12-14.
- Müdürrisođlu, H.; Demir, Z.; Kutay, E.L. 2005. **Motivations determining participation in rural recreations: example of university students.** *Journal of Applied Sciences.* 5(7): 1254-1259.
- Mulder, C.; Shibil, S.; Hale, J. 2005. **Young people's demand for countryside recreation: A function of supply, tastes and preferences?** *Managing Leisure.* 10: 106-127.
- Ragheb, M.G. 1980. **Interrelationships among leisure participation, leisure satisfaction and leisure attitudes.** *Journal of Leisure Research.* 12: 138-149.
- Sievänen, T.; Pouta, E.; Neuvonen, M. 2007. **Recreational home users—potential clients for countryside tourism?** *Scandinavian Journal of Hospitality and Tourism.* 7(3): 223-242.
- Statistics Canada. 1986. **General social survey.** Ottawa, ON.

Svenson, S. 2004. **The cottage and the city: an interpretation of the Canadian second home experience.** In: Hall, C.M.; Müller, D.K., eds. *Tourism, mobility and second homes: between elite landscape and common ground. Aspects of tourism 15.* Clevedon, England: Channel View Publications: 55-74.

Warnick, R. 2002. **Rural recreation lifestyles: trends in recreation activity patterns and self-reported quality of life and health – an exploratory study.** *Journal of Park and Recreation Administration.* 20(4): 37-64.

Williams, D.R.; Kaltenborn, B.P. 1999. **Vacation places and modernity: the use and meaning of recreational cottages in Norway and the USA.** In: Crouch, D., ed. *Leisure/tourism geographies: practices and geographical knowledge.* London: Routledge: 214-230.

The content of this paper reflects the views of the author(s), who are responsible for the facts and accuracy of the information presented herein.

***NORMS, CROWDING,  
AND CONFLICT***

# MANAGING OUTDOOR RECREATION CONFLICT ON THE SQUAMISH, BRITISH COLUMBIA TRAIL NETWORK

---

Ana Elia Ramón Hidalgo  
Department of Forest Resources Management  
University of British Columbia  
anaelia@interchange.ubc.ca

Howard Harshaw  
University of British Columbia

---

**Abstract.**—Recreationists with high expectations of satisfaction from outdoor recreation activities are increasingly using trails networks near urban areas. But differences in expectations, behaviors and values of trail users may create conflicts resulting in unsatisfactory experiences. The objective of this study was to test the efficacy of management practices that may reduce social value conflict (SVC) and interpersonal conflict (IPC). The research is a survey-based, cross-sectional case study of the Squamish Trail Network (n = 340). We hypothesize that in areas where educational programs are applied, recreationists will report less SVC than in areas without such programs. Similarly, we hypothesize that in areas zoned for nonmotorized activities, recreationists will report less IPC than in unzoned areas. Results suggest that while specific management practices are effective in reducing IPC and SVC, the differences account for low variability. Other factors not considered in this study may be affecting the efficacy of conflict management.

---

## 1.0 INTRODUCTION

Publicly-owned forests in Canada have traditionally been managed for timber resources (Harshaw et al. 2007). Coinciding with the deceleration of British Columbia's forest industry in the 1990s (Kozak et al. 2008) and an increase in public awareness regarding environmental issues and concerns (Tarrant and Cordell 2002), there has been a shift in management emphasis to a more comprehensive approach to forest management that recognizes nontimber

values, including outdoor recreation (Harshaw et al. 2007). The increase in environmental awareness, accompanied by high expectations of satisfaction from outdoor recreation activities has resulted in higher trail network use every day (Bell et al. 2007). Recreationists are not homogenous, however, and differences in trail users' expectations, behaviors, and values (Rollins and Robinson 2002) may create conflict and decreased levels of satisfaction.

## 1.1 Theory

Conflict has traditionally been understood in an outdoor recreation context as the result of goal interference attributed to another's behavior (Jacob and Schreyer 1980). This definition is based on the assumption that conflict is goal oriented and is grounded within the expectancy and discrepancy theories (see Manning 1999 for a review). Vaske et al. (1995) labelled this type of conflict as the interpersonal conflict model (IPC) and considered this model as just one source of conflict. The authors demonstrated that conflict can also arise when users do not share the same norms or social values, independent of physical presence or actual contact between them (Vaske et al. 2000, Vaske et al. 1995). This conflict model is usually called conflict in social values (or social values conflict, SVC).

The literature has often suggested management approaches to alleviate certain types of conflict (Carothers et al. 2001, Manning 1999, Moore 1994, Vaske et al. 2000, Vaske et al. 1995,). Although certain authors (Hammit and Schneider 2000, Moore 1994) have identified alternative practices that can be used to address recreation conflict, the two most common practices are zoning and the application of educational programs. The former separates users in space and time and is often effective with interpersonal conflict or direct contact. Educational programs are more likely to be effective when the conflict arises from differences in social values or normative values

(i.e., indirect contact). That is because social values conflicts require neither actual encounters between users nor indirect encounters such as noise from the distance or trail erosion (Cordell and Tarrant 2002, Manning 1999).

Some authors indicate that the failure of management practices to reduce conflict may be related to the lack of consideration of underlying causes (Cordell and Tarrant 2002, Kajala 1994, Manning 1999, Marcouiller et al. 2005, Moore 1994, Owens 1985, Schneider 2000, Watson et al. 1994, Tumes 2007). However, none of these cases examined the efficacy of education and zoning management practices at addressing with these two sources of conflict (SVC and IPC). In this study, we explore several types of conflict situations and investigate whether recreationists perceive the conflict as SVC or as IPC in order to test the efficacy of management practices applied in the area.

## 1.2 Objectives

Two objectives framed this study: (1) to comparatively test the efficacy of educating trail users in order to reduce social value conflict (SVC); and (2) to test the efficacy of separating incompatible users by zoning in order to reduce interpersonal conflict (IPC). We hypothesized that: (H<sub>1</sub>) at trailheads with educational posters, users will report SVC less frequently and at a lower level than at trailheads without educational posters; and (H<sub>2</sub>) in zoned areas, trail users will report IPC less frequently and at a lower level than in areas that are not zoned.

## 1.3 Background

With 6 million recreational visits per year, the Squamish trail network in the Sea-to-Sky Corridor is one of the most highly utilized recreation areas in North America due to its diversity of landscapes and natural resources. It is suitable for both winter and summer recreation opportunities (hiking, jogging, dog walking, mountain biking, dirt biking, all-terrain vehicles (ATV) riding, snowmobiling, cross-country skiing) and the area attracts a wide range of motorized and nonmotorized recreationists (British Columbia Ministry of Sustainable Resource Management 2002).

Conflict on the Squamish trail network has been reported in several documents (British Columbia Ministry of Sustainable Resource Management, n.d.) Due to its status as a world-renowned tourist destination for local, regional, and international visitors, the Squamish trail network is an excellent case study for investigating trail user conflict as well as the effectiveness of management practices in reducing such conflict.

## 2.0 METHODS

The study consists of a survey-based, cross-sectional case study of nine Squamish trail areas that have employed different management practices. Data were collected via an onsite survey between September 3 and September 19, 2009; the sample period included one long weekend, two regular weekends, and 10 weekdays. Only summer activities were considered in this study. Sample size was 340 with a 57 percent response rate.

### 2.1. Independent Variables

To test the first hypothesis, we compared the responses of people surveyed at trailheads that had educational posters (n = 185) with the responses of people that were surveyed at trailheads without educational posters (n = 155). Figure 1 shows an example of the educational poster. To test the second hypothesis, respondents were classified as either being surveyed in an area zoned for nonmotorized use only (n= 249), or being surveyed at an area where the use of the trails is shared by motorized and nonmotorized users together (n= 91).

### 2.2 Dependent Variables

Respondents were asked about the extent to which a series of events (Table 1) posed problems for their enjoyment of the trail-based activity. Respondents were then classified according to whether they were surveyed at trailheads with educational posters (yes or no) and whether they were surveyed in areas zoned only for nonmotorized users or in areas where trails were shared with motorized users.



Figure 1.—Educational poster evaluated.

IPC and SVC measures were derived from previous research (Carothers et al. 2001, Vaske et al. 1995, Vaske et al. 2007). From two sets of questions regarding 15 potential conflict events, we were able to distinguish whether the subjects were experiencing SVC or IPC. Respondents evaluated the extent to which events were unacceptable as well as the number of times that they had observed such events.

First, respondents were asked how frequently they had observed a set of 16 potential problematic events. Response attributes ranged from “never” to “almost always” in a 5-point interval scale. Second, respondents assessed the extent to which each of the 16 conflict-behaviors were a problem for their enjoyment of the area. Response categories ranged from “no problem” to “extreme problem” in a 4-point interval scale. Finally, in order to classify each response as either an SVC measure or an IPC measure, the frequency of occurrence responses (observed, not observed) were combined with their corresponding perceived problem variables for each respondent and produced two conflict typologies: (a) IPC when

Table 1.—Conflict events asked of each recreationist across different managed areas

---

Not yielding the right of way
Not obeying signs
Dangerous behavior
Riding too fast
Failure to give warning when approaching
Passing too close
Excessive noise
Excessive exhaust smells
Environmental damage
Litter on trails
Trail erosion
Dust from other users
Dogs off-leash
Rudeness and discourteousness
Graffiti
Too many users on the trail

---

conflict had been previously observed; and (b) SVC when, despite not having witnessed the conflict event, respondents still considered it to be a problem.

Although participants who experienced IPC could also experience SVC (see Vaske et al. 2007 for review), our study approach considered that individuals who had witnessed a behavior and evaluated it as problematic experienced only IPC and not SVC (acknowledging the caveats that this methodology has). SVC events were used as the dependent variables in H<sub>1</sub> and IPC measures were used as the dependent variables in H<sub>2</sub>.

### 2.3 Analyses

Due to nonnormally distributed data, nonparametric tests were used to analyze the data. The Mann-Whitney test was used in H<sub>1</sub> to compare levels of SVC under the two conditions (educational posters vs. no educational posters) and in H<sub>2</sub> to compare levels of IPC under the two conditions (zoned areas and unzoned areas). The Chi-square test was used in H<sub>1</sub> to compare frequency of SVC under the two conditions (educational poster vs. no educational posters) and

in  $H_2$  to compare frequency of IPC under the two conditions (zoned areas and unzoned areas). In order to use the Chi-Square tests, the dependent variables were dichotomized as follows: when respondents considered an event to be no problem, the answer was classified as no conflict, and when respondents considered an event to be a slight, moderate or extreme problem, the answer was classified as a conflict.

### 3.0 RESULTS AND DISCUSSION

Most respondents (52.6 percent) were from the local communities of Squamish, Whistler, and Pemberton, or came from the region surrounding nearby Vancouver (28.7 percent). Over 60 percent (61.3 percent) were female while 38.7 percent were male. In relation to the distribution of activities, 40.7 percent of respondents were hikers, 24.0 percent were mountain bikers, 10.8 percent were dirt bikers and the rest (24.6 percent) were climbers, joggers, dog walkers and ATV riders. Younger recreationists (those below 30 years old) were often hikers (29.8 percent) and mountain bikers (26.3 percent), while older respondents (above 50 years old) were most likely to be hikers (65.9 percent). Dirt bikers were widely spread across different age groups.

More than 80 percent of respondents (84.4 percent) reported experiencing some kind of problem but only 14.5 percent reported extreme problems in relation to the 16 conflict behaviors. Littering (27.7 percent) and environmental damage (24.1 percent) were more frequently reported as highly unacceptable potential conflict behaviors. Overall, respondents reported having a problem less frequently in managed areas compared to areas that had neither zoning nor educational posters.

### 3.1. Social Values Conflict

In terms of perceived frequency of conflict, half of the measures of social values conflict were significantly different between areas with educational posters and areas without educational posters. At trailheads with educational posters, respondents reported significantly fewer instances of conflict for 8 of the 16 SVC measures. Where only nonmotorized users were analyzed between the two areas, conflicts for 9 out of 16 SVC were significantly less frequent.

In relation to the severity of social values conflict, again half of the measures were significantly less severe for respondents surveyed at trailheads with education posters compared to trailheads without educational posters (Table 2). Thus, it seems that the use of the posters does have an effect on the perception of conflict among recreationists. The same number of conflict measures were significantly different in areas where nonmotorized users alone were analyzed. More homogeneous groups (i.e., mountain bikers, hikers, dirt bikers) could not be examined due to small sample size. Despite finding significantly lower levels and less frequency of conflict in some SVC measures in areas with educational posters, the sizes of the effects were low (\*Low effect size 0.01-0.29; \*\*medium effect size 0.30-0.50; (Field 2005)).

### 3.2. Interpersonal Conflict

When analysing the effect that zoning (separating nonmotorized users from motorized users) had on the severity and frequency of occurrence of IPC, few measures were significantly different between respondents in zoned and unzoned areas. In terms of the frequency of IPC reported, when all users were

**Table 2.—Results by hypotheses**

Respondents	$H_1$ Education to reduce SVC		$H_2$ Zoning to reduce IPC	
	Frequency	Severity	Frequency	Severity
All	8*	8*	2*	2*
Nonmotorized	9*	8*	3*/**	5*/**
Mountain bikers	—	—	3**	7**

P-values < 0.05; \*Low effect size 0.01-0.29; \*\*medium effect size 0.30-0.50; — could not be calculated due to small sample size.

analyzed together, there were significant differences for 2 of the 16 measures of IPC (i.e. these measures were reported less frequently in zoned areas). When more homogeneous groups (i.e., nonmotorized users only and mountain bikers only) were analyzed, significantly more IPC measures (3) were reported less frequently in zoned areas (Table 2).

With regard to the severity of IPC reported in both types of areas, 2 out of 16 conflict measures were significantly more severe in areas where recreationists shared the trails with motorized respondents. When only nonmotorized respondents were considered in the analyses, 5 out of 16 types of conflicts were significantly less severe in zoned areas. In the case of mountain bikers, 7 out of 16 types of conflicts were significantly less severe in the zoned area. Overall, the magnitude of the independent variables' effect varied from small to medium.

In Squamish, recreationists at trailheads with educational posters and in zoned areas reported less SVC and IPC compared to recreationists in unmanaged areas, although the differences accounted for low variability (mostly low effect sizes and few medium effect sizes). The combination of several educational programs may have a larger effect on mitigating SVC when compared to a single program approach (Moore 1994). Similarly, when considering zoning management practices, the combination of temporal and spatial management practices may have a larger impact on the alleviation of IPC. Also, increased enforcement of management practices may have had an effect on the severity and frequency of conflict (Vaske et al. 1995). According to Bell et al. (2007), managing trail user conflict can be an especially complex task. Even when the root cause of the increase in conflict is simply an increase in demand for most outdoor recreation activities (Cordell and Tarrant 2002), many other factors may be related to conflict, such as trail features, recreation opportunities, types of users, land planning, ecological impact, management practices, economic resources, and staff availability.

## 4.0 CONCLUSIONS AND IMPLICATIONS

We can conclude from this study that educational posters and zoning as management practices can help to mitigate SVC and IPC. However, results indicate that individual management practices have a small effect on reducing conflict when compared to areas where those management practices do not exist.

This study considered the efficacy of educational programs and zoning management practices as they relate to SVC and IPC, respectively. Previous literature has suggested that a combination of management practices have the potential to more strongly reduce user conflicts (Moore 1994) compared to one strategy. For example, the combination of educational posters with brochures, signage, information and enforcement may more efficiently alleviate SVC. Similarly, applying several zoning management practices onsite (temporal zoning, physical zoning, user zoning) may increase the efficacy of these approaches at reducing IPC.

Future research should include other educational programs (flyers, Web information, information centres, and talks) when studying SVC as well as other types of zoning (motorized only, seasonal zoning) when studying IPC. Furthermore, researchers should also investigate the effect that combining zoning and educational programs has on the severity and frequency of SVC and IPC reported by recreationists. Reducing trail recreation conflict through management can provide more satisfactory experiences (Rollins and Robinson 2002) and can avoid costly political and legal action if conflicts are avoided or resolved at the initial stages (Cordell and Tarrant 2002). However, there is a need for better understanding of social interaction (i.e., conflict) in order to produce effective decisionmaking (i.e., management) (Dearden and Rollins 2002). This study is the first of its kind to test empirically the theoretical assumptions that relate education to SVC mitigation and zoning to IPC mitigation.

## 5.0 LITERATURE CITED

- Bell, S.; Tyrvaianen, L.; Sievanen, U.; Probstl, T.; M. Simpson. 2007. **Outdoor recreation and nature tourism: a European perspective**. Living Reviews in Landscape Research, 1. Available at <http://www.livingreviews.org/lrlr-2007-2/>. (Accessed May 17, 2010).
- British Columbia Ministry of Sustainable Resource Management. n.d. **Sea-to-sky land and resource management plan**. Available at [http://srmwww.gov.bc.ca/cr/resource\\_mgmt/lrmp/s2s/](http://srmwww.gov.bc.ca/cr/resource_mgmt/lrmp/s2s/). (Accessed July 27, 2005).
- British Columbia Ministry of Sustainable Resource Management. 2002. **Crown land recreational conflict documentation for the Ft St. James, Vanderhoof, Prince George, and Robson Valley LRMP Areas: conflict between motorized and non-motorized recreation users**. Available at [http://ilmbwww.gov.bc.ca/slrp/lrmp/northern/recreation\\_conflict/files/Main\\_Report\\_Rec.pdf](http://ilmbwww.gov.bc.ca/slrp/lrmp/northern/recreation_conflict/files/Main_Report_Rec.pdf). (Accessed May 17, 2010).
- Carothers, P.; Vaske, J.J.; Donnelly, M.P. 2001. **Social values versus interpersonal conflict among hikers and mountain bikers**. Leisure Sciences. 23(1): 47-61.
- Cordell, H.K.; Tarrant, M.A. 2002. **Socio-6: forest-based outdoor recreation**. USDA Southern Forest Resource Assessment. Available at <http://www.srs.fs.usda.gov/sustain/report/socio6/socio6.htm>. (Accessed October 4, 2009).
- Dearden, R.; Rollins, R. 2002. **Parks and protected areas in Canada – planning and management**. 2nd ed. Toronto, ON: Oxford University Press Canada.
- Field, A. 2005. **Discovering statistics using SPSS**. 2nd ed. London: SAGE Publications.
- Hammitt, W.E.; Schneider, I.E. 2000. **Recreation conflict management**. In: Gartner, W.C.; Lime, D.W. eds. Trends in Outdoor Recreation, Leisure and Tourism. New York: CABI Publishing: 347-356.
- Harshaw, H.W.; Sheppard, S.R.J.; Kozak, R.A. 2007. **Outdoor recreation and forest management: a plea for empirical data**. Forestry Chronicle. 83(2): 231-238.
- Jacob, G.R.; Schreyer, R. 1980. **Conflict in outdoor recreation: a theoretical perspective**. Journal of Leisure Research. 12(4): 368-380.
- Kajala, L., I. .1994. **The applicability of conflict theories in outdoor recreation: a case study of hikers and recreational stock users in the Eagle Cap Wilderness**. Corvallis, OR: Oregon State University. M.S. thesis. Available at <http://hdl.handle.net/1957/10335>. (Accessed June 19, 2010).
- Kozak, R.A.; Spetic, W.C.; Harshaw, H.W.; Maness, T.C.; Sheppard, S.R.J. 2008. **Public priorities for sustainable forest management in six forest dependent communities of British Columbia**. Canadian Journal of Forest Research. 38(12): 3071-3084.
- Manning, R.E. 1999. **Studies in outdoor recreation. search and research for satisfaction**. 2nd ed. Corvallis, OR: Oregon University Press.
- Marcouiller, D.W.; Scott, I.; Prey, J. 2005. **Addressing recreation conflict: providing a conceptual basis for management**. 13 p. Working Paper 05-2. Department of Urban and Regional Planning, Madison, WI: University of Wisconsin.
- Moore, R.L. 1994. **Conflicts on multiple-use trails: synthesis of the literature and state of the practice**. Report No. FHWA-PD-94-031. Washington, DC: Federal Highway Administration. 70 p.
- Owens, P.L. 1985. **Conflict as a social interaction process in environment and behaviour research: the example of leisure and recreation research**. Journal of Environmental Psychology. 5: 243-259.
- Rollins, R.; Robinson, D.W. 2002. **Social science, conservation, and protected areas**. In: Dearden, P.; Rollins, R., eds. Parks and protected areas in Canada: planning and management. 2nd ed. Toronto: Oxford University Press: 117-147.

- Schneider, I.E. 2000. **Revisiting and revising recreation conflict research.** *Journal of Leisure Research.* 32: 129-132.
- Tarrant, M.A.; Cordell, H.K. 2002. **Amenity values of public and private forests: examining the value-attitude relationship.** *Environmental Management.* 30(5): 692-703.
- Tumes, K. 2007. **Out of my way: using qualitative methods to understand recreation conflict between bushwalkers and mountain bike riders.** *Anthropological Notebooks.* 13(1): 45-57.
- Vaske, J.J.; Carothers, P.; Donnelly, M.P.; Baird, B. 2000. **Recreation conflict among skiers and snowboarders.** *Leisure Sciences.* 22(4): 297-313.
- Vaske, J.J.; Donnelly, M.P.; Wittmann, K.; Laidlaw, S. 1995. **Interpersonal versus social-values conflict.** *Leisure Sciences.* 17(3): 205-222.
- Vaske, J.J.; Needham, M.D.; Cline, R.C. 2007. **Clarifying interpersonal and social values conflict among recreationists.** *Journal of Leisure Research.* 39(1): 182-195.
- Watson, A.E.; Niccolucci, M.J.; Williams, D.R. 1994. **The nature of conflict between hikers and recreational stock users in the John Muir Wilderness.** *Journal of Leisure Research.* 26(4): 372-385.

The content of this paper reflects the views of the author(s), who are responsible for the facts and accuracy of the information presented herein.

# HOW PLACE ATTACHMENTS INFLUENCE RECREATION CONFLICT AND COPING BEHAVIOR

---

Cheng-Ping Wang  
Department of Tourism  
Shih Hsin University  
Taipei, Taiwan  
cpwang@cc.shu.edu.tw

Yin-Hsun Chang  
National Taiwan University of Science and  
Technology

---

**Abstract.**—The purpose of this study was to explore how place attachment influences recreation conflict and coping behaviors based on the Transactional Stress/Coping Model. The interference between bikers and walkers in Bali Zon-An Park in Taipei County, Taiwan was investigated in May and June of 2007. A total of 384 valid questionnaires were collected. The study results indicated that park users with different levels of place attachment perceived different levels of recreation conflict, and users with high place attachment would not like to engage in spatial displacement to another area to cope with recreation conflict. Therefore, place attachment may not only influence the perceived conflicts (stress) of park users, but also their coping strategies.

---

## 1.0 INTRODUCTION AND LITERATURE REVIEW

This study explored the relationships among place attachment, recreation conflict, and coping behavior. Previous empirical studies of recreation conflict and coping behavior have focused on the factors affecting recreationists' perceived conflicts and how they coped with those conflicts, but have not addressed how conflict factors influence coping strategies during a perceived conflict.

The Transactional Stress/Coping Model (Lazarus and Folkman 1984) suggests various personal and situational factors that can influence an individual's perceived stress, and coping strategies that may be adopted to minimize the negative feelings. As coping strategies are initiated, the personal-situational relationship changes, and the individual reappraises whether or not the stress still exists. Therefore, a relationship between personal situational factors, stress, and coping can be proposed based on the Transactional Stress/Coping Model.

Goal interference theory (Jacob and Schreyer 1980) defines recreation conflict as "goal interference attributed to another's behavior," and proposes four conflict factors: activity style, resource specificity, lifestyle tolerance, and mode of experience. Activity style is defined as "the personal meanings attached to the set of behaviors constituting a recreation activity" (Jacob and Schreyer 1980). Several studies have indicated that activity style is an essential dimension related to recreation conflict (Kajala 1994, Todd and Graefe 1989, Vaske et al. 2000, Watson et al. 1994), but other researchers do not agree (Ramthun 1995, Schuster 1996, Williams et al. 1994). Resource specificity is "the significance attached to using a specific recreation resource for a given recreation experience" (Jacob and Schreyer 1980). Empirical studies support resource specificity as a predictor of recreation conflict (Adelman et al. 1982, Gibbons and Ruddell 1995, Watson et al. 1994, Widner 1994); for example, Gibbons and Ruddell's (1995) research concludes that visitors with high place dependence are more likely to perceive goal interference. Lifestyle tolerance is defined as "the tendency to reject lifestyles different from one's own" (Jacob and Schreyer 1980). Most studies find that recreationists with higher lifestyle tolerance are less likely to perceive conflict

with other recreationists (Ivy et al. 1992, Ramthun 1995, Watson et al. 1994). The mode of experience factor is defined as “the varying expectations of how the natural environment will be perceived”, but research results on this concept are inconsistent. For example, Watson et al. (1994) found that mode of experience was a significant variable in predicting goal interference and that wilderness users were more focused on the setting and the activity than non-wilderness users. However, Vaske et al. (2000) studied the in-group and out-group conflict among skiers and snowboarders and found that mode of experience only helped predict skiers’ in-group conflicts, not the other three types of conflict (skier-snowboarder, snowboarder-skier and snowboarder-snowboarder).

Neither the Transactional Stress/Coping Model nor the Goal Interference Theory addresses how personal and situational factors influence an individual’s use of coping strategies while experiencing perceived stress. “Place attachment” refers to an individual’s affinity for a specific place and is considered the operationalization of resource specificity, one of the conflict factors from goal interference theory. Empirical studies have indicated that place attachment could predict resource use conflicts among recreationists (see Gibbons and Ruddell 1995 and Vaske et al. 2000), or between recreationists and other resource users such as motorboaters, watercrafters, and coastal landowners (Wang and Dawson 2005). In addition, the literature also indicates that when people are attached to a specific place where they engage in recreation, it can be difficult for them to engage in the coping mechanism of finding a substitute place that is equally satisfying (Hammitt et al. 2006, Kyle et al. 2004). Therefore, place attachment may influence both recreation conflict and conflict coping behavior.

## 2.0 METHODS

The purpose of this study was to explore how place attachment influences recreationists’ perceived conflict and coping strategies. The study site was Bali Zon-An Park on the western coast of Dan-Shua River in Taipei County, Taiwan. Bali Zon-An Park attracted more than 2.4 million visitors in 2007. It is near the metropolitan

area of Taipei City, and there are various attractions around this park such as the Guan-Yin Mountain Scenic Area, Shihshang Archaeological Site, Tanshui Old Street, and Tamshui Fisherman’s Wharf. Visitors to this park can enjoy the nature beauty and participate in various outdoor recreation activities, especially walking and biking. A walking trail was built along the coast next to the biking trail and visitors can cross between the two trails. Thus, there is the potential for conflict or at least interference between walkers and bikers.

A questionnaire employed to collect data for model testing asked about the respondents’ backgrounds, place attachment, recreation conflicts, and the coping strategies they adopted when facing conflicts. Place attachment questions were based on the studies of Bricker and Kerstetter (2000), Moore and Graefe (1994), and Williams and Vaske (2003), in which place attachment contained two dimensions: place identity (affective attachment) and place dependence (functional attachment). Likert scales were used for possible responses which ranged from strongly disagree (1) to neutral (3) to strongly agree (5). The recreation conflict items were based on on-site observations and interviews with both walkers and bikers, and the Likert-scale responses options were: 1 (no influence), 2 (slightly influence), 3 (somewhat serious influence), 4 (serious influence), and 5 (very serious influence). Coping strategy questions were based on Miller and McCool (2003) in which coping strategies included displacement, rationalization, product shift, substitution, and direct action. The Likert-type response scale for coping strategies ranged from strongly disagree (1) to neutral (3) to strongly agree (5).

The survey was conducted in May and June, 2007. A convenience sampling method was used and 384 complete questionnaires were collected. Descriptive Analysis, Cluster Analysis, and ANOVA were conducted using SPSS 17 in order to explore the relationships among place attachment, recreation conflict, and coping behavior.

### 3.0 RESULTS

#### 3.1 Respondents' Demographics

Of the 384 respondents who provided valid questionnaires, 217 were walkers and 167 were bikers (see Table 1). Just over half (50.7 percent) of the walker-respondents were female, and most were young (54.4 percent were 21-30 years old), had a college education (65.4 percent), and were in the low to middle income category (76.1 percent earned 0~40,000 NTD/month). The largest group of walkers worked in business/service jobs (37.3 percent). Just over half (52.7 percent) of the biker-respondents were male and most were also young (54.5 percent were 21-30 years old), had a college education (65.9 percent), and were in the low to middle income category (76.6 percent earned 0~40,000 NTD/month). Most bikers were in the police/faculty/student employment category (43.1 percent).

#### 3.2 Place Attachment, Recreation Conflicts, and Coping Strategies

To explore how place attachment influenced users' perceived recreation conflicts and coping strategies, weekday respondents (n=97, 48 walkers + 49 bikers) were separated from weekend respondents (n=286, 169 walkers + 117 bikers) due to visitor number differences (i.e. there were higher numbers of visitors and therefore a higher likelihood of crowding and user conflicts on weekends). A cluster analysis was conducted on data from weekend respondents based on their place attachment to Bali Zon-An Park. We used the hierarchical cluster analysis technique with Ward's method and Square Euclidean distance measure options in SPSS 17. Two to four groups were clustered for interpretation, and based on the results, three groups—low place attachment (Low-PA), intermediate place attachment (Intermediate-PA), and high place attachment (High-PA)—were identified for both weekend bikers and walkers. However, only one group was identified for weekday bikers and hikers. Therefore, there were a total of four groups for both bikers and walkers (Tables 2 and 3).

**Table 1.—Demographics of study respondents**

Variable	Walker (N=217)		Biker (N=167)	
	N	%	N	%
Gender				
Male	107	49.3	88	52.7
Female	110	50.7	79	47.3
Age				
20 and under	37	17.1	38	22.8
21-30	118	54.4	91	54.5
31-40	56	25.8	27	16.2
41-50	2	0.9	6	3.6
51 and up	4	1.8	5	3.0
Income (NTD/month)				
no income	58	26.7	42	25.1
1~20,000	27	12.4	30	18.0
20,001~40,000	80	36.9	56	33.5
40,001~60,000	37	17.1	24	14.4
60,001~80,000	11	5.1	7	4.2
80,001 and up	4	1.8	8	4.8
Education				
Elementary	0	0.0	1	0.6
Junior High	1	0.5	1	0.6
Senior High	53	24.4	35	21.0
College	142	65.4	110	65.9
Graduate School	21	9.7	20	12.0
Employment				
Industry	36	16.6	24	14.4
Business/Service	81	37.3	54	32.4
Police/faculty/student	74	35.0	72	43.1
Other	14	6.5	10	6.0
Unemployed	10	4.6	7	4.2

The study tested whether or not respondents with different place attachment levels had different levels of perceived recreation conflict and different coping strategies. ANOVA test results indicated that the four groups of walkers were significantly different in two types of conflict (conflict from bikers and conflict from walkers) and two types of coping strategies (absolute displacement and director behavior) (Table 2). Weekend walkers with the lowest place attachment scores (Low-PA) were most likely to experience conflict with both bikers and other walkers; in addition, of the four walking groups, weekend Low-PA walkers were most likely to leave the park (absolute displacement) when they experienced perceived conflicts. Weekday walkers with relatively high

**Table 2.—Mean values for nine variables and the AVOVA test results for groups of walkers in the Zon-An Park**

Variable		Weekday	Weekend			ANOVA
		(n=48)	Low-PA (n=33)	Intermediate-PA (n=112)	High-PA (n=24)	F
Place Attachment	Place identity	3.1 <sup>b</sup>	2.5 <sup>a</sup>	3.0 <sup>b</sup>	3.9 <sup>c</sup>	38.393*
	Place dependency	2.9 <sup>c</sup>	1.8 <sup>a</sup>	3.0 <sup>c</sup>	2.6 <sup>b</sup>	57.509*
Stress	Conflict with bikers	1.8 <sup>a</sup>	2.4 <sup>b</sup>	2.0 <sup>ab</sup>	2.3 <sup>ab</sup>	3.530*
	Conflict with walkers	1.4 <sup>a</sup>	2.1 <sup>b</sup>	1.7 <sup>ab</sup>	1.8 <sup>ab</sup>	3.977*
Coping Behavior	Cognitive coping	3.3	3.4	3.4	3.2	1.121
	Absolute displacement	2.2 <sup>ab</sup>	2.4 <sup>b</sup>	2.2 <sup>ab</sup>	1.8 <sup>a</sup>	3.003*
	Temporal displacement	3.5	3.2	3.2	3.3	1.779
	Direct behavior	2.4 <sup>b</sup>	1.9 <sup>ab</sup>	2.3 <sup>b</sup>	1.7 <sup>a</sup>	4.990*
	Spatial displacement	2.9	2.8	2.9	2.7	0.650

Note: 1. \*P<0.05.

2. <sup>a, b, c</sup> are the ANOVA groups based on Scheffe Test.

**Table 3.—Mean values for nine variables and the AVOVA test results for groups of bikers in the Zon-An Park**

Variable		Weekday	Weekend			ANOVA
		(n=49)	Low-PA (n=42)	Intermediate-PA (n=53)	High-PA (n=22)	F
Place Attachment	Place identity	3.1 <sup>b</sup>	2.8 <sup>a</sup>	2.9 <sup>ab</sup>	4.0 <sup>c</sup>	29.687*
	Place dependency	2.6 <sup>b</sup>	2.0 <sup>a</sup>	3.0 <sup>c</sup>	3.0 <sup>bc</sup>	35.400*
Stress	Conflict with bikers	1.8 <sup>a</sup>	2.5 <sup>b</sup>	2.2 <sup>ab</sup>	2.2 <sup>ab</sup>	5.594*
	Conflict with walkers	1.8 <sup>a</sup>	2.7 <sup>b</sup>	2.5 <sup>b</sup>	2.6 <sup>b</sup>	7.686*
Coping Behavior	Cognitive coping	3.3	3.4	3.3	3.5	0.866
	Absolute displacement	1.9 <sup>a</sup>	2.5 <sup>b</sup>	2.4 <sup>b</sup>	2.1 <sup>ab</sup>	6.488*
	Temporal displacement	3.5	3.1	3.2	3.5	1.988
	Direct behavior	2.4	2.4	2.5	2.4	0.493
	Spatial displacement	2.9	2.9	3.1	3.4	2.013

Note: 1. \*P<0.05.

2. <sup>a, b, c</sup> are the ANOVA groups based on Scheffe Test.

place attachment perceived lower levels of recreation conflicts, and preferred temporal displacement (walking at a different time of day) when they experienced perceived conflicts. Weekend walkers with the highest place attachment scores reported some conflicts, but did not tend to leave the park in response.

ANOVA test results indicated that the four groups of bikers were significantly different from each other in levels of perceived conflicts with bikers and walkers and in one type of coping strategy (absolute

displacement) (Table 3). Weekend Low-PA bikers were the most likely to experience both types of recreation conflicts; in addition, they had the highest potential to leave the park (absolute displacement) when they experienced perceived conflicts. Weekday bikers with relatively high place attachment reported the lowest perceived recreation conflicts, and had the lowest potential to leave the park. Weekend bikers with the highest place attachment scores did report conflicts, but did not tend to leave the park in response.

## 4.0 DISCUSSION

Weekday users perceived lower recreation conflict than weekend users (Tables 2 and 3). Since the number of visitors on weekdays is lower than on weekends, fewer social interactions may decrease the opportunities for and likelihood of recreation conflict. This may also explain why the study results did not find a positive relationship between resource specificity (operationalized as place attachment in this study) and recreation conflict as suggested by goal interference theory and research. Comparing weekday users and weekend users, weekday users had higher place attachment scores than Low-PA weekend users, but perceived higher recreation conflict than Low-PA weekend users (Tables 2 and 3).

As suggested by the Transactional Stress/Coping Model, respondents in this study tended to adopt coping strategies when they perceived recreation conflict. Walkers would be more likely than bikers to leave the park (absolute displacement) in order to alleviate perceived conflict. Since recreationists generally do not like to substitute another recreation area for their own when they are more psychologically attached to a park, it follows in this study that most park users would not consider absolute displacement when perceiving recreation conflict. As expected, park users in this study with low place attachment perceived higher recreation conflict and more often intended to adopt absolute displacement than those users with high place attachment. Therefore, park users' coping behaviors were affected by both recreation conflict and resource specificity (that is place attachment). These results extend the findings of previous research that discussed but did not study the relationship between stress and coping.

## 5.0 ACKNOWLEDGMENT

This study was funded by the National Science Council, Taiwan (NSC 96-2415-H-128-004). The authors wish to express gratitude to Chad Dawson, professor at SUNY College of Environmental Science and Forestry, and Yi-Chung Hsu, professor at National Dong Hwa University, Taiwan, for their valuable comments and suggestions.

## 6.0 LITERATURE CITED

- Adelman, B.; Heberlein, T.; Bonnicksen, T. 1982. **Social psychological explanations for the persistence of a conflict between paddling canoeists and motorcraft users in the Boundary Waters Canoe Area.** *Leisure Sciences*. 5(1): 45-61.
- Bricker, K.S.; Kerstetter, D.L. 2000. **Level of specialization and place attachment: an exploratory study of whitewater recreationists.** *Leisure Sciences*. 22: 233-257.
- Gibbons, S.; Ruddell, E. 1995. **The effect of goal orientation and place dependence on select goal interferences among winter backcountry users.** *Leisure Sciences*. 17: 171-183.
- Hammit, W.E.; Backlund, E.A.; Bixler, R.D. 2006. **Place bonding for recreation places: conceptual and empirical development.** *Leisure Studies*. 25(1): 17-41.
- Ivy, M.; Stewart, W.; Lue, C. 1992. **Exploring the role of tolerance in recreational conflict.** *Journal of Leisure Research*. 24(4): 348-360.
- Jacob, G.; Schreyer, R. 1980. **Conflict in outdoor recreation: a theoretical perspective.** *Journal of Leisure Research*. 12: 368-380.
- Kajala, L. 1994. **The applicability of conflict theories in outdoor recreation: a case study of hikers and recreational stock users in the Eagle Cap Wilderness.** Corvallis, OR: Oregon State University, Oregon. M.S. thesis.
- Kyle, G.; Bricker, K.; Graefe, A.; Wickham, T. 2004. **An examination of recreationists' relationships with activities and settings.** *Leisure Sciences*. 26: 123-142.
- Lazarus, R.S.; Folkman, S. 1984. **Stress, appraisal, and coping.** New York: Springer Publishing.
- Miller, T.A.; McCool, S.F. 2003. **Coping with stress in outdoor recreational settings: an application of transactional stress theory.** *Leisure Sciences*. 25: 257-275.

- Moore, R.; Graefe, A. 1994. **Attachment to recreation settings: the case of rail-trail users.** *Leisure Sciences.* 16: 17-31.
- Ramthun, R. 1995. **Factors in user group conflict between hikers and mountain bikers.** *Leisure Sciences.* 17: 159-169.
- Schuster, R., Jr. 1996. **Conflict management in outdoor recreation activities.** Laramie, WY: The University of Wyoming. M.S. thesis.
- Todd, S.; Graefe, A. 1989. **Level of experience and perception of conflict among canoeists on the Delaware River.** In: More, T.; Donnelly, M.; Graefe, A.; Vaske, J., eds. *Proceedings of the 1989 Northeastern Recreation Research Symposium.* Gen. Tech. Report NE-132. Broomall, PA: U.S. Department of Agriculture, Forest Service, Northeastern Forest Experiment Station: 147-156.
- Vaske, J.; Carothers, P.; Donnelly, M.; Baird, B. 2000. **Recreation conflict among skiers and snowboarders.** *Leisure Sciences.* 22: 297-313.
- Wang, C.P.; Dawson, C.P. 2005. **Recreation conflict along New York's Great Lakes coast.** *Coastal Management.* 33: 297-314.
- Watson, A.; Niccolucci, M.; Williams, D. 1994. **The nature of conflict between hikers and recreational stock users in the John Muir Wilderness.** *Journal of Leisure Research.* 26(4): 372-385.
- Widner, C. 1994. **Conflict among hikers and horseback riders in the Mount Rogers High Country of Virginia.** Blacksburg, Virginia: The Virginia Polytechnic Institute and State University. M.S. thesis.
- Williams, D.R.; Vaske, J.J. 2003. **The measurement of place attachment: validity and generalizability of a psychometric approach.** *Forest Science.* 49: 830-840.
- Williams, P.; Dossa, K.; Fulton, A. 1994. **Tension on the slopes: managing conflict between skiers and snowboarders.** *Journal of Applied Recreation Research.* 19: 191-213.

The content of this paper reflects the views of the author(s), who are responsible for the facts and accuracy of the information presented herein.

*MEASUREMENT  
AND APPLICATION*

# PERCEIVED COMMUNITY BENEFITS FROM RECREATION RESOURCES: FROM SCALE DEVELOPMENT TO VALIDATION

---

Jordan W. Smith  
Dept. of Parks, Recreation and Tourism Management  
North Carolina State University  
jwsmit12@ncsu.edu

Dorothy H. Anderson  
North Carolina State University

Mae A. Davenport  
University of Minnesota

Jessica E. Leahy  
University of Maine

---

**Abstract.**—This research proposes a six-factor psychometric scale for assessing individuals' perceptions of community benefits generated from managed recreation resources. We suggested that community benefits primarily occur within six related dimensions: ecological, economic, lifestyle, quality of life, sense of physical space, and social solidarity. A 30-item scale was proposed to measure these dimensions. Data came from a mail-back questionnaire administered to residents living within 15 miles of Voyageurs National Park near International Falls, Minnesota. Confirmatory factor analysis was employed to test the convergent and discriminant validity of the proposed scale. We also tested for measurement and covariance invariance, two tests of scale reliability, using multi-group confirmatory factor analysis (CFA). Results support the validity and reliability of the scale. We suggest the perceived community benefits scale can be employed in future research to develop more valid theoretical propositions relating individuals' values and the possible outcomes they would like to see recreation resources managed for.

---

## 1.0 INTRODUCTION

Many recreation scholars and professionals have intuitively believed that the availability of recreation resources leads to benefits for local communities (Driver 2008, Driver et al. 1991, Moore and Driver 2005). In fact, many federal land management agencies are mandated to facilitate the production and delivery of desirable benefits not only to recreation users but to local communities as well (Anderson et al. 2008). Despite the longstanding use of these "outcomes-focused" management approaches, relatively little empirical research has attempted to gauge how local residents perceive the potential benefits that managed recreation resources provide to their local communities.

This paper begins to fill this gap in the recreation and natural resource management literatures in several distinct ways. First, we draw on the substantive body of recreation benefits literature (e.g., Driver 2008, Driver et al. 1991) to develop a 30-item psychometric scale of potential community benefits. Second, drawing on the same literature and several case studies of resource management areas, we hypothesize six dimensions of potential community benefits. These dimensions are: ecological, economic, lifestyle, quality of life, sense of physical space, and social solidarity. Third, we test these theoretical dimensions using two surveys administered to residents living adjacent to Voyageurs National Park in Minnesota.

## 2.0 SCALE DIMENSIONS

The community benefits scale developed here is concerned solely with individuals' perceptions of how managed recreation resources benefit their local communities. This cognitive approach differs from the large bodies of literature, primarily originating within the field of resource and environmental economics, which have focused on valuing the benefits produced by managed resource areas. Given this, we

define community benefits as the perceived “benefits resulting from public land management that accrue to local residents in communities nearby or adjacent to public lands” (Anderson et al. 2008, p. 312). Based upon a review of the diverse and interdisciplinary literatures that address perceived community benefits, we developed a relatively parsimonious set of six dimensions of community benefits. The six types of

community benefits presented here are: ecological, economic, lifestyle, quality of life, sense of physical space, and social solidarity. Each of these benefits can be accrued by local communities adjacent to managed resource areas; these benefits are also inherently interrelated. The statement items used to measure each set of benefits are shown in Table 1.

**Table 1.—Descriptive statistics, reliabilities, and standardized factor loadings for community benefits**

Statement <sup>a</sup>	$\alpha$ if $\alpha$ deleted	Mean Inter-Item Covariance	M	SD	Loading	Uniqueness
<b>Ecological</b>	<b>.93</b>	<b>.85</b>				
A greater retention of distinctive natural landscape features	.93		3.88	1.10	.74	.45
Improved soil, water, and air quality	.92		4.14	1.07	.83	.31
A sense of security that the natural environment will not be lost	.90		4.06	1.08	.91	.18
A place to conserve various natural and unique ecosystems	.91		3.92	1.08	.88	.22
Knowing conserved natural resources exists for future generations	.91		4.10	1.07	.89	.20
<b>Economy</b>	<b>.93</b>	<b>.89</b>				
Having a more stable economy within my community	.90		4.16	1.10	.92	.16
Increased job opportunities within my community	.91		4.16	1.13	.89	.21
Attracting tourism dollars to my community	.92		4.14	1.11	.80	.36
Having a more stable economy for the surrounding region	.90		4.18	1.05	.93	.14
Gaining financially by using natural resources	.93		3.78	1.15	.72	.48
<b>Lifestyle</b>	<b>.88</b>	<b>.71</b>				
More community involvement in recreation	.85		3.72	1.13	.73	.46
A greater concern for the natural environmental among residents	.85		3.95	1.05	.80	.36
Increased knowledge about the area’s cultural resources	.83		3.75	1.01	.86	.27
A chance for local people to maintain an outdoor-oriented lifestyle	.85		4.12	1.09	.78	.40
Opportunities for residents to grow spiritually	.88		3.46	1.19	.67	.55
<b>Quality of Life</b>	<b>.92</b>	<b>.81</b>				
Heightened sense of community satisfaction	.92		3.70	1.12	.72	.48
Living in a healthy environment	.90		4.31	1.03	.87	.25
Opportunities for exercise that improve local people’s health	.90		3.86	1.09	.83	.32
Providing a good quality of life	.88		4.10	1.10	.89	.20
A higher quality of life	.89		4.05	1.08	.84	.29
<b>Sense of Physical Space</b>	<b>.92</b>	<b>.85</b>				
A greater ability to preserve small-town feeling of your community	.91		3.63	1.20	.78	.39
Better maintenance of community infrastructure	.90		3.71	1.14	.81	.34
Greater retention of community’s distinctive architecture	.91		3.38	1.11	.78	.39
Improved care for community aesthetics	.90		3.93	1.12	.83	.31
Feeling that your community is a special place to live	.90		3.97	1.16	.84	.30
Having a better sense of my place within my community	.90		3.49	1.13	.81	.35
<b>Social Solidarity</b>	<b>.91</b>	<b>.94</b>				
A stronger sense of community togetherness or cohesion	.87		3.66	1.15	.90	.19
A stronger sense of family bonds within the community	.88		3.55	1.19	.86	.27
A natural setting in which your community takes great pride	.89		3.96	1.14	.81	.35
A feeling of community pride	.89		3.81	1.13	.80	.37

<sup>a</sup> Respondents were asked to indicate the importance of the statement item relative to their community’s relationship with the recreation resource on a scale where 1 = Very Unimportant through 5 = Very Important.

## 2.1 Ecological Benefits

Ecological benefits are a product of managed recreation resources. By conserving natural landscapes, managed resource areas provide a host of ecological benefits. The conservation of wildlife habitat, the facilitation of carbon sequestration, and the protection of water quality, are all prime examples of benefits that communities receive from the management of recreation resources.

## 2.2 Economic Benefits

Recreation resources can draw visitors and tourists to local communities and their expenditures can fuel local sales receipts and provide what would otherwise be unattainable levels of economic growth (Stein et al. 1999). However, economic benefits produced by managed recreation resources are often perceived as having a substantial negative influence on local community life as well (Davenport and Anderson 2005). Regardless of how they are perceived, managed recreation resources can, and often do, play a substantial role in local and regional economies.

## 2.3 Lifestyle Benefits

Communities with managed recreation resources can become associated with specific types of lifestyles and group identities (Carroll et al. 2005, Field and Burch 1988). As a result, the role that resource areas play in sustaining particular lifestyles can be perceived as a substantial benefit for local communities, and one that contributes to local residents' satisfaction. Several examples are recurrent in the literature: retirees developing local social enclaves in amenity-rich areas (e.g., Gosnell and Abrams 2009, McCool and Kruger 2003); adventure-seeking young professionals (e.g., Florida 2005, McGranahan and Wojan 2007); and occupational lifestyles like logging (Carroll et al. 2005) or fruit and fungi harvesters (Carroll et al. 2003, McLain 2000).

## 2.4 Quality of Life Benefits

Leisure services provided through managed resource areas can strongly contribute to individuals' overall feelings of satisfaction with their communities (Allen and Beattie 1984). Logically, individuals' satisfaction

with their local communities depends on the ability of the community and its surrounding environment to meet their needs and desires. When needs and desires are met through the provision of recreation opportunities or other tangible benefits that individuals value, residents are more likely to be satisfied with their community and believe that the resource area helps produce a higher quality of life (Marans 2003).

## 2.5 Sense of Physical Space

Over time, communities adjacent to managed recreation resources can develop distinct architectures and aesthetic traits. The physical development of resource-associated communities often results from conscious efforts on the part of local developers and city officials to develop a distinct community identity in order to increase tourist flows and local tax revenues. Regardless of the causal mechanisms for developing a distinct sense of physical space, unique physical and aesthetic characteristics can be associated with being located adjacent to a managed recreation resource area.

## 2.6 Social Solidarity Benefits

The settings provided by managed areas can facilitate social bonding which can, in turn, lead to increased feelings of social solidarity and a shared sense of community (Mann and Leahy 2010). Furthermore, the physical settings of managed resource areas are often used by local organizations (e.g., civic, religious, and professional organizations) for social functions and gatherings. Managed recreation resources, therefore, may provide the functional requirements for social solidarity to develop within local communities.

## 3.0 METHODS

### 3.1 Data Collection

Data were collected from residents living within 15 miles of the Voyageurs National Park in Minnesota. Roughly half of the population around the National Park lives within the community of International Falls (2000 population = 6,703). Given this, we stratified our sampling frame into two populations, those living in International Falls and those living elsewhere around the Park. The two study populations were

generated using tax records and addresses included in local phone number listings. From each of the study populations, we generated a random sample of 575 households. Mail questionnaires, administered according to Dillman's Tailored Design Method (2007), were sent to each of the selected households. Within International Falls, a total of 506 questionnaires were deliverable; of these, 313 were returned completed for a response rate of 62 percent. For the questionnaires administered to other residents around the Park, a total of 490 were deliverable; of these, 297 were returned completed for a response rate of 61 percent. Given that both response rates were above the 60 percent recommended by Dillman (2007), a non-response bias analysis was not necessary.

### 3.2 Data Analysis

The mail questionnaire contained the 30-item community benefits scale (Table 1). Respondents were asked to indicate how important it was to them that Voyageurs National Park was managed to produce each statement item. The data generated from the scale was analyzed using confirmatory factor analysis (CFA). The CFA process proceeded through two distinct phases. First we utilized CFA on data from each of the two samples independently to ensure that our hypothesized six-dimensional model provided an adequate fit to both samples. In assessing model fit, we used the following criteria adopted from Kline (2005) and Hu and Bentler (1999): the maximum likelihood  $\chi^2$  (smaller values indicate better model fit); the relative  $\chi^2$  ( $\chi^2/df$ ) (values of 3 or less indicate acceptable model fit); the root mean-square error of approximation (RMSEA) (values of less than .08 indicate acceptable model fit); the Akaike Information Criteria (AIC) (lower values represent better model fit); the expected cross-validation index (ECVI) (lower values represent better model fit); the comparative fit index (CFI) (values nearer to 1 indicate better model fit); and the non-normed fit index (NNFI) (values nearer to 1 indicate better model fit). The second phase of analysis used multi-group CFA to determine whether or not measurement weights and covariance coefficients were invariant across both samples. If the measurement weights are invariant across samples, we

can be assured the measurement items are measuring identical constructs for both sets of data. Similarly, testing for invariance in the covariance coefficients allowed us to determine whether the relationships between the six community benefit dimensions are similar across samples. If covariance invariance is found, we can have a greater amount of confidence in the reliability of the proposed community benefits scale. For both invariance tests, if the  $\Delta CFI \leq .01$  from the multi-group configural model to the subsequent constrained model, invariance is supported (Cheung and Rensvold 2002).

## 4.0 RESULTS

### 4.1 Scale Reliabilities

Each community benefit was measured with four to six observed variables (Table 1). The internal reliabilities (Cronbach's alpha) of each of the hypothesized community benefits were satisfactory, ranging from .88 to .93. Support for item-scale validity was also seen in the high levels of inter-item covariance ( $\geq .71$ ), more than adequate factor loadings ( $\geq .72$ ), low uniqueness values ( $\leq .48$ ), and the fact that removal of no singular item reduced a dimension's reliability (Table 1, Column 2). These initial results suggested that the scale contained a high degree of item-scale validity and that subsequent CFA was warranted.

### 4.1 Confirmatory Factor Analysis

The fit indices for the hypothesized six-dimension models are shown in Table 2. We initially estimated model fit using each sample individually and then assessed model fit for the pooled sample. Following the fit criteria described above, we found that the data from each sample, as well as the pooled sample, provided a good fit to the hypothesized model. Given adequate model fit, we next examined the correlations among the six latent community benefits (Table 3). The correlations were high and statistically significant at the .05 level. The presence of high levels of inter-correlation among latent dimensions indicates there is a considerable level of codependence between each of the perceived community benefits dimensions.

**Table 2.—Goodness-of-fit indices and measurement and structural invariance test statistics**

Model	$\chi^2$	Df	$\chi^2/df$	RMSEA [90%C.I.]	AIC	ECVI [90%C.I.]	CFI	NNFI	$\Delta\chi^2$	$\Delta CFI$
Confirmatory Factor Analysis										
Pooled Sample	1183.72	373	3.17	.06 [.06, .06]	1367.72	2.25 [2.08, 2.42]	.90	.88	—	—
International Falls Sample	891.84	373	2.39	.07 [.06, .07]	1075.84	3.45 [3.18, 3.74]	.88	.85	—	—
Other Residents Sample	846.55	373	2.27	.07 [.06, .07]	1030.55	3.48 [3.21, 3.78]	.88	.85	—	—
Invariance Tests										
Multi-group Configural Model	1738.39	746	2.33	.05 [.04, .05]	2106.39	3.46 [3.27, 3.67]	.88	.85	—	—
Multi-group test of measurement invariance	1761.69	770	2.29	.05 [.04, .05]	2081.69	3.42 [3.23, 3.63]	.88	.85	23.3	.00
Multi-group test of covariance invariance	1804.79	791	2.28	.05 [.04, .05]	2082.79	3.43 [3.23, 3.64]	.88	.84	66.4	.00

**Table 3.—Correlations among latent dimensions**

Dimension	Dimension				
	Ecological	Economic	Lifestyle	Quality of Life	Sense of Physical Space
Economic	.75				
Lifestyle	.80	.76			
Quality of Life	.85	.84	.88		
Sense of Physical Space	.75	.78	.88	.88	
Social Solidarity	.68	.74	.83	.81	.88

Note: All correlations are significant at the .05 level.

In summation, the presence of high item-scale validity, illustrated through the adequate alpha values, factor loadings, and low uniqueness values, lend support for the convergent validity of the community benefits scale. The overall acceptable levels of model fit across the two samples lend support for the reliability of the six-dimension model of community benefits. Scale reliability was further tested in the subsequent invariance tests.

#### 4.2 Multi-Group Analysis

To test for measurement and covariance invariance, we first estimated a baseline configural model from both samples simultaneously. As expected given the results from the previous section, the fit of the multi-group configural model was acceptable (Table 2). The CFI and RMSEA values were .88 and .05 respectively. With these baseline statistics established, we subsequently constrained the measurement weights (factor loadings) and intercepts to be equal across both

samples and re-estimated model fit. The fit indices for the constrained model were again adequate (Table 2) and the CFI statistic was .88. Given that the change in CFI between the configural model and the constrained model was less than .01, measurement invariance was supported. The six-dimension scale of community benefits measured the same latent constructs for the International Falls sample as it did for the sample of those living elsewhere around the Park.

Next we tested for covariance invariance by adding the additional constraint of setting covariance estimates to be equal across both samples and re-estimating model fit. The fit indices for the constrained model were adequate (Table 2) and the CFI statistic did not change. These results support covariance invariance between the two samples. More simply put, the relationships between latent factors were equivalent for both sets of data. These findings lend increased support to the reliability of the proposed community benefits scale.

## 5.0 DISCUSSION AND CONCLUSIONS

The community benefits scale developed here provides a means by which resource managers can assess what people living in close proximity to recreation resources would like to see those areas managed for. Understanding these potential benefits is essential to meeting the needs and desires of local residents and, in turn, developing strong collaborative relationships with mutual understanding (Davenport et al. 2007a, Davenport et al. 2007b, Wondolleck and Yaffee 2000). The scale provides both a barometer by which each of the community benefit dimensions can be measured and a mechanism to analyze, in a comparative and standardized fashion, variations in desired benefits. In sum, the community benefits scale is not only valid and reliable but also has practical value to community stakeholders and resource area managers. The initial scale development process illustrated here is integral for providing resource managers with substantive concepts around which planning and decisions can be based. Furthermore, empirical validation of the community benefits scale may prove integral in launching new lines of inquiry in the fields of recreation and natural resource management.

## 6.0 LITERATURE CITED

- Allen, L.R.; Beattie, R.J. 1984. **The role of leisure as an indicator of overall satisfaction with community life.** *Journal of Leisure Research.* 16(2): 99-109.
- Anderson, D.H.; Davenport, M.A.; Leahy, J.E.; Stein, T.V. 2008. **OFM and community benefits.** In: Driver, B.L., ed. *Managing to optimize the beneficial outcomes of recreation.* State College, PA: Venture: 311-334.
- Carroll, M.S.; Blatner, K.A.; Cohn, P. 2003. **Somewhere between: social embeddedness and the spectrum of wild edible huckleberry harvest and use.** *Rural Sociology.* 68(3): 319-342.
- Carroll, M.S.; Lee, R.G.; McLain, R.J. 2005. **Occupational community and forest work: three cases from the Pacific Northwest.** In: Lee, R.G.; Field, S.R., eds. *Communities and forests: where people meet the land.* Corvallis, OR: Oregon State University Press: 159-175.
- Cheung, G.W.; Rensvold, R.B. 2002. **Evaluating goodness-of-fit indexes for testing measurement invariance.** *Structural Equation Modeling: A Multidisciplinary Journal.* 9: 233-255.
- Davenport, M.A.; Anderson, D.H. 2005. **Getting from sense of place to place-based management: an interpretive investigation of place meanings and perceptions of landscape change.** *Society and Natural Resources.* 18(7): 625-641.
- Davenport, M.A.; Anderson, D.H.; Leahy, J.E.; Jakes, P.J. 2007a. **Reflections from USDA Forest Service employees on institutional constraints to engaging and serving their local communities.** *Journal of Forestry.* 105: 43-48.
- Davenport, M.A.; Leahy, J.E.; Anderson, D.H.; Jakes, P.J. 2007b. **Building trust in natural resource management within local communities: a case study of the Midewin National Tallgrass Prairie.** *Environmental Management.* 39: 353-368.
- Dillman, D.A. 2007. **Mail and Internet surveys: the tailored design method.** 2nd ed. New York: John Wiley and Sons.
- Driver, B.L. ed. 2008. **Managing to optimize the beneficial outcomes of recreation.** State College, PA: Venture.
- Driver, B.L.; Brown, P.; Peterson, G., eds. 1991. **Benefits of leisure.** State College, PA: Venture.
- Field, D.R.; Burch, W.R. 1988. **Rural sociology and the environment.** Middleton, WI: Social Ecology Press.

- Florida, R. 2005. **The flight of the creative class: the new global competition for talent.** New York: Harper Collins.
- Gosnell, H.; Abrams, J. 2009. **Amenity migration: diverse conceptualizations of drivers, socioeconomic dimensions, and emerging challenges.** *GeoJournal*. Available at <http://www.springerlink.com/content/9140n2843572mm05/fulltext.pdf>.
- Hu, L.-T.; Bentler, P.M. 1999. **Cutoff criteria for fit indexes in covariance structure analysis: conventional criteria versus new alternatives.** *Structural Equation Modeling*. 6: 1-55.
- Kline, R.B. 2005. **Principles and practices of structural equation modeling.** 2nd ed. New York: Guilford.
- Mann, M.; Leahy, J. 2010. **Social capital in an outdoor recreation context.** *Environmental Management*. 45(2): 363-376.
- Marans, R.W. 2003. **Understanding environmental quality through quality of life studies: the 2001 DAS and its use of subjective and objective indicators.** *Landscape and Urban Planning*. 65(1-2): 73-83.
- McCool, S.F.; Kruger, L.E. 2003. **Human migration and natural resources: implications for land managers and challenges for researchers.** Gen. Tech. Rep. PNW-GTR-580. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station.
- McGranahan, D.; Wojan, T. 2007. **Recasting the creative class to examine growth processes in rural and urban counties.** *Regional Studies*. 41(2): 197-216.
- McLain, R.J. 2000. **Controlling the understory: wild mushroom politics in central Oregon.** Seattle, WA: University of Washington. Ph.D. dissertation.
- Moore, R.L.; Driver, B.L. 2005. **Introduction to outdoor recreation: providing and managing natural resource based opportunities.** State College, PA: Venture.
- Stein, T.V.; Anderson, D.H.; Kelly, T. 1999. **Using stakeholders' values to apply ecosystem management in an upper Midwest landscape.** *Environmental Management*. 24(3): 399-413.
- Wondolleck, J.M.; Yaffee, S.L. 2000. **Making collaboration work: lessons from innovation in natural resource management.** Washington, DC: Island Press.

The content of this paper reflects the views of the author(s), who are responsible for the facts and accuracy of the information presented herein.

# MEASURING THE EDUCATIONAL IMPACT OF PROMOTING ENVIRONMENTAL AWARENESS IN KIDS (PEAK): THE DEVELOPMENT AND IMPLEMENTATION OF A NEW SCALE

---

Jennifer Miller  
SUNY Cortland

Lindsey Brown  
SUNY Cortland

Eddie Hill, Ph.D.  
SUNY Cortland

Amy Shellman, Ph.D.  
SUNY Cortland

Ron Ramsing, Ph.D.  
Western Kentucky University

Edwin Gómez, Ph.D.  
Old Dominion University

---

**Abstract.**—The Leave No Trace Center for Outdoor Ethics (LNT) is a nonprofit educational organization that teaches skills and values for recreating responsibly in the out-of-doors. LNT developed Promoting Environmental Awareness in Kids (PEAK), based on seven ethical principles. The PEAK program provides a pack that contains several interactive activities specifically designed to educate children about the outdoors and the responsible use of shared public lands. While the PEAK program has been in existence for a number of years, the program’s effectiveness has not been empirically tested. Moreover, there is limited data regarding responsible environmental attitudes and behavior in elementary school-aged children. The focus of this study was to develop a scale to assess the educational impact of the PEAK program on children. The PEAK Assessment Scale (PAS) was pilot tested in the spring of 2010 to assess the psychometric properties. Results of the analysis indicated the scale was reliable (.77) and evidence supports that the scale is unidimensional.

---

## 1.0 INTRODUCTION

The Promoting Environmental Awareness in Kids (PEAK) program is designed to teach children about the environment and how to recreate responsibly in the out-of-doors. In partnership with Recreational Equipment Inc. (REI), the Leave No Trace Center for Outdoor Ethics (LNT) developed the PEAK program to help youth learn environmentally responsible behaviors while participating in outdoor activities. The seven “kid friendly” principles, based on the original seven principles of Leave No Trace, include:

- (1) Know Before You Go: teaching children to prepare prior to recreating outside;
- (2) Choose the Right Path: teaching techniques and knowledge about how to protect different environments by making decisions that have less impact on the environment;
- (3) Trash Your Trash: teaching children to keep the environment clean from litter and other waste;
- (4) Leave What You Find: teaching the importance of leaving artifacts and other natural items behind for the next person to enjoy;
- (5) Be Careful With Fire: teaching the techniques for making responsible decisions about how, when, and where to have a fire;
- (6) Respect Wildlife: teaching children how our behavior can affect wildlife and how to appreciate wildlife from a distance;
- (7) Be Kind to Other Visitors: teaching kids how to be respectful of others.

The primary goals of the program are to:

- (a) increase awareness of Leave No Trace;
- (b) promote stewardship of public lands; (c) meet the demands of diverse youth population; and (d) to have fun (Leave No Trace Center for Outdoor Ethics 2010).

## 1.1 Purpose

According to Louv (2008), researchers recognize the need to connect children and nature in order to alleviate what he has identified as “nature-deficit disorder.” With the increase in technology, media-driven awareness of “stranger danger”, and an increase in fear of the outdoors, children are becoming disconnected from nature. Louv asserts that this disconnect is negatively affecting the physical and mental health of children and leading to a lack of stewardship for the environment.

With the relatively recent No Child Left Inside movement aimed at reconnecting children with nature, programs such as PEAK are trying to teach young people to make environmentally responsible decisions when recreating outdoors—whether they are in a backyard or on a camping trip. However, the effectiveness of these programs is presently unknown.

Baldwin et al. (2005) emphasize that it is critical to create evaluations and surveys to help programs determine the effectiveness of their curricula and to determine if their intended goals have been met. LNT, Old Dominion University, and SUNY Cortland collaborated to develop a reliable and valid scale to measure the effectiveness of the PEAK program.

## 2.0 METHODS

The first step was to determine what type of scale would be best to collect the data. Since the main goals of LNT are to increase awareness of the Leave No Trace principles and to promote stewardship of public lands, the objective of the scale was to assess young people’s attitudes and opinions regarding their behaviors in the natural environment. Researchers have used Likert-type scales to measure attitudes for many years because of their ease of use (Friedman et al. 1993). Measuring the attitudes of children before and after they participated in the PEAK program was determined to be an effective way to measure the knowledge gained. Prior to using the scale as a pre- and post-assessment, the scale was tested to ensure that each item measured what it was intended to measure. For the pilot studies reported here, the

scale was only administered once, as the goal was to evaluate the psychometric properties of the scale.

During the initial design, a 40-item Likert-type scale was constructed based on the stated goals of the PEAK program and specific material in the PEAK Pack activities. The PEAK Assessment Scale (PAS) had five items per principle and five items to measure overall stewardship. Response options ranged from 1 = strongly agree to 4 = strongly disagree. According to Friedman et al. (1993), when participants are given a Likert-type scale and asked to choose a response, they tend to choose the left-hand column of the scales. To ensure that PAS respondents read each item carefully, seven reverse-coded items were embedded in the scale. The scale was reviewed and updated based on feedback from a panel of educational experts, including an education administrator from the LNT. The scale was then administered to 25 fifth- and sixth-graders in an afterschool program in central New York to determine the approximate amount of time it would take them to complete it and to assess if its reading level was appropriate for the target audience.

Based on the results of that pilot study, the following revisions were made to the scale. The Flesch-Kincaid Grade Level assessment indicated that the wording for many of the items was too complex; therefore, the wording was changed to a more appropriate reading level for fifth- and sixth-graders (Kincaid et al. 1975). Two of the seven reverse-coded items were deleted because the readability level was too difficult. Additional feedback suggested that it was necessary to include a “Don’t Know” option because the children may lack knowledge about the LNT key principles prior to participating in the PEAK program. The revised PAS contained 36 items, 5 of which were reverse-coded.

The PEAK Assessment Scale was piloted a second time in the spring of 2010 at an elementary school in central New York to determine the reliability and validity of the scale, and to determine if each item was measuring the correct principle. The scale was administered again to fifth- and sixth-graders. The

researchers instructed the classroom teachers on how to administer the survey to the students.

### 3.0 RESULTS

A total of 109 assessments were collected in the second pilot study. After the data were cleaned and screened for outliers, four of the surveys were excluded due to insufficient data.

A confirmatory factor analysis was conducted on the data to determine the validity of each subscale. The sampling adequacy was evaluated by running the Kaiser-Meyer-Olkin (KMO) measure and Bartlett's Test of Sphericity on each of the constructs. Constructs with a KMO greater than 0.60 and a significant Bartlett's Test of Sphericity ( $p < 0.05$ ) were accepted as meeting the minimum requirements for sampling adequacy in order to perform validity and reliability analyses (Tabachnick and Fidell 1996).

After the confirmatory factor analysis, each subscale was subjected to a reliability test. The number of items that held and the Cronbach's Alpha for each subscale are as follows:

Know Before You Go: based on factor loadings, five items were removed, producing a reliability coefficient of .41.

Choose the Right Path: based on factor loadings, three of the five items were removed, producing a reliability of .56.

Trash Your Trash: during the factor analysis all items held, producing a reliability of .62.

Leave What You Find: based on factor loadings one of the three items was removed, producing a reliability coefficient of .40.

Be Careful With Fire: during the factor analysis all items held, producing a reliability coefficient of .54.

Respect Wildlife: based on factor loadings, one of the three items was removed, producing a reliability coefficient of .59.

Be Kind to Other Visitors: based on factor loadings three of the five items were removed, producing a reliability coefficient of .45.

Overall Stewardship: during the factor analysis all items held, producing a reliability coefficient of .63 (Table 1).

After the deletion of 12 items, the remaining 24 items were then subjected to an Exploratory Factor Analysis. The overall reliability of the scale was .77.

### 4.0 DISCUSSION AND CONCLUSION

The results indicate that further refinement of the PAS is needed before it will be ready for widespread use. Items found to be unreliable will need to be changed, and the scale will need be restructured for a third to fourth grade reading level because not all fifth and sixth graders read at a fifth grade reading level. We intend to change the response options to 5 = very often, 4 = often, 3 = it depends, 2 = sometimes, and 1 = never and to include an option for "I don't know." We may also administer the PAS electronically to allow students to complete the survey as part of a computer/technology assignment. The revised scale will be tested with a larger sample size. The PAS will be reanalyzed to determine the psychometric properties of the revised form. When the scale is complete, LNT intends to use it nationally with the PEAK Program.

In the future, having an electronic version of the survey will make it easier for LNT and SUNY Cortland to collect and analyze the results over time, and to collect results from multiple locations via a centralized database. For example, using SUNY Cortland's on-line survey software, Select Survey,

**Table 1.—Subscale reliabilities for each principle**

Subscales	$\alpha$ – Reliability
Know Before You Go	.41
Choose the Right Path	.56
Trash Your Trash	.62
Leave What You Find	.40
Be Careful With Fire	.54
Respect Wildlife	.59
Be Kind to Other Visitors	.45
General Environmental	.63

we could create a link for any organization that would like to assess the effectiveness of the PEAK Program with their population. Data collection through this system would eliminate human error introduced when manually entering respondents' answers for each item into the database. The electronic PAS may help LNT collect data that can support the goals of the program and will help LNT promote the PEAK Pack, potentially leading to a higher level of environmental awareness in children.

## 5.0 LITERATURE CITED

- Baldwin, C.K.; Caldwell, L.L.; Witt, P.A. 2005. **Deliberate programming with logic models: from theory to outcomes.** In: Witt, P.A.; Caldwell, L.L., eds. *Recreation and youth development.* State College, PA: Venture Publishing, Inc.: 219-239.
- Friedman, H.; Herskovitz, P.; Pollack, S. 1993. **The biasing effects of scale-checking styles on response to a Likert scale.** In: *Proceedings of the Survey Research Methods section, American Statistical Association:* 792-795.
- Kincaid, J.P.; Fishburne, Jr., R.P.; Rogers, R.L.; Chissom, B.S. 1975. **Derivation of new readability formulas (Automated Readability Index, Fog Count and Flesch Reading Ease Formula) for Navy enlisted personnel.** Research Branch Report 8-75. Millington, TN: Naval Technical Training, U.S. Naval Air Station.
- Leave No Trace Center for Outdoor Ethics. 2010. **Promoting environmental awareness in kids (PEAK).** Available at <http://lnt.org/programs/peak.php>. (Accessed January 5, 2010).
- Louv, R. 2008. **Last child in the woods: Saving our children from nature-deficit disorder. 2nd ed.** New York: Woodman Publishing Company, Inc.
- Tabachnick, B.G.; Fidell, L.S. 1996. **Using multivariate statistics.** 3rd ed. New York: Harper Collins.

The content of this paper reflects the views of the author(s), who are responsible for the facts and accuracy of the information presented herein.

*PLANNING AND  
PARTNERSHIPS*

# RECREATION PARTNERSHIPS ON NATIONAL FORESTS: THE INFLUENCES OF INSTITUTIONAL COMMITMENT AND URBAN PROXIMITY ON AGENCY CAPACITY

---

Allie E. McCreary  
Department of Forestry  
Southern Illinois University

Erin Seekamp  
Southern Illinois University

Lee Cerveny  
U.S. Forest Service

---

**Abstract.**—This paper presents data from the second phase of a multiphase study being conducted to explore the structure and function of U.S. Forest Service (FS) recreation partnerships. In Phase I, institutional commitment and urban proximity emerged as key indicators of agency capacity to effectively develop and maintain recreation partnerships. In Phase II, multiple case studies were selected to explore these indicators of partnership capacity. Interviews were conducted throughout six of the nine FS regions with personnel at each forest’s ranger districts and supervisor’s office. The narratives of our key informants and their representative themes help refine our emerging conceptual understanding of FS recreation partnerships. This paper describes the influence of institutional commitment and urban proximity on agency capacity to cooperate in recreation partnerships.

---

## 1.0 INTRODUCTION

U.S. Forest Service (FS) partnerships, worth an estimated one billion dollars per year, enhance the FS budget and capacity to manage public lands (Collins and Brown 2007). The FS Partnership Guide (National Forest Foundation and FS 2005) uses the term “partnership” to “describe relationships between the people, organizations, agencies, and communities that

work together and share interests” (p. 5). Numerous articles in professional journals and technical reports have described the benefits of working with partners (Darrow and Vaske 1995, Selin and Chavez 1994, Uhlik and Parr 2005). Previous research has explored characteristics of successful partnerships and implementation cycles but has not focused on the role of urban proximity and institutional commitment in building and maintaining successful partnerships. This study addresses this research gap through an in-depth case study of multiple partnership environments and commitment levels. Specifically, this paper has three objectives:

- Objective 1: Evaluate the role of urban proximity in national forest recreation partnerships.
- Objective 2: Evaluate the role of institutional commitment in national forest recreation partnerships.
- Objective 3: Explore the influence of urban proximity and institutional commitment on agency capacity to work in partnerships and use partnerships to enhance recreation services and opportunities.

In Phase I of this research, institutional commitment emerged as an important factor for both FS employees and their partners. Partnership coordinators at both the regional level and forest level organized partnerships by matching willing partners who contacted the forest with the appropriate FS personnel. However, not all national forests have a designated partnership coordinator. Phase I results revealed that just having a partnership coordinator demonstrated institutional commitment to building and managing partnerships and influenced the nature and extent of FS-partner relations.

Phase I also revealed that urban proximity was a crucial advantage in many successful partnerships.

An urban forest is defined as a forest adjacent to, or within one to two hours of a metropolitan area. Phase I interviews revealed that forests meeting this definition had access to a larger pool of potential partners and volunteers. In addition, urban forests are primarily recreation-focused. An amenity forest (Kruger 2006) is defined as a forest in an area that has a history of second homes, vacation homes, and built or natural features that attract people from urban to rural areas. Amenity forests are typically rural but recreation-focused. Amenity forests are unique in that they have access to partners from populations that may be transitory but deeply connected to the public lands that attract them to the area. A rural forest is defined as a forest that is more than two hours from a metropolitan area. Phase I informants working on rural forests typically had access to a smaller pool of potential partners. Rural forests were also more likely than other types of forests to focus on a mixture of commodity (e.g. timber harvest) and noncommodity functions.

## 2.0 METHODS

Using grounded theory, Phase I developed a conceptual framework of partnerships on National Forests through key informant interviews (n= 21) with both FS personnel and their partners. In open coding of the Phase I interview transcriptions, several themes emerged. External environment (i.e., urban, amenity or rural proximity) and institutional commitment (i.e., presence of a partnership coordinator) surfaced as key indicators of the agency's capacity to partner. Phase II more deeply investigated these findings through multiple case studies and interviews with FS personnel working closely with partners.

In April 2009, case studies were selected following phone discussions with regional partnership coordinators. Site visits were then coordinated with the partnership coordinator (where present) or the forest recreation manager at each forest. Cases were selected to represent a combination of rural, urban, and amenity forests with and without partnership coordinators, as well as differing forest locales (i.e., from different FS regions). One-on-one interviews were conducted in June-November 2009 during

site visits (n = 41) and via telephone (n = 4) when scheduling conflicts occurred. Interviews began with the key contact person; subsequently, a chain referral sampling technique was used to gather additional employees' perceptions of partnerships on each forest. All interviews were audio recorded, and audio files were transcribed verbatim following interview completion. Transcribed interviews were imported to NVivo7 to facilitate analysis. Open and axial coding (Charmaz 2006) was used to determine themes and central ideas about partnerships in these national forest cases. Triangulation (Seale 1999), reflexivity through peer debriefing, fair dealing in case selection, attention to negative cases, and a clear explanation of research methods enhanced the quality of this study (Mays and Pope 2000).

## 3.0 RESULTS

The six case studies investigated in Phase II suggested that institutional commitment is highly variable among forest units. Geographic location strongly influenced how much pressure each forest was under from the public to have partnerships and what primary type(s) of partnerships the forest developed. Both institutional commitment and geographical location were instrumental in understanding the current capacity of FS personnel to engage effectively in partnerships. Future partnership efforts may benefit from the insights presented here.

### 3.1 Case A: Urban Forest with Partnership Coordinator

Case A informants described their forest as having extremely well-structured institutional support with a designated partnership coordinator on the forest level, "zoned" partnership coordinators assigned to the forest's districts, and volunteer partnership coordinators who assisted FS personnel with partnership events.

*I would say in the region, we've just been acknowledged, probably nationally, we're probably one of the most developed partnership organizations in the NFS. Part of it is [the zoned partnership coordinators], they've been*

*around for a long time and have a lot of great relationships.* (Forest Partnership Coordinator)

However, even with an overwhelming amount of institutional support, many Case A informants also felt that they lacked the capacity to fully manage the public demand to partner.

*Even with [partnership coordinators], there is no way we can meet the number of volunteers and partners out there who are interested in working with us. Part of this is that [urban area] is a very outdoorsy community. We are an urban forest, we are the backyard.* (Forest Partnership Coordinator)

Because of the extensive public interest, Case A personnel discussed the need to “funnel” individual volunteers into larger partner groups. They suggested that it is more effective to interact with one club president than to coordinate project tasks with several individual volunteers. Case A personnel referred to “umbrella” organizations, external entities that help organize individuals and groups of volunteers and plan projects with the insight and assistance of FS personnel.

### **3.2 Case B: Urban Forest, No Partnership Coordinator**

Case B informants reported very little institutional support for creating and maintaining partnerships. Many reported feeling that leadership recognized the potential value of partnerships but had not committed resources or formalized a support structure to enable personnel to form and maintain partnerships.

*The forest lacks organization. As far as our volunteer program. We just aren't organized real well to take advantage of the metropolitan area... I don't think it's a desire. It's just a lack of funds to even hire a volunteer coordinator. And you can say, well, you can take funds from everybody and then make a volunteer coordinator, that would give it a forest emphasis. Well, top level management hasn't chosen to do that, hasn't made that kind of dedication to it.* (Group Leader for Public Service)

Case B personnel reported receiving more support for partnerships from external partners than from internal leadership. Partners were often providing the basic resources (i.e., funding) and relational support (i.e., dedication to project tasks and collaborative management) necessary for building and sustaining partnerships.

Because of its urban proximity, Case B informants did report an overwhelming public demand to partner. Partners of this forest were primarily local: Boy Scouts, local governments, and individuals. Case B informants reported that the use of partnerships was inconsistent throughout the unit. Often, individual employees were dedicated to and innately skilled in collaborating and did the bulk of the agency's work with partners. Case B personnel reported a desire for more structured support for building and maintaining partnerships in order to alleviate their own workloads and to help better meet the demands of the public. When asked what they would do with additional support, one person replied, “We'd work with more volunteers and more partners. And we'd work with them longer. We'd have more projects going and do more with it” (Recreation, Lands, and Minerals Officer).

### **3.3 Case C: Amenity Forest with a Partnership Coordinator**

Case C informants reported a lack of institutional support for partnerships. While the forest unit had a designated partnership coordinator, this employee was assigned to other duties and did not take an active role in assisting forest personnel with recreation partnership tasks. District personnel reported that their motivation to partner stemmed from necessity (e.g., lack of in-house resources to accomplish job duties) and political popularity.

*And I mean the line officers push partnership development. Primarily for political reasons, they're very sexy...But there's really no internal incentive mechanism that drives us to promote these partnerships. We do it because it's politically popular to do it and we do it because we can get some work done.* (Recreation Staff Officer)

One Case C informant described access to partners at “in-between” forests located in neither urban or rural areas:

*Yes I think there's a good volunteer base. We're better than some forests and not as good as others. Often if you're adjacent to larger communities you have more opportunities. If you're out in the hinterlands it's hard. We're kind of in between.* (Public Service Staff Officer)

Many Case C partnerships are local entities: outfitters, guides, hiking or biking clubs, and concessionaires. Case C personnel also reported partnerships with groups from outside the adjacent communities. These groups often traveled to the forest to provide recreation opportunities or services that relied on the forest's specialized resource (e.g., contiguous wilderness or a wild and scenic river).

### **3.4 Case D: Amenity Forest, No Partnership Coordinator**

While Case D had no designated partnership coordinator, personnel on this forest reported a high level of internal commitment to, and support for, partnerships. Leadership would interact directly with partners, facilitate employees' partnership skill development, and provide access to necessary resources for partnerships (e.g., ability to match funds). Case D informants also reported the use of umbrella organizations to help organize partnership efforts:

*...[This umbrella organization's] primary mission is facilitating volunteer work. So they coordinate, supervise, facilitate volunteer groups...And during the off-season, they are kind of lining up volunteers and individuals and groups, individuals to come in as groups, and work on projects. And during the off season they also work with us to prioritize those projects and identify them and work on the logistical support for those. And it is just, for me, an unbelievably positive relationship where they help us so much.* (Wilderness Ranger)

These umbrella organizations established by Case D personnel are also instrumental in providing the forest with access to partners. Like with Case C, most partners are either local or travel to the forest because of a deep connection with and reliance on the forest's amenity resources.

*So I think people here are more involved with the forest. They're here because of the forest, a lot of them...So I think the caring level is higher. So that maybe answering your access question, in that if people care more about their forest maybe they're more accessible.* (Forest Supervisor)

### **3.5 Case E: Rural Forest with Partnership Coordinator**

Case E informants reported that leaders are supportive of partnerships. A newly hired partnership coordinator signified a shift in the forest's emphasis towards working on partnerships. However, long-term personnel (i.e., informants who had been with this forest for ten or more years) discussed heavy turnover within leadership positions and felt that the current support of partnerships might be temporary. Informants also described time and workforce constraints; to them, partnerships were “extra work” that they were not able or willing to take on. Few district-level informants reported using the partnership coordinator to assist them.

*What [the partnership coordinator's] job is, is to solicit these grants, write the grants, apply for the grants, get the money in, and then we get all the work dumped on us. We got all we need to do already...we don't have the people to actually go do the work that we bring all this grant money in [to do].* (Forester, Recreation)

Case E partnerships were primarily based upon individual employees' professional or personal networks. These networks consisted of state agencies or local residents with a common interest.

*I do a lot of phone calls. I know a lot of different disciplines; folks in fisheries, folks in wildlife, folks in birds. That kind of stuff...Oil and gas*

*people, biofuels folks, I've been working with them too. You just start putting your fillers out, you're aggressive, you're not afraid to approach somebody and beg for something.* (Partnership Coordinator)

Nearly all of Case E's partners were local. Many informants spoke about the importance of local retired people in assisting the forest with visitor services. Youth corps-types of partnerships were also an important source of volunteer workforce. The only partners from outside the adjacent communities were campground hosts who traveled to the forest from neighboring states.

### **3.6 Case F: Rural Forest, No Partnership Coordinator**

While Case F did not have a designated partnership coordinator, forest personnel here also reported a recent increase in support for partnerships. This was demonstrated through the forest's newer hires who were brought on because of their experience in working with partners. While some Case F informants desired a designated coordinator, others reported that existing personnel with the appropriate skills were a suitable or preferred alternative to a designated coordinator.

*... you have to be careful about that [designating a partnership coordinator] because when you add positions you don't necessarily add capacity. It's really important to have the right skills. They don't need to be in a position per se, you just need to have them on your staff. They may have other responsibilities but they also have the energy and desire to do this.* (District Ranger)

The majority of Case F partnerships were with local entities concerned with a specific resource or use. Because of limited resources to complete the work, partnerships had become an important element in delivering recreation services.

*Our motorized rec program, ATV, off-highway motorcycles, snowmobiles... Back around '96, '97 we started amping up the program, getting more partners involved, getting more money*

*involved for the upkeep and maintenance of trails. And then it just seemed to blossom.*  
(Natural Resources Specialist)

Other forest informants discussed the effectiveness of using self-sufficient groups that came to the forest with their own leadership and oversight. These were often partnerships with youth-oriented volunteer programs (e.g., Student Conservation Association with crew leaders). These type of partnerships were also effective because they consumed very little of the forest's limited time and labor resources.

## **4.0 DISCUSSION AND IMPLICATIONS**

The six cases explored in this study reveal the interesting dynamics of FS partnerships. The role of urban proximity and access to partners is more clearly explained through the experiences and narratives of our informants. In addition, institutional commitment to partnerships is shown to be highly variable among the six FS case studies. Exploring the role of designated coordinators and other supportive personnel furthers our understanding of agency commitment to the partnership process.

### **4.1 Access and Capacity**

There seems to be an inverse relationship between public demand to partner and the agency's need to partner. Public demand to partner was highest on urban forests, where personnel reported a more moderate need to use partners. In contrast, rural forests have a more moderate demand from their public to partner, but report a higher need to partner to accomplish essential work. At amenity forests, both the public demand and agency need to partner is high (Table 1). Because of heavy visitation to the national forests, amenity forests (cases C and D) reported higher volumes of partnership access and a greater need to provide recreation opportunities than did rural forests (cases E and F). Although urban proximity explained a forest's demand from partners and common types of partners (i.e., umbrella organizations on urban forests, self-sufficient groups on rural forests), institutional commitment was vital to agency capacity on all forests.

**Table 1.—Access and capacity**

Indicators of Collaborative Capacity	Geographic Location		
	Urban Forest (Case A and B)	Amenity Forest (Case C and D)	Rural Forest (Case E and F)
Agency Need	Moderate	High	High
Public Demand	High	Moderate/High	Moderate
Common Partnership Type	Individuals, Diverse	Local, Specialized Users	Local, formalized
Partnering Focus	Umbrella	Multi-focus	User groups

#### 4.2 Commitment and Capacity: Units with a Partnership Coordinator

FS capacity to form and maintain partnerships hinges on the presence of personnel with appropriate skills (i.e., negotiation and network building). Partnership coordinators have these skills but, in some cases, partnership coordinators are constrained by other job duties (i.e., Case D). In Case E, the partnership coordinator primarily acquired grants to fund partnerships (Table 2). To act strategically towards partnerships, districts must also be enabled to manage partnerships. Because partnership coordinators cannot account for all pieces of the partnership puzzle, efforts should be made to provide all agency personnel with skills and resources necessary to build and maintain partnerships.

#### 4.3 Commitment and Capacity: Units without a Partnership Coordinator

The same is true for FS units without a partnership coordinator; increased capacity and a comprehensive approach to partnerships requires that multiple personnel are fluent in the partnership process. Forests without a partnership coordinator demonstrated a lack of organized support for partnerships. In these cases, leadership emphasis becomes necessary to increase agency capacity to partner (Table 2). Because there is not a designated coordinator, it is essential that forest and district personnel develop partnership skills on their own.

**Table 2.—Commitment and capacity**

	Forests with partnership coordinator			Forests without partnership coordinator		
	Case A	Case C	Case E	Case B	Case D	Case F
Current Institutional Commitment:	Forest partnership coordinator, zoned/district coordinators, AmeriCorps volunteer coordinators	Forest partnership coordinator, constrained by other duties	Newly hired forest partnership coordinator, primarily acquires grants	Leadership recognizes the value but no committed structure is given to support partnerships	Leadership support allows forest and district personnel to work effectively in partnerships	Hiring incoming personnel with partnership skills
Future Commitment Needs:	Further development of partnership structure at the district level to address the public demand to partner	Personnel committed to working actively with partners, especially at the district level where most partnerships occur	Increased time and resources for district personnel to work with grant-funded partnerships	More consistent support for partnerships at the forest and district level, partnering with an umbrella group to assist internal efforts	Further work with umbrella organizations and continued institutional support for partnerships	Increased time and resources to personnel who work with partners, or assistance of a formalized coordinator

## 5.0 CONCLUSIONS

Through increased awareness of forest conditions (i.e., external environment and level of institutional commitment), FS leaders may become more sensitive to the capacity of their personnel to partner and may be in a better position to provide appropriate resources to enhance or expand existing partnership-building capacity. Future studies may further evaluate the influence of external environment and institutional commitment on building and maintaining successful partnerships in other cases.

## 6.0 LITERATURE CITED

- Charmaz, K. 2006. **Constructing grounded theory: a practical guide through qualitative analysis.** London: Sage Publication Ltd.
- Collins, S.; Brown, H. 2007. **The growing challenge of managing outdoor recreation.** *Journal of Forestry.* 105(7): 371-375.
- Darrow, C.V.; Vaske, J.J. 1995. **Partnerships in natural resource agencies: a conceptual framework.** In: Chavez, D.J., tech. coord. Proceedings of the Second Symposium on Social Aspects and Recreation Research, February 23-25, 1994, San Diego, California. Gen. Tech. Rep PSW-GTR-156. Albany, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station: 87-88.
- Kruger, L. 2006. **Quality of life attributes spur growth in high amenity communities.** *Western Rural Development Center.* 1(3): 2-5.
- Mays, N.; Pope, C. 2000. **Assessing quality in qualitative research.** *British Medical Journal.* 320: 50-52.
- National Forest Foundation and USDA Forest Service. 2005. **Partnership guide.** Living Document, 4-74. Government Printing Office: U.S. Department of Agriculture, Forest Service, Washington, D.C.
- Seale, C. 1999. **Quality in qualitative research.** *Qualitative Inquiry.* 5(4): 465-478.
- Selin, S.; Chavez, D. 1994. **Characteristics of successful tourism partnerships: a multiple case study design.** *Journal of Park and Recreation Administration.* 12(2): 51-61.
- Uhlik, K.; Parr, M. 2005. **How and why: partnership's unanswered questions.** *Parks and Recreation.* 40(6): 26-33.

The content of this paper reflects the views of the author(s), who are responsible for the facts and accuracy of the information presented herein.

*URBAN GREEN SPACE  
AND ENVIRONMENTS*

# ENJOYING GREEN CITIES: ASSESSING VISITORS' ATTITUDES AND PREFERENCES FOR URBAN FORESTS IN WASHINGTON, D.C.

---

Rogelio Andrada II  
Division of Forestry and Natural Resources  
West Virginia University  
randrada@mix.wvu.edu

Jinyang Deng, Ph.D.  
West Virginia University

---

**Abstract.**—This study examined the attitudes and preferences of visitors to Washington, D.C., one of the top tourism cities in the United States. Results of a visitor survey conducted at two sites show that respondents have a highly positive attitude towards the city's urban forest and that their appreciation of the urban forest has a positive influence on their experiences as visitors. In addition, this study used conjoint analysis to explore tourists' preferences regarding the appearance of urban forests. Respondents gave high importance ratings to key urban forest attributes such as plant and color variety, planting pattern, and manner of growth. These findings will be useful for urban managers and planners as they try to ensure that both residents and visitors enjoy the benefits of urban forests.

---

## 1.0 INTRODUCTION

Increasing urbanization and the popularity of recreational activities has sparked an interest in urban forests. In the United States, 75 percent of the population lives in urban areas, and about 3.8 billion trees cover these areas (Dwyer et al. 2000). Urban forests can help reestablish the connection between urban populations and natural resources (Dwyer et al. 2000). Thus, proper management of urban forest resources is important to realizing their full benefits, especially environmental quality improvement and the enhancement of human health and well-being.

Urban forests serve a multitude of social functions for urban residents and city visitors. According to Dwyer et al. (2000), urban forests may be the only type of forest that urban residents experience due to travel constraints such as money or time. In addition, urban forests provide a venue for a number of recreational activities such as walking, jogging, and biking, and other social activities such as outdoor games, picnics, and simply hanging out with family and friends. Dwyer et al. (2000) emphasize that the nation's urban forests influence people's perceptions of and preferences towards both the city and the forest.

The present study explored visitors' attitudes toward and preferences for the appearance of urban forests in Washington, D.C. This city was selected because of its unique status as the nation's capital. Washington, D.C. is also the seventh most visited city in the country, and visitation has increased steadily over the past 5 years (Office of Travel & Tourism Industries 2009). Additionally, the abundance of parks and gardens across the city makes it an interesting place for assessing visitors' preferences and attitudes regarding urban forests.

## 2.0 LITERATURE REVIEW

Many studies have explored the roles of urban forests in influencing the quality of life and community activities in urban areas. Litvin (2005) observed that planting trees as part of a streetscape improvement project in Charleston, South Carolina increased business activity in the area. In a similar study in College Station, Texas, trees and shrubs planted in commercial areas had a positive influence on residents' satisfaction with their neighborhoods (Ellis et al. 2006). Research on the aesthetic benefits of urban forests has shown that people put a premium on natural urban views characterized by an abundance of trees and plants in gardens and parks (Price 2003). For

the tourism industry, marketers and planners prefer to use images of groomed natural landscapes when promoting an urban destination because prospective visitors are drawn to such images (Hunter 2008).

In Japan, the rapid urbanization of key cities has resulted in rising demand for accessible nearby forests to serve as places for communing with nature, recreation, and meditation. A similar trend is evident in the United States as more and more people living in cities demand urban forests in the form of local parks and playgrounds, primarily for family recreation (Zhu and Zhang 2008). Recent studies have also looked at the environmental and health benefits of urban forests. Studies by McHale et al. (2007) and Nowak et al. (2006) found that urban forests help improve human health and well-being by mitigating air pollution and the greenhouse effect through carbon sequestration.

Most of the above-mentioned studies include social surveys that elicit residents' perceptions, attitudes, and preferences. The present study adds to the growing body of knowledge on the benefits of urban forests by looking through the eyes of urban visitors rather than residents.

### 3.0 METHODS

Visitor surveys were conducted in Washington, D.C. on three occasions from September to October 2009. Because of a relatively large proportion of foreign visitors, purposive sampling was used to target visitors who could answer the questionnaire in English. Study participants were recruited at two locations: (1) the U.S. Botanic Garden, which is near the Smithsonian museums and the U.S. Capitol where most visitors spend time strolling; and (2) the U.S. National Arboretum, which is outside the main tourist area (National Mall).

The survey instrument was a self-administered questionnaire comprised of three sections. The first section focused on eliciting visitors' attitudes toward the urban forest by asking them to assess their level of agreement with 23 statements related to having urban forests in the city and the impacts of the urban forest

on their experiences as visitors. The respondents rated the statements using a five-point Likert scale where 1 = strongly disagree and 5 = strongly agree. Some of these statements were negatively worded; scores for these statements were reversed in the statistical analyses.

The second section of the questionnaire was a conjoint experiment combining different attributes and characteristics of urban forests. As seen in Table 1, each attribute had several levels, and a random orthogonal design was generated using SPSS 11.5 for Windows to obtain nine sets of hypothetical urban forest conditions (Table 2). The study participants were asked to rate their preference for each set using a rating scale of 1 to 10 where 1 = least preferred and 10 = most preferred. The last section of the questionnaire elicited background information (e.g., gender, age, education level) and served as a basis for grouping and comparing respondents during analysis. Data were analyzed through descriptive statistics, t-tests, and conjoint analysis.

## 4.0 RESULTS AND DISCUSSION

### 4.1 Socio-demographics

Of the 600 visitors who were approached and asked to participate, 355 agreed and answered the questionnaire, resulting in a 59.2 percent response rate. There were slightly more females (55.3 percent) than males (44.7 percent) in the sample, and 90.3 percent

**Table 1.—Urban forest attributes and levels used for the conjoint experiment**

Attribute	Level
Plant variety	Trees only
	Trees and grass
	Trees, shrubs and grass
Planting pattern	Scattered
	In patches
	Concentrated in parks and gardens
Color variety	Green with few other colors
	Green with many other colors
Growth	Natural
	Trimmed

**Table 2.—Hypothetical urban forest types rated by the respondents**

Type	Description
1	Composed of trees; concentrated in parks and gardens; mainly green with few other colors and trimmed
2	Composed of trees, shrubs and grass; concentrated in parks and gardens; mainly green with few other colors and naturally growing
3	Composed of trees and grass; scattered throughout the city; mainly green with few other colors and naturally growing
4	Composed of trees and grass; concentrated in parks and gardens; mainly green with many other colors and naturally growing
5	Composed of trees, shrubs and grass; planted in patches; mainly green with few other colors and naturally growing
6	Composed of trees; scattered throughout the city; mainly green with few other colors and naturally growing
7	Composed of trees; planted in patches; mainly green with many other colors and trimmed
8	Composed of trees and grass; planted in patches; mainly green with few other colors and trimmed
9	Composed of trees, shrubs and grass; scattered throughout the city; mainly green with many other colors and trimmed

of them were domestic visitors coming from nearby states such as Maryland, Virginia, New York, New Jersey, Pennsylvania, and Ohio. Foreign respondents (9.7 percent) were mainly from but not limited to Canada, Mexico, Germany, and the United Kingdom. There were 82.4 percent repeat visitors while 17.6 percent were first-timers. More than half (51.6 percent) of the sample was between 18 and 49 years old. The participants were generally well-educated; 52.8 percent had a graduate-level education and 39.7 percent had an undergraduate degree. A total of 74.1 percent earned at least USD60,000 per year. Concerning their trip characteristics, 36.9 percent were traveling in pairs (generally with their spouse/boyfriend/girlfriend), 34.6 percent were with their families (more than one other person), and 15.8 percent travelled with friends. Just over 62 percent had traveled to Washington, D.C. for leisure, 20.3 percent were visiting family, relatives or friends, and 18 percent traveled for other reasons such as for business or education.

#### 4.2 Visitors' Attitudes Toward Urban Forests

Table 3 provides an overview of responses to items measuring attitudes toward urban forests. About two-thirds of the study participants strongly agreed that urban forests make the city more relaxing to visitors and make going around the city more interesting (67.8 percent and 66.6 percent, respectively). The

respondents also strongly agreed that the city is much better to visit because of the urban forest (57.8 percent) leading to a more satisfying visit or stay (57.2 percent). Finally, more than half (52.8 percent) said that they would recommend visiting the city's parks and gardens to their friends and relatives.

Furthermore, 48.8 percent of the respondents strongly agreed that urban forests help indicate seasonal changes; 48.3 percent strongly agreed that the trees and plants make the National Mall look natural, and 47.6 percent were strongly impressed by the city's greenery. These figures show that the study participants were aware of the impacts that the urban forests have on the appearance of the city. In addition, 45.6 percent enjoyed taking pictures of the urban forest while 44.9 percent said that the urban forest enhanced their visitor experience. It is worth noting that 43.1 percent of the respondents strongly agreed that the urban forest is part of the city's appeal for tourists.

These findings reveal that the visitors had a keen sense of the urban forest in Washington, D.C., that it is part of the city's image, and helps make the city a draw as a tourist destination. Their appreciative and very positive attitude toward the city's urban forest attested to the forest's impact on enhancing their experiences as visitors.

**Table 3.—Summary responses of respondents on attitude statements**

Statement	Responses				
	Strongly disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	Strongly Agree (%)
Parks, gardens and street trees make the city more relaxing for visitors	0.6	0.3	2.4	28.9	67.8
Parks, gardens and street trees make going around Washington, D.C. interesting	0.3	0.0	0.9	32.3	66.6
Urban forests in Washington, D.C. make it a better place to visit	0.0	0.6	4.1	37.5	57.8
I am satisfied with my visit and stay in Washington, D.C.	0.0	0.0	2.6	40.2	57.2
I will tell my relatives and friends to visit Washington, D.C.'s parks and gardens	0.6	2.3	4.7	39.7	52.8
I enjoy taking pictures of parks and gardens as souvenirs	1.5	2.1	10.9	40.0	45.6
My visitor experience was enhanced by the urban forests in Washington, D.C.	0.0	0.9	8.5	45.5	44.9
I believe that urban forests are part of the tourist appeal of Washington, D.C.	0.6	6.2	12.6	37.5	43.1
Parks and gardens are places in the city where I can do recreational activities	1.8	2.4	21.2	42.1	32.5
The urban forests of Washington, D.C. are among the main attributes that attracted me to visit the city	1.2	6.8	25.4	36.4	30.2
I am satisfied with the appearance of the urban forests in the city	0.6	3.5	16.7	51.8	27.5
I believe that urban forests give Washington, D.C. a more urban appearance	3.3	13.8	21.9	33.8	26.9
Street trees and flowers give a feeling of security because it separates pedestrians from traffic	1.2	6.3	28.9	43.7	19.9
Crowds in parks and gardens lessen my enjoyment in these areas	8.0	23.1	32.3	29.1	7.4
Tree parks and gardens attract birds and other animals that annoy visitors	40.2	38.8	8.0	7.1	5.9
Parks, gardens and street plantings are still good to look at even if they are withered and unkempt	18.4	39.2	23.1	15.4	3.9
I feel tired after visiting parks and gardens	26.5	32.4	27.7	9.7	3.5
I am not impressed by the greenery of the city	47.6	34.3	9.2	5.6	3.3
Trees and plants in the National Mall make it look less natural	48.3	38.4	7.8	3.3	2.1
Visiting gardens and parks decreased my curiosity on trees and other plants found in Washington, D.C.	31.8	41.8	19.9	4.5	2.1
Urban forests do not give interesting scents and colors	31.8	43.6	14.8	7.9	1.8
Street trees and plantings in sidewalks hinder tourist mobility	38.6	44.5	12.1	3.2	1.5
Urban forests do not tell us of seasonal changes	48.8	37.5	9.8	3.0	0.9

Visitor groupings based on gender, age, and education level were compared, and the results with significant differences between the two groups are summarized in Table 4.

Female visitors more often than males enjoyed taking pictures of urban forests, were more impressed by the greenery, and viewed the urban forests as more relaxing (Table 4). On the other hand, male visitors more strongly believed that urban forests are part of the city's tourist appeal. People aged 50 years and older tended to be more impressed with Washington, D.C.'s greenery than younger people. They also believed that urban forests enhanced their experiences and made the city a better place to visit. Lastly, visitors with at least a college degree had a more aesthetic and functional view of urban forests compared to visitors who only had a high school education.

### 4.3 Visitor Preferences for Urban Forests

The conjoint analysis results revealed that study participants viewed planting pattern as the most important attribute of the urban forest's appearance, followed by color, plant variety, and growth (Table 5). The relative importance values show that all the attributes were of almost equal importance. This means that the visitors consider all four attributes when looking for their preferred urban forest type.

The positive utility values in Table 5 show which attribute levels the study participants preferred. Visitors preferred urban forests with more plant variety, a scattered planting pattern, more color, and natural growth.

**Table 4.—Summary of results on group comparisons of respondents' perception**

Statement	Group	n	M	SD	t-Value
I enjoy taking pictures of parks and gardens as souvenirs	Female visitors	177	4.41	0.85	-3.36**
	Male visitors	144	4.10	0.80	
I am not impressed by the greenery of the city	Female visitors	177	1.71	0.97	2.34*
	Male visitors	142	1.98	1.11	
	18-49 years old	163	2.02	1.10	3.19*
	≥50 years old	154	1.65	0.95	
Parks, gardens and street trees make the city more relaxing for visitors	Female visitors	177	4.69	0.60	-2.01*
	Male visitors	137	4.55	0.63	
I believe that urban forests are part of the tourist appeal of Washington, D.C.	Female visitors	178	4.03	0.96	2.76*
	Male visitors	144	4.31	0.83	
Visiting gardens and parks decreased my curiosity on trees and other plants found in Washington, D.C.	18-49 years old	164	2.17	0.92	2.94*
	≥50 years old	153	1.87	0.91	
My visitor experience was enhanced by the urban forests in Washington, D.C.	18-49 years old	165	4.25	0.70	-2.47*
	≥50 years old	154	4.44	0.66	
Urban forests in Washington, D.C. make it a better place to visit	18-49 years old	164	4.46	0.65	-2.13*
	≥50 years old	155	4.60	0.54	
I will tell my relatives and friends to visit Washington, D.C.'s parks and gardens	18-49 years old	166	4.30	0.86	-2.81*
	≥50 years old	155	4.53	0.60	
Trees and plants in the National Mall make it look less natural	High school level	21	2.14	1.42	2.11*
	College/graduate level	301	1.71	0.86	
Street trees and plantings in sidewalks hinder pedestrian mobility	High school level	21	2.33	1.11	2.66*
	College/graduate level	307	1.82	0.84	

Note: \*significant at .05 level; \*\*significant at .001 level

**Table 5.—Conjoint analysis results showing the relative importance and utility values of urban forest attributes and levels**

Attribute	Level	Relative importance (%)	Utility
Plant variety		24.15	
	Trees only		-0.0531
	Trees and grass		-0.0208
	Trees, shrubs and grass		0.0739
Planting pattern		26.59	
	Scattered		0.1250
	In patches		-0.1176
	Concentrated in parks and gardens		-0.0074
Color variety		25.86	
	Green with few other colors		-0.5897
	Green with many other colors		0.5897
Growth		23.40	
	Natural		0.1608
	Trimmed		-0.1608

## 5.0 CONCLUSIONS

The findings of the study revealed that visitors in Washington, D.C. were well aware of the city's urban forest. Most visitors were familiar with the benefits of having urban forests in a tourist destination to enhance visitor enjoyment. Visitors expressed their appreciation for the resource by commenting that the city should maintain and even expand the areas allocated for urban forests. Most of the study participants were well-educated and lived in nearby states. They believed that the greenery of the city was impressive and was a part of its tourism appeal. This implies that in addition to the cultural and heritage attractions, the city's tourism managers can also highlight its urban forests in promoting the city as a destination.

City planners and urban forest managers of cities such as Washington, D.C. are constantly monitoring the condition of their urban forests, and this study provides feedback on how visitors prefer urban forests to be structured. The study participants generally had a very positive attitude toward the current condition of the city's urban forest. In terms of preferences about the appearance of urban forests in the city, visitors

gave almost equal importance to plant variety, planting pattern, color, and growth. However, they tended to prefer urban forest features scattered throughout the city with more types of plants, more color, and a less trimmed appearance. These findings provide managers with a clearer picture of what visitors like and enjoy while spending time in the city. Thus, these attributes should be carefully considered in plans to establish, maintain, or improve urban forests. Because it is one of the top city destinations both locally and internationally, Washington, D.C. needs to be dynamically attuned to the needs and expectations of its visitors.

## 6.0 ACKNOWLEDGMENTS

This study was made possible through a grant awarded to the second author by the Urban and Community Forestry Program of the United States Department of Agriculture through the recommendation of the National Urban and Community Forestry Advisory Council. Thanks also to David Dyre who helped with data collection and whose family provided lodging during fieldwork.

## 7.0 LITERATURE CITED

- Dwyer, J.F.; Nowak, D.J.; Noble, M.H.; Sisinni, S.M. 2000. **Connecting people with ecosystems in the 21st century: an assessment of our nation's urban forests.** Gen. Tech. Rep. PNW-GTR-490. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 434 p.
- Ellis, C.D.; Lee, S.W.; Kweon, B.S. 2006. **Retail land use, neighbourhood satisfaction and the urban forest: an investigation into the moderating and mediating effects of trees and shrubs.** *Landscape and Urban Planning*. 74: 70-78.
- Hunter, W.C. 2008. **A typology of photographic representations for tourism: depictions of groomed spaces.** *Tourism Management*. 29: 354-365.
- Litvin, S.W. 2005. **Streetscape improvements in an historic tourist city a second visit to King street, Charleston, South Carolina.** *Tourism Management*. 26: 421-429.
- McHale, M.R.; McPherson, E.G.; Burke, I.C. 2007. **The potential of urban tree plantings to be cost effective in carbon credit markets.** *Urban Forestry & Urban Greening*. 6: 49-60.
- Nowak, D.J.; Crane, D.E.; Stevens, J.C. 2006. **Air pollution removal by urban trees and shrubs in the United States.** *Urban Forestry & Urban Greening*. 4: 115-123.
- Office of Travel & Tourism Industries. 2009. **Overseas visitation estimates for U.S. states, cities and census regions: 2009.** 8 p. [http://tinet.ita.doc.gov/outreachpages/download\\_data\\_table/2009\\_States\\_and\\_Cities.pdf](http://tinet.ita.doc.gov/outreachpages/download_data_table/2009_States_and_Cities.pdf). (Accessed June 12, 2010).
- Price, C. 2003. **Quantifying the aesthetic benefits of urban forestry.** *Urban Forestry & Urban Greening*. 1: 123-133.
- Zhu, P.; Zhang, Y. 2008. **Demand for urban forests in United States cities.** *Landscape and Urban Planning*. 84: 293-300.

The content of this paper reflects the views of the author(s), who are responsible for the facts and accuracy of the information presented herein.

# MAPPING URBAN TOURIST EXPERIENCE ZONES IN DOWNTOWN RALEIGH, NORTH CAROLINA

---

Holly Bosley Perry, Ph.D.  
Department of Recreation and Leisure Studies  
The College at Brockport  
hperry@brockport.edu

---

**Abstract.**—A spatial analysis of tourism resources in a community can reveal relationships among places of interest that may otherwise be obscured by predetermined geographic boundaries. As part of a larger study on the spatial characteristics of an urban tourist destination, data were collected from tourism and urban planning professionals regarding their perceptions of the most-visited tourist attractions in downtown Raleigh, North Carolina. Data were mapped using ArcView software. These maps were compared to an existing map of downtown Raleigh's business improvement district (BID). Findings from this study revealed an interconnected set of tourist experience zones, defined by the associations among their contents, instead of a BID with artificial parameters. This new conceptual framework offers a more functional perspective of downtown, rather than one that is artificial or prefabricated.

---

## 1.0 INTRODUCTION

Both urban planners and tourism professionals have a stake in the development of a city as an attractive destination for local residents as well as tourists. Urban planners aim to maximize the quality of life for local residents, while tourism professionals aim to maximize the experience for visitors. Both professions, however, are concerned with the built, natural, and cultural features that give a city its unique sense of place (Hinch 1996). Selby (2004) noted that, "an attractive place to visit tends to be an attractive place to live and work. Tourism has therefore become an important component of urban economic development" (p. 10).

At the same time, developing a city as an attractive place to live and work can also result in increased tourism.

Urban planners are responsible for the infrastructural components of the city, including tourism facilities, while tourism professionals must work with these built resources to create and promote a unique image for their city. Once each profession understands that their work affects the other, tourism professionals and urban planners can work together to shape downtown spaces into livable cities that are also amenable to tourism.

The purpose of this study was to conduct a spatial analysis of the data collected from urban planners and tourism professionals on their perceptions of the most-visited attractions and places, lodging properties, and restaurants in downtown Raleigh, North Carolina.

## 2.0 LITERATURE REVIEW

Research on urban tourism is relevant to both tourism researchers and urban planners but has sometimes been neglected by researchers in both areas of study. Ashworth (1989) described the dearth of urban tourism research as a "double neglect... whereby... those interested in the study of tourism have tended to neglect the urban context in which much of it is set, while those interested in urban studies... have been equally neglectful of the importance of the tourist function of cities" (p. 33). From the time of Ashworth's commentary until the completion of the present study, urban tourism research has been slow to evolve compared to other areas of tourism research over the same time period.

Ashworth (2003) also noted that while tourism depends on cities, cities do not need tourism. Though not essential for a city's economic survival, tourism can make positive contributions to a city's economy

by, for example, attracting businesses and broadening the tax base. Tourism facilities and tourist activity also create an energetic environment that is vital for the creation of a livable city.

Despite the connection between tourism and economic development, urban economic development strategies do not always include tourism development or promotion in their plans. When tourism development and promotion are not pursued, a common strategy for downtown improvement has been to establish a business improvement district (BID). Friesecke (2006) defined a BID as: “a geographically and mostly inner city area by which the property and business owners cooperate to improve the business and urban environment. The BID services provided are supplementary to those provided by the municipality and usually include security, maintenance of public spaces, removal of litter and graffiti, economic development, public parking improvements, special events and social services” (p. 2). Houston (1997) noted that “many state laws require a map indicating which properties will be assessed and served by the BID” (p. 25), thus justifying the geographic component in Friesecke’s definition.

The BID concept originated in Toronto, Canada, with the designation of the Bloor West Village Business Improvement Area (BIA) in 1970. The BIA developed in response to the completion of the Bloor-Danforth subway line, when “many shoppers who formerly traveled along the surface [i.e., at street level] on Bloor Street in streetcars began disappearing underground” (Bloor West Village BIA 2005). Today, BIDs play an important role in downtown revitalization in cities, large and small, around the world. Many American cities, including Baltimore, Maryland, Cleveland, Ohio, and Raleigh, North Carolina have established BIDs to improve their downtown areas.

A common urban development strategy is to design a standardized urban center with amenities that mimic those of other cities. Frieden and Sagalyn (1989) used the term “trophy collection” to describe the checklist-style ensemble of attractions that cities

amass to increase their attractiveness to visitors and residents as a “civic agenda...and a trophy collection that mayors want” (p. 259). Judd (1999) related this “trophy collection” to the development of the urban tourist bubble, noting that urban tourist bubbles are standardized and contain identical attractive components such as a convention center, atrium hotel, shopping mall, and restored historic neighborhood. The result of formulaic urban development can be what Harvey (1989) termed a “zero-sum” game, whereby cities become more alike and have no features to differentiate them from competitor destinations.

Therefore, to attract visitors, cities need to “develop something either distinctive or specialized...based on something inherent in the place and its history, or a theme which has been identified” (Law 1993, p. 170). This recommendation relates to the marketing concept of positioning: the differentiation of a destination from its competitors so that it occupies a distinctive place relative to other destinations in the minds of potential visitors (Ries and Trout 1986). Differentiation can be a struggle for cities that have adhered to a standardized downtown revitalization strategy.

## **3.0 METHODS**

### **3.1 Study Site**

This study was conducted in Raleigh, North Carolina, the state’s capital with a population of 350,000. The greater Raleigh area receives 11.5 million visitors annually (GRCVB 2007a) and about 3.5 million of them (30 percent) visit downtown Raleigh (DRA n.d.). In downtown Raleigh, a BID, was established to improve the business and urban environment. Downtown Raleigh’s BID is divided into five districts.

### **3.2 Sampling**

The population of interest for this exploratory study was tourism professionals, defined as all individuals with direct professional experience with tourist behavior in downtown Raleigh, and urban planning professionals, defined as all individuals with professional responsibilities associated with

the revitalization of downtown Raleigh. Two nonprobability sampling techniques—purposive and snowball sampling strategies—were employed in this study. Purposive sampling is used to seek out predefined groups and is often used in exploratory studies (Trochim 2006).

A purposive sampling technique was used to identify the study's initial sampling frame. With assistance from two external consultants and the President and CEO of the Greater Raleigh Convention and Visitors Bureau, the initial sampling frame was developed by enumerating all tourism industry professionals whose job responsibilities included interaction with visitors. The consultants identified three tourism-oriented organizations in Raleigh. Only those staff members with direct knowledge of and/or experience with visitor behavior in downtown Raleigh were chosen for inclusion in the sampling frame. A sampling frame of urban planners and others with a professional interest in downtown Raleigh revitalization was constructed using online staff directories of three urban planning-related organizations in downtown Raleigh.

Additional respondents were identified using a snowball sampling technique, whereby initial respondents recommended that others be included in the sample, based on their affiliation with the tourism or urban planning profession.

### **3.3 Data Collection**

Standardized in-person and telephone interviews were conducted over a three-month span (August-October, 2007) with 45 tourism industry professionals and 23 urban planning professionals for a total sample size of 68 respondents. Interviews were chosen as the method for data collection in order to obtain respondents' "top of mind" responses to the questions. The section of the interview relevant to this paper consisted of three questions about the most visited sites in downtown Raleigh. Respondents were asked to list, in rank order, their perceptions of the top 10 most visited attractions and places, the top 5 most frequented lodging properties, and the top 10 most visited restaurants

for visitors to downtown Raleigh. Respondents were prompted not to provide their own personal preferences, but rather to indicate their perceptions of the most popular sites for tourists in downtown Raleigh.

## **4.0 RESULTS**

Spatial relationships were identified through a geographic analysis of the data. The following subsections summarize the results of the interview questions regarding the most-visited attractions and places and restaurants, as these were the questions where geographic patterns in the data were exposed.

### **4.1 Findings Pertaining to Attractions and Places**

On the map of the total sample's perceptions of the most-visited attractions and places, high-frequency responses were located in two main clusters. The first cluster consisted of state-run museums and attractions, such as the North Carolina Museum of Natural Sciences and the State Capitol. A smaller cluster of attractions consisted of museums and attractions relating to art and culture, including Marbles Kids Museum and a collection of galleries and shops called City Market. These two clusters could also be interpreted as one larger collection spanning three downtown districts, representing what was termed a "family-friendly attraction zone" in downtown Raleigh (Figure 1).

Currently, the Downtown Raleigh Alliance (DRA) promotes five distinct downtown districts, whose descriptions lack any mention of families or family-friendly activities (DRA, n.d.). The geographically contiguous collection of family-friendly tourist options identified in this study fills this void and, if properly marketed to families, could attract additional day and overnight visitors to downtown Raleigh. Additional marketing implications will be addressed in the discussion section.

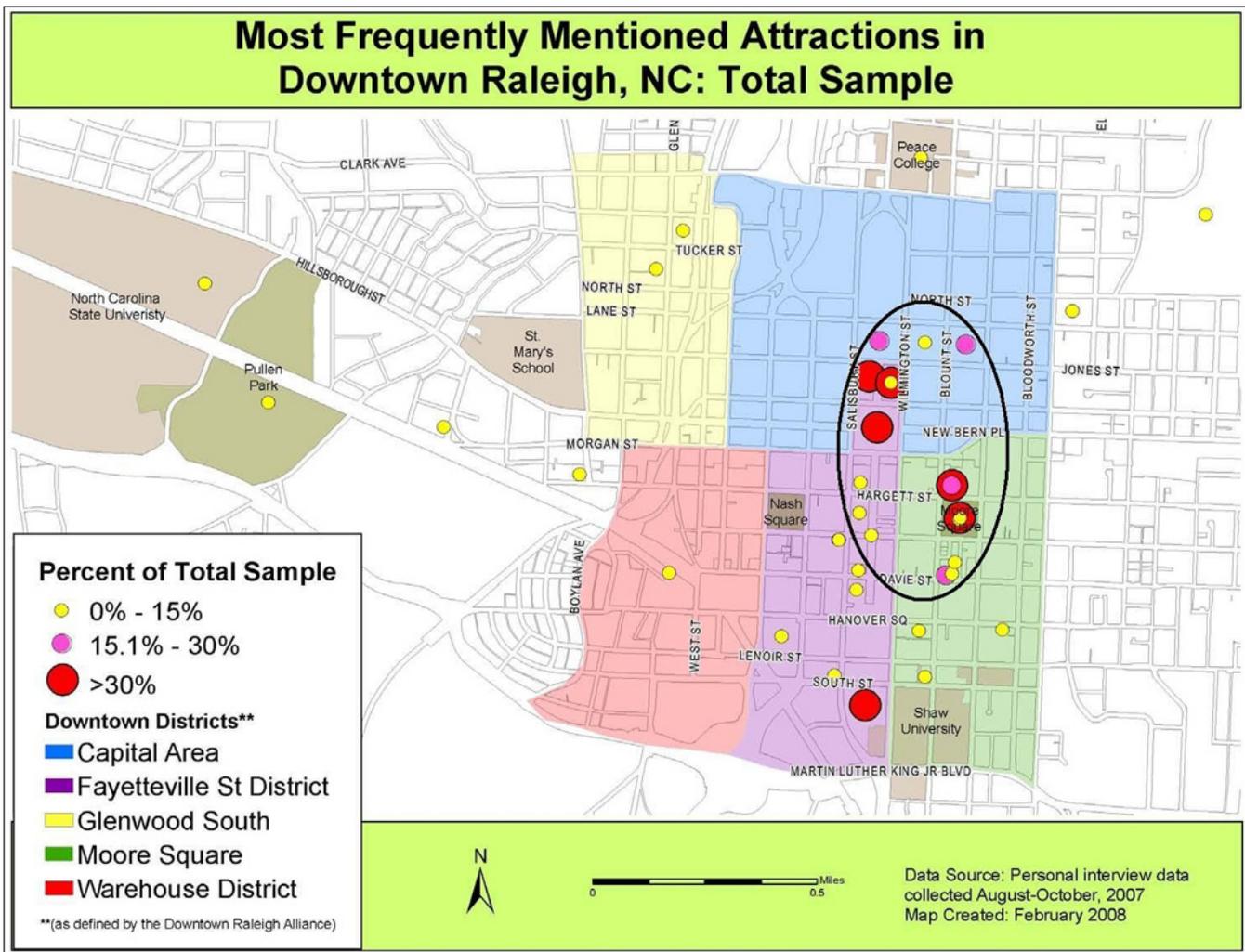


Figure 1.—GIS map of downtown Raleigh attractions.

#### 4.2 Findings Pertaining to Restaurants

Seventeen restaurants were mentioned by at least 15 percent of the total sample and were primarily clustered in three downtown districts: the Glenwood South District (8 restaurants), the Moore Square District (4 restaurants), and the Fayetteville Street District (3 restaurants). While the Glenwood South District is already well known for its restaurants, the geographic distribution of the restaurants in the latter two districts created a second inter-district restaurant zone that spanned the Fayetteville Street and Moore Square Districts (Figure 2).

Like the family-friendly attraction zone, this inter-district restaurant zone is neither acknowledged nor promoted by the Downtown Raleigh Alliance, since it straddles two downtown districts. The Glenwood

South District, described as “a thriving restaurant and retail environment” (DRA, n.d.) and “burgeoning with eclectic restaurants and spirited nightlife” (GRCVB 2007b), is promoted as downtown Raleigh’s dining mecca. Respondents in this study, however, identified almost the same number of restaurants in this inter-district restaurant zone (7 restaurants) as the Glenwood South District (8 restaurants), suggesting that there is a second geographic cluster of dining options in the Fayetteville Street-Moore Square area.

#### 5.0 DISCUSSION AND CONCLUSIONS

In this case, the geographical information system (GIS) mapping tool helps us see beyond predetermined geographic boundaries to identify two new tourist experience zones in downtown Raleigh: a family-friendly attraction zone and an inter-district restaurant

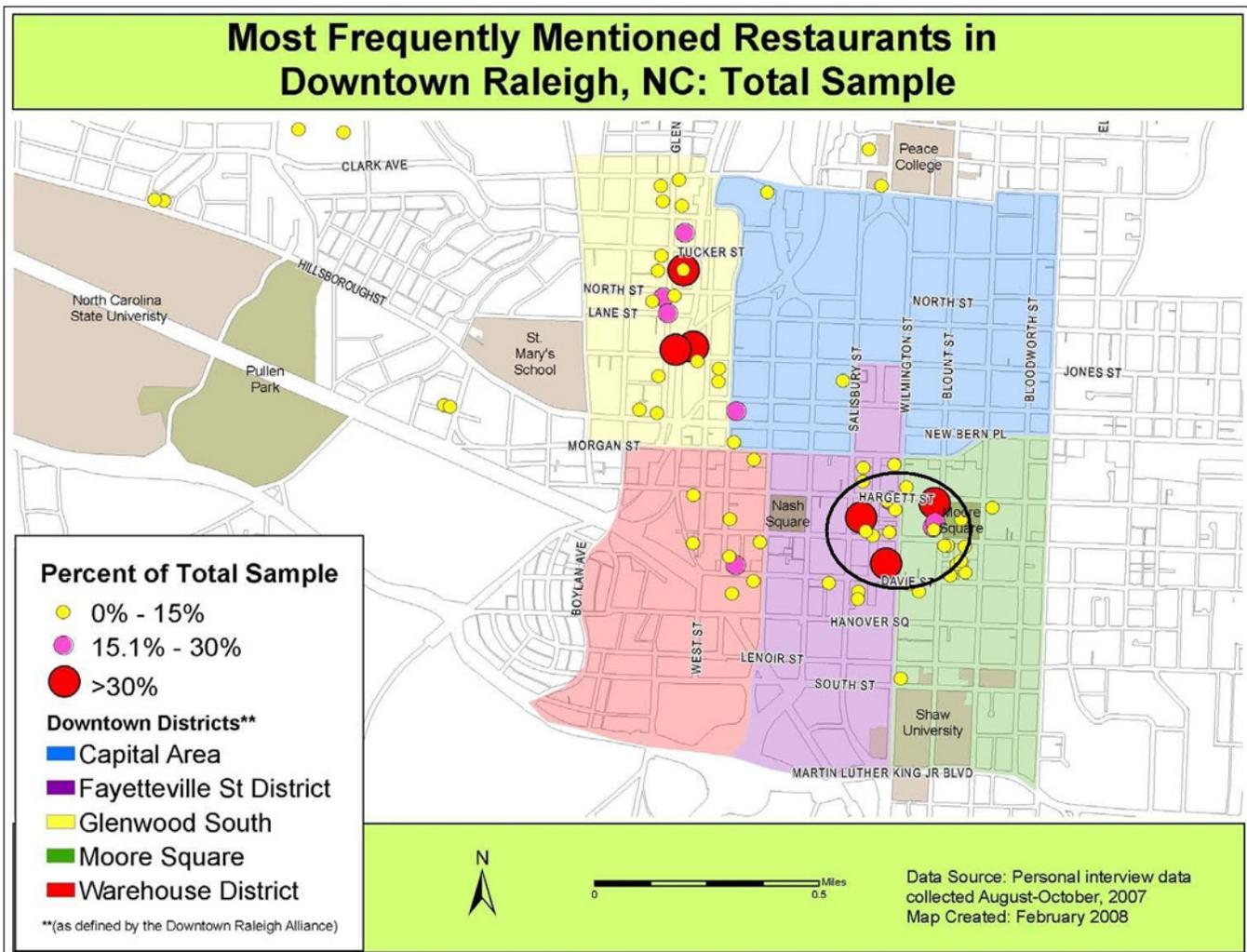


Figure 2.—GIS map of downtown Raleigh restaurants.

zone. The tourist experience zones can be promoted to a broader range of target markets to more clearly indicate opportunities for tourists in the city center and to increase visitation to the downtown area.

The family-friendly attraction zone is comprised of a number of state-run museums and attractions. Consequently, it already draws numerous school groups each year. However, this zone could be promoted to families, a market segment which sometimes perceives a downtown area as lacking wholesome affordable tourist activities. Specific to Raleigh, one respondent noted: “When 5 o’clock comes and things have closed, there’s not a whole lot left to do except restaurants, bars, and plays—nothing to do for kids or teens, such as a movie theater.”

Negative aspects of an urban tourist destination—such as traffic, inaccessibility, and perceptions of crime—often dissuade families from choosing a city for their vacation destination (Bramwell 1998). To challenge this misconception, the city of Raleigh could actively promote the walkability and accessibility of the family-friendly attraction zone identified in this study.

Marketing efforts could include: conducting market research to determine the types of families to include in the target market, developing a consistent marketing message to communicate to the target market, and distributing promotional materials (e.g., direct mail, radio, print advertisements) to the target market highlighting downtown Raleigh’s family-friendly attraction zone.

Highlighting the inter-district restaurant zone would be useful for overnight guests staying in the two largest hotels in downtown Raleigh, since the restaurants in this zone are within walking distance of both hotels. On the other hand, the Glenwood South District, which has been touted as the cornerstone of downtown Raleigh's dining scene, is located at least ½ mile from any downtown lodging property. According to urban planning literature, pedestrians would most likely regard ½ mile as too far to be considered "within walking distance" (Aurbach 2008). Urban planners use the term pedestrian shed—also called a "ped shed" or walkable catchment—to describe the "the area encompassed by the walking distance from a town or neighborhood center. Ped sheds are often defined as the area covered by a 5-minute walk (about 0.25 miles)" (Aurbach 2008). Based on Aurbach's definition, Glenwood South is not in the ped shed of any downtown lodging property.

The inter-district restaurant zone also has implications for the promotion of downtown Raleigh's dining options to residents and visitors. The "hip and trendy" (DRA, n.d.) Glenwood South District, with its mix of restaurants and nightclubs, is generally perceived to attract a younger crowd. On the other hand, the second restaurant zone of the Fayetteville Street and Moore Square Districts, which intersects the family-friendly attraction zone also identified in this study, has the potential to attract families and older adults to downtown Raleigh in addition to the young professionals, college students, and downtown office workers who are already targeted.

Downtown Raleigh is at a crossroads where tourism development has the potential to improve the quality of life for urban residents and enhance the experiences of visitors. The findings from this study—specifically the notion that the five downtown districts comprising the BID did not accurately reflect respondents' perceptions of tourism activity in downtown Raleigh—can be used as a platform for future research.

Data were displayed geographically using GIS software to detect patterns in respondents' perceptions

of the spatial distribution of the urban tourism supply (i.e., attractions & places, accommodations, restaurants). The technique developed in this study can be applied to other destinations in future research to improve understanding of the spatial relationships among tourist attractions, restaurants, and lodging properties in cities. Maps are an effective way to display research findings to stakeholders. Each map created for this study condensed a large amount of data into a single figure. In addition to sharing these maps with tourism and urban planning professionals, maps can also be circulated to restaurateurs, hotel developers, and transportation officials in charge of signage and directions. These stakeholders would benefit from knowing the locations of the pockets of tourism activity in downtown Raleigh, including the family-friendly attraction zone and the inter-district restaurant zone that were revealed in this study.

## 6.0 LITERATURE CITED

- Ashworth, G.J. 1989. **Urban tourism: an imbalance in attention.** In: Cooper, C.P., ed. *Progress in tourism, recreation and hospitality management.* London: Belhaven: 33-54. Vol. 1.
- Ashworth, G. 2003. **Urban tourism: Still an imbalance in attention?** In: Cooper, C., ed. *Classic reviews in tourism.* Buffalo, NY: Channel View Publications: 143-163.
- Aurbach, L.J. 2008. **Ped Shed: frequently asked questions.** Available at: [http://pedshed.net/?page\\_id=5](http://pedshed.net/?page_id=5). (Accessed November 19, 2008).
- Bloor West Village Business Improvement Area. 2005. Available at: <http://www.bloorwestvillage.ca/about.php>. (Accessed March 20, 2008).
- Bramwell, B. 1998. **User satisfaction and product development in urban tourism.** *Tourism Management.* 19 (1): 35-47.
- Downtown Raleigh Alliance (DRA). n.d. **About downtown.** Available at: <http://www.godowntownraleigh.com/about-downtown.cfm>. (Accessed March 15, 2007).

- Frieden, B.J.; Sagalyn, L.B. 1989. **Downtown, Inc.: how America rebuilds cities.** Cambridge, MA: MIT Press.
- Friesecke, F. 2006. **Revitalization of urban areas through Business Improvement Districts (BIDs) – trends and expectations for shrinking cities.** In: Promoting Land Administration and Good Governance. Proceedings, 5th FIG Regional Conference for Africa. Available at: [http://www.fig.net/pub/accra/papers/ts10/ts10\\_02\\_friesecke.pdf](http://www.fig.net/pub/accra/papers/ts10/ts10_02_friesecke.pdf). (Accessed March 20, 2008).
- Greater Raleigh Convention and Visitors Bureau (GRCVB). 2007a. **Quick facts.** Available at: <http://www.visitraleigh.com/media/quickfacts.html>. (Accessed April 1, 2007).
- Greater Raleigh Convention and Visitors Bureau. 2007b. **Entertainment districts.** Available at: <http://www.visitraleigh.com/weekends/entertainment/index.html>. (Accessed February 28, 2008).
- Harvey, D. 1989. **The condition of postmodernity.** Oxford: Blackwell.
- Hinch, T.D. 1996. **Urban tourism: perspectives on sustainability.** *Journal of Sustainable Tourism*. 4 (2): 95-110.
- Houstoun, L.O., Jr. 1997. **Business improvement districts.** Washington, D.C.: Urban Land Institute.
- Judd, D.R. 1999. **Constructing the tourist bubble.** In: Judd, D.R.; Fainstein, S.S, eds. *The tourist city.* New Haven: Yale University Press: 35-53.
- Law, C.M. 1993. **Urban tourism: attracting visitors to large cities.** London: Mansell.
- Ries, A.; Trout, J. 1986. **Positioning: the battle for your mind.** New York, NY: McGraw-Hill.
- Selby, M. 2004. **Understanding urban tourism: image, culture and experience.** London: I.B. Tauris.
- Trochim, W.M.K. 2006. **Nonprobability sampling.** Available at: <http://www.socialresearchmethods.net/kb/sampon.php>. (Accessed October 17, 2007).

The content of this paper reflects the views of the author(s), who are responsible for the facts and accuracy of the information presented herein.

# *CARRYING CAPACITY*

# DETERMINATES OF CLUSTERING ACROSS AMERICA'S NATIONAL PARKS: AN APPLICATION OF THE GINI COEFFICIENT

---

R. Geoffrey Lacher  
Department of Parks, Recreation & Tourism  
Management  
Clemson University  
rlacher@clemson.edu

Matthew T.J. Brownlee  
Clemson University

---

**Abstract.**—The changes in the clustering of visitation across National Park Service (NPS) sites have not been well documented or widely studied. This paper investigates the changes in the dispersion of visitation across NPS sites with the Gini coefficient, a popular measure of inequality used primarily in the field of economics. To calculate the degree of clustering nationally, the researchers used visitation data provided by the NPS Public Use Statistics Office for 41 parks covering 34 years. Two ordinary least squares regressions were performed to test whether a time trend, total visits to the parks in question, and economic indicators have a significant impact on clustering of NPS visitation. Results indicated that visitation and visitation density tend to cluster in the more popular parks over time when vacations are more expensive (i.e., when gas prices and the exchange rate increases).

---

## 1.0 INTRODUCTION

The total visitation to national parks and within specific park units has been a focal point since the inception of the National Park Service (NPS) (Runte 1987). Researchers have been continually interested in the trends of public land visitation and outdoor recreation participation for decades (Cordell et al. 2008). Often public officials use visitation data, such as total annual visits and visitation trends across time, to elicit public support for conservation initiatives, to understand visiting populations, and to inform

new policies (Cessford and Muhar 2003, Hendee and Dawson 2002, Manning 1999). Additionally, visitation data are often directly tied to the appropriation of federal funds to an agency and subsequently within an agency (National Park Service 2010). Furthermore, assessing and understanding park visitation trends allows for an increased collective understanding of human behavior within natural environments, such as visitor impacts to the resource or the overall visitor experience (Loomis 2000).

The methods used to monitor annual national park visitation have been inconsistent. For example, the variety of techniques employed to count and monitor total visitation at a particular park site (e.g., vehicle counts, survey data, permit allocations) vary across sites, sometimes by year, and often within individual sites (Cessford and Muhar 2003). This creates problems for researchers and managers alike when assessing visitation trends.

This limitation aside, a wealth of data exists about visitation trends to national parks. For example, overall visitation to national parks peaked in 1987, when more than 287 million people reportedly visited a national park, and then steadily declined in the early 1990s (Cordell et al. 2008). After rebounding slightly in the late 1990s, national park visits have remained relatively stable since 2001.

However, assessing only overall visitation trends does not capture the full story of visitation to NPS sites. Although overall park visitation may remain stable with limited fluctuations during a decade (e.g., 2001-2010), the degree of clustering of visits across sites may vary widely. For instance, the National Park Service may experience the same number of overall visits in 2006 and 2007. However, visits to specific National Park (NP) units (e.g., Everglades NP and the Great Smoky Mountains NP) may change considerably from 2006 and 2007. This is important because

understanding fluctuations in visitation between parks may inform managers (at a national and regional level) about park popularity in relation to other parks, or the effect of infrastructure near the parks on destination choice. Additionally, if only overall visitation trends are assessed, plans for appropriate park staffing, park concessionaire contracting, or park zoning may not be fully informed. Thus, to understand visitation behavior at the macrolevel, assessing the level of dispersion across sites and across years becomes a relevant topic, especially in the current era of stagnation in total park visitation.

## 2.0 PURPOSE OF THE RESEARCH

This research sought to understand how national park visits across sites have changed annually, with specific interest in the level of annual inequality (i.e., dispersion) of visits across sites. The first step was assessing the degree of inequality of visits across sites annually. Second, the researchers investigated what factors may account for the degree of inequality in annual visits over time.

## 3.0 METHODOLOGY

To measure the changing distribution of visitation across the NPS, the researchers used the Gini coefficient. The Gini coefficient is a frequently used measure of inequality in the field of economics. The Gini coefficient can range from 0 to 1 with 0 representing perfect equality and 1 representing perfect inequality. It is most commonly used to measure income inequality but has been used in numerous applications. In parks and tourism research, the Gini coefficient had been used to quantify seasonality (Fernandez-Morales 2003) and industry agglomeration (Urtasun and Gutierrez 2006).

### 3.1 Calculating the Gini Coefficient

While using the Gini coefficient to assess visitation inequality across the park's system is a novel application, this statistic can measure the inequality in any data set. Specifically, the Gini coefficient is the ratio of: 1) the difference between a Lorenz curve and a line of perfect equality; and 2) the total area under the line of perfect equality (see Figure 1). The Lorenz

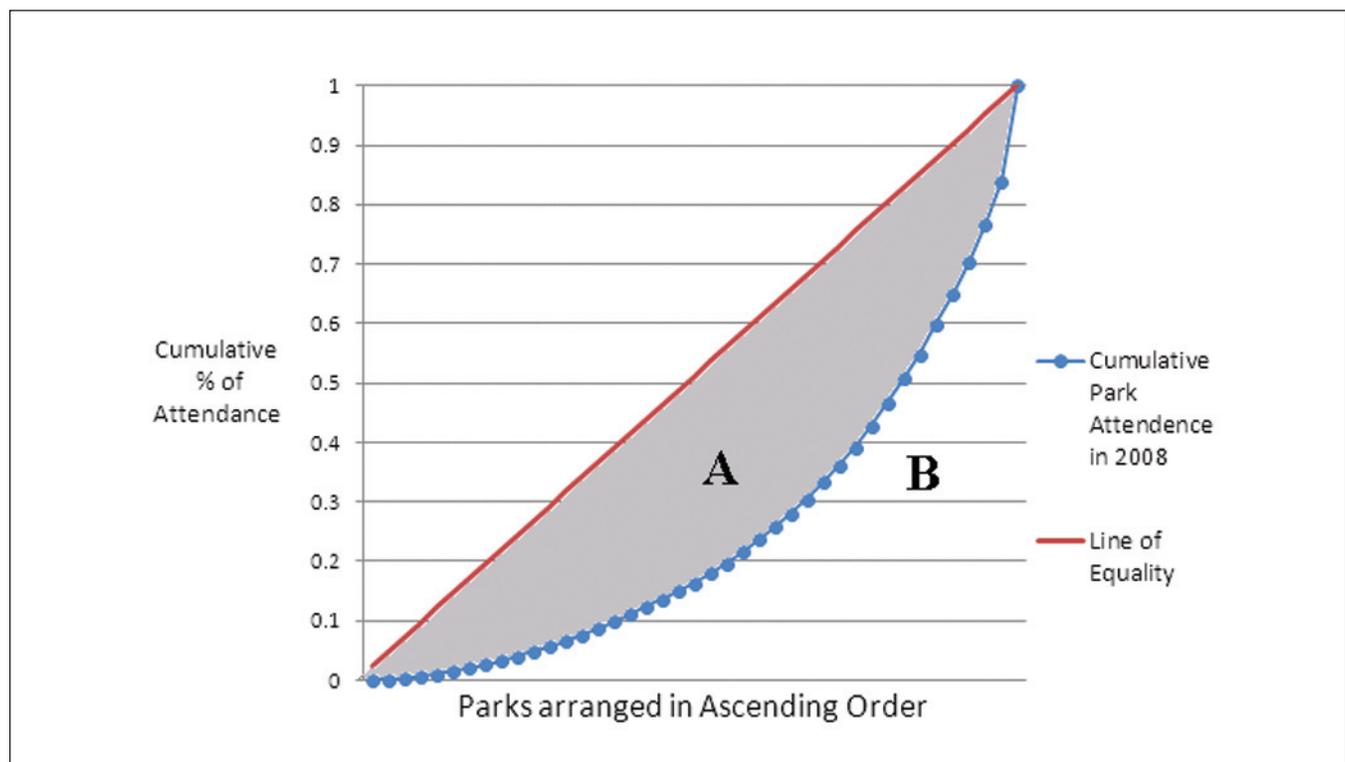


Figure 1.—A visual representation of the Gini coefficient. The Gini coefficient is equal to the ratio of the area between the two lines to the area below the line of equality or  $Gini = A / (A+B)$ .

curve visually displays the relationship between the cumulative percentage of numbers when the numbers are arranged in ascending order. For our purposes, the x-axis of the Lorenz curve is the cumulative percentage of the parks in the sample (arranged from least to most visited), and the y-axis represents the cumulative percentage of number of visits to these parks.

The Gini coefficient is a preferred method for calculating inequality for a variety of reasons. First, it is scale independent and is not affected by the type of units measured. Additionally, it is easy to interpret (e.g., 0 to 1). Other measurements of inequality, including the logarithmic variance or Herfindahl-Hirschman index, have no upward bound and therefore can be more difficult to interpret (Urtasun and Gutierrez 2006). The Gini coefficient also considers all data points when measuring inequality and is not as influenced by extreme values as other measures of inequality, such as those relying on variance or standard deviation (Wanhill 1980).

### 3.2 Visitation Data for the Gini Coefficient

To calculate a Gini coefficient for each year of visitation, the researchers used a data set of the total visitation and park acreage of 41 parks over 34 years (data gathered from the NPS Public Use Statistics Office Web site). The original data set included 48 parks, but after initial review of the data, 7 parks were removed from further analysis due to discrepancies (e.g., after remaining relatively stable for a number of years, total visitation would double in a year, and then stabilize again for the remaining years) that perhaps resulted from inconsistent visitation monitoring methods.

The data set with the remaining 41 parks was used to calculate the Gini coefficients for total visitation and the number of visitors per acre (i.e., visitation density) for every year from 1975 to 2009, yielding 34 observations for both total visitation and visitation density. The two different Gini coefficients measure different types of clustering and will give greater depth to the analysis. The Gini coefficients for total visitation

measure the degree of visitation clustering in the more popular parks, while the Gini coefficients for visitation density measure clustering in the more crowded parks. For example, Yellowstone is a park with high visitation but, due to its size, it has low visitation density. The Gini coefficients for total visitation and visitation density were calculated for the 34 years using the trapezoidal method (equation below) in which  $X_k$  represents the cumulative proportion of the parks and  $Y_k$  represents the cumulative proportion of visitors arrival (again where the parks are arranged by ascending order of visitation). This method calculates the area under the Lorenz curve for each park as a trapezoid and the sum of the trapezoids is the Gini coefficient.

$$G_1 = 1 - \sum_{k=1}^n (X_k - X_{k-1})(Y_k + Y_{k-1})$$

### 3.3 Predictor Variables

An initial set of predictors was created from an examination of previous literature and consultation with colleagues (Table 1).

Two ordinary least square regressions (OLS) were performed using independent variables to predict the Gini coefficient for total visitation and visitation density for the parks. Due to multicollinearity issues within the variable list, several independent variables were eliminated. Using a trial and error approach, models with high  $R^2$ , significant predictors, and low multicollinearity were created. The final independent variables included in the models were gas price, gross national product (GDP) growth, United States dollar (USD) exchange rate, and time trend (i.e., year).

## 4.0 RESULTS

The mean for the Gini Coefficient for total visitation over the 34 observations was 0.55 (SD = 0.012) and for visitation density was 0.62 (SD = 0.019) (see Figure 2). A visual examination of the data reveals similarities between the total visitation inequality in the late seventies and in the late 2000s, and the relationships appear to be negatively correlated.

**Table 1.—Variables used in the analysis**

Variable	Interpretation	Source
Year	Numbered 0-34 for the years 1975 to 2009	—
Gas price	Inflation adjusted price of a gallon of gas in dollars	EIA <sup>1</sup>
Exchange rate	Relative cost of a dollar to a basket of foreign currencies. The higher the number, the weaker the dollar	Federal Reserve (2009)
Growth	Gross Domestic Product (GDP) growth for the year	BEA <sup>2</sup>
Unemployment*	Average unemployment rate for the year	BLS <sup>3</sup>
1995 Dummy Variable*	0 for all pre-1995 years, 1 for all post-1995 years, based on a change made in National park fee structures in 1995	—
Visits *	Visits to the 41 parks in question	NPS <sup>4</sup>

Notes: \*Variable eliminated from final model due to colinearity issues.

<sup>1</sup>Energy Information Administration (2009).

<sup>2</sup>Bureau of Economic Analysis (2009).

<sup>3</sup>Bureau of Labor Statistics (2009).

<sup>4</sup>National Park Service Public Use Statistics Office.

The Gini coefficient for total visitation and the Gini coefficient for visitation density are in fact significantly correlated ( $p < 0.05$ ) in a negative manner, meaning that when visitation to the National Park system is more clustered (i.e., the most popular parks are more highly visited), the parks with the highest visitation per acre receive relatively less visitation. However, the variables only explain a small amount of each other's variance ( $R^2 = 0.14$ ).

The model predicting the Gini coefficient for total visits to parks was significant ( $p < 0.01$ ) and produced an  $R^2$  of 0.366 (Table 2). The only significant predictors were gas price and exchange rate. This model suggests that as the price of gas increases, clustering of visitation increases as well. The coefficient for exchange rate indicates that when more funds (USD) are necessary to purchase foreign currency (i.e., when the dollar is weak), more clustering in visitation occurs.

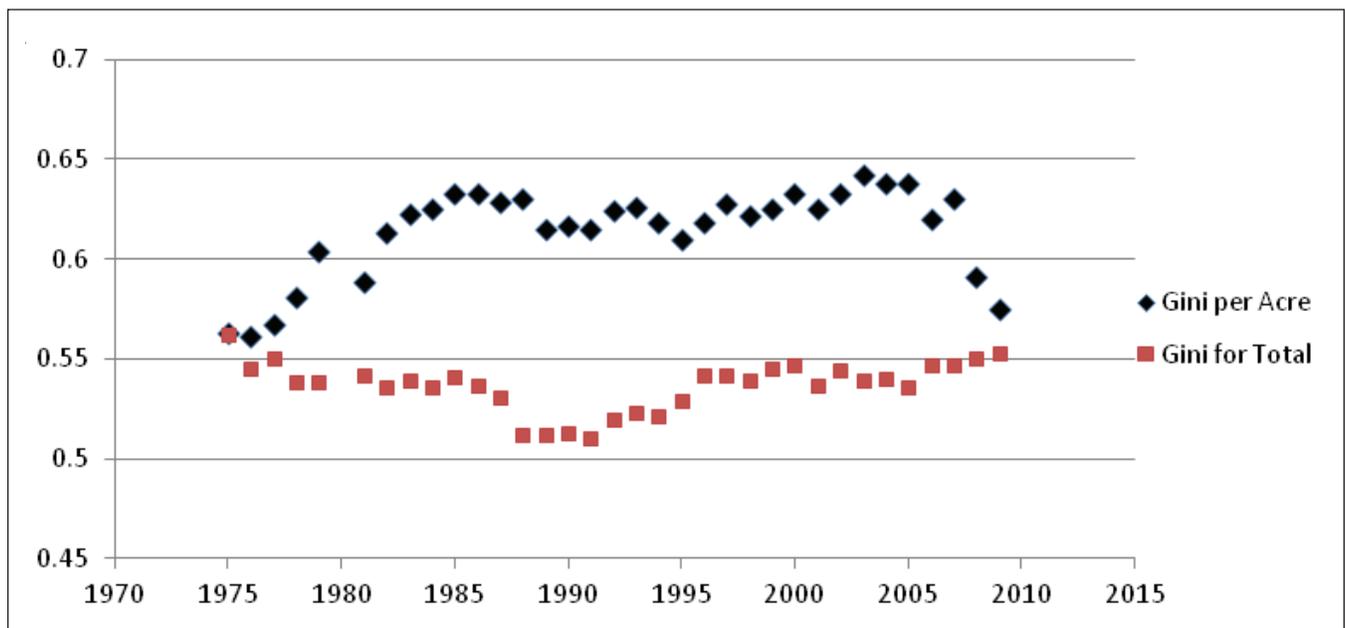


Figure 2.—The Gini coefficients across time for the 41 parks.

**Table 2.—Results of regression on Gini coefficient for total visitation to parks**

	B	Std. Error	p
Constant	.5299*	.005360	.000
Year	.000278	.000192	.159
Growth	.633	.001095	.568
Gas price	.135*	.000038	.001
Exchange	.409*	.000173	.025

\*indicates  $p \leq 0.05$ .

The model predicting the Gini coefficient for density of park visitation was significant ( $p < 0.01$ ) and produced an  $R^2$  of 0.462 (Table 3). The significant predictors were the time trend (i.e., year) and exchange rate. The coefficient for year indicates that as time has increased, visitation has become increasingly clustered. The coefficient for exchange rate demonstrates that when the dollar is weak, more clustering in visitation occurs.

## 5.0 DISCUSSION

The Gini coefficient for visitation density indicates a tendency towards clustering over time. This indicates a trend of visitors seeking less isolated and less remote parks. The parks with denser visitation tend to have a greater emphasis on easy-to-access, short-duration activities while the parks with less dense visitation tend to emphasize multiday wilderness experiences. Although this trend is slow in developing, it has some potential implications. For example, near-park communities may economically benefit from a higher

**Table 3.—Results of regression on Gini coefficient for visitation density to parks**

	B	Std. Error	p
(Constant)	.5953*	.008822	.000
Year	.001127*	.000316	.001
Growth	.000247	.001802	.892
Gas price	-.000098	.00062	.126
Exchange	.000796*	.000284	.009

\*indicates  $p \leq 0.05$ .

concentration of visitors (e.g., Gatlinburg, TN outside the Great Smoky Mountains NP). However, as more visitors converge in one area, increases in visitor-caused environmental impacts and/or social crowding and loss of solitude may occur.

The Gini coefficient results for total visitation indicate that visitation tends to cluster in the more popular parks when vacations are more expensive (e.g., when gas price and exchange rate both increase). This observation adds a nuance to the previously reported hypothesis that National Park vacations might be an inferior good (i.e. individuals' demand for a product decreases when their income increases) (Weiler and Seidl 2004). Additionally, in this analysis, exchange rate may also be a proxy for international visitation and could indicate that international visitors tend to go to the more popular parks located in proximity (e.g., Yellowstone and Great Smoky Mountains Parks).

## 6.0 CONCLUSIONS

The Gini coefficient is an efficient and effective method to summarize a changing distribution and can easily be applied by researchers involved in recreation resource management. The Gini coefficient could be applied to many additional types of analyses related to park visitation. For example, visitation data could be analyzed at the regional and state level or assessed across numerous land management agencies (e.g., Bureau of Land Management, NPS, U.S. Forest Service) using the Gini coefficient. Thus, the Gini coefficients could be compared across agencies within a given time period (e.g., one year). Additionally, the Gini coefficient may be a useful tool for those investigating issues beyond visitation. For example, total annual expenditures allocated to concessionaires at park sites could be assessed across parks.

As park researchers and resource management professionals move forward with new methods and novel inquiry, the Gini coefficient may assist in understanding and explaining components of visitor behavior. Furthermore, assessing inequalities may lead to increased insight about the role of public lands in society, and about human behavior.

## 7.0 LITERATURE CITED

- Bureau of Economic Analysis. 2009. **U.S. economic accounts**. Available at <http://www.bea.gov/>. (Accessed October 10, 2009).
- Bureau of Labor Statistics. 2009. **Labor force characteristics**. Available at <http://www.bls.gov/cps/lfcharacteristics.htm#unemp>. (Accessed October 10, 2009).
- Cessford, G.; Muhar, A. 2003. **Monitoring options for visitor numbers in parks and natural areas**. *Journal for Nature Conservation*. 11: 240-250.
- Cordell, K.; Betz, C.; Green, G. 2008. **Nature-based outdoor recreation trends and wilderness**. *International Journal of Wilderness*. 14(2): 7-13.
- Energy Information Administration. 2009. **Petroleum**. Available at <http://www.eia.doe.gov/>. (Accessed October 10, 2009).
- Federal Reserve. 2009. **Foreign exchange rates**. Available at <http://www.federalreserve.gov/releases/h10/Summary/>. (Accessed October 10, 2009).
- Fernandez-Morales, A. 2003. **Decomposing seasonal concentration**. *Annals of Tourism Research*. 30(4): 942-956.
- Hendee, J.C.; Dawson, C.P. 2002. **Wilderness management: stewardship and protection of resources and values**. Golden, CO: Fulcrum Publishing.
- Loomis, J. 2000. **Counting on recreation use data: A call for long-term monitoring**. *Journal of Leisure Research*. 32(1): 93-96.
- Manning, R. 1999. **Studies in outdoor recreation: search and research for satisfaction**. Corvallis, OR: Oregon State University Press.
- National Park Service. 2010. **NPS budget justifications**. Available at <http://home.nps.gov/applications/budget2/gbchoose.htm>. (Accessed May 13, 2010).
- Runte, A. 1987. **National parks: the American experience**. 3rd ed. Lincoln, NE: University of Nebraska Press.
- Urtasun, A.; Gutiérrez, I. 2006. **Tourism agglomeration and its impact on social welfare: an empirical approach to the Spanish case**. *Tourism Management*. 27(5): 901-912.
- Wanhill, S. 1980. **Tackling seasonality: a technical note**. *Tourism Management*. 1(4): 243-245.
- Weiler, S.; Seidl, A. 2004. **What's in a name? extracting econometric drivers to assess the impact of national park designation**. *Journal of Regional Science*. 44(2): 245-262.

The content of this paper reflects the views of the author(s), who are responsible for the facts and accuracy of the information presented herein.

*CONSERVATION AND NATURE-BASED  
TOURISM AND RECREATION*

# EXPLORING THE RELATIONSHIP BETWEEN OUTDOOR RECREATION ACTIVITIES, COMMUNITY PARTICIPATION, AND ENVIRONMENTAL ATTITUDES

---

Lindsey Barker  
SUNY College of Environmental Science and Forestry

Chad Dawson, Ph.D.  
SUNY College of Environmental Science and Forestry

---

**Abstract.**—The relationship between environmental attitudes (EA) and environmentally responsible behavior (ERB) has been the focus of several studies in environmental psychology and recreation research. The purpose of this study was to explore the relationship between EAs and ERBs at both a general level and at an activity-specific level using a 2009 survey of motorized recreationists (all-terrain vehicle (ATV) and off-highway vehicle (OHV) riders). Questions to measure general attitudes were adapted from the New Environmental Paradigm (NEP) and activity-specific environmental attitude questions were developed from the literature. The survey also collected information on demographics, outdoor recreation participation, experience use history, and community participation as well as measures of environmentally responsible behavior.

---

## 1.0 INTRODUCTION

As public concern about global environmental issues has increased, it has become more important to understand people's attitudes about the environment and the relationship between environmental attitudes and behaviors. While there have been high levels of environmental concern since the 1990s, environmentally responsible behaviors (ERBs) have not been similarly high (Tarrant and Cordell 1997). The question of why people who hold positive attitudes toward environmental protection fail to practice pro-environment behaviors is still unanswered in many contexts. To investigate the

formation of attitudes and their relationship to measures of behavioral intention at both the general and activity-specific level, a better understanding of the fundamental concepts is needed. This research offers an initial model that relates several individual characteristics, such as socio-demographics, participation in community organizations, and outdoor recreation activities, with measures of environmental attitudes and behaviors at both general and specific levels (see Figure 1).

## 2.0 METHODS

### 2.1 Data Collection

The first portion of this study was conducted in the southeastern quadrant of the Adirondack Park in the summer of 2009 as part of the mail survey portion of the annual Adirondack Visitor Study. Due to a low number of respondents, we subsequently contacted off-highway vehicle/all-terrain vehicle (OHV/ATV) clubs that were active in this area of the park. The North Country ATV Association (NCATVA) was the only club/organization that agreed to participate in the study. We sent the NCATVA 140 survey packets to distribute to active members in the fall of 2009. Completed surveys from the two outreach efforts were combined to create a total sample size of 78 individuals for this study.

### 2.2 Variables

The survey instrument consisted of six pages and a total of 21 questions. The questionnaire was divided into six sections: (1) outdoor recreation participation; (2) involvement in environmental and OHV/ATV organizations; (3) OHV/ATV ownership and use history; (4) opinions toward the environment and OHV/ATVs; (5) background information; and (6) environmental behavior. Demographic information was only collected for variables that were determined in the literature (Cottrell 2003, Tarrant and Cordell

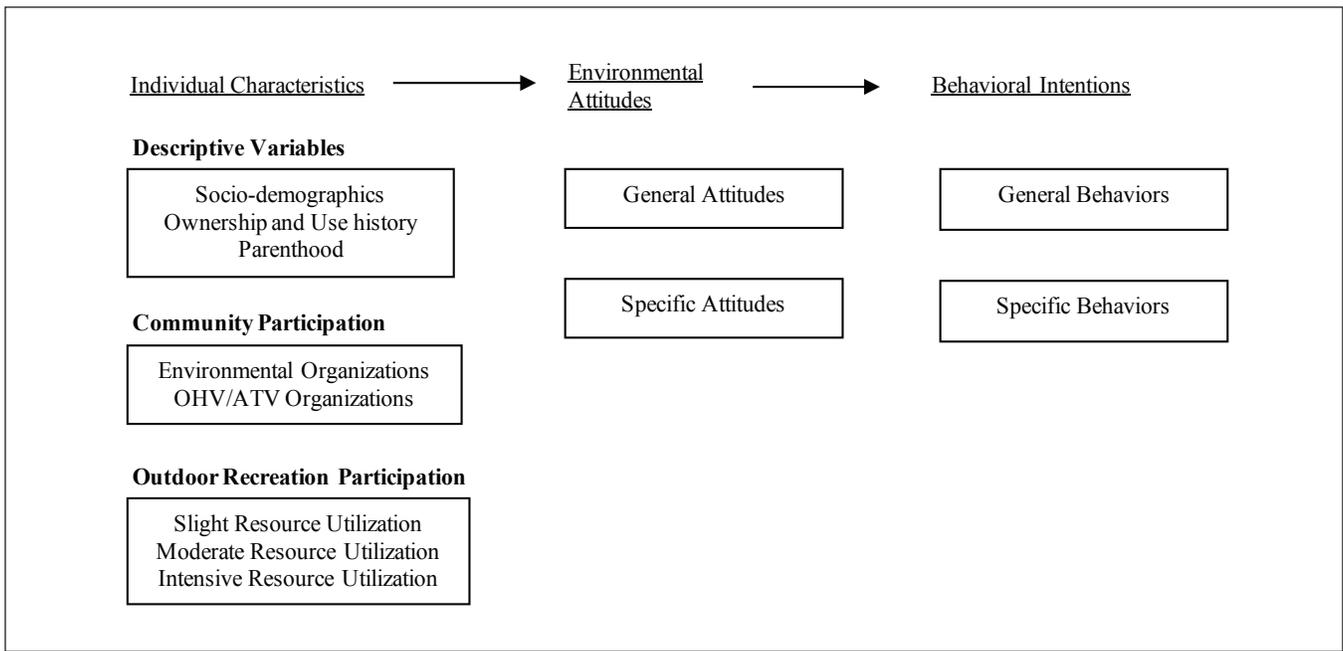


Figure 1.—Proposed model between study concepts—individual characteristics, environmental attitudes, and behavioral intentions.

1997, Thapa and Graefe 2001) to have an effect on either environmental attitudes (EA) or ERB: gender, age, education, political orientation and parenthood (number of children under 18 living in the household).

Outdoor recreation activities were measured using two questions. The first asked “During the last 12 months, did you participate in any of the following activities in the Adirondack Park?” and asked respondents to check the box next to any of 21 activities in which they had participated. There was also space to write in another activity not included on the list. The second question asked participants to write in which of the activities was, in general, their most important recreation activity. This information was used by Thapa and Graefe (2001) to separate respondents into categories for analysis based on the amount of resource utilization for each recreational activity. Thapa and Graefe (2001) used the labels of appreciative, consumptive, and motorized to classify recreation activities. The original labels for consumptive and appreciative typology were developed by Dunlap and Heffernan (1975). Other researchers including Cottrell (2003) and Theodori et al. (1998) used a similar method for organizing activities but employed different labels on activities, separating them by the

degree of resource utilization: slight, moderate or intense. This classification was used for the recreation activities in the present study and respondents were separated into three groups (slight, moderate, or intense resource utilization) for analysis.

Involvement in environmental and OHV/ATV organizations was measured using two questions. Respondents were asked to indicate if they actively participated in environmental or conservation organizations and, if yes, they were asked to list the organizations they were involved with at the local, regional, national or international level. A second question asked about their active participation in OHV and/or ATV riding clubs or organizations. The purpose of this section was to investigate whether individuals who were actively involved with an organization that focused on environmental or OHV/ATV riding issues had different attitudes toward the environment and ERBs than those who were not members of a club or organization.

Environmental attitudes were measured using two separate foci: general and activity-specific. General environmental attitudes were measured using the revised New Ecological Paradigm (NEP) scale

(Dunlap et al. 1992) which consisted of 15 items in a 5-point Likert Scale format, ranging from strongly disagree (1) to strongly agree (5). Eight of the 15 items were reverse coded to maintain the directionality of the scale. A higher score indicates a greater agreement with the dominant environmental paradigm, suggesting a greater concern for the environment.

Activity-specific EA were measured using questions from Gray (1985) based on the foundations of attitude theory, and questions regarding OHV/ATV use developed by D'Luchosh (2008). Overall, there were 17 items that aimed to measure the cognitive, affective, and conative dimensions of attitude. Specific attitudes were measured on a 5-point Likert scale from (1) strongly disagree to (5) strongly agree. To maintain consistent directionality, six of the 17 items were reverse coded. A low overall score on the scale indicated more OHV/ATV-centric attitudes.

### 2.3 Analysis

The data from each survey were entered into an Excel spreadsheet and transferred to SPSS v. 13.0 for analysis. All open-ended questions were coded as response patterns emerged. Descriptive statistics were calculated and all variables were checked for normality. Descriptive statistics for outdoor recreation participation were compiled for all of the variables and for each activity group (slight, moderate, intensive). Both of the attitude scales (NEP and activity-specific) were subjected to Principle Component Factor Analysis (PCA) with varimax rotation. Prior to factor analysis, several items on both the NEP scale and the specific attitude scale were reverse coded to maintain a consistent directionality among items. Evaluation criteria included checking scree plots, eigenvalues greater than 1, percent variance greater than 5 percent for any factor, and factor loadings greater than 0.4 for any variable. A Cronbach's reliability coefficient (alpha) of 0.60 or higher was required for a scale to be considered reliable (Tabachnick and Fidell 1996). Statistical tests (chi-sq tests with alpha values < 0.05) were conducted to measure the relationships between individual characteristics and general and specific attitudes.

## 3.0 RESULTS

Overall, the survey respondent population was 92 percent male and 55 percent were between the ages of 35 and 54. Education level was evenly split between high school education or less (33 percent), individuals with some college or an associate's degree (35 percent), and individuals with a bachelors or graduate degree (32 percent). Self-defined political orientation was predominantly conservative (41 percent), while an additional 44 percent defined themselves as being slightly liberal/conservative. A total of 54 percent of the respondents did not have children living in their households.

Of the survey respondents, 92 percent rode ATVs, mainly for trail and leisure riding, hunting, and utility/work purposes. Over two-thirds (68 percent) considered themselves advanced or expert in their riding ability level. While there were some novice riders who had only been involved with the sport for five years or less (24 percent), the majority of riders had between 11 and 30 years of experience. Most OHV/ATV riding took place on club lands (70 percent) or private lands, and the majority of the respondents rode between 0 and 30 days/year or 31 to 60 days/year (37 percent for each). Most households had one or two riders and owned a similar number of OHV/ATVs.

### 3.1 Outdoor Recreation Participation

For 80 percent of respondents, their main activity was ATV riding, followed by fishing (53 percent), hunting (46 percent), hiking/backpacking (45 percent), and camping (43 percent) (see Figure 2). Approximately 61 percent of the respondents chose an intensive resource utilization activity as their "most important" activity (ATV riding accounted for the majority), 19 percent choose a moderate resource utilization activity (hunting/fishing), and the remaining 16 percent choose a slight resource utilization activity (camping, hiking/backpacking).

### 3.2 Community Participation

During data coding, clubs and organizations that respondents reported participating in were split into groups (i.e., recreation, local, nature, snowmobile

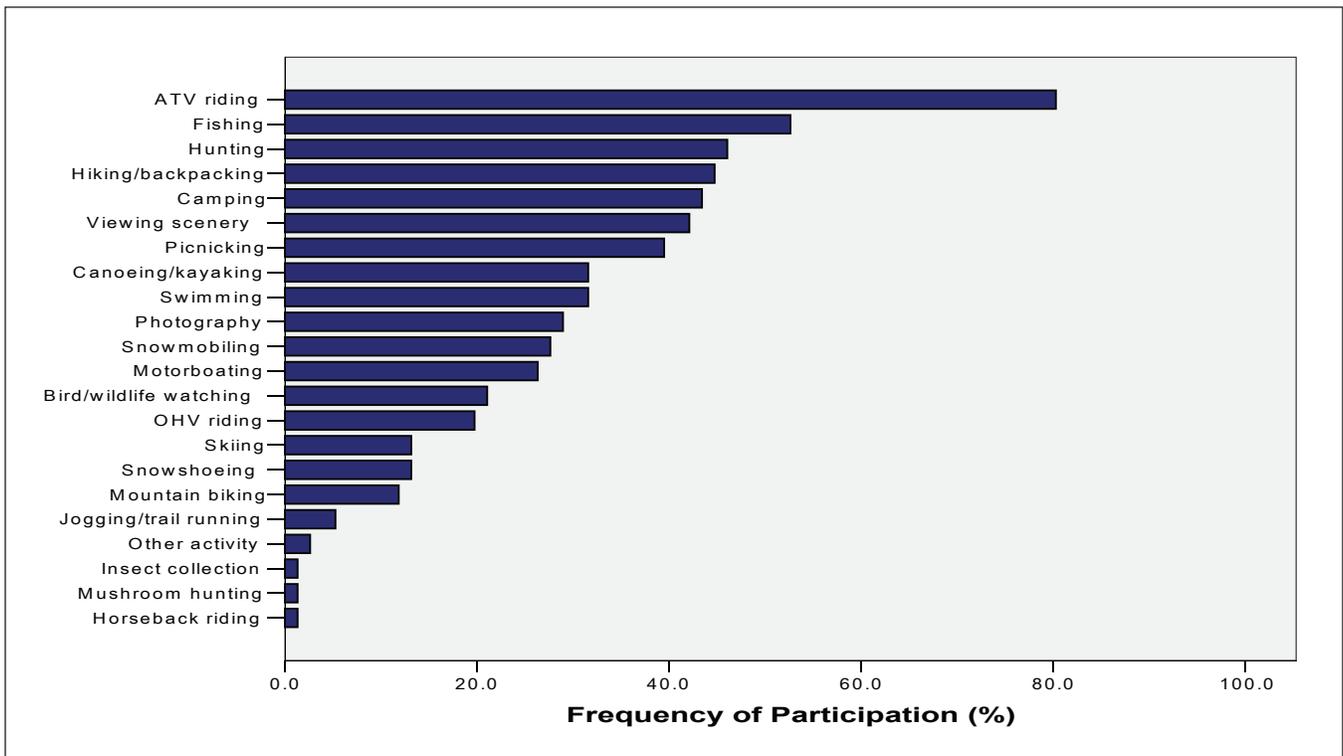


Figure 2.—Respondents' activity participation in the Adirondack Park.

etc.) to better organize the data and observe patterns. Only a small portion of respondents (n = 9) were active in environmental organizations; of these individuals, eight were also members of an OHV/ATV organization. As expected, the vast majority of respondents (94 percent) were active members of an OHV/ATV organization; this classification included not only NCAATVA membership but also out-of-state organizations and mountain biking/snowmobiling clubs as well.

### 3.3 Environmental Attitudes

EAs were split into two categories, general and specific. The NEP was used as a single dimension scale ( $\alpha = .84$ ) and split into three score categories using quartiles for analysis: low, medium, and high. A high score on the NEP indicates that that the individual has a high level of concern about the environment and environmental problems. The highest possible NEP score is a 75; respondents to the 2009 OHV/ATV Recreation Survey had a mean score of 50.39 (med=52, sd=8.127). Nineteen individuals

scored in the low group (score of 31-45), 35 scored in the medium group (46-56), and 17 scored in the high group (57-67) (see Figure 3).

The specific EA scale was designed to measure three issues related to OHV/ATV use: (1) creation of new trails, (2) riding where use is prohibited, and (3) environmental and social impacts of OHV/ATV riding. The OHV/ATV-specific scale was also treated as unidimensional ( $\alpha = .62$ ), and like the general scale, was split into three categories for analysis. The low category consisted of 16 individuals (with scores of 34-42), the medium group had 36 individuals (43-48), and the high group had 17 individuals (49-60) (see Figure 4). A high score for this scale represented someone with attitudes that were less OHV/ATV-centric, so respondents were expected to have low overall scores for this measure. The highest possible score for the specific EA scale was 85; survey respondents had a mean score of 45.99 (med=45.50, sd=5.167). Figure 5 summarizes the relationships found in this research.

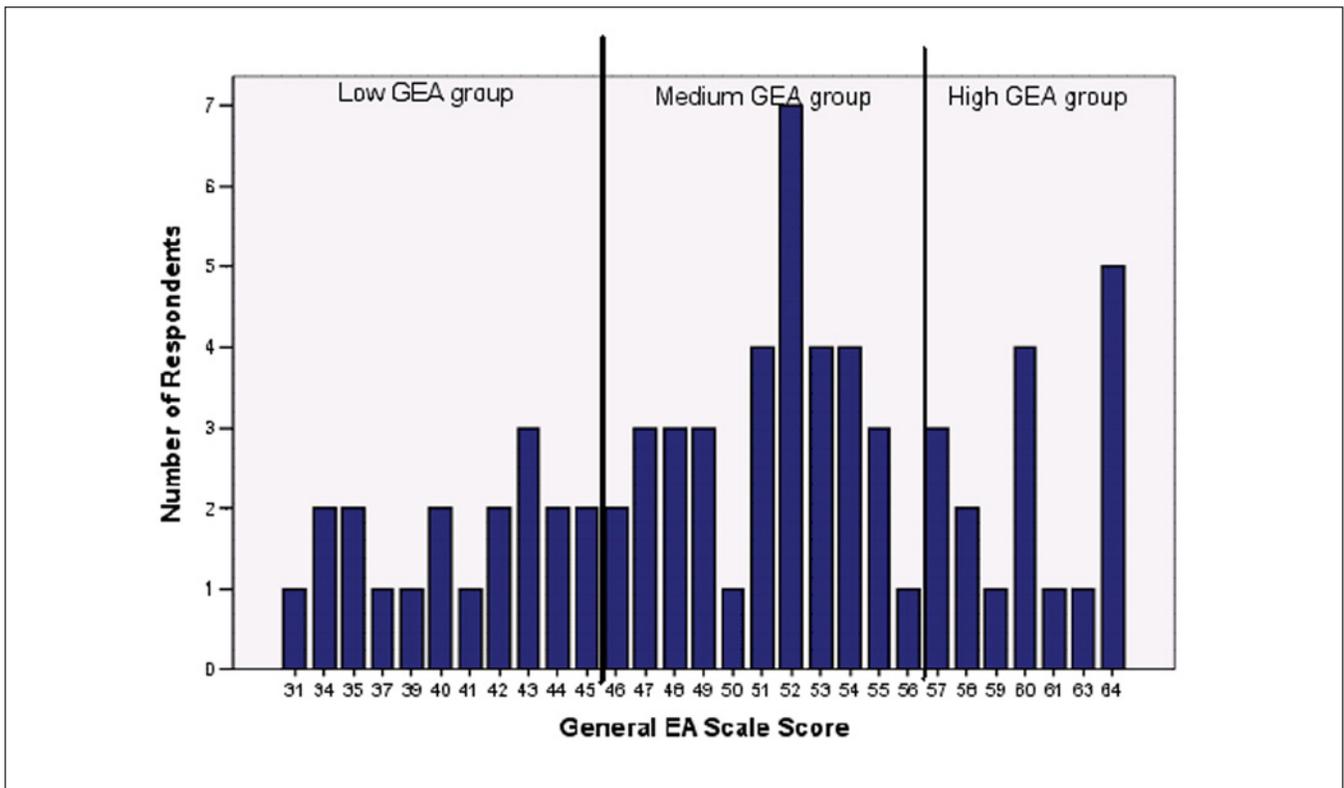


Figure 3.—Distribution of NEP scores for the combined data set.

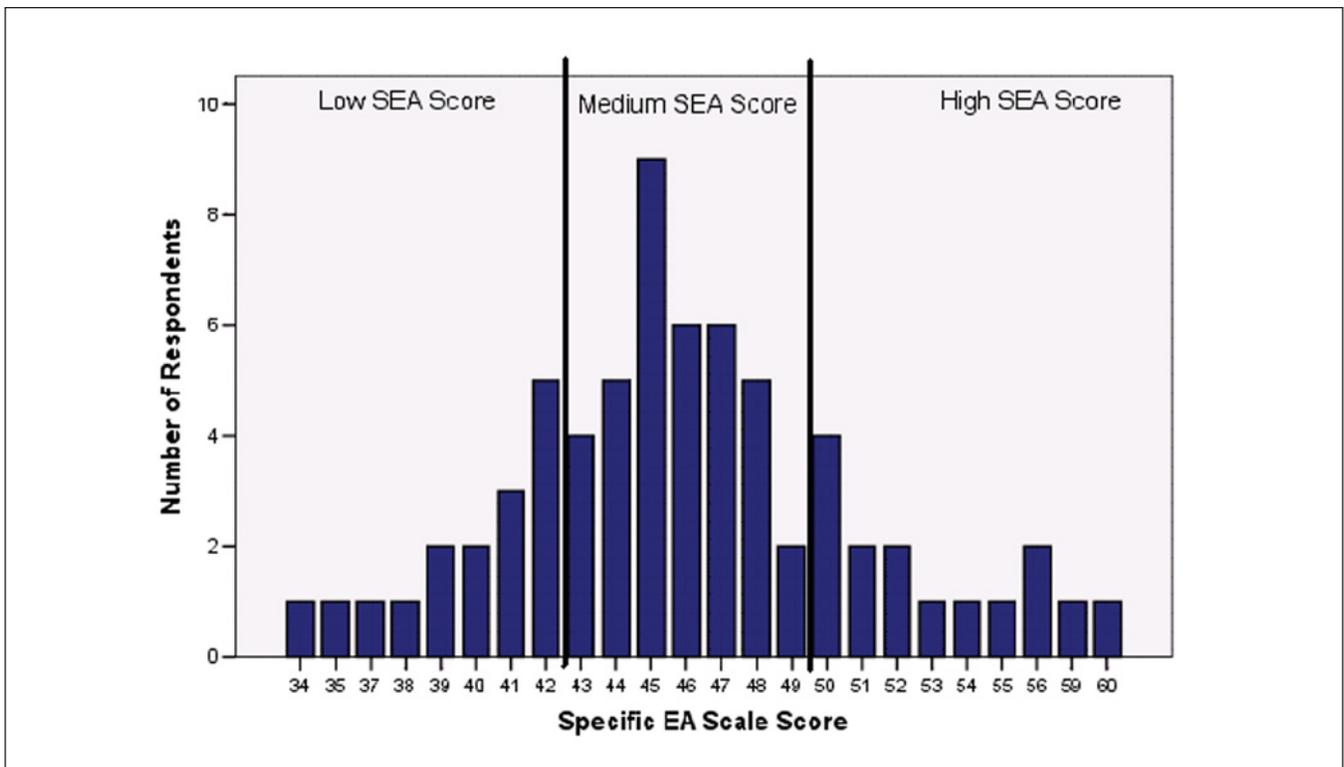


Figure 4.—Distribution of specific EA scores from the combined data set.

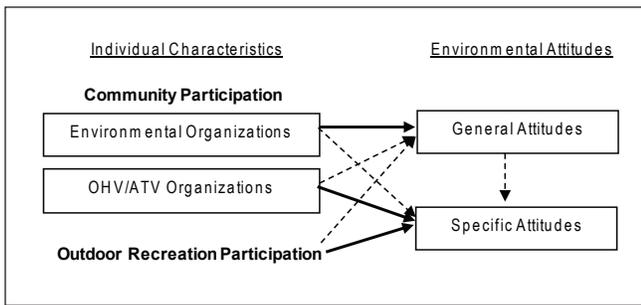


Figure 5.—Significant relationships (chi-sq tests with alpha values < 0.05) observed between study concepts. (Note: significant relationships are represented by thick solid lines; relationships with non-significant associations, but observed tendencies are represented by dashed lines.)

#### 4.0 DISCUSSION AND CONCLUSIONS

This study aimed to explore the relationship between outdoor recreation participation, environmental attitudes, and intended environmentally responsible behavior by examining variables at both general and activity-specific levels. Using a particular recreation group, OHV/ATV riders, we investigated the relationship between outdoor recreation participation, EAs, and ERBs. Previous research has suggested that specific attitudes generally correspond to specific behaviors and general attitudes correspond to general behaviors; however, this study failed to find strong associations between EA and ERB (Figure 5).

Two additional variables were also proposed to have a relationship with EA and ERB: participation in community organizations and parenthood. This study failed to find significant relationships between several of the variables that, from findings in previous studies, were hypothesized to have a relationship with EA and ERB. The lack of associations found could have resulted from several factors including the small sample size for this study.

Outdoor recreation participation was predicted to have a relationship with all measures of EA and ERB. Jackson (1986) found strong support for this trend, stating, “a stronger relationship existed between outdoor recreation and attitudes to specific aspects

of the environment necessary for pursuing such activities than between outdoor recreation and attitudes more ‘distant’ or general environmental attitudes.” In this study an increased level of participation in outdoor recreation (mainly OHV/ATV riding) lead to higher measures of specific EA and ERB but had no relationship with general measures of EA and ERB.

There was a positive association between participation in environmental community organizations and measures of general EA and ERB and another between participation in OHV/ATV organizations and activity-specific measures of EA and ERB.

While previous research has found that there is a relationship between parenthood and pro-environmental behavior, this research failed to find a statistically significant association between the two variables. While there was almost an equal split between individuals who had a child living under the age of 18 living in the household and those who did not (46 percent and 54 percent, respectively) there was no difference between these groups with respect to the measures of EA and ERB.

Attitudes are associated with the intention to engage in behaviors; thus, attitudes provide an access point for managerial influence on behavior (Manfredo et al. 1992). While this study did not find significant relationships between EA and ERB, it did find relationships between outdoor recreation participation and community participation. This suggests that providing information about environmental issues and knowledge of how to act may be the most effective way to influence attitudes and increase environmentally responsible behavior. Further studies are needed to replicate this research with a more representative sample of OHV/ATV recreationists. It might be useful to study other motorized recreation groups as well, such as snowmobiling, motor-boating and jet skiing recreationists. In future research, a larger sample size could provide more precise estimates of EAs and ERBs and better test the proposed relationships between variables.

## 5.0 ACKNOWLEDGMENTS

We appreciate the partial support of the NYS Department of Environmental Conservation and the OHV/ATV riders who agreed to participate in this study. A special thanks to the members of the North Country ATV Association (NCATVA) for their participation in this study.

## 6.0 LITERATURE CITED

- Cottrell, S.P. 2003. **Influence of sociodemographics and environmental attitudes on general responsible environmental behavior among recreational boaters.** *Environment and Behavior*. 35: 347-375.
- D'Luhosch, P. 2008. **Attitudes and perceptions of OHV operators pertaining to intentions to engage in depreciative behavior: an application of the theory of planned behavior.** Syracuse, NY: State University of New York College of Environmental Science and Forestry. M.S. Thesis.
- Dunlap, R.E.; Heffernan, R.B. 1975. **Outdoor recreation and environmental concern: an empirical examination.** *Rural Sociology*. 40(1): 18-29.
- Dunlap, R.E.; VanLiere, K.D.; Mertig, A.G.; Catton, W.R.; Howell, R.E. 1992. **Measuring endorsement of an ecological worldview: a revised NEP scale.** Paper presented at the Annual Meeting of the Rural Sociological Society, The Pennsylvania State University. University Park, PA.
- Gray, D. 1985. **Ecological beliefs and behaviors: assessment and change.** Westport, CT: Greenwood Press. 288 p.
- Jackson, E.L. 1986. **Outdoor recreation participation and attitudes to the environment.** *Leisure Studies*. 5: 1-23.
- Manfredo, M.J.; Yuan, S.M.; McGuire, F.A. 1992. **The influence of attitude accessibility on attitude-behavior relationships: implications for recreation research.** *Journal of Leisure Research*. 24: 157-170.
- Tabachnick, B.G.; Fidell, L.S. 1996. **Using multivariate statistics.** 3rd ed. New York: Harper Collins.
- Tarrant, M.A.; Cordell, H.K. 1997. **The effect of respondent characteristics on general environmental attitude-behavior correspondence.** *Environment and Behavior*. 29: 618-637.
- Thapa, B.; Graefe, A.R. 2001. **Environmental attitude-behavior correspondence between different types of forest recreationists.** In: Kyle, G., comp., ed. 2001. *Proceedings of the 2000 Northeastern Recreation Research Symposium*. Gen. Tech. Rep. NE-276. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northeastern Research Station: 20-27.
- Theodori, G.L.; Luloff, A.E.; Willits, F.K. 1998. **The association of outdoor recreation and environmental concern: reexamining the Dunlap-Heffernan thesis.** *Rural Sociology*. 63(1): 94-108.

The content of this paper reflects the views of the author(s), who are responsible for the facts and accuracy of the information presented herein.

# THE IMPACT OF PARK DEVELOPMENT ON THE LIVES OF LOCAL INHABITANTS WITHIN GROS MORNE NATIONAL PARK

---

Margot Herd  
Leisure Studies  
University of Ottawa

Paul Heintzman  
University of Ottawa  
pheintzm@uottawa.ca

---

**Abstract.**—The creation of a national park changes the local community's relationship to the land. In 1973, Parks Canada created Gros Morne National Park around existing communities and only relocated a small number of inhabitants to nearby communities. While park creation placed some restrictions on traditional activities, compromises were made to allow the continuation of some recreational and subsistence activities normally not permitted in national parks. This study investigates the local community members' perceptions of how their lives have changed since the creation of Gros Morne National Park. In-depth interviews with 12 local residents were used to discover how the establishment of the park has affected their lives in terms of their work, recreation, social, and subsistence activities, as well as their community life. This paper focuses on three themes that emerged in the interviews: restrictions placed on traditional extractive activities; relocation; and the benefit of employment created through the park and tourism.

---

## 1.0 INTRODUCTION

Before 1970, creating national parks in Canada often meant relocating residents. For example, in 1969 approximately 1,200 New Brunswick residents were relocated to other communities to create Kouchibouguac National Park, creating negative feelings among the local people (MacEachern 2001, McNamee 2002). Parks Canada changed its approach

in the case of Gros Morne National Park, established in 1973 in Newfoundland and Labrador (see Figure 1). Originally, 175 families were to be moved (MacEachern 2001), but ultimately the park boundary was drawn around six existing communities, leaving them in place and intact (McNamee 2002) (see Figure 2). This study investigates the residents' perception of how their lives have changed after the creation of Gros Morne National Park.

## 2.0 LITERATURE REVIEW

The creation of a park changes a community's access to the land. In many cases (e.g., Armando Bermudez National Park, Dominican Republic; Royal Chitwan National Park, Nepal) the local inhabitants are no longer able to participate in activities they had engaged in before the park's creation (Allendorf et al. 2007, Busch and Zube 1990, Fahey et al. 2002, Nepal and Spiteri 2008, Zube 1986), and thus there are frequently negative feelings towards the park (Busch and Zube 1990, More et al. 2008). Nevertheless, many studies have found that local populations perceive the existence of a park as beneficial. Benefits include safe drinking water (Fahey et al. 2002), increased economic opportunities (Fahey et al. 2002, More et al. 2008, Nepal and Spiteri 2008), and continuation of some traditional extractive activities (Nepal and Spiteri 2008, Nepal and Weber 1995, Allendorf et al. 2007). More research is needed in Canada to examine the relationship between local communities and established parks as well as potential park areas.

## 3.0 METHODOLOGY

Qualitative research was used to investigate whether the creation of Gros Morne National Park had had any impact on local inhabitants of the seven communities within the park. The researcher contacted residents she met while working at the park. Participants were also recruited through posters. Snowball sampling ensued.



Figure 1.—Geographical location of Gros Morne National Park in Newfoundland and Labrador. Source: Parks Canada (2009).



Figure 2.—Communities within Gros Morne National Park. Source: Parks Canada (2009).

The participants lived in one of the park communities at the time of the study, had lived in the park area for at least nine years before the park was created, and had lived there for most of the time since the park's creation. During in-depth interviews, participants were asked a series of questions to determine if, and how, the creation of the park had affected their lives. Interpretive analysis, including the constant comparison technique, was used to develop themes.

## 4.0 RESULTS

The 12 study participants (6 females and 6 males), ranged in age from 45 to 83 years. In this paper, respondents are referred to by fictitious names to protect their privacy. Five respondents were retired. Eleven of them were either employed directly by the park at some time in their life, worked in a service job that was made possible by the park, or had a family member who was employed directly or indirectly by the park. Three were employed by the park during the park's operating season as heritage presenters and trail maintenance workers.

Through the data analysis, two major themes and seven sub-themes emerged. The first major theme concerned restrictions placed on traditional land use. This theme included four sub-themes: loss of freedom; restrictions placed on traditional extractive activities; restrictions to traditional land use and recreation; and relocation. The second major theme dealt with benefits of the park and included three sub-themes: employment created through the park and tourism; protection of the natural environment and local heritage; and community development. This paper focuses on three sub-themes: restrictions placed on traditional extractive activities, relocation, and the benefit of employment created through the park and tourism.

### 4.1 Restrictions Placed on Traditional Extractive Activities

One of the rights that local inhabitants felt they had lost was the ability to access and use the land for traditional activities. Chester went as far as to say that the restriction on these activities "discourages

some people from even participating in the traditional things they used to do, as far as hunting and fishing is concerned." Hunting has been most strongly affected; there is no hunting within the park boundary so the inhabitants have to go elsewhere to hunt moose, caribou, rabbit, or ptarmigan. As Isaac said, people are "not allowed to hunt rabbits in the park...[or] big game in the park...such as moose. And you're not allowed...to trap...animals like foxes and lynx and beaver...inside the park because they're all protected." Blanche said, "you have to go farther now to hunt; you got to keep out of the park boundaries, right. It sometimes makes it a little more difficult." Chester felt that hunting had "changed somewhat, because it's only certain areas now that you can hunt. You're limited to the space that you got now."

The one exception to the hunting ban is that the local people are allowed to snare snowshoe hare in their woodcutting areas, which are located within the park. Fred felt that the one allowance about snowshoe hares was not enough stating:

*Now you got to keep...on that side of the boundary line. But it's not the same. I mean up Pond, years ago people would go up there for weeks, get enough rabbits, you know, but now you're not allowed.*

Residents are also not allowed to catch rabbits in the quantity they once did. Chester mentioned that the one method allowed to catch the rabbits is not effective:

*You can't take a firearm back there and harvest snowshoe hare; you got to use a snare, a wire... I'm just guessing this; they have to use special wire now. And that's in effect for everywhere, and the wire is very, very weak. People were saying, "Well we don't catch very many rabbits because they break the wire."*

There are also restrictions on fishing within the park boundary including how fish can be caught, where fishing can occur, and limits on the number of fish that can be taken. Isaac, an avid angler, commented that "for fishing outside the park in the province, you're allowed three lines for fishing... and in the park you're

allowed one fishing line.” Georgina said “in certain parts of the river you have to have a license to fish,” and Chester commented that “you got to have that permit to go in the park to fish, and probably have to have a park pass.”

Only local residents are allowed to cut wood and pick berries in the park. Some residents like Alan see this continued access as a benefit:

*For people that are living here we can still cut our firewood, the same as we always did. My generation of course, the next generation won't.*

There are also restrictions on the location, amount of wood, and time of year that residents can cut. Fred commented:

*Well once they put the restrictions on, they put signs up: 'no cutting,' 'you got to get a permit to cut here'... And what I find about the park, worst I find about it... There's hundreds of cords of wood blowed down there alongside that road. And they wouldn't let you cut it... It was in the park. I mean they turn around and they go half a kilometer from the inner cutting blocks and give you good timber to cut. And that was perfect timber that was blowed down... I mean the rules and the regulations they got... I don't know. I mean why, if wood blowed down along the road, why didn't they cut it?... Then up the pond, if you wanted to go up the head of the two ponds there, and cut wood...pick-up wood around the beach, or anything at all, you'd go up there and do it. But you can't do it, not allowed up there. And you got to get a permit to go to bed now.*

Berry-picking is much simpler; the residents are allowed to pick berries within the park when they are in season. As with all the other activities, however, they must have a park pass to pick berries. Daisy felt that this requirement was an unfortunate constraint to berry-picking:

*Now that's something that [has] affected the local people... The hiking trails and all that stuff... If I wanted to go down there, like we used to go down and go to Western Brook Pond, go in*

*on the bogs in there, you go berry picking. Now you can't go in there without a pass.*

## 4.2 Relocation

All participants agreed that one negative aspect of the park's creation was the relocation of a number of households in the Gros Morne area. When the park was being planned, the federal and provincial governments decided not to relocate six communities within the proposed park boundary. However, other households and small communities within the proposed park boundary were required to move to one of the six communities. Sally's Cove, a community that was slated for relocation, still exists as a park enclave. Daisy commented, “People still lives there today because some of [the residents] refused to move.” Other communities were not as fortunate and “their land was... expropriated, and they had to move. So... actually, some of those places were wiped right off the earth” (Chester).

There are still many negative feelings towards the park because of these forced relocations. Many participants felt that moving people out of their homes was unjust and unnecessary. Alan said, “Moving people out of Sally's Cove and moving people out of Lomond were mistakes.” Eddie commented that there is a lot of wilderness in the interior of the park, and that “people, except on the Avalon Peninsula, lives along the coast line...” He did not understand why the people had to be moved just to create the park, and this was a common feeling among the participants.

## 4.3 Employment Created Through Tourism and the Park

Although many of the participants were unhappy about the restrictions placed on their traditional activities, most said that the park brought benefits to the local community. The fishing and the logging industries were dying long before the park was created, so many residents had left the region to seek employment elsewhere (Newfoundland Historical Society 2008). The creation of the park offered new employment opportunities, which the participants perceived as a significant benefit.

A few participants are, or have been, employed by the park and many others commented that the park did employ some local inhabitants directly. When asked about the changes the park had caused in his life, Isaac commented: "I see positive things because I've been working with them [Parks Canada], for 22 years." Chester, who also works for the park, said: "it's the best job I ever had." Many others commented that the park brings in tourists, and that many tourism jobs have been created since the park was established. Alan commented:

*There's a lot of tourism jobs... I'd say, probably... something like 40 percent of the people, the working-aged people in our community, are working in tourism right now. Whether it be with Parks Canada directly, or in a little shop... or in a B&B or a restaurant or whatever.*

However, a couple of participants felt that there was not enough employment created for the local people and that more local people should be employed directly with the park. Blanche agreed that the park had created employment opportunities but acknowledged that some people had a different view:

*Now a lot of the income of people is based on income from tourism. But still sometimes you get people who figures there's not enough employment directly with the park.*

Daisy commented:

*"There was no employment here for us, or our family, they all had to leave home, my husband had to leave home to go to work." She thought that the park would have created more jobs for the local people but found that "the park didn't employ too many people around here. Few laborers, summertime, some of them got seasonal work. But there wasn't too many that got permanent employment in the park."*

Eddie also felt that the park should have employed more local people:

*There's probably, one third [of people] moved out now, between Trout River and Parson's Pond. And I don't see any employment. I mean the majority of people employed is not local people, you know.*

## 5.0 DISCUSSION

The creation of Gros Morne National Park limited residents' access to the land for traditional activities. This was the source of study participants' most significant objections to the park. Older participants had more objections to the restrictions and changes than did the younger participants.

In the establishment of Kouchibouguac National Park, large scale relocation was protested emphatically, and negative feelings were unanimous among residents (MacEachern 2001). In the creation of Gros Morne National Park, many residents were allowed to stay in their homes and were not asked to relocate. Of the 12 participants interviewed, 2 were relocated, and 2 were residents of Sally's Cove whose families refused to move. The participants who were relocated felt very strongly that this was a mistake, and this feeling was echoed by all other study participants who were not relocated.

Many study participants experienced benefits related to the creation and existence of the park. As with other studies, the main identified benefit was economic: parks create new employment opportunities for local people. The creation of Gros Morne National Park attracted tourists from all over the world and tourism has provided the local people with new employment opportunities in the service industry. There were also some residents employed directly by the park. There were only two residents who did not feel that the park provided economic benefits. Both lived in a community that has no park infrastructure and very few amenities for visitors. These participants did acknowledge that the park provided some economic benefit to other communities within the park but felt that their community did not benefit directly.

## 6.0 CONCLUSIONS

Local residents identified a number of positive and negative impacts that the establishment of Gros Morne National Park had had on their lives and their communities. Residents expressed negative perceptions about the relocation of a number of residents from small communities to the larger centres. Many participants stated that they were unhappy with restrictions placed on traditional land use and extractive activities. However, most felt that in general park creation was a good thing for their communities. Employment was the most commonly perceived benefit; eleven out of twelve people said that the park had at one time or another provided employment for himself, herself, or a family member. Overall, for most study participants the benefits of the park outweighed the negative feelings caused by restrictions.

## 7.0 LITERATURE CITED

- Allendorf, T.D.; Anderson, D.H.; Smith, J.L.D. 2007. **Residents' perceptions of Royal Bardia National Park, Nepal.** *Landscape and Urban Planning*. 82: 33-40.
- Busch, M.L.; Zube, E.H. 1990. **Park-people relationships: an international review.** *Landscape and Urban Planning*. 19: 117-131.
- Fahey, T.J.; Lassoie, J.P.; Schelhas, J.; Sherman, R.E. 2002. **Linking community and national park development: a case from the Dominican Republic.** *Natural Resources Forum*. 26: 140-149.
- MacEachern, A. 2001. **Natural Selections: National parks in Atlantic Canada, 1935-1970.** Montreal/Kingston, QC/ON: McGill-Queens University Press.
- McNamee, K. 2002. **From wild places to endangered spaces: a history of Canada's national parks.** In: Dearden, P.; Rollins, R., eds. *Parks and protected areas in Canada*. Don Mills, ON: Oxford University Press: 21-50.
- More, T.; Stevens, T.H.; Urdaneta, B. 2008. **Shifting national park policies and local people: a case study of Acadia National Park.** *Journal of Park and Recreation Administration*. 26(4): 105-125.
- Nepal, S.K.; Spiteri, A. 2008. **Distributing conservation incentives in the buffer zone of Chitwan National Park, Nepal.** *Environmental Conservation*. 35(1): 76-86.
- Nepal, S.K.; Weber, K.E. 1995. **The quandary of local people-park relations in Nepal's Royal Chitwan National Park.** *Environmental Management*. 19(6): 853-866.
- Newfoundland Historical Society. 2008. **A Short History of Newfoundland and Labrador.** St. John's, NL: Boulder Publications.
- Parks Canada. 2009. **Gros Morne National Park of Canada - Maps.** Available at: <http://www.pc.gc.ca/eng/pn-np/nl/grosmorne/visit/visit7.aspx>. (Accessed March 26, 2010).
- Zube, E.H. 1986. **Local and extra-local perceptions of national-parks and protected areas.** *Landscape and Urban Planning*. 13(1): 11-17.

The content of this paper reflects the views of the author(s), who are responsible for the facts and accuracy of the information presented herein.

# ***OUTDOOR RECREATION***

# ROADSIDE CAMPING ON FOREST PRESERVE LANDS IN THE ADIRONDACK PARK: A QUALITATIVE EXPLORATION OF PLACE ATTACHMENT AND RESOURCE SUBSTITUTABILITY

---

David A. Graefe  
SUNY College of Environmental Science and Forestry  
dagraefe@syr.edu

Chad Dawson, Ph.D.  
SUNY College of Environmental Science and Forestry

Rudolph M. Schuster  
U.S. Geological Survey

---

**Abstract.**—Roadside camping is a popular and widespread public outdoor recreation activity on New York State Forest Preserve (FP) lands within the Adirondack Park (AP). While several roadside camping areas exist on FP lands throughout the Park, little is known about these camping areas or the visitors who use them. Recently, debate has developed over how to define and manage roadside camping settings on these lands. State University of New York-College of Environmental Science and Forestry (SUNY ESF) researchers conducted a qualitative study in order to better understand visitor attachment to these settings and visitor perceptions regarding the substitutability of other camping settings within the Adirondack Park for roadside camping. Twenty-nine structured interviews were conducted with visitors to roadside camping areas on FP lands. This paper describes the results of these interviews and their implications for research and management.

---

## 1.0 INTRODUCTION

New York State's Adirondack Park is composed of a variety of public and private lands. Of the approximately 6 million acres of land within the Park boundary, about 2.4 million acres are considered state Forest Preserve (FP) lands, which are under the jurisdiction of the New York State Department of

Environmental Conservation (NYSDEC) (Adirondack Park Agency 2001). As stipulated in the Adirondack Park State Land Master Plan (APSLMP), the NYSDEC is responsible for managing state FP lands in a manner that provides for sufficient protection of the physical, biological, social, and psychological aspects of the natural resources. While resource protection is of paramount importance to the management philosophy of the Adirondack Park (AP), the APSLMP also stipulates that public recreational use of state FP lands should be allowed and encouraged so that current and future generations can experience and enjoy Park resources. The AP provides opportunities for the public to enjoy a variety of outdoor recreation activities across several different types of settings. Overnight camping is one activity that is offered to the public throughout the AP.

Opportunities for camping in the Adirondacks are widespread and diverse, ranging from primitive camping in state wilderness areas to public and private campgrounds with a variety of amenities and services. Public land camping settings are categorized into three types: primitive/backpacking campsites and lean-tos; campsites within developed campgrounds; and roadside camping sites. Primitive and lean-to campsites generally have an undeveloped character, have no controlled access, and are located a significant distance from a road or trailhead within the FP. Developed public campgrounds on state FP lands are concentrated collections of campsites with controlled access and associated fees per night (typically about \$20), providing users with a number of different amenities including fireplaces or fire rings, picnic tables, showers and bathrooms with running water, playgrounds, and other day use facilities. The third type of public camping setting, roadside camping, could be described as a hybrid between primitive camping and campground camping, at least in regards

to level of development and amenities provided. Roadside campsites are located on FP lands near forest roads, do not have restricted access or fees, and often provide fireplaces, picnic tables, and pit privies. Like primitive sites, roadside camping sites are free and only provide a minimal set of amenities. However, like campground sites, roadside campsites typically provide enough space for one or more vehicles/tents in the interior of the site. Consequently, camping equipment varies among roadside campsite users (e.g., recreational vehicles, trailers, pop-ups, tents).

The APSLMP provides definitions and management guidelines for both primitive campsites and developed campgrounds within the FP, but does not include such information for roadside camping areas (Adirondack Park Agency 2001). Consequently, debate has developed over how to define and manage roadside camping areas within the FP. On one side, it has been argued that roadside campsites should be considered primitive sites and should, therefore, conform to the APSLMP definition and guidelines for primitive sites. As most of the existing roadside campsites within the FP do not conform to the APSLMP definition and guidelines for primitive sites, proponents of this view have argued that roadside campsites should be removed or should be brought into compliance with APSLMP definitions and guidelines. Opponents of this view have argued that roadside campsites provide opportunities for a distinct type of camping experience and should not be included under the APSLMP definition of a primitive site. Rather, roadside camping areas should be defined as a new camping setting category for management under the APSMLP. In an effort to inform land management decisions, the NYSDEC funded State University of New York-College of Environmental Science and Forestry (SUNY ESF) researchers to conduct a study examining roadside campsite visitor characteristics and perceptions.

The need for specific information about roadside camping suggested two applicable study topics: place meanings and attachment, and resource substitutability. During the summer of 2009, SUNY ESF researchers conducted 29 structured interviews with roadside

campers in the FP. The purposes of the interviews were to: (1) gain an understanding of visitor attachment to roadside camping areas; (2) obtain visitor perspectives regarding the comparability between the three types of camping opportunities in the FP; and (3) aid in the development of an in-depth quantitative field survey measuring visitor place attachment and resource substitutability. The purpose of this report is to summarize the results of the 29 interviews and discuss their implications for further research.

## 2.0 REVIEW OF LITERATURE

The following paragraphs provide a review of existing literature concerning sense of place, place meanings, place attachment, and recreation substitutability. While not comprehensive, the following brief reviews are meant to introduce basic information regarding these topics as they relate to this study.

### 2.1 Sense of Place, Place Meanings, and Place Attachment

The types of meaning that individuals ascribe to recreation places and the types of relationships that people form with places have been topics of considerable study in the field of outdoor recreation management. Williams and Stewart (1998) defined sense of place as “the collection of meanings, beliefs, symbols, values, and feelings that individuals or groups associate with a particular locality” (p. 19) and explained that physical space, in and of itself, does not necessarily encompass all aspects of place within its boundaries. Rather, certain spaces become places over time as people experience these spaces/settings and begin to assign meaning and value to them. Consequently, a single space could represent a number of different, or even competing, places to different people or groups. Also, place meanings are dynamic and can change as a result of social, economic, and political pressure. As stated by Tuan (1980), “people are constantly making and unmaking places by talking about them... a place is its reputation” (p. 6).

The concepts of place and place attachment have been studied from a variety of perspectives and disciplines. However, many researchers in the field of

outdoor recreation have adopted an approach based in environmental psychology, which views place attachment as a positive connection or bond between a person and a particular place (Williams and Vaske 2003). Many dimensions of place attachment have been examined such as dependence and identity (Williams and Vaske 2003), rootedness (Tuan 1980), lifestyle (Bricker and Kerstetter 2000), familiarity and belongingness (Hammit et al. 2004), and others. However, Williams and Vaske (2003) explain that the two dominant dimensions of place attachment that have emerged in outdoor recreation research are place dependence and identity.

Place dependence refers to a functional attachment to a particular setting and reflects the importance of a place in regards to its provision of features and the conditions necessary for the realization of outdoor recreational goals. Place dependence is related to the physical aspects of a place such as the resource opportunities that it provides (e.g., number of trails, range of technical difficulty of trails, social setting) and its proximity to recreationists' homes. While settings that are utilized mostly by local recreationists may be ideal for the facilitation of place dependence, Williams and Vaske (2003) indicated that these functional attachments also form within larger settings that attract a variety of regional and international visitors.

A second primary dimension of place attachment has been termed place identity. Williams and Vaske (2003) described place identity as "the symbolic importance of a place as a repository for emotions and relationships that give meaning and purpose to life" (p. 831). Place identity is associated with the formation of self-identity, enhanced levels of self-esteem, increased feelings of belongingness within one's community, and increased communication regarding environmental values and policy. Williams and Vaske (2003) have also suggested that place identity generally evolves through psychological investments with a recreational setting that develop over time. Consequently, place dependence may develop into feelings of place identity, although place dependence may not be a necessary determinant of place identity.

## **2.2 Recreation Substitution and Substitutability**

While early research on recreation substitutability focused mostly on participation in activities, some research has shown that the concept of substitutability may be influenced by recreational settings as well. Shelby and Vaske (1991) developed a typology of substitution alternatives based on both the activity and the setting in which it is pursued. Four types of recreation substitution were proposed. (1) Temporal/strategic substitution involves participating in the same activity in the same setting but during different times or areas within the setting, similar to temporal and spatial displacement concepts (Hall and Shelby 2000). (2) Resource substitution involves continuing to participate in a specific activity but choosing to do so in a different setting; this substitution alternative might be most attractive in areas where similar resources exist in close proximity to each other. (3) Activity substitution occurs when a person continues to visit the same setting but chooses to participate in a different recreational activity; this type of substitution might be particularly prevalent in recreational areas where visitors perceive the setting as unique or special or in areas where there is a lack of alternative recreation sites. (4) Activity and resource substitution, which the authors viewed as a last resort for recreationists when activity substitutes do not exist within a setting and when resource substitutes do not exist within a region.

Shelby and Vaske (1991) used these four types to investigate the substitutability of two river recreation areas in New Zealand. The results indicated several reasons that visitors did not consider the two similar settings to be substitutable: longer driving distances, increased expenses, poor quality activity experiences, crowding, and lack of scenery. The authors suggested several considerations for future research concerning recreation substitutability. First, they argued that while much research has focused on activity substitutability, outdoor recreation managers might be more interested in resource substitutability, especially if considering management alternatives that require closures of areas previously used for recreation. They also suggested that researchers focusing on resource substitutability

should: (1) identify variables that may affect peoples' willingness to substitute; (2) consider resource characteristics in conjunction with user perceptions of those characteristics; and (3) be aware that resource substitutes may not be symmetrical (site A is an acceptable substitute for site B, but not the opposite).

Brunson and Shelby (1993) discussed the limitation of activity-focused recreation substitutability research and redefined recreation substitution as "the interchangeability of recreation experiences such that acceptably equivalent outcomes can be achieved by varying one or more of the following: the timing of the experience, the means of gaining access, the setting, and the activity" (p. 69). Brunson and Shelby also identified several questions that remain relatively unanswered regarding recreation substitution and suggested a number of tasks for future researchers: (1) determining "acceptable equivalence" (i.e., how should equivalence of recreation experiences be determined and measured?); (2) further testing of the resource-activity typology; (3) examining the relationship between recreational intentions and actual behaviors; (4) examining trade-offs associated with temporal and strategic substitutes; (5) examining the effects of activity on resource substitutability (e.g., specialization); (6) examining the effects of place attachment measures on substitutability; (7) better understanding peoples' choices to participate in nonequivalent substitutes; (8) combining temporal and less similar substitutes (i.e., when an alternate time is substituted, what does the participant do during the time of the original activity?); and (9) integrating research on substitutability and leisure constraints.

### **3.0 RESEARCH DESIGN AND METHODS**

The data in this paper were collected as part of a larger research project conducted during the summer of 2009 for the purpose of better understanding roadside camping areas on FP lands in the Adirondack Park and the visitors who use those camping areas. The larger research project consisted of three phases. During the first phase, an inventory of roadside camping areas was conducted in order to locate and assess roadside campsites existing on FP lands. The

second phase, which is the primary focus of this paper, involved conducting structured interviews with visitors to roadside camping areas. These first two phases were conducted simultaneously and researchers interviewed campers they encountered during the inventory process. Thus, a convenience sample was created for the qualitative phase of the study. Data collected during the first two phases were used to help inform the development of the final phase of the overall research project, which involved an onsite camper survey and a follow-up mail-administered questionnaire. As noted, the focus of this paper is on the data collected during the structured interview portion of this study (phase two only).

Structured interviews were conducted with visitors to roadside camping areas during the months of May and June in 2009. Twenty-nine interviews (over 90 percent response rate) were conducted within six different FP Management Units that included the majority of roadside camping areas: Black River Wild Forest, Ferris Lake Wild Forest, Jessup River Wild Forest, Moose River Plains Wild Forest, Horseshoe Lake Wild Forest, and Saranac Lake Wild Forest. A roving intercept sampling method was used and interviews were conducted at visitors' campsites. Visitor participation was voluntary and interview participants remained anonymous. Upon completion of each interview, participants were compensated with a small camping-related gift, not exceeding \$5 in value, for their time and effort.

Interviews typically lasted between 20-60 minutes and were audio recorded with the permission of each participant. Interview recordings were then transcribed and data were coded using the Nudist N6 software package. A content analysis was conducted in order to reduce response data to meaningful categories related to place attachment and/or comparisons between the three types of camping settings described above. One coder did the entire content analysis and then a second coder did a 10 percent random selection independently. The coding of the sampled content was highly correlated with the original coder's analysis and, therefore, the coding was reliable.

Nineteen questions were included on the structured interview instrument. The instrument was designed to collect visitor perspectives on a variety of topics. However, while a variety of topics were discussed during the interviews (e.g., visitor background information, motivations, management concerns), this paper only summarizes visitor responses to interview questions that were related to place attachment, place dependence, and camping setting comparisons.

## 4.0 RESULTS

The following subsections describe four content categories that emerged from participant responses: place attachment; place dependence; comparisons between roadside camping and campground camping; and comparisons between roadside camping and primitive camping. The data categorized were far too numerous to provide a complete description of the results within this paper. Consequently, the following sections outline the major themes that emerged in relation to these four content categories and provide examples of data coded within them.

### 4.1 Themes Related to Place Attachment

Visitors were asked to describe any emotional attachment that they felt towards the roadside camping area that they were visiting or towards the Adirondack Park in general. The majority of campers indicated that they were emotionally attached to the camping area they were visiting. Seven themes emerged from the participants' descriptions of attachment to the setting.

#### 4.1.1 Memories

The most widely mentioned source of attachment was a person's personal and/or family history with the area and nostalgia, or peoples' cherished memories of previous experiences with the area. The following quote provides an example of response data coded within this theme:

*Absolutely, ever since I was a little guy, there's camping stories that have been around since before this road was actually drivable back in the 50s and 60s. My parents were up here*

*camping, they had jeeps, you were able to access whatever you could drive to at that point, so there's pictures and stuff floating around like that...nostalgia from the 60s, years ago now, so definitely an emotional attachment.*  
(Interview #4)

#### 4.1.2 Setting as a Central Part of Visitors' Life Identities

Campers indicated that they had such a rich history with the camping area that it had become a central part of their lives. One visitor commented:

*I think if I hadn't been coming here for as many years as I have my life would have a big chunk missing from it. This is a piece of my life that I rely on that makes my year. Everybody has markers throughout the year, and the June camp out here in the past, it's gelled at this point, and I could see me camping for the rest of my life, and if I didn't, there'd be a hole.* (Interview #21)

#### 4.1.3 Feeling at Home While Visiting Roadside Camping Areas

Participants described feeling at ease or "at home" while in their roadside camping area or in the surrounding natural area. One visitor said:

*Emotional attachment? Oh yes...Now, if you come up here during hunting season, you'll see the same tents year after year. It's first come first serve, but out of respect I don't set up on your site if you don't set up on mine. We know it's not ours, but if you go to the same place every year so many times, it's like your home.*  
(Interview #9)

#### 4.1.4 General Fondness or Love Associated with Roadside Camping Area Visited

Participants discussed enjoyment that they felt towards the camping area that they were visiting. For example, one visitor commented:

*Just we really enjoy it, love it. Glad she talked me into doing it.* (Interview #19)

#### 4.1.5 Opportunities to Interact with Natural Beauty and Wildlife

Respondents discussed being attached to the roadside camp they were visiting as a result of the interactions with nature and wildlife that they experienced within the setting. One visitor said:

*I just enjoy God's creation. No matter where you look it's just so beautiful. In a couple more months I'll be eating raspberries, strawberries, blueberries...all the streams and just everything about it, it's just so awesome. (Interview #15)*

#### 4.1.6 Concern about Potential Loss of Access to Roadside Camping Areas

Participants mentioned feeling concerned or worried about losing access to the camping area that they were visiting. One person said, "If they got rid of this I would be totally bummed" (Interview #17). Another participant commented:

*I would hate the government that passed that legislation. Any politicians involved with that process that voted for that, I would vote against those guys . . . I would definitely challenge them. It's that important to me that they not put a restriction on that kind [roadside] of camping. (Interview #9)*

#### 4.1.7 Visitor Willingness to Pay for Roadside Camping Areas

Participants explained that they would be willing to pay a fee in order to use the roadside camping area that they were visiting. One of them reported:

*I wouldn't care if they put a gate up there and charged us \$5 to come through that gate. That's how much we like it here. (Interview #25)*

### 4.2 Themes Related to Place Dependence

A broad question related to emotional attachment was useful for gaining an understanding of some of the types, or dimensions, of attachment that are important to roadside camping area visitors. While a number of meaningful themes emerged that were related to emotional attachment, researchers were also interested in understanding potential functional attachments to roadside camping areas, or place dependence.

Therefore, interview participants were asked whether or not they felt like they depended on roadside camping areas for their outdoor recreational pursuits, and why.

About a third of the respondents indicated that they did depend on roadside camping areas, another third of the respondents indicated they did not, and the others were more neutral. Responses of those participants who did depend on roadside camping areas were categorized into three themes.

#### 4.2.1 Unique Opportunity

Participants depended on roadside camping areas because they provide opportunities for a unique type of camping experience that could not be found elsewhere. One person said:

*Yeah I'd say so. I mean we could probably stay at a motel or something, but it wouldn't be the same experience. It's not what we're looking for. We could stay in Indian Lake [campground] somewhere, rent a cabin or whatever for the week or two, but it's definitely not what we're trying to do. This is what we're trying to do. (Interview #27)*

#### 4.2.2. Physical Abilities

Some participants indicated that they depended on roadside camping areas because they were limited in their physical abilities and could no longer travel to primitive tent sites, which are often located a significant distance into the interior of the forest. For example, one person explained:

*Yeah I do. It's so great for me, there's no way I could hike back into a place like that [primitive site]. There's just no way I could do it, and here I just pull up and I'm here. (Interview #15)*

#### 4.2.3 Costs Associated With Different Types of Camping

Participants indicated they were dependent on roadside camping areas because they could not afford, or did not wish to pay for, camping in other areas. One participant stated:

*Yeah, for camping. Yeah because it really is a convenience, one of the cheapest vacations you can take. The state campgrounds, they're not cheap.* (Interview #29)

### **4.3 Visitor Comparisons of Roadside Sites and Campground Sites**

Roadside camping visitors were asked whether or not they had previously stayed in state campgrounds within the AP. Those who reported having previous experiences with this type of setting were then asked to compare their camping experiences between roadside camping settings and campground settings. Responses to this line of questioning were coded into five themes.

#### **4.3.1 Differences in Social Atmospheres**

Most participants indicated that they felt the state campgrounds were too crowded and/or noisy and that roadside areas allowed for more personal privacy. One individual stated:

*It's just different, because right here there's nobody camping near us. It's like being in the wilderness. We're not packed into a campground.* (Interview #17)

Another participant commented:

*I like coming in here because there're not a lot of people. You can go hiking up to the ponds. It's just a nice outdoor experience versus going to [a state campground] where everybody's on top of each other.* (Interview #16)

#### **4.3.2 Differences in Amenities and Types of Groups Who Enjoy Them**

Respondents indicated that campgrounds and the amenities provided within them are nice for certain types of groups, while roadside areas and their more-limited set of amenities are better for other types of groups. One person stated about group type:

*There are a couple [campgrounds] around here but we don't stay in them because we don't have family and kids. If we had family and kids we'd stay at a park where there are showers and all. We just come out and camp like this, we've got*

*our own water, our own food. I would much rather do this.* (Interview #17)

#### **4.3.3 Differences in Cost**

Participants mentioned the higher cost involved in campground site use. One participant commented:

*Well, to me roadside campsites are more for your average person who doesn't have a lot of extra money to throw around. We can come up here a whole lot cheaper than we could go to a state campground for.* (Interview #1)

#### **4.3.4 Differences in Freedom Experienced by Visitors**

Participants described feeling a greater amount of freedom from restrictions when visiting roadside camping areas. One person commented:

*Last night my daughter was raising a ruckus, screaming and such. If we were in a campground and she was doing that the ranger would be like hey keep it down. Here you don't have to. You can sit out here and howl at the coyotes and stuff at night and let them howl back. You have a good time. We wouldn't get totally out of control, but you don't have to worry about the neighbors.* (Interview #24)

#### **4.3.5 Level of Primitiveness Associated With Each Type of Camping Area**

Participants explained that they felt roadside camping was a more primitive type of camping experience than camping in a campground. One of them said:

*I don't want to degrade state campgrounds and regular campgrounds, because they're really nice, but it's just not for me. I just want to be in the wilderness.* (Interview #15)

### **4.4 Visitor Comparisons of Roadside Sites and Primitive Sites**

In addition to comparing roadside and campground camping, respondents were asked to compare their roadside camping experiences with their experiences camping in primitive tent sites or lean-tos. Five themes emerged out of the responses to this question: one related to similarities and four related to differences.

#### 4.4.1 Similarity between Camping in Each Setting

While most of the responses were focused on identifying differences between camping at the two settings, some participants commented on a general similarity between roadside camping and primitive camping:

*I don't know if there's such a difference. It's different in that you're restricted in what you take, what you need to take, but then make do with what you've got on your back. Same experience, different amount of equipment I guess. (Interview #27)*

#### 4.4.2 Differences in Amount of Effort Required to Camp

Participants commented on the different amounts of effort required to camp in roadside and primitive tent sites:

*I like to come just because there are certain times when I like to do the lazy kind of camping instead of backpacking and stuff like that. I can bring the creature comforts, some chairs and stuff, and also kids. I can't fold my son up and put him in a backpack and go in too deep with him because I end up carrying everything. It's just an easier type of camping. (Interview #13)*

#### 4.4.3 Differences in Vehicle Use

Participants commented on the importance of using vehicles while roadside camping compared to primitive tent camping. One participant said:

*I know that roadside camping is a beautiful thing. There are a lot of people who just leave a lot of their stuff in their vehicle, work out of the back of their vehicle. It's safer, cleaner. (Interview #17)*

Another participant commented:

*One of the biggest reasons we come up here is because you can drive right to them [roadside campsites]. (Interview #25)*

#### 4.4.4 Differences Related to Secondary Activities and Experience Intentions of the Visitor

Participants indicated that reasons for using primitive sites differed from reasons for using roadside camping areas. One participant commented:

*I go there [primitive sites] with different intentions...rock climbing or hiking...that's just a base camp. This is more of a sit and hang out. (Interview #28)*

#### 4.4.5 Differences in Level of Primitiveness and Privacy

Participants mentioned that they felt primitive tent sites provided a better opportunity to experience privacy, solitude, or quietness. One of them stated:

*They're both [roadside and lean-to camping] great. That's [lean-to?] actually quieter; you don't have people going by all the time and all that stuff. (Interview #1)*

### 5.0 SUMMARY AND DISCUSSION

The content analysis performed for this study provided valuable information for managers and researchers of roadside camping areas on FP lands within the AP. A number of themes emerged from the participants' responses and provided useful information regarding three research questions: (1) sources or types of emotional attachment to roadside camping areas, (2) sources or types of visitor dependence on roadside camping areas, and (3) potential reasons why roadside camping areas, campgrounds, and primitive tent sites may or may not be perceived by roadside campers as acceptable resource substitutes. Such information was particularly valuable in creating comprehensive and meaningful quantitative measures of place attachment and resource substitutability for surveying a much larger and more representative sample of roadside campers on FP lands in the Adirondacks.

The study results provide preliminary support for the belief that visitors to roadside camping areas on FP lands in the AP are both emotionally and functionally attached to these areas. Additionally, while some roadside campers perceive primitive

tent sites to be substitutable for roadside sites, others reported a lack of substitutability between roadside campsites and campgrounds. Thus, the level of substitutability between roadside camping settings and primitive settings seems to be higher than the level of substitutability between roadside settings and campground settings. Of course, due to the design of the exploratory research phase discussed in this paper, these results cannot be generalized to the population of roadside campers in the AP. The convenience sample, the sampling timeframe, and the limited number of sites included in the sampling frame resulted in an unrepresentative sample of the roadside camper population within the Park.

The utility of this research, rather, was to gain a rich qualitative understanding of the types/ dimensions of attachment and dependence that are most relevant to roadside camping areas and their visitors and to identify variables that are relevant to visitor perceptions of resource substitutability. This information was largely unknown in the Adirondack Park and only rarely reported in published literature. The next phase of this research was to develop a quantitative survey instrument to further study the population and be able to measure population characteristics related to place attachment and resource substitutability.

While a few participants discussed a general similarity between camping in roadside settings and camping in primitive tent sites, many other participants discussed specific differences between these two settings. Several participants described differences between these two settings in relation to the amount of effort required to use them and the use of vehicles during the camping experience. Also, several participants indicated that they were dependent on roadside camping areas for their recreation because they were limited in their physical ability and could not access primitive tent sites located within the interior of forests. However, the extent to which people would be limited in this fashion cannot be determined by the data presented here. Future research, such as the subsequent quantitative phase of this overall research project, will address this question in order to

gain a more complete understanding of visitor place attachment and perceptions of resource substitutability for camping on FP lands in the AP.

## 6.0 LITERATURE CITED

- Adirondack Park Agency, New York State  
Department of Environmental Conservation.  
2001. **Adirondack Park state land master plan.**  
Raybrook, NY.
- Bricker, K.S.; Kerstetter, D.L. 2000. **Level of specialization and place attachment: an exploratory study of whitewater recreationists.** *Leisure Sciences.* 22: 233-257.
- Brunson, M.W.; Shelby, B. 1993. **Recreation substitutability: a research agenda.** *Leisure Sciences.* 15: 67-74.
- Hall, T.; Shelby, B. 2000. **Temporal and spatial displacement: evidence from a high-use reservoir and alternate sites.** *Journal of Leisure Research.* 32(4): 435-456.
- Hammitt, W.E.; Backlund, E.A.; Bixler, R.D. 2004. **Experience use history, place bonding, and resource substitution of trout anglers during recreational engagements.** *Journal of Leisure Research.* 36(3): 356-378.
- Shelby, B.; Vaske, J.J. 1991. **Resource and activity substitutes for recreational salmon fishing in New Zealand.** *Leisure Sciences.* 13: 21-32.
- Tuan, Y. 1980. **Rootedness versus sense of place.** *Landscape.* 24(1): 3-8.
- Williams D.R.; Stewart, S. I. 1998. **Sense of place: an elusive concept that is finding a home in ecosystem management.** *Journal of Forestry.* 96(5): 18-23.
- Williams, D.R.; Vaske, J.J. 2003. **The measurement of place attachment: validity and generalizability of a psychometric approach.** *Forest Sciences.* 49(6): 830-839.

The content of this paper reflects the views of the author(s), who are responsible for the facts and accuracy of the information presented herein.

*CLIMATE CHANGE AND  
RESOURCE PLANNING*

# CLASSIFICATION OF FOREST-BASED ECOTOURISM AREAS IN POCAHONTAS COUNTY OF WEST VIRGINIA USING GIS AND PAIRWISE COMPARISON

---

Ishwar Dhama  
Division of Forestry and Natural Resources  
West Virginia University  
idhami@mix.wvu.edu

Jinyang Deng, Ph.D.  
West Virginia University

---

**Abstract.**—Many previous studies have examined ecotourism primarily from the perspective of tourists while largely ignoring ecotourism destinations. This study used geographical information system (GIS) and pairwise comparison to identify forest-based ecotourism areas in Pocahontas County, West Virginia. The study adopted the criteria and scores developed by Boyd and Butler (1994) with some modifications to prepare thematic layers for the different criteria. Weights for each criterion were determined using pairwise comparison. Finally, the weighted thematic layers were overlaid to generate areas suitable for ecotourism, which were then divided into five classes based on equal interval methods. The results show the location, size, and classes of ecotourism sites in the study area. This information and this type of analysis could be used to help ecotourists select sites to visit based on their preferences.

---

## 1.0 INTRODUCTION

Tourism is one of the largest industries in the world (World Tourism Organization 2006), and ecotourism is growing faster than the tourism industry itself, with an estimated yearly growth rate of 20-34 percent since the 1990s (TIES 2005). Ecotourism aims to minimize environmental impacts and contribute to the economic development of local communities and has shown potential for successfully funding conservation and sustainable development programs (Drumm and Moore 2005).

The philosophy of ecotourism was proposed in the early 1980s to address the environmental and social consequences of tourism. Ecotourism, as an alternative to mass tourism, was advocated to espouse the goal of symbiosis through the integration of natural resources, environmental education, and sustainable management. Over the past few decades, ecotourism has become a major source of income generation (Olinda 1991, Whelan 1991). However, ecotourism with its growing popularity and increasing pressures on natural areas may generate problems of its own (Deng et al. 2002). With the growth of ecotourism, the question about the extent to which new areas can support ecotourism physically and socio-culturally has drawn the attention of many researchers.

Although it is increasingly recognized that the maintenance of ecological integrity and environmental quality is essential for sustainable tourism development, ecotourism has been examined primarily from the perspective of tourists while largely ignoring one fundamental component—the destinations. Ziffer (1989) emphasized the need to set up standards by which ecotourism destinations or programs can be identified and judged. Boyd and Butler (1993) developed criteria for ecotourism for Northern Ontario then Boyd et al. (1994) used GIS to identify ecotourism areas in Northern Ontario and classify the areas into five different types based on a naturalness continuum. Although they developed criteria and gave scores to different attributes within each of the criteria, Boyd et al. (1994) did not consider the relative importance of each of the criteria. Jankowski (1995) argued that selection of land use allocation requires decisionmakers to consider the importance of different criteria in choosing the best alternative. He presented a framework for integrating geographical information systems (GIS) and multi-criteria decisionmaking (MCDM) methods using a file exchange module and four different MCDM computer programs.

Many studies have used fuzzy theory and analytic hierarchy process (AHP), one of the methods of MCDM, for site selection involving concerned stakeholders in various fields (Kahraman et al. 2003, Strager & Rosenberger 2006). A combined GIS and AHP-based approach has also been adopted for site selection problems, for example by Aguilar-Manjarrez and Ross (1995) for aquaculture development, by Tseng et al. (2001) for artificial reef development, and by Sener et al. (2006) for landfill site selection. AHP basically involves pairwise comparison to create a ratio matrix and produces the relative preference weight for each criterion (Saaty 1980).

Although there are a wide range of studies on the site selection problem, the authors know of no studies on site selection for ecotourism destinations with the involvement of stakeholders in an analytical framework. It should be noted that assessing the quality of natural areas would be more effective than assessing tourist facilities from the perspective of long-term sustainability (Font & Mihalic 2002). This requires appropriate criteria and indicators for the ecotourism areas within an appropriate framework. For ecotourism to be sustainable, there is a need to identify potential areas which could be developed as ecotourism destinations based on acceptable standards and criteria. Thus, the general objective of this study is to apply GIS and pairwise comparison to identify forest-based ecotourism areas in the Pocahontas County of West Virginia, USA. Ecotourism in this study is defined as “environmentally responsible travel and visitation to relatively undisturbed natural areas, in order to enjoy and appreciate nature (and any accompanying cultural features - both past and present), that promotes conservation, has low negative visitor impact, and provides for beneficially active socio-economic involvement of local populations” (Ceballos-Lascurain 1996). Forest-based ecotourism areas in this study refers to areas that are primarily dominated by forests with water bodies (i.e., lakes, rivers) as backdrops and cultural or heritage sites as supplementary attractions. Thus, forest-based ecotourism includes highly forested national parks and protected areas as well as national and state forests with the potential to be developed into ecotourism destinations.

## 2.0 METHODOLOGY

### 2.1 Study Area

The long-term objective of this study is to identify forest-based ecotourism in the entire state of West Virginia. However, to test the methods developed, Pocahontas County was examined first as a pilot site. Pocahontas County is the richest county in West Virginia in terms of natural amenities (Wang 2008).

### 2.2 Model Design

This study is based on a suitability index (S) model developed by Eastman et al. (1995) which is a common aggregation function that combines preference weights ( $w_i$ ) and criterion scores ( $x_i$ ) and is usually calculated through weighted linear combination.

$$S = \sum w_i x_i \quad (1)$$

However, applying the suitability model in MCDM consists of two steps: formulating an evaluation matrix E consisting of I \* J standardized criterion scores (e) for I criteria across J alternatives and a group preference weight vector W consisting of preference weights (w) for each criterion i (Jankowski and Richard 1994):

$$E = \begin{bmatrix} e_{11} & \dots & e_{1j} \\ \dots & \dots & \dots \\ e_{i1} & \dots & e_{ij} \end{bmatrix} \quad (2)$$

and

$$W = (w_1, w_2, \dots, w_i), \sum_{i=1}^I w_i = 1 \quad (3)$$

The basic form of the weighted linear combination model can be expressed as

$$\begin{bmatrix} s_1 \\ \dots \\ s_i \\ \dots \\ s_j \end{bmatrix} = \begin{bmatrix} e_{11} & \dots & e_{1j} \\ \dots & \dots & \dots \\ e_{i1} & \dots & e_{ij} \end{bmatrix} * \begin{bmatrix} w_1 \\ \dots \\ w_i \\ \dots \\ w_j \end{bmatrix} \quad (4)$$

The weighted linear combination method can easily be integrated spatially in GIS by using raster-based map algebra (Strager and Rosenberger 2006). In Eq. (2), E can be measured in GIS by raster- or grid-based spatial analysis techniques. Typically, all criterion scores are standardized to a common numeric range such as 0-1 or 0-100 before aggregation. With values represented in equal scales, GIS grid layers can be used to represent each of the criteria, I, in a spatial context. The alternatives J comprise the cell locations for the extent of a study area and the values from Eq. (4) represent the suitability S for a location.

### 2.3 Criteria and Score

For the identification of forest-based ecotourism sites, this study follows the criteria and score developed by Boyd and Butler (1994) with some modifications. First, the naturalness continuum was developed (Figure 1) and the criteria were selected. The selected criteria were remoteness, wildlife potential areas, distance from logging, distance from mining, slope, and vegetation cover. Thematic layers were prepared for each criterion by assigning scores ranging from 1 to 5 to the different attributes within the criteria based on naturalness of the area (Table 1). Higher scores represent the best sites for forest based-ecotourism (pristine conditions) whereas lower scores represent the least suitable sites (urban conditions). For example, for remoteness criteria, this study follows the Recreation Opportunity Spectrum and divides the study areas from primitive (score 5) to urban/town area (score 1). Finally, an overlay of all thematic layers was done to generate areas suitable for ecotourism. The resulting map was then classified in to five different classes based on equal interval classification method and the layers of town, roads, and water bodies were merged to get the final map.

### 2.4 Pairwise Comparison Method

Pairwise comparison was done to determine the relative importance of the criteria. A survey using a self-administered questionnaire was carried out among 28 participants from West Virginia University, including 17 undergraduate students taking an ecotourism class, 9 graduate students, and 2 faculty

members from the Recreation, Parks, and Tourism Resources Program. Participants were asked to assign a number to indicate the relative importance of one criterion against another based on the scale adapted from Strager and Rosenberger (2006). Table 2 shows the intensity of importance and their explanation used for this study.

The study adopted the following AHP conceptual model from Duke and Aull-Hyde (2002). The criteria were defined and assembled as one matrix for participants to perform pairwise comparisons. The matrix can take the following form:

$$A = \begin{bmatrix} a_{11} & a_{12} & \dots & a_{1n} \\ a_{21} & a_{22} & \dots & a_{2n} \\ \dots & \dots & \dots & \dots \\ a_{m1} & a_{m2} & \dots & a_{mn} \end{bmatrix} \quad (5)$$

The  $a_{mn}$  values represent the relative degree of importance of criterion m over criterion n. To combine the responses, the geometric mean was used because this is an effective method for calculating an overall rating (Benjamin et al. 1992, Schmoldt et al. 1994). With a survey of p respondents, a composite judgment of their  $a_{mn}$  values is the geometric mean of the  $a_{mn}$  values, which is defined as

$$a_{mn}^* = \sqrt[p]{\prod_{k=1}^p a_{mn}^k} \quad (6)$$

With the geometric averaged  $a_{mn}^*$  values, a set of numerical weights  $w_1, w_2, \dots, w_i$  may be computed to represent the relative degree of importance assigned to each criterion (Strager and Rosenberger 2006). Based on the properties of matrices, a consistency index (CI) can be calculated to measure the consistency of participants' judgment in the process of pairwise comparison of criteria using the following formula.

$$CI = (\lambda_{max} - n) / (n-1) \quad (7)$$

where n denotes the size of the comparison matrix (number of rows or column). The more consistent the comparisons are, the closer the value of  $\lambda_{max}$  is (largest eigen value) to n.

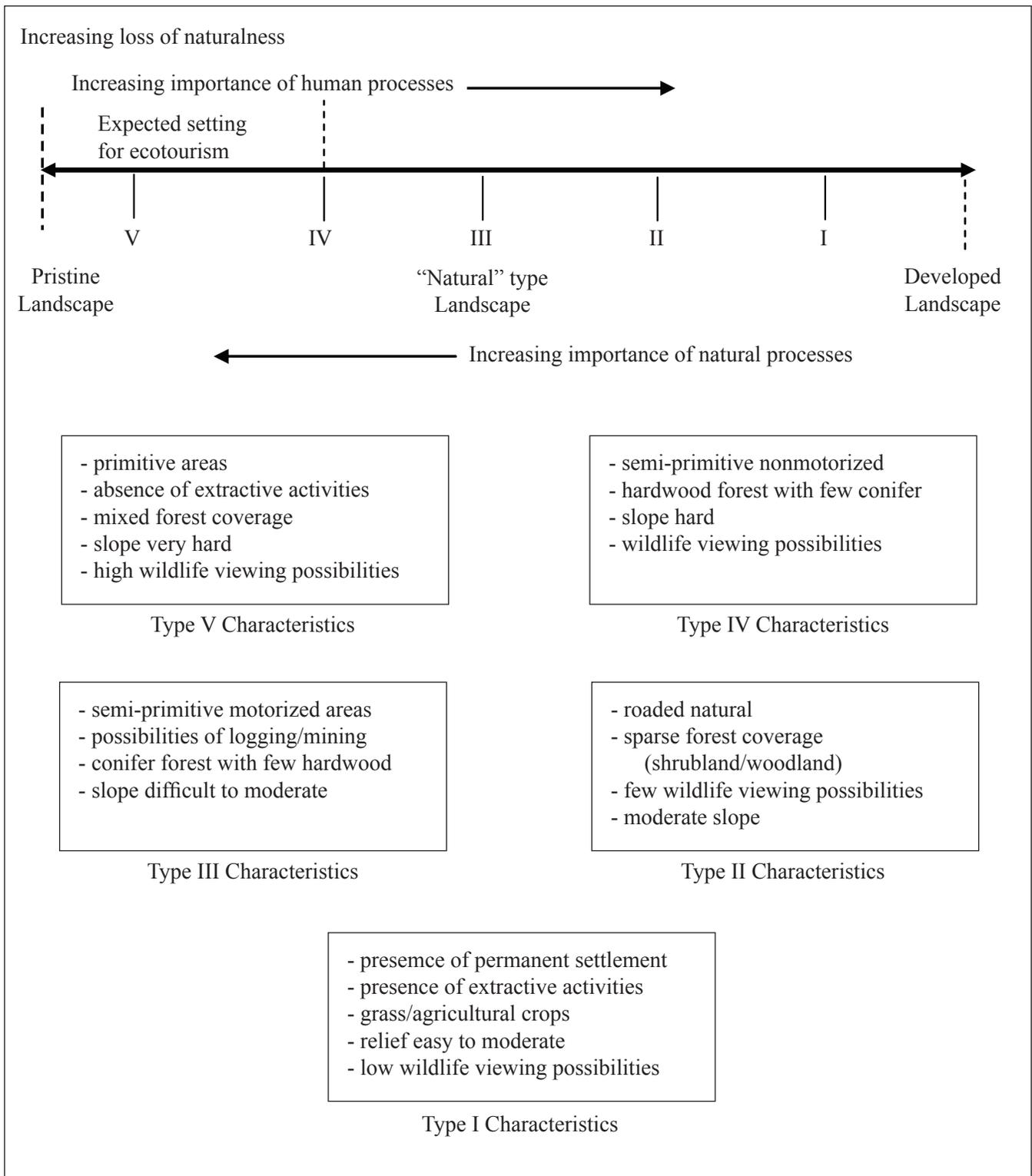


Figure 1.—Naturalness continuum (Source: Boyd and Butler 1994).

**Table 1.—Criteria, scores and attributes to establish an area's naturalness**

Score	Criteria/Type	Attributes
<b>Remoteness</b>		
5	Primitive	> 3 mi from all roads
4	Semi-primitive non motorized	< 3 mi from all roads >1/2 from unimproved roads
3	Semi-primitive motorized	<1/2 from unimproved roads >1/2 from improved roads
2	Roaded Natural	<1/2 from improved roads
1	Town/Urban area	<1/2 from improved roads and presence of settlement
<b>Vegetation</b>		
5	Mixed forest	Includes non high-elevation forest types such as oak–pine forest. Typically occur as xeric or dry forests along ridges and south–facing slopes in the less mountainous areas of the state.
4	Hardwood forest	Hardwood forests that dominate the areas in the state.
3	Coniferous forest	Single-species planted conifer stands. Can also potentially include Christmas tree farms.
2	Shrubland/woodland	Includes natural shrubland and wooded areas with immature closed canopy forest cover.
1	Grassland and agriculture crops	Includes vegetated pasture/grassland areas and row crops such as corn and soybeans.
<b>Distance from Mining</b>		
5	No presence of mining	Outside 3 mile buffer from mining areas
3	Area nearby operational mining	Between 1 to 3 mile buffer from mining areas
1	Operational mining present	Within 1 mile buffer from mining areas
<b>Distance from Logging</b>		
5	No presence of logging activities	Outside 3 mile buffer from logging areas
3	Area nearby active logging	Between 1 to 3 mile buffer from logging areas
1	Active logging present	Within 1 mile buffer from logging areas
<b>Wildlife Potential</b>		
5	Wildlife setting I	177-217 species
4	Wildlife setting II	136-176 species
3	Wildlife setting III	96-135 species
2	Wildlife setting IV	55-95 species
1	Wildlife setting V	13-54 species
<b>Slope</b>		
5	High slope	>25 degree
3	Medium slope	10-25 degree
1	Low relief	Less than 10 degree

**Table 2.—Scale for pairwise comparisons**

Intensity of Importance	Determination and Explanation
1	Two attributes are equally important
3	One attribute is slightly more important than the other
5	One attribute is moderately important over the other
7	One attribute is very important over the other
9	One attribute is extremely important over the other

The CI value is then used to estimate the consistency ratio (CR) which measures the coherence of the pairwise comparisons and can be computed as

$$CR = 100(CI/ACI) \quad (8)$$

where ACI is the average consistency index of the randomly generated comparisons. A CR value of 10 percent or less is considered as acceptable (Kangas 1994).

### 2.5 Dataset and Software

The data used for vegetation cover and predicted wildlife distribution were obtained from maps created through the WV Gap Analysis Project. In addition, data for road, digital elevation models (USGS DEMs), and mining areas were obtained from West Virginia GIS Technical Center. Information about logging areas in the study site was obtained from the West Virginia Division of Forestry. ArcMap software was used for analyzing and displaying the maps and Expert Choice software was used for calculating weights in pairwise comparison.

## 3.0 RESULTS AND DISCUSSION

### 3.1 Unweighted Forest-based Ecotourism Map

Figure 2 shows the unweighted forest-based ecotourism map with five classes. Class V (pristine) represents the most suitable sites for forest-based ecotourism and class I (urban) represents the least suitable. Table 3 indicates the percentage of area within each class. The figure and table also show that classes V and II represent 7.86 percent and 2.66 percent of land, respectively, and are mostly located in the southwestern part of the County. Classes IV and III land is dispersed throughout the county and covers 78.43 percent and 9.45 percent of land, respectively. Class I land is scattered all over the county but includes only 1.59 percent of the total county land.

### 3.2 Pairwise Comparison

Weights obtained from pairwise comparison for each criterion are shown in Figure 3. Among the criteria, vegetation cover received the highest weight (0.236)

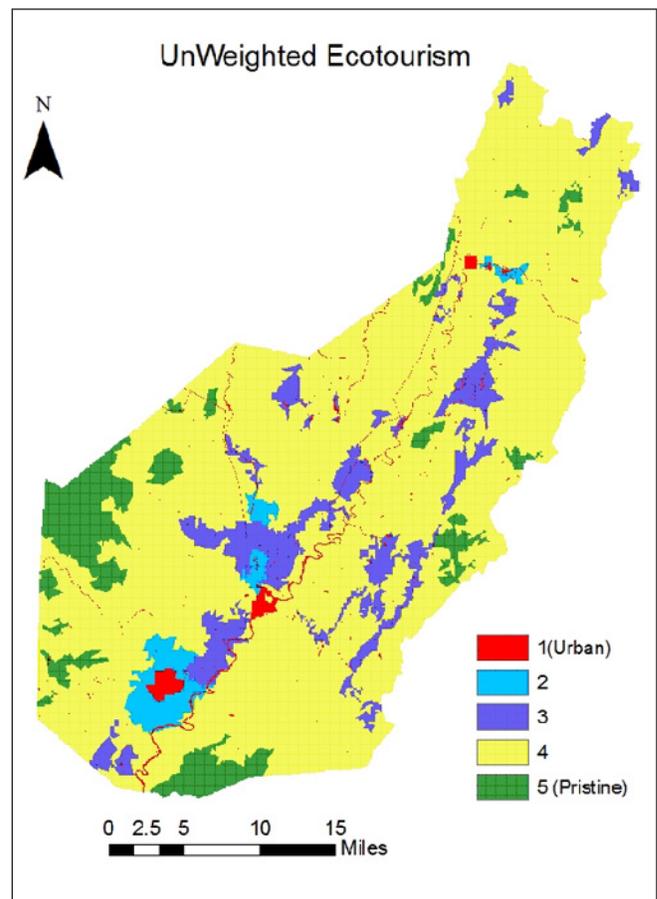


Figure 2.—Map of unweighted forest-based ecotourism land in Pocahontas County.

Table 3.—Unweighted forest-based ecotourism

Class	% of Total Area
1	1.59
2	2.66
3	9.45
4	78.43
5	7.86

followed by distance from mining (0.186) and logging (0.174) whereas slope received the lowest weight (0.077). This implies that vegetated area far from mining and logging are preferred for forest-based ecotourism. The CR for pairwise comparison was 0.04 or 4 percent which is less than 10 percent.

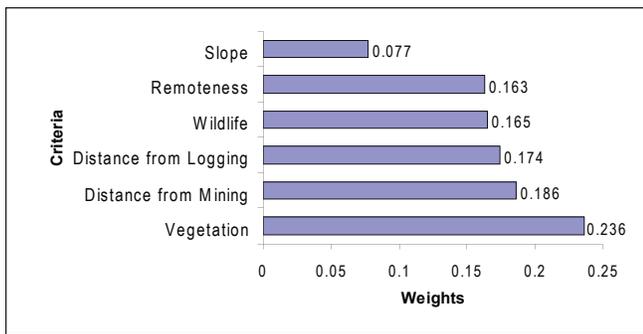


Figure 3.—Pairwise comparison.

### 3.3 Weighted Forest-based Ecotourism Map

Figure 4 shows the weighted forest-based ecotourism map with five classes. Table 4 indicates the percentage of area within each class. Classes V, VI, and III represent 13.37 percent, 54.50 percent, and 23.30 percent of land, respectively, and are found throughout the County. Classes II and I covers 6.50 percent and 2.33 percent of the land, respectively, and are less dispersed compared to other classes.

Comparing the weighted and unweighted ecotourism maps, area under class IV decreases on the weighted map whereas area of class V increases. Areas far from mining and logging were preferred in pairwise comparison, so the class IV land in the unweighted map becomes less desirable and fall into lower classes. Also, vegetation received the highest weight; therefore some areas in the unweighted map get upgraded and fall in to class V on the weighted map.

For verification, the weighted ecotourism map was compared with the existing forest areas in the county. Most of the state parks and Monongahela National Forest fall in class IV whereas wilderness areas, some portion of national forest, and state parks fall in class V, confirming the consistency between the existing map and the forest-based ecotourism map.

Although the use of GIS and pairwise comparison are promising in identifying areas suitable for forest-based ecotourism with consideration of relative importance of criteria, there are certain limitations which might have influenced these findings. This study used land

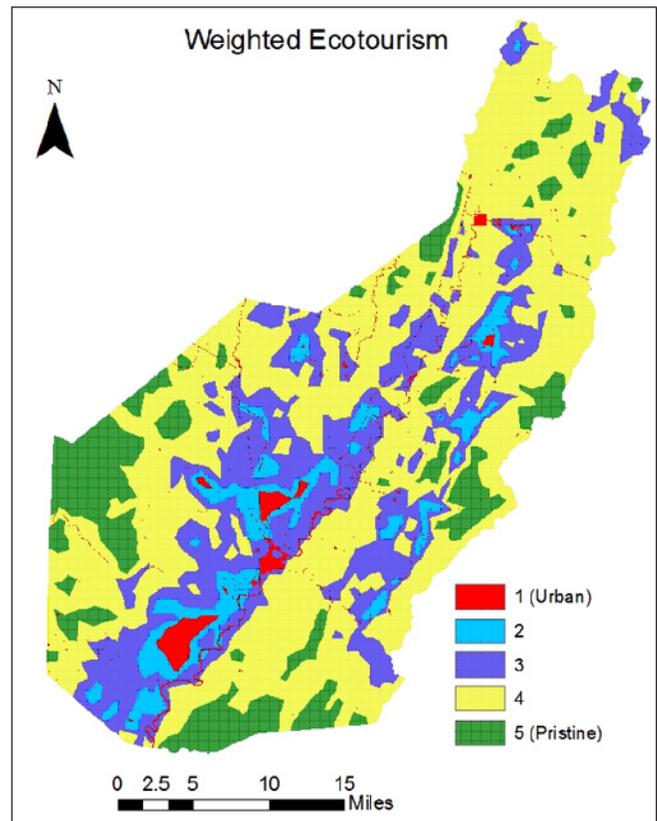


Figure 4.—Map of weighted forest-based ecotourism land in Pocahontas County.

Table 4.—Weighted forest-based ecotourism

Class	% of Total Area
1	2.33
2	6.50
3	23.30
4	54.50
5	13.37

cover and wildlife potential data of 30m resolution. The coarse resolution of this dataset can affect the precision of the area while calculating the areas for each class. Data on cultural and/or historic sites was not found. If available, it would help to address the cultural component in the definition of ecotourism. Data for mining and logging areas were available as points but, in the real world, they are polygons so this might affect the results as well. Some of the data used was from 1992 satellite imagery (for example,

the wildlife potential map prepared by the WVUGAP project) and some was from 2002 (e.g., the mining data). Such discrepancies in the age of the data might also affect the results.

#### **4.0 CONCLUSIONS AND IMPLICATIONS**

Based on the results, Pocahontas County is suited for forest-based ecotourism as class III, IV and V land together cover more than 90 percent of the county's land area. The results also indicate that the study site would be suitable for the entire spectrum of ecotourists. More than 10 percent of the county could cater to 'hard' ecotourists who value wilderness (class V). More than half of the county is suitable for ecotourists who value wilderness but also desire some amenities (class IV). This was validated by overlaying a campsite layer on the weighted ecotourism map; most campsites were in areas classified as class IV. Areas under classes I and II are basically suitable for 'soft' ecotourists who value amenities and accessibility.

The weights allocated to each of the criteria changed the amount of area allocated to each class when compared to the unweighted ecotourism map. This shows the relative importance of preference criteria in creating a suitability map. The highest weight was given to vegetation, and since Pocahontas County is heavily forested, the total area under class V increased in the weighted classification. GIS was found to be a useful tool in analyzing and visualizing the outputs of classification and pairwise comparison aided in the ecotourism suitability mapping. The demonstrated framework is flexible in that new criteria and varying weights can be applied during classification to fit the context of the study area.

The results of this study would be helpful in providing information to ecotourists about the type and size of ecotourism sites available in the area. Based on these results, ecotourists could select the sites they would want to visit. The results would also benefit agencies responsible for resource planning and management to assess the potential draw of tourism-focused activities

within the area and advertise them accordingly. Also, information on the size of the different ecotourism areas could help management authorities determine the type of ecotourism activities to be promoted—for example, excursion only or with limited overnight stays. As visitor preferences and areas of land cover change with time, the GIS database prepared for this study can be used to make adjustments to the ecotourism area. Finally, long-term studies dealing with land use changes and visitor trends in the area could provide important insights for better sustainable ecotourism planning.

#### **5.0 LITERATURE CITED**

- Anguilar-Manjarrez, J.; Ross, L.G. 1995. **Geographical information system (GIS) environmental models for aquaculture development in Sinaloa State, Mexico.** *Aquaculture International*. 3(2): 103-115.
- Benjamin, C.O.; Ehie, I.C.; Omurtag, Y. 1992. **Planning facilities at the University of Missouri-Rolla.** *Interfaces*. 22: 95-105.
- Boyd, S.W.; Butler, R.W. 1993. **Review of the development of ecotourism with respect to identifying criteria for ecotourism for Northern Ontario.** Saulte Ste. Marie, ON: Department of Natural Resources/Forestry, Ministry of Natural Resources.
- Boyd, S.W.; Butler, R.W. 1994. **Geographic Information Systems: A tool for establishing parameters for ecotourism criteria.** Sault Ste. Marie, ON: Department of Natural Resources/Forestry, Ministry of Natural Resources.
- Boyd, S.W.; Butler, R.W.; Haider, W.; Perera, A. 1994. **Identifying areas for ecotourism in Northern Ontario: application of a geographical information system methodology.** *Journal of Applied Recreation Research*. 19: 41-46.
- Ceballos-Lascurain, H. 1996. **Tourism, ecotourism, and protected areas: the state of nature-based tourism around the world and guidelines for its development.** Gland, Switzerland: IUCN, The International Union for the Conservation of Nature. 301 p.

- Deng, J.; King, B.; Bauer, T. 2002. **Evaluating natural attractions for tourism**. *Annals of Tourism Research*. 29: 422-438.
- Drumm, A.; Moore, A. 2005. **Ecotourism development: a manual for conservation planners and managers, volume 1: an introduction to ecotourism planning**. 2nd ed. Arlington, VA: The Nature Conservancy. 96 p.
- Duke, J.; Aull-Hyde, R., 2002. **Identifying public preferences for land preservation using the analytic hierarchy process**. *Ecological Economics*. 42: 131-145.
- Eastman, J.R.; Jin, W.; Kyem, W.; Tolendano, P. 1995. **Raster procedures for multi-criteria/multi-objective decisions**. *Photogrammetric Engineering & Remote Sensing*. 61: 539-547.
- Font, X.; Mihalic, T. 2002. **Beyond hotels: nature-based certification in Europe**. In: Honey, M., ed. *Ecotourism & certification: setting standards in practice*. Washington, DC: Island Press: 211-236.
- Jankowski, P. 1995. **Integrating geographical information systems and multiple criteria decision-making methods**. *International Journal of Geographical Information Systems*. 9: 251-273.
- Jankowski, P.; Richard, L. 1994. **Integration of GIS-based suitability analysis and multicriteria evaluation in a spatial decision support system for route selection**. *Environmental and Planning B, Planning and Design*. 21: 323-340.
- Kahraman, C.; Rhan, D.; Doganel, I. 2003. **Fuzzy group decision-making for facility location selection**. *Information Sciences*. 157:135-153.
- Kangas, J. 1994. **An approach to public participation in strategic forest management planning**. *Forest Ecology and Management* 70: 75-88.
- Olinda, P. 1991. **The old man of nature tourism: Kenya**. In: Whelan, T., ed. *Nature tourism: managing for the environment*. Washinton DC: Island Press: 23-28.
- Saaty, T.L. 1980. **The analytic hierarchy process**. New York: McGraw-Hill.
- Schmoldt, D.L.; Peterson, D.L.; Smith, R.L. 1994. **The analytic hierarchy process and participatory decision making**. In: Power, J.; Strome, M.; Daniel, T.C., eds. *Decision Support – 2001*. Vol. 1. Proceedings of the 17th Annual Geographic Information Seminar and the Resource Technology 94 Symposium. Toronto, Ontario, ON: 129-143.
- Sener, B.; Suzen, M.L.; Doyuran, V. 2006. **Landfill site selection by using geographic information systems**. *Environmental Geology*. 49: 376-388.
- Strager, M.P.; Rosenberger, R.S. 2006. **Incorporating stakeholder preferences for land conservation: weights and measures in spatial MCA**. *Ecological Economics*. 58: 79-92.
- The International Ecotourism Society (TIES). 2005. **Global ecotourism fact sheet**. Available at: <http://www.ecotourism.org/atf/cf/%7B82a87c8d-0b56-4149-8b0a-4aaced1cd38%7D/TIES%20GLOBAL%20ECOTOURISM%20FACT%20SHEET.PDF>. (Accessed May 21, 2010).
- Tseng, C.-T.; Chen, S.-C.; Huang, C.-S.; Liu, C.-C. 2001. **GIS-assisted site selection for artificial reefs**. *Fisheries Science*. 67(6): 1015-1022.
- Wang, J. 2008. **Development of outdoor recreation resource amenity indices for West Virginia**. Morgantown, WV: West Virginia University. M.S. thesis.
- Whelan, T. 1991. **Nature tourism: managing for the environment**. Washington DC: Island Press.
- World Tourism Organization. 2006. **Tourism fact sheet 2006**. Available at: <http://www.world-tourism.org/facts/menu.html>. (Accessed July 21, 2009).
- Ziffer, K.A. 1989. **Ecotourism: The uneasy alliance**. Washington, DC: Conservation International and Ernst & Young.

The content of this paper reflects the views of the author(s), who are responsible for the facts and accuracy of the information presented herein.

# PARKS AND THE URBAN HEAT ISLAND: A LONGITUDINAL STUDY IN WESTFIELD, MASSACHUSETTS

---

Robert S. Bristow  
Geography and Regional Planning  
Westfield State College

Robert Blackie  
Westfield State College

Nicole Brown  
Lyndon State College

---

**Abstract.**—Urban landscapes often have warmer temperatures than the surrounding countryside, a phenomenon known as the urban heat island (UHI) effect. This study compares and contrasts temperatures across Westfield, Massachusetts, a moderate size New England city, and considers the influence that the city’s parks and protected areas have on the local microclimate. The data show a clear urban heat island in the downtown area of Westfield and show that the urban heat island grew larger between 1993 and 2009.

---

## 1.0 INTRODUCTION

Urban landscapes often have warmer temperatures than the surrounding countryside. Known as the urban heat island (UHI) effect, this phenomenon was first identified by meteorologist Luke Howard in 1818. UHIs were first studied by medical doctors because of the connection between urban air quality, air temperatures, and health. Later, scientists were able to distinguish the environmental factors that cause warmer temperatures in urban areas. Today artificial surfaces including pavement, sidewalks, and buildings, plus traffic and related infrastructure contribute to warmer urban temperatures (Braham 1977, Martin and Powell 1977). Paved surfaces typically cover up to 30 percent of the land in cities. This “asphalt jungle” absorbs solar energy received during the day and releases heat into the atmosphere at night. Additional

heat is generated by vehicles and by heating and ventilation units on buildings.

There has been a lot of past research on parks and climate change. Parks are usually mostly unpaved open space and are known to mitigate the consequences of climate change by providing cooling effects and carbon sequestration (Alig 2009, Braham 1977, MacDonald 2009, Spronken-Smith and Oke 1998). Urban parks have also long served local residents as enclaves of relief from the summer heat. Some research has found that an increased chance of thunderstorms and other precipitation is directly tied to human-induced higher urban temperatures (Bornstein 1968, Bornstein and Lin 2000, Kim and Baik 2005). Dixon and Mote (2003) found low-level moisture to be important in producing precipitation, but they also acknowledge that the UHI effect is an important factor.

The UHI effect is not limited to midlatitude or major cities. Barrow, Alaska (lat. 71° N) has a known UHI with increased temperatures of as much as 2 °C that can affect the city’s permafrost (Hinkel et al. 2003). Midsized cities like Columbia, Missouri (population 84,000) have found that temperatures can be 1 to 2 °C warmer than in the suburbs. While these differences may seem minor, even a one-degree change can mean the difference between rain and snow.

In contrast, arid landscapes experience only a mild UHI effect. Principally this is because the built-up urban center absorbs and releases heat in much the same way as the surrounding desert. When an area is naturally-forested, a pronounced UHI can occur as city features replace the forests (Carlowicz 2010).

Fortunately, not all parts of an urban area are built up. Urban parks and open spaces such as riparian corridors (Endreny 2008, Martin and Powell 1977), forested lands (Heisler et al. 2007), and grassy fields (Murphy

et al. 2007) have been observed to mitigate warmer surrounding urban temperatures. Urban forests also mitigate the deleterious effects of UHIs (Alig 2009) and improve air quality in urban landscapes (Nowak 1995). The American Planning Association's City Parks Forum has identified these four ways that urban parks help mitigate UHIs:

- Parks moderate artificially higher temperatures from the urban heat island effect through shading and evapotranspiration.
- Parks enhance local wind patterns in cities through the park breeze (cooler air over parks replaces warmer air in adjacent city neighborhood).
- Parks mitigate local precipitation anomalies amplified by the urban heat island effect.
- Parks sequester carbon and other pollutants trapped by the urban heat island that may otherwise alter local and global atmospheric composition. (MacDonald 2009)

Finally, heat waves kill more people in the United States than hurricanes, tornados, earthquakes and floods combined (Golden et al. 2008). Since urban areas have the bulk of the world's population, especially in the developing world, mitigating UHIs may help reduce the health impacts of global climate change at the local scale.

### 1.1 Case Study

Westfield is a 46 square-mile city located in Hampden County in Western Massachusetts. Also known as "Whip City," Westfield was incorporated in 1669 and grew from an agricultural community to a small industrial city by the mid-1800s. Westfield was once well known for producing bricks, whips, cigars and many other products. According to historic U.S. Geological Survey topographic maps, there was a major expansion of the city center outward and a concentration of neighborhood roads between 1895 and the 1940s. As this road and building construction occurred, the downtown area began to have less greenery and trees. During this time, the city designated thirty parks and playgrounds. The historic Westfield Commons was set aside in 1732.

The city is bounded by higher elevations on the east and west borders. The Westfield River drains the Berkshire Mountains and bisects the town into a northern section and a southern section. Currently there are about 40,000 residents in the city.

### 2.0 METHODS

This study used two sampling schemes to collect air temperature data in Westfield. The entire city was sampled since Westfield's land use pattern deviates from a theoretical model of concentric circles. Following Murphy et al. (2007), data were collected using fixed-height thermometers starting on the outskirts of the community. Both mobile and pedestrian data collection methods were employed. Three automobiles drove east to west, north to south, and on an eastern loop to collect data at  $\frac{1}{4}$  to  $\frac{1}{2}$  mile intervals. This transect method, also employed by Melhuish and Pedder (1998), does not permit simultaneous data collection at all sampling points but is still relevant since the goal was to measure differences between the urban core and the outlying suburban and rural landscapes.

Research by Kim and Baik (2005) found the highest UHI effect occurred overnight at 0300 local time, while Bornstein (1968) collected temperatures at predawn. For our study, data were collected during the predawn hours to obtain the coolest temperatures for the region.

The first data set was obtained on 23 November 1993 (Bristow and Mullens 1996). Sites for air temperature readings were randomly selected for the entire city. In order to compare current conditions with those from the earlier study, an updated inventory was repeated 16 years later on 6 November 2009. In addition to collecting temperature readings for the outskirts of the city, sampling in the downtown area included oversampling in built-up areas and several urban parks.

### 3.0 RESULTS

Both the 1993 and 2009 studies found a pronounced UHI effect in the center of the city. In 1993, the

temperature range across the city was 6 °F. Cooler temperatures were found along the Westfield River and along the eastern and western boundaries of the city (which are at higher elevations). In the 2009 data, the downtown area also experienced warmer UHI temperatures, although temperatures in the park areas were somewhat cooler.

Figure 1 shows the absolute temperature readings for 1993 and 2009. In 1993, there is a clear heat island in the downtown area on both the north and south sides of the Westfield River. The isotherms (lines of equal temperature) show warmer temperatures in the built-up downtown area and cooler temperatures in rural farmland away from commercial development. While cooler temperatures would be expected in the riparian

corridor, the data collected in 1993 were too coarse to permit such an analysis.

In Figure 1, the temperature scale is the same for each year; that is, a quick look at the two years suggests that there was a tremendous increase in temperature over the 16 years. Actually, the weather conditions were quite different during the two sampling periods and the 2009 data were collected 17 days earlier in November than the 1993 data. In an effort to standardize the UHI findings, a median temperature was calculated for the two time periods. Median temperatures rather than mean were used to offset the oversampling of downtown data points in 2009. In 1993, the average temperature in the data set was 33 °F. In the milder fall of 2009, the average temperature was 38 °F. Since the

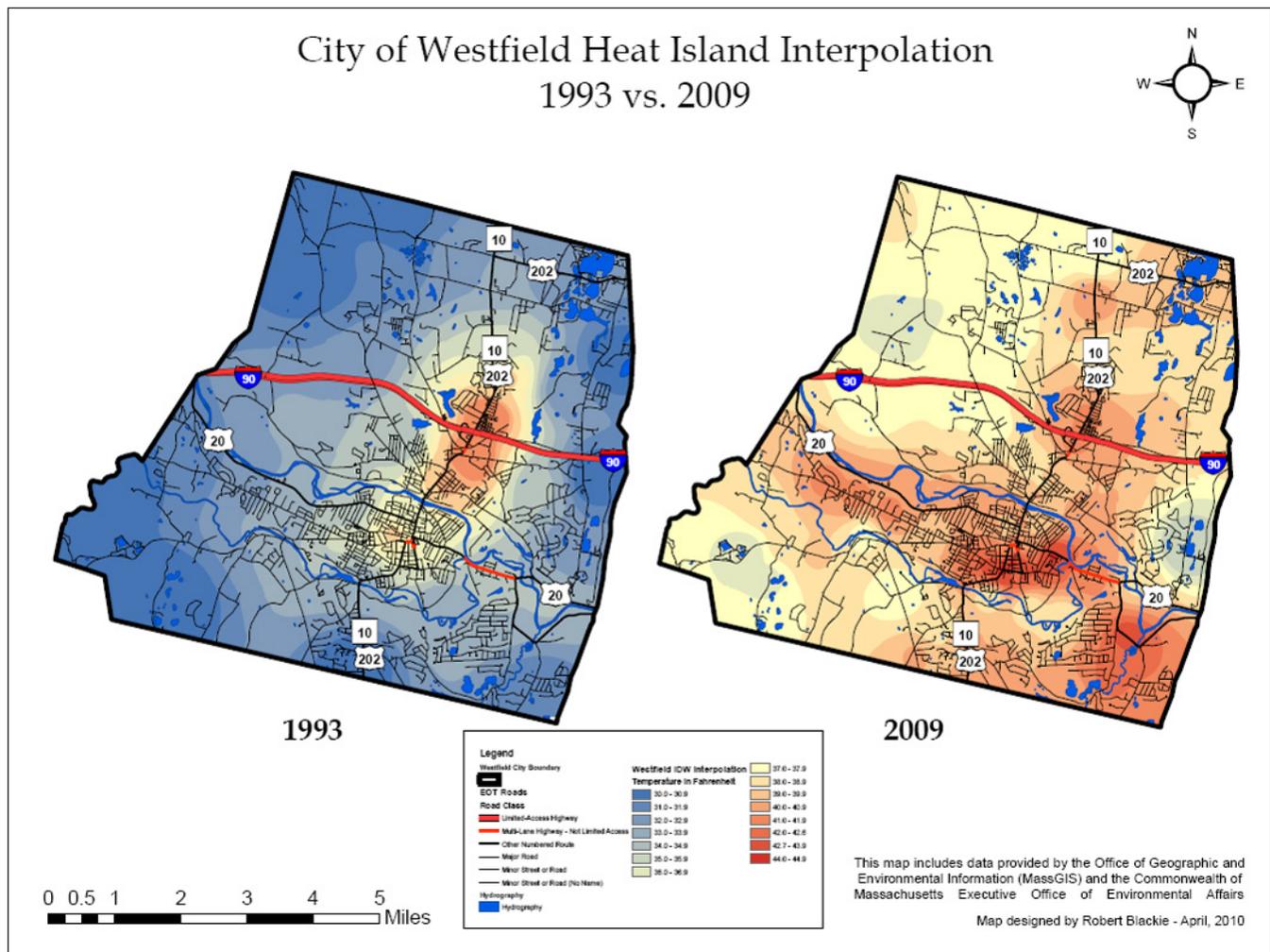


Figure 1.—Raw temperature data of Westfield with geographical information system (GIS) interpolation for years 1993 and 2009.

difference in relative temperature is the most important element of UHI, these averages, while different, can still be used to identify the UHI effect in Westfield.

Figure 2 shows UHI maps for 1993 and 2009 with the differences in absolute temperatures standardized – where it is hotter than the median temperature (in red) and where it is cooler (in blue). The UHI effect appears to have expanded to a larger area of downtown over the sixteen years.

In 2009, several pedestrian researchers canvassed the downtown area to obtain finer-grain temperature data at 100-foot intervals (Figure 3). The additional air temperature data shows the UHI effect at a finer scale.

It is interesting to note the bifurcated temperatures on the north side versus the south side of the city.

The cooler temperatures in the north may be caused by the eastward flow of the Westfield River from the highlands in the west. In addition, north of the river, higher elevations gradually climb toward the hill town of Montgomery. The cooling effect of the river may be “pushed” by a mountain breeze as cool air drains from the higher elevations. For the southern portion of downtown, temperatures were 4-5 °F warmer, perhaps because of large parking areas and a small industrial park.

Finally, it is important to note that there are cooler temperatures around the city green in the 2009 data (blue spot in the center of Figure 3). This small area, known as Park Square, was acquired by the city in the 1835. Citizens planted trees in 1859 and today the park is still well used, hosting farmer’s markets and local festivals. It is clear that the grassy grove of

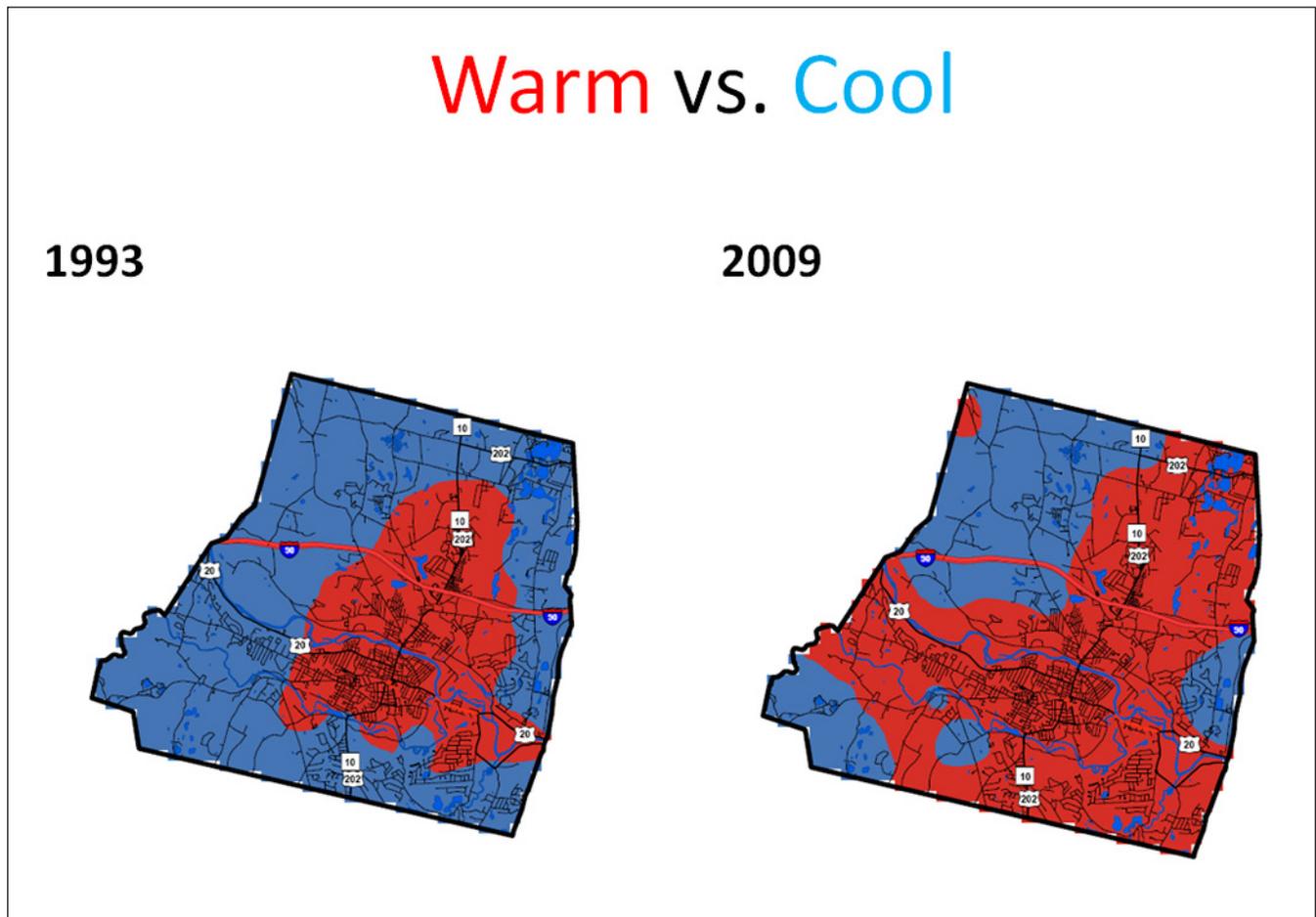


Figure 2.—Standardized urban heat island (UHI) maps for 1993 and 2009.

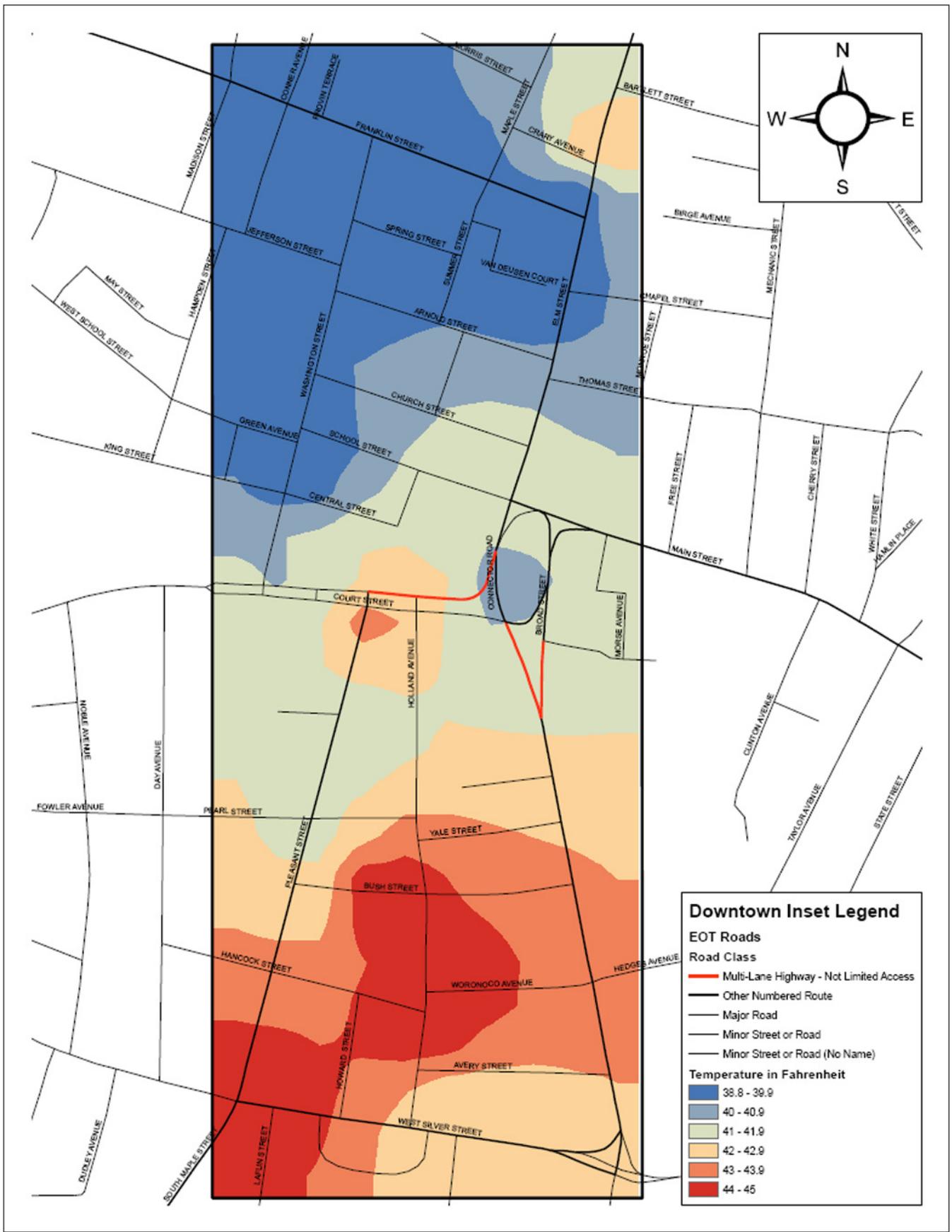


Figure 3.—The downtown urban heat island (UHI) and cooler park area.

trees mitigates the UHI since it is at least one degree Fahrenheit cooler than the pavement surrounding it. As Pinho and Manso Orgaz (2000) caution, the lack of parks in cities only adds to UHI effects.

#### 4.0 DISCUSSION AND CONCLUSIONS

Two important findings of this study warrant discussion. First, even when data are standardized for the different climatic conditions between 1993 and 2009, the UHI effect has apparently expanded outward from the city core. A modest population growth during this time period may offer some explanation, but increased vehicular traffic has probably also exacerbated the problem.

Second, the finer-grained 2009 data highlights the positive benefit of the small green in mitigating the warmer downtown temperatures. This research demonstrates the positive environmental benefits of urban green spaces, which help improve microclimatic conditions.

Urban forests include many smaller parks and protected areas that may go unnoticed and unused by thousands of people who drive by them. Beyond the occasional festival or fair, these urban parks provide a place for urban residents to recreate or socialize. This research suggests that even small urban parks can provide a vital climate control against the effects of urban heat islands.

Several questions remain for further research. First, the Westfield River and down-slope drainage of cooler air from the hills may influence the cooler temperatures north of Park Square, but further research is needed on the impact of the river and varied elevation levels on nearby temperatures. Second, it would be useful to study what happens to urban air temperatures when parks are deforested. In May 2010, the Park Square trees were cut down as part of an urban redevelopment plan, so the authors will explore the impact of these actions on nearby air temperatures in November 2010.

Finally, more research is needed on how changes in land cover and urbanization affect global temperatures since most studies to date have concentrated on atmospheric and ocean temperature exchange (Carlowicz 2010). For example, what impacts do urban heat islands have on the global or regional temperature changes, and how much can urban parks and other open spaces mitigate these changes? The small temperature differences found in our study (both across the city and over the 16-year period between data collections) might suggest broader affects if we could replicate the findings for each city on the planet.

#### 5.0 ACKNOWLEDGMENTS

The authors wish to thank the students in GARP0346 Quantitative Methods (Fall 2009) for their help with the data collection. We also wish to thank Dr. Carsten Braun for his review of this manuscript.

#### 6.0 LITERATURE CITED

- Alig, R. 2009. **We're all in this together: decisionmaking to address climate change in a complex world.** Science Findings. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 116: 1-2.
- Bornstein R. 1968. **Observations of urban heat island effect in New York City.** Journal of Applied Meteorology. 7: 575-582.
- Bornstein, R.; Lin, Q. 2000. **Urban heat islands and summertime convective thunderstorms in Atlanta: three case studies.** Atmospheric Environment. 34: 507-516.
- Braham, R. 1977. **Overview of urban climate.** In: Heisler, G.; Herrington, L. eds. Proceedings of the conference on metropolitan physical environment. Gen. Tech. Rep. NE-25. Upper Darby, PA: U.S. Department of Agriculture, Forest Service, Northeastern Forest Experiment Station: 3-17.

- Bristow, R.; Mullens, J. 1996. **Environmental education: a geographical approach.** In: Middlekauff, B., ed. Proceedings of the New England St. Lawrence Valley Geographical Society. Plymouth State College. Vol. 25.
- Carlowicz, M. 2010. **Ecosystem, vegetation affect intensity of urban heat island effect.** *The Earth Observer.* 22(1): 36-37.
- Dixon, P.; Mote, T. 2003. **Patterns and causes of Atlanta's urban heat island-initiated precipitation.** *Journal of Applied Meteorology.* 42: 1273-1284.
- Endreny, T. 2008. **Naturalizing urban watershed hydrology to mitigate urban heat-island effects.** *Hydrologic Processes.* 22: 461-463.
- Golden, J.; Hartz, D.; Brazel, A.; Luber, G.; Phelan, P. 2008. **A biometeorology study of climate and heat-related morbidity in Phoenix from 2001 to 2006.** *International Journal of Biometeorology.* 52(6): 471-80. Available at <http://www.springerlink.com/content/j20r26199m664074/>. (Accessed October 2009).
- Heisler, G.; Walton, J.; Yesilonis, I.; Nowak, D.; Pouyat, R.; Grant, R.; et al. 2007. **Empirical modeling and mapping of below-canopy air temperatures in Baltimore, MD and vicinity.** In: Proceedings of the seventh urban environment symposium; September 10-13, 2007; San Diego, CA: American Meteorological Society. 7 p.
- Hinkel, K.; Nelson, F.; Klene, A.; Bell, J. 2003. **The urban heat island in winter at Barrow, Alaska.** *International Journal of Climatology.* 23: 1889-1905. Available at: <http://www.geography.uc.edu/~kenhinke/uhi/HinkelEA-IJOC-03.pdf>. (Accessed October 2009).
- Kim, Y.; Baik, J. 2005. **Spatial and temporal structure of urban heat island in Seoul.** *Journal of Applied Meteorology.* 44: 591-605.
- MacDonald, J. 2009. **How cities use parks for climate change management.** City Parks Forum Briefing Papers #11. American Planning Association. Available at: <http://www.planning.org/cityparks/briefingpapers/climatechange.htm>. (Accessed October 2009).
- Martin, F.; Powell, G. 1977. **The urban heat island in Akron Ohio.** In: Heisler, G.; Herrington, L., eds. Proceedings of the conference on metropolitan physical environment. Gen. Tech. Rep. NE-25. Upper Darby, PA: U.S. Department of Agriculture, Forest Service, Northeastern Forest Experiment Station: 94-97.
- Melhuish E.; Pedder, M. 1998. **Observing an urban heat island by bicycle.** *Weather.* 53: 121-128.
- Murphy, D.; Hall, M.; Hall, C.; Heisler, G.; Stehman, S. 2007. **The relationship between land-cover and the urban heat island in Northeastern Puerto Rico.** In: Proceedings of the seventh urban environment symposium; September 10-13, 2007; San Diego, CA: American Meteorological Society.
- Nowak, D. 1995. **The effects of urban trees on air quality.** Washington, DC: U.S. Department of Agriculture, Forest Service. Available at: [www.fs.fed.us/ne/syracuse/gif/trees.pdf](http://www.fs.fed.us/ne/syracuse/gif/trees.pdf). (Accessed November 24, 2009).
- Pinho, O.; Manso Orgaz, M.D. 2000. **The urban heat island in a small city in coastal Portugal.** *International Journal of Biometeorology.* 44: 198-203.
- Spronken-Smith, R.; Oke, T. 1998. **The thermal regime of urban parks in two cities with different summer climates.** *International Journal of Remote Sensing.* 19(11): 2085-2104.

The content of this paper reflects the views of the author(s), who are responsible for the facts and accuracy of the information presented herein.

# CLIMATE CHANGE AND ENVIRONMENTALLY RESPONSIBLE BEHAVIOR ON THE GREAT BARRIER REEF, AUSTRALIA

---

Jee In Yoon

Department of Recreation, Park, and Tourism Sciences  
Texas A&M University  
jeeinyoon@tamu.edu

Gerard Kyle

Texas A&M University

Carena J. van Riper

Texas A&M University

Stephen G. Sutton

James Cook University

---

**Abstract.**—This study explored the relationship between Australians' perceptions of climate change, its impact on the Great Barrier Reef (GBR), and predictors of environmentally responsible behavior (ERB). Our hypothesized model suggested that general attitudes toward climate change, social pressure for engaging in ERBs (subjective norms), and perceived behavioral control (PBC) over ERB would be positively related to intentions to engage in ERB. We hypothesized that attitude, subjective norms, and PBC would negatively influence the constraints of ERB, intention to engage in ERB, and actual ERB. We used data from a survey of Australian residents on the impacts of climate change and individual human ERB on the GBR to test our hypotheses. The most important predictor of intention to engage in ERB was perception of one's control over the behavior. For both residents and nonresidents, attitudes toward climate change were negatively associated with constraints impinging on their ability to adopt ERBs – although this effect was much more pronounced for nonresidents. By emphasizing the accessibility/easiness of environmental behaviors, GBR marine park managers can reinforce perception of individual control over behaviors and reduce the constraints to engaging in ERBs.

---

## 1.0 INTRODUCTION

Australia's Great Barrier Reef (GBR), the largest coral reef in the world, provides diverse tourism and recreation opportunities. Increased water temperature and ocean acidification associated with global climate change have already caused coral bleaching and threatened existing species that live in GBR ecosystems. Because of this, the Great Barrier Reef Marine Park Authority (GBRMPA) has become increasingly interested in understanding climate change, its contributing factors, and Australians' attitudes toward and engagement in environmentally responsible behaviors (ERB). A growing body of literature has noted that people's attitudes toward environmental degradation, such as climate change, are strongly related to their intention to negotiate constraints that impede environmentally responsible behavior (Dunlap and Van Liere 1978, Grob 1995, Schahn and Holzer 1990).

Ajzen's (1985, 1991) theory of planned behavior (TPB) assumes that three attitudinal variables (attitude toward behavior, subjective norm, and perceived behavioral control) contribute to predicting behavioral intention, the most important indicator of actual behavior. This framework has been widely used by many researchers to understand how attitudes toward behavior contribute to predicting behavioral tendencies. In this study, we used the TPB model as a theoretical framework to understand the adoption of environmentally responsible behavior. Also, it has been reported in the constraint literature (Frey 1988, Tanner 1999) that internal and/or external conditions can hinder behavior, even when someone has a positive attitude toward the behavior. Thus, we also explored the mediating role of constraints on the relationships between respondents' attitudes toward behaviors that have been reported to influence climate change and their actual ERBs.

Based on the tenets of TPB, we tested a model where three dimensions of respondents' attitudes toward climate change and associated behaviors (i.e., attitudes toward climate change, subjective norms, and perceived behavioral control) were hypothesized to have a positive influence on respondents' intentions to adopt ERBs. The attitude dimensions were also hypothesized to be negatively associated with respondents' perceptions of constraints to engaging in ERB. Intention was hypothesized to positively influence respondents' reported ERB whereas constraints were hypothesized to be negatively associated with intention to adopt ERBs and actual reported ERBs.

We tested the model using data from two groups of survey respondents—residents living near the GBR and residents of other states across Australia—in order to explore the effect of residential proximity (a surrogate of personal relevance) on the relationships in our model.

## **2.0 LITERATURE REVIEW**

### **2.1 Environmental Attitude and Behavioral Tendency**

Research by social psychologists has consistently found a positive relationship between attitude and behavior (Ajzen 2005; Bagozzi and Burnkrant 1979; Fazio and Zanna 1978, 2006; Fishbein and Ajzen 1975). Attitude has been reported to be a prepared psychological state, a kind of mind-set that is already formulated before one behaves (Fishbein and Ajzen 1975). Some social psychologists (Fazio et al. 1983, Fishbein and Ajzen 1975) believe that an attitude toward an object/behavior is significantly related to behavioral tendencies.

In accordance with traditional social psychology, environmental social psychologists have also examined the relationship between environmental attitudes or concern and behavioral intentions to engage in environmental behavior (Dunlap and Van Liere 1978, Staats 2003, Taylor and Todd 1995). In general, two environmental attitudes have been used

to predict environmental behavior: attitude toward environment (or environmental concern), and attitude toward environmental behavior (Hines et al. 1986, Olsen 1981). Taylor and Todd (1995) tested the TPB to predict intention to engage in recycling and composting. They found that respondents' intention to recycle and compost was positively affected by two of the attitudinal variables in the TPB: attitude toward recycling/compositing, and their perceived behavioral control (PBC) over these behaviors.

The relationship between positive attitude toward nature and pro-environmental behavior has also been consistently supported by previous research. Some researchers (Becker et al. 1981, Carrus et al. 2005, Kals et al. 1999) investigated the emotional and attitudinal aspects of pro-environmental behavior. These studies found that a positive attitude or emotional affinity for the natural environment increased the possibility of engaging in environmentally responsible behaviors.

### **2.2 Subjective Norms**

In the TPB framework, subjective norms depict the perceived social pressure to perform a behavior or the recognition of what ones significant others expect him or her to do. For instance, the chance of adopting ERBs would be higher when people who are close to an individual (e.g. parents, friends, or siblings) expect the individual to participate in a certain behavior and when s/he is motivated to adapt to their expectation.

Some authors (Herberlein and Black 1976, Stern and Dietz 1994) have noted the importance of subjective norms for the prediction of behavioral intention or actual environmental behavior. For environmental behaviors, Schwartz (1968) and Schwartz and Howard (1981) asserted that behaviors depend on the activation of a moral norm rather than on the influence of general environmental concern. Their results indicate that people feel more responsibility for engaging in environmental behaviors when they are aware of the negative consequences that come from nonparticipation.

### 2.3 Perceived Behavioral Control

Perceived behavioral control refers to a person's belief that they have the ability to carry out a particular behavior (Ajzen 1988). To strengthen the prediction of behavior, PBC was added to Fishbein and Azjen's (1975) theory of reasoned action (TRA), which had only two attitudinal variables (i.e., subjective norm and attitude toward behavior) for predicting behavioral intention. The necessity of including the PBC construct in the TPB model is supported by many studies (Ajzen and Driver 1992, Dziewaltowski et al. 1990, Wankel et al. 1994). For example, using data collected from a national survey of Canadians' perceptions of well-being and intention to engage in fitness activity, Wankel et al. (1994) reported that TRA has a 15 percent predictability rate (R-square) while TPB has a 30 percent rate. In addition, they noted that perceived behavioral control is the most influential factor in actual behavior.

Research on PBC suggests that the probability of engaging in ERB would increase when people actually believe that they can bring a positive change to the natural environment by engaging in the behavior. Environmental researchers have observed that individuals are more likely to engage in pro-environmental behavior if they believe they have the ability to solve environmental problems through their behavior (Grob 1995, Huebner and Lipsey 1981).

### 2.4 Constraints to Engaging in Environmentally Responsible Behavior

Even when people maintain a positive attitude, they still may not engage in a behavior due to lack of opportunities (Tanner 1999). Previous research has found that constraints may keep environmental concerns or a positive attitude toward the environment from being expressed in one's behavior (Hines et al. 1986, Stern 1992, Tanner 1999, Vining and Ebreo 2006). Gardener and Stern (1996) noted that pro-environmental attitudes are more likely to be associated with pro-environmental behaviors when the barriers or constraints to action are low. Kaiser et al. (1999) commented that the inconsistency between environmental attitudes and behavior is due to inadequate measures of attitudes and behaviors or the lack of consideration of behavioral constraints on a target behavior.

In summary, previous constraints research on pro-environmental behavior has illustrated that positive attitudes toward a behavior may fail to lead to a behavioral action due to the meditational role of constraints on the attitude-behavior relationship. Thus, in our hypothesized model (Figure 1) we have attitude toward climate change, subjective norm, and perceived behavioral control each predicting behavioral intentions as well as constraints to engaging in ERB. In turn, behavioral intention and constraints predict the actual environmental behavior.

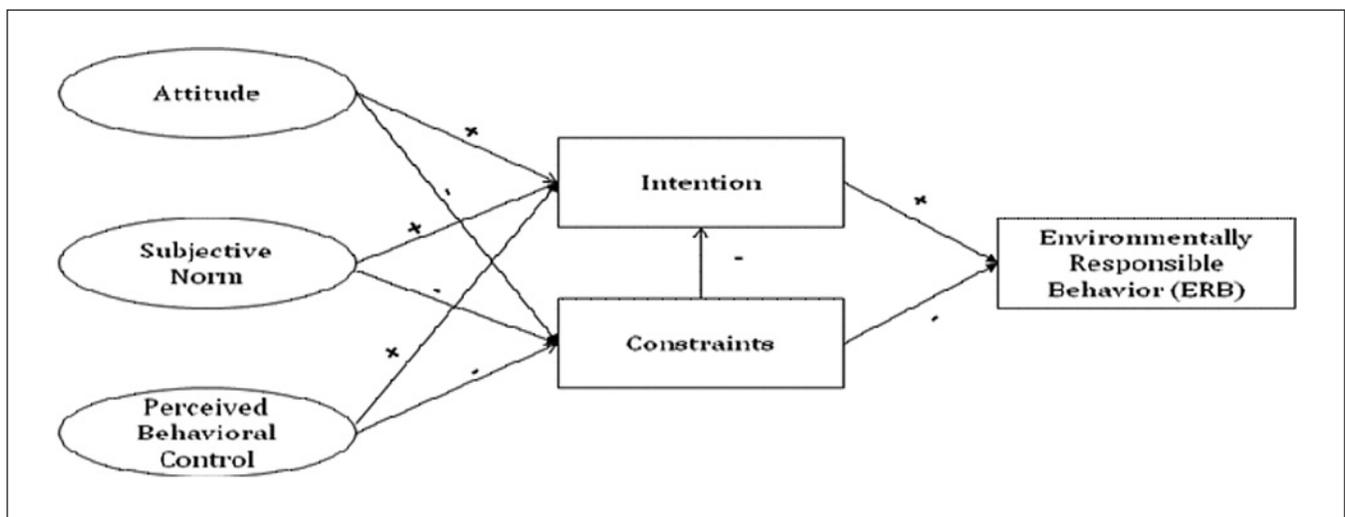


Figure 1.—Hypothesized model.

## 2.5. Residential Proximity

Previous work has shown that people who live in an area are more concerned about its environmental condition than people who reside outside of the area (Liu and Var 1986, Tremblay and Dunlap 1977). For instance, Tremblay and Dunlap (1977) noted that residential status (e.g., local or distant) determined residents' level of concern about pollution and attitude toward environmental changes. Liu and Var (1986) found that residents regarded environmental protection as a more important priority than tourism development, even when the latter would bring economic benefits to the area. Since residential proximity somewhat determines one's concern for the local environment, we assumed that environmental concern, attitudes, and intention to engage in ERB would be different for those who reside outside of GBR area. Thus, we tested whether residential status (Australian residents living near the GBR and those living further away from the GBR area) moderated the relationships tested in our model.

## 3.0 METHODS

### 3.1 Sampling and Measures

Our sample was drawn from five regions of northern Queensland located within 50 km of the Great Barrier Reef Marine Park Coastline plus the cities of Brisbane, Melbourne, and Sydney in Australia. A marketing company telephoned 10,057 randomly selected households to conduct a survey about people's environmental attitudes, thoughts, and behaviors. This yielded 1,623 complete surveys including approximately 200 individuals from each of the eight sample regions. The survey asked respondents to indicate their attitudes toward climate change (7 items), subjective norms (3 items), and perceived behavioral control (2 items) using a 5-point Likert scale (see Table 1). These items were adapted from Ajzen's (1991) measures to fit the present study although some of the items from the original scale were removed because of low factor loadings. For attitude toward climate change, we asked

**Table 1.—Descriptive analysis**

Variables	Items	$\alpha$	$\lambda$	M	SD
Attitude toward climate change (7 items)	Climate change will increase the overall health and beauty of the GBR, the amount of coral on the GBR, the ability to support recreation populations, sustainable fisheries or tourism, and visitors' enjoyment	.87	.63-.76	3.86	.75
Subjective Norm (3 items)	I'd feel guilty if climate change had a negative impact on the GBR/ People should do everything they can to reduce the impact of climate change on the health of the GBR/I feel personally obligated to help reduce the impact of climate change on the GBR	.76	.57-.75	2.47	.96
Perceived Behavioral Control (2 items)	If everyone takes action, we could reduce the impact of climate change on the GBR/ I have the ability to reduce the impact of climate change on the GBR	.67	.56-.69	2.25	1.02
Behavioral Intention to engage in ERB (sum of 38 items)	Use public transport/drive less (walk)/recycle/use solar energy/spread awareness/reduce electricity usage/become more educated about climate change/become involved in environmental organizations/turn lights off/plant trees/use environmentally friendly products, etc.	Manifest variables		1.13	1.04
Constraints on ERB (sum of 7 items)	I don't have time/I don't know what to do/I don't understand the climate change problem/Too much money required/I don't believe I can reduce the impact/My family or friends would not approve/I have other important priorities in my life	Manifest variables		2.78	1.39
Environmentally Responsible Behavior (ERB) (sum of 21 items)	Similar items to Behavioral Intention: measured actual engagement of ERB	Manifest variables		2.33	1.54

the respondents to indicate the extent to which they thought environmental changes around the GBR area had been the result of climate change. For subjective norms, we asked respondents to indicate the extent to which they felt a social obligation to engage in ERB. For PBC, we asked them to indicate the extent to which they felt they had control over their engagement in ERBs. Specific questions about behavioral intention (38 items), constraints (7 items), and actual behavior (21 items) related to engaging in ERBs were measured using a dichotomous response scale (yes or no) (see Table 1).

## 4.0 ANALYSES AND FINDINGS

### 4.1 Descriptive Analyses

Our model includes three latent variables (attitude toward climate change, subjective norm, and perceived behavioral control). The remaining variables (behavioral intention to engage in ERB, constraints of ERB, and actual ERB) were measured by summing responses (1=yes, 0=no) to develop single respondent scores. For instance, we specifically asked whether respondents were participating in actual ERB with 21 items. They checked 0 if they were not participating and 1 if they were.

**Table 2.—Summary of model testing procedure**

Model	$\chi^2$	df	RMSEA	NNFI	CFI
Measurement Model	751.50	90	.07	.94	.95
Structural Model	593.25	84	.06	.95	.96

**Table 3.—Invariance tests**

Model	$\chi^2$	df	RMSEA	NNFI	CFI
H <sub>1</sub> Equality of structure	1278.48	180	.09	.90	.91
H <sub>2</sub> Equality of factor scaling	1192.39*	177	.08	.90	.93
Final model H <sub>2</sub> a	1104.86	168	.08	.91	.93
H <sub>3</sub> Equality of factor variance/covariance	1244.08*	177	.08	.90	.92
Final model H <sub>3</sub> a	1112.19	172	.08	.91	.93
H <sub>4</sub> Structural paths <sup>3</sup>	1135.37*	178	.08	.91	.92
Final model H <sub>4</sub> a	1113.46	176	.08	.91	.93

\* p <.001

## 4.2 Model Testing

We used a covariance structure analysis in LISREL to examine the measurement and structural properties of our hypothesized model. For the pooled sample, both the measurement (chi-square=751.51, df=90, RMSEA=.07 NNFI=.94, CFI=.95) and the structural model (chi-square=593.25, df=84, RMSEA=.06 NNFI=.95, CFI=.96) displayed good fit (Table 2). Our findings illustrated that both attitude toward climate change (beta= -.14, p<.001) and perceived behavioral control (beta= -.17, p<.001) had negative effects on constraints for engaging in ERB, accounting for 6 percent of the variance. Further, perceived behavioral control (beta=.16, p<.001) had a positive impact on intention to engage in ERBs, accounting for 4 percent of the variance. While behavioral intention (beta=.09, p<.001) had a positive effect on actual ERBs, constraint (beta= -.09, p<.001) showed a negative impact on ERBs, accounting for 2 percent of its variance. Finally, subjective norms were not a statistically significant predictor of either behavioral intention or constraint.

The moderating effect of residential proximity was examined by splitting the sample into resident/non-resident groups and testing the model simultaneously for each group. The invariance tests are shown in Table 3. The purpose of invariance tests was to examine whether the factor structure, factor loadings, factor variance/covariance, and beta weights were significantly different among the two groups. For the fourth hypothesis (see Table 3), we were interested in examining the difference in beta coefficients across the two groups since this provides information about

which paths are significantly different from each other. Beta coefficients were constrained to be invariant across the two groups (residents and nonresidents of GBR area), and then conclusions were drawn as to whether or not the imposition of the constraint significantly affected the model fit. Our findings indicated that there was significant difference between these two groups with regard to the beta coefficients ( $\Delta\chi^2=1135.37$ ;  $\Delta df=178$ , RMSEA=.08, NNFI=.91, CFI=.92). Specifically, we observed that the path from attitude to constraints was significantly stronger (beta= -.21,  $p<.001$ ) for nonresidents compared to residents (beta= -.10,  $p<.001$ ). Also, while residents' constraints (beta= -.16,  $p<.001$ ) had a negative impact on their intention to adopt ERBs, the relationship was not significant for nonresidents. Instead, nonresidents' constraints had a negative impact on the actual behavior.

## 5.0 DISCUSSION

These findings provide further insight into how attitudinal variables contribute to the prediction of environmentally responsible behavior. Based on hypothesized model testing for the pooled sample, the most important predictor of behavioral intention and constraints on ERB was perceived behavioral control. This information may be useful for GBR managers who can emphasize to the public that individual actions have a collective impact on the Great Barrier Reef. In addition, efforts to promote ERB can communicate the ease and accessibility of pro-environmental behavior (e.g., the way to reduce energy consumption or recycling), which may enhance people's confidence in their ability to make a difference.

However, in general, two attitudinal variables (attitude toward climate change and perceived behavioral control) accounted for a relatively small amount of variance in our model and the third TPB variable, subjective norm, had no impact on behavioral intention or constraints of ERB. We tentatively conclude that attitudinal variables related to climate change are not sufficient predictors of respondents' intentions, constraints, and actual performance of ERBs. Thus,

for future research, continued exploration of the factors influencing people's ERB will assist our understanding of the drivers of action. For example, it is still unclear how elements such as people's environmental worldviews, values, and their attachments to natural landscapes influence the relationships among the constructs tested in our model.

Finally, while our model may have general relevance for the broader Australian population, our testing did not explore variation among segments within the population. Education programs aimed at increasing the adoption of ERBs will need to be sensitive to the preferences and tendencies of segments within the population. Given that little is known about the nature of this variation, the immediate priority for our future research will be to refine our understanding beginning with indicators of respondents' attitudes toward and attachments to natural landscapes.

## 6.0 LITERATURE CITED

- Ajzen, I. 1985. **From intentions to actions: a theory of planned behavior.** In: Kuhl, J.; Beckman, J., eds. *Action-control: From cognition to behavior.* Heidelberg: Springer: 11-39.
- Ajzen, I. 1988. **Attitudes, personality and behavior.** 1st ed. Berkshire, England: Open University Press.
- Ajzen, I. 1991. **The theory of planned behavior.** *Organizational behavior and human decision processes.* 50(2): 179-211.
- Ajzen, I. 2005. **Attitudes, personality and behavior.** 2nd ed. Berkshire, England: Open University Press.
- Ajzen, I.; Driver, B. 1992. **Application of the theory of planned behavior to leisure choice.** *Journal of Leisure Research.* 24(3): 207-224.
- Bagozzi, R.; Burnkrant, R. 1979. **Attitude organization and the attitude-behavior relationship.** *Journal of Personality and Social Psychology.* 37(6): 913-929.

- Becker, L.; Seligman, C.; Fazio, R.; Darley, J. 1981. **Relating attitudes to residential energy use.** *Environment & Behavior.* 13(5): 590-609.
- Carrus, G.; Bonaiuto, M.; Bonnes, M. 2005. **Environmental concern, regional identity, and support for protected areas in Italy.** *Environment and Behavior.* 37(2): 237-257.
- Dunlap, R.; Van Liere, K. 1978. **Environmental concern: a bibliography of empirical studies and brief appraisal of the literature.** Monticello, IL: Vance Bibliographies.
- Dzewaltowski, D.; Noble, J.; Shaw, J. 1990. **Physical activity participation: social cognitive theory versus the theories of reasoned action and planned behavior.** *Journal of Sport & Exercise Psychology.* 12(4): 388-405.
- Fazio, R.; Powell, M.; Herr, P. 1983. **Toward a process model of the attitude-behavior relation: accessing one's attitude upon mere observation of the attitude object.** *Journal of Personality and Social Psychology.* 44(4): 723-735.
- Fazio, R.; Zanna, M. 1978. **Attitudinal qualities relating to the strength of the attitude-behavior relationship.** *Journal of Experimental Social Psychology.* 14(4): 398-408.
- Fazio, R.; Zanna, M. 2006. **On the predictive validity of attitudes: the roles of direct experience and confidence.** *Journal of Personality.* 46(2): 228-243.
- Fishbein, M.; Ajzen, I. 1975. **Belief, attitude, intention and behavior: an introduction to theory and research.** Reading, MA: Addison-Wesley.
- Frey, B. 1988. **Ipsative and objective limits to human behavior.** *Journal of Behavioral Economics.* 17(4): 229-248.
- Gardner, G.; Stern, P. 1996. **Environmental problems and human behavior.** Needham Heights: Allyn and Bacon. 300 p.
- Grob, A. 1995. **A structural model of environmental attitudes and behaviour.** *Journal of Environmental Psychology.* 15(3): 209-220.
- Herberlein, T.; Black, J.S. 1976 **Attitudinal specificity and the prediction of behaviour in a field setting.** *Journal of Personality and Social Psychology.* 33: 474-479.
- Hines, J.; Hungerford, H.; Tomera, A. 1986. **Analysis and synthesis of research on responsible environmental behavior: a meta-analysis.** *Journal of Environmental Education.* 18(2): 1-8.
- Huebner, R.; Lipsey, M. 1981. **The relationship of three measures of locus of control to environment activism.** *Basic and Applied Social Psychology.* 2(1): 45-58.
- Kaiser, F.; Wölfing, S.; Fuhrer, U. 1999. **Environmental attitude and ecological behaviour.** *Journal of Environmental Psychology.* 19(1): 1-19.
- Kals, E.; Schumacher, D.; Montada, L. 1999. **Emotional affinity toward nature as a motivational basis to protect nature.** *Environment and Behavior.* 31(2): 178.
- Liu, J.C.; Var, T. 1986. **Resident attitudes toward tourism impacts in Hawaii.** *Annals of Tourism Research.* 13: 193-214.
- Olsen, M. 1981. **Consumers' attitudes toward energy conservation.** *Journal of Social Issues.* 37(2): 108-131.
- Schahn, J.; Holzer, E. 1990. **Studies of individual environmental concern: the role of knowledge, gender, and background variables.** *Environment and Behavior.* 22(6): 767.
- Schwartz, S. 1968. **Words, deeds, and the perception of consequences and responsibility in action situations.** *Journal of Personality and Social Psychology.* 10(3): 232-242.

- Schwartz, S.; Howard, J. 1981. **A normative decision-making model of altruism.** In: Rushton, J.P.; Sorrentino, R.M., eds. *Altruism and helping behaviour: social, personality, and developmental perspectives*. Hillsdale, NJ: Erlbaum: 189-211.
- Staats, H. 2003. **Understanding proenvironmental attitudes and behavior: an analysis and review of research based on the theory of planned behavior.** In: Bonnes, M.; Lee, T.; Bonaiuto, M., eds. *Psychological theories for environmental issues*. Burlington, VT: Ashgate: 171-201.
- Stern, P. 1992. **What psychology knows about energy conservation.** *American Psychologist*. 47(10): 1224-1232.
- Stern, P.; Dietz, T. 1994. **The value basis of environmental concern.** *Journal of Social Issues*. 50(3): 65-84.
- Tanner, C. 1999. **Constraints on environmental behaviour.** *Journal of Environmental Psychology*. 19(2): 145-157.
- Taylor, S.; Todd, P. 1995. **Understanding information technology usage: a test of competing models.** *Information Systems Research*. 6: 144-176.
- Tremblay, K., Jr.; Dunlap, R. 1977. **Rural-urban residence and concern with environmental quality: a replication and extension.** *Rural Sociology*. 43(3): 474-91.
- Vining, J.; Ebreo, A. 2006. **Predicting recycling behavior from global and specific environmental attitudes and changes in recycling opportunities.** *Journal of Applied Social Psychology*. 22(20): 1580-1607.
- Wankel, L.; Kerry Mummery, W.; Stephens, T.; Craig, C. 1994. **Prediction of physical activity intention from social psychological variables: results from the Campbell's survey of well-being.** *Journal of Sport and Exercise Psychology*. 16: 56-69.

The content of this paper reflects the views of the author(s), who are responsible for the facts and accuracy of the information presented herein.

# AUSTRALIAN COMMUNITY MEMBERS' ATTITUDES TOWARD CLIMATE CHANGE IMPACTS AT THE GREAT BARRIER REEF

---

Carena J. van Riper  
Texas A&M University  
cvanripe@tamu.edu

Gerard Kyle  
Texas A&M University

Jee In Yoon  
Texas A&M University

Stephen G. Sutton  
James Cook University

---

**Abstract.**—This research identified homogenous groups of Australian community members that share similar attitudes toward climate change impacts within the Great Barrier Reef World Heritage Area (GBRWHA). A questionnaire was administered to a random sample of adult residents living near the GBRWHA (n = 1,623) in order to assess public awareness of climate change, concern about associated impacts, and involvement in mitigation strategies. Five distinct segments of the survey population were identified using three attitudinal dimensions drawn from the Theory of Planned Behavior. Study findings illustrated that each group perceived a variety of social, commercial, and environmental threats to the health of the Great Barrier Reef ecosystem and reported different levels of intended and carried-out environmentally responsible behaviors. Recommendations are provided for how to engage the identified groups of survey respondents in environmentally responsible behaviors.

---

## 1.0 INTRODUCTION

The Great Barrier Reef World Heritage Area (GBRWHA) is one of the most biologically diverse systems in the world. This area extends approximately 1,500 miles along the northeastern coast of Australia,

protecting an expansive network of coral reef ecosystems, continental islands, and sandy cays. Multiple uses are considered in its management with the goal of providing opportunities for the public to value and appreciate the reef (GBRMPA 2009). Shipping, commercial charters, recreational activities such as fishing and diving, and hunting by indigenous peoples are among the many uses accommodated within the GBRWHA.

There are a number of impacts and external pressures that are considered in managing the GBRWHA including climate change, which is recognized as one of the greatest threats facing the GBR ecosystems (IPCC 2007, Johnson and Marshall 2007, Moscardo et al. 2001, Vanclay 1988). In response to the anticipated impacts of climate change, GBRWHA management has made it a priority to reduce human influences on the reef. Managers have also been communicating with and involving the public in climate change mitigation strategies (Lynch et al. 2009). For example, the Australian Government developed the Climate Change Action Plan, a five-year project to better understand and test strategies for helping the reef cope with climate change impacts (GBRMPA, 2007). A thorough understanding of both public engagement and behavioral responses to environmental concerns is integral to this plan and to climate change mitigation strategies in general (Fielding et al. 2008, Lorenzoni et al. 2007).

The present study sought to identify homogenous groups of Australian residents that share similar attitudes toward climate change impacts within the GBRWHA. The findings from this research will help managers efficiently direct agency resources toward segments of the Great Barrier Reef regional community. Recommendations are provided for how to engage the identified groups of survey respondents in environmentally responsible behaviors (ERBs).

## 2.0 METHODS

### 2.1 Survey of Community Members

A telephone survey was administered in November 2008 to a random sample of adult residents living near the GBRWHA. The study area was stratified into eight regions, five of which were located within 50 km of the coastline: Cape York, Far Northern, Northern, Central, and Southern Queensland. The three remaining regions included residents in the Metropolitan Statistical Areas of Sydney, Melbourne, and Brisbane.

### 2.2 Analysis Approach

This research approach drew on the Theory of Planned Behavior (TPB) to determine whether individuals will engage in ERBs (Ajzen 1988, 1991). The TPB model was employed because it has previously demonstrated good explanatory power and has been extensively applied to measure ERBs in a variety of contexts (Fielding et al. 2008, Hinds and Sparks 2008). Confirmatory factor analysis (CFA) was used to test the adequacy of a three-factor solution that aligned with the three TPB dimensions: 1) attitudes, 2) subjective norms, and 3) perceived behavioral control (PBC). All survey items were aligned with the areas conceptualized by the TPB model to predict intentions to engage in ERBs, which in turn were used to predict public engagement in climate change mitigation strategies. More specifically, the first factor measured levels of environmental concern about climate change impacts on the health of the GBRWHA. The second factor assessed the extent to which respondents felt personally obligated to engage in mitigation efforts. The third factor assessed respondents' perceived levels of control over climate change. Mean value scores from the three factors were used to perform a cluster analysis (K-means), segmenting respondents into homogeneous groups. For the final cluster solution, various cluster combinations were evaluated based on the distinction among groups, proportionality of the clusters, and the analysts' informed judgment.

Batteries of questions on the following were used to compare and contrast the identified groups of survey respondents: 1) potential threats to the GBRWHA,

2) behavioral intentions, and 3) reported behavior. This phase of the analysis helped to evaluate the division of attitudinal segments (Jun et al. 2009, Kotler et al. 2002). First, respondents' opinions of potential threats were measured with 10 survey items. (Chi-square tests were later used to examine each item individually across groups of respondents.) The next step assessed intended behaviors by asking respondents what actions they would undertake over the following 12 months to help reduce the impacts of climate change on the Great Barrier Reef ecosystem. The third step assessed reported behaviors by asking if, in the previous 12 months, respondents had engaged in behaviors equivalent to those that were used to measure behavioral intentions. For these two behavioral measures, summative scores were created from a list of 14 survey items and entered into an ANOVA to assess the similarities and differences among groups.

## 3.0 STUDY FINDINGS

### 3.1 Response Rates

A total of 10,057 households were contacted by Roy Morgan Research, an Australian-based consulting firm. A phone survey was administered to 1,623 respondents for a response rate of 16 percent. Approximately 90 percent of those who declined to participate did so prior to being informed about the content of the survey. Approximately 200 residents in each of the eight communities completed the survey: Sydney (n = 200), Melbourne (n = 200), Brisbane (n = 200), Cape York (n = 200), Far Northern (n = 206), Northern (n = 202), Central (n = 202), and Southern Queensland (n = 213). Non-response bias for respondents and non-respondents was not assessed, so there is a possibility that the study estimates were mildly skewed. It should also be noted that potential bias does not extend to the cluster analysis, which examined relationships among variables rather than estimating population parameters. However, the size of the groups would be affected and, therefore, the results might not be generalizable to the broader population.

### 3.2. Socio-demographics

Just over half (54 percent) of the survey respondents were male. The average age was between 40 and

44 years. Approximately one third (32 percent) had achieved less than a U.S. high school diploma (i.e., graduated from primary school or secondary school) and 21 percent had attained what is equivalent to a high school diploma. Few respondents (6 percent) had attended some form of trade school, 18 percent had earned some postsecondary education, and 23 percent were college graduates. Most respondents had high annual household incomes: 4 out of 10 earned greater than \$100,000, 3 out of 10 earned between \$50,000 and \$100,000, just over 1 in 10 earned between \$30,000 and \$49,999, and 1 in 10 earned less than \$30,000 on an annual basis. Only 4 percent reported being of Aboriginal or Torres Strait Islander descent, 80 percent were born in Australia, and 95 percent spoke English as a first language. Average household size was just over three people.

### 3.3 Modeling Results

This research employed a three-factor TPB model (Table 1). The associated fit indices revealed an acceptable model fit ( $\chi^2 = 197.093$ ,  $df = 51$ ,  $RMSEA = .042$ ;  $NNFI = .982$ ;  $CFI = .986$ ). Using this attitudinal model, five distinct segments of the population were identified in the cluster procedure. No significant differences were found between clusters based on number of days visiting the Great Barrier Reef, household size, income, or ethnicity (Aboriginal or Torres Strait Islander). However, several distinguishing items emerged, including education, gender, birthplace in Australia, English as first language, and average age.

**Table 1.—Factor loadings, mean values, and standards deviations for Australian residents’ attitudes, subjective norms and perceived behavioral control (n = 1,623)**

	Factor Loadings			Mean	SD
	Factor 1	Factor 2	Factor 3		
<b>Attitudes</b> <sup>ac</sup>				3.86	0.75
8a. The overall health of the Great Barrier Reef	.70			3.90	1.00
8b. The natural beauty of the Great Barrier Reef	.76			3.93	0.95
8c. The ability of the Great Barrier Reef to support populations of fish and wildlife	.71			3.82	1.03
8d. The enjoyment people get from visiting the Great Barrier Reef	.70			3.72	1.05
8e. The ability of the Great Barrier Reef to support sustainable fisheries	.63			3.92	1.02
8f. The ability of the Great Barrier Reef to support sustainable tourism	.67			3.73	1.04
8g. The amount of coral on the Great Barrier Reef	.68			3.99	0.95
<b>Subjective norms</b> <sup>bc</sup>				2.47	0.96
6e. I feel personally obligated to help reduce the impact of climate change on the Great Barrier Reef		.75		2.59	1.15
6f. I would feel guilty if climate change had a negative impact on the Great Barrier Reef		.57		2.64	1.27
6g. People like me should do everything they can to reduce the impact of climate change on the health of the Great Barrier Reef		.67		2.19	1.09
<b>Perceived Behavioral Control</b> <sup>bc</sup>				2.25	1.02
6a. If everyone took action, we could reduce the impact of climate change on the Great Barrier Reef			.56	1.95	1.15
6c. I have the ability to help reduce the impact of climate change on the Great Barrier Reef			.69	2.54	1.20

<sup>a</sup> Mean score value is on a scale ranging from 1 (strongly increase) to 5 (strongly decrease).

<sup>b</sup> Mean score value is on a scale ranging from 1 (strongly agree) to 5 (strongly disagree).

<sup>c</sup> Fit indices:  $\chi^2 = 197.093$ ,  $df = 51$ ;  $RMSEA = .042$ ;  $NNFI = .982$ ;  $CFI = .986$

The TPB model was used to segment respondents into five groups (see Table 2). Cluster One reported a low average score (mean = 3.18) on attitude items relative to the four other groups of respondents. This group had the highest reported values for items measuring subjective norms (mean = 3.99) and PBC (mean = 4.14). Several distinguishing variables arose in the profile of Cluster One: 75 percent were 45 years of age or above, 73 percent were male, and 86 percent were born in Australia. Cluster Two had the highest average attitude score (mean = 4.21), as well as high levels of subjective norms (mean = 3.39) and PBC (mean = 3.5). Respondents in this cluster were in one of two groups containing the lowest percentage (75 percent) of Australian-born residents and they fell into one of the highest average age groups. Cluster Three did not report strong feelings about the three factors, ranking third in all categories including attitudes (mean = 4.04), subjective norms (mean = 2.8), and PBC (mean = 2.17), though it should be noted that the average attitude score for Cluster Three was high considering its placement on a scale ranging from one to five. Many of the socio-demographics that helped to identify respondents in Cluster Three were consistent with the larger sample; however, this group contained one of the highest proportions (86 percent) of Australian-born residents. Cluster Four was comprised of respondents who reported the lowest attitude scores (mean = 2.63), low levels of subjective norms (mean = 2.20), and low PCB (mean = 1.95). This cluster was

distinct from the others in terms of respondents' low levels of education, large proportion of non-native English speakers, low income bracket, and young age. Finally, respondents assigned to Cluster Five reported the highest attitude scores (mean = 4.21) and the lowest level of agreement with items measuring both subjective norms (mean = 1.67) and PCB (mean = 1.51). Similar to Clusters Three and Four, this group was relatively young and contained more females than males.

### 3.4 Cluster Comparisons

Three batteries of questions were used to profile and compare across the five clusters, the first of which measured respondents' perceived levels of social (e.g., recreation, tourism, development, indigenous uses), commercial (e.g., fishing, shipping), and environmental (e.g., climate change, water quality) threats to the GBRWHA (Table 3). Study findings suggest that there was higher concern about commercial uses and environmental impacts than about recreation, development, or subsistence living in the GBRWHA. Clusters One and Two reported lower degrees of perceived threats than did Clusters Three, Four, and Five. In other words, respondents in the two clusters that reported the highest levels of subjective norms and perceived behavioral control also reported less severe perceived impacts from threats to the GBRWHA than did individuals in the other three clusters.

**Table 2.—Average factor scores for five-cluster solution**

	Cluster 1 (n = 160)	Cluster 2 (n = 199)	Cluster 3 (n = 423)	Cluster 4 (n = 210)	Cluster 5 (n = 631)	F
Attitudes (mean, SD)	3.18 (0.51) <sup>ac</sup>	4.21 (0.63) <sup>ab</sup>	4.04 (0.47) <sup>abc</sup>	2.63 (0.54) <sup>abc</sup>	4.21 (0.46) <sup>ac</sup>	503.24*
Subjective Norms (mean, SD)	3.99 (0.70) <sup>a</sup>	3.39 (0.73) <sup>a</sup>	2.80 (0.51) <sup>a</sup>	2.20 (0.64) <sup>a</sup>	1.67 (0.44) <sup>a</sup>	809.35*
Perceived Behavioral Control (mean, SD)	4.14 (0.62) <sup>a</sup>	3.50 (0.62) <sup>a</sup>	2.17 (0.47) <sup>a</sup>	1.95 (0.47) <sup>a</sup>	1.51 (0.45) <sup>a</sup>	1169.53*

Similar superscripts indicate significant differences at  $p \leq 0.05$ .

\*Significant at  $p \leq 0.001$ .

**Table 3.—Descriptive statistics for measures of potential threats to the Great Barrier Reef reported by Australian community members**

Survey Item mean (SD)	Total	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5	F
Commercial fishing in the GBRMP	3.35 (0.81)	3.01 <sup>a</sup> (1.00)	3.19 <sup>b</sup> (0.86)	3.38 <sup>ab</sup> (0.79)	3.23 <sup>c</sup> (0.85)	3.50 <sup>abc</sup> (0.70)	15.40*
Recreational fishing in the GBRMP	2.56 (0.86)	1.99 <sup>a</sup> (0.89)	2.35 <sup>ab</sup> (0.81)	2.57 <sup>abc</sup> (0.80)	2.62 <sup>ab</sup> (0.87)	2.75 <sup>abc</sup> (0.83)	29.84*
Recreational activities such as snorkeling or diving on the reef	2.20 (0.82)	1.88 <sup>a</sup> (0.91)	2.16 <sup>a</sup> (0.80)	2.15 <sup>ab</sup> (0.79)	2.23 <sup>a</sup> (0.88)	2.31 <sup>ab</sup> (0.77)	9.69*
Shipping on the GBRMP	3.26 (0.85)	2.58 <sup>a</sup> (1.10)	3.20 <sup>ab</sup> (0.83)	3.27 <sup>ac</sup> (0.79)	3.37 <sup>a</sup> (0.83)	3.42 <sup>abc</sup> (0.74)	34.45*
Declining quality of the water from land run-off into the GBRMP	3.39 (0.81)	2.62 <sup>a</sup> (0.98)	3.23 <sup>ab</sup> (0.90)	3.44 <sup>abc</sup> (0.76)	3.33 <sup>ad</sup> (0.81)	3.63 <sup>abcd</sup> (0.61)	58.89*
Coastal development along the GBRMP	3.29 (0.82)	2.62 <sup>a</sup> (0.97)	3.23 <sup>ab</sup> (0.88)	3.29 <sup>ac</sup> (0.79)	3.16 <sup>ad</sup> (0.85)	3.51 <sup>abcd</sup> (0.66)	43.10*
Tourism in the GBRMP	2.66 (0.83)	2.22 <sup>a</sup> (0.94)	2.60 <sup>ab</sup> (0.82)	2.64 <sup>ac</sup> (0.82)	2.68 <sup>a</sup> (0.81)	2.81 <sup>abc</sup> (0.76)	17.56*
Climate change or global warming	3.45 (0.84)	2.29 <sup>a</sup> (1.06)	3.21 <sup>ab</sup> (0.90)	3.53 <sup>abc</sup> (0.70)	3.35 <sup>ad</sup> (0.88)	3.76 <sup>abcd</sup> (0.51)	129.87*
Indigenous hunting in the GBRMP	2.31 (0.94)	2.13 <sup>a</sup> (1.07)	2.10 <sup>b</sup> (0.92)	2.24 <sup>c</sup> (0.88)	2.56 <sup>abc</sup> (0.94)	2.37 <sup>ab</sup> (0.92)	8.58*
Recreational boating in the GBRMP	2.59 (0.85)	2.10 <sup>a</sup> (0.92)	2.43 <sup>ab</sup> (0.81)	2.59 <sup>a</sup> (0.83)	2.75 <sup>ab</sup> (0.89)	2.71 <sup>ab</sup> (0.80)	20.82*

Mean score value is on a scale ranging from 1 (no threat at all) to 4 (major threat).

Similar superscripts indicate significant differences at  $p \leq 0.05$ .

\*Significant at  $p \leq 0.001$ .

The second and third batteries of questions used to validate the five-cluster solution measured intended and reported behaviors (Table 4). Respondents intended to take actions and reported actually taking actions to reduce climate change impacts in the GBRWHA. A total of 79 percent of respondents in the aggregated sample reported undertaking at least one ERB in the previous 12 months. Across all groups, respondents underestimated their intended behaviors

by actually engaging in more behaviors than they reported intending to engage in (see Figure 1). The most frequently cited behavioral intention items were miscellaneous (15 percent), reduced power, energy, and/or electricity usage (12 percent), and recycling (5 percent). The most common behaviors that had occurred in the previous 12 months were turning off lights and appliances (38 percent) and recycling (33 percent).

**Table 4.—Average factor scores for five-cluster solution**

	Cluster 1 (n = 160)	Cluster 2 (n = 199)	Cluster 3 (n = 423)	Cluster 4 (n = 210)	Cluster 5 (n = 631)	F
Behavioral Intentions	0.62 (0.88)	0.52 (0.67)	0.60 (0.79) <sup>a</sup>	0.47 (0.68)	0.66 (1.08) <sup>a</sup>	2.67*
Reported Behavior	1.93 (1.47) <sup>a</sup>	1.57 (1.28) <sup>b</sup>	1.65 (1.17) <sup>c</sup>	1.86 (1.46) <sup>d</sup>	1.68 (1.31) <sup>abcd</sup>	7.05*

Similar superscripts indicate significant differences at  $p \leq 0.05$ .

\*Significant at  $p \leq 0.001$ .

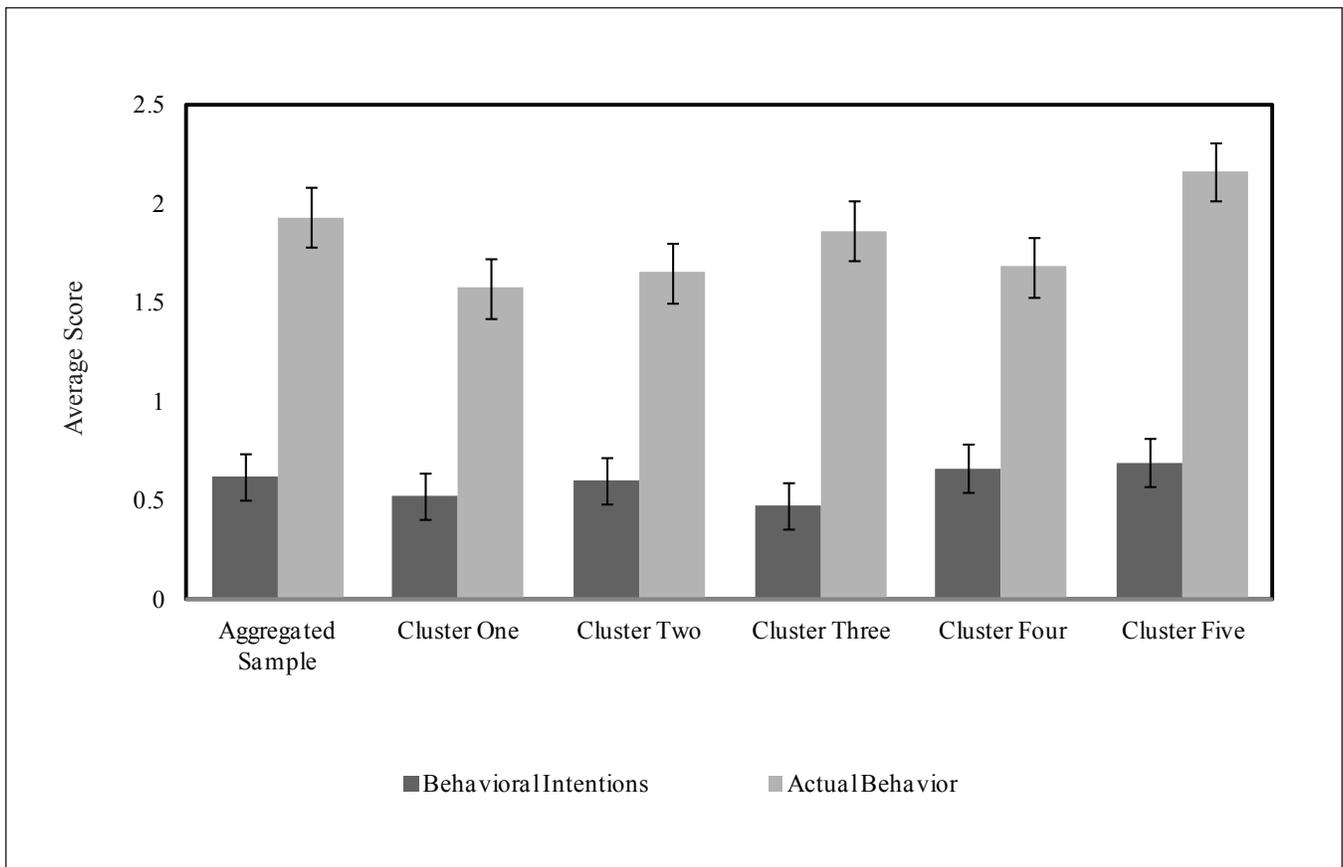


Figure 1.—Comparison between intended and reported environmentally responsible behaviors.

#### 4.0 DISCUSSION

Consistent with past research, the results of this study show that the survey respondents shared widespread awareness and concern over climate change and its perceived impacts on the health of the Great Barrier Reef ecosystem (Johnson & Marshall 2007, Moscardo et al. 2001, Nilsson et al. 2010, Vanclay 1988). This suggests that educational efforts aimed at engaging the public in climate change mitigation strategies would be well received among the survey respondents.

We identified five homogenous groups of Australian community members living in close proximity to the GBRWHA who share distinct attitudes and beliefs about climate change. GBR managers may want to know how to direct resources in ways that are appealing to these different groups. Cluster One is comprised mostly of older males born in Australia who have relatively weak attitudes, are strongly influenced by moral obligations, and feel the highest level of control over ERBs. These respondents would

be especially receptive to climate change-friendly management strategies. Cluster Two, older non-residents, reported strong attitudes and moderate levels of norms and PBC, indicating that respondents in this group value the environment and the GBRWHA in particular. Both Clusters One and Two would be likely to support pro-environmental management actions. Cluster Three, the group with the highest proportion of Australian-born residents, high levels of income, and young average age, reported average attitudinal scores relative to the four other identified groups. Although Cluster Three ranked third in all categories, respondents in this group have strong attitudes but feel a relatively weak degree of social obligation and control over reducing climate change impacts at the GBRWHA. Cluster Four included survey respondents with lower levels of education and income, a large proportion of non-native English speakers, and of a relatively younger age. Respondents in this group reported the lowest overall attitudes. Managers will likely face challenges engaging this group in ERBs.

Finally, Cluster Five contained a greater proportion of young females than any other group, reported strong attitudes, perceived the lowest levels of obligation, and had the strongest disbelief that behavioral measures would influence climate change. To engage this group of survey respondents effectively, managers could convey the message that ERBs can in fact make a difference in reducing climate change impacts.

Three sets of validation variables identified similarities and differences among the five identified groups of respondents, including indicators of perceived threats, intended behaviors, and reported behaviors. First, study findings demonstrate that Clusters Three, Four, and Five are more concerned with social, commercial, and environmental threats facing the health of the GBRWHA, while Clusters One and Two are less concerned about these threats. Perceived threats were thus helpful in determining the distinctiveness of the attitudinal segments. Second, survey respondents intended to engage in ERBs such as reducing energy use, recycling, and using public transportation, suggesting that most respondents are willing to engage in climate change mitigation strategies. Finally, respondents reported engaging in ERBs during the previous year, pointing to behavioral responses to concerns surrounding climate change. In addition to validating the differences among attitudinal segments, assessing intended and reported behaviors revealed that behavioral intentions were underestimated – all groups reported engaging in more ERBs than anticipated. This finding is contrary to past research and may be a function of social judgment theory, in that survey respondents could have felt obliged to provide the most socially acceptable response to the survey questionnaire (Sherif and Hovland 1961).

## 5.0 CONCLUSIONS

Consistent with past research, the results of this study show that the Great Barrier Reef regional community is aware of the threats that climate change poses to the reef ecosystem. Considering this widespread concern, educational efforts aimed toward the five segments of the survey population should be well received and effective as a mechanism for engaging community members in ERBs.

## 6.0 LITERATURE CITED

- Ajzen, I. 1988. **Attitudes, personality and behavior.** Chicago, IL: Dorsey Press.
- Ajzen, I. 1991. **The theory of planned behaviour.** *Organizational Behavior and Human Decision Processes.* 50: 179-211.
- Fielding, K.S.; McDonald, R.; Louis, W.R. 2008. **Theory of planned behaviour, identity and intentions to engage in environmental activism.** *Journal of Environmental Activism.* 28: 318-326.
- Great Barrier Reef Marine Park Authority (GBRMPA). 2007. **Great Barrier Reef climate change action plan 2007 – 2012.** Available at [http://www.gbrmpa.gov.au/\\_\\_data/assets/pdf\\_file/0012/22620/climate-change-action-plan.pdf](http://www.gbrmpa.gov.au/__data/assets/pdf_file/0012/22620/climate-change-action-plan.pdf). (Accessed March 8, 2009).
- Great Barrier Reef Marine Park Authority (GBRMPA). 2009. **Great Barrier Reef outlook report 2009.** Available at [http://www.gbrmpa.gov.au/corp\\_site/about\\_us/great\\_barrier\\_reef\\_outlook\\_report](http://www.gbrmpa.gov.au/corp_site/about_us/great_barrier_reef_outlook_report).
- Hinds, J.; Sparks, P. 2008. **Engaging with the natural environment: the role of affective connection and identity.** *Journal of Environmental Psychology.* 28(2): 109-120.
- IPCC. 2007. **Climate change 2007: the physical science basis: summary for policymakers.** Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. Geneva.
- Johnson, J.E.; Marshall, P.A. 2007. **Climate change and the Great Barrier Reef: A vulnerability assessment.** Great Barrier Reef Marine Park Authority and Australia Greenhouse Office.
- Jun, J.; Kyle, G.T.; Mowen, A.J. 2009. **Market segmentation using perceived constraints.** *Journal of Park & Recreation Administration.* 26: 35-55.
- Kotler, P.; Roberto, E.; Lee, N. 2002. **Social marketing: Improving the quality of life.** Thousand Oaks, CA: Sage Publications.

- Lorenzoni, I.; Nicholson-Cole, S.; Whitmarsh, L. 2007. **Barriers perceived to engaging with climate change among the UK public and their policy implications.** *Global Environmental Change*. 17: 445-459.
- Lynch, A.M.; Sutton, S.; Tobin, R. 2009. **A review of community perceptions of climate change: Implications for the Great Barrier Reef.** Report prepared for the Great Barrier Reef Marine Park Authority.
- Moscardo, G.; Green, D.; Greenwood, T. 2001. **How great is the Great Barrier Reef! tourists' knowledge and understanding of World Heritage status of the Great Barrier Reef.** *Tourism Recreation Research*. 26: 19-25.
- Nilsson, J.A.; Sutton, S.G.; Tobin, R.C. 2010. **A community survey of climate change and the Great Barrier Reef.** Report prepared for the Great Barrier Reef Marine Park Authority.
- Sherif, M.; Hovland, C.I. 1961. **Social judgment: assimilation and contrast effects in reaction to communication and attitude change.** New Haven, CT: Greenwood.
- Vanclay, F.M. 1988. **Tourist perceptions of the Great Barrier Reef.** Research Publication No. 38. Great Barrier Reef Marine Park Authority.

The content of this paper reflects the views of the author(s), who are responsible for the facts and accuracy of the information presented herein.

***TOURISM MARKETING  
AND MANAGEMENT***

# PURCHASE DECISION INVOLVEMENT: EVENT MANAGEMENT SEGMENTS AND RELATED EVENT BEHAVIOR

---

Rodney B. Warnick, Ph.D.  
Department of Hospitality and Tourism Management  
University of Massachusetts at Amherst

David C. Bojanic  
University of Texas at San Antonio

---

**Abstract.**—The goal of this research was to examine the relationships between different levels of event purchase decision involvement (PDI) segments and their respective event behaviors (e.g., expenditures, travel behavior, event consumption and satisfaction). The specific purpose was to answer two major research questions: 1) Can PDI identify different levels or segments of event attendees?; and 2) Do the PDI segments differ by their tendency to travel, spend, and consume at an event? Three segments of attendees were identified based on PDI and there were significant differences among these segments in both categorical and continuous variables.

---

## 1.0 INTRODUCTION

Special events are characterized by important purchase decisions, planning, and consumptive behavior. From a marketing perspective, the success of the event depends on attracting attendees and influencing their expenditures, length of stay, and overall event satisfaction. Because special events attract followers or consumers who have high interest levels in the event's attractions, it is appropriate to measure involvement in order to differentiate and segment attendees.

The measurement of involvement over the past two decades has become more complex while its application is still lacking (Reagan et al. 2009). Substantial development of "involvement theory" in the leisure research field has drawn from marketing, consumer behavior, and social psychology, and has evolved over time (Havitz and Mannell 2005).

However, the literature on involvement in the tourism field is scarce according to Cia et al. (2004) and is especially lacking in the study of event management (Getz 2008).

The goal of this research was to examine the concept of purchase decision involvement (PDI) among special event attendees. Two major research questions were posed: 1) Can PDI identify different segments of event attendees?; and 2) Do the certain types of PDI segments differ by their tendency to travel, spend, and consume at an event?

## 2.0 LITERATURE REVIEW

Havitz and Mannell (2005) suggested that the involvement literature could be "cross-fertilized" with situation-specific leisure and tourism research in order to make more profound and operational applications of the various involvement constructs. The present research grew out of that idea. From an operational perspective, an event professional or researcher should consider the measures of involvement including: the media used and the time spent in searching for events; the energy, effort, or financial commitment invested in researching and attending events; the number of event alternatives examined or considered; and the extent of the decisionmaking process. Event pre-trip or pre-event planning and decisionmaking need to be examined as part of the process (Clawson and Knetsch 1966). From a marketing perspective, associations also play a vital role in securing corporate and/or private sponsorships for events ranging from the Olympics to regional First Night celebrations. Cornwell and Maigan (1998) and Speed and Thompson (2000) note that little is known about how effective marketing activities are at attracting attendees to such events. At the same time, researchers have not developed theoretical frameworks to guide investigations of consumers' reactions to event marketing and sponsorships.

## **2.1 Involvement Theory and Application to Special Events**

The concept of involvement has been heavily researched since 1962 when it was introduced through the works of Zaichkowsky (1986). Involvement is typically defined as a “state of motivation, arousal, or interest” (Havitz and Dimanche 1997, 1999; McWilliams and Crompton 1997). The consumer behavior and social psychology literature uses the concept of involvement to explain a variety of behavioral and decisionmaking processes (Havitz and Dimanche 1990, 1997). There are three ways to view involvement: 1) ego or psychological involvement; 2) situational or purchase involvement; and 3) response involvement. There are excellent summaries of involvement research by Cai et.al (2004), Engell and Blackwell (1982), Havitz and Dimanche (1990, 1999), Kim et al. (1997), Michealidou and Dibb (2008), and Zaichkowsky (1986).

The application of situational involvement has varied across the fields of tourism, hospitality, recreation and leisure settings. Situational involvement has not been studied or refined as closely or intently as enduring or ego involvement despite its advantages for direct application as a theoretical construct or as a segmentation and/or marketing tool.

## **2.2 Situational Involvement and Purchase Decision Involvement**

PDI was conceptualized and developed through the works of Mittal (1989) and Park and Mittal (1985) and is generally classified as “situational involvement” (Michealidou and Dibb 2008). PDI represents the consumer’s mental state as manifested in temporary concern with a stimulus object—in this case a special event. Park and Mittal (1985) posited that involvement is an individual’s “goal-directed arousal capacity,” which is governed by both cognitive and affective motives. Cognitive aspects are represented by the cost-benefits of functional performances of the product, service, or event, while the affective aspects relate to symbolic benefits such as self-image or self-esteem.

Developed by Mittal (1989), the scale used in this study focuses on the interest and concern that an individual brings to bear on the purchase decision task. It includes four dimensions: 1) the degrees of caring about which types of and brands of the product exist; 2) the differences among the types and brands of the product; 3) the importance of the right choice of the product; and 4) the concern of the outcome of the actual product choice decision. Subsequent research by Mittal (1995) suggested that one item, perceived brand differences, showed excessive item error. Thus, the brand difference item was not measured in this study.

## **2.3 Purchase Decision Involvement as a Segmentation Variable**

Research by Arora (1982), Laurent and Kapferer (1985), and Zaichkowsky and Sood (1989) suggests that involvement provides a promising basis for market segmentation. Dimanche et al. (1993) found three unique segments in a study of tourists’ involvement with five tourism activities. McIntyre and Pigram (1992) identified four unique segments of vehicle-based campers. Havitz et al. (1994) uncovered six different segments of fitness participants. Kyle et al. (2002) found three distinct segments of runners in their analysis of road races, but they also found that the level of involvement varied across activities and that the type and level of involvement varied across segments of participants within an activity. They concluded that distinct and meaningful target markets could be identified through involvement profiles.

In their study of PDI, Cai et al. (2004) found that information was perceived and valued differently by those with different levels of purchase decision involvement. The researchers made three specific recommendations based on their findings. First, the value of PDI information should be considered by destination marketing organizations (DMO) in the promotional process. Second, PDI information is critical in determining the specific type(s) of information to be included in marketing messages. Third, the differences among market segments

also affect which advertising or promotional media should be used and how different types of destination information should be presented in advertising layouts. Perhaps most important in their findings was the impact that PDI could have upon segmentation.

## **2.4 Special Event Research and Marketing Applications**

Special event management research has increased in the last decade largely because more academic programs and journals are covering this topic. At the same time, one type of special event, air shows, has grown in popularity both worldwide and in the U.S. An air show is, in essence, a sporting event where flying performances are showcased with thrilling aerobatics, competitions, and displays of aerial feats that are not easily seen in any other setting.

The International Council of Air Shows (ICAS 2009) collects data on the demographics and travel behaviors of air show spectators throughout North America. The spectator base of a typical air show represents a relatively affluent cross-section of North America, with 54.3 percent of survey respondents reporting an income in excess of \$50,000 (ICAS 2009). ICAS's most recent data indicate that 75 percent of all air show attendees travel 49 or fewer miles to these events (53 percent travel less than 20 miles and 22 percent travel 21 to 49 miles). Travel characteristics are often used to establish the extent to which visitors' bring "outside money" to the local economy where they event is located. Thus, examining both involvement profiles and market segments is important for understanding the economic impacts of special events, and for improving the measures and marketing applications of segmentation strategies in professional event management.

Relatively few academic journals have reported research about air shows. A comparative study in the "Journal of Vacation Marketing" by Nicholson and Pearce (2001) examined four different events including an air show in New Zealand's South Island and found that all of the events attracted significantly

different visitors. They concluded that, of the four events (a country music festival, a wine and food festival, a foods festival and an air show), the air show was more characteristically a "tourism event" by the nature of the visitors it attracted. They also concluded that event participant profiling needs to go beyond the typical socio-demographic variables to examine other means of segmentation.

## **3.0 METHOD**

This study was conducted during the Great New England Air Show (GNEAS) on September 6 and 7, 2008. The GNEAS has been staged 20 times over the past four decades at the Westover Air Base in Chicopee, Massachusetts. The event is coordinated by the local host organization, the Galaxy Council, and is jointly sponsored by the U.S. Air Force, the Greater Springfield Convention and Visitors Bureau, and numerous corporate sponsors. Despite its long history, there has been no detailed attempt to understand the value of the air show's contributions to the regional economy or to study the attendees who travel from around the region. The two-day event is one of the largest special events in New England, attracting over 300,000 visitors during one weekend in the early fall.

A comprehensive survey instrument was developed and divided into six distinct parts: 1) interest in the GNEAS and previous experience with air shows; 2) motivation to visit the GNEAS and the Pioneer Valley region of Massachusetts; 3) purchase decision involvement regarding air shows in general and the GNEAS in particular; 4) travel behavior related to the GNEAS and to the Pioneer Valley region; 5) spending behavior and analysis; 6) demographic profile of visitors. A seventh section invited visitors' open-ended comments. These questions provided a basis for measuring the level of PDI and helped measure other parameters that are crucial in segmenting the overall market by visitor dynamics and event-related behaviors. Chi-square analysis and ANOVAs were conducted to determine if significant differences existed at the .05 level.

## 4.0 SELECTED RESULTS

The response rate for the study was 37.3 percent. Of 3,078 surveys emailed, 3,072 were successfully delivered and 1,145 were completed. Six surveys were not deliverable due to incorrect email addresses, and 89 surveys were discarded for being incomplete. On average, the respondents were middle-aged (mean 45 years), middle-income (\$50,000 to \$100,000 gross household income before taxes), and traveling with families or friends (average 3.65 people in the party).

Respondents, on average, were 'somewhat involved' in the air show; on the one involvement-measuring question, the average score was 5.31 on a 7-point scale with 7 being very highly involved). They traveled an average of 45 miles (one-way) to attend the show, stayed 1.5 nights away from home, and spent an average of \$29.17 per person at the event. Nearly 38 percent had learned about the air show on the Internet while word-of-mouth from family, friends, and the military was another important source of information. Print ads, broadcast ads, and direct mailers were mentioned less frequently as information sources. The two primary points of interest at the GNEAS in general were the aircraft (mentioned by 57 percent) and the event as a source of entertainment (32 percent mentioned this).

A large number of respondents (83 percent) had visited the region before and 63 percent had been to the GNEAS in the past, but more than half (60 percent) would not have visited the area if not for the air show. The air show visit was a day-trip for most; only 15 percent indicated that they had lengthened their stay in the area and the average length of stay was less than two days (1.41 days average). The respondents tended to be satisfied with their GNEAS experience (they gave an average score of 5.96 out of 7 on the satisfaction question where 7 indicated being extremely satisfied). They also indicated a high likelihood of returning to the GNEAS event in the future, with an average score of 6.09 on a 7-point scale where 7 meant very likely to return.

The PDI scale did identify three distinct levels of involvement: High (n=403, 35 percent), Medium (n=392, 34 percent), and Low (n=350, 31 percent). In subsequent analyses, involvement level was a significant segmentation variable for 6 of 10 categorical variables and 8 of 15 continuous variables.

There were significant differences between the PDI segments (high, medium, or low) on the following categorical variables (Table 1):

1. air show information sources, chi sq (18, N=1,145) = 46.006;  $p > .000$ ;
2. interest in air shows, chi sq (6, N=1,145) = 108.886,  $p > .000$ ;
3. been to show before, chi sq (2, N=1,145) = 13.992,  $p > .001$ ;
4. length of stay, chi sq (4, N=369) = 10.524,  $p > .032$ ;
5. gender, chi sq (2, N=1,111) = 30.152,  $p > .001$ ; and
6. age, chi sq (8, N=1,104) = 27.804,  $p > .001$ .

There were no significant differences on the following categorical variables: visitation to Pioneer Valley in the past, visitation to the Pioneer Valley if not for the GNEAS, education level of respondents, and income of the respondents.

ANOVA also found significant differences among PDI segments for the following variables (Table 2):

1. times attended GNEAS;
2. group size;
3. time spent at GNEAS;
4. nights away from home at the event;
5. number of days at event;
6. number of hours per day at the event;
7. likelihood of return;
8. satisfaction level;
9. travel distance;
10. total expenditures per person; and
11. transportation costs per person.

Variables that were not different by PDI segments were lodging expenditures, attractions visited, size of party, and children in party.

**Table 1.—Chi-Square analysis of selected categorical variables and involvement levels**

	High Involvement (n=350)	Medium Involvement (n=392)	Low Involvement (n=403)	DF	Chi-Square	P-value
Prompted Interest in GNEAS?				6	108.886	0.000
% Aircrafts	42.7	36.7	20.6			
% War Vet	46.8	35.5	17.7			
% Armed Forces	34.3	32.9	32.9			
% Entertainment	31.8	29.9	50.0			
Been to GNEAS Before?				2	13.992	0.001
Yes	38.1	35.1	26.8			
No	30.4	32.7	36.9			
Hear About GNEAS?				8	46.006	0.000
Publicity	34.8	34.8	30.4			
Paid Advertising	32.1	29.4	38.5			
Internet – Web site	43.6	34.4	22.0			
Word of Mouth Referrals	27.3	34.2	38.4			
Local/ Other	27.7	41.5	30.8			
Would you have visited the area if there were no GNEAS?				2	1.614	0.446
Yes	31.9	35.6	32.5			
No	35.7	34.7	29.6			
GNEAS Affect Stay Length				4	10.524	0.032
Stayed Longer	47.3	32.7	20.0			
Stayed Same Length	28.3	35.0	36.7			
Stayed Shorter Length	41.9	29.0	39.0			
Been to Pioneer Valley Before?				2	0.934	0.627
Yes	35.0	35.1	30.0			
No	37.1	31.4	31.4			
Gender				2	30.152	0.000
Male	39.6	35.1	25.3			
Female	26.4	33.5	40.1			
Income				6	9.132	0.166
< \$50K	34.5	36.6	28.9			
\$50-\$74.9K	36.5	31.4	32.1			
\$75-99.9K	30.4	41.3	28.3			
\$100K+	39.3	31.0	29.7			
Age				8	27.804	0.001
<30	38.7	27.9	33.3			
30-39	27.4	33.3	39.3			
40-49	33.2	38.5	28.3			
50-59	39.8	36.4	23.7			
60+	45.1	29.9	25.0			
Education				2	4.055	0.132
Some College or Less	37.5	35.0	27.3			
College Graduate	33.1	34.1	32.8			

**Table 2.—Mean PDI levels and event attributes as measured by ANOVA**

Variable	High Involvement	Medium Involvement	Low Involvement	F-value	Significance
Times Attended GNEAS	3.39	3.24	2.64	6.242	0.002***
Number of Adults in Party	2.55	2.30	2.29	4.881	0.008***
Number of Children in Party	1.20	1.27	1.33	.770	0.463
Total Size of Party	3.74	3.57	3.63	.636	0.530
Hours Per Day at GNEAS	6.13	5.64	4.60	36.415	0.000***
Days of Trip to GNEAS	3.08	2.41	2.13	63.924	0.000***
Nights Stayed Away for Event	1.13	1.41	2.08	63.951	0.000***
Attractions Visited	0.94	0.41	0.35	1.988	0.137
Distance from Event (miles)	37.89	45.56	50.78	2.370	0.094*
Likelihood of Return (7 pts.)	5.80	6.03	6.40	19.440	0.000***
Level of Satis-faction (7 pts.)	5.65	5.92	6.27	16.109	0.000***
Transportation Cost (\$)/ Person	6.36	7.76	9.52	6.150	0.002***
Lodging Expenditures/ Person	2.23	3.23	4.82	2.282	0.103
Total Expenses/ Person	22.04	27.49	36.84	13.392	0.000***
Total Expenditure/ Group	70.51	83.03	126.36	15.998	0.000***

Significance Level: \*\*\* at 0.001 level; \*\* at 0.05 level and \* at 0.10 level.

In terms of specific reasons for visiting the GNEAS, those who were more highly involved were most interested in the aircrafts (43 percent of high involvement respondents versus 21 percent of low involvement respondents) and war veteran-related attractions (47 percent of high involvement versus 18 percent of low involvement). On the other hand, the low involvement participants were more likely to be motivated by the entertainment value of the event (50 percent of low involvement respondents versus 32 percent of high involvement respondents). High involvement participants were more likely than low involvement participants to have been to the GNEAS before (38 percent versus 27 percent, respectively). High involvement participants were also more likely than low involvement participants (44 percent versus 22 percent, respectively) to hear about the event through the Internet Web site. Low involvement participants used word-of-mouth referrals more frequently (38 percent) than high involvement participants (27 percent). High involvement participants were also more likely to stay in the area longer (47 percent) because of the GNEAS than low involvement participants (20 percent), but the GNEAS did not differentiate by involvement level on previous visits to the area in general or likelihood of visiting the area were it not for the air show.

There were some differences among responses by gender. About 40 percent of males but only 25 percent of females were high involvement attendees; 40 percent of females were low involvement attendees. Two segments of attendees were different from the others by age: about 39 percent of young adults, 40 percent of those age 50-59, and 45 percent of those over age 60 were high involvement attendees while just 29 percent, 24 percent, and 25 percent of those same groups (respectively) were low involvement attendees. There were no significant differences across the different involvement levels based on income and education attainment.

When the dynamics of past and current travel behavior were examined, there were significant differences by number of times attending the event in the past and the amount of time spent at the event. As expected, high involvement participants were significantly more likely to have attended the air show in the past (3.39 times on average) than low involvement participants (2.64 times on average). High involvement participants were also likely to be part of a group an average of 2.55 adults while low involvement participants tended to be part of groups with a significantly lower number of adults (2.29). The high involvement segment spent significantly more hours per day (6.13) at the air show

and more days per trip (3.08) than low involvement segments (4.60 hours per day, 2.13 days per trip). On the other hand, low involvement participants spent a higher average number of days away from home (2.08 nights) versus the high involvement participants (1.13 nights).

This behavior may be partially explained by travel distance to the event. Low involvement participants travelled further, an average of 50.78 miles one-way versus 37.89 miles one-way for high involvement participants. Expenditures by involvement type also revealed significant differences in four expenditure categories. Low involvement participants spent more money overall on the event by group (\$126.36 on average) and by person (\$36.84 per person) and more on transportation (\$9.52 per person) than high involvement participants (who spent \$70.51 overall per group; \$22.04 overall per person; and \$6.36 for transportation per person). There were no significant differences among involvement segments with regard to expenditures for lodging.

This study also found that high involvement participants were harder to please and less likely to return. On scales where 7 was the highest score, low involvement participants recorded high satisfaction scores (average 6.27) and higher likelihoods to return scores (average 6.40) than high involvement participants (average satisfaction score of 5.65 and average likelihood to return score of 5.80).

## **5.0 CONCLUSIONS AND DISCUSSION**

Purchase decision involvement was found to be a viable segmentation variable. Three levels of involvement were found in this study—high, medium and low, as suggested by Mittal (1989). There were significant differences by PDI on categorical variables such as info sources, interest in air shows, previous air show attendance, length of stay at the air show, gender, and age. There were also significant differences by continuous variables such as number of times respondents had attended the show, group size, and nights away from home. PDI was not significant for lodging expenditures, attractions visited, overall size

of the group, children in the group, education level, and previous travel to the area.

Two of the critical outcome variables, likelihood to return to the GNEAS and event satisfaction were also found to be significantly different by PDI segments. Furthermore, high versus low PDI groups reported visiting the air show for different reasons. High PDI attendees were more interested in the planes and the show specifics while low PDI attendees were most interested in family entertainment. Men were more likely than women to be high PDI members. The high involvement group also used different media sources and wanted more details about the event than lower PDI groups. The low PDI group spent more money overall, but not in every category. It appears that knowledge of the event and costs associated with it are experience-based—those who have high involvement and more experience know best how to prepare for and spend (save) money on the event.

There are a number of applications for and recommendations from the results of this study. PDI is useful from a marketing perspective. Clearly, the air show event serves different purposes for different attendees, and the event organizers need to be aware of this. Detailed information about the event's schedule and featured acts is important to high PDI individuals who are likely to search the Internet for information about the show. However, low PDI and first-time attendees have a stronger need for specific information about the nature of the event itself, how to get to there, and when it is held. First-time attendees are primarily in the low PDI group, have different levels of expectations, and express higher levels of satisfaction with their air show experience.

Within the high involvement group, there appear to be two major age segments: young adults (under age 35), and older adults (over age 50). This may be related to the military aspect of the GNEAS; the younger cohorts may be currently enlisted military and the older group may be retired military. In any case, the show must appeal to both groups. Furthermore, "involvement" and even the more detailed types of involvement may

in fact differ by these age-related subgroups. While not measured here, “ego or enduring involvement” may vary considerably by these two age-related subgroups. In addition, the study data may be confounded by involvement in the military (the attendee survey did not collect data on military involvement). On ground observation at the event confirmed that there were a large number of military families.

Finally, a limitation to this study was the economic reality of the timing of the event. This was a large regional event held during a time of particularly high gasoline prices in the summer of 2008 (the cost exceeded \$4 per gallon) and attendees sought out events that offered high value and low costs.

Other important practical lessons of this study include that it was effective to conduct the survey online versus a traditional mailed or telephone survey; the response rate was high by survey standards while costs were kept to a minimum. Incentives were also helpful in increasing the response rate. Events like the air show would also benefit from an online registration process to speed entry or provide different types of information to different segments. For future research, a larger sample of air show attendees could yield information that is highly valuable to event planners and could be used in pitches to potential corporate sponsors. Although not analyzed in this study, the ability to obtain open-ended qualitative research information is potentially enhanced by an online survey. The responses to the open-ended questions in this study were extensive.

This research does have limitations, and future research is still needed. Obtaining a representative sample is a challenge when the organizers desire is to measure the economic impact or significance of an air show event. An online registration process could be a potential recruiting tool, but we recommend that future air show research use an intercept recruiting process in order to get a sample that is more representative of the population of attendees. While PDI was a viable segmentation tool, other types of involvement and attributes of the event itself also need to be

measured and studied. Event loyalty and other aspects of likelihood to return are important and should be investigated further. A more detailed analysis of information search behaviors of attendees and their use of media sources would be helpful. Finally, we learned that air shows do appear to provide a rich sample of “involved individuals” for research and operational applications.

## 6.0 LITERATURE CITED

- Arora, R. 1982. **Consumer involvement in retail store positioning.** *Journal of the Academy of Marketing Sciences.* 10(1): 109-124.
- Cia, L.A.; Feng, R.; Breiter, D. 2004. **Tourist purchase decision involvement and information preferences.** *Journal of Vacation Marketing.* 10(2): 138-148.
- Clawson, M.; Knetsch, J.L. 1966. **Economics of outdoor recreation.** Baltimore, MD: John Hopkins Press. 348 pages.
- Cornwell, T.B.; Maigan, I. 1998. **An international review of sponsorship research.** *Journal of Advertising.* 27(1): 1-22.
- Dimanche, F.; Havitz, M.E.; Howard, D.R. 1993. **Segmenting recreationists and tourists using involvement profiles.** *Journal of Travel and Tourism Marketing.* 1(4): 33-52.
- Engel, J.F.; Blackwell, R.D. 1982. **Consumer behavior. 4th ed.** New York: Dryden Press.
- Getz, D. 2008. **Event tourism: definition, evolution and research.** *Tourism Management.* 29: 403-428.
- Havitz, M.E.; Dimanche, F.; Bogle, T. 1994. **Segmenting the adult fitness market using involvement profiles.** *Journal of Park and Recreation Administration.* 12(3): 35-56.
- Havitz, M.E.; Dimanche, F. 1990. **Propositions for testing the involvement construct in recreation and tourism contexts.** *Leisure Science.* 12(2): 179-197.

- Havitz, M.E.; Dimanche, F. 1997. **Leisure involvement revisited: conceptual conundrums and measurement advances.** *Journal of Leisure Research.* 29(3): 245-278.
- Havitz, M.E.; Dimanche, F. 1999. **Leisure involvement revisited: drive properties and paradoxes.** *Journal of Leisure Research.* 31(2): 122-149.
- Havitz, M.E.; Mannell, R.C. 2005. **Enduring involvement, situational involvement in leisure and non-leisure activities.** *Journal of Leisure Research.* 37 (2): 152-177.
- ICAS. 2009. **International Council of Air Shows, Inc.** Available at <http://www.airshows.aero/>. (Accessed March 2009).
- Kim, S.S.; Scott, D.; Crompton, J.L. 1997. **An exploration of the relationships among social psychological involvement, behavioral involvement, commitment, and future intentions in the context of bird-watching.** *Journal of Leisure Research.* 29 (3): 320-339.
- Kyle, G.T; Kerstetter, D.L.; Guadagnolo, F.B. 2002. **Market segmentation using participant involvement profiles.** *Journal of Park and Recreation Administration.* 20(1): 1-21.
- Laurent, G.; Kapferer, J.-N. 1985. **Measuring consumer involvement profiles.** *Journal of Marketing Research.* 12(1): 41-53.
- McIntyre, N.; Pigram, J.J. 1992. **Recreation specialization reexamined: the case of vehicle-based campers.** *Leisure Sciences.* 14(1): 36-40.
- McWilliams, E.G.; Crompton, J.L. 1997. **An expanded framework for measuring the effectiveness of destination advertising.** *Tourism Management.* 18(3): 127-137.
- Michaelidou, N.; Dibb, S. 2008. **Consumer involvement: a new perspective.** *The Marketing Review.* 8(1): 83-99.
- Mittal, B. 1989. **Measuring purchase-decision involvement.** *Psychology and Marketing.* 6(2): 147-162.
- Mittal, B. 1995. **A comparative analysis of four scales of consumer involvement.** *Psychology and Marketing.* 12(7): 663-682.
- Nicholson, R.E.; Pearce, D.G. 2001. **Why do people attend events: a comparative analysis of visitor motivations at four South Island events.** *Journal of Travel Research.* 39(4): 449-460.
- Park, C.W.; Mittal, B. 1985. **A theory of involvement in consumer behavior: problems and issues.** In: Sheth, J.N., ed. *Research in consumer behavior 1.* Greenwich, CT: JAI Press: 201-301.
- Speed, R.; Thompson, P. 2000. **Determinants of sports sponsorship response.** *Journal of the Academy of Marketing Science.* 28(2): 226-238.
- Zaichkowsky, J.L. 1986. **Conceptualizing involvement.** *Journal of Advertising.* 15(2): 4-14, 34.
- Zaichkowsky, J.L.; Sood, J.H. 1989. **A global look at consumer involvement and use of products.** *International Marketing Review.* 6(1): 20-35.

The content of this paper reflects the views of the author(s), who are responsible for the facts and accuracy of the information presented herein.

# REINVENTING “RETROTELS”: USING ENGAGED SCHOLARSHIP TO MARKET NOSTALGIA TOURISM IN RURAL NEW HAMPSHIRE

---

Ben Amsden, Ph.D.  
The Center for Rural Partnerships  
Plymouth State University  
blamsden@plymouth.edu

Thad Guldbrandsen, Ph.D.  
Plymouth State University

Mark Okrant, Ph.D.  
Plymouth State University

---

**Abstract.**—Nostalgia tourism is an emerging phenomenon in which visitors actively seek to relive their experiences and/or perceptions of yesteryear. How can modern-day tourism development best leverage this desire to reexperience the past? The Institute for New Hampshire Studies and the Center for Rural Partnerships at Plymouth State University sought to answer this question by creating an engaged scholarship initiative of research and application in the area of tourism marketing. The initiative focuses on developing an operational model for a nostalgia-based tourism program that markets enduring travel accommodations and attractions—in this case, New Hampshire’s aging roadside motels (and possibly other attractions) from the 1950s and 1960s—as modern-day reflections of the past. This brief paper will describe the concept of engaged scholarship in relation to this project. In addition to serving the University’s need for regional engagement, we felt that these historic motels, fast on the road to extinction, could serve as a new lens through which visitors view the past.

---

## 1.0 INTRODUCTION

Nostalgia tourism is an emerging phenomenon in which visitors actively seek to relive their experiences and/or perceptions of yesteryear. By invoking cultural traditions, tangible artifacts, and natural landscapes,

tourism enterprises actively engage nostalgia by presenting glorified and venerated versions of the past (Catton and Santos 2007, Kerstetter et al. 1998, Kibby 2000). Because this “sense of past” resonates with people on so many levels, tourism in which people seek to experience some form of history has become one of the fastest growing segments of the industry (Russell 2008).

How, then, should modern-day tourism development best leverage one’s desire to reexperience the past? How would those experiences take shape? Our objective was to seek the answers to these questions while engaging Plymouth State University in the preservation of the many aging and declining roadside motels and attractions scattered throughout rural New Hampshire. We felt that these places, fast on the road to extinction (mainly due to changes in travel patterns, declining economic conditions, and increased security awareness), could serve as a new lens through which visitors view and experience the past. In addition, involving our small regional comprehensive university in “engaged scholarship” with off-campus partners provided an opportunity for our students and faculty to have a positive impact on the local community while providing lasting benefits for rural New Hampshire.

This brief paper will describe our use of engaged scholarship on a project designed to develop an operational model for nostalgia-based tourism that markets enduring travel accommodations and attractions from the 1950s and 1960s.

## 2.0 ENGAGED SCHOLARSHIP

“Engaged scholarship” (as adapted from Boyer 1996) can be defined as a tool to help the faculty and students of small regional colleges and universities fulfill community needs in diverse areas such as: arts, music, and creative economy; business and tourism development; economic development; informal

education and museum development; workforce development; mathematics teacher education; and social studies education. By partaking in engaged scholarship, off-campus partners can get to know specific faculty members and students, and develop working relationships that go beyond their initial involvement with the university. As a result, small schools that struggle for local support can become more accessible to the broader region, and may no longer be perceived as isolated “ivory towers” devoid of regional impact.

At Plymouth State, undergraduate education is central to the University’s purpose. However, as the University evolves into a regional comprehensive university, faculty and staff are seeking out new and relevant ways to engage in research, outreach, and service. The University’s mission clearly emphasizes community engagement at the local and regional level. The Center for Rural Partnerships and the Institute for New Hampshire Studies, through a wide variety of partnership initiatives, provide avenues for academic excellence and engagement that blur the lines between research, teaching, and service, for the benefit of faculty, students, and the surrounding regions as well. Examples of this work include seeking financial support for faculty and student engagement, translational research and publications, educational programs, technical assistance, and other strategic partnerships.

Engaged scholarship projects have had a positive impacted on Plymouth State’s teaching, research, service, and outreach functions in a number of specific ways. First, involving faculty and students in projects germane to the region encourages everyone on campus to think creatively about how their work relates to the future of rural New Hampshire. This results in greater support for outreach and off-campus partnerships, even among the faculty, staff, and students who are not directly involved. Second, engaged scholarship projects serve as a key component of a larger effort on campus to revitalize outreach, service, and research. Few faculty members at Plymouth State have previously sought grant funding for their work,

and engaged scholarship provides the opportunity to leverage their work by providing assistance while they seek additional funding. Finally, engaged scholarship can serve as a model for other universities, creating lessons learned and best practices that can be used by small colleges just beginning to consider university-community engagement.

### **3.0 THE “RETROTEL” CONCEPT**

Despite the growing importance of nostalgia tourism, there are few examples of its use as an explicit strategy for tourism development in New Hampshire. Instead, most efforts at nostalgia are woven into existing tourism enterprises. A prominent example is agritourism, which conjures nostalgia by revisiting old-fashioned techniques or reliving the lost experience of wholesome farm-to-table produce. New Hampshire’s four grand hotels (the Balsams, the Mountain View Grand, the Mount Washington, and Wentworth-by-the-Sea) are another example; collectively, these are the last remaining examples of the opulence and hospitality bestowed upon nineteenth-century visitors who sought escape from urban environs. Currently, people who visit historic farms, historic grand hotels, and other tourist attractions usually spend their nights in modern hotels or motels, which interrupts the historic tourism experience.

So how would more comprehensive or immersive modern-day nostalgia tourism experience take shape? We felt that the answers to this question could be found among the many aging roadside motels and attractions scattered throughout rural New Hampshire. Attractions such as these have the ability to channel nostalgia by harnessing the myriad social and cultural interpretations that surround the decades of their heyday. While the history of New Hampshire (like anywhere) does not conform neatly to bound ten year spans, many tourists assign meaning to specific decades, referring to preexisting constructions such as “the Fifties,” with its attendant notions of family values and middle-class affluence, or “the Sixties,” a time defined in part by political and social unrest.

New Hampshire's aging roadside motels are on track to be reinvented as avatars of these constructions—modern-day reflections of the past immersing the visitor in the essence of the period while maintaining a comfortable, state-of-the-art experience. These “retrotels” could cater to a niche market of visitors who wish to revisit and/or discover their perceptions of how life and tourism “used to be.” Based upon discussions with local property owners and personal observations of other markets, it is quite possible that retrotels could be of interest to a strong core market of Generation X, Y, and young Baby Boomers, consisting of highly educated urban Americans and Europeans eager to experience Post-World War II American culture and products. Throughout the region, this demand is evident—a number of non-hotel properties (diners in particular) have successfully captured this sense of nostalgia in ways that are consistent with diner development in other regions (Genthner 2003, Witzel 2006)

Our vision of the Retrotel concept was a perfect fit with the engaged scholarship model described above. Through research, tourism marketing, planning, and community development, there were a number of logical connections for partnership and consensus building between the Center for Rural Partnerships (CRP), the Institute for New Hampshire Studies (INHS), and the owners of several historic motels. Admittedly, convincing motel owners to renovate their properties in the style of a certain decade was a tall order. We were confident, however, that with hard work and a little luck, the “retrotel” concept could become an important feature of New Hampshire's tourism landscape.

#### **4.0 APPROACH**

We used research and applications from tourism marketing to create a framework for “reinventing” New Hampshire's aging roadside motels as modern-day reflections of the past. Our mixed methods for engagement and research included: a) partnership and consensus building; b) the design of standards and criteria; c) the recruitment of owners for participation in a formal owners association; and d) a qualitative

assessment of local community response and enthusiasm.

For this project, we adopted the following definition of a motel: a commercial lodging, generally 1 or 2 stories high (in rare cases 3 stories), where guests can pull their cars up to the building and have direct access from the parking lot to a guestroom, either by walking into the guestroom through an outside door or by walking up a flight of stairs to an outside terrace or walkway and then directly into the guestroom. The common denominator is that all guest rooms must be directly accessible from the exterior of the building (Okrant 2006).

#### **5.0 RESULTS AND OBSERVATIONS**

From the outset, the “retrotel” project was met with enthusiasm by property owners and policy makers, and consequently, the New Hampshire Division of Travel and Tourism Development funded a concept development team consisting of the CRP, the INHS, and local motel owners. The project team initially researched retro design throughout the region and developed a series of flexible criteria:

1. Architecture and decor that is reflective of a 1950s/1960s-era motel
2. Signage that is appropriate to a retro motel property in New Hampshire—especially vacancy and non-vacancy signs
3. Simple outdoor amenities/traditional family activities
4. Parlor games (e.g., cards, checkers, board games)
5. Owner/manager present on site
6. Affordability
7. Building construction
8. Paint (appearance and color scheme)
9. Modern amenities in good working order
10. Interior furnishings that reflect the spirit of the 50s and 60s
11. Traditional motel office (restaurant optional) with architecture and decor that is reflective of a 1950s/1960s-era motel

The project team then completed an inventory of over 35 motel properties, in all states of repair, throughout rural northern New Hampshire. Properties were included in the inventory as long as they were in business (hosting guests) and demonstrating some adherence to the standing definition of motel, thereby lending themselves to an application of the project team's retro design standards. This inventory was also used as a master list from which the project members could contact owners and encourage participation in a newly created Retrotel Owners Association. Ideally, this association would include other motel, diner, restaurant, and attraction properties, and would facilitate cooperative marketing. Potential owners association projects could include: developing retrotel packages; creating opportunities to participate in an attractive, government-sponsored Web-based marketing effort; creating and displaying a distinctive certificate and logo; selling bumper stickers and retro clothing items; and encouraging members to create and display retro signage, such as an historic poster of the property, along with paint and other supplies necessary for minor repairs consistent with the "retro" theme.

Early meetings to encourage creation of the owners association were positive but revealed a number of challenges, most of which were raised by the motel owners. Specifically, there was uncertainty regarding the target market, issues of authenticity, the measurement of consistency, the evaluation of properties that might be slightly outside the scope of the project, shifting project parameters (geography, period, property type), and issues of competition. Of particular importance was discussion surrounding further development of the initiative beyond the early organizational stages.

From a scholarly perspective, the enthusiasm expressed by the owners, their guests, and others in New Hampshire's tourism industry confirmed the literature's suggestion that roadside motels and attractions have the ability to channel nostalgia by harnessing the social and cultural constructions surrounding the time of their heyday. Project

participants frequently referred to the "Fifties" and "Sixties," and shared examples of their guests doing the same.

## **6.0 CURRENT STATUS AND LESSONS FOR ENGAGED SCHOLARSHIP**

The project is slowly moving forward. The newly-formed owners association is currently planning to secure funding for future phases of the project, including an inventory of additional properties (diners, drive-ins, general stores, etc.). The community partners involved in the retrotel project—property owners, state policy makers, university faculty, and students—have described numerous positive results from their participation, mainly in terms of their new relationships with each other and the university. This, in essence, is the purpose of engaged scholarship, to create new and lasting impacts throughout the region.

This project provides an example of how effective engaged scholarship can help public universities play an important role in making communities better places to live, while enhancing the university experience in the process. While rural communities throughout the Northeast face many challenges associated with economic and demographic changes, fragmentation of forest and agricultural lands, stressed social services, and a declining job base, the region also has many rich assets enabling a high quality of life and a promising future. Among these assets are an attractive natural landscape, towns and villages with a strong sense of place, and many high-quality educational institutions. Models for engagement, such as the Retrotel project, blend the best aspects of teaching, research, and service, and ultimately help rural places more fully realize the mutual benefits of collaboration between universities and the stakeholders they aim to serve.

Working with the variety of Retrotel stakeholders has had a positive impact on the academic scholarship of Plymouth State, the Center for Rural Partnerships, and the Institute for New Hampshire Studies in the following ways. First, the project has enabled faculty and students to learn about the intricacies of

rural tourism in northern New Hampshire. Second, work on this and other engaged scholarship projects has allowed us to include students in fieldwork and experiential education opportunities. Finally, we have found our work in the communities of rural New Hampshire to be meaningful, rewarding, and inspiring, serving as a wellspring of ideas, collaborations, and future directions for the continuation of engaged scholarship.

## 7.0 LITERATURE CITED

- Boyer, E.L. 1996. **The scholarship of engagement.** Bulletin of the Academy of Arts and Science. 49(7): 18-33.
- Catton, K.; Santos, C. 2007. **Heritage tourism on Route 66: deconstructing nostalgia.** Journal of Travel Research. 45(4): 371-386.
- Genthner, N.M. 2003. **What's cooking at Moody's diner.** West Rockport, ME: Dancing Bear Books.
- Kerstetter, D.; Confer, J.; Bricker, K. 1998. **Industrial heritage attractions: types and tourists.** Journal of Travel and Tourism Marketing. 7(2): 91-104.
- Kibby, M. 2000. **Tourists on the mother road and the information superhighway.** In: Robinson, M.; Long, P.; Evans, N.; Sharpley, R.; Swarbrooke, J., eds. Reflection of international tourism: expressions of culture, identity, and meaning in tourism. Newcastle: University of Northumbria: 139-149.
- Okrant, M. 2006. **Sleeping alongside the road: recollections by patrons and the owners of motels in that era when motels were Americans' first choice.** Manchester, NH: Oak Manor Publishing.
- Russell, D. 2008. **Nostalgic tourism.** Journal of Travel and Tourism Marketing. 25(2): 103-116.
- Witzel, M.K. 2006. **The American diner.** St. Paul, MN: MBI Publishing Co.

The content of this paper reflects the views of the author(s), who are responsible for the facts and accuracy of the information presented herein.

Fisher, Cherie LeBlanc; Watts, Clifton E., Jr., eds. 2012. **Proceedings of the 2010 Northeastern Recreation Research Symposium**. Gen. Tech. Rep. NRS-P-94. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northern Research Station. 261 p.

Contains articles presented at the 2010 Northeastern Recreation Research Symposium. Contents cover tourism marketing, fish and wildlife, place meaning, leisure and demographics, nature-based tourism, methods, leisure motives, outdoor recreation management, outdoor recreation among specific populations, leisure constraints, environmental attitudes and values, leisure cognition, environmental education, wildland-urban interface issues, and attribute evaluation and preference.

KEY WORDS: fish and wildlife, environmental attitudes, leisure, recreation, tourism, wildland-urban interface

Visit our homepage at: <http://www.nrs.fs.fed.us/>

---

---

Published by:  
USDA FOREST SERVICE  
11 CAMPUS BLVD., SUITE 200  
NEWTOWN SQUARE, PA 19073-3294

March 2012

For additional copies:  
USDA Forest Service  
Publications Distribution  
359 Main Road  
Delaware, OH 43015-8640  
Fax: 740-368-0152

---

---

Manuscript received for publication May 2011

---

---

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at 202-720-2600 (voice and TDD). To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, 1400 Independence Avenue SW, Washington, DC 20250-9410, or call 800-795-3272 (voice) or 202-720-6384 (TDD). USDA is an equal opportunity provider and employer.

---

---



Printed on recycled paper



---

[www.nrs.fs.fed.us](http://www.nrs.fs.fed.us)